CRANDALL ISD

PERFORMING ARTS CENTER ADDITION TO CRANDALL HIGH SCHOOL

13385 FM 3039
CRANDALL, TX 75114

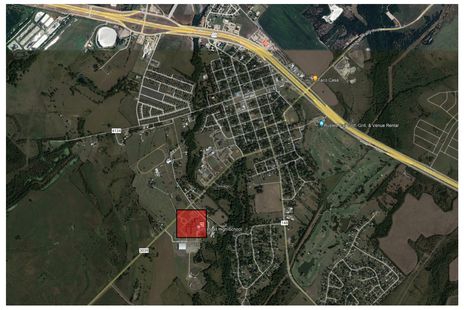
PROJECT DESCRIPTION

A NEW GROUND UP ADDITION TO THE EXISTING CRANDALL ISD HIGH SCHOOL. ADDITION WILL HOUSE PERFORMING ARTS LEARNING SPACES ALONG WITH A NEW PERFORMING ARTS THEATER. NEW ADDITION WILL BE SEPARATED FROM THE EXISTING HIGH SCHOOL WITH AN EXISTING FIRE WALL.

BUILDING CODE INFORMATION

2021 INTERNATIONAL BUILDING CODE (IBC)
2021 INTERNATIONAL FIRE CODE (IFC)
2021 INTERNATIONAL MECHANICAL CODE (IMC)
2021 INTERNATIONAL FUEL GAS CODE (IFGC)
2023 NATIONAL ELECTRICAL CODE (NEC)
2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2012 TEXAS ACCESSIBILITY STANDARDS (TAS)

PROJECT LOCATION



PROJECT TEAM

OWNER

CRANDALL INDEPENDENT SCHOOL DISTRICT
DR. ANJANETTE MURRY, SUPERINTENDENT, CRANDALL ISD

SCOTT STEWART,
EXECUTIVE DIRECTOR OF TRANSPORTATION & SCHOOL PLANNING
972-427-6024
SSTEWART@CRANDALL-ISD.NET
WWW.CRANDALL-ISD.NET
400 W. LEWIS STREET, CRANDALL, TX 75114

JIMMY STROHMEYER, AIA, NCARB,
OWNERS REP
JIMMY@STROHMEYERARCHITECTS.COM
2701 SUNSET RIDGE DRIVE SUITE 601, ROCKWALL, TX, USA
469-516-7549

CIVIL ENGINEER

TEAGUE NALL AND PERKINS, INC
JOEL RICHEY, PE,
SENIOR PROJECT MANAGER
JRICHEY@TNPINC.COM
214-461-9867
825 WATTERS CREEK BOULEVARD, SUITE M300, ALLEN, TX 75013

CONSTRUCTION MANAGER

GALLAGHER CONSTRUCTION COMPANY
JASON THORPE,
REGIONAL VP OF CONSTRUCTION
JASON@GALLAGHERTX.COM
O: 972-633-0564
M: 214-882-1801
3501 TOKEN DR. SUITE 100
RICHARDSON, TX 75082

ARCHITECT

DLR GROUP
CHARLES BRANT
SENIOR ARCHITECTURE LEADER
CBRANT@DLRGROUP.COM
O: 214-452-1264
M: 214-264-4288
2500 PACIFIC AVE STE. 1600, DALLAS, TX 75226

STRUCTURAL ENGINEER

DLR GROUP
JAMES WHITT
SENIOR ASSOCIATE
STRUCTURAL ENGINEERING LEADER
JWHITT@DLRGROUP.COM
O: 214-452-1261
M: 214-232-7888
2500 PACIFIC AVE STE. 1600, DALLAS, TX 75226

MEP ENGINEER

DLR GROUP
BRENT HOWARD
SENIOR ASSOCIATE
MECHANICAL ENGINEERING LEADER
BHOWARD@DLRGROUP.COM
214-452-1208
2500 PACIFIC AVE STE. 1600, DALLAS, TX 75226

MARK NIECHWIADOWICZ
SENIOR ASSOCIATE
ELECTRICAL ENGINEERING LEADER
MNIECHWIADOWICZ@DLRGROUP.COM
O: 402-972-4624
2500 PACIFIC AVE STE. 1600, DALLAS, TX 75226

SHEET LIST

.GENERAL.
G0.1 COVER SHEET
G1.1 GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

.CODE.
CP0.1 BUILDING USE ANALYSIS
CP1.1 LEVEL 01 - CODE PLAN
CP1.2 LEVEL 02 - CODE PLAN
CP1.3 AUDIENCE CHAMBER CATCHMENT ZONES
CP2.0 TESTED ASSEMBLIES
CP2.1 TESTED ASSEMBLIES

ENERGY
EN0.1 MECHANICAL COMPLIANCE CERTIFICATE
EN0.2 ENVELOPE COMPLIANCE CERTIFICATE

.CIVIL.
C1.00 CIVIL COVER SHEET
C1.01 EXISTING TOPOGRAPHIC PLAN
C1.02 DEMOLITION PLAN
C1.03 SITE PLAN
C1.04 DIMENSION CONTROL PLAN
C1.05 DIMENSION CONTROL PLAN INSET
C1.06 GRADING PLAN
C1.07 GRADING PLAN LOADING DOCK INSET
C1.08 STORM DRAIN PLAN
C1.09 STORM DRAIN PROFILES
C1.10 WATER AND SANITARY SEWER PLAN
C1.11 PAVING PLAN
C1.12 EROSION CONTROL PLAN
C1.13 EROSION CONTROL DETAILS
C1.14 SITE DETAILS
C1.15 PAVING DETAILS
C1.16 STORM DRAIN DETAILS
C1.17 WATER AND SANITARY SEWER DETAILS

L1.01 LANDSCAPE PLAN
L1.02 LANDSCAPE NOTES
L1.03 LANDSCAPE DETAILS
L1.04 LANDSCAPE DETAILS

IR1.01 IRRIGATION PLAN
IR1.02 TREE IRRIGATION PLAN
IR1.03 IRRIGATION SCHEDULE & NOTES
IR1.04 IRRIGATION DETAILS

.ARCHITECTURAL.
AS1.1 ARCHITECTURAL SITE PLAN
AS1.2 ARCHITECTURAL SITE ENLARGED PLANS
AD1.1B LEVEL 01 - AREA B- DEMOLITION PLAN
AD3.1B LEVEL 01 - AREA B - REFLECTED CEILING DEMOLITION PLAN
A1.1 LEVEL 01 - OVERALL PLAN
A1.1A LEVEL 01 - AREA A - FLOOR PLAN
A1.1B LEVEL 01 - AREA B - FLOOR PLAN
A1.2 LEVEL 02 - OVERALL PLAN
A1.2A LEVEL 02 MEZZANINE - AREA A - FLOOR PLAN
A1.3 LEVEL 03 CATWALK - OVERALL PLAN
A1.4 OVERALL ROOF PLAN
A2.1 ENLARGED PLAN - AUDIENCE CHAMBER - LEVEL 01
A2.2 ENLARGED PLAN - AUDIENCE CHAMBER - LEVEL 02
A2.3 ENLARGED PLAN - AUDIENCE CHAMBER - CATWALK
A2.4 ENLARGED PLAN - AUDIENCE CHAMBER - LOADING BRIDGE
A2.5 ENLARGED PLAN - AUDIENCE CHAMBER - GRID LEVEL
A2.6 ENLARGED PLAN - AUDIENCE CHAMBER - SEATING PLAN
A2.11 ENLARGED PLAN - BAND / PERCUSSION ROOMS RENNOVATION
A2.12 ENLARGED PLAN - BAND / PERCUSSION ROOMS RENNOVATION
A2.15 ENLARGED RESTROOM PLANS AND ELEVATIONS - FRONT OF HOUSE
A2.16 ENLARGED RESTROOM PLANS AND ELEVATIONS - BACK OF HOUSE
A3.0 TYPICAL CEILING PLANS RULES
A3.1 LEVEL 01 - OVERALL REFLECTED CEILING PLAN
A3.1A LEVEL 01 - AREA A - REFLECTED CEILING PLAN
A3.1B LEVEL 01 - AREA B - REFLECTED CEILING PLAN
A3.2 LEVEL 02 - OVERALL REFLECTED CEILING PLAN
A3.2A LEVEL 02 - MEZZANINE - AREA A - REFLECTED CEILING PLAN
A3.3 LEVEL 03 - CATWALK & GRID - REFLECTED CEILING PLAN
A3.4 LEVEL 04 - GRID - REFLECTED CEILING PLAN
A4.1 EXTERIOR ELEVATIONS
A4.2 EXTERIOR ELEVATIONS
A5.1 BUILDING SECTIONS
A5.2 BUILDING SECTIONS
A6.1 WALL SECTIONS
A6.2 WALL SECTIONS
A7.1 STAIR VIEWS
A7.2 STAIR VIEWS
A8.2 PARTITION TYPES
A8.3 DOOR & FRAME TYPE & SCHEDULE
A8.5 WINDOW TYPES, SCHEDULES, & ELEVATIONS

.ARCHITECTURAL.
A9.0 EXTERIOR ASSEMBLIES
A9.1 EXTERIOR DETAILS
A9.2 EXTERIOR DETAILS
A9.3 EXTERIOR DETAILS
A9.4 EXTERIOR DETAILS

.INTERIORS.
A10.1 INTERIOR ELEVATIONS
A10.2 INTERIOR ELEVATIONS
A10.3 INTERIOR ELEVATIONS
A10.4 INTERIOR ELEVATIONS
A10.5 INTERIOR ELEVATIONS
A10.6 INTERIOR ELEVATIONS
A10.7 INTERIOR ELEVATIONS
A10.8 INTERIOR ELEVATIONS
A10.9 INTERIOR ELEVATIONS
A10.10 INTERIOR ELEVATIONS
A10.11 INTERIOR ELEVATIONS
A11.1 INTERIOR DETAILS - PARTITIONS
A11.2 INTERIOR DETAILS - DOOR AND FRAME
A11.3 INTERIOR DETAILS - FLOORING
A11.4 INTERIOR DETAILS - GENERAL
A11.5 INTERIOR DETAILS - GENERAL CONT.
A11.6 INTERIOR DETAILS - VERTICAL CIRCULATION
A11.7 INTERIOR DETAILS - AUDIENCE CHAMBER
A11.8 INTERIOR DETAILS - AUDIENCE CHAMBER
A11.9 INTERIOR DETAILS - AUDIENCE CHAMBER
A11.10 INTERIOR DETAILS - AUDIENCE CHAMBER
A12.01 FINISH SCHEDULES
A12.1A LEVEL 01 - AREA A - FINISH PLAN
A12.1B LEVEL 01 - AREA B - FINISH PLAN
A12.2A LEVEL 02 - AREA A - FINISH PLAN
A12.2B LEVEL 02 - AREA B - FINISH PLAN
A12.3 LEVEL 03 - CATWALK - FINISH PLAN
A13.1A LEVEL 01 - AREA A - FF&E PLAN
A13.1B LEVEL 01 - AREA B - FF&E PLAN
A13.2A LEVEL 02 - AREA A - FF&E PLAN

.STRUCTURAL.
S0.1 GENERAL STRUCTURAL NOTES
S0.2 GENERAL STRUCTURAL NOTES & SPECIAL INSPECTIONS
S0.3 GENERAL STRUCTURAL NOTES, SYMBOLS & ABBREVIATIONS

.STRUCTURAL.
S1.1 LEVEL 01 OVERALL FOUNDATION PLAN
S1.1A LEVEL 01 AREA A - FOUNDATION PLAN
S1.1B LEVEL 01 AREA B - FOUNDATION PLAN
S1.2A LEVEL 02 MEZZANINE - AREA A - FRAMING PLAN
S2.3 LEVEL 03 CATWALK - OVERALL FRAMING PLAN
S2.3A LEVEL 03 CATWALK - AREA A - FRAMING PLAN
S2.3B LEVEL 03 CATWALK - AREA B - FRAMING PLAN
S2.4A LEVEL 04 AUDIENCE CHAMBER - AREA A - FRAMING PLAN
S2.6A LEVEL 06 STAGE HOUSE - AREA A - FRAMING PLAN
S3.1 STRUCTURAL DETAILS
S3.2 STRUCTURAL DETAILS
S3.4 STRUCTURAL DETAILS
S3.5 STRUCTURAL DETAILS
S5.1 STEEL TYPICAL DETAILS
S5.2 STEEL TYPICAL DETAILS
S5.3 STEEL TYPICAL DETAILS
S5.4 STEEL SECTIONS
S5.5 STEEL SECTIONS
S5.6 STEEL SECTIONS
S5.7 STEEL SECTIONS
S5.8 STEEL SECTIONS
S5.9 STEEL SECTIONS
S6.1 BRACE ELEVATIONS
S6.2 BRACE ELEVATIONS

.FIRE PROTECTION.
FP0.1 FIRE PROTECTION SYMBOLS & ABBREVIATIONS
FP0.2 FIRE PROTECTION ABBREVIATIONS
FP1.1 LEVEL 01 - FIRE PROTECTION PLAN
FP1.2A LEVEL 02 MEZZANINE - AREA A - FIRE PROTECTION PLAN

.PLUMBING.
P0.1 PLUMBING GENERAL NOTES & SYMBOLS
P0.2 PLUMBING ABBREVIATIONS
PD2.1B LEVEL 01 - AREA B - DEMOLITION PLAN
P2.1 OVERALL UNDERGROUND PLUMBING PLAN
P2.1B LEVEL 01 - AREA B - PLUMBING PLAN
P2.1A LEVEL 01 - AREA A - PLUMBING PLAN

.PLUMBING.
P2.2MA LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN
P2.3 OVERALL ROOF PLUMBING PLAN
P3.1 ENLARGED PLUMBING PLANS
P4.1 WASTE & VENT RISER DIAGRAMS
P4.2 DOMESTIC RISER DIAGRAM
P4.3 STORM RISER DIAGRAM
P5.1 PLUMBING DETAILS
P6.1 PLUMBING SCHEDULES

.MECHANICAL.
M0.1 MECHANICAL SYMBOLS, ABBREVIATIONS & NOTES
MD1.1B LEVEL 01 - AREA B - HVAC DEMOLITION PLAN
M1.1A LEVEL 01 - AREA A - HVAC PLAN
M1.1B LEVEL 01 - AREA B - HVAC PLAN
M1.2MA LEVEL 02 MEZZANINE - AREA A - HVAC PLAN
M1.3A LEVEL 03 - AREA A - ROOF MECHANICAL PLAN
M1.3B LEVEL 03 - AREA B - MECHANICAL PLAN
M1.4B LEVEL 04 - AREA B - ROOF MECHANICAL PLAN
M5.1 CONTROLS DIAGRAMS
M5.2 CONTROLS DIAGRAMS
M5.3 CONTROLS DIAGRAMS
M7.1 MECHANICAL DETAILS
M7.2 MECHANICAL DETAILS
M8.1 MECHANICAL SCHEDULES

.ELECTRICAL.
E0.1 ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES
ED1.1B LEVEL 01 - AREA B - ELECTRICAL DEMOLITION PLAN
ES1.1 ELECTRICAL SITE PLAN
ES1.2 SITE LIGHTING PHOTOMETRICS
EL1.1A LEVEL 01 - AREA A - LIGHTING PLAN
EL1.1B LEVEL 01 - AREA B - LIGHTING PLAN
EL1.2A LEVEL 02 MEZZANINE - AREA A - LIGHTING PLAN
EL1.3A LEVEL 03 CATWALK - AREA A - LIGHTING PLAN
EL1.4A LEVEL 04 GRID - AREA A - LIGHTING PLAN
ELF1.1A LEVEL 01 - AREA A - LIGHTING FLOOR PLAN

.ELECTRICAL.
ELF1.3A LEVEL 03 - AREA A - LIGHTING FLOOR PLAN
E2.1 LEVEL 01 - POWER PLAN
E2.1A LEVEL 01 - AREA A - POWER PLAN
E2.1B LEVEL 01 - AREA B - POWER PLAN
E2.2A LEVEL 02 MEZZANINE - AREA A - POWER PLAN
E2.3A LEVEL 03 CATWALK - AREA A - POWER PLAN
E2.4A LEVEL 04 GRID - AREA A - POWER PLAN
E2.5A ROOF LEVEL - POWER PLAN
E2.6A ROOF LIGHTNING PROTECTION PLAN
E3.1A LEVEL 01 - AREA A - SPECIAL SYSTEMS PLAN
E3.1B LEVEL 01 - AREA B - SPECIAL SYSTEMS PLAN
E3.2A LEVEL 02 MEZZANINE - AREA A - SPECIAL SYSTEMS PLAN
E3.3A LEVEL 03 CATWALK - AREA A - SPECIAL SYSTEMS PLAN
E5.1 ELECTRICAL DIAGRAMS
E6.1 ELECTRICAL DETAILS
E6.2 ELECTRICAL DETAILS
E6.3 ELECTRICAL DETAILS
E6.4 LIGHTING ELEVATIONS
E6.5 LIGHTING ELEVATIONS
E7.1 LIGHTING SCHEDULES
E7.2 ELECTRICAL SCHEDULES
E7.3 ELECTRICAL SCHEDULES
E7.4 ELECTRICAL SCHEDULES

.THEATRICAL.
QT0.01 THEATRICAL GENERAL INFORMATION
QT1.01 LEVEL 1 - THEATRICAL LIGHTING PLAN
QT1.02 LEVEL2 - THEATRICAL LIGHTING PLAN, CONTROL BOOTH AND ELECTRICS
QT1.03 LEVEL 3 - THEATRICAL LIGHTING PLAN, CATWALK AND FOLLOWSPOT
QT1.04 LEVEL 4 - THEATRICAL LIGHTING PLAN, GRID
QT1.21 LEVEL 1 - THEATRICAL DRAPERY PLAN - THEATER
QT1.22 LEVEL 1 - THEATRICAL DRAPERY PLAN AND SECTION - PERCUSSION ROOM
QT1.23 LEVEL 2 - THEATRICAL AND ACOUSTIC DRAPERY PLAN, CATWALK
QT1.31 LEVEL 1 - THEATRICAL RIGGING PLAN
QT1.32 LEVEL 2 - THEATRICAL RIGGING PLAN
QT1.33 LEVEL 3 - THEATRICAL RIGGING PLAN - LOADING BRIDGE
QT1.34 LEVEL 4 - THEATRICAL RIGGING PLAN - GRID
QT1.71 LEVEL 1 - ORCHESTRA SHELL PLAN
QT3.21 THEATRICAL DRAPERY, LONGITUDINAL SECTION
QT3.22 THEATRICAL & ACOUSTIC DRAPERY SECTIONS
QT3.23 THEATRICAL RIGGING - TRANSVERSE SECTION - TYPICAL COUNTERWEIGHT LINESET
QT3.24 THEATRICAL RIGGING TRANSVERSE SECTION - MOTORIZED LIGHTING LINESET
QT3.25 THEATRICAL RIGGING - TRANSVERSE SECTION - MOTORIZED ACOUSTIC CEILING LINESET
QT3.26 THEATRICAL RIGGING - TRANSVERSE SECTION - FIRE CURTAIN
QT3.31 THEATRICAL RIGGING - LONGITUDINAL SECTION
QT3.61 ORECHESTRA SHELL SECTION
QT5.11 THEATRICAL WIRING DEVICE DETAILS & SCHEDULE
QT5.12 THEATRICAL CONTROL DEVICE DETAILS & SCHEDULE
QT5.14 THEATRICAL HOUSE LIGHT CONTROL DEVICE DETAILS & SCHEDULE
QT5.15 THEATRICAL RACK & PANEL PHYSICAL PROPERTIES
QT5.21 THEATRICAL & ACOUSTIC DRAPERY DETAILS
QT5.31 THEATRICAL RIGGING DETAILS
QT5.33 THEATRICAL RIGGING DETAILS, FIRE CURTAIN
QT5.36 THEATRICAL RIGGING DETAILS, SIGNAGE
QT5.37 THEATRICAL RIGGING POWER & CONTROL DIAGRAM
QT6.11 THEATRICAL LIGHTING CONTROL DIAGRAM
QT6.12 THEATRICAL LIGHTING MAINS FED PANEL SCHEDULES
QT6.13 THEATRICAL LIGHTING FEED-THRU PANEL SCHEDULES
QT6.14 THEATRICAL LIGHTING FIXTURES & ACCESSORIES SCHEDULE
QT6.15 THEATRICAL LIGHTING REPERTORY PLOT

.AUDIOVISUAL.
TA0.01 AUDIOVISUAL GENERAL NOTES
TA0.02 AUDIOVISUAL GENERAL DETAILS
TA1.01 AUDIOVISUAL WIRING DEVICE PLAN, FIRST LEVEL - AREA A
TA1.01A LEVEL 01 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.01B LEVEL 01 - AREA B - AUDIOVISUAL WIRING DEVICE PLAN
TA1.02A LEVEL 02 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.03A CATWALK - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.11 AUDIOVISUAL EQUIPMENT PLAN, FIRST LEVEL - AREA A
TA1.11A LEVEL 01 - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA1.11B LEVEL 01 - AREA B - AUDIOVISUAL EQUIPMENT PLAN
TA1.12A LEVEL 02 - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA1.13A CATWALK - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA2.01A LEVEL 01 - AREA A - REFLECTED CEILING PLAN
TA2.01B LEVEL 01 - AREA B - REFLECTED CEILING PLAN
TA2.02A LEVEL 02 - AREA A - REFLECTED CEILING PLAN
TA4.01 ELEVATIONS, SECTIONS AND 3D VIEWS
TA4.02 ELEVATIONS, SECTIONS AND 3D VIEWS
TA5.01 AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.02 AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.03 AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.04 AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA6.01 AUDIOVISUAL DETAILS
TA6.02 AUDIOVISUAL DETAILS
TA6.51 AUDIOVISUAL WIRING DEVICE DETAILS
TA6.52 AUDIOVISUAL WIRING DEVICE DETAILS
TA7.01 AUDIOVISUAL SCHEDULES
TA7.02 AUDIOVISUAL SCHEDULES

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

COVER SHEET

G0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:20:36 PM

GENERAL ABBREVIATIONS

#	NUMBER
&	AND
@	AT
ADA	AMERICANS WITH DISABILITY ACT
ADDN	ADDITION OR ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
BLDG	BUILDING
BSMT	BASEMENT
CL	CENTER LINE
CLG	CEILING
CM	CENTIMETER
CONC	CONCRETE
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CTR	CENTER
D	DEPTH
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DIV	SPECIFICATION DIVISION
DN	DOWN
DTL	DETAIL
DWG(S)	DRAWING(S)
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
EL	ELEVATION
ELEC	ELECTRICAL
ENG	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EXST	EXISTING
EXT	EXTERIOR
FIN	FINISHED
FL	FLOOR
FT	FEET
FUT	FUTURE
GC	GENERAL CONTRACTOR
GOVT	GOVERNMENT
H	HEIGHT
HORIZ	HORIZONTAL
HT	HEIGHT
i.e.	THAT IS
IBC	INTERNATIONAL BUILDING CODE
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
M	METER
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
OVHD	OVERHEAD
PAR	PARALLEL
PENT	PENTHOUSE
PLYWD	PLYWOOD
QTY	QUANTITY
REQ(D)	REQUIRE(D)
REV	REVISION(S)
RM	ROOM
RND	ROUND
S	SOUTH
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION(S)
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SYM	SYMETRICAL
TEMP	TEMPORARY
TYP	TYPICAL
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
W	WEST
W/	WITH
W/O	WITHOUT

ARCHITECTURAL ABBREVIATIONS

A/E	ARCHITECT/ENGINEER
AB	AIR BARRIER
ABS	ASBESTOS
ACC	ADA ACCESSIBLE
ACR	ACRYLIC
ACT	ACOUSTIC CEILING TILE
AD	ACCESS DOOR
ADJ	ADJUSTABLE
ADJT	ADJACENT
ADMIN	ADMINISTRATION
AEC	AUTOMATED EXTERNAL DEFIBRILLATORS
AL	ALUMINUM
ALUM	ALUMINUM
AP	ACCESS PANEL
APC	ACOUSTIC PANEL CEILING
ASPH	ASPHALT
AUTO	AUTOMATIC
AVG	AVERAGE
AWP	ACOUSTIC WALL PANEL
B.O.	BOTTOM OF
BCS	BABY CHANGING STATION
BD	BOARD
BLK	BLOCK
BLKG	BLOCKING
BLKHD	BULKHEAD
BM(S)	BEAM(S)
BOT	BOTTOM
BRDG	BRIDGING
BRG	BEARING
BRKT	BRACKET
BT	BATHTUB
BTWN	BETWEEN
CAB	CABINET
CBD	CHALKBOARD
CER	CERAMIC
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFMF	COLD-FORMED METAL FRAMING
CG	CLEAR FLOAT GLASS
CGD	CORNER GUARD
CI	CAST IRON
CIG	CLEAR INSULATING GLASS
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CJA	CONTROL JOINT ABOVE
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATIONS
COMPR	COMPRESSIBLE
CONF	CONFERENCE
CONFIG	CONFIGURATION
CORR	CORRIDOR
CP	COVER PLATE
CPT	CARPET
CR	CHAIR RAIL
CS	COUNTERSINK
CSTJ	CONSTRUCTION JOINT
CSWK	CASEWORK
CT	CERAMIC TILE
CTG	CLEAR TEMPERED FLOAT GLASS
CTIG	CLEAR TEMPERED INSULATING GLASS
CU	COPPER
CU	COMBINATION UNIT
CV	CONDOM VENDOR
CY	CUBIC YARD
CYL	CYLINDER
DB	DECIBEL
DBL	DOUBLE
DC	DUST COLLECTOR
DEPR	DEPRESS(ION)(ED)
DEPT	DEPARTMENT
DET	DETENTION
DF	DRINKING FOUNTAIN
DG	DOOR GRILLE
DIAG	DIAGONAL
DPFG	DAMPROOFING
DR	DOOR
DSN	DOWNSPOUT NOZZLE
DW	DISHWASHER
DWL(S)	DOWEL(S)
DWR	DRAWER
EB	EXPANSION BOLT
EE	EACH END
EEW	EMERGENCY EYE WASH
EEWS	EMERGENCY EYE WASH SHOWER
EFF	EFFICIENCY
EJ	EXPANSION JOINT
ELAS	ELASTOMERIC
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
ENTR	ENTRANCE
ERF	EPOXY RESIN FLOORING
EUI	ENERGY USE INTENSITY
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXP	EXPANSION
EXP	EXPOSED
F	FABRIC
F.O.	FACE OF
FAB	FABRICATE(D)
FB	FACE BRICK
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIG	FIGURE
FIX	FIXTURE
FLASH	FLASHING
FLEX	FLEXIBLE
FLG	FLOORING
FLM	FULL LENGTH MIRROR
FLUOR	FLUORESCENT
FO	FINISH OPENING
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FP	FIREPROOFING
FR	FIRE RESISTANT
FRP	FIBERGLASS REINFORCED PANEL
FRT	FIRE RESISTANCE TREATED
FS	FLOOR SINK
FSS	FOLDING SHOWER SEAT
FTG	FOOTING
FVC	FIRE VALVE CABINET
FWC	FABRIC WALL COVERING
G	GROUT
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GD	GARBAGE DISPOSAL
GEN	GENERAL
GFA	GROSS FLOOR AREA
GL	GLUE LAMINATED
GL	GLASS
GMP	GUARANTEED MAXIMUM PRICE
GR	GUARD RAIL
GR	GRADE
GRS	GALVANIZED RIGID STEEL
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HC	HOLLOW CORE
HD	HAND DRYER
HDF	HIGH DENSITY FIBERBOARD
HDR	HEADER
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HR	HOUR
HR	HANDRAIL
HS	HARDWARE SET
HSS	HOLLOW STRUCTURAL SHAPE
HVAC	HEATING VENTILATING AND AIR CONDITIONING
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IF	INSIDE FACE
IIP	INSULATED INFILL PANEL GLASS
IJ	ISOLATION JOINT
IJS	IN JOIST SPACE
INC	INCLUDE(ING)
INSUL	INSULATION
JAN	JANITOR
JBE	JOIST BEARING ELEVATION
JBX	JUNCTION BOX
JCT	JUNCTION
JFB	JOINT FILLER BOARD
JST	JOIST
JT	JOINT
KCJ	KEYED CONSTRUCTION JOINT
KD	KNOCKDOWN
KH	KITCHEN HOOD
KIT	KITCHEN
L	ANGLE
LAB	LABORATORY
LAM	LAMINATED
LAV	LAVATORY
LBR	LUMBER
LDG	LOADING
LF	LINEAR FOOT
LG	LENGTH (LONG)
LG	LAMINATED GLASS
LIN	LINEAR
LINO	LINOLEUM
LKR	LOCKER
LOC	LOCATION
LONG	LONGITUDINAL
LSC	LIFE SAFETY CODE
LTG	LIGHTING
LV	LOUVER
LVT	LUXURY VINYL TILE
MAG	MAGNETIC
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MATL	MATERIAL
MB	MOP BASIN
MBD	MARKER BOARD
MBH	MOP/BROOM HOLDER
MC	MEDICINE CABINET
MEMB	MEMBRANE
MH	MANHOLE
MR/S	MIRROR WITH SHELF
MTD	MOUNTED
MTG	MOUNTING
MUL	MULLION
NC	NOISE CRITERIA
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOM	NOMINAL
O to O	OUT TO OUT
OA	OVERALL
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OPPOSITE HAND
OPG(S)	OPENING(S)
OSHA	OPERATIONAL SAFETY AND HEALTH ADMINISTRATION
OTB	OPEN TO BELOW
OVFL	OVERFLOW
P	PAINT
PAN B	PANIC BOLT
PB	PARTICLE BOARD
PC	PRECAST CONCRETE
PCD	PAPER CUP DISPENSER
PCT	PORCELAIN CERAMIC TILE
PD	PANIC DEVICE
PERF	PERFORATED
PERP	PERPENDICULAR
PG	PATTERN GLASS
PIC	PORTABLE INSTRUMENT CONNECTION
PIG	PATTERN INSULATING GLASS
PL	PLATE
PL	PROPERTY LINE
PL	PLASTIC LAMINATE
PLAM	PLASTIC LAMINATE
PLBG	PLUMBING
PR	PAIR
PREFAB	PREFABRICATED
PROJ	PROJECT(OR) (ION)
PS	PROJECTION SCREEN
PT	POINT
PT	POINT OF TANGENCY
PTD	PAPER TOWEL DISPENSER
PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PWL	SOUND POWER LEVEL
QGV	QUAD GAS VALVE
QT	QUARRY TILE
QTR RND	QUARTER ROUND
R	RISER
RAD	RADIUS
RB	RUBBER BASE
RC	REMOTE CONTROL
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REFL	REFLECTED
REM	REMOVABLE
RESIL	RESILIENT
RF	RESILIENT FLOORING
RF	RUBBER FLOOR
RFM	RECESSED FLOOR MAT
RH	ROBE HOOK
RI&C	ROUGH IN AND CONNECT
S	SINK
SAT	SPRAYED ACOUSTIC TREATMENT
SAW	SOUND ABSORBING WALL UNITS
SB	SPLASH BLOCK
SC	SOLID CORE
SC	SHOWER CURTAIN
SCD	SEAT COVER DISPENSER
SCH	SHOWER CURTAIN HOOK
SCR	SHOWER CURTAIN ROD
SCT	STRUCTURAL CLAY TILE
SD	SOAP DISPENSER
SECY	SECRETARY
SF	SQUARE FEET
SG	SPANDREL GLASS
SG	SPECIALTY GLASS
SGL	SINGLE
SGV	SINGLE GAS VALVE
SH	SHOWER
SHM	SECURITY HOLLOW METAL
SLNT	SEALANT
SM	SHEET METAL
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SO	SENSOR OPERATED
SPL	SOUND PRESSURE LEVEL
SQ	SQUARE
SR	SURFACE MOUNTED ELECTRICAL RACEWAY
SS	SOLID SURFACE
SSA	STORM SHELTER AREA
SSM	SOLID SURFACE
SSS	STAINLESS STEEL SHELF
SST	STAINLESS STEEL
ST	STONE
ST	STAIR
STAG'D	STAGGERED
STC	SOUND TRANSMISSION CLASS
STGR	STRINGER
SUBFL	SUBFLOOR
SUL	SULPHUR
SURF	SURFACE
SUSP	SUSPENDED
SVF	SHEET VINYL FLOORING
SVF	SERVICE FIXTURE
SVG	SERVICE FIXTURE GROUP
T	TREAD
T&G	TONGUE AND GROOVE
T.O.	TOP OF
TAN	TANGENT
TB	TOWEL BAR
TBD	TACK BOARD
TCP	TOILET COMPARTMENT PARTITION
TERR	TERRAZZO
TFG	TINTED FLOAT GLASS
TG	TEMPERED GLASS
TH	THRESHOLD
THK	THICK(NESS)
TI	TENANT IMPROVEMENT
TIG	TINTED INSULATING GLASS
TMR	TILT MIRROR UNIT
TOIL	TOILET
TOP	TOP OF PAVING
TRANS	TRANSVERSE
TT	TERRAZZO TILE
TTD	TOILET TISSUE DISPENSER
TTG	TINTED TEMPERED FLOAT GLASS
TTIG	TINTED TEMPERED INSULATING GLASS
TW	TACK WALL
UL	UNDERWRITERS LABORATORIES
UR	URINAL
US	UTILITY SHELF
UTIL	UTILITY
VB	VAPOR BARRIER
VB	VINYL BASE
VCB	VENTED COVE BASE
VF	VINYL FLOOR
VOC	VOLITILE ORGANIC COMPOUND
VOL	VOLUME
VP	VENEER PLASTER
VT	VINYL TILE
VWC	VINYL WALL COVERING
W	WIDE
WB	WALL BASE
WC	WATER CLOSET
WC	WALL COVERING
WCL	WATER CLOSET/LAVATORY COMBINATION
WD	WOOD
WDF	WOOD FLOORING
WDW	WINDOW
WG	POLISHED WIRE GLASS
WI	WROUGHT IRON
WOM	WALK OFF MAT
WR	WASTE RECEPTACLE
WRB	WEATHER RESISTANT BARRIER
WW	WARM WHITE
WWF	WELDED WIRE FABRIC
YD	YARD

GENERAL SYMBOLS

- DETAIL NUMBER / CROSS REFERENCE / SHEET NUMBER
- BUILDING ELEVATION (XX, A4.XX)
- INTERIOR ELEVATION (XX, A12.X)
- SIMILAR OR TYPICAL REFERENCE (SIM)
- WALL SECTION
- DETAIL REFERENCE
- BUILDING SECTION
- SHEET NOTE
- REFERENCE KEYNOTE
- COLUMN GRID LINE
- ROOM NUMBER/NAME (ROOM NAME ???)
- REVISION NUMBER (XXX-XX)
- LEVEL ELEVATION (LEVEL XX XXX'-XX")
- FINISH FLOOR ELEVATION (TYP FF EL= 100'-0")
- SPOT ELEVATION (100'-0")

Materials:

- EARTH
- GRAVEL
- SAND
- CONCRETE
- PRECAST CONCRETE
- STEEL
- STONE
- CONCRETE MASONRY UNIT
- BRICK VENEER
- GYM FLOOR
- WOOD (CONTINUOUS BLOCKING)
- WOOD (NON-CONTINUOUS BLOCKING)
- WOOD (TRIM/FINISH)
- GLASS
- SHINGLES
- PLYWOOD (LARGE SCALE)
- GYPSUM WALL BOARD
- BLANKET INSULATION
- RIGID INSULATION
- SPRAY FOAM INSULATION
- MINERAL WOOL INSULATION
- PROTECTION BOARD
- CARPET (LARGE SCALE)
- ACOUSTIC TILE (LARGE SCALE)
- TILE (LARGE SCALE)

ARCHITECTURAL SYMBOLS

- CASEWORK ELEVATION (XX/ A11.X)
- DOOR NUMBER (A110)
- INTERIOR WINDOW NUMBER (A124)
- EXTERIOR WINDOW / CURTAIN WALL NUMBER
- WALL TYPE (XX. X. XX)
- CEILING TYPE (APC-1 — CEILING TYPE; 9' - 0" — CEILING HEIGHT)

SITE SYMBOLS

- PROPERTY LINE
- LOT LINE
- EASMENT LINE
- BUILDING LINE, EXISTING
- BUILDING LINE, NEW W/DOOR OPENING AND STRUCTURAL STOOP
- PRIMARY CONTOUR, EXISTING (100)
- PRIMARY CONTOUR, NEW (100)
- SECONDARY CONTOUR, EXISTING (99)
- SECONDARY CONTOUR, NEW (99)
- SLOPE, PAVEMENT (1% SLOPE DOWN)
- DRAINAGE DITCH OR SWALE
- STREET CENTERLINE
- CURB, THICKENED EDGE
- CURB, EXISTING
- CURB, NEW
- PAVING CONTRACTION JOINT
- PAVING KEYED CONSTRUCTION JOINT (KCJ)
- PAVING TIED CONSTRUCTION JOINT (KCT)
- PAVING EXPANSION JOINT (EJ)
- FENCE, SECURITY
- FENCE, BARBED WIRE
- FENCE, CHAIN LINK
- FENCE, WOOD
- SEED LIMIT
- SOD LIMIT
- FOUNDATION DRAIN, NON-PERFORATED (FD)
- FOUNDATION DRAIN, PERFORATED (FD)
- SUBDRAIN, PERFORATED (PSD)
- SANITARY SEWER (S)
- FORCE MAIN (FM)
- WATER (W)
- FIRE (F)
- GAS (G)
- HIGH PRESSURE STEAM (HPS)
- MEDIUM PRESSURE STEAM (MPS)
- LOW PRESSURE STEAM (LPS)
- UNDERGROUND ELEC/TELEPHONE (UGE/UGT)
- OVERHEAD POWER (OHP)
- LAWN SPRINKLER HOT LINE (HOT)
- LAWN SPRINKLER LATERAL (LAT)
- AREA INLET
- CURB INLET
- MANHOLE
- HEAD WALL
- FLARED END
- CLEAN OUT (CO)
- CAP
- THRUST BLOCK
- VALVE
- POST INDICATOR VALVE (PIV)
- REDUCER
- FIRE HYDRANT (FH)
- POWER POLE
- LIGHT POLE
- TELEPHONE MANHOLE
- TELEPHONE BOX
- SPRINKLER HEAD, 360°
- SPRINKLER HEAD, 270°
- SPRINKLER HEAD, 180°
- SPRINKLER HEAD, 90°
- QUICK COUPLING (QC)
- TREE, EXISTING DECIDUOUS
- TREE, EXISTING CONIFER
- SHADE TREE
- ORNAMENTAL TREE
- DECIDUOUS TREE
- SHRUB
- CLIPPED SHRUB

GENERAL NOTES

A. GENERAL NOTES APPLY TO ALL SHEETS.
B. DIMENSIONS ARE ACTUAL AND ARE TO FACE OF STUDS, FACE OF CONCRETE WALLS, FACE OF CMU WALLS, FACE OF FRAMES, OR CENTERLINE OF COLUMNS, UNLESS NOTED OTHERWISE.
C. THE OWNER SHALL FURNISH AND INSTALL THE FOLLOWING ITEMS: 1.???, 2. ???
D. INCLUDE ALL OWNER-FURNISHED AND INSTALLED ITEMS AND OWNER-FURNISHED AND CONTRACTOR-INSTALLED ITEMS IN THE CONSTRUCTION SCHEDULE, AND SHALL COORDINATE WITH THE OWNER TO ACCOMMODATE THESE ITEMS.
E. COORDINATE ALL MECHANICAL CHASE SIZES WITH THE MECHANICAL CONTRACTOR.
F. ARCHITECTURAL FINISH FLOOR ELEVATION 0'-0" EQUALS ACTUAL SITE REFERENCE ELEVATION OF FINISH FLOOR 416.8 FEET.
G. SEE SHEET CP1.1 & CP1.2 FOR LOCATION OF WALLS OF FIRE-RESISTANCE-RATED CONSTRUCTION. ALL WALLS OF FIRE-RESISTANCE-RATED CONSTRUCTION SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE.
H. ALL PENETRATIONS THROUGH WALLS SHALL BE SEALED WITH PENETRATION FIRE STOPPING MATERIAL AS REQUIRED TO ACHIEVE THE RESPECTIVE FIRE-RESISTANCE RATING AND SMOKE STOPPAGE. SEE SPECIFICATION SECTION 078413.
I. COORDINATE WITH MECHANICAL AND ELECTRICAL CONTRACTORS THE SIZE AND LOCATION OF EQUIPMENT PADS SHOWN ON PLANS.
J. FIRE-RESISTANCE-RATED ENCLOSURES AROUND ALL STEEL COLUMNS SHALL BE CONTINUOUS FROM FLOOR TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE FOR EACH LEVEL.
K. CONSTRUCTION DOCUMENTS ARE COMPLEMENTARY. SEE DRAWING FOR QUANTITIES AND LOCATION OF WORK. SEE SPECIFICATIONS FOR QUALITIES AND CONDITIONS OF WORK.
L. WORK: ALL ASPECTS OF THE WORK AND ITEMS NOT SPECIFICALLY MENTIONED, BUT NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED AND INDICATED IN THE CONTRACTOR'S BID.
M. GENERAL SHEET NOTES ONLY APPLY TO PARTICULAR DRAWING OR SERIES OF DRAWINGS.
N. NO ASBESTOS OR PCB CONTAINING MATERIALS SHALL BE USED ON THIS PROJECT.
O. DO NOT SCALE DRAWINGS. DIMENSIONS NOTED PREVAIL. NOTIFY ARCHITECT IN CASE OF DISCREPANCY.
P. HORIZONTAL AND VERTICAL DIMENSIONS ARE MINIMUM DIMENSIONS. CLEARANCES ARE GIVEN TO FINISH SURFACES. GC TO VERIFY ALL CLEARANCES. NOTIFY ARCHITECT IN CASE OF DISCREPANCY.

DLRGROUP

© DLR Group

REGISTERED ARCHITECT ☆ STATE OF TEXAS ☆ CHARLES E. BRANT 20568
07.25.2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

G1.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:20:38 PM

A | B | C | D | E | F

1 | 2 | 3 | 4 | 5

GENERAL PROJECT INFORMATION:

NAME OF PROJECT:	CRANDALL HIGH SCHOOL PERFORMING ARTS ADDITION
LOCATION:	13385 FM 3039 CRANDALL, TX 75114
PROPOSED USE:	[E] [A-1] [S-1]
OWNER:	CRANDALL INDEPENDENT SCHOOL DISTRICT SCOTT STEWART, EXECUTIVE DIRECTOR OF TRANSPORTATION & SCHOOL PLANNING 400 W. LEWIS STREET CRANDALL, TX, 75114 469-516-7549
ARCHITECT:	DLR GROUP CHARLES BRANDT, AIA LIC NO. 20568 2500 PACIFIC AVENUE, SUITE 1600 DALLAS, TX 75226 214-747-2511

APPLICABLE BUILDING CODES:

CITY OF [Crandall], [Texas]:

2021 INTERNATIONAL BUILDING CODE (IBC)

2021 INTERNATIONAL FIRE CODE (IFC)

2021 INTERNATIONAL MECHANICAL CODE (IMC)

2021 INTERNATIONAL FUEL GAS CODE (IFGC)

2021 INTERNATIONAL PLUMBING CODE (IPC)

2023 NATIONAL ELECTRICAL CODE (NEC)

2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

2012 TEXAS ACCESSIBILITY STANDARDS

COUNTY OF [Kaufman], Texas]:

2007 ASME A17.1/CSA B44 SAFETY CODE FOR ELEVATORS AND ESCALATORS

STATE OF [TEXAS]: [TITLE 153 STATE FIRE MARSHAL]

INCLUDING THE FOLLOWING APPLICABLE REGUALTIONS:

NFPA 1 - FIRE PREVENTION CODE (W/ NE AMENDMENTS 11-25-19 - 2012)

NFPA 10 - PORTABLE FIRE EXTINGUISHERS - 2010

NFPA 13 - INSTALLATION OF SPRINKLER SYSTEMS - 2010

NFPA 14 - STANDPIPE AND HOSE SYSTEMS - 2010

NFPA 24 - INSTALLATION OF PRIVATE FIRE SERVICE MAINS - 2002

NFPA 54 - NATIONAL FUEL GAS CODE - 2012

NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE - 2010

NFPA 80 - FIRE DOORS AND OTHER OPENING PROTECTIVES - 2010

NFPA 88A - PARKING STRUCTURES - 2011

NFPA 90A - AIR CONDITIONING & VENTILATING SYSTEMS - 2010

NFPA 96 - VENTILATION AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS - 2011

NFPA 101 - LIFE SAFETY CODE (W/ NE AMENDMENTS 11-25-19) - 2012

NFPA 105 - SMOKE DOOR AND OTHER OPENING PROTECTIONS - 2010

NFPA 110 - EMERGENCY STANDBY POWER SYSTEMS - 2010

NFPA 220 - TYPES OF BUILDING CONSTRUCTION - 2012

NFPA 221 - FIRE WALLS AND FIRE BARRIER WALLS - 2012

NFPA 241 - SAFEGUARDING OF CONSTRUCTION, ALTERATIONS, AND DEMOLITION OPERATIONS - 2009

NFPA 664 - STANDARD FOR THE PREVENTION OF FIRE AND EXPLOSIONS IN WOOD PROCESSING AND WOODWORKING FACILITIES

NFPA 2001 - CLEAN AGENT FIRE EXTINGUISHING SYSTEMS - 2012

BUILDING CONSTRUCTION TYPE AND DESIGN REQUIREMENTS

CONSTRUCTION TYPE:	II-B (IBC), Type II - 000 (LSC)
RISK CATEGORY	III
SEISMIC DESIGN:	CATEGORY A

OCCUPANCY GROUPS INCLUDED IN PROJECT

Editor note: Delete rows for occupancy types not used in project.

OCCUPANCY GROUPS:	IBC	NFPA 101 (LSC)
ASSEMBLY FOR VIEWING PERFORMING ARTS OR MOTION PICTURES, USUALLY WITH FIXED SEATS.	ASSEMBLY GROUP A-1	NEW OR EXISTING ASSEMBLY OCCUPANCY
EDUCATIONAL THRU 12TH GRADE FOR USE BY SIX OR MORE PERSONS AT ANY ONE TIME	EDUCATIONAL GROUP E	NEW OR EXISTING EDUCATIONAL OCCUPANCY
STORAGE OF MODERATE HAZARD MATERIALS.	STORAGE GROUP S-1	STORAGE OCCUPANCIES

BUILDING USE CLASSIFICATION AND OCCUPANCY

BUILDING - PAC BUILDING ADDITION	CLASSIFICATION	OCCUPANCIES WITHIN BUILDING
HIGH SCHOOL (with Auditorium/theater)	MIXED-USE	Group E - Educational
	NON-SEPARATED	GROUP A1 - ASSEMBLY
	NON-SEPARATED	GROUP S1 - MODERATE-HAZARD STORAGE

*a Total square footage of all accessory...
*b Square footage of accessory occupanc...
*c Assembly occupancies associated with...

FIRE AND SMOKE PROTECTION SYSTEMS:

AUTOMATIC SPRINKLER SYSTEM PER IBC SECTION 903
STANDPIPE SYSTEMS PER IBC SECTION 905
PORTABLE FIRE EXTINGUISHERS PER IBC SECTION 906
FIRE ALARM SYSTEM PER IBC SECTION 907
SMOKE DETECTION SYSTEM PER IBC SECTION 907
EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM PER IBC SECTION 907
EMERGENCY ALARM SYSTEMS PER IBC SECTION 908
FIRE DEPARTMENT CONNECTIONS PER IBC SECTION 912
EMERGENCY RESPONDER SAFETY FEATURES PER IBC SECTION 914
EMERGENCY RESPONDER RADIO COVERAGE PER IBC SECTION 915 AND IFC SECTION 510.
STANDBY POWER SYSTEM PER IBC CHAPTER 27 AND SECTIONS 1009.4, 3003, 3007 OR 3008
EMERGENCY POWER SYSTEM PER IBC 403.4.8
GAS DETECTION SYSTEMS PER IBC SECTION 908.3 IN LAUNDRY AND KITCHEN AREAS
CARBON MONOXIDE ALARMS PER IBC SECTION 915 IN GROUP I-1, I-2, I-4, R OCCUPANCIES, AND CLASSROOMS GROUP E

BUILDING HEIGHT, NUMBER OF STORIES AND BUILDING AREA LIMITATIONS PER IBC CHAPTER 5

NOTE: E OCCUPANCY LIMITED TO RENOVATION AREA, AND DOES NOT IMPACT THIS SCHEDULE.

BUILDING PERFORMING ARTS ADDITION: MIXED-OCCUPANCY, ONE STORY BUILDING - NONSEPARATED OCCUPANCIES, IBC SECTION 508.3		
OCCUPANCY TYPE	A-1	S-1
PROPOSED TYPE OF CONSTRUCTION	II-B	II-B
ALLOWABLE BUILDING HEIGHT ABOVE GRADE PLANE - PER IBC TABLE 504.3		
S - AUTOMATIC SPRINKLER SYSTEM	75	75
MOST RESTRICTIVE ALLOWABLE BUILDING HEIGHT		
PROPOSED MAXIMUM HEIGHT (FEET)		
ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE - PER IBC TABLE 504.4		
S - AUTOMATIC SPRINKLER SYSTEM	4	3
MOST RESTRICTIVE ALLOWABLE NUMBER OF STORIES		
PROPOSED NUMBER OF STORIES ABOVE GRADE PLANE		
ALLOWABLE AREA CALCULATION PER IBC SECTION 506.2.2 EQUATION 5-1 Aa = At + (NS x If)		
ALLOWABLE AREA FACTOR (At) TABLE 506.2 [NS] [S1] [S13D] [S13R] IN SQ FT	70,000	34,000
NS - NON SPRINKLERED - USED FOR CALCULATING (NS x If)	17,500	8,500
S1 - AUTOMATIC SPRINKLER SYSTEM - 1 STORY ABOVE GRADE	70,000	34,000
IBC 506.3 - FRONTAGE INCREASE FACTOR (If)	0.00	0.00
ALLOWABLE FRONTAGE INCREASE IN SQUARE FEET	0	0
ALLOWABLE AREA PER OCCUPANCY TYPE (Aa) IN SQUARE FEET	70,000	34,000
MOST RESTRICTIVE ALLOWABLE AREA Aa		
PROPOSED BUILDING AREA PER OCCUPANCY (SQUARE FEET)	1,742	28,843
PROPOSED BUILDING AREA, SQUARE FEET (MUST BE < Aa)	30,585	

*ALLOWABLE FRONTAGE IS NOT REQUIRED FOR PROPOSED BUILDING AREA AND IS NOT CALCULATED.

BUI...

CLIMATE ZONE: 3A (KAUFMAN COUNTY, TX) PER IECC SECTION 301.

OP...	
	CLIMATE ZONE - 3A - MINIMUM R-VALUES
ENVELOPE ASSEMBLY	All other Occupancies
ROOF - Insulation entirely above deck	R-25ci
ROOF - Metal Buildings (with R-5 Thermal Blocks) *a, *b	R-19 + R-11 LS
ROOF - Attic and other	R-38
WALLS ABOVE GRADE - Mass	R-7.6ci
WALLS ABOVE GRADE - Metal Building *b	R-13 + R-6.5ci
WALLS ABOVE GRADE - Metal Framed	R-13 + R-7.5ci
WALLS ABOVE GRADE - Wood Framed and Other	R-13 + R-3.8ci or R-20
WALLS BELOW GRADE *d	NR
FLOORS - Mass	R-10ci
FLOORS - Joist/framing	R-30
SLAB-ON-GRADE FLOORS - Unheated Slabs	NR
SLAB-ON-GRADE FLOORS - Heated Slabs	R-10 for 24" below + R-5 full slab
OPAQUE DOORS - nonswinging	R-3.2

ci = Continuous insulation, LS = Liner System
*a Assembly descriptions can be found in ANSI/ASHRAE/IESNA Appendix A.
*b When using R-Value compliance method, a thermal spacer block shall be provided,...
*c R-5.7ci is allowed to be substituted with concrete block walls complying with ASTM C 90, ungrouted or partially grouded at 32 inches or less on center vertically and 48 iches or less on center horizontally, with ungrouted cores filled with material having a maximum thermal conductivity of 0.44 BTU-in/h-f2 F.

*d When heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.
*e "Mass floors" shall be in accordance with Section C402.2.3.
*f Steel floor joist systems shall be insulated to R-38.
*g "Mass walls" shall be in accordance with Section C402.2.2.
*h The first value is for perimter insulation and the second value is for slab insulation....
*i Not applicable to garage doors. See Table C402.1.4.

BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SGHC REQUIREMENTS - IECC TABLE C402.4 - CLIMATE ZONE 3A

Vertical Fenestration (40% maximum of above grade wall)	
Framing materials other than metal with or without metal reinforcement or cladding	0.35 U-Factor Maximum
Metal framing with or without thermal break	
Fixed Fenestration	0.42 U-Factor Maximum
Operable Fenestration	0.54 U-Factor Maximum
Entrance Doors	0.68 U-Factor Maximum
SHGC - ALL FRAME TYPES	
SHGC: PF < 0.2	Fixed - 0.25 Operable - 0.23
SHGC: 0.2 < PF < 0.5	Fixed - 0.30 Operable - 0.28
SHGC: PF > 0.5	Fixed - 0.40 Operable - 0.37
SK...	0.55 U-Factor Maximum 0.30 SHGC Maximum

*a All others includes operable windows, fixed windows and nonentrance doors.
PF = Projection Factor (PF = A / B)
A Distance measured horizontally from the furthest continuous extremity of any overhang, eave, or permanently attached shading device to the vertical surface of the glazing.
B Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave or permanently attached shading device.

FIRE-RESISTANCE RATINGS FOR BUILDING ELEMENTS (MOST RESTRICTIVE REQUIREMENTS - IBC OR LSC - SHALL GOVERN)

IBC TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)	
BUILDING ELEMENT	TYPE II-B
Primary structural frame *f (see IBC Section 202)	0
Bearing Walls - Exterior *e, *f	0
Bearing Walls - Interior	0
Nonbearing walls and partitions - Exterior	
Nonbearing walls and partitions - Interior *d	0
Floor Construction and associated secondary members (see IBC Section 202)	0
Roof Construction and associated secondary members (see IBC Section 202)	0 *c

*a Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
*b Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
*c In all occupancies, heavy timber complying with IBC section 2304.11shall be allowed where a 1-hour or less fire-resistance rating is required.
*d Not less then the fire-resistance rating required by other sections of this code.
*e Not less than the fire-resistance rating based on fire separation distance. (see IBC Table 602).
*f Not less than the fire-resistance rating as referenced in Section 704.10

IBC TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEAPARATION DISTANCE *a, *d, *g

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP S-1	OCCUPANCY GROUP A, E
X < 5 *b	ALL	2	1
5 < X < 10	IA	2	1
	Others	1	1
10 < X < 30	IA, IB	1	1 *c
	IIB, VB	0	0
	Others	1	1 *c
X > 30	ALL	0	0

*a Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of IBC Table 601.
*b See IBC Section 706.1.1 for party walls.
*d The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

*e For special requirements for Group H occupancies, see IBC Section 415.6.
*g Where IBC Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior wall is 0 hours.

MEANS OF EGRESS - TRAVEL DISTANCE TO EXIT

IBC TABLE 1017.2 - EXIT ACCESS TRAVEL DISTANCE *a

OCCUPANCY TYPE	WITHOUT SPRINKLER SYSTEM (FEET)	WITH SPRINKLER SYSTEM (FEET)
A, E, F-1, M, R, S-1	200*e	250 *b

*a Refer to the following IBC sections for modifications to exit access travel distance requirements:
402.8, 404.9, 407.4, 408.6.1, 411.3, 412.6, 1006.2.2.2, 1006.2.2.3, 1006.3.3, 1017.2.2, 1029.7, 3103.4, 3104.9
*b Buildings equipped throughout with an automatic sprinkler systems in accordance with IBC Section 903.3.1.1 or 903.3.1.2.
See IBC Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with IBC Section 0903.3.1.2.
*c Buildings equipped throughout with an automatic sprinkler systems in accordance with IBC Section 903.3.1.1.
*e
Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with IBC Section 903.3.1.3. See IBC Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with IBC Section 903.3.1.3

MEANS OF EGRESS - EGRESS SIZING

IBC SECTION 1005.3.1 AND 1005.3.2

COMPONENT	CAPACITY FACTOR
STAIRS	0.3 INCH PER OCCUPANT
OTHER (DOOR, RAMP, ETC)	0.15 INCH PER OCCUPANT

MEANS OF EGRESS - MINIMUM CORRIDOR WIDTH (MOST RESTRICTIVE REQUIREMENTS - IBC OR LSC - SHALL GOVERN)

IBC TABLE 1020.2 MINIMUM CORRIDOR WIDTH

OCCUPANCY	WIDTH (minimum)
Any facillities not listed below	44 inches
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24 inches
With a required occupancy capacity less than 50	36 inches
In Group E with a corridor having a required capacity of 100 or more	72 inches

MEANS OF EGRESS - DEAD END CORRIDORS (MOST RESTRICTIVE REQUIREMENTS - IBC OR LSC - SHALL GOVERN)

IBC 1018.4 DEAD END CORRIDOR LENGTH

OCCUPANCY	MAXIMUM DEAD END LENGTH (FEET)	
	Without sprinkler system	With sprinkler system
ALL UNLESS INDICATED OTHERWISE	20 FEET	20 FEET
GROUPS B, E, F, I-1, M, R-1, R-2, S and U	20 FEET	50 FEET
Shall not be limited in length where the length of the dead-end corridor is less than 2.5 times the least width of the dead-end corridor,		

PLUMBING FIXTURE REQUIREMENTS - CALCULATIONS BASED ON 2018 INTERNATIONAL PLUMBING CODE SECTION 403 / 2018 INTERNATIONAL BUILDING CODE SECTION 2902

PLUMBING FIXTURE CALCULATION - BUILDING LEVEL AND/OR AREA AND SPACE DESCRIPTION [i.e. BUILDING 1 - LEVEL 1, AUDITORIUM]

A-1 ASSEMBLY OCCUPANCY GROUP Theaters, auditoriums with fixed seating	OCCUPANT LOAD	WC-MALE	UR-MALE Per IPC 424.2 allowed to replace 67% of required WC with urinals	LAV-MALE	WC-FEMALE	LAV-FEMALE	DRINKING FOUNTAIN	SERVICE SINK
	820	1 per 125		1 per 200	1 per 65	1 per 200	1 per 500	1
REQUIRED MALE FIXTURES	410	4	2	3				
REQUIRED FEMALE FIXTURES	410				7	3		
OTHER FIXTURES REQUIRED PER PERSON	820						2	1
PROVIDED MALE FIXTURES [LOCATIONS WHERE PROVIDED]		10	6	6				
PROVIDED FEMALE FIXTURES [LOCATIONS WHERE PROVIDED]					12	8		
PROVIDED OTHER FIXTURES [LOCATIONS WHERE PROVIDED]							2	2

NOTES: In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies.

In assembly occupancies, an accessible family or assisted-use toilet room shall be provided where an aggregate of six or more male and female water closets are required.

PLUMBING FIXTURE CALCULATION- BUILDING LEVEL AND/OR AREA AND SPACE DESCRIPTION [i.e. BUILDING 2 - LEVEL 1 CLASSROOM AREAS]

EDUCATIONAL OCCUPANCY GROUP E Educational facilities	OCCUPANT LOAD	WC-MALE	UR-MALE Per IPC 424.2 allowed to replace 67% of required WC with urinals	LAV-MALE	WC-FEMALE	LAV-FEMALE	DRINKING FOUNTAIN	SERVICE SINK
	199	1 per 50		1 per 50	1 per 50	1 per 50	1 per 100	1
REQUIRED MALE FIXTURES	100	2	1	2				
REQUIRED FEMALE FIXTURES	100				2	2		
OTHER FIXTURES REQUIRED PER PERSON	199						2	1
PROVIDED MALE FIXTURES [LOCATIONS WHERE PROVIDED]		See Above	See Above	See Above				
PROVIDED FEMALE FIXTURES [LOCATIONS WHERE PROVIDED]					See Above	See Above		
PROVIDED OTHER FIXTURES [LOCATIONS WHERE PROVIDED]							See Above	See Above

NOTES: In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies.

STAGE VENTILATION PER IBC SECTION 911

Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m2) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with Section 410.2.7.1 or 410.2.7.2.

410.2.7.1 Roof vents.

Two or more vents constructed to open automatically by approved heat-activated devices and with an aggregate clear opening area of not less than 5 percent of the area of the stage shall be located near the center and above the highest part of the stage area. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in Section 2610.2. Vents shall be labeled.

ROOF VENT AREA - PER IBC 410.2.7.1	
PROPOSED STAGE AREA	3,508 SF
5% OF STAGE AREA	175.4 SF
AGGREGATE CLEAR OPENING PER VENT	40 SF
NUMBER OF VENTS PROPOSED	5
TOTAL PROPOSED AGGREGATE AREA	200

LEGEND - OCCUPANCY GROUP PLANS

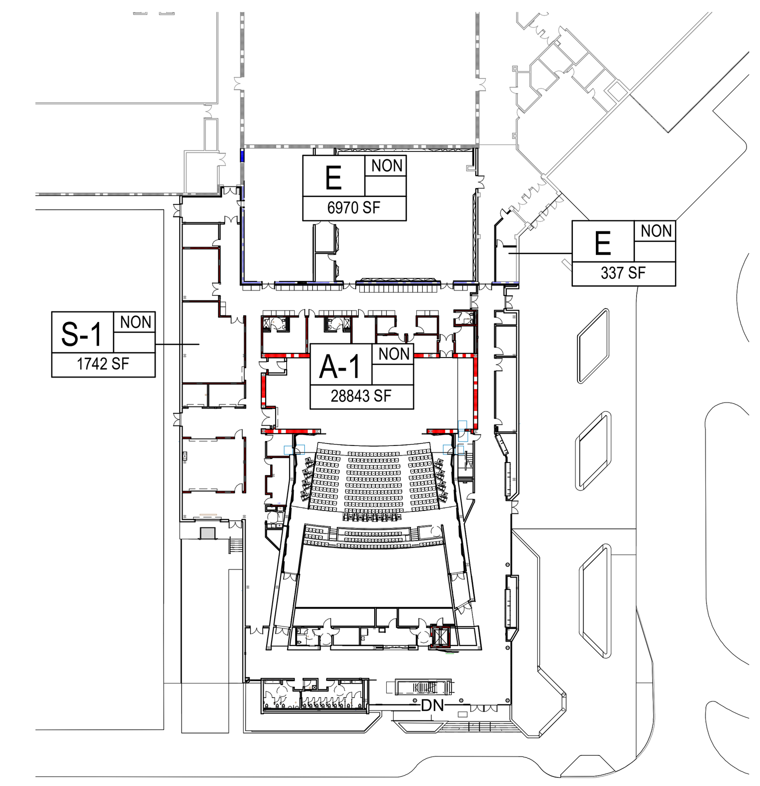
X-X / 150 SF — SINGLE USE OCCUPANCY GROUP TAG - TAG USED TO INDICATE OCCUPANCY GROUP AND GROSS BUILDING AREA PER STORY IN SF

MIXED-USE OCCUPANCY GROUP TAG - TAG USED FOR SEPARATED, NON-SEPARATED, AND ACCESSORY USES

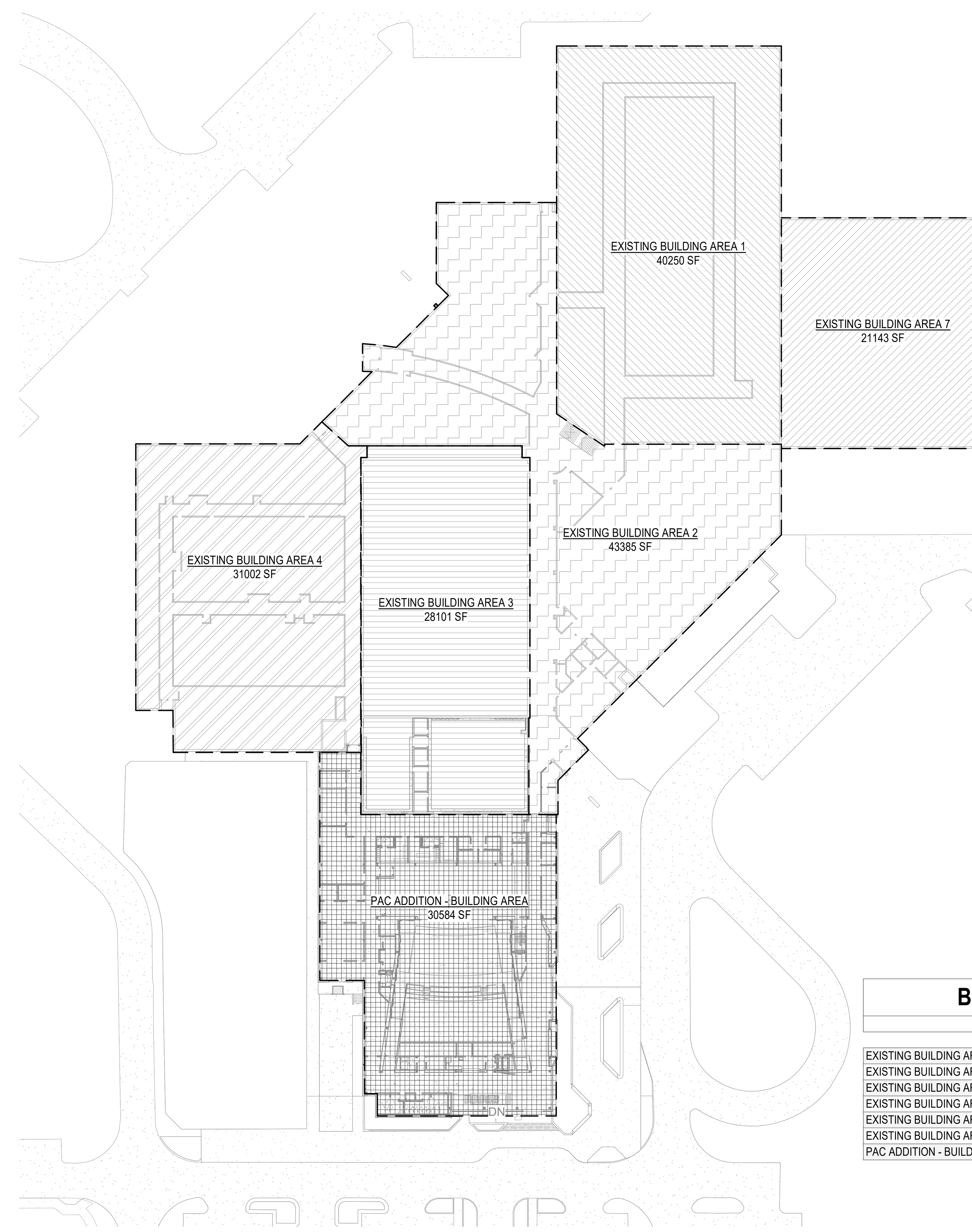
X-X SEP / 150 SF
ASSIGNED OCCUPANCY GROUP
OPTIONS:
SEP = SEPARATED
NON = NON-SEPARATED
ACC = ACCESSORY
PRIMARY OCCUPANCY GROUP FOR NON OR ACC OCCUPANCIES
GROSS BUILDING AREA PER STORY IN SF

OCCUPANCY GROUP PATTERNS

A-1 ASSEMBLY
E EDUCATIONAL
S-1 STORAGE



N TRUE
OCCUPANCY GROUP PLAN
SCALE: 1" = 60'-0"



N TRUE
BUILDING AREA PLAN
SCALE: 1" = 60'-0"

BUILDING AREA SCHEDULE

Name	AREA
EXISTING BUILDING AREA 1	40,250 SF
EXISTING BUILDING AREA 2	43,385 SF
EXISTING BUILDING AREA 3	28,101 SF
EXISTING BUILDING AREA 4	31,002 SF
EXISTING BUILDING AREA 5	50,775 SF
EXISTING BUILDING AREA 7	21,143 SF
PAC ADDITION - BUILDING AREA	30,584 SF
	245,241 SF

DLRGROUP
© DLR Group

REGISTERED ARCHITECT ★ STATE OF TEXAS ★ CHARLES E. BRANT 20568
07.25.2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

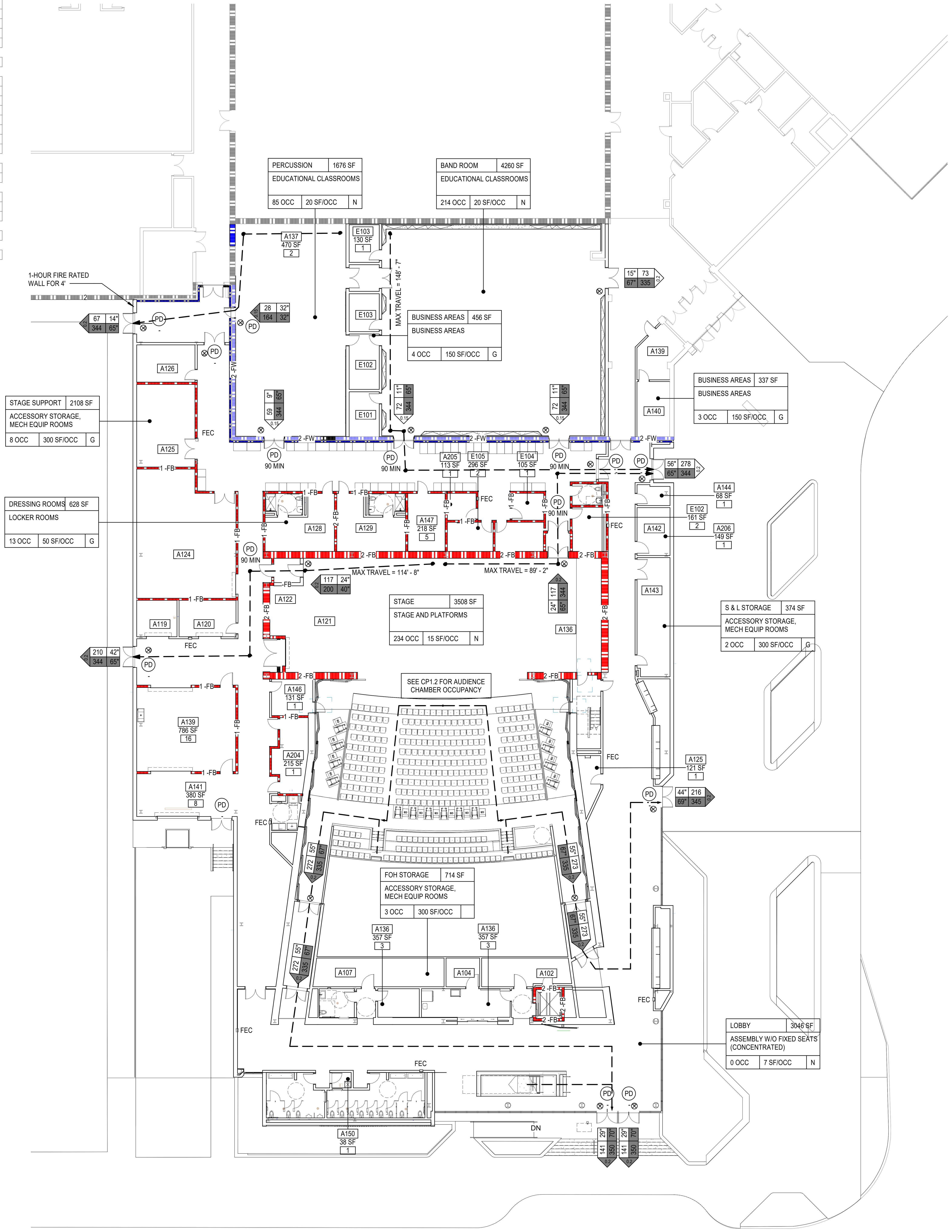
BUILDING USE ANALYSIS

CP0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:20:48 PM

OCCUPANT LOAD TABLE - LEVEL 01

NAME	FUNCTION OF SPACE	AREA	GROSS/NET	OLF	OCCUPANT LOAD
ACCESSORY STORAGE, MECH EQUIP ROOMS					
ACCESSORY STORAGE, MECH EQUIP ROOMS	ACCESSORY STORAGE, MECH EQUIP ROOMS	38 SF	GROSS	300	1
BLDG MAINT. / FIRE PANEL / PHONE	ACCESSORY STORAGE, MECH EQUIP ROOMS	68 SF	GROSS	300	1
STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	121 SF	GROSS	300	1
ACCESSORY STORAGE, MECH EQUIP ROOMS	ACCESSORY STORAGE, MECH EQUIP ROOMS	131 SF	GROSS	300	1
IDF	ACCESSORY STORAGE, MECH EQUIP ROOMS	149 SF	GROSS	300	1
ELECTRICAL ROOM	ACCESSORY STORAGE, MECH EQUIP ROOMS	215 SF	GROSS	300	1
S & L STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	374 SF	GROSS	300	2
PERCUSSION CAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	470 SF	GROSS	300	2
FOH STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	714 SF	GROSS	300	3
STAGE SUPPORT	ACCESSORY STORAGE, MECH EQUIP ROOMS	2108 SF	GROSS	300	8
ASSEMBLY W/O FIXED SEATS (CONCENTRATED)					
LOBBY	ASSEMBLY W/O FIXED SEATS (CONCENTRATED)	3046 SF	NET	7	0
BUSINESS AREAS					
PRACTICE ROOMS	BUSINESS AREAS	105 SF	GROSS	150	1
PRACTICE ROOMS	BUSINESS AREAS	113 SF	GROSS	150	1
BUSINESS AREAS	BUSINESS AREAS	130 SF	GROSS	150	1
PRACTICE ROOMS	BUSINESS AREAS	161 SF	GROSS	150	2
BUSINESS AREAS	BUSINESS AREAS	296 SF	GROSS	150	2
BUSINESS AREAS	BUSINESS AREAS	337 SF	GROSS	150	3
BUSINESS AREAS	BUSINESS AREAS	357 SF	GROSS	150	3
BUSINESS AREAS	BUSINESS AREAS	456 SF	GROSS	150	4
EDUCATIONAL CLASSROOMS					
PERCUSSION	EDUCATIONAL CLASSROOMS	1676 SF	NET	20	85
BAND ROOM	EDUCATIONAL CLASSROOMS	4260 SF	NET	20	214
EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL					
MAKEUP	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	218 SF	NET	50	5
LOADING DOCK	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	380 SF	NET	50	8
WORKSHOP	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	786 SF	NET	50	16
LOCKER ROOMS					
DRESSING ROOMS	LOCKER ROOMS	628 SF	GROSS	50	13
STAGE AND PLATFORMS					
STAGE	STAGE AND PLATFORMS	3508 SF	NET	15	234
Grand total					613



LEVEL 01 - CODE PLAN

SCALE: 1/16" = 1'-0"

LEGEND - CODE FLOOR PLANS

Area name	XXXX SF
Space Function	
XXX OCC / XXX SF/OCC	G

OCCUPANT LOAD TAG (GROSS)
- SEE PATTERN FOR APPLIED LOAD FACTOR

ROOM NUMBER (###) — AREA (SF) (XXXX SF) — OCCUPANT LOAD (XXX)

OCCUPANT LOAD TAG (NET)
- THIS LOAD DOES NOT EXTEND BEYOND THIS SPACE
- SEE PATTERN FOR APPLIED LOAD FACTOR

EXIT TAG
- CUMULATIVE OCCUPANT LOAD
- EGRESS CAPACITY

REQUIRED OCCUPANT LOAD
REQUIRED WIDTH FOR OCCUPANT LOAD (INCHES)
CAPACITY OF EGRESS COMPONENT (WIDTH IN INCHES)
CAPACITY OF EGRESS COMPONENT (OCCUPANTS)
LOAD FACTOR (INCHES/OCCUPANT)
- WHEN CAPACITY FACTOR TRIANGLE IS FILLED - THIS IS TOTAL OCCUPANT LOAD AT THIS EXIT FROM THIS STORY

(PD) XX MIN — DOOR TAG
- PANIC DEVICE
- DOOR FIRE RATING

EXIT SIGN

MAX TRAVEL = Length — EXIT ACCESS TRAVEL DISTANCE

MAX CP = Length — COMMON PATH OF EGRESS TRAVEL DISTANCE

MAX DIAG DIM = X'-X" / 1/3 DIAG = X'-X" — MAX OVERALL DIAGONAL DIM OF AREA SERVED

MIN SEPARATION DISTANCE = X'-X" — MIN EXIT SEPARATION

SEPARATION LEGEND

HOURLY RATING
0 = 0 HOUR
5 = 1/2 HOUR
1 = 1 HOUR
2 = 2 HOUR
3 = 3 HOUR
4 = 4 HOUR
SP = SMOKE PARTITION

FIRE AND SMOKE SEPARATION TYPES
C = CORRIDOR (CYAN)
EW = EXTERIOR WALL (PURPLE)
FW = FIRE WALL (BLUE)
FB = FIRE BARRIER (RED)
FP = FIRE PARTITION (MAGENTA)
SP = SMOKE PARTITION (GREEN)
SB = SMOKE BARRIER (GREEN)
VS = VERTICAL SHAFT (ORANGE)
VX = VERTICAL EXIT ENCLOSURE (ORANGE)
XP = EXIT PASSAGEWAY (YELLOW)

OCCUPANT LOAD FACTOR PATTERNS

7 NET SF
15 NET SF
20 NET SF
50 NET SF
50 GROSS SF
150 GROSS SF
300 GROSS SF

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

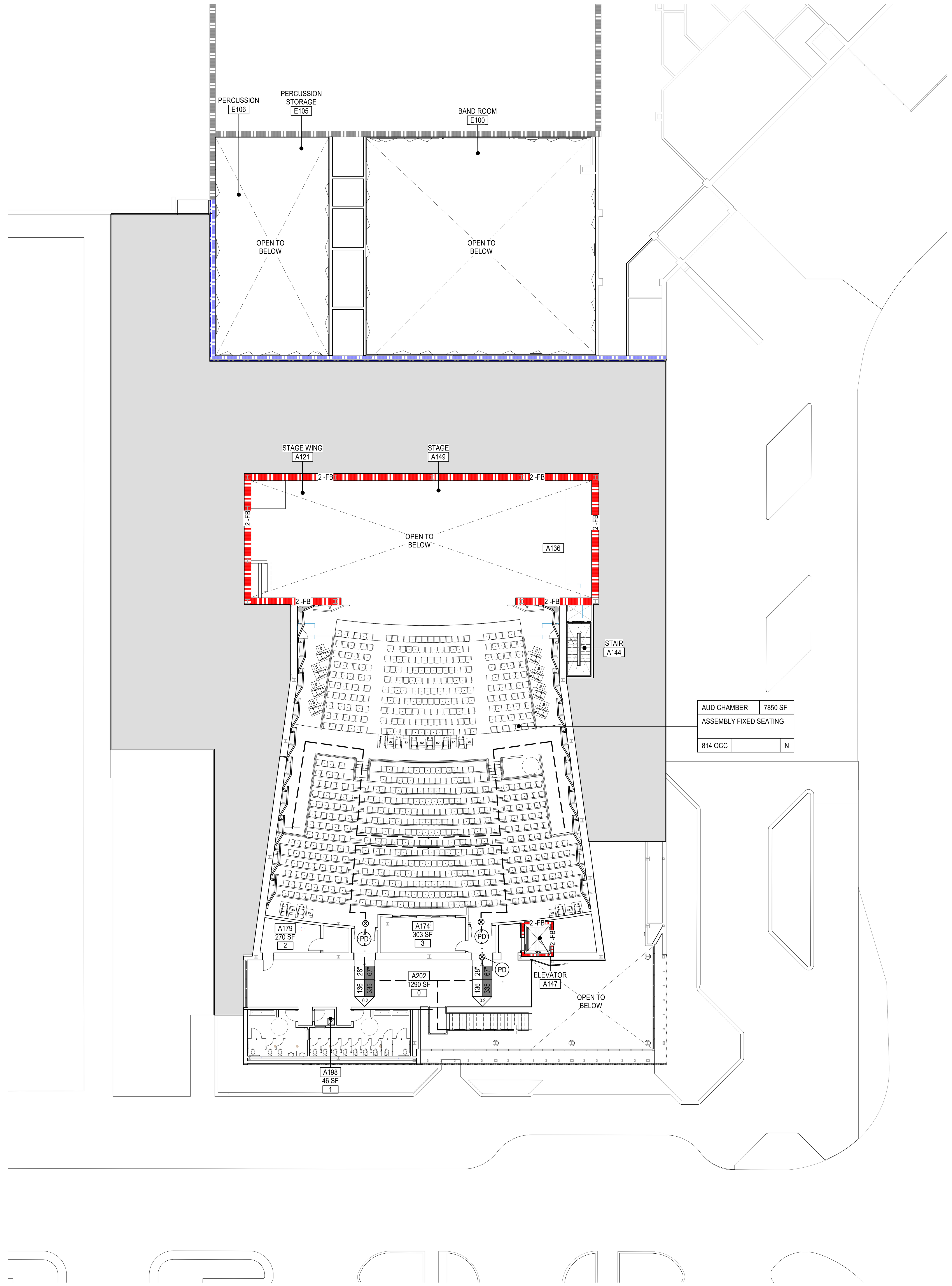
LEVEL 01 - CODE PLAN

CP1.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:20:52 PM

OCCUPANT LOAD TABLE - LEVEL 02

NAME	FUNCTION OF SPACE	AREA	GROSS/NET	OLF	OCCUPANT LOAD
ACCESSORY STORAGE, MECH EQUIP ROOMS					
ACCESSORY STORAGE, MECH EQUIP ROOMS	ACCESSORY STORAGE, MECH EQUIP ROOMS	46 SF	GROSS	300	1
ASSEMBLY FIXED SEATING					
AUD CHAMBER	ASSEMBLY FIXED SEATING	7850 SF	NET		814
ASSEMBLY W/O FIXED SEATS (CONCENTRATED)					
LOBBY MEZZANINE	ASSEMBLY W/O FIXED SEATS (CONCENTRATED)	1290 SF	NET	7	0
BUSINESS AREAS					
BUSINESS AREAS	BUSINESS AREAS	270 SF	GROSS	150	2
BUSINESS AREAS	BUSINESS AREAS	303 SF	GROSS	150	3
Grand total					820



LEVEL 02 - CODE PLAN

SCALE: 1/16" = 1'-0"

LEGEND - CODE FLOOR PLANS

Area name	XXXX SF
Space Function	
XXX OCC / XXX SF/OCC	G

OCCUPANT LOAD TAG (GROSS)
- SEE PATTERN FOR APPLIED LOAD FACTOR

/ XXXX SF / XXX — ROOM NUMBER, AREA (SF), OCCUPANT LOAD

OCCUPANT LOAD TAG (NET)
- THIS LOAD DOES NOT EXTEND BEYOND THIS SPACE
- SEE PATTERN FOR APPLIED LOAD FACTOR

EXIT TAG
- CUMULATIVE OCCUPANT LOAD
- EGRESS CAPACITY

0.15 | 0 | 1" | 0 | 0"

REQUIRED OCCUPANT LOAD
REQUIRED WIDTH FOR OCCUPANT LOAD (INCHES)
CAPACITY OF EGRESS COMPONENT (WIDTH IN INCHES)
CAPACITY OF EGRESS COMPONENT (OCCUPANTS)
LOAD FACTOR (INCHES/OCCUPANT)
- WHEN CAPACITY FACTOR TRIANGLE IS FILLED - THIS IS TOTAL OCCUPANT LOAD AT THIS EXIT FROM THIS STORY

(PD) XX MIN — DOOR TAG
- PANIC DEVICE
- DOOR FIRE RATING

EXIT SIGN

MAX TRAVEL = Length — EXIT ACCESS TRAVEL DISTANCE

MAX CP = Length — COMMON PATH OF EGRESS TRAVEL DISTANCE

MAX DIAG DIM = X'-X" / 1/3 DIAG = X'-X" — MAX OVERALL DIAGONAL DIM OF AREA SERVED

MIN SEPARATION DISTANCE = X'-X" — MIN EXIT SEPARATION

SEPARATION LEGEND

HOURLY RATING
0 = 0 HOUR
5 = 1/2 HOUR
1 = 1 HOUR
2 = 2 HOUR
3 = 3 HOUR
4 = 4 HOUR
SP = SMOKE PARTITION

FIRE AND SMOKE SEPARATION TYPES
C = CORRIDOR (CYAN)
EW = EXTERIOR WALL (PURPLE)
FW = FIRE WALL (BLUE)
FB = FIRE BARRIER (RED)
FP = FIRE PARTITION (MAGENTA)
SP = SMOKE PARTITION (GREEN)
SB = SMOKE BARRIER (GREEN)
VS = VERTICAL SHAFT (ORANGE)
VX = VERTICAL EXIT ENCLOSURE (ORANGE)
XP = EXIT PASSAGEWAY (YELLOW)

OCCUPANT LOAD FACTOR PATTERNS

7 NET SF
15 NET SF
20 NET SF
50 NET SF
50 GROSS SF
150 GROSS SF
300 GROSS SF

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 02 - CODE PLAN

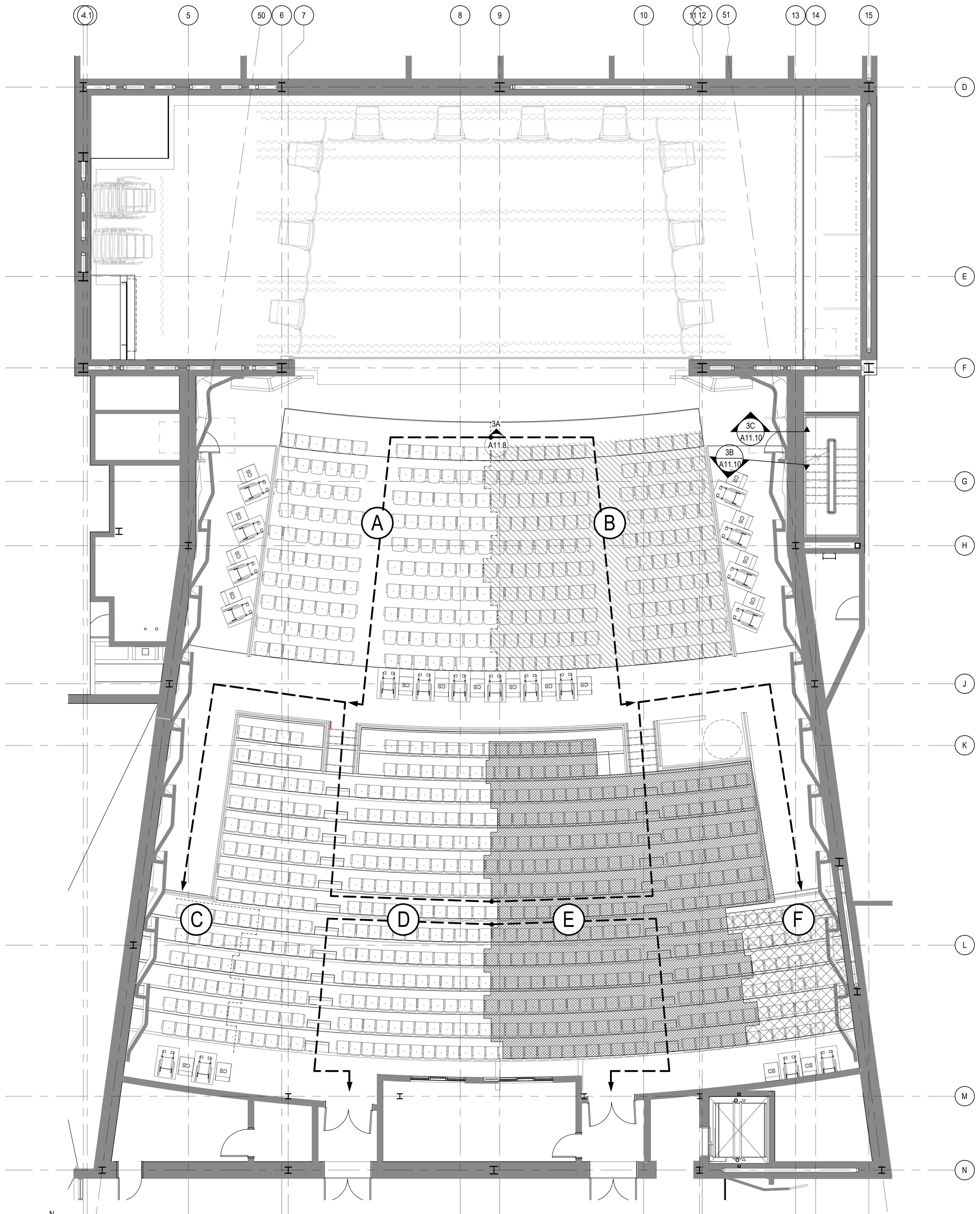
CP1.2

SEE FIRE PROTECTION DRAWINGS FOR STANDPIPE LOCATIONS

FIRE EXTINGUISHER CABINETS

FEC-2 RECESSED FIRE EXTINGUISHER CABINET

SEE CP1.1 AND CP1.2 FOR CODE PLAN
SEE CP1.1 AND CP1.2 EGRESS DOORS AND PATHS
SEE A2.1 FOR SEATING INFORMATION



LEVEL 03 - CODE PLAN - CATCHMENT ZONES

SCALE: 1/8" = 1'-0"

AUDIENCE CHAMBER SEATING

TOTAL SEATS PROVIDED:	814	
ACCESSIBLE SEAT POSITIONS:	09 REQUIRED 18 PROVIDED	("501 TO 5000" CATEGORY, PER IBC TABLE 1109.2.2.1)
COMPANION SEATS:	09 REQUIRED 18 PROVIDED	
DESIGNATED AISLE SEATS:	05 REQUIRED 06 PROVIDED	(5% OF 89 = 5 REQUIRED)

CLEAR WIDTH OF AISLE ACCESSWAYS:

COMPLYING WITH IBC SECTION 1030.13.2, REQUIRED CLEAR WIDTHS OF AISLE ACCESSWAYS ARE PROVIDED (MEASURED AS THE CLEAR HORIZONTAL DISTANCE FROM THE BACK OF THE ROW AHEAD AND THE NEAREST PROJECTION OF THE ROW BEHIND). REFER TO ENLARGED LIFE SAFETY PLANS AND DETAILS ON CP1.1 AND CP1.2.

PER 1030.13.2.1 FOR DUAL ACCESS ROWS: FOR ROWS OF SEATING SERVED BY AISLES OR DOORWAYS AT BOTH ENDS, THERE SHALL BE NOT MORE THAN 100 SEATS PER ROW. THE MINIMUM CLEAR WIDTH OF 12 INCHES BETWEEN ROWS SHALL BE INCREASED BY 0.3 INCH FOR EVERY ADDITIONAL SEAT BEYOND 14 SEATS. THE MINIMUM CLEAR WIDTH IS NOT REQUIRED TO EXCEED 22 INCHES.

PER 1030.13.2.2 FOR SINGLE ACCESS ROWS: FOR ROWS OF SEATING SERVED BY AN AISLE OR DOORWAY AT ONLY ONE END OF THE ROW, THE MINIMUM CLEAR WIDTH OF 12 INCHES BETWEEN ROWS SHALL BE INCREASED BY 0.6 INCH FOR EVERY ADDITIONAL SEAT BEYOND SEVEN SEATS. THE MINIMUM CLEAR WIDTH IS NOT REQUIRED TO EXCEED 22 INCHES.

LEVEL 01: MAX. NUMBER OF SEATS AT A DUAL ACCESS ROW = 14.
16 - 14 = 2
2 * 0.3 INCH = 0.6 + 12 = 12.6 INCHES (REQ'D CLEAR WIDTH OF AISLE ACCESSWAY)
GREATER THAN 13 INCHES PROVIDED. SEE DETAIL 2/CP1.3.

LEVEL 01: MAX. NUMBER OF SEATS AT A SINGLE ACCESS ROW = 7.
7 - 7 = 0
12 INCHES (REQ'D CLEAR WIDTH OF AISLE ACCESSWAY)
GREATER THAN 12 INCHES PROVIDED. SEE DETAIL 2/CP1.3.

LEVEL 02: MAX. NUMBER OF SEATS AT A DUAL ACCESS ROW = 24.
24 - 14 = 10
10 * 0.3 INCH = 3 + 12 = 15 INCHES (NOT REQUIRED TO EXCEED 22 INCHES)
15 INCHES = REQ'D CLEAR WIDTH OF AISLE ACCESSWAY
GREATER THAN 15 INCHES PROVIDED. SEE DETAIL 2/CP1.3.

LEVEL 02: MAX. NUMBER OF SEATS AT A SINGLE ACCESS ROW = 7.
7 - 7 = 0
12 INCHES = REQ'D CLEAR WIDTH OF AISLE ACCESSWAY)
GREATER THAN 12 INCHES PROVIDED. SEE DETAIL 2/CP1.3.

ASSISTED LISTENING SYSTEMS:

ASSISTED LISTENING SYSTEM PROVIDED. SEE SHEET TA-613. LISTENING DEVICES WILL BE AVAILABLE AT THE CONCIERGE DESK.

NUMBER OF DEVICES REQUIRED PER IBC - CHAPTER 1109.2.7.1:
TOTAL NUMBER OF SEATS: 814
20 DEVICES PLUS 1 PER 33 SEATS OVER 500 SEATS OF SEATS REQUIRED FOR ASSISTED LISTENING DEVICES - REQUIRED: 30 PROVIDED: 30

1 PER 4 OF ALD'S REQUIRED TO BE HEARING AID COMPATIBLE - REQUIRED: 08 PROVIDED: 08

SEATING TYPE GRAPHIC LEGEND

ACCESSIBLE SEAT POSITION, COMPLYING W/ IBC SECTION 1109.2.2.

CS — COMPANION SEATS, COMPLYING W/ IBC SECTION 1109.2.3. AT LEAST ONE COMPANION SEAT COMPLYING WITH SECTION 1109.2.3 SHALL BE PROVIDED IMMEDIATELY ADJACENT TO EACH WHEELCHAIR SPACE REQUIRED BY SECTION 1109.2.2.

DA — DESIGNATED AISLE SEATS, COMPLYING W/ IBC SECTION 1109.2.5. AT LEAST 5 PERCENT OF THE TOTAL NUMBER OF AISLE SEATS PROVIDED SHALL COMPLY W/ SECTION 1109.2.5 AND SHALL BE THE AISLE SEATS LOCATED CLOSEST TO ACCESSIBLE ROUTES.

CATCHMENT LEGEND

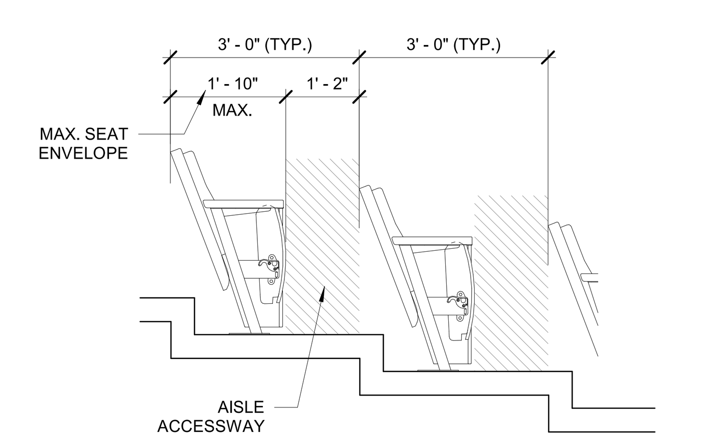
AUDIENCE CHAMBER CATCHMENT ZONE OCCUPANCY NUMBERS

- A — 140 OCCUPANTS
- B — 140 OCCUPANTS
- C — 29 OCCUPANTS
- D — 220 OCCUPANTS
- E — 218 OCCUPANTS
- F — 31 OCCUPANTS

THEATRICAL SEATING SCHEDULE

Type	Angle	Count
(CS) Companion Seat		18
(DA) DESIGNATED AISLE - 20"	20.00°	4
(DA) DESIGNATED AISLE - 21"	20.00°	1
(DA) DESIGNATED AISLE - 22"	20.00°	1
(WC) Accessible Seat		18
FIXED SEATING - 19"	16.00°	230
FIXED SEATING - 20"	20.00°	125
FIXED SEATING - 20"	16.00°	250
FIXED SEATING - 21"	20.00°	96
FIXED SEATING - 21"	16.00°	39
FIXED SEATING - 22"	20.00°	53
FIXED SEATING - 22"	16.00°	18
Grand total		853

FIXED THEATRICAL SEATING BASIS OF DESIGN -
WENGER CAVEA - FABRIC SEAT BOTTOMS AND BACKS W/ WOOD VENER.



21 DEGREE ANGLED SEAT

2 CP1.3 CLEAR AISLE ACCESSWAY WIDTHS
SCALE: 1/2" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIENCE CHAMBER CATCHMENT ZONES

CP1.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:03 PM

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

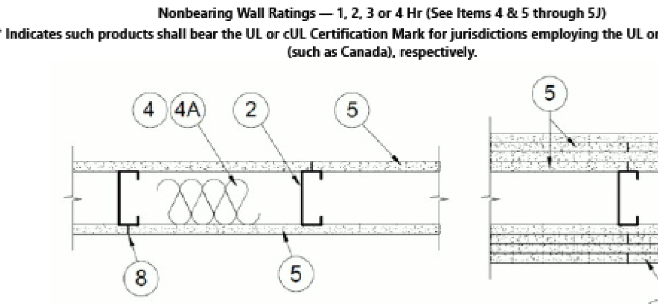
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

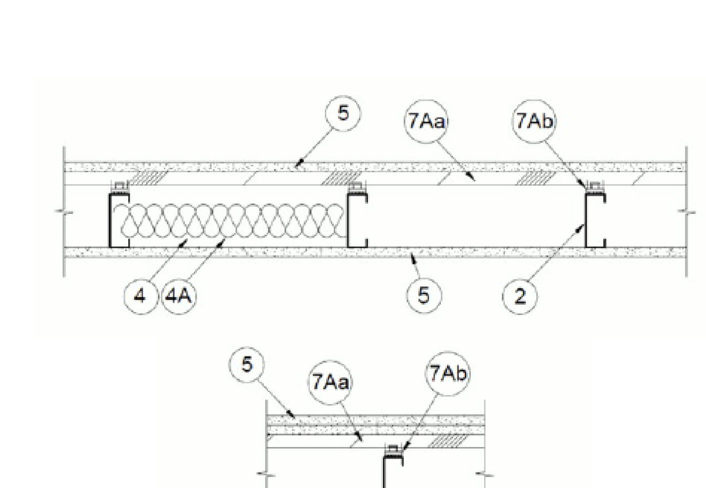
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. U419

June 14, 2024

Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 4 & 5 through 5J)
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**





1. **Floor and Ceiling Runners** — (Not Shown) — For use with Item 2 — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
CEMCO, LLC — Viper25™ Track

CRACO MFG INC — SmartTrack25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper25™ Track

1B. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2C, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
CEMCO, LLC — Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track

1C. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — In lieu of Item 1 — Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

1D. **Floor and Ceiling Runners** — (Not Shown) — For use with Item 2A — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1E. **Framing Members* — Floor and Ceiling Runners** — (Not Shown, As an alternate to Item 1) — For use with Items 2E, 5F or 5G or 5I only, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK

MBA METAL FRAMING — ProTRAK

RAM SALES L L C — Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1F. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2F, proprietary channel shaped runners, minimum width to accommodate stud size, with 1- 1/8 in. long legs fabricated from min 0.015 in. (min bare metal thickness) galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
SUPER STUD BUILDING PRODUCTS — The Edge

1G. **Framing Members* — Floor and Ceiling Runner** — For use with Item 2G, proprietary channel shaped runners, minimum width to accommodate stud size attached to floor and ceiling with fasteners 24 in. OC max.
STUDCO BUILDING SYSTEMS — CROCSTUD Track

1H. **Floor and Ceiling Runners** — (Not Shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.018 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track VT100

1I. **Framing Members* — Floor and Ceiling Runners** — (Not Shown, As an alternate to Item 1) — For use with Items 2H, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
TELLING INDUSTRIES L L C — TRUE-TRACK™

1J. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2I, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.

1K. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

1L. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2N, proprietary channel shaped runners, 1-1/4 in. wide by min. 3-1/2 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RESCUE METAL FRAMING, L L C — AlphaTRAK

1M. **Framing Members* — Floor and Ceiling Runners** — Not Shown — As an alternate to Item 1 — For use with Item 2O, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Wall Track

1N. **Framing Members* — Floor and Ceiling Runners** — Not Shown — As an alternate to Item 1 — For use with Item 2P, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Track

1O. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2Q, proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max.
CEMCO, LLC — Viper X Track

1P. **Framing Members* — Floor and Ceiling Runner** — (Not Shown — Alternate to Item 1) — For use with Item 2R, channel shaped runners pre-equipped with proprietary attachment clips. Min. 3-5/8 in. wide. Legs of top runners minimum 3-1/4 in. wide. Legs of bottom runners minimum 1-1/2 in. wide. Runners attached to floor and ceiling with fasteners 24 in. OC max.

HYPERFRAME INC - Hypertrack

1Q. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2S , proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

JJC INTERNATIONAL DISTRIBUTORS — Non-structural Tracks 3-5/8" and 6".

1R. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2T, proprietary channel shaped runners ,min width to accommodate stud size, fabricated from min. 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max

IRONLINE METALS LLC — Bantam Track.

2. **Steel Studs** — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

2A. **Steel Studs** — (As an alternate to Item 2, For use with Items 5B, 5E, 5H, 5J or Type ULIX) — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2B. **Framing Members* - Steel Studs** — (As an alternate to Item 2, For use with Items 5C, 5I or Type ULIX) — Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.

CEMCO, LLC — Viper25™

CRACO MFG INC — SmartStud25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

IMPERIAL MANUFACTURING GROUP INC — Viper25™

2C. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CEMCO, LLC — Viper20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

IMPERIAL MANUFACTURING GROUP INC — Viper20™

2D. **Framing Members* — Steel Studs** — In lieu of Item 2 — Channel shaped studs, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

2E. **Framing Members* — Steel Studs** — (Not Shown, As an alternate to Item 2) — For use with Items 5F or 5G or 5I or Type ULIX only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2F. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (min bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights.
SUPER STUD BUILDING PRODUCTS — The Edge

2G. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped studs, minimum width indicated under Item 5, Studs to be cut 3/8 to 3/4 in less than the assembly height.
STUDCO BUILDING SYSTEMS — CROCSTUD

2H. **Framing Members* — Steel Studs** — (Not Shown, As an alternate to Item 2) — Fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
TELLING INDUSTRIES L L C — TRUE-STUD™

2I. **Framing Members* — Steel Studs** —

2J. **Framing Members* — Metal Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights

2K. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
EB METAL INC — NITROSTUD

2L. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
OLMAR SUPPLY INC — PRIMESTUD

2M. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™

2N. **Framing Members*— Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min depth 3-1/2 in. and as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in length than assembly height.
RESCUE METAL FRAMING, L L C — AlphaSTUD

2O. **Framing Members* — Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Lipped Wall Stud

2P. **Framing Members* — Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, min 25 MSG galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Stud

2Q. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — For use with Item 1O, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CEMCO, LLC — Viper X

2R. **Framing Members* — Steel Studs** — (Not Shown — Alternate to Item 2, For use with Item 1P) — Channel shaped steel studs with attachment clips at top and bottom, min 3-5/8 in. depth, spaced a max of 24 in. OC. Studs clipped into floor and ceiling runners (Item 1P). Max 2-3/8 in. extension reveal from top of stud to inside of ceiling runner.

HYPERFRAME INC— Hyperstud

2S. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — For use with Item 1Q, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.

JJC INTERNATIONAL DISTRIBUTORS — Non-structural Studs 3-5/8" and 6".

2T. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — For use with Item 1R, proprietary channel shaped steelstuds, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.

IRONLINE METALS LLC — Bantam Stud.

3. **Wood Structural Panel Sheathing** — (Optional, For use with Item 5 Only) — (Not Shown) — 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural 1 sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field. When used, gypsum panels attached over OSB or plywood panels and fastener lengths for gypsum panels increased by min. 1/2 in.

4. **Batts and Blankets*** — (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4A. **Batts and Blankets*** — (Optional – as an alternate to item 4) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4B. **Fiber, Sprayed*** — (Optional – as an alternate for items 4 or 4A, for use with Type ULIX) Where insulation is required - Spray applied granulated mineral fiber material. The fiber is applied with adhesive at a minimum density of 4.0 pcf to completely fill the wall cavity in accordance with the application instructions supplied with the product. See **Fiber, Sprayed** (CCAZ).
AMERICAN ROCKWOOL MANUFACTURING, LLC — Type Rockwool Premium Plus

4C. **Foamed Plastic*** — (As an alternate for items 4, 4A or 4B, for use with Item 5K) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity, for 2 hour rated assemblies only. When foamed plastic is used, minimum stud depth shall be 3-1/2 in. with minimum 20 MSG steel thickness.

CARLISLE SPRAY FOAM INSULATION — Types SealTite ONE, SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and Foamsulate HFO.

4D. **Foamed Plastic*** — (As an alternate for items 4, 4A or 4B, for use with Item 5K) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity, for up to 2 hour rated assemblies only. When foamed plastic is used, minimum stud depth shall be 3-1/2 in. with minimum 20 MSG steel thickness.

BASF CORP - Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite HP+, FE137®, FE158®, Spraytite® 158, Spraytite® SP, Spraytite® 81205, Spraytite® Comfort XL, Walltite® XL, Walltite® MAX, Walltite® LWP, Walltite® Plus and Enertite® Max

5. **Gypsum Board*** — Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) with Type ULIX need not be staggered. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2, 2C, 2D, 2F, 2G, 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — 1/2 in. thick Type C and 5/8 in. thick Type SCX

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SGX, SHX, ULIX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR; 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 7B, **Steel Framing Members***, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 6. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. **Gypsum Board*** — (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.
CGC INC — Type SHX.

UNITED STATES GYPSUM CO — Type FRX-G, SHX.

USG MEXICO S A DE C V — Type SHX.

5B. **Gypsum Board*** — (Not Shown) — As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 in or 3/4 in. thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) — Nom 5/8 in. or 3/4 in. may be used as alternate to all 5/8 in. or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to 20 MSG steel studs Item 2A with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or Lead Discs or Tabs (see Item 12).
RAY-BAR ENGINEERING CORP — Type RB-LBG

5C. **Gypsum Board*** — (For Use With Item 2B) — Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.
CGC INC — Type SCX, ULIX.

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type SCX

UNITED STATES GYPSUM CO — Type SCX, SGX, ULIX.

USG BORAL DRYWALL SFZ LLC — Type SCX

USG MEXICO S A DE C V — Type SCX

5D. **Gypsum Board*** — (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in Item 6. For use with Items 1 and 2 only.
CGC INC — Type USGX

UNITED STATES GYPSUM CO — Type USGX

USG BORAL DRYWALL SFZ LLC — Type USGX

USG MEXICO S A DE C V — Type USGX

5E. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

5F. **Gypsum Board*** — (As an alternate to Item 5) — For use with Items 1E and 2E and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in.
THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type SCX

UNITED STATES GYPSUM CO — 5/8 in. thick Type SCX, SGX, ULIX

USG BORAL DRYWALL SFZ LLC — 5/8 in. thick Type SCX, SGX

5G. **Gypsum Board*** — (As an alternate to Item 5) — For use with Items 1E and 2E only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR;, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX or 3/4 in. thick Types IP-X3 or ULTRACODE

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — 1/2 in. thick Types C and 5/8 in. thick SCX

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type SCX, SGX, SHX, IP-X1, AR, C, , FRX-G, IP-AR, IP-X2, IPC-AR, ULIX; 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

5H. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 or 3/4 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 or 3/4 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Gypsum board secured to 20 MSG steel studs Item 2B with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 11A) or Lead Discs (see Item 12A).
MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

5I. **Gypsum Board*** — (As an alternate to Item 5) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.
CGC INC — Type ULIX, ULX

UNITED STATES GYPSUM CO — Type ULIX, ULX

USG MEXICO S A DE C V — Type ULX

5J. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

5K. **Gypsum Board*** — (As an alternate to Item 5 when Foam Plastic insulation (Items 4C or 4D) is used) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 5 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-1/4 in. long Type S steel screws spaced 8 in. OC at perimeter and in the field. For 2 layer assemblies outer layer will be attached to studs over inner layer with the 1-7/8 in. long steel screws spaced 8 in. OC.

6. **Fasteners** — (Not Shown) — For use with Items 2 and 2F - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. **Single layer system with Type ULIX:** 1 in. long, spaced 12 in. OC in the field and perimeter, when panels are applied horizontally or vertically.**Two layer systems:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer.**Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

7. **Furring Channels** — (Optional, Not Shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A.

7A. **Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to studs with No. 8 x 9/16 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

7B. **Framing Members*** — (Optional, Not Shown) — As an alternate to Item 7, for single or double layer systems, furring channels and Steel Framing Members on only one side of studs as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 5. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.
KINETICS NOISE CONTROL INC — Type Isomax

7C. **Framing Members*** — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ca) to studs (Item 2). Clips spaced max. 48 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.
PLITEQ INC — Type GENIECLIP

7D. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire.. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Da) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

7E. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 7Eb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire.. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

7F. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Resilient channels and Steel Framing Members as described below:
a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 5. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach resilient channels (Item 7Fa) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

7G. **Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ga) to studs (Item 2). Clips spaced max. 48 in. OC. Clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips.
CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

8. **Joint Tape and Compound** — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

9. **Siding, Brick or Stucco** — (Optional, Not Shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

10. **Caulking and Sealants*** — (Optional, Not Shown) — A bead of acoustical sealant applied around the partition perimeter for sound control.
UNITED STATES GYPSUM CO — Type AS

11. **Lead Batten Strips** — (Not Shown, For Use With Item 5B) — Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5B) and optional at remaining stud locations. Required behind vertical joints.

11A. **Lead Batten Strips** — (Not Shown, For Use With Item 5H) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations.

12. **Lead Discs or Tabs** — (Not Shown, For Use With Item 5B) — Used in lieu of or in addition to the lead batten strips (Item 11) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 5B) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

12A. **Lead Discs** — (Not Shown, for use with Item 5H) — Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

13. **Lead Batten Strips** — (Not Shown, For Use With Item 5E) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5E) and optional at remaining stud locations.

14. **Lead Tabs** — (Not Shown, For Use With Item 5E) — 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 5E) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

15. **Barrier Mesh** — (Optional, Not Shown) - Attached to steel studs on one or both sides of the wall using Barrier Mesh Clips spaced at maximum 12 inches on center vertically, using a flat head type screw penetrating through the steel at least 3/8 of an inch. For Steel Studs less than 0.033 inches in thickness, use self-piercing screws. For Steel Studs equal to or greater than 0.033 inches in thickness, use steel drill screws (self-tapping). Gypsum Board (Item 5) to be installed directly over the Barrier Mesh using prescribed screw patterns with lengths increased by a minimum 1/8 in. Barrier Mesh may be installed with the long dimension of the diamond pattern positioned vertically or horizontally. Barrier Mesh joints may occur as butt joints at the framing members and secured using the Barrier Mesh Clips or occur in between framing members as overlapping joints secured using 18 SWG wire ties spaced a maximum 12 in. on center.
CLARKDIETRICH BUILDING SYSTEMS — Barrier Mesh, Barrier Mesh Clips

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2024-06-14

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

UL U419 WALL ASSEMBLY

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
20568
STATE OF TEXAS
07.25.2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

TESTED ASSEMBLIES

CP2.0

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:03 PM

UL U493 WALL ASSEMBLY

SCALE: 12" = 1'-0"

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

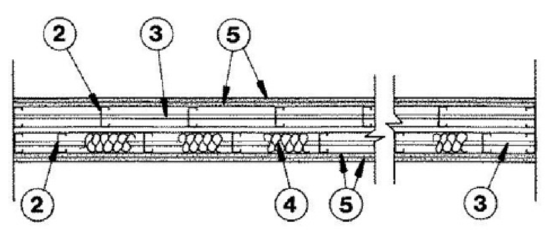
BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **U493**

November 14, 2023

Nonbearing Wall Rating — 1 or 2 Hr. (See Items 5, 5A, 5B)
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



HORIZONTAL SECTION

1. **Floor and Ceiling Runners** — (For use with Item 5 and 5A) — Channel shaped, attached to floor and ceiling in two rows, a min 1 in. apart, with steel fasteners spaced 24 in. OC. Runners fabricated from min No. 25 MSG galv steel, 1-1/4 in. wide and 2-1/2 in. deep.

1A. **Floor and Ceiling Runners** — (As an alternate to Item 1, For use with Item 5B and 5C) — Channel shaped, attached to floor and ceiling in two rows, a min 1 in. apart. Runners fabricated from min No. 20 MSG galv steel, 1-3/16 in. wide and 2-9/16 in. deep.

1B. **Framing Members* — Floor and Ceiling Runners** — (Not shown for use with Item 2B) — As an alternate to Item 1 - Channel shaped, min. 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

1C. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — As an alternate to Item 1 for a 2 hour rating only — For use with Item 2C, channel shaped, min 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.
CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK

MBA METAL FRAMING — ProTRAK

RAM SALES L L C — Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1D. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — As an alternate to Item 1 - For use with Item 2D, channel shaped, min 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track

1E. **Framing Members* — Floor and Ceiling Runners** — (Not Show

n) — As an alternate to Item 1 for a 2 hour rating only - For use with Item 2E, channel shaped, min 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper25™ Track

1F. **Framing Members* — Floor and Ceiling Runners** — Not Shown — As an alternate to Item 1 for use with Item 2F, proprietary channel shaped, min. 3-1/2 in. wide, fabricated from min. 0.018 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC max.
RESCUE METAL FRAMING, L L C — AlphaTRAK

1G. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — As an alternate to Item 1 for use with Item 2G and for a 2 hour rating only. Channel shaped, min. 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D25

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D25

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D25

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D25

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D25

TELLING INDUSTRIES L L C — Type SUPREME D25

UNITED METAL PRODUCTS INC — Type SUPREME D25

1H. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — As an alternate to Item 1 for use with Item 2H and for a 2 hour rating only. Channel shaped, min. 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper X Track.

1I. **Framing Members* — Floor and Ceiling Runner** — (Not Shown) — As an alternate to Item 1 for use with Item 2I. Proprietary channel shaped runners, 1-1/4 in. wide by min. 2-1/2 in. deep fabricated from min 0.019 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

PANEL REY S A – SUPRA Track 20EQ/19 mil

1J. **Framing Members* — Floor and Ceiling Runner** — (Not Shown — Alternate to Item 1) — For use with Item 2J, channel shaped runners pre-equipped with proprietary attachment clips. Min. 3-5/8 in. wide. Legs of top runners minimum 3-1/4 in. wide. Legs of bottom runners minimum 1-1/2 in. wide. Runners attached to floor and ceiling with fasteners 24 in. OC max.

HYPERFRAME INC - Hypertrack

2. **Steel Studs** — (For use with Item 5 and 5A) — Channel shaped, supplied with cutouts, friction -fitted into floor and ceiling runners and spaced a max 24 in. OC. Studs cut 1/2 in. less than assembly height and evenly staggered between the two rows of floor and ceiling runners. Studs fabricated from min No. 25 MSG galv steel, min 2-1/2 in. deep by 1-1/4 in. wide with 3/16 in. folded back return flange legs.

2A. **Steel Studs** — (As an alternate to Item 2, For use with Items 5B, 5C, 5E, and 5F) — Channel shaped, supplied with cutouts, friction -fitted into floor and ceiling runners and spaced a max 16 in. OC. Studs cut 1/2 in. less than assembly height and staggered flush against the floor runners. Studs fabricated from min No. 20 MSG galv steel, min 2-1/2 in. deep x 1-5/8 in. wide x 3/8 in. folded back return flange legs.

2B. **Framing Members* — Steel Studs** — As an alternate to Item 2 — Channel shaped studs, min. 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

OLMAR SUPPLY INC — PRIMESTUD

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

2C. **Framing Members* — Steel Studs** — As an alternate to Item 2 for a 2 hour rating only — For use with Item 1C, channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2D. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1D, channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

IMPERIAL MANUFACTURING GROUP INC — Viper20™

2E. **Framing Members* — Steel Studs** — As an alternate to Item 2 for a 2 hour rating only — For use with Item 1E, channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

IMPERIAL MANUFACTURING GROUP INC — Viper25™

2F. **Framing Members* — Steel Studs** — As an alternate to Item 2, for use with Item 1F, proprietary channel shaped studs, min. 3-1/2 in. wide, fabricated from min. 0.018 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
RESCUE METAL FRAMING, L L C — AlphaSTUD

2G. **Framing Members* — Steel Studs** — As an alternate to Item 2 for use Item 1G and for a 2 hour rating only — Channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D25

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D25

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D25

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D25

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D25

TELLING INDUSTRIES L L C — Type SUPREME D25

UNITED METAL PRODUCTS INC — Type SUPREME D25

2H. **Framing Members* — Steel Studs** — As an alternate to Item 2 for use Item 1H and for a 2 hour rating only — Channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper X.

2I. **Framing Members* — Steel Studs** — As an alternate to Item 2 for use with Item 1I. Proprietary channel shaped steel studs, min 1-1/4 in. wide by min 2-1/2 in. deep with 1/4 in. return lips fabricated from min 0.019 in. thick galv steel, spaced 24 in. OC max. Studs cut 1/2 in. less in length than assembly height.

PANEL REY S A – SUPRA Stud 20EQ/19 mil

2J. **Framing Members* — Steel Studs** — (Not Shown — Alternate to Item 2, For use with Item 1J) — Channel shaped steel studs with attachment clips at top and bottom, min 3-5/8 in. depth, spaced a max of 24 in. OC. Studs clipped into floor and ceiling runners (Item 1J). Max 2-3/8 in. extension reveal from top of stud to inside of ceiling runner.

HYPERFRAME INC— Hyperstud

3. **Lateral Bracing** — The bracing shall be in accordance with the SSMA Technical Note Dated March 2000 Referencing Unsheathed Flange Bracing.

3A. **Lateral Bracing** — (Not Shown) — Right angle- shaped, supplied with notches spaced 12, 16, or 24 in. OC., friction-fitted to the cutouts in steel studs, supplied in 7/8 in. by 7/8 in. by 50 in. lengths. Lateral bracing bars fabricated from min. 20 MSG galvanized steel. The bracing shall be located a maximum of 5 ft on center in accordance with the manufacturers published literature.
CLARKDIETRICH BUILDING SYSTEMS — TradeReady Spazzer 9200 bar

4. **Batts and Blankets** — Optional — Glass fiber batts may be friction-fitted to completely fill the stud cavities on one or both rows of studs.
See **Batts and Blankets** Category (BZJZ) for names of manufacturers.

4A. Deleted.

4B. **Foamed Plastic* —(Optional)** — Not Shown — As an alternate to Item 4. For use with Item 5I. Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity. When foamed plastic is used, minimum stud depth shall be 3-1/2 in.

CARLISLE SPRAY FOAM INSULATION — Types SealTite ONE, SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and Foamsulate HFO.

5. **Gypsum Board*** — Nom 5/8 in. thick, 4 ft. wide, gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Single layer installed on each side of the steel studs for the 1-hr system, two layers installed on each side of the studs for the 2-hr system. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (2-hr system) staggered one stud cavity. Horizontal edge joints and horizontal butt joints need not be backed by framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (2-hr system) staggered a minimum of 6 in. Horizontal edge joints and horizontal butt joints in adjacent layers (2-hr system) need not be staggered with Type ULIX. For the single layer system: panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when applied vertically. For the single layer system with ULIX, panels attached to steel studs and floor runners with 1 in. long Type S screws spaced 12 in. OC when applied vertically or horizontally. Horizontal joints need not be staggered on opposite sides of studs. For the double layer system: base layer panels attached to steel studs and floor runner with 1 in. long Type

S steel screws spaced 16 in., face layer panels attached to steel studs and floor runner with 1-5/8 in. long Type S steel screws spaced 12 in. When used in widths other than 48 in., gypsum panels to be installed horizontally.
When **Steel Framing Members*** (Item 7 or any alternate clips) are used: For the 1-hr system, gypsum panels attached vertically to furring channels with 1 in. long Type S-12 screws spaced 12 in. OC. Vertical joints offset min 12 in. from layer on other side of wall. For the 2-hr system, inner layer of gypsum panels attached vertically to furring channels with 1 in. Type S-12 screws spaced 16 in. OC, outer layer with 1-5/8 in. Type S-12 screws spaced 12 in. OC. Inner layer to be applied vertically. Outer layer to be applied vertically with joints offset a minimum 12 in. from inner layer joints.

CGC INC — Type SCX, SHX, IP-X1, WRX, AR, IP-AR, C, WRC, IP-X2, IPC-AR, ULIX, USGX (Joint tape and compound, Item 6, optional for use with Type USGX)

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX

UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, USGX, WRX, WRC (Joint tape and compound, Item 6, optional for use with Type USGX)

USG BORAL DRYWALL SFZ LLC — Types C, SCX, SGX, USGX (Joint tape and compound, Item 6, optional for use with Type USGX)

USG MEXICO S A DE C V — Type SCX, SHX, IP-X1, WRX, AR, IP-AR, C, WRC, IP-X2, or IPC-AR, USGX (Joint tape and compound, Item 6, optional for use with Type USGX)

5A. **Gypsum Board*** — (As an alternate to Item 5) — Single layer installed on each side of the steel studs for the 1-hr system, two layers installed on each side of the studs for the 2-hr system. Nom 3/4 in. thick, 4 ft wide, installed as described in Item 5 with screw length increased to 1-1/4 in. for base layer (or for 1 hr. configuration) 2-1/4 in. for face layer.
CGC INC — Types AR, IP-AR

UNITED STATES GYPSUM CO — Types AR, IP-AR

USG MEXICO S A DE C V — Types AR, IP-AR

5B. **Gypsum Board*** — (As an alternate to Item 5 may be used as the base layer on one or both sides of wall, For direct attachment only) — Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over min 20 MSG galvanized steel studs and staggered min 1 stud cavity on opposite sides of studs. See Item 2A. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 8) or Lead Discs or Tabs (see Item 9).
RAY-BAR ENGINEERING CORP — Type RB-LBG

5C. **Gypsum Board*** — (As an alternate to Item 5 may be used as the base layer on one or both sides of wall, For direct attachment only) — Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or #6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

5D. **Gypsum Board*** — (As an alternate to Item 5, not for use with Items 1C and 2C) — Nom. 5/8 in. thick, 4 ft. wide gypsum panels with beveled, square or tapered edges installed as described in Item 5.
CGC INC — Type ULX

UNITED STATES GYPSUM CO — Type ULX

USG MEXICO S A DE C V — Type ULX

5E. **Gypsum Board*** — (As an alternate to Item 5 may be used as the base layer on one or both sides of wall, For direct attachment only). Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over min 20 MSG galvanized steel studs and staggered min 1 stud cavity on opposite sides of studs. See Item 2A. Wallboard secured

to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

5F. **Gypsum Board*** — (As an alternate to Items 4) — For Direct Application to studs Only — For use as the base layer or as the face layer. Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and in the field when applied as the base layer. When applied as the face layer screw length to be increased to 2-1/2 in. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 10 ft long with a max thickness of 0.140 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, max 5/16 in. diam by max 0.140 in. thick compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grades "A, B, C or D". Fasteners for face layer gypsum panels (Items 5) when installed over lead backed board to be min 2-1/2 in. Type S-12 bugle head steel screws spaced as described in Item 5.
MAYCO INDUSTRIES INC — "X-Ray Shielded Gypsum"

5G. Deleted.

5H. **Gypsum Board*** — Nom 5/8 in. thick, 4 ft. wide, gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Single layer installed on each side of the steel studs for the 1-hr system, two layers installed on each side of the studs for the 2-hr system. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (2-hr system) staggered one stud cavity. Horizontal edge joints and horizontal butt joints need not be backed by framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (2-hr system) staggered a minimum of 6 in. For the single layer system: panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when applied vertically. For the double layer system: base layer panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 16 in., face layer panels attached to steel studs and floor runner with 1-5/8 in. long Type S steel screws spaced 12 in. When used in widths other than 48 in., gypsum panels to be installed horizontally.
When **Steel Framing Members*** (Item 7-7B) are used: For the 1-hr system, gypsum panels attached vertically to furring channels with 1 in. long Type S-12 screws spaced 12 in. OC. Vertical joints offset min 12 in. from layer on other side of wall. For the 2-hr system, inner layer of gypsum panels attached vertically to furring channels with 1 in. Type S-12 screws spaced 16 in. OC, outer layer with 1-5/8 in. Type S-12 screws spaced 12 in. OC. Inner layer to be applied vertically. Outer layer to be applied vertically with joints offset a minimum 12 in. from inner layer joints.

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR.

5I. **Gypsum Board*** — (For use when Foam Plastic insulation (Item 4B) is used) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 5 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1 in. long Type S steel screws spaced 8 in. OC at perimeter and in the field. For 2 layer assemblies outer layer will be attached to studs over inner layer with the 1-5/8 in. long steel screws spaced 8 in. OC. All joints in outer layers staggered from joints in inner layers.

6. **Joint Tape and Compound** — (Not Shown) — Outer layer joints covered with joint compound and paper or mesh tape. Screw heads covered with joint compound. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

7. **Steel Framing Members*** — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 5. May not be used with items 5B, 5C, 5E or 5F.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7a) to studs (Item 2). Clips spaced max. 48 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75)

7A. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire.Gypsum board attached to furring channels as described in Item 5. May not be used with items 5B, 5C, 5E or 5F.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Aa) to studs. Clips spaced 48 in. OC., and secured to studs 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

7B. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with a double strand of No. 18 AWG twisted steel wire. Gypsum board attached to furring channels as described in Item 5. May not be used with Items 5B, 5C, 5E, or 5F.

b. **Steel Framing Members*** — Used to attach furring channels (Item 78a) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

7C. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 7) — Resilient channels and Steel Framing Members as described below:
a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 5. May not be used with Items 5B, 5C, 5E, or 5F.

b. **Steel Framing Members*** — Used to attach resilient channels (Item 7Ca) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

7D **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:
a **Furring Channels** — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 5.

b **Steel Framing Members*** — Used to attach furring channels (Item 7Da) to studs. Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

8. **Lead Batten Strips** — (Not Shown, For Use With Item 5B) — Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5B) and optional at remaining stud locations. Required behind vertical joints.

9. **Lead Discs or Tabs** — (Not Shown, For Use With Item 5B) — Used in lieu of or in addition to the lead batten strips (Item 8) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 5B) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

10. **Lead Batten Strips** — (Not Shown, For Use With Item 5C) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5C) and optional at remaining stud locations.

11. **Lead Tabs** — (Not Shown, For Use With Item 5C) — 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 5C) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

12. **Wall and Partition Facings and Accessories*** — (Optional, Not Shown) — For use with Items 5 or 5A — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-500 or QR-510 panel is installed between the steel framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-500 and QR-510

13. **Barrier Mesh** — (Optional, Not Shown) - Attached to steel studs on one or both sides of the wall using Barrier Mesh Clips spaced at maximum 12 inches on center vertically, using a flat head type screw penetrating through the steel at least 3/8 of an inch. For Steel Studs less than 0.033 inches in thickness, use self-piercing screws. For Steel Studs equal to or greater than 0.033 in thickness, use steel drill screws (self-tapping). Gypsum Board (Item 5) to be installed directly over the Barrier Mesh using prescribed screw patterns with lengths increased by a minimum 1/8 in. Barrier Mesh may be installed with the long dimension of the diamond pattern positioned vertically or horizontally. Barrier Mesh joints may occur as butt joints at the framing members and secured using the Barrier Mesh Clips or occur in between framing members as overlapping joints secured using 18 SWG wire ties spaced a maximum 12 in. on center.
CLARKDIETRICH BUILDING SYSTEMS — Barrier Mesh, Barrier Mesh Clips

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2023-11-14

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

UL U417 WALL ASSEMBLY

SCALE: 12" = 1'-0"

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

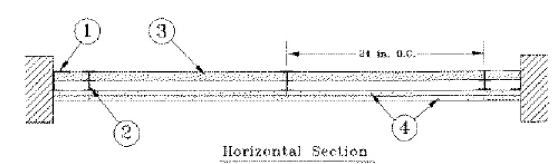
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. U417

August 18, 2023

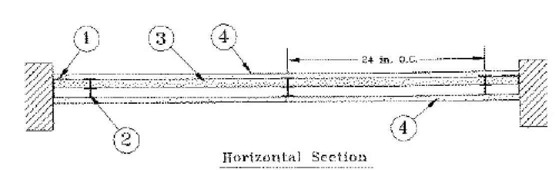
Nonbearing Wall Ratings — 1, 2 or 3 Hr
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System A – 2 Hr.



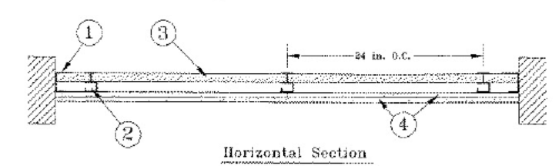
Horizontal Section

System B – 2 Hr.



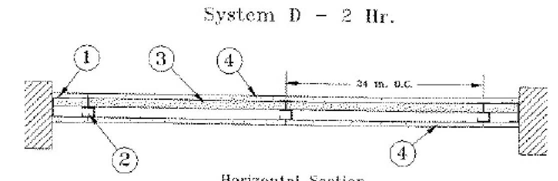
Horizontal Section

System C – 2 Hr.



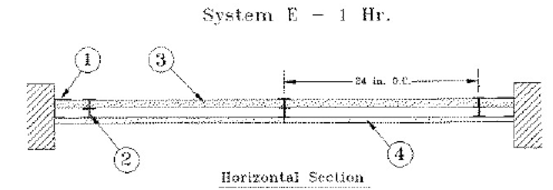
Horizontal Section

System D – 2 Hr.



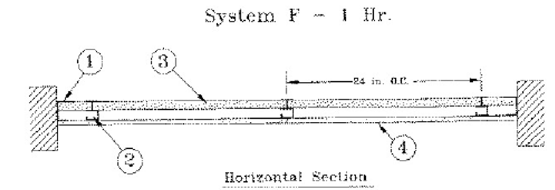
Horizontal Section

System E – 1 Hr.



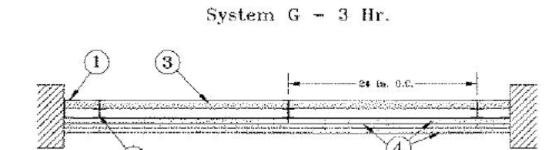
Horizontal Section

System F – 1 Hr.



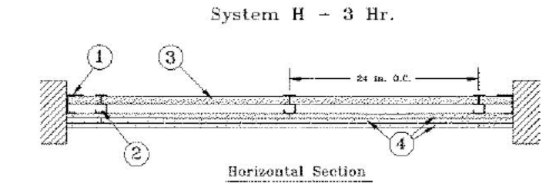
Horizontal Section

System G – 3 Hr.



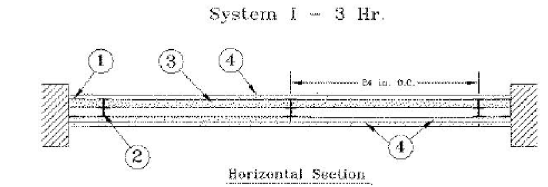
Horizontal Section

System H – 3 Hr.



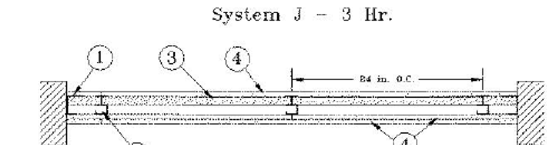
Horizontal Section

System I – 3 Hr.



Horizontal Section

System J – 3 Hr.



Horizontal Section

1. **Floor, Side and Ceiling Runners** — "J" -shaped runner, min 2-1/2 in. deep, with unequal legs of 1-1/8 in. and 2-1/8 in., fabricated from min 25 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC.

For use with **Type LWTX in Systems A-D** - "J" -shaped runner, min 4 in. deep, with unequal legs of nominal 1 in. and 2-1/4 in., fabricated from min 25 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC.

2. **Steel Studs** —

Systems A, B, E, G and I
"I" -shaped studs fabricated from min 25 MSG galv steel, min 2-1/2 in. deep, 1-1/2 in. wide. Studs contain 3/4 in. wide by 2-1/4 in. high holding tabs spaced 2-3/4 in. OC. Cut to lengths 5/8 in. less than floor-to-ceiling height and spaced 24 in.

Systems C, D, F, H and J
"C-T" -shaped studs, min 2-1/2 in. deep, 1-1/2 in. wide, fabricated from min 25 MSG galv steel. Cut to lengths 5/8 in. less than floor-to-ceiling height and spaced 24 in. or

"C-H" - shaped studs, min 2-1/2 in. deep, fabricated from min 25 MSG galv steel. Cut to lengths 5/8 in. less than floor-to-ceiling height and spaced 24 in. OC.

For use with **Type LWTX in System A-D**, "C-T" or "C-H" shaped studs, min 4 in. deep, nominal 1-1/2 in. wide, fabricated from min 25 MSG galv steel. Cut to lengths 5/8 in. less than floor to ceiling height and spaced 24 in. OC.

2A. **Steel Studs** — (Not Shown) — Alternate to Item 2, "E" - shaped studs installed back to back in place of "C-H" - shaped studs (Item 2) "E" - shaped studs secured together with steel screws spaced a maximum 12 in. OC. Fabricated from min 25 MSG (min 20 MSG when Item 5A is used) galv steel, min 2-1/2 in. deep, with one leg 1 in. long and two legs 3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 to 1/2 in. less than floor to ceiling heights.

3. **Gypsum Board*** — Gypsum liner panels, nom 1 in. thick, 24 in. wide. Panels cut max 1 in. less in length than floor to ceiling height. Vertical edges inserted in "I" -shaped section of "C-T" studs, the "H"-shaped section of "C-H" studs or tabs holding tabs of "I" studs. Free edge of end panels attached to long leg of "J" -runners with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of the wall. Horizontal joints need not be staggered or backed by steel framing.
CERTAINTEED GYPSUM INC — Types Shaftliner, EGRG Shaftliner, GlasRoc Shaftliner, LGFCSL.

THAI GYPSUM PRODUCTS PCL — Type Shaftliner, M2Tech Shaftliner Type X

4. **Gypsum Board*** —

Systems A and C
For use with **Type Shaftliner** liner panels - Gypsum panels, nom 1/2 or 5/8 in. thick, 48 in. wide, applied in one of the following methods. Method 1 — Base layer installed horizontally to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. Face layer installed vertically to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC, staggered 12 in. from base layer screws. Method 2 — Base layer installed vertically to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. Face layer installed horizontally to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC, staggered 12 in. from base layer screws. Additionally, Type G screws to be installed at the center of each stud cavity, 1-1/2 in. from both sides of the horizontal joint. For the 1/2 in. thick and 5/8 in. thick boards, the Type G screw length shall be 1-1/4 in. and 1-1/2 in. long, respectively. Method 3 — Base layer installed vertically to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. Face layer installed vertically to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC, staggered 12 in. from base layer screws. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

For use with **Type EGRG, GlasRoc Shaftliner, or LGFCSL** liner panels - Gypsum panels, nom 1/2 or 5/8 in. thick, 48 in. wide, applied in one of the following methods. Method 1 — Base layer installed horizontally to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. with the 1st screws installed 12 in. from the board edge. Face layer installed vertically to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC. with the 1st and 2nd screws spaced 3/4 in. and 6-3/4 in. from the board edge, staggered 12 in. from base layer screws. Method 2 — Base layer installed vertically to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. with the 1st screws installed 12 in. from the board edge. Face layer installed horizontally to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC., with the 1st and 2nd screws installed 3/4 in. and 6-3/4 in. from the board edge, staggered 12 in. from base layer screws. Additionally, Type G screws to be installed at the center of each stud cavity, spaced 12 in. OC., 1-1/2 in. from both sides of the horizontal joint. For the 1/2 in. thick and 5/8 in. thick boards, the Type G screw length shall be 1-1/4 in. and 1-1/2 in. long, respectively. Method 3 — Base layer installed vertically to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. with the 1st screws installed 12 in. from the board edge. Face layer installed vertically to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 24 in. OC, with the 1st and 2nd screws spaced 3/4 in. and 6-3/4 in. from the board edge, staggered 12 in. from base layer screws. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

For use with **Type LWTX** - Base layer installed horizontally to 4 in. steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC. Face layer installed horizontally to steel studs with 1-5/8 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC. Face layer joints staggered 24 in. OC from base layer.

CERTAINTEED GYPSUM INC — 1/2 in. thick Type C, 5/8 in. thick Type C or 5/8 in. thick Type X-1, SilentFX, EGRG, GlasRoc, GlasRoc-2, LWTX.

THAI GYPSUM PRODUCTS PCL — Type C, M2Tech Type C and Type X

Systems B and D
Gypsum panels, nom 1/2 or 5/8 in. thick, 48 in. wide, applied vertically to steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC. Vertical joints on opposite sides of wall staggered a min of 24 in.

For use with **Type LWTX** - Installed horizontally to both sides of 4 in. steel studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC. Horizontal Joints on opposite sides of wall staggered 24 in.

CERTAINTEED GYPSUM INC — 1/2 in. thick Type C, 5/8 in. thick Type C or 5/8 in. thick Type X-1, SilentFX, EGRG, GlasRoc, GlasRoc-2, LWTX.

THAI GYPSUM PRODUCTS PCL — Type C, M2Tech Type C and Type X

Systems E and F

A. Gypsum panels, nom 5/8 in. thick, 48 in. wide, applied vertically with edges centered over studs, with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC.

CERTAINTEED GYPSUM INC — Type X-1, Easi-Lite Type X-2, SilentFX, EGRG, GlasRoc, GlasRoc-2, or Type C

THAI GYPSUM PRODUCTS PCL — Type X and Type C, M2Tech Type C

B. As an alternate to Item A - Gypsum panels, nom 5/8 in. thick, 48 in. wide, applied horizontally only to min. 2-1/2 in. studs with 1 in. long Type S or S-12 self-drilling, self-tapping bugle head steel screws spaced 12 in. OC.

CERTAINTEED GYPSUM INC — Type LWTX

Systems G and H
Gypsum panels, nom 5/8 in. thick, 48 in. wide applied in three layers to one side of the assembly. Base layer applied vertically, remaining layers applied vertically or horizontally. Base layer attached to studs with 1 in. long Type S or S-12 steel screws spaced 24 in. OC. Middle layer attached to studs with 1-5/8 in. long Type S or S-12 steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Face layer attached to studs with 2-1/4 in. long Type S or S-12 steel screws spaced 16 in. OC when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. When applied horizontally, 1-1/2 in. long Type G screws to be installed at the center of each stud cavity, 1-1/2 in. from both sides of the horizontal joint. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CERTAINTEED GYPSUM INC — Type C

THAI GYPSUM PRODUCTS PCL — Type C, M2Tech Type C

Systems I and J
Gypsum panels, nom 5/8 in. thick, 48 in. wide applied in two layers to one side of the assembly and one layer to the other side. On the two layer side, base layer applied vertically, face layer applied vertically or horizontally. Base layer attached to studs with 1 in. long Type S or S-12 steel screws space 24 in. OC. Face layer attached to studs with 1-5/8 in. long Type S or S-12 steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Screws offset 6 in. from layer below. When applied horizontally, 1-1/2 in. long Type G screws to be installed at the center of each stud cavity, 1-1/2 in. from both sides of the horizontal joint. Vertical joints centered over studs and staggered 24 in. on adjacent layers. On the one layer side, panels applied vertically and attached to studs with 1 in. long Type S or S-12 steel screws spaced 12 in. OC. Vertical joints on opposite sides of wall staggered min 24 in. OC.

CERTAINTEED GYPSUM INC — Type C

THAI GYPSUM PRODUCTS PCL — Type C, M2Tech Type C

5. **Furring Channels** — (Optional, Not Shown) — For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG corrosion protected steel, installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting "I", "C-T", "C-H" or "E" stud on side of stud opposite the 1 in. liner panels with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically only.

5A. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board installed vertically only.

b. **Steel Framing Members*** — Used to attach furring channels (Item 5Aa) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

5B. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs (Item 2 or 2A) as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG

galvanized steel wire.Gypsum board attached to furring channels as described in Item 4.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to studs. Clips spaced 24 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips — Type A237R

5C. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs (Item 2 or 2A) as described in Item 5Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4.

b. **Steel Framing Members*** — Used to attach furring channels (Item 5Ca) to studs. Clips spaced 24 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

5D. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Resilient channels and Steel Framing Members as described below:
a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 4.

b. **Steel Framing Members*** — Used to attach resilient channels (Item 5Da) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

6. **Joint Tape and Compound** — (Not shown) — Joints covered with joint compound and paper or mesh tape. Screw heads covered with joint compound.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2023-08-18

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

UL W472 WALL ASSEMBLY

SCALE: 12" = 1'-0"

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

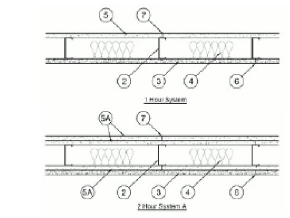
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

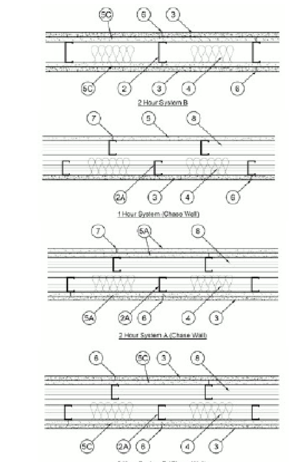
Design No. W472

June 12, 2020

Nonbearing Wall Rating — 1 and 2 Hr (See Items 3, 5, 5A, 5B and 5C)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**





1. **Floor and Ceiling Runners** — (Not Shown) — For use with Item 2, Channel shaped, fabricated from min 20 MSG corrosion-protected or galvanized steel, min 3-5/8" width, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1A. **Floor and Ceiling Runners** — As an alternate to Item 1 — For use with Item 2A, Channel shaped, fabricated from min No. 20 MSG corrosion-protected or galvanized steel, min 2-1/2 in. width with 1 in. long legs, attached to floor and ceiling in two rows, a min 1 in. apart, with steel fasteners spaced 24 in.

2. **Steel Studs** — Channel shaped, fabricated from min 20 MSG corrosion-protected or galvanized steel, min 3-5/8 in. width, min 1-1/4 in. flanges and 1/4 in. return, spaced max 16 in. OC. Studs cut 1/2 in. less than assembly height and friction-fitted into floor and ceiling runners.

2A. **Steel Studs** — As an alternate to Item 2, For use with Item 1A, Channel shaped, fabricated from min No. 20 MSG corrosion-protected or galvanized steel, min 2-1/2 in. width, min 1-1/4 in. flanges with 1/4 in. return, spaced a max 16 in. OC. Studs cut 1/2 in. less than assembly height and evenly staggered between the two rows of floor and ceiling runners.

3. **Cementitious Backer Units*** — 7/16 in., 1/2 in., 5/8 in., 3/4 in. or 1 in. thick, min. 32 in. wide. 1-Hr System - Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with 1-1/4 in. long, sharp point cement board screws spaced a max of 8 in. OC. When 4 ft. wide boards are used, horizontal joints need not be backed by framing. When boards less than 4 ft. wide are used, they shall be applied vertically, or one row of horizontal joints shall be backed by steel studs if applied horizontally. All vertical joints staggered one stud cavity from gypsum board vertical joints on

the opposite side of studs.
2-Hr System A — Applied vertically or horizontally with vertical joints centered over studs. Face layer fastened over gypsum board to studs and runners with 1-5/8 in. long, sharp point cement board screws spaced a max of 8 in. OC. All face layer joints offset min 16 in. from underlying base layer joints. Base layer joints shall be staggered from base layer joints on the opposite side of the wall.

2-Hr System B — Applied vertically or horizontally with vertical joints centered over steel studs. Fastened over gypsum board base layer (Item 5C) to studs and runners with 1-5/8 in. long, sharp point cement board screws spaced a max of 8 in. OC. All joints offset min 24 in. from underlying base layer gypsum board joints.

NATIONAL GYPSUM CO — Type DuraBacker, PermaBase, DuraBacker Plus, or PermaBase Plus

4. **Batts and Blankets*** — Nom. 3 in. thick mineral wool batts having a min. density of 2.6 lbs per cubic foot, friction-fitted between studs.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

5. **Gypsum Board* — 1 Hr System** — 5/8 in. thick, with square or tapered edges, applied vertically with vertical joints centered over studs. Fastened to studs and runners with 1-1/8 in. long Type S screws spaced max 8 in. OC at vertical edges and spaced max 12 in. OC in the field. Vertical joints staggered one stud cavity from cement board vertical joints on opposite side of studs.
NATIONAL GYPSUM CO — Types eXP-C, FSL, FSW, FSK, FSW-C, FSK-C, FSW-3, FSW-5, FSW-6, FSW-8, FSMR-C, Type SBWB

5A. **Gypsum Board* — 2 Hr System A** — 1/2 in. or 5/8 in. thick, with square or tapered edges, applied vertically or horizontally with vertical joints centered over studs. Base layers fastened with 1 in. long Type S screws spaced max 24 in. OC to studs and runners. Face layer fastened with 1-5/8 in. long Type S screws spaced max 16 in. OC to studs and runners with screws offset from base layer screws. Face layer joints offset min 16 in. from base layer joints. Base layer joints shall be staggered from base layer joints on the opposite side of the wall.
NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSL, FSW, FSW-C, FSW-3, FSW-G, FSW-5, FSMR-C, FSW-6, FSW-8, Type SBWB

5B. **Gypsum Board* — 1 Hr System** — (As an alternate to 5/8 in. Type FSW in Item 5) — Nom. 5/16 in. thick gypsum panels applied vertically. Two layers of 5/16 in. for every single layer of 5/8 in. gypsum board described in Item 5 or 5A. Horizontal joints on the same side need not be staggered. Inner layer of each double 5/16 in. layer attached with fasteners, as described in item 5 or 5A, spaced 24 in. OC. Outer layer of each double 5/16 in. layer attached per Item 5 or 5A.
NATIONAL GYPSUM CO — Type FSW

5C. **Gypsum Board* — 2 Hr System B** — 5/8 in. thick, with square or tapered edges, applied vertically or horizontally with vertical joints centered over studs. Fastened with 1 in. long Type S screws spaced max 16 in. OC to steel studs and runners. Joints offset from face layer joints (Item 3) minimum 24 in.
NATIONAL GYPSUM CO — Types eXP-C, FSL, FSW, FSK, FSW-C, FSK-C, FSW-3, FSW-5, FSW-6, FSW-8, FSMR-C, Type SBWB

6. **Joints of Cementitious Backer Units** — Covered with glass fiber mesh tape and latex modified Portland cement mortar meeting ANSI A118.4.

7. **Joints of Gypsum Board** — When tapered edge gypsum board is used, face layer joints covered with joint compound and paper tape. As an alternate, gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with joints reinforced. When square-edge gypsum board is used, treatment of joints is optional.

8. **Lateral Bracing** — Required with Item 2A only. The bracing shall be in accordance with the SSMA Technical Note Dated March 2000 Referencing Unsheathed Flange Bracing.

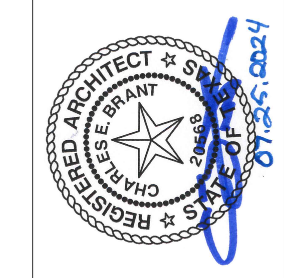
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2020-06-12

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

DLRGROUP
© DLR Group



CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

TESTED ASSEMBLIES

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:04 PM

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Crandall PAC
Location: Crandall, Texas
Climate Zone: 3a
Project Type: Addition

Construction Site: Owner/Agent: Designer/Contractor:

Mechanical Systems List

Quantity System Type & Description

1 RTU-1 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 486 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 81.00 % Et
Cooling: 1 each - Single Package DX Unit, Capacity = 740 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 10.20 EER, Required Efficiency = 9.80 EER
Proposed Part Load Efficiency = 16.50 IEER, Required Part Load Efficiency = 13.00 IEER
Fan System: RTU1 -- Compliance (Brake HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Single-Zone VAV, 14230 CFM, 5.5 motor nameplate hp, 5.5 design brake hp (5.5 max. BHP), 1.23 fan energy index
SF Supply, Single-Zone VAV, 14230 CFM, 5.5 motor nameplate hp, 5.5 design brake hp (5.5 max. BHP), 1.23 fan energy index

1 RTU-2 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 160 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 139 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency = 10.80 EER
Proposed Part Load Efficiency = 18.00 IEER, Required Part Load Efficiency = 14.00 IEER
Fan System: RTU2 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
EF Return, Single-Zone VAV, 2030 CFM, 1.7 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW
SF Supply, Single-Zone VAV, 2530 CFM, 2.4 motor nameplate hp, 1.23 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW

1 RTU-3 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 160 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 123 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.00 EER, Required Efficiency = 11.00 EER
Proposed Part Load Efficiency = 20.00 IEER, Required Part Load Efficiency = 14.60 IEER
Fan System: RTU3 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Single-Zone VAV, 2085 CFM, 1.7 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW
SF Supply, Single-Zone VAV, 2085 CFM, 2.4 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW

1 RTU-4 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 240 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 81.00 % Et
Cooling: 1 each - Single Package DX Unit, Capacity = 279 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency = 9.80 EER

Quantity System Type & Description

Proposed Part Load Efficiency = 20.00 IEER, Required Part Load Efficiency = 13.00 IEER
Fan System: RTU4 -- Compliance (Brake HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Single-Zone VAV, 5930 CFM, 3.0 motor nameplate hp, 1.5 design brake hp (1.5 max. BHP), 1.00 fan energy index
SF Supply, Single-Zone VAV, 5930 CFM, 5.0 motor nameplate hp, 2.4 design brake hp (2.4 max. BHP), 1.00 fan energy index

1 RTU-5 (Multiple-Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 160 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 76 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER
Proposed Part Load Efficiency = 20.00 IEER, Required Part Load Efficiency = 14.60 IEER
Fan System: RTU5 -- Compliance (Brake HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Multi-Zone VAV, 940 CFM, 3.0 motor nameplate hp, 1.9 design brake hp (1.9 max. BHP), 1.00 fan energy index
SF Supply, Multi-Zone VAV, 1490 CFM, 5.0 motor nameplate hp, 2.1 design brake hp (2.1 max. BHP), 1.00 fan energy index

1 RTU-6 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 240 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 81.00 % Et
Cooling: 1 each - Single Package DX Unit, Capacity = 417 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 10.60 EER, Required Efficiency = 9.80 EER
Proposed Part Load Efficiency = 16.90 IEER, Required Part Load Efficiency = 13.00 IEER
Fan System: RTU6 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Single-Zone VAV, 11025 CFM, 3.7 motor nameplate hp, 1.26 fan energy index
SF Supply, Single-Zone VAV, 11425 CFM, 5.1 motor nameplate hp, 1.26 fan energy index

1 RTU-7 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 160 kBtuh
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 119 kBtuh, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.00 EER, Required Efficiency = 11.00 EER
Proposed Part Load Efficiency = 20.00 IEER, Required Part Load Efficiency = 14.60 IEER
Fan System: RTU7 -- Compliance (Brake HP and fan efficiency method) : Passes

Fans:
EF Exhaust, Single-Zone VAV, 2750 CFM, 0.5 motor nameplate hp, 0.5 design brake hp (0.5 max. BHP), 1.23 fan energy index
SF Supply, Single-Zone VAV, 2750 CFM, 1.5 motor nameplate hp, 1.0 design brake hp (1.0 max. BHP), 1.23 fan energy index

Quantity System Type & Description

energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW
EF Exhaust, Single-Zone VAV, 5000 CFM, 1.5 motor nameplate hp, 1.0 design brake hp (1.0 max. BHP), 1.20 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW

1 IU-01 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 13 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 12 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 25.20 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-02 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-03 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-04 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-06 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-07 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-09 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-10 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 22.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-05 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 10 kBtuh
No minimum efficiency requirement applies
Cooling: 1 each - Split System, Capacity = 12 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 25.20 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

1 IU-08 (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 24 kBtuh
No minimum efficiency requirement applies

Quantity System Type & Description

Cooling: 1 each - Split System, Capacity = 24 kBtuh, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 14.30 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00

2 Water Heater:
Electric Instantaneous Water Heater, Capacity: 2 gallons
No minimum efficiency requirement applies

2 Water Heater:
Electric Instantaneous Water Heater, Capacity: 1 gallons
No minimum efficiency requirement applies

6 Water Heater:
Electric Instantaneous Water Heater, Capacity: 1 gallons
No minimum efficiency requirement applies

3 Water Heater:
Electric Instantaneous Water Heater, Capacity: 3 gallons
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COMcheck Software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2]^{1}	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical and service water heating systems and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR8]^{1}	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.13.2 [FO9]^{1}	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature above 50F and outdoor temperature above 40F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6]^{1}	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41]^{1}	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.1 [ME65]^{1}	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.8.2 [ME21]^{1}	HVAC fan motors not oversized beyond allowable limits.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.3 [ME117]^{1}	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.4 [ME142]^{1}	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.8.6 [ME143]^{1}	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.9 [ME144]^{1}	Large diameter fans where installed shall be tested and labeled in accordance with AMCA 230.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.3 [ME55]^{1}	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.2.1 [ME112]^{1}	Zone isolation devices and controls installed where applicable.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.5.5 [ME113]^{1}	Fault detection and diagnostics installed with air-cooled unitary DX units or VRF units having economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.2 [ME59]^{1}	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.6.1 [ME75]^{1}	Hydronic and multizone HVAC system controls are VAV fans driven by mechanical or electrical variable speed drive per Table C403.4.1.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.9 [ME67]^{1}	VAV fans have static pressure sensors located so controller setpoint <=1.2 w.c..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.1.3 [ME24]^{1}	Reset static pressure setpoint for DDC controlled VAV boxes reporting to central controller based on the zones requiring the most pressure.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.1 [ME130]^{1}	Supply air systems serving multiple zones have VAV systems with controls configured to reduce the volume of air that is reheated, recooled or mixed in each zone. See section for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.2 [ME131]^{1}	Single-duct VAV systems use terminal devices configured to reduce the supply of primary supply air before reheating or recooling takes place.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.3 [ME132]^{1}	Systems that have 1 warm duct and 1 cool air duct use terminal devices configured to reduce the flow from one duct to a minimum before mixing of air from the other duct takes place.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.4 [ME133]^{1}	Individual dual-duct or mixing heating and cooling systems with a single fan and with total capacities > 90,000 Btuh not equipped with air economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.5 [ME134]^{1}	Multiple zone HVAC systems have supply air temperature reset controls based on building loads or outside temperatures.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.7 [ME136]^{1}	Parallel-flow fan-powered VAV air terminals have automatic controls configured to 1) turn off the terminal fan except when space heating is required or where required for ventilation, 2) turn on the terminal fan as the first stage of heating before the heating coil is activated, and 3) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or, reverse the terminal damper logic and provide heating from the central air handler by primary air.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.8 [ME137]^{1}	Systems with DDC of individual zones reporting to the central control panel configured to reset the static pressure setpoint based on zone requiring the most pressure. The DDC is capable of monitoring zone damper positions or have an alternative method of indicating the need for static pressure. See section for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.6.9 [ME138]^{1}	Static pressure sensors used to control VAV fans located such that the controller setpoint is <= 1.2 inches w.c.. Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor located on each major branch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.1.4 [ME63]^{1}	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.6.6 [ME135]^{1}	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.3.3 [ME35]^{1}	Hot gas bypass limited to: <=240 kBtuh – 50% >240 kBtuh – 25%	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.2.1 [ME53]^{1}	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.11.3.1, C403.11.3.2 [ME123]^{1}	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.11.3.1 and refrigeration compressor systems that comply with C403.11.3.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26]^{1}	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8 [EL27]^{1}	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9.1, C405.9.2 [EL28]^{1}	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.10 [EL29]^{1}	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.1.1 [EL30]^{1}	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.11, C405.11.1 [EL31]^{1}	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8]^{1}	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.3.1 [FI27]^{1}	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.1 [FI47]^{1}	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.1.2 [FI38]^{1}	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.1.3 [FI20]^{1}	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.2 [FI39]^{1}	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.2.1, C403.4.2.2 [FI40]^{1}	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.2.3 [FI41]^{1}	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C404.3 [FI11]^{1}	Heat traps installed on supply and discharge piping of non-circulating systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.1.1 [FI57]^{1}	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.1 [FI28]^{1}	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.3.1 [FI31]^{1}	HVAC equipment, systems and system-to-system relationships have been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.3.2 [FI10]^{1}	HVAC and service water heating control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.3.3 [FI32]^{1}	Economizers have been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.4 [FI29]^{1}	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5 [FI7]^{1}	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.1 [FI43]^{1}	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.2 [FI30]^{1}	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

MECHANICAL COMPLIANCE CERTIFICATE

SCALE: 1/2" = 1'-0"

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:05 PM

DLRGROUP | bowie gridley
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

MECHANICAL COMPLIANCE CERTIFICATE

EN0.1

COM*check* Software Version COMcheckWeb

Envelope Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	Crandall ISD Performing Arts Center
Location:	Crandall, Texas
Climate Zone:	3a
Project Type:	Addition
Vertical Glazing / Wall Area:	9%

Construction Site:
13385 Fm 3039
Crandall, Texas 75114

Owner/Agent:
Scott Stewart
Crandall Independent School District
400 W. Lewis St
Crandall, Texas 75411
972-427-6024
sstewart@crandall-isd.net

Designer/Contractor:
Charles Brandt
DLR Group
2500 Pacific Avenue, Suite 1600
Dallas, Texas 75226
214-747-2511
cbrant@dlrgroup.com

Building Area	Floor Area
1-Performing Arts Theater : Nonresidential	30550

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor$_{tu}$
Roof: Insulation Entirely Above Deck, 3-Year-Aged Solar Reflectance Index = 64.00, Thermal Emittance = 0.90 (d), [Bldg. Use 1 - Performing Arts Theater]	58505	---	25.0	0.039	0.039
Floor: Unheated Slab-On-Grade, [Bldg. Use 1 - Performing Arts Theater] (c)	1367	---	---	0.730	0.730
NORTH					
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Performing Arts Theater]	5402	19.0	6.5	0.064	0.064
EAST					
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Performing Arts Theater]	8921	19.0	6.5	0.064	0.064
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Performing Arts Theater]	252	---	---	0.313	0.370
Door: Glass (over 50% glazing): Metal Frame, Entrance Door, Perf. Specs.: Product ID KB282.02-116-45, SHGC 0.25, [Bldg. Use 1 - Performing Arts Theater] (b)	120	---	---	0.570	0.680
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID G1908.02-116-45-RO, SHGC 0.25, [Bldg. Use 1 - Performing Arts Theater] (b)	1032	---	---	0.450	0.420
SOUTH					
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Performing Arts Theater]	6536	19.0	6.5	0.064	0.064
Door: Insulated Metal, Garage door 14% glazing, [Bldg. Use 1 - Performing Arts Theater]	258	---	---	0.222	0.310
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Performing Arts Theater]	380	---	---	0.313	0.370
Door: Glass (over 50% glazing): Metal Frame, Entrance Door,	126	---	---	0.570	0.680

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor$_{tu}$
Perf. Specs.: Product ID KB282.02-116-45, SHGC 0.25, [Bldg. Use 1 - Performing Arts Theater] (b)					
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID G1908.02-116-45-RO, SHGC 0.25, [Bldg. Use 1 - Performing Arts Theater] (b)	1550	---	---	0.450	0.420
WEST					
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Performing Arts Theater]	10424	19.0	6.5	0.064	0.064
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID G1908.02-116-45-RO, SHGC 0.25, [Bldg. Use 1 - Performing Arts Theater] (b)	75	---	---	0.450	0.420
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Performing Arts Theater]	237	---	---	0.313	0.370

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.
(d) High albedo roof requirement options: 1) 3-year aged solar reflectance index >= 55.0 thermal emittance >= 0.75, 2) 3-year aged solar reflectance index >= 64.0, 3) Initial year aged solar reflectance >= 0.70 thermal emittance >= 0.75, 4) Initial year aged solar reflectance index >= 82.0.

Project Notes

Envelope PASSES: Design 0.3% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

A new performing arts center at the Crandall ISD High School, including a new 800 seat auditorium addition and supporting theater arts spaces. Additionally, the project includes the renovation of existing spaces for a new Band and Percussion classrooms.

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.4.1 [PR10][1]	The vertical fenestration area <= 30 percent of the gross above-grade wall area.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.4.1 [PR11][1]	The skylight area <= 3 percent of the gross roof area.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.4.2 [PR14][1]	In enclosed spaces > 2,500 ft2 directly under a roof with ceiling heights >15 ft. and used as an office, lobby, atrium, concourse, corridor, storage, gymnasium/exercise center, convention center, automotive service, manufacturing, non-refrigerated warehouse, retail store, distribution/sorting area, transportation, or workshop, the following requirements apply: (a) the daylight zone under skylights is >= half the floor area; (b) the skylight area to daylight zone is >= 3 percent with a skylight VT >= 0.40; or a minimum skylight effective aperture >= 1 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C303.2 [FO4][1]	Slab edge insulation installed per manufacturer's instructions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C303.2.1 [FO6][1]	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C105 [FO3][1]	Installed slab-on-grade insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.2.4 [FO7][1]	Slab edge insulation depth/length. Slab insulation extending away from building is covered by pavement or >= 10 inches of soil.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Complies?	Comments/Assumptions
C303.1.3 [FR12][1]	Fenestration products rated in accordance with NFRC certified and as to performance labels or certificates provided.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.4.3 [FR10][1]	Vertical fenestration SHGC value.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.4.3, C402.4.3.4 [FR8][1]	Installed vertical fenestration U-factor and SHGC consistent with label specifications and as reported in plans and COMcheck reports.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.4.5 [FR14][1]	U-factor of opaque swinging and nonswinging doors associated with the building thermal envelope meets requirements.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.5.1 [FR16][1]	The building envelope contains a continuous air barrier that is sealed in an approved manner and either constructed or tested in an approved manner. Air barrier penetrations are sealed in an approved manner.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.5.4 [FR18][1]	Factory-built fenestration and doors are labeled as meeting air leakage requirements.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26][1]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8 [EL27][1]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9.1, C405.9.2 [EL28][1]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.10 [EL29][1]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.1.1 [EL30][1]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.11, C405.11.1 [EL31][1]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Complies?	Comments/Assumptions
C303.1 [IN3][1]	Roof insulation installed per manufacturer's instructions and is labeled with R-value or insulation certificate providing R-value and other relevant data. Blown or poured loose-fill insulation is installed only where the roof slope is <=3 in 12.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.2.1 [IN20][1]	Roof assembly meets minimal thermal resistance installed between roof framing or in a continuous fashion on the roof assembly as stipulated in Table C402.1.3. Requirements for above deck insulation, minimum thickness, suspended ceilings, staggered joints and skylight curbs will be met.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C303.2 [IN7][1]	Above-grade wall insulation installed per manufacturer's instructions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C105 [IN6][1]	Installed above-grade wall insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.2.3 [IN8][1]	Installed floor insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.2.6 [IN18][1]	Radiant panels and associated components, designed for heat transfer from the panel surfaces to the occupants or indoor space are insulated with a minimum of R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.3 [IN5][1]	High-albedo roofs satisfy one of the following: 3-year-aged solar reflectance >= 0.55 and thermal emittance >= 0.75 or 3-year-aged solar reflectance index >= 64.0.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C105 [IN2][1]	Installed roof insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. For some ceiling systems, verification may need to occur during Framing Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
C402.5.1.1 [IN1][1]	All sources of air leakage in the building thermal envelope are sealed, caulked, gasketed, weather stripped or wrapped with moisture vapor-permeable wrapping material to minimize air leakage.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C401.3 [FO58][1]	A thermal envelope certificate will be supplied and completed by an approved third party.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.5.10 [FI26][1]	Recessed luminaires in thermal envelope to limit infiltration and be IC rated and labeled. Seal between interior finish and luminaire housing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.5.11 [FI59][1]	Operable openings > 40 ft2 will be interlocked with heating and cooling systems to setback setpoint temperatures within 10 minutes of opening.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C402.5.8 [FI37][1]	Weatherseals installed on all loading dock cargo door openings and provide direct contact along the top and sides of vehicles parked in the doorway.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

ENVELOPE COMPLIANCE CERTIFICATE

SCALE: 12" = 1'-0"

DLRGROUP | bowie gridley
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ENVELOPE COMPLIANCE CERTIFICATE

EN0.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:06 PM

CONSTRUCTION/RENOVATION PLANS FOR

CRANDALL ISD HIGH SCHOOL PAC ADDITION

SITE DEVELOPMENT
CITY OF CRANDALL
KAUFMAN COUNTY, TEXAS

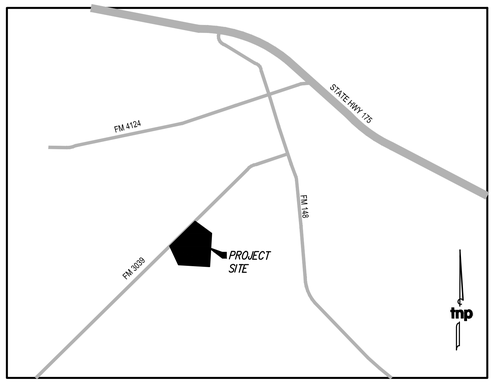
OWNER/APPLICANT:
CRANDALL I.S.D.
400 W LEWIS ST
CRANDALL, TEXAS 75114
PHONE: 972.427.6000
CONTACT: MS. CHRISTY STARRETT

ARCHITECT:
DLR ARCHITECTS
2500 PACIFIC AVE., SUITE 1600
DALLAS, TX 75236
214.747.2511
CONTACT: CHARLES BRANDT

ENGINEER:
TEAGUE NALL & PERKINS, INC.
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013
214.396.9564
CONTACT: JOEL RICHEY, P.E.

SURVEYOR:
TEAGUE NALL & PERKINS, INC.
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013
214.461.9918
CONTACT: BRIAN J. MADDOX II, R.P.L.S.

LANDSCAPE ARCHITECT:
TEAGUE NALL & PERKINS, INC.
5237 N RIVERSIDE, SUITE 100
FORT WORTH, TEXAS 76137
817.336.5773
CONTACT: WILLIAM H. SMITH, R.L.A.



LOCATION MAP
NTS

Crandall
Independent
School
District

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED
PROFESSIONAL ENGINEER
01/25/2024

no.	revision	by	date

JULY 2024

Sheet List Table

SHEET NUMBER	SHEET TITLE
C1.00	COVER SHEET
C1.01	EXISTING TOPOGRAPHIC PLAN
C1.02	DEMOLITION PLAN
C1.03	SITE PLAN
C1.04	DIMENSION CONTROL PLAN
C1.05	DIMENSION CONTROL PLAN INSET
C1.06	GRADING PLAN
C1.07	GRADING PLAN LOADING DOCK INSET
C1.08	STORM DRAIN PLAN
C1.09	STORM DRAIN PROFILES
C1.10	SANITARY SEWER PLAN
C1.11	PAVING PLAN
C1.12	EROSION CONTROL PLAN
C1.13	EROSION CONTROL DETAILS
C1.14	SITE DETAILS
C1.15	PAVING DETAILS
C1.16	STORM DRAIN DETAILS
C1.17	SANITARY SEWER DETAILS
L1.01	LANDSCAPE PLAN
L1.02	LANDSCAPE NOTES
L1.03	LANDSCAPE DETAILS (1 of 2)
L1.04	LANDSCAPE DETAILS (2 of 2)
IR1.01	IRRIGATION PLAN
IR1.02	TREE IRRIGATION PLAN
IR1.03	IRRIGATION SCHEDULE & NOTES
IR1.04	IRRIGATION DETAILS

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

tnp Project DLR23073

CITY OF CRANDALL, TX

CRANDALL ISD - HIGH SCHOOL - PAC ADDITION

DLRGROUP
© DLR Group

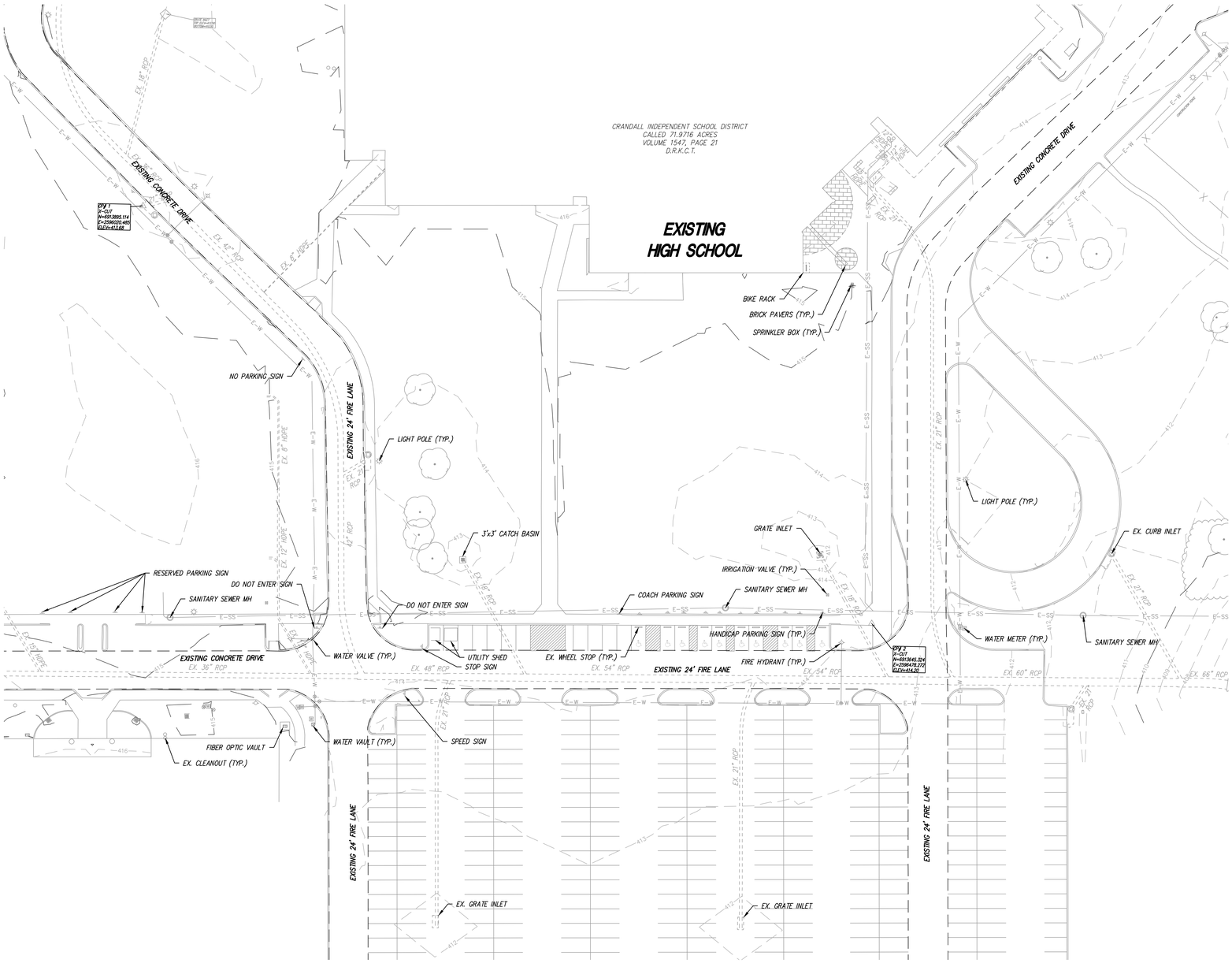
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
COVER SHEET
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

COVER SHEET

C1.00



SURFACE TO GRID NOTES

BEARINGS ARE REFERENCED TO GRID NORTH OF THE TEXAS COORDINATE SYSTEM OF 1983 (NORTH CENTRAL ZONE 4202; NAD83(2011) EPOCH 2010) AS DERIVED LOCALLY FROM ALLTERRA CENTRAL RTKNET CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS) VIA REAL TIME KINEMATIC (RTK) SURVEY METHODS. ALL DISTANCES SHOWN ARE SURFACE DISTANCES USING A COMBINED SCALE FACTOR OF 1.000114077.

POINTS IN FILE ARE IN GROUND SURFACE COORDINATES

Location: Crandall High School, Crandall Texas

Combined Scale Factor Site specific:

Ground to Grid	0.999885936
Grid to Ground	1.000114077
Scaled from:	0,0

tnp

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
1	691,895.114	2596020.486	CP SX ON INLET
2	691,645.324	2596478.272	CP SX ON SW

LEGEND

- TNP CONTROL
- SANITARY SEWER M.H.
- FIBER OPTIC VAULT
- LIGHT POLE
- WATER VALVE
- WATER METER
- SIGN
- TREE
- EDGE OF TREE CANOPY

THIS TOPOGRAPHIC SURVEY WAS PREPARED BY TEAGUE, NALL AND PERKINS JANUARY 11, 2024

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

THIS SHEET IS FOR INFORMATION ONLY

City of Crandall, Texas

Crandall Independent School District

High School - PAC Addition

EXISTING TOPOGRAPHIC PLAN

tnp project DLR23073

sheet C1.01

DLRGROUP
© DLR Group

tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

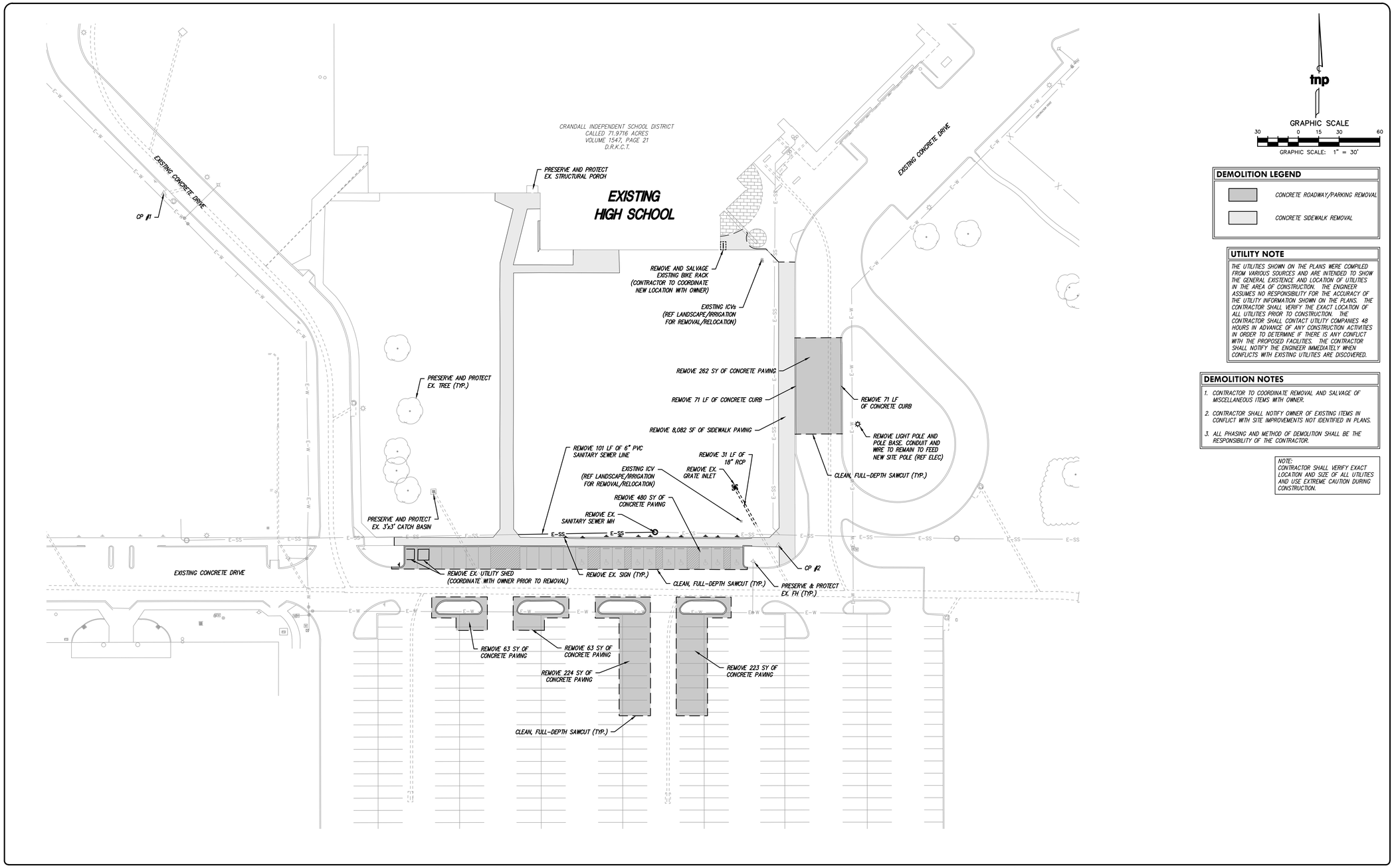
ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

EXISTING TOPOGRAPHIC PLAN

C1.01



tnp

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

DEMOLITION LEGEND

- CONCRETE ROADWAY/PARKING REMOVAL
- CONCRETE SIDEWALK REMOVAL

UTILITY NOTE

THE UTILITIES SHOWN ON THE PLANS WERE COMPILED FROM VARIOUS SOURCES AND ARE INTENDED TO SHOW THE GENERAL EXISTENCE AND LOCATION OF UTILITIES IN THE AREA OF CONSTRUCTION. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE UTILITY INFORMATION SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT UTILITY COMPANIES 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES IN ORDER TO DETERMINE IF THERE IS ANY CONFLICT WITH THE PROPOSED FACILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS WITH EXISTING UTILITIES ARE DISCOVERED.

DEMOLITION NOTES

1. CONTRACTOR TO COORDINATE REMOVAL AND SALVAGE OF MISCELLANEOUS ITEMS WITH OWNER.
2. CONTRACTOR SHALL NOTIFY OWNER OF EXISTING ITEMS IN CONFLICT WITH SITE IMPROVEMENTS NOT IDENTIFIED IN PLANS.
3. ALL PHASING AND METHOD OF DEMOLITION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

NOTE:
CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE OF ALL UTILITIES AND USE EXTREME CAUTION DURING CONSTRUCTION.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

tnp

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas

Crandall Independent School District

High School - PAC Addition

DEMOLITION PLAN

tnp project DLR23073

sheet C1.02

DLRGROUP
© DLR Group

tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

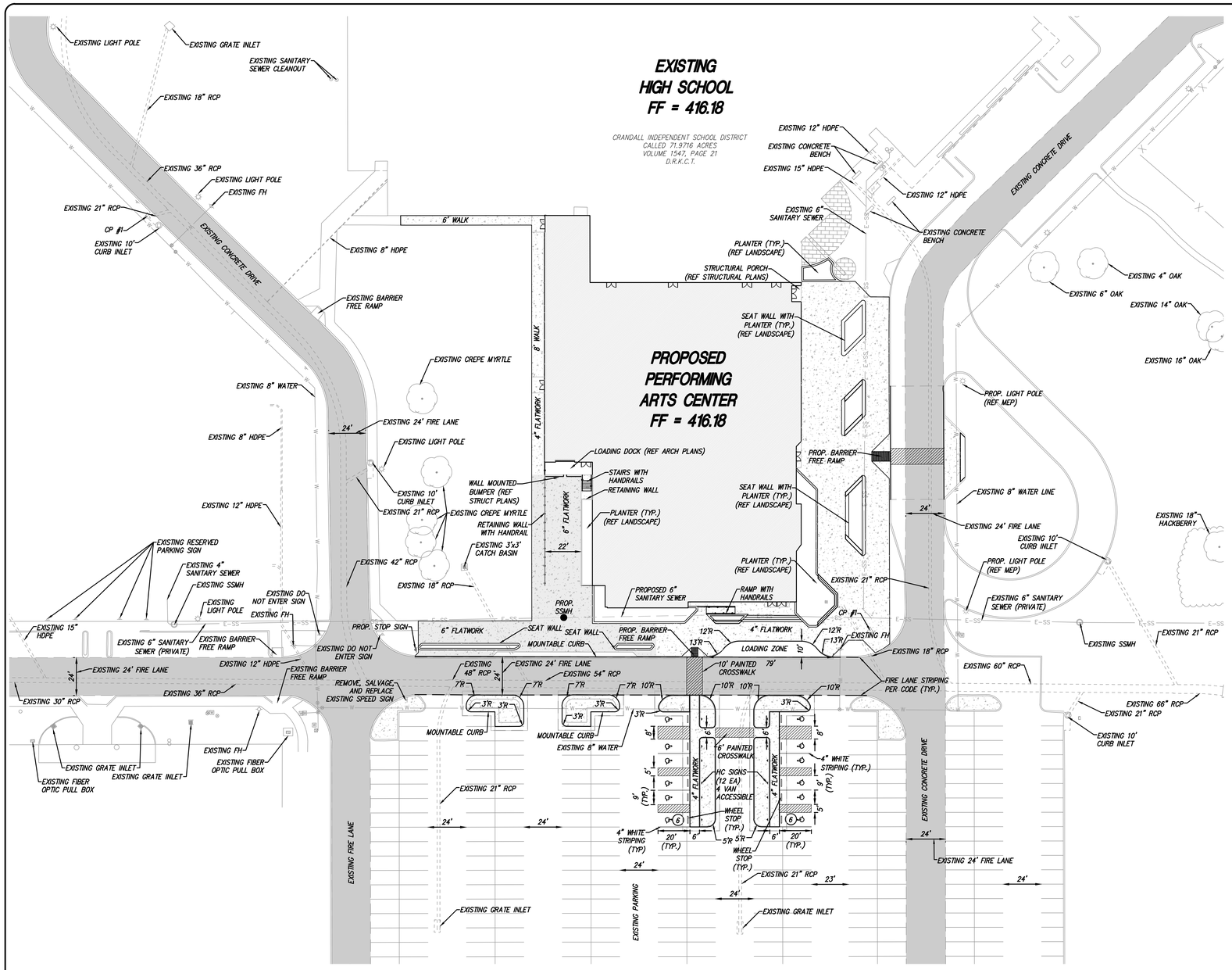
ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

DEMOLITION PLAN

C1.02



LEGEND

- 4" CONCRETE FLATWORK WITH SANDBLASTED CONCRETE BANDS (REF LANDSCAPE PLANS)
- EXISTING CONCRETE FIRE LANE
- 6" CONCRETE FLATWORK
- EXISTING WATER METER
- EXISTING WATER VALVE

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

SITE DATA SUMMARY

EXISTING ZONING:	PDD
PROPOSED USE:	HIGH SCHOOL
GROSS LOT AREA:	106.995 ACRES (4,660,702 SF)
PROPOSED BUILDING AREA:	30,310 SF
EXISTING BUILDING AREA:	165,394 SF
TOTAL BUILDING AREA:	195,704 SF
HEIGHT:	<=80'-0" (2 STORIES)
LOT COVERAGE RATIO:	12.36%
FLOOR AREA RATIO:	17.24%
REQUIRED PARKING: (1:4 SEATS FOR ASSEMBLY AREAS) (280 SEATS)	70 SPACES
REQUIRED HANDICAP SPACES:	3 SPACES (PER LOT)
TOTAL PROVIDED PARKING:	484 SPACES
STANDARD SPACES: (9'x20')	462 SPACES
HANDICAP SPACES:	12 SPACES

TREE SURVEY NOTES

PRESERVE AND PROTECT:

5 – CREPE MYRTLES
1 – 18" HACKBERRY
1 – 16" OAK
1 – 14" OAK
1 – 6" OAK
1 – 4" OAK

ENGINEER:

TEAGUE NALL & PERKINS
CONTACT: JOEL RICHEY, P.E.
214.396.9564 PHONE
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013

SURVEYOR:

TEAGUE NALL & PERKINS
CONTACT: BRIAN J. MADDOX II, R.P.L.S.
214.461.9918 PHONE
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013

ARCHITECT:

DLR ARCHITECTS
CONTACT: CHARLES BRANDT
214.747.2511 PHONE
2500 PACIFIC AVE., SUITE 1600
DALLAS, TEXAS 75236

OWNER:

CRANDALL ISD
CONTACT: MS. CHRISTY STARRETT
972.427.6000 PHONE
400 W LEWIS ST
CRANDALL, TEXAS 75114

LANDSCAPE ARCHITECT:

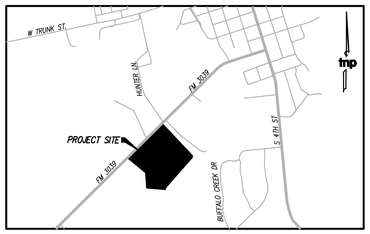
TEAGUE NALL & PERKINS
CONTACT: WILLIAM H. SMITH, R.L.A.
817.336.5773 PHONE
5237 N RIVERSIDE DRIVE, SUITE 100
FORT WORTH, TEXAS 76137

SITE PLAN FOR CRANDALL HIGH SCHOOL PERFORMING ARTS CENTER

BEING 106.995 ACRES OF LAND
SITUATED IN THE J. BOWLIN EXEMPT SURVEY,
ABSTRACT NO. 14
CITY OF CRANDALL, KAUFMAN COUNTY, TEXAS
PREPARED: APRIL 10,2024

NOTES

1. ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) PANEL 48257C0280E DATED JANUARY 12, 2023 BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), THE SUBJECT TRACT OF LAND SHOWN HEREON LIES WITHIN ZONE "X" UNSHADED, DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN".



LOCATION MAP
NTS

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
SITE PLAN

tnp project DLR23073
sheet C1.03

DLRGROUP
© DLR Group

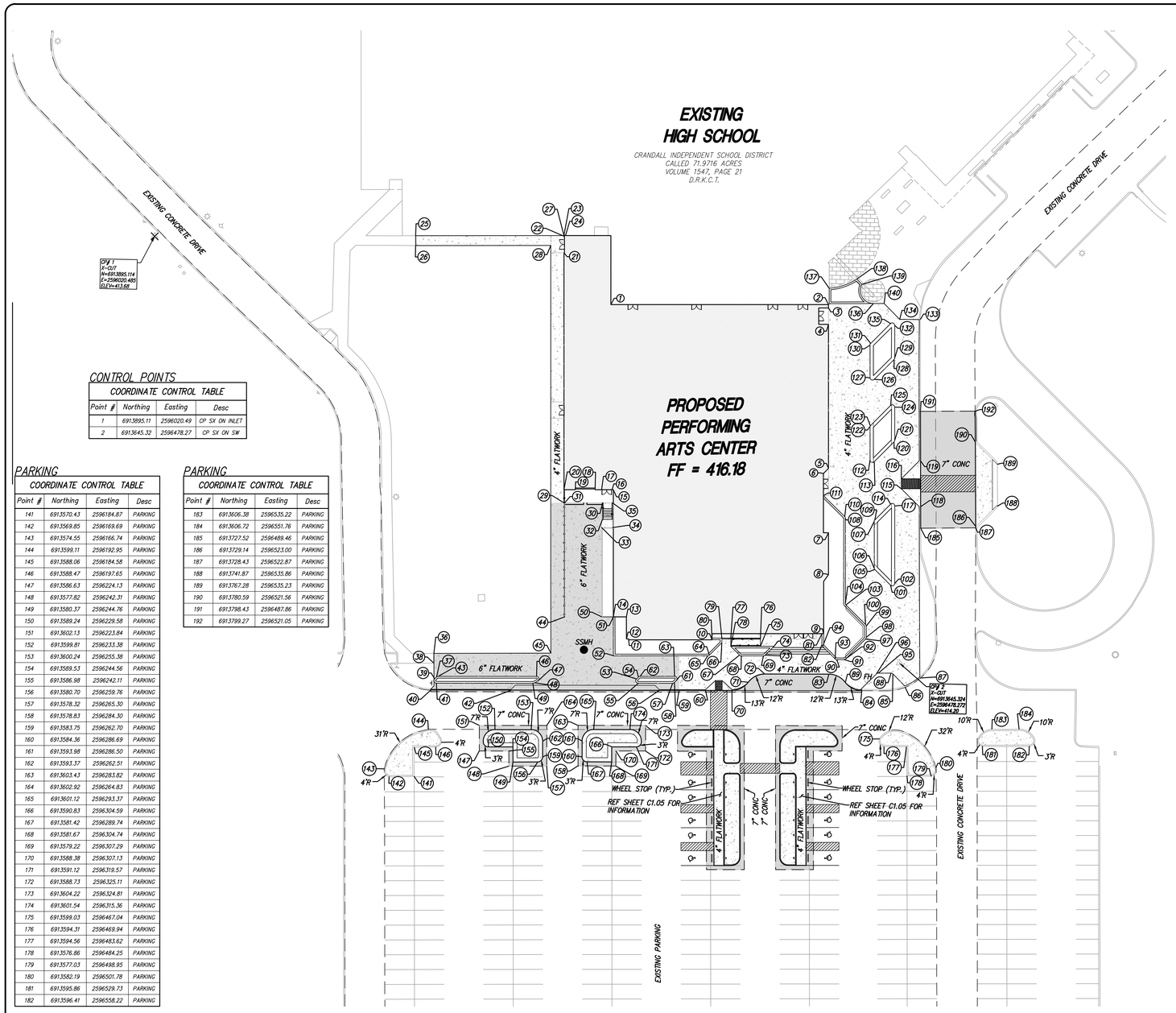
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

SITE PLAN

C1.03



NOTES

1. THIS PLAN SHALL BE USED TO CONTROL THE GEOMETRICS OF THE SITE LAYOUT. DIMENSIONAL TIES AND COORDINATES ARE PROVIDED TO ADDIST IN THE LAYOUT OF THE SITE IMPROVEMENTS. THE CONTRACTOR SHALL VERIFY THE COORDINATE TIES WITH THE DIMENSIONS PROVIDED ON THE PLANS.
2. AL DIMENSIONS AND COORDINATES ARE TO THE FACE OF CURB AND BUILDING.
3. ALL BUILDING TIES AND DIMENSIONS SHALL BE COORDINATED AND VERIFIED WITH THE ARCHITECT'S PLANS. ALL DIMENSIONS TO BUILDINGS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
4. ALL CURB RADII ARE 5' UNLESS OTHERWISE NOTED.

tnp

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

CONTROL POINTS

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
1	6913895.11	2596020.49	CP SX ON INLET
2	6913645.32	2596478.27	CP SX ON SW

PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
141	6913570.43	2596184.87	PARKING
142	6913569.85	2596169.69	PARKING
143	6913574.55	2596166.74	PARKING
144	6913599.11	2596192.95	PARKING
145	6913588.06	2596184.58	PARKING
146	6913588.47	2596197.65	PARKING
147	6913586.63	2596224.13	PARKING
148	6913577.82	2596242.31	PARKING
149	6913580.37	2596244.76	PARKING
150	6913589.24	2596229.58	PARKING
151	6913602.13	2596223.84	PARKING
152	6913599.81	2596233.38	PARKING
153	6913600.24	2596255.38	PARKING
154	6913589.53	2596244.56	PARKING
155	6913586.98	2596242.11	PARKING
156	6913580.70	2596259.78	PARKING
157	6913578.32	2596265.30	PARKING
158	6913578.83	2596284.30	PARKING
159	6913583.75	2596262.70	PARKING
160	6913584.36	2596286.69	PARKING
161	6913593.98	2596286.50	PARKING
162	6913593.37	2596262.51	PARKING
163	6913603.43	2596283.82	PARKING
164	6913602.92	2596264.83	PARKING
165	6913601.12	2596293.37	PARKING
166	6913590.83	2596304.59	PARKING
167	6913581.42	2596289.74	PARKING
168	6913581.67	2596304.74	PARKING
169	6913579.22	2596307.29	PARKING
170	6913588.38	2596307.13	PARKING
171	6913591.12	2596319.57	PARKING
172	6913588.73	2596325.11	PARKING
173	6913604.22	2596324.81	PARKING
174	6913601.54	2596315.36	PARKING
175	6913598.03	2596467.04	PARKING
176	6913594.31	2596469.94	PARKING
177	6913594.56	2596483.62	PARKING
178	6913576.86	2596484.25	PARKING
179	6913577.03	2596498.95	PARKING
180	6913582.19	2596501.78	PARKING
181	6913595.86	2596529.73	PARKING
182	6913596.41	2596558.22	PARKING

PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
183	6913606.38	2596535.22	PARKING
184	6913606.72	2596551.76	PARKING
185	6913727.52	2596489.46	PARKING
186	6913729.14	2596523.00	PARKING
187	6913728.43	2596522.87	PARKING
188	6913741.87	2596535.86	PARKING
189	6913767.28	2596535.23	PARKING
190	6913780.59	2596521.56	PARKING
191	6913798.43	2596487.86	PARKING
192	6913799.27	2596521.05	PARKING

SIDEWALK

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
25	6913898.78	2596178.98	SIDEWALK
26	6913892.79	2596179.10	SIDEWALK
27	6913900.69	2596269.10	SIDEWALK
28	6913894.52	2596261.23	SIDEWALK
29	6913738.39	2596272.47	SIDEWALK
30	6913738.88	2596295.89	SIDEWALK
31	6913738.40	2596272.97	SIDEWALK
32	6913728.88	2596296.10	SIDEWALK
33	6913723.87	2596295.70	SIDEWALK
34	6913724.01	2596302.27	SIDEWALK
35	6913739.00	2596301.96	SIDEWALK
36	6913645.33	2596195.35	SIDEWALK
37	6913631.01	2596197.25	SIDEWALK
38	6913639.37	2596185.49	SIDEWALK
39	6913629.84	2596196.13	SIDEWALK
40	6913622.97	2596193.88	SIDEWALK
41	6913627.30	2596197.24	SIDEWALK
42	6913623.93	2596242.71	SIDEWALK
43	6913631.41	2596198.30	SIDEWALK
44	6913669.19	2596274.40	SIDEWALK
45	6913646.94	2596266.43	SIDEWALK
46	6913632.65	2596258.00	SIDEWALK
47	6913629.98	2596258.94	SIDEWALK
48	6913628.78	2596256.97	SIDEWALK
49	6913628.46	2596255.85	SIDEWALK
50	6913669.66	2596296.76	SIDEWALK
51	6913669.80	2596303.89	SIDEWALK
52	6913646.12	2596304.40	SIDEWALK
53	6913632.35	2596318.79	SIDEWALK
54	6913633.52	2596319.91	SIDEWALK
55	6913629.82	2596319.90	SIDEWALK
56	6913625.74	2596332.69	SIDEWALK
57	6913630.23	2596340.74	SIDEWALK
58	6913630.69	2596341.79	SIDEWALK
59	6913625.96	2596344.75	SIDEWALK
60	6913626.27	2596360.85	SIDEWALK
61	6913631.86	2596342.92	SIDEWALK
62	6913633.98	2596320.96	SIDEWALK
63	6913634.40	2596341.84	SIDEWALK
64	6913647.80	2596362.74	SIDEWALK
65	6913647.34	2596361.69	SIDEWALK
66	6913655.49	2596370.13	SIDEWALK
67	6913648.15	2596381.05	SIDEWALK
68	6913647.73	2596382.12	SIDEWALK
69	6913648.01	2596395.57	SIDEWALK
70	6913626.58	2596376.84	SIDEWALK
71	6913631.77	2596386.75	SIDEWALK
72	6913636.97	2596396.65	SIDEWALK
73	6913648.47	2596396.63	SIDEWALK
74	6913653.89	2596401.84	SIDEWALK
75	6913653.73	2596393.61	SIDEWALK
76	6913658.69	2596393.51	SIDEWALK
77	6913658.32	2596375.52	SIDEWALK
78	6913653.32	2596375.62	SIDEWALK
79	6913658.26	2596370.08	SIDEWALK
80	6913658.14	2596364.10	SIDEWALK
81	6913662.25	2596430.83	SIDEWALK
82	6913655.52	2596430.97	SIDEWALK
83	6913637.71	2596435.53	SIDEWALK
84	6913628.10	2596455.72	SIDEWALK
85	6913638.65	2596474.41	SIDEWALK
86	6913630.69	2596482.10	SIDEWALK
87	6913636.55	2596491.23	SIDEWALK
88	6913639.08	2596473.33	SIDEWALK
89	6913632.91	2596445.62	SIDEWALK

SIDEWALK

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
90	6913646.65	2596440.19	SIDEWALK
91	6913646.73	2596444.51	SIDEWALK
92	6913647.19	2596445.56	SIDEWALK
93	6913647.07	2596439.12	SIDEWALK
94	6913654.47	2596431.43	SIDEWALK
95	6913638.92	2596465.50	SIDEWALK
96	6913638.47	2596464.46	SIDEWALK
97	6913659.44	2596457.33	SIDEWALK
98	6913660.49	2596457.75	SIDEWALK
99	6913667.28	2596457.61	SIDEWALK
100	6913668.33	2596457.15	SIDEWALK
101	6913692.55	2596471.85	SIDEWALK
102	6913693.66	2596474.38	SIDEWALK
103	6913679.94	2596445.05	SIDEWALK
104	6913680.93	2596444.65	SIDEWALK
105	6913701.90	2596462.12	SIDEWALK
106	6913702.68	2596461.74	SIDEWALK
107	6913730.93	2596461.15	SIDEWALK
108	6913732.51	2596443.63	SIDEWALK
109	6913731.90	2596461.50	SIDEWALK
110	6913733.56	2596443.17	SIDEWALK
111	6913746.07	2596429.98	SIDEWALK
112	6913768.32	2596457.85	SIDEWALK
113	6913767.31	2596460.43	SIDEWALK
114	6913741.66	2596470.87	SIDEWALK
115	6913751.21	2596477.18	SIDEWALK
116	6913757.22	2596477.04	SIDEWALK
117	6913740.65	2596473.46	SIDEWALK
118	6913740.54	2596489.16	SIDEWALK
119	6913768.46	2596488.53	SIDEWALK
120	6913779.54	2596472.19	SIDEWALK
121	6913780.61	2596472.61	SIDEWALK
122	6913788.73	2596457.45	SIDEWALK
123	6913789.11	2596457.62	SIDEWALK
124	6913800.68	2596472.21	SIDEWALK
125	6913801.70	2596469.69	SIDEWALK
126	6913817.32	2596459.39	SIDEWALK
127	6913818.02	2596456.84	SIDEWALK
128	6913829.56	2596471.15	SIDEWALK
129	6913830.63	2596471.57	SIDEWALK
130	6913838.04	2596456.42	SIDEWALK
131	6913839.11	2596456.83	SIDEWALK
132	6913850.33	2596471.18	SIDEWALK
133	6913854.23	2596486.64	SIDEWALK
134	6913854.06	2596474.05	SIDEWALK
135	6913851.34	2596468.59	SIDEWALK
136	6913863.35	2596457.96	SIDEWALK
137	6913872.07	2596430.86	SIDEWALK
138	6913878.01	2596447.52	SIDEWALK
139	6913874.83	2596450.71	SIDEWALK
140	6913863.50	2596464.46	SIDEWALK

BUILDING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
1	6913859.39	2596298.46	BLDG
2	6913862.13	2596430.67	BLDG
3	6913860.13	2596430.71	BLDG
4	6913850.13	2596430.91	BLDG
5	6913762.65	2596432.73	BLDG
6	6913759.50	2596429.70	BLDG
7	6913723.53	2596433.54	BLDG
8	6913698.13	2596434.07	BLDG
9	6913662.27	2596431.83	BLDG
10	6913657.14	2596364.12	BLDG
11	6913656.03	2596313.50	BLDG
12	6913656.52	2596312.15	BLDG
13	6913669.97	2596311.85	BLDG
14	6913669.80	2596303.89	BLDG
15	6913747.01	2596302.29	BLDG
16	6913746.99	2596301.50	BLDG
17	6913746.86	2596295.17	BLDG
18	6913746.78	2596291.22	BLDG
19	6913746.53	2596279.23	BLDG
20	6913746.39	2596272.30	BLDG
21	6913890.30	2596269.32	BLDG
22	6913900.30	2596269.11	BLDG
23	6913900.86	2596269.10	BLDG
24	6913900.88	2596270.08	BLDG

BENCHMARKS

BM #1:
[CP#50] 5/8" CAPPED IRON ROD SET WITH A CAP STAMPED "TNP" LOCATED ON AN ISLAND AT THE MAIN ENTRANCE APPROXIMATELY 210' SOUTH EAST OF THE CENTERLINE OF F.M. 3039 AND APPROXIMATELY 15' BEHIND THE MONUMENT SIGN
N = 6914317.207
E = 2596030.924
ELEV. 415.60

BM #2:
[CP#2] X-CUT SET ON THE CORNER OF A SIDEWALK LOCATED APPROXIMATELY 225' SOUTH OF THE SCHOOLS SOUTH FACE AND APPROXIMATELY 600' WEST OF THE TENNIS COURTS
N = 6913645.324
E = 2596478.272
ELEV. 414.20

no.	revision	by	date

Crandall Independent School District

scale: horiz 1"=30'; vert N/A
date: JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
DIMENSION CONTROL PLAN

tnp project: DLR23073
sheet: C1.04

DLRGROUP
© DLR Group

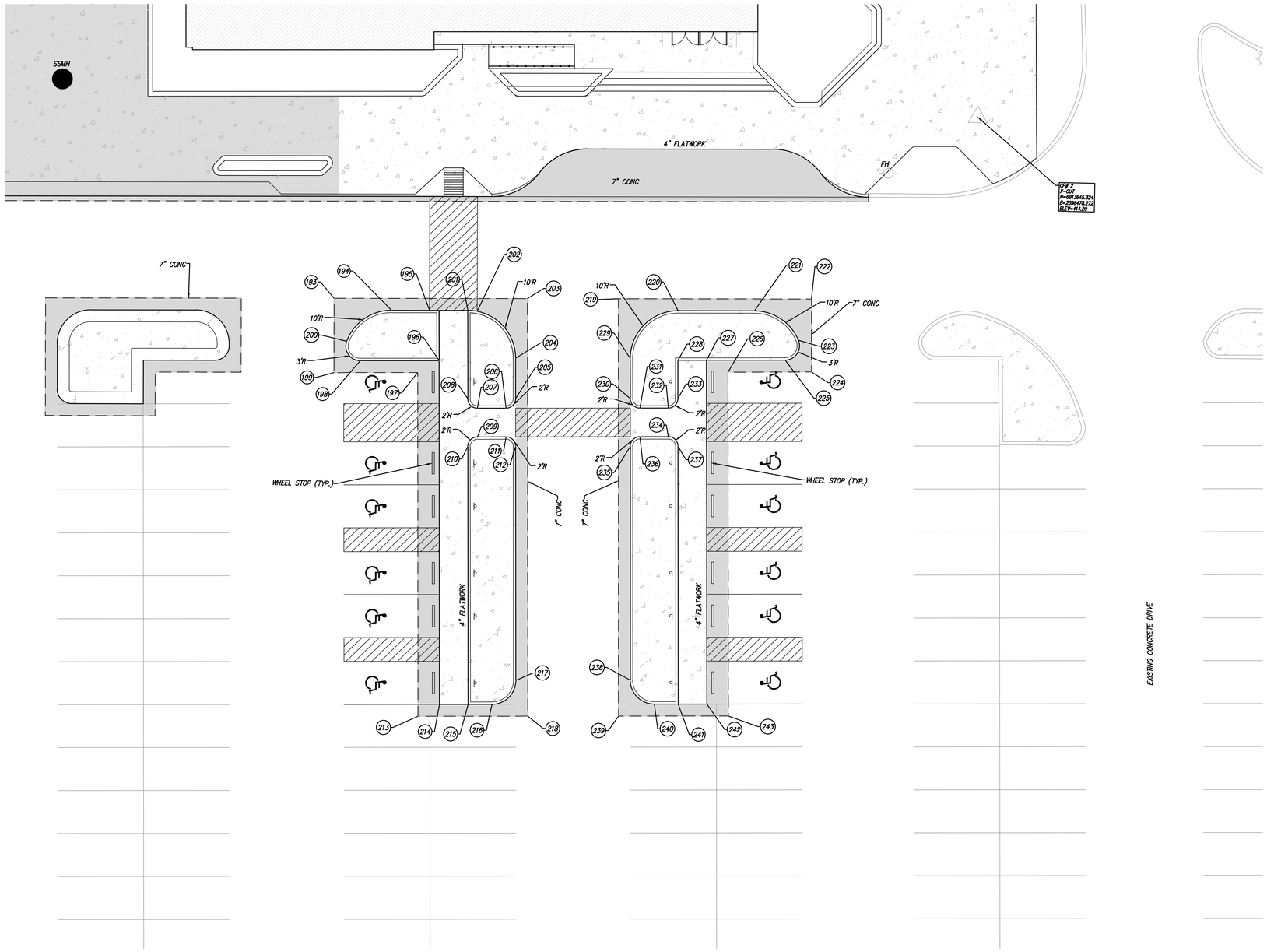
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230;
SURV 10011600, 10011601, 10194381
GBPE: PEF007431;
TBAE: BR 2673
www.tnpinc.com

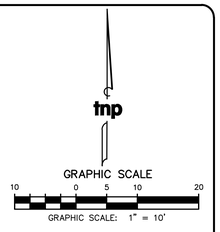
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

DIMENSION CONTROL PLAN

C1.04





PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
193	691,3604.60	2596,344.25	PARKING
194	691,3602.33	2596,356.36	PARKING
195	691,3602.49	2596,364.31	PARKING
196	691,3592.02	2596,366.53	PARKING
197	691,3589.42	2596,362.09	PARKING
198	691,3591.66	2596,350.01	PARKING
199	691,3589.04	2596,344.55	PARKING
200	691,3595.66	2596,347.12	PARKING
201	691,3602.64	2596,372.33	PARKING
202	691,3602.49	2596,374.27	PARKING
203	691,3605.38	2596,384.75	PARKING
204	691,3592.86	2596,382.52	PARKING
205	691,3584.37	2596,382.70	PARKING
206	691,3582.33	2596,380.75	PARKING
207	691,3582.20	2596,374.75	PARKING
208	691,3584.15	2596,372.71	PARKING
209	691,3576.20	2596,374.88	PARKING
210	691,3574.15	2596,372.92	PARKING
211	691,3576.33	2596,380.88	PARKING
212	691,3574.37	2596,382.92	PARKING
213	691,3517.44	2596,363.65	PARKING
214	691,3520.04	2596,368.10	PARKING
215	691,3520.17	2596,374.10	PARKING
216	691,3520.28	2596,379.10	PARKING
217	691,3525.38	2596,383.99	PARKING
218	691,3517.94	2596,386.65	PARKING
219	691,3605.75	2596,403.79	PARKING
220	691,3603.49	2596,416.36	PARKING
221	691,3603.79	2596,432.34	PARKING
222	691,3606.52	2596,444.25	PARKING
223	691,3597.83	2596,441.68	PARKING
224	691,3591.25	2596,444.54	PARKING
225	691,3593.62	2596,439.00	PARKING
226	691,3590.84	2596,427.07	PARKING
227	691,3593.27	2596,422.52	PARKING
228	691,3593.11	2596,416.52	PARKING
229	691,3593.28	2596,406.56	PARKING
230	691,3584.89	2596,406.74	PARKING
231	691,3582.94	2596,408.78	PARKING
232	691,3583.06	2596,414.74	PARKING
233	691,3585.11	2596,416.70	PARKING
234	691,3577.07	2596,414.87	PARKING
235	691,3574.89	2596,406.95	PARKING
236	691,3576.94	2596,408.90	PARKING
237	691,3575.11	2596,416.91	PARKING
238	691,3525.91	2596,407.98	PARKING
239	691,3518.35	2596,405.64	PARKING
240	691,3521.01	2596,413.09	PARKING
241	691,3521.12	2596,418.09	PARKING
242	691,3521.25	2596,424.09	PARKING
243	691,3518.85	2596,428.64	PARKING

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=10'
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
DIMENSION CONTROL PLAN INSET

tnp project DLR23073
sheet C1.05

DLRGROUP
© DLR Group

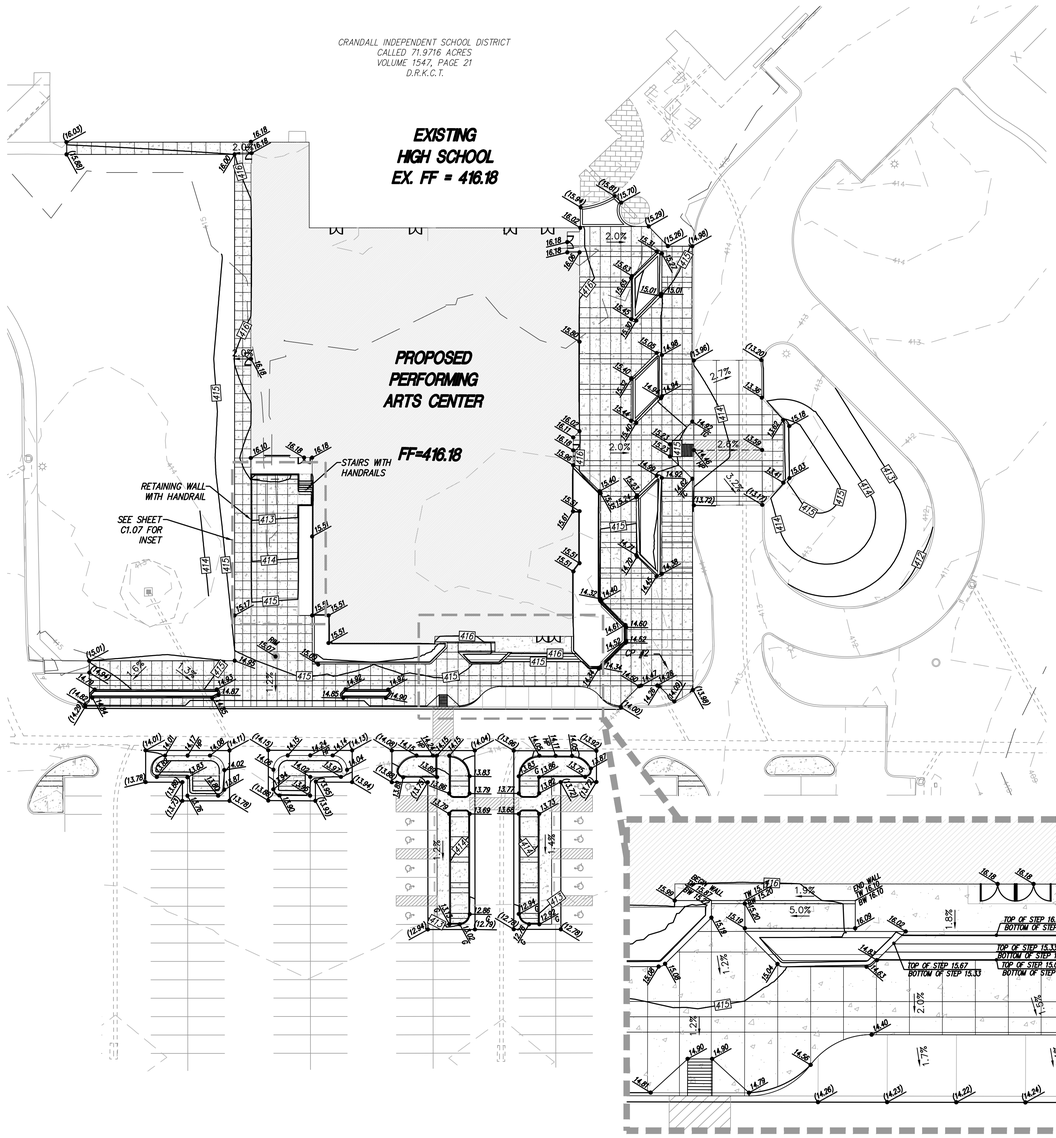
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

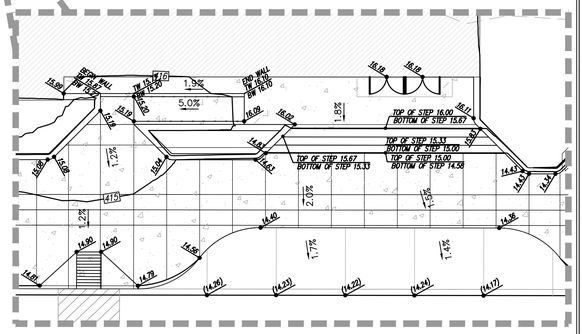
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

DIMENSION CONTROL PLAN INSET

C1.05





INSET SCALE: 1" =10"

LEGEND

(79.20)	EXISTING SPOT ELEVATION
79.20	PROPOSED SPOT ELEVATION
5%	PROPOSED PERCENT OF GRADE
555	PROPOSED CONTOUR
	GRADE BREAK/RIDGE LINE
	PROPOSED SWALE LINE
	PROPOSED DAYLIGHT LINE
5:1	PROPOSED SLOPE RATIO
633	EXISTING CONTOURS

tnp

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

NOTE:
MAXIMUM SLOPE IS 4:1.

NOTE:
CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE OF ALL UTILITIES AND USE EXTREME CAUTION DURING CONSTRUCTION.

GRADING CONSIDERATIONS:

1. TEXAS ACCESSIBILITY STANDARDS (TAS) REQUIRE ACCESSIBLE ROUTES SLOPE NO MORE THAN 5% IN THE DIRECTION OF TRAVEL WITH A MAXIMUM OF 2% CROSS-SLOPE. CHAPTER 18 OF THE INTERNATIONAL BUILDING CODE (IBC) REQUIRES PERVIOUS GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SLOPE AWAY FROM THE BUILDING AT 5% MINIMUM SLOPE AND IMPERVIOUS GROUND AT MINIMUM OF 2% GRADING AS SHOWN ON THIS PLAN IS PROVIDED TO MEET THESE REQUIREMENTS WHERE TECHNICALLY FEASIBLE.
2. FLATWORK ON SITE MAY BE SUBJECT TO POTENTIAL VERTICAL MOVEMENT AS DESCRIBED IN THE GEOTECHNICAL REPORT FOR THE PROJECT. MAINTENANCE MAY BE REQUIRED TO ADDRESS FLATWORK CHANGES DUE TO POTENTIAL VERTICAL MOVEMENT.
3. GRADING PLANS ARE SUBMITTED IN ACCORDANCE WITH INDUSTRY STANDARD OF CARE HOWEVER, DUE TO ABOVE THE ABOVE TAS RESTRICTIONS, MAY NOT COMPLY WITH ALL PROVISIONS OF CHAPTER 18 OF THE IBC. APPROVAL OF THESE PLANS IS CONSIDERED APPROVAL TO DEVIATIONS FROM CHAPTER 18 OF THE IBC ASSOCIATED WITH SITE GRADING.

NOTES

1. THE GRADING OF THE DIFFERENT AREAS SHOWN ON THE SITE SHALL BE COMPACTED IN STRICT ACCORDANCE WITH THE SPECIFICATIONS WHICH SHALL BE CONSIDERED AS PART OF THESE DRAWINGS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINE GRADING TO THE SUBGRADE OF ALL PAVED AREAS TO ALLOW FOR THE PAVEMENT SECTIONS. CONTRACTOR SHALL GRADE AND COMPACT ALL AREAS UNDER PAVEMENT TO ALLOW FOR THE RESPECTIVE PAVING SECTIONS AND SHALL MAINTAIN THESE FINISHED GRADES AS SHOWN UNTIL FINAL ACCEPTANCE.
3. CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN EROSION CONTROL AT ALL TIMES THROUGHOUT THE PROJECT.
4. THE SPREADING AND COMPACTION OF ANY WASTE OR EXCESS MATERIAL NOT SUITABLE FOR FILLING, SUCH AS LARGE ROCK, CONCRETE, TREES, TRASH AND VEGETATION, SHALL BE DISPOSED OFFSITE AT THE CONTRACTOR'S EXPENSE ONLY IN THOSE AREAS APPROVED FOR DISPOSING OF WASTE MATERIAL. THE CONTRACTOR SHALL NOT DISPOSE OF ANY WASTE MATERIAL ON ADJACENT PROPERTY OWNER'S OR OTHER AREAS WHICH ARE NOT LEGALLY ACCEPTED BY THE CITY. NO BURNING OF ANY MATERIAL AT ANY TIME SHALL BE ALLOWED ON THIS SITE UNLESS PERMITTED BY CITY ORDINANCES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SAFETY LAWS IN ACCORDANCE WITH THE CITY, STATE AND FEDERAL LAWS WHICH GOVERN CONSTRUCTION.
6. ALL AREAS TO BE FILLED SHALL BE FILLED IN STRICT ACCORDANCE WITH THE SPECIFICATIONS. ALL VEGETATION, TREES, ROCKS AND OBJECTIONABLE MATERIALS SHALL BE REMOVED BY THE CONTRACTOR FROM THE SURFACE OF WHICH THE FILL IS PLACED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE, SPREAD, WATER AND COMPACT THE FILL IN STRICT ACCORDANCE WITH THE SPECIFICATIONS FOR THIS PROJECT.
7. ALL DRIVE, PARKING AREAS, CUT AND FILL SLOPES, BUILDING PADS AND OPEN SPACE AREAS SHALL BE TRIMMED AND COMPACTED TO THE FINISHED GRADE TO PRODUCE SMOOTH SURFACES AND UNIFORM CROSS-SECTIONS. THE SLOPES OF ALL EXCAVATIONS AND EMBANKMENTS SHALL BE LEFT IN A NEAT AND ORDERLY CONDITION. ALL STONES, ROOTS, TREES, AND OTHER WASTE MATERIAL SHALL BE REMOVED AND DISPOSED OFF SITE. ALL VOIDS SHALL BE FILLED AND ANY SOFT SPOTS OCCURRING ON THIS SITE SHALL BE RECOMPACTED PER THE SPECIFICATIONS. VERIFY ALL GRADES TO AVOID PONDING OF WATER.
8. NO ADJUSTMENT OF GRADES WILL BE PERMITTED TO ANY STRUCTURES, PAVEMENT OR WALK SURFACES. SHOULD THE CONTRACTOR DETERMINE THERE IS A DEFICIENCY OF MATERIAL, THEN ALLOWANCE WILL MADE IN THE CONTRACT TO IMPORT A CLEAN MATERIAL SUITABLE FOR FILLING. THE OWNER'S LABORATORY WILL BE ALLOWED TO TEST AND INSPECT THE BORROW SITE PRIOR TO BEGINNING HIS FILLING OPERATIONS. EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OFFSITE AS REQUIRED.
9. THE CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXACT SCOPE OF WORK. THE CONTRACTOR SHALL REMOVE ALL VEGETATION FROM THE LIMITS OF THE PROPOSED IMPROVEMENTS. ALL TREES OUTSIDE THE LIMITS OF CONSTRUCTION SHALL REMAIN UNLESS NOTED ON THE PLANS TO BE REMOVED OR APPROVED BY THE OWNER.
10. ALL WALKS SHALL NOT EXCEED THE MAXIMUM SLOPES ALLOWED BY THE TEXAS ACCECCIBILITY STANDARDS (TAS), UNLESS INDICATED. THE MAXIMUM CROSS SLOPE IS 2% AND THE MAXIMUM DIRECTIONAL SLOPE IS 5%.
11. ALL SPOT GRADES ARE FOR PROPOSED EDGE OF PAVEMENT OR GUTTER ELEVATIONS, UNLESS INDICATED OTHERWISE.
12. ALL AREAS SHALL BE TRIMMED AND COMPACTED TO THE FINISHED GRADE TO PRODUCE SMOOTH SURFACES AND UNIFORM CROSS- SECTIONS. THE SLOPES OF ALL EXCAVATIONS AND EMBANKMENTS SHALL BE LEFT IN A NEAT AND ORDERLY CONDITION. ALL STONES, ROOTS, TREES, AND OTHER WASTE MATERIAL SHALL BE REMOVED AND DISPOSED OFF SITE. ALL VOIDS SHALL BE FILLED AND ANY SOFT SPOTS OCCURRING ON THIS SITE SHALL BE RECOMPACTED PER THE SPECIFICATIONS. VERIFY ALL GRADES TO AVOID PONDING OF WATER.
13. EXISTING DEPRESSED AREAS, WHICH HOLD SURFACE WATER, SHALL BE PUMPED DRY. EXISTING SOGGY MATERIALS SHALL BE EXCAVATED AND REMOVED UNTIL A STABILE DRY MATERIAL IS AVAILABLE. THIS EXPOSED MATERIAL SHALL BE COMPACTED TO 95% STD PROCTOR. ON SITE MATERIAL SHALL BE PLACED IN 8" MAX LIFTS AND COMPACTED TO MAX 95% STD PROCTOR AT OPTIMUM MOISTURE CONTENT.
14. IN THE EVENT THE CONTRACTOR WILL BE STOCKPILING DIRT ON SITE, THE LOCATION OF THE STOCKPILE SHALL BE PLACED IN A LOCATION SO AS NOT TO CAUSE A DIVERSION OR CHANGE OF THE DRAINAGE PATTERNS THAT WILL IMPACT OFFSITE PROPERTIES.
15. REFERENCE LANDSCAPE PLANS FOR LIMITS OF LANDSCAPING AND SEEDING/SODDING. IN THE EVENT AN AREA IS DISTURBED DUE TO CONSTRUCTION OR GRADING AND IS NOT CALLED OUT FOR TREATMENT UNDER THE LANDSCAPE PLAN. THEN THE MINIMUM REQUIRED TREATMENT SHALL BE HYDROMULCH SEEDING. IN SOME INSTANCES BLOCK SODDING WILL BE REQUIRED TO STABILIZE SLOPES.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition

GRADING PLAN

tnp project DLR23073
sheet C1.06

DLRGROUP
© DLR Group

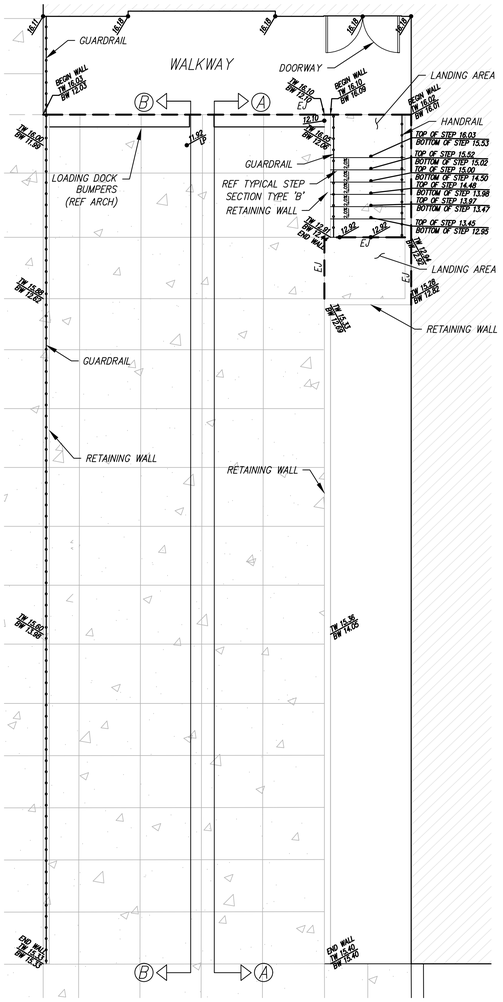
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

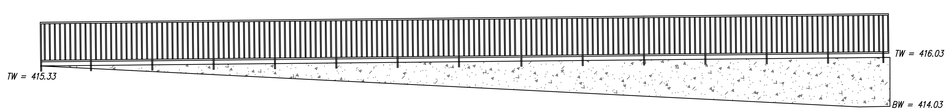
GRADING PLAN

C1.06



LOADING DOCK STAIRS

N.T.S.



SECTION B-B

DRAWING TO SHOW DESIGN INTENT, NOT FOR CONSTRUCTION PURPOSES

SECTION A-A

DRAWING TO SHOW DESIGN INTENT, NOT FOR CONSTRUCTION PURPOSES

no.	revision	by	date

Crandall Independent School District

scale	
horiz	N/A
vert	N/A
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
GRADING PLAN LOADING DOCK INSET

tnp project DLR23073
sheet C1.07

DLRGROUP
© DLR Group

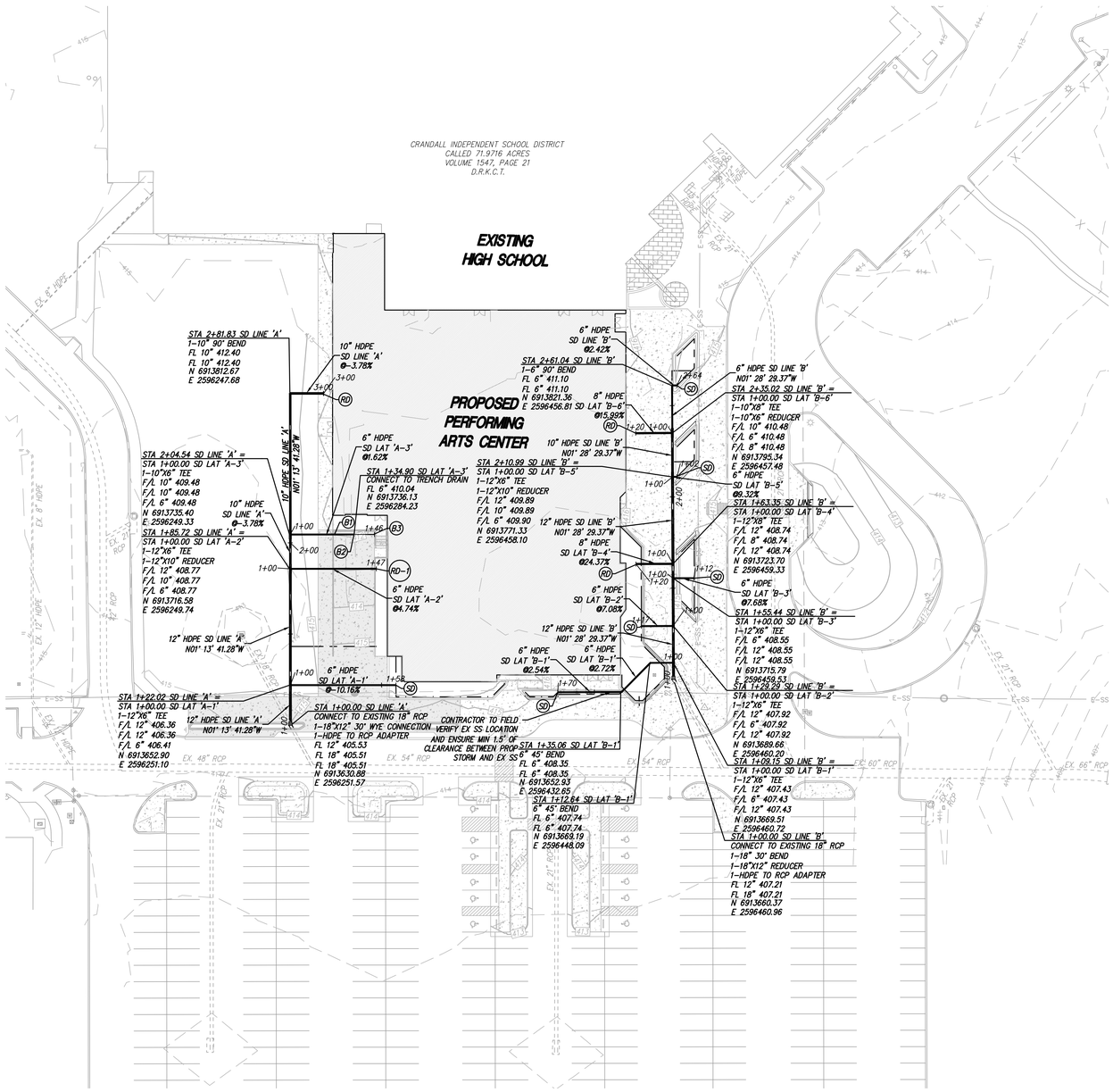
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

GRADING PLAN LOADING DOCK INSET

C1.07



NOTES

1. ALL DIMENSIONS ARE TO FACE OF BUILDING.
2. SANITARY SEWER AND STORM LINE CROSSINGS ARE INDICATED ON THE UTILITY PLAN.
3. REFER TO THE GRADING PLAN FOR THE FINISH FLOOR ELEVATIONS AND THE PERIMETER GRADES.
4. ALL STORM DRAIN LINES ARE TO BE HDPE/RCP UNLESS OTHERWISE NOTED.
5. REFER TO THE ARCHITECTS' PLANS FOR THE EXACT LOCATIONS OF THE DOWN SPOUTS. REFER TO THE MEP PLANS FOR THE EXACT LOCATIONS OF THE ROOF DRAINS.

DRAINAGE SPECIFICATIONS

1. HDPE SHALL BE HEAVY WALL MEETING THE REQUIREMENTS OF ASTM 2648 AND ASTM F477. HDPE SHALL BE ADS N-12 (WT) OR EQUAL, CORRUGATED EXTERIOR W/ SMOOTH LINED INTERIOR.
2. ALL PIPES UNDER FIRE LANE SHALL BE RCP.
3. ALL PIPE, COUPLINGS, TEES, & BENDS SHALL BE HDPE WATERTIGHT SEWER GRADE GASKETED PVC FITTINGS.
4. PROVIDE ALL NECESSARY FITTINGS AT TIE-IN LOCATIONS.

(RD) FLOWLINES OF ROOF DRAINS ARE 2.5 FEET BELOW FINISHED FLOOR ELEV. (F/L=413.68) REFER TO MEP PLANS FOR CONNECTION

(RD-1) FLOWLINES OF ROOF DRAINS ARE 5.18 FEET BELOW FINISHED FLOOR ELEV. (F/L=411.00) REFER TO MEP PLANS FOR CONNECTION

(SD) CONNECT SUBDRAINS/LANDSCAPE DRAINS TO THE STORM DRAIN SYSTEM AS INDICATED. SUBDRAINS SHALL BE A MINIMUM OF 4" UNLESS OTHERWISE NOTED AND HAVE A MINIMUM SLOPE OF 1.0%.

NOTE

CONTRACTOR TO TIE DOWNSPOUTS TO STORM DRAIN SYSTEM.

LEGEND

— · — LANDSCAPE DRAIN (REF LANDSCAPE PLANS)

LOADING DOCK TRENCH DRAIN

#	Station	ABT PolyDrain Presloped Drain System	Grate	F/L Information
B1	STA 1+24.24 SD LAT 'A-3'	Part No. 106 Begin Trench Drain: Part No. 010 to Part No. 030	ADA Stainless Steel Heel Proof Grate Part No. 2452 - Trench Drain Rim Elevation Varies per Plan	F/L = 411.627
B2	STA 1+34.86 SD LAT 'A-3'	Part No. 2900 Catch Basin Connect 6" HDPE		F/L = 410.05
B3	STA 1+45.47 SD LAT 'A-5'	Part No. 030 to Part No. 010 Part No. 106: End Trench Drain		F/L = 411.57

no.	revision	by	date

Crandall Independent School District

scale
horiz 1"=30'
vert N/A
date JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
STORM DRAIN PLAN

tnp project DLR23073
sheet C1.08

DLRGROUP
© DLR Group

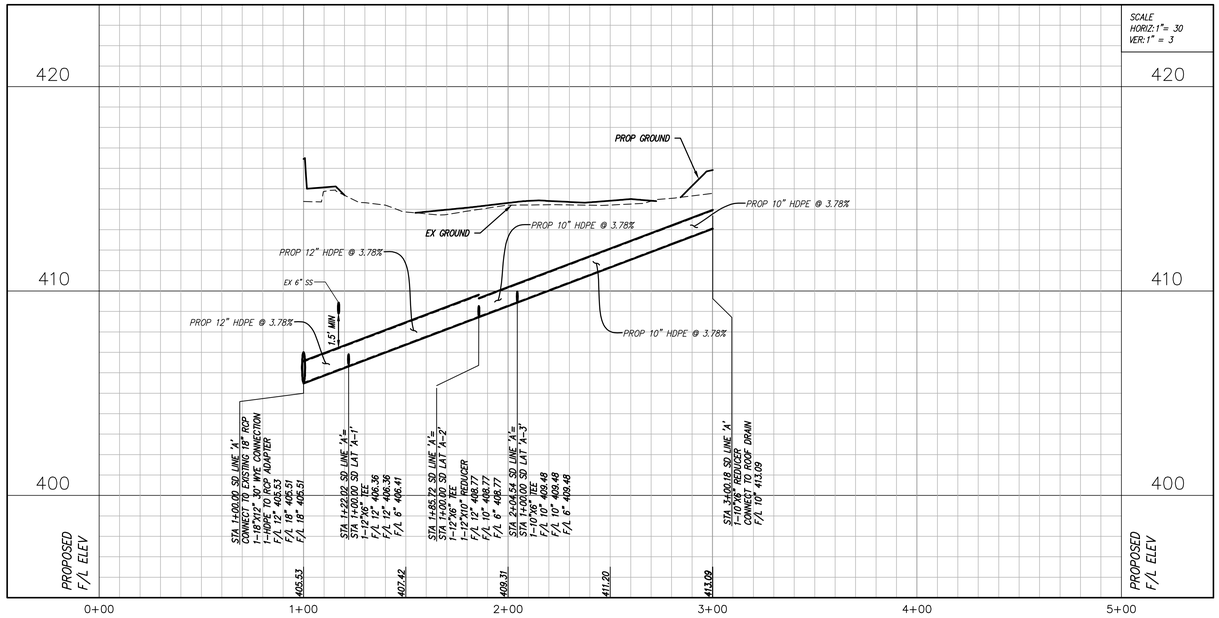
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

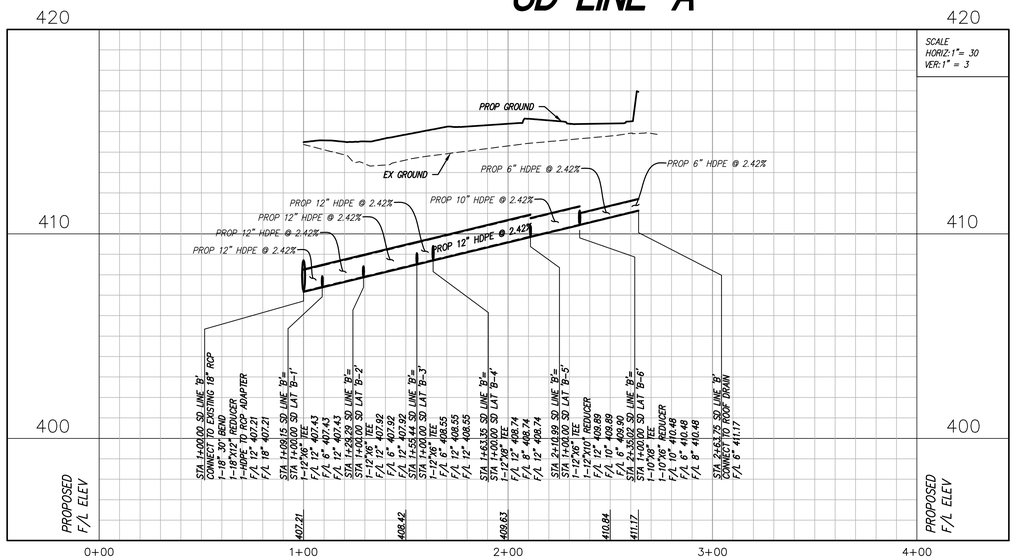
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

STORM DRAIN PLAN

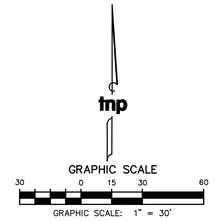
C1.08



SD LINE 'A'



SD LINE 'B'



no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	1"=3'
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition

STORM DRAIN PROFILES

tnp project DLR23073
sheet C1.09

DLRGROUP
© DLR Group

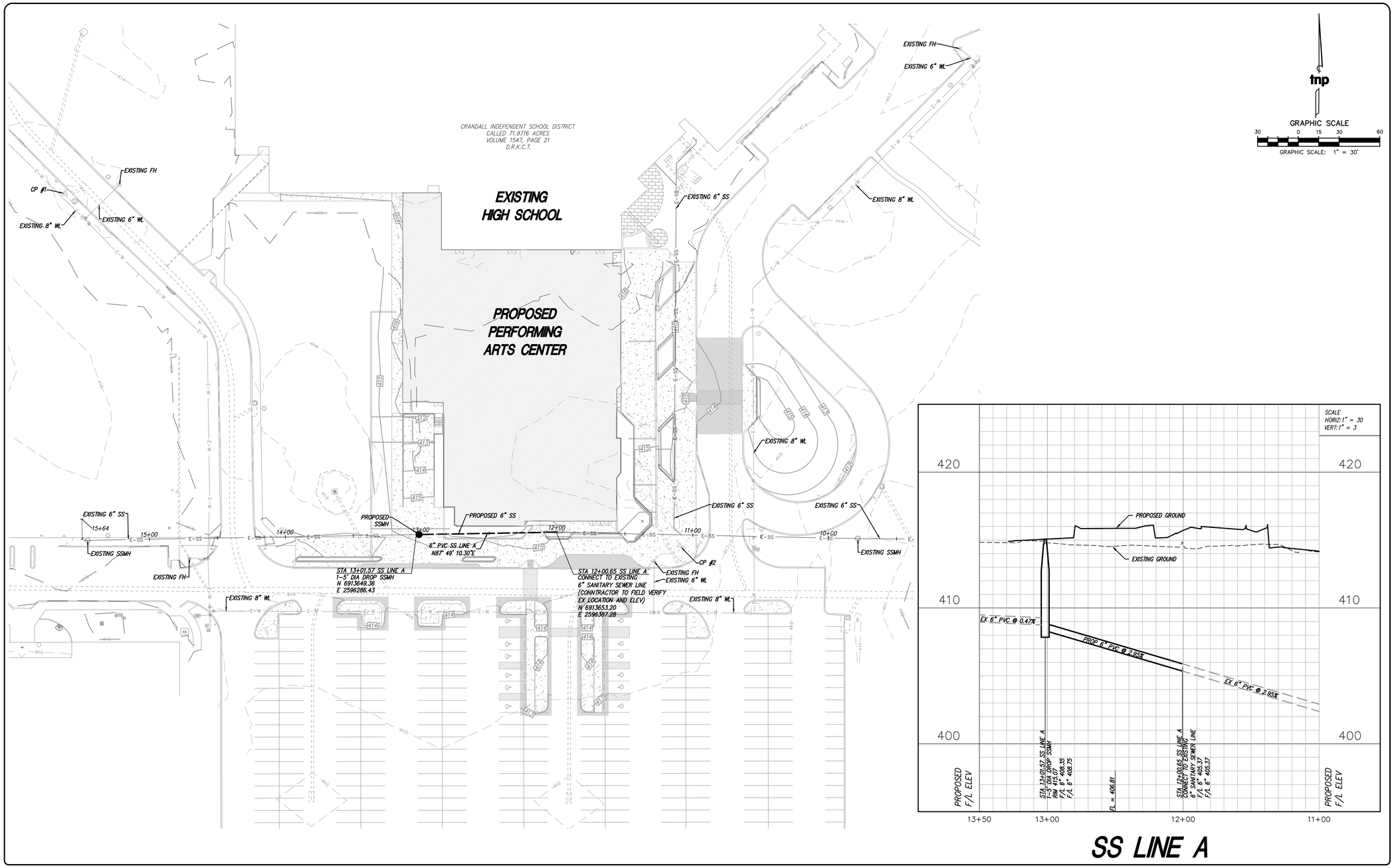
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

STORM DRAIN PROFILES

C1.09



no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	1"=3'
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
01/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition

SANITARY SEWER PLAN

tnp project DLR23073
sheet C1.10

DLRGROUP
© DLR Group

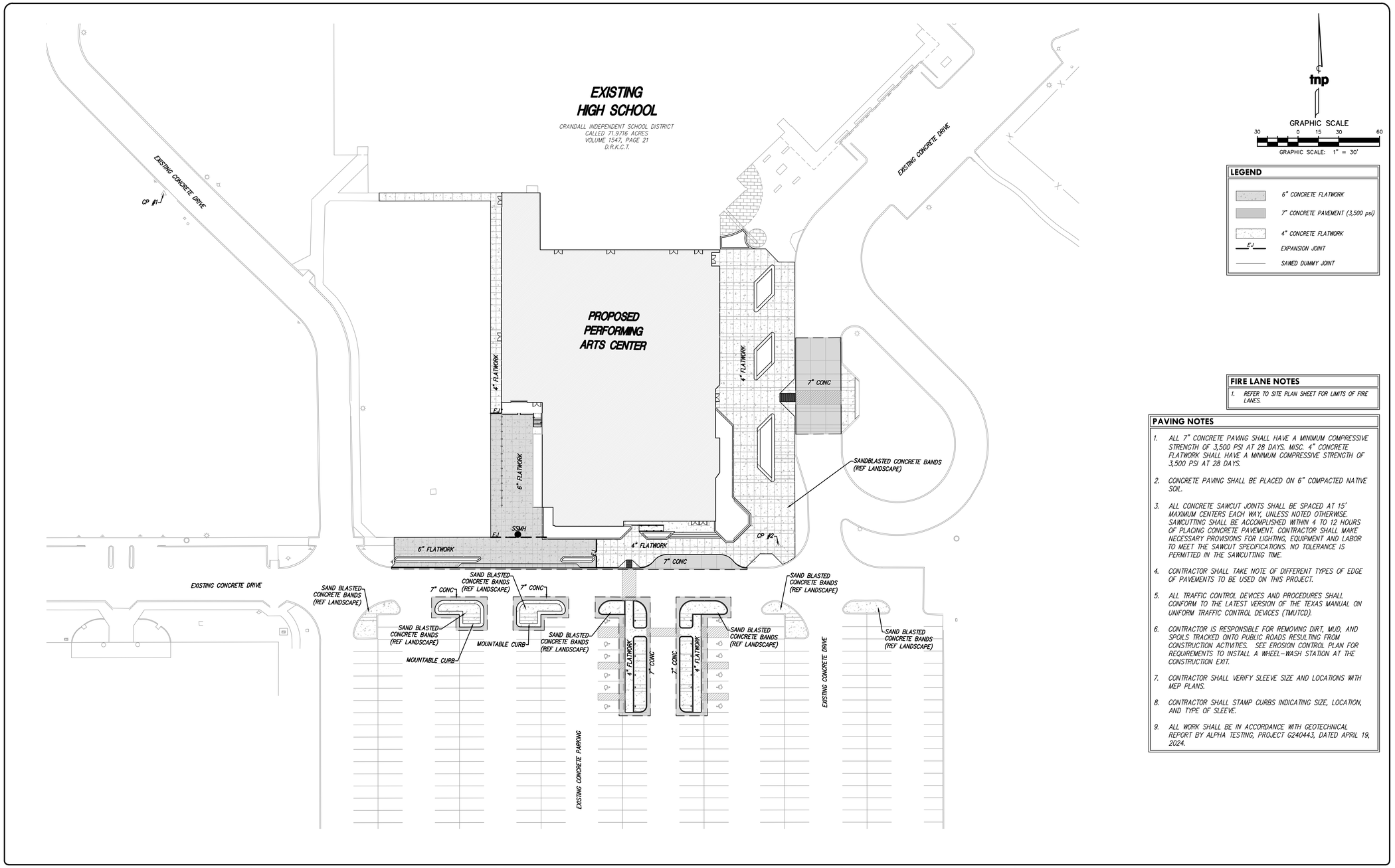
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

SANITARY SEWER PLAN

C1.10



LEGEND

- 6" CONCRETE FLATWORK
- 7" CONCRETE PAVEMENT (3,500 psi)
- 4" CONCRETE FLATWORK
- EJ — EXPANSION JOINT
- SAWED DUMMY JOINT

FIRE LANE NOTES

1. REFER TO SITE PLAN SHEET FOR LIMITS OF FIRE LANES.

PAVING NOTES

1. ALL 7" CONCRETE PAVING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. MISC. 4" CONCRETE FLATWORK SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
2. CONCRETE PAVING SHALL BE PLACED ON 6" COMPACTED NATIVE SOIL.
3. ALL CONCRETE SAWCUT JOINTS SHALL BE SPACED AT 15' MAXIMUM CENTERS EACH WAY, UNLESS NOTED OTHERWISE. SAWCUTTING SHALL BE ACCOMPLISHED WITHIN 4 TO 12 HOURS OF PLACING CONCRETE PAVEMENT. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS FOR LIGHTING, EQUIPMENT AND LABOR TO MEET THE SAWCUT SPECIFICATIONS. NO TOLERANCE IS PERMITTED IN THE SAWCUTTING TIME.
4. CONTRACTOR SHALL TAKE NOTE OF DIFFERENT TYPES OF EDGE OF PAVEMENTS TO BE USED ON THIS PROJECT.
5. ALL TRAFFIC CONTROL DEVICES AND PROCEDURES SHALL CONFORM TO THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
6. CONTRACTOR IS RESPONSIBLE FOR REMOVING DIRT, MUD, AND SPOILS TRACKED ONTO PUBLIC ROADS RESULTING FROM CONSTRUCTION ACTIVITIES. SEE EROSION CONTROL PLAN FOR REQUIREMENTS TO INSTALL A WHEEL-WASH STATION AT THE CONSTRUCTION EXIT.
7. CONTRACTOR SHALL VERIFY SLEEVE SIZE AND LOCATIONS WITH MEP PLANS.
8. CONTRACTOR SHALL STAMP CURBS INDICATING SIZE, LOCATION, AND TYPE OF SLEEVE.
9. ALL WORK SHALL BE IN ACCORDANCE WITH GEOTECHNICAL REPORT BY ALPHA TESTING, PROJECT G240443, DATED APRIL 19, 2024.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition

PAVING PLAN

tnp project DLR23073
sheet C1.11

DLRGROUP © DLR Group

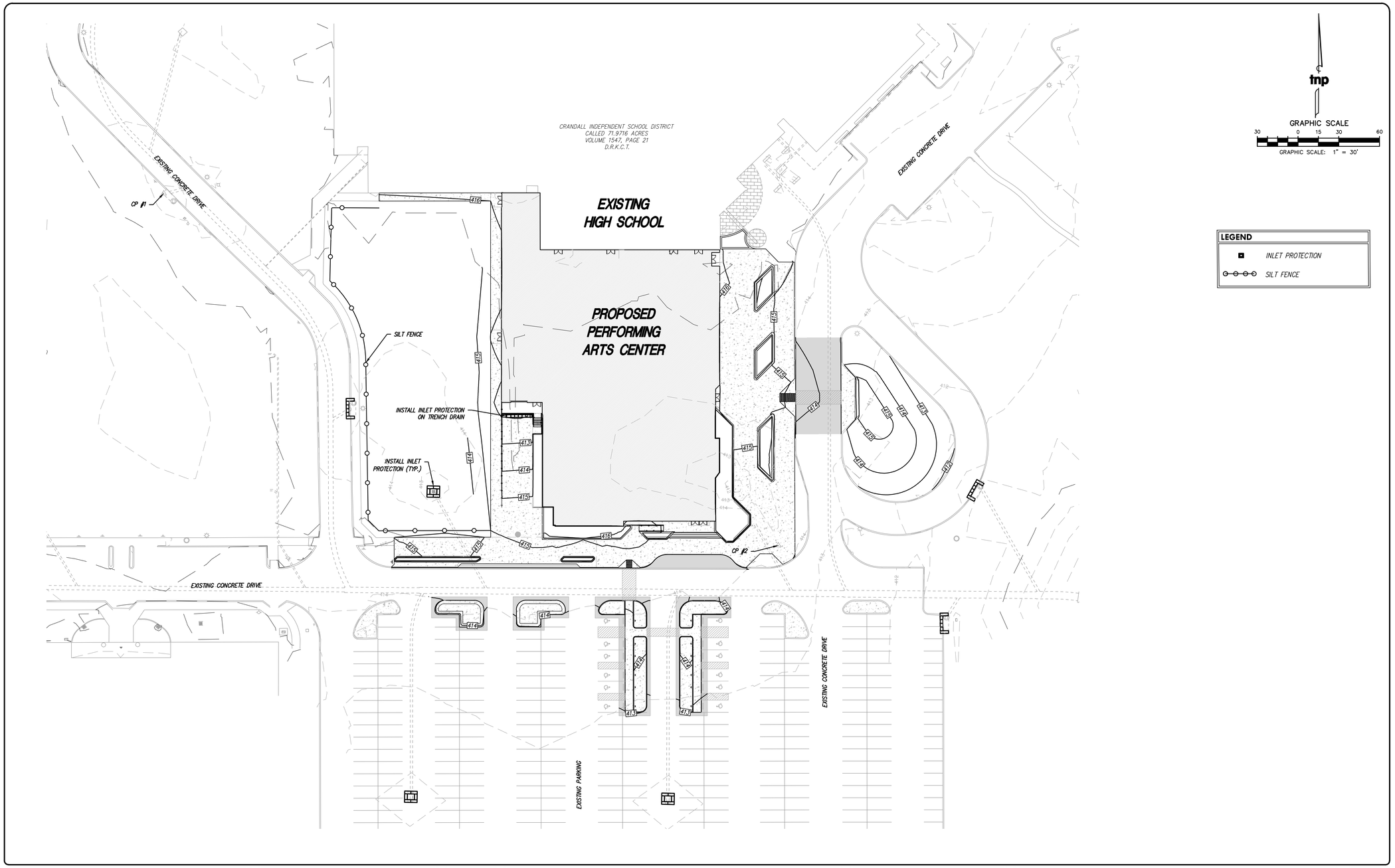
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

PAVING PLAN

C1.11



no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=30'
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition

EROSION CONTROL PLAN

tnp project DLR23073
sheet C1.12

DLRGROUP
© DLR Group

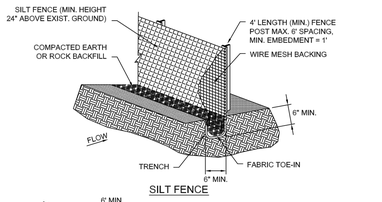
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

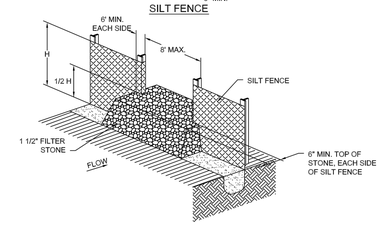
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

EROSION CONTROL PLAN

C1.12



SILT FENCE



STONE OVERFLOW STRUCTURE

SILT FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.5 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1020A

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

SILT FENCE GENERAL NOTES:

1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

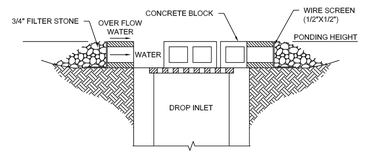
5. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

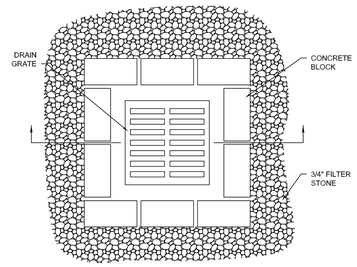
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

SILT FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.5 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1020B

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



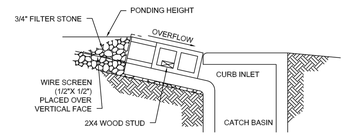
CROSS SECTION



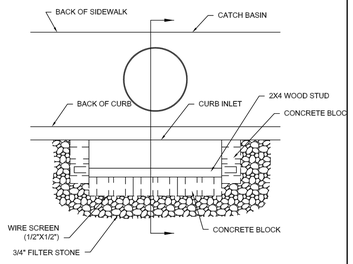
PLAN VIEW

INLET PROTECTION–DROP	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.14 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1130

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



CROSS SECTION



PLAN VIEW

INLET PROTECTION–CURB	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.14 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1140

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

no.	revision	by	date

Crandall Independent School District

scale horiz N/A vert N/A

date JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS JOEL M. RICHEY 136432 LICENSED PROFESSIONAL ENGINEER 07/25/2024

City of Crandall, Texas

Crandall Independent School District

High School - PAC Addition

EROSION CONTROL DETAILS

tnp project DLR23073

sheet C1.13

DLRGROUP © DLR Group

tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

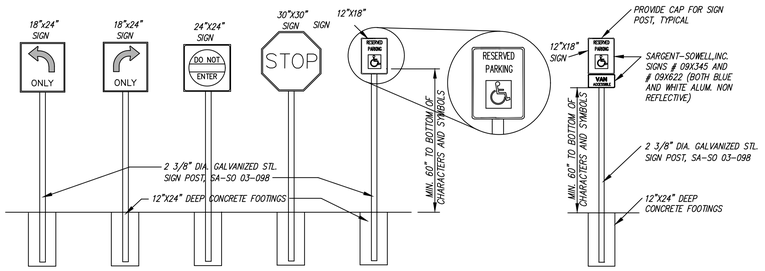
ISSUE FOR BID AND PERMIT

2024.07.25

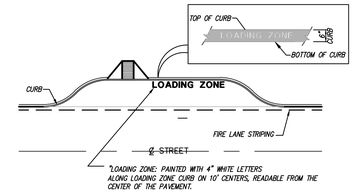
REVISIONS

EROSION CONTROL DETAILS

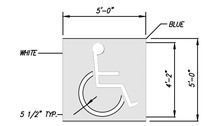
C1.13



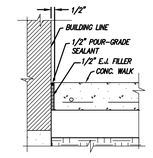
TRAFFIC SIGN DETAILS
N.T.S.



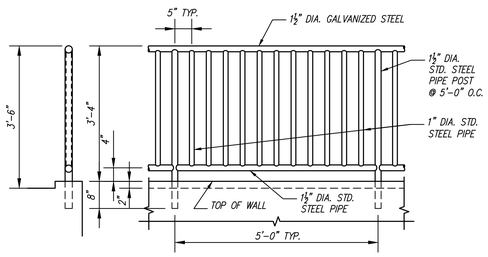
LOADING ZONE MARKING DETAIL
N.T.S.



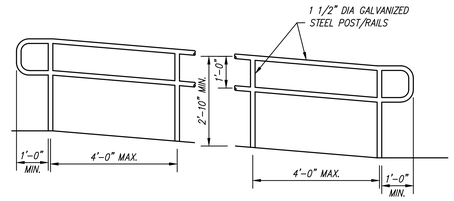
PAINTED ACCESSIBLE PARKING LOGO
N.T.S.



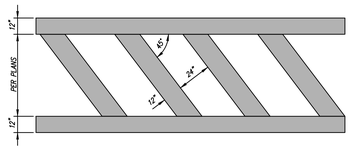
1/2" EXPAN. JOINT @ BLDG. & WALK
N.T.S.



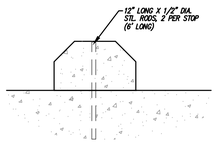
GUARDRAIL DETAIL
N.T.S.



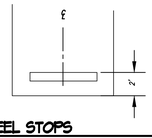
HANDRAIL DETAILS
N.T.S.



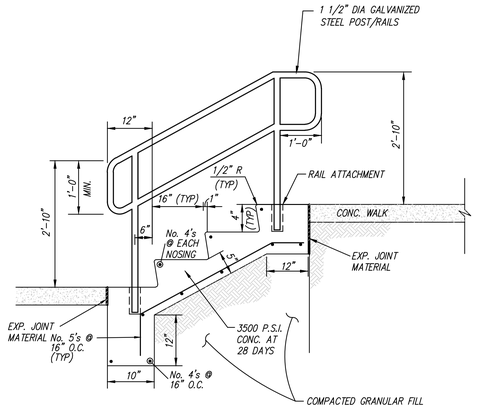
CROSSWALK STRIPING DETAIL (PAINTED)
N.T.S.



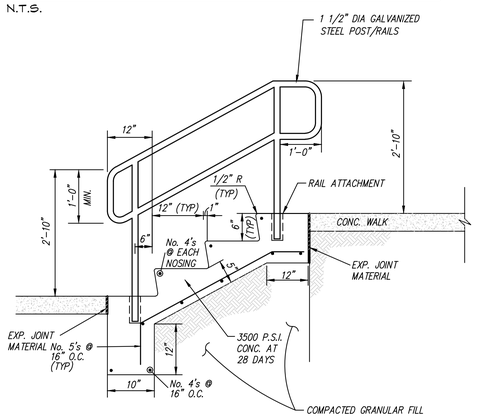
WHEEL STOP DETAIL
N.T.S.



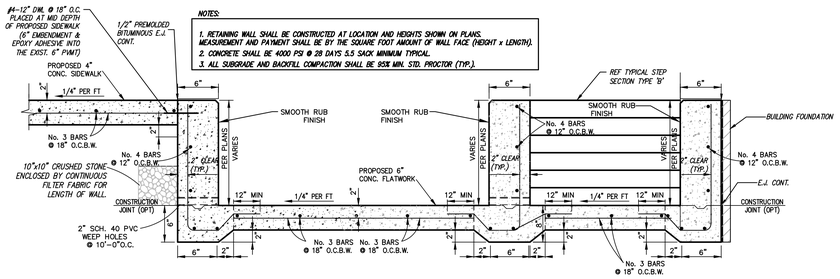
WHEEL STOPS
N.T.S.



TYPICAL STEP SECTION - TYPE 'A'
N.T.S.



TYPICAL STEP SECTION - TYPE 'B'
N.T.S.



NOTES:
1. RETAINING WALL SHALL BE CONSTRUCTED AT LOCATION AND HEIGHTS SHOWN ON PLANS. MEASUREMENT AND PAYMENT SHALL BE BY THE SQUARE FOOT AMOUNT OF WALL FACE (HEIGHT x LENGTH).
2. CONCRETE SHALL BE 4000 PSI @ 28 DAYS 5.5 SACK MINIMUM TYPICAL.
3. ALL SUBGRADE AND BACKFILL COMPACTION SHALL BE 95% MIN. STD. PROCTOR (TYP.).

LOADING DOCK WALLS
N.T.S.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	N/A
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
SITE DETAILS

tnp project DLR23073
sheet C1.14

DLRGROUP
© DLR Group

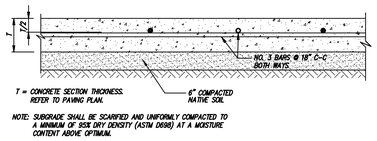
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

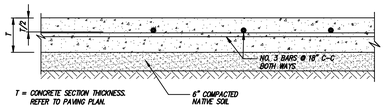
SITE DETAILS

C1.14



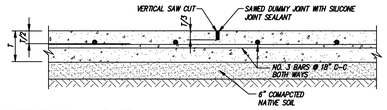
FIRE LANE CONCRETE SECTION

N.T.S.



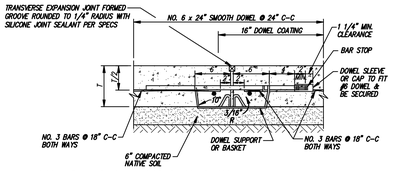
TYPICAL CONCRETE SECTION

N.T.S.



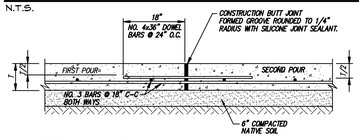
SAWED DUMMY JOINT

N.T.S.



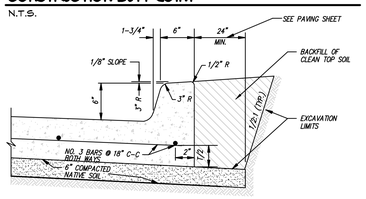
TRANSVERSE EXPANSION JOINT

N.T.S.



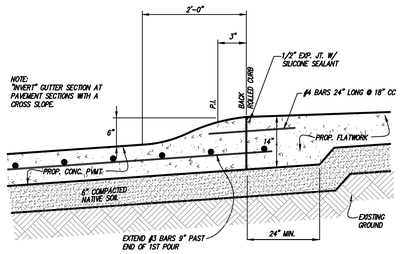
CONSTRUCTION BUTT JOINT

N.T.S.



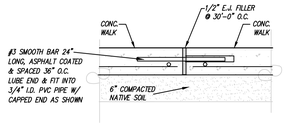
MONOLITHIC CURB

N.T.S.



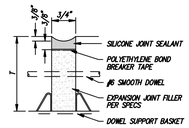
MOUNTABLE CURB

N.T.S.



TYPICAL CONC. WALK EXPANSION JOINT

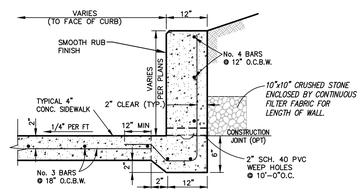
N.T.S.



EXPANSION JOINT SEAL

N.T.S.

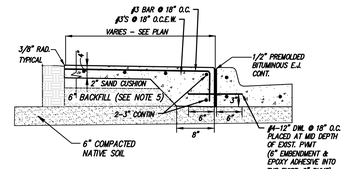
NOTES:
1. RETAINING WALL SHALL BE CONSTRUCTED AT LOCATION AND HEIGHTS SHOWN ON PLANS. MEASUREMENT AND PAYMENT SHALL BE BY THE SQUARE FOOT AMOUNT OF WALL FACE (HEIGHT x LENGTH).
2. CONCRETE SHALL BE 4000 PSI @ 28 DAYS 5.5 SACK MINIMUM TYPICAL.
3. ALL SUBGRADE AND BACKFILL COMPACTION SHALL BE 95% MIN. STD. PROCTOR (TYP.).



NOTES:
1. CONCRETE SHALL BE 4000 PSI @ 28 DAYS 5.5 SACK MINIMUM TYPICAL.
2. ALL SUBGRADE AND BACKFILL COMPACTION SHALL BE 95% MIN. STD. PROCTOR (TYP.).

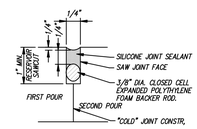
RETAINING WALL W/ SIDEWALK

N.T.S.



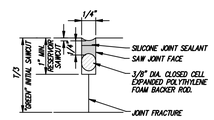
SIDEWALK W/ THICKENED EDGE (ADJACENT TO BACK OF CURB)

N.T.S.



CONSTRUCTION BUTT JOINT SEAL

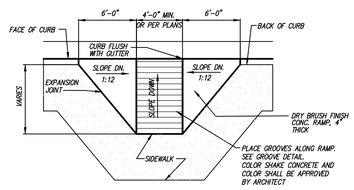
N.T.S.



NOTE:
1. POLYETHYLENE FOAM BACKER ROD DOES NOT SIT ON BOTTOM OF SAW
2. SILICONE BEAD HAS GENERAL WIDTH TO DEPTH RATIO OF 2:1.

SAWED DUMMY JOINT SEAL

N.T.S.



TYPE 'A' (PRIVATE ONLY)

N.T.S.

SIDEWALK GENERAL NOTES (PRIVATE):

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS UNLESS SUPERCEDED BY CITY STANDARD SPECIFICATIONS.

2. REINFORCED CONCRETE SIDEWALK SHALL BE A MINIMUM 4 FEET WIDE, A MINIMUM OF 4 INCHES THICK AND SHALL BE CLASS "A" CONTAINING A MINIMUM OF 6 SACKS OF TYPE I CEMENT PER YARD. AGGREGATE SHALL CONSIST OF A MINIMUM OF 50% CRUSHED STONE. ALL CONCRETE PLACED SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% ± 1% AIR CONTENT.

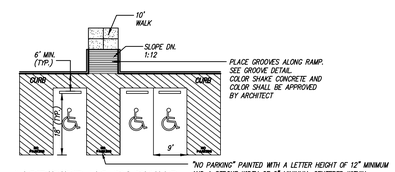
3. CHAMFER ALL EXPOSED EDGES OF CONCRETE 3/8 INCH.

4. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A-615 GRADE 60. REINFORCING STEEL SHALL BE PLACED WITH A MINIMUM OF 1-1/2" OF COVER FOR #5 BARS OR SMALLER. WHERE REINFORCING BARS ARE SPLICED. A 30 DIAMETER LAP SHALL BE USED.

5. SUBGRADE SHALL CONSIST OF NATIVE SOIL COMPACTED TO A DENSITY NOT LESS THAN 95% ASTM D698 AND A MOISTURE CONTENT THAT IS AT LEAST ZERO (0) PERCENTAGE POINTS ABOVE OPTIMUM MOISTURE CONTENT, BUT NO MORE THAN THREE (3) PERCENTAGE POINTS ABOVE OPTIMUM MOISTURE CONTENT.

6. SIDEWALKS SHALL BE FINISHED BY LIGHTLY BROOMING SURFACE TRANSVERSELY TO DIRECTION OF MAIN TRAFFIC OR WHERE ADJACENT. SIDEWALKS DIFFER FROM FROM THIS STANDARD, NEW SIDEWALKS SHALL CONFORM TO ADJACENT SIDEWALK (E.G. EXPOSED AGGREGATE).

7. AN APPROVED CURING COMPOUND SHALL BE APPLIED TO THE SURFACE OF THE PAVEMENT AS SOON AS IT HAS BEEN PLACED AND FINISHED.

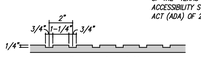


MODIFIED HC PARKING

N.T.S.

ACCESSIBLE GENERAL NOTES:

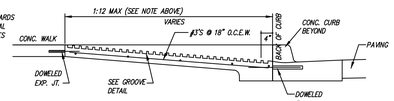
1. ACCESSIBLE RAMPS AND WALKWAYS SHALL CONFORM TO THE LATEST STANDARDS OF THE "TEXAS ACCESSIBILITY STANDARDS (TAS)" AND THE "UNIFORM FEDERAL ACCESSIBILITY STANDARDS" ESTABLISHED BY THE AMERICANS WITH DISABILITES ACT (ADA) OF 2010.



GROOVES DETAIL

N.T.S.

NOTE:
CONTRACTOR SHALL NOTE GRADE ELEVATIONS OF ALL CURB RAMPS ON THE GRADING PLAN.



SIDEWALK RAMP SECTION (PRIVATE ONLY)

N.T.S.

TYPICAL RAMP DETAILS (PRIVATE RAMPS ONLY)

N.T.S.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	N/A
vert	N/A
date	JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
PAVING DETAILS

tnp project DLR23073
sheet C1.15

DLRGROUP
© DLR Group

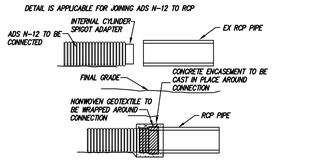
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

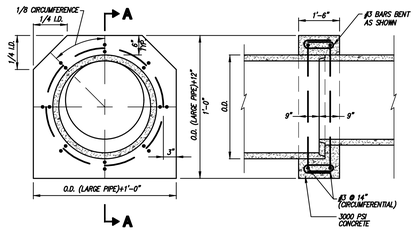
PAVING DETAILS

C1.15

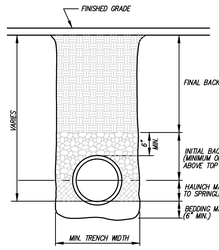


NOTES
1. EXISTING GRADE TO BE EXCAVATED IN SUCH A MANNER TO PROVIDE A SAFE WORK AREA.
2. INTERNAL CYLINDER ADAPTER TO BE WELDED TO ADS N-12, OUTSIDE DIAMETER TO BE INSERTED INTO INSIDE DIAMETER OF CONCRETE PIPE.
3. AREA UNDER CONNECTION MUST BE OVEREXCAVATED TO ALLOW AMPLE WORK AREA TO WRAP NON-WOVEN GEOTEXTILE.
4. NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION WITH FULL SEAM OVERLAP TO PROVIDE FULL PROTECTION FROM SOIL INTRUSION.
5. CONCRETE ENCASEMENT TO BE CAST IN PLACE AROUND CONNECTION.
6. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321.
7. IN LIEU OF AN INTERNAL CYLINDER, AN ADS WATERTIGHT REPAIR COUPLER CAN BE USED TO CONNECT ADS N-12 TO RCP.
8. INTERNAL CYLINDER ADAPTER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.

HDPE/ RCP CONNECTION DETAIL
N.T.S.



CONCRETE COLLAR
N.T.S.

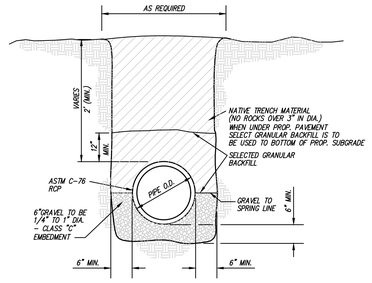


NOTES:
1. BEDDING MATERIALS SHALL BE CLASS IB (1/2" – 3/4" CRUSHED STONE) MATERIALS AS DEFINED IN TABLE 1, ASTM D-2321. INSTALLATION OF THESE MATERIALS SHALL BE AS PER TABLE 2.
2. HAUNCH MATERIALS SHALL BE CLASS IB (1/2" – 3/4" CRUSHED STONE) MATERIALS AS REQUIRED ABOVE, RESTRICTED AS PER D-2321, TABLE 2.
3. INITIAL BACKFILL MATERIALS SHALL BE CLASS IB (1/2" – 3/4" CRUSHED STONE) MATERIALS AS REQUIRED ABOVE, RESTRICTED AS PER D-2321, TABLE 2.
4. MINIMUM TRENCH WIDTHS (AS REQUIRED BY ASTM D-2321) ARE AS FOLLOWS:

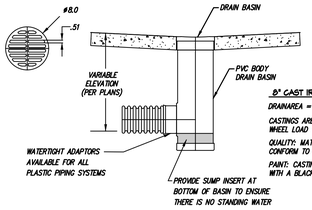
PIPE DIAMETER	MIN. TRENCH WIDTH
8"	25"
10"	27"
12"	30"
15"	34"
18"	38"
24"	48"
30"	52"
36"	65"

* A LESSER TRENCH WIDTH WILL BE PERMITTED ONLY WHERE IT IS DETERMINED THE CONTRACTOR CAN UTILIZE EQUIPMENT CAPABLE OF MEETING THE REQUIRED INSTALLED DENSITIES.
5. WHERE THE TRENCH BOTTOM IS UNSTABLE, CONTRACTOR SHALL EXCAVATE TO A DEPTH AS REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIALS AS AN ALTERNATIVE. TRENCH BOTTOM MAY BE STABILIZED USING A GEOFABRIC.
6. FINAL BACKFILL SHALL BE NATIVE TRENCH MATERIAL (NO ROCKS OVER 3" IN DIA.) PLACE IN 12" MAX. LIFTS TO THE FINAL GRADE WITH EACH LIFT. COMPACT TO A MIN. 95% OF STANDARD PROCTOR DENSITY AT A MOISTURE CONTENT BETWEEN 2% BELOW TO 4% ABOVE (–2 TO +4) OPTIMUM MOISTURE CONTENT.

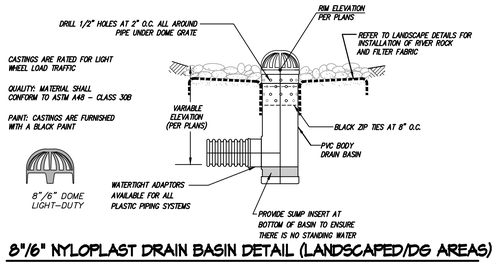
STORM DRAIN PIPE (PE OR PVC) EMBEDMENT & TRENCH BACKFILL DETAILS
N.T.S.



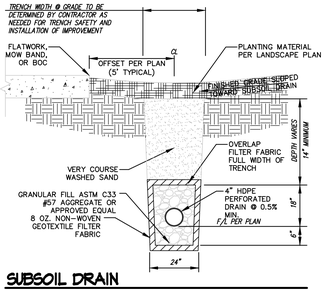
RCP TRENCH EMBEDMENT & BACKFILL DETAIL
N.T.S.



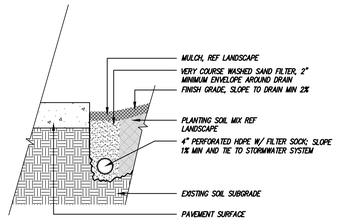
8" NYLOPLAST DRAIN BASIN DETAIL (PAVED AREAS)
N.T.S.



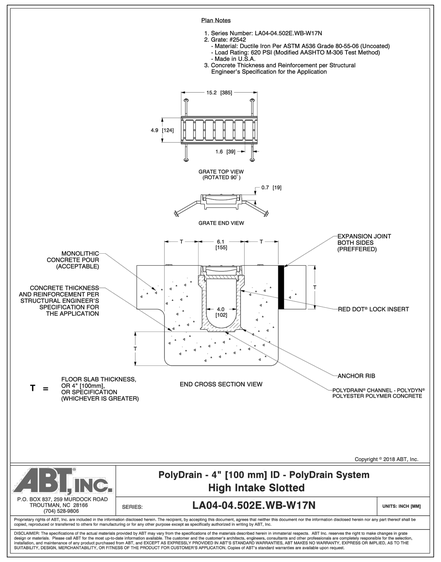
8"/6" NYLOPLAST DRAIN BASIN DETAIL (LANDSCAPED/DG AREAS)
N.T.S.

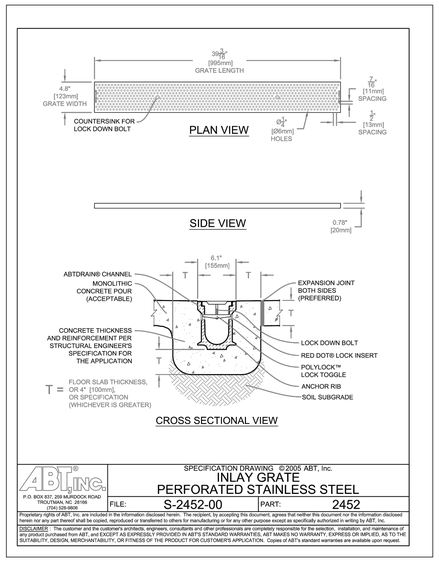


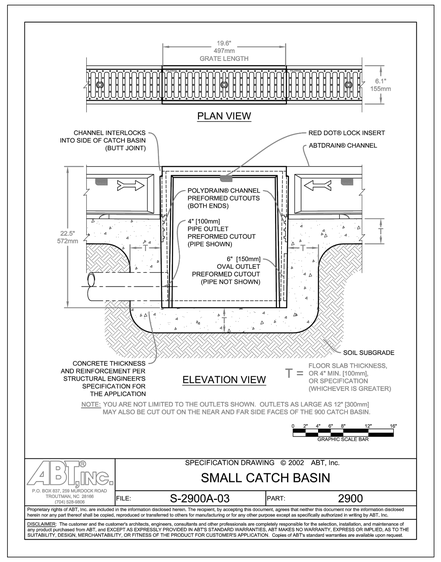
SUBSOIL DRAIN
N.T.S.



LANDSCAPE SUB-SOIL DRAIN
N.T.S.







TRENCH DRAIN DETAIL
N.T.S.

no.	revision	by	date

Crandall Independent School District

scale	
horiz	N/A
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS JOEL M. RICHEY 136432 LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
STORM DRAIN DETAILS

tnp project DLR23073
sheet C1.16

DLRGROUP
© DLR Group

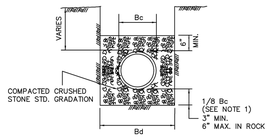
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

STORM DRAIN DETAILS

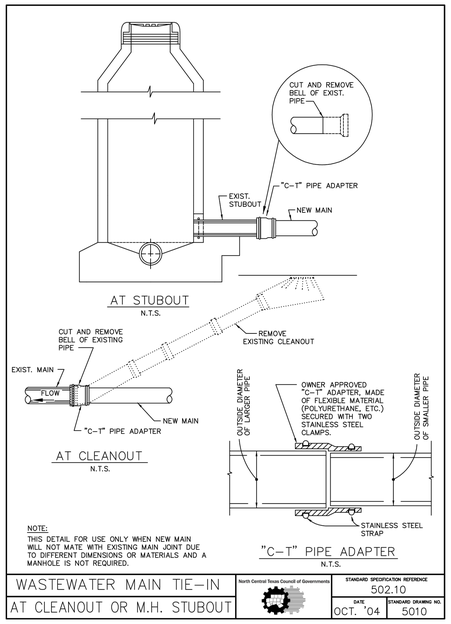
C1.16



CLASS "H"
N.T.S.

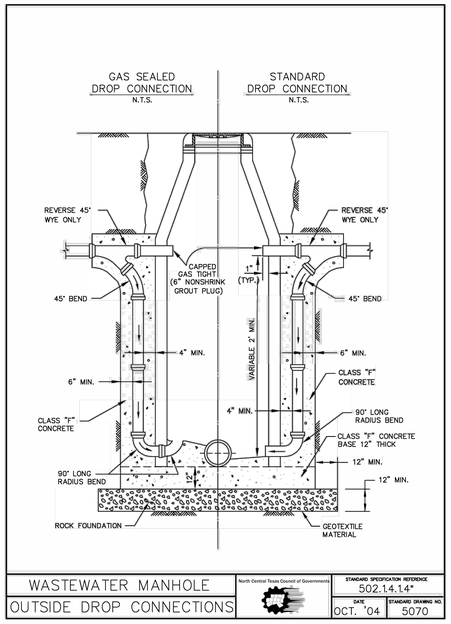
NOTES:
1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bd = TRENCH WIDTH
3. Bc = OUTSIDE DIAMETER OF PIPE
4. D = INSIDE DIAMETER OF PIPE

3060 (Standard Drawing)	EMBEDMENT CLASS "G-1" & "H"	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 504.5 DATE OCT. '04 / STANDARD DRAWING NO. 3060



NOTE:
THIS DETAIL FOR USE ONLY WHEN NEW MAIN WILL NOT MATE WITH EXISTING MAIN JOINT DUE TO DIFFERENT DIMENSIONS OR MATERIALS AND A MANHOLE IS NOT REQUIRED.

WASTEWATER MAIN TIE-IN AT CLEANOUT OR M.H. STUBOUT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.10 DATE OCT. '04 / STANDARD DRAWING NO. 5010	



WASTEWATER MANHOLE OUTSIDE DROP CONNECTIONS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.14.14* DATE OCT. '04 / STANDARD DRAWING NO. 5070	

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

no.	revision	by	date

Crandall Independent School District

scale horiz N/A vert N/A
date JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
SANITARY SEWER DETAILS

tnp project DLR23073
sheet C1.17

DLRGROUP
© DLR Group

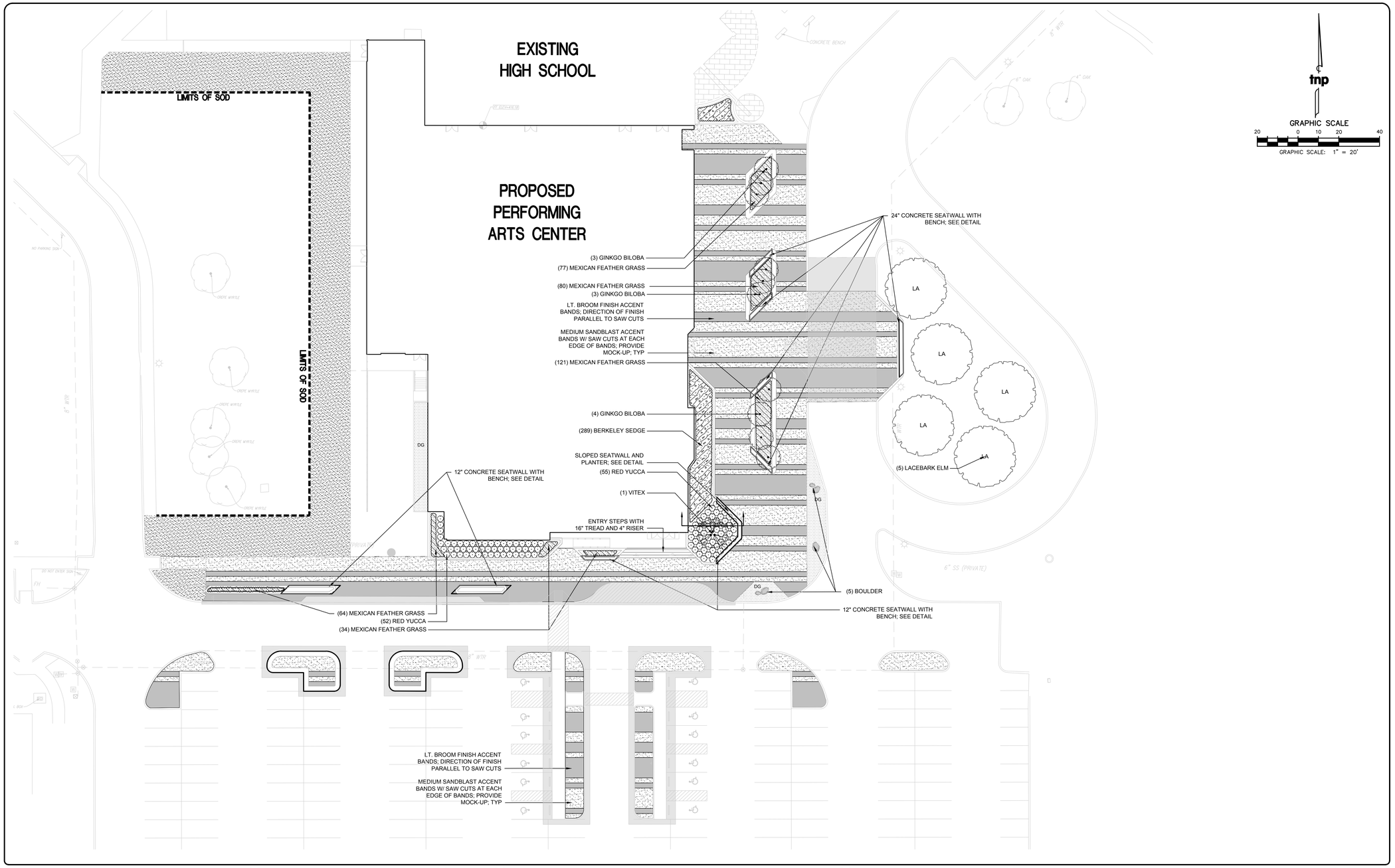
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

SANITARY SEWER DETAILS

C1.17



no.	revision	by	date

Crandall Independent School District

scale	
horiz	1"=20'
vert	N/A
date	JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

REGISTERED LANDSCAPE ARCHITECT
JOE L. MADRID
3207
STATE OF TEXAS
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
LANDSCAPE PLAN

tnp project DLR23073
sheet L1.01

DLRGROUP
© DLR Group

tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

LANDSCAPE PLAN

L1.01

PLANTING NOTES

SECTION 1 - GENERAL

1. These notes are intended as a field reference for the Contractor. The Contractor will thoroughly review these notes, specifications and the drawings prior to start of any work. The Contractor shall visit the site prior to submitting his bid and prior to start of work to become completely familiar with site conditions.

2. It is the responsibility of the contractor to advise the Landscape Architect (hereinafter, LA) of any condition found on the site which prohibits installation as shown on these drawings.

3. Prior to submitting a bid, the Contractor shall verify any discrepancies between the notes, specifications, or the drawings with the LA for clarification. If there is a discrepancy between the quantity of materials shown on the plans and the quantity of materials shown in the materials legends, the greater quantity will take precedence for bidding purposes. All quantities listed are for information only. It is the contractor's responsibility to provide full coverage of materials in all areas.

4. Written dimensions prevail over scaled dimensions. Notify landscape architect of any discrepancies

5. The Contractor bears all responsibility for obtaining all licenses and permits required by federal, state, and local agencies to accomplish the work of this project.

6. Contractor shall complete soil test in all planting areas to determine soil amendment requirements and submit test results to LA for approval. Contractor shall adjust pH and fertility based upon these results. No addition to or placement of soil is to be done prior to initial soil test report approval. Testing shall be done by LA approved laboratory. No planting shall begin until results and proper adjustment have been made. It is the Contractor's responsibility to ensure proper drainage and fertility of all planting areas.

7. Coordinate all work with the project's building contractor or owner.

8. Warning! Call toll-free 811 *before* you dig! The contractor bears all responsibility for verifying all underground utilities, pipes, and structures in the field prior to construction. Any damage to utilities that are to remain shall be repaired immediately at no expense to the owner. The Contractor shall contact the building contractor and all utility authorities to mark location of site utilities. Install flags or stakes and maintain them in place throughout the project. Damage to utilities or other work shall be repaired at the expense of the contractor responsible for the damage. The locations of existing utilities as shown on these plans are approximate. There may be other underground utilities within the project area that are not shown. Landscape Architect and/or Engineer assumes no responsibility for any utilities not shown on plans.

9. Due to existing vegetation and other site conditions, the Contractor should anticipate field adjustments by the LA and should understand such adjustments are not a change order.

10. The Contractor shall give the LA 48 hours' notice of required inspections *upon completion* of each of the following phases:

A. Pre-Construction Conference after award of bid (on-site)
B. Construction debris/ weed clean-up (before *any* grading, fill, or irrigation)
C. Rough Grading (within 2" of finish grade), Utility Marking, and Tree Staking
D. Fine Grading and Tree Staking (before any tree pits are dug)
E. Tree Planting
F. Staking of Bedlines and/or Edging
G. Shrub Planting
H. Substantial Completion
I. Final Acceptance

11. Contractor shall guarantee all plant material for one (1) full year from date of final acceptance. The cutting off of water or electricity by other trades or persons shall not void the warranty.

12. It is the contractor's responsibility to insure the availability of water to the plants at all times until final acceptance. The contractor shall reject and replace all trees with tip-dieback of more than one (1) inch over the entire canopy of the tree and replace all shrubs or plants with any dieback. All rejected plant material shall be replaced with specified plant material within 14 calendar days at the contractor's expense.

13. LA assumes no responsibility for damages, liabilities, or cost resulting from changes or alterations made to the plan without the express written consent of LA.

14. All materials, locations, and workmanship are subject to approval or refusal by the LA. All materials, locations, and workmanship rejected by the LA shall be remedied at the Contractor's expense.

SECTION 2 - MATERIALS

15. The Contractor shall check all material for specified requirements, shipping damage, pests, and diseases and shall reject all unsatisfactory materials. All plant material is to be carefully handled by the root ball, not the trunk, branches, and/or foliage of the plant. Mishandled material will be rejected. B&B material shall be "hardened off" after digging for at least 90 days and have at least 10" of rootball for every caliper inch. All material rejected by the LA shall be removed from the site and replaced with acceptable material at the Contractor's expense

16. Plants shall be well formed, vigorous, growing specimens with growth typical of variety specified and shall be free from injury, insects, and diseases. All plant material is to be well rooted, not root bound, such that the root ball remains intact throughout the planting process. The Contractor shall reject all cracked root balls. All plant material shall conform to the specifications and sizes shown in the plant list and shall be nursery grown in accordance with the latest edition (ANSI Z60.1) of "American Standard for Nursery Stock." Any plant substitution shall be approved by landscape architect prior to purchase. Trees with co-dominant stems shall be rejected.

17. Do not make substitutions. If specified material is not available, submit proof of non-availability to LA.

18. All planting areas shall have organic topsoil that is natural, well-drained, friable, fertile, sandy-loam. Sandy-loam is to be pH 6.5-7.5. Heavy clays, limestone, poorly drained bottomland soil, silt, or alluvial soils are not allowed in any planting areas. Topsoil shall be free of harmful insects or nematodes, soil-borne diseases, toxins, select fill, inorganic subsoils, heavy metals, trash, petroleum by-products, rocks over 1/2" in diameter, rubble, roots, and weeds or weed seeds. Contractor shall submit a 2-cup sample in a gallon-size baggie to Landscape Architect before delivery of any soil to the site or placement of any soil in planting areas.

19. Sod shall consist of live growing plants secured from sources which have dense, thickly matted root system throughout the soil of the sod for a minimum of one inch. Sod shall be free of weeds or other varieties of grasses.

20. Sod shall not be used where the roots are dried because of sun or wind. The landscape architect has the right to reject any or all of sod due to lack of care, improper cutting, or other agronomic problems.

SECTION 3 - EXECUTION

21. The Contractor shall *thoroughly* remove from the construction site all limestone larger than 1/2" in diameter and all heavy clay to these depths: 6" minimum in turf and seed areas, and 18" minimum in planting beds. The LA shall verify that this is complete before the Contractor is authorized to proceed with fill of specified topsoil or grading. Scarify subsoil after removal of rock or heavy clay before adding topsoil so as to break up any surface tension.

22. The Contractor shall thoroughly remove from the construction site all the following particles that are larger than 3/4" in diameter: inorganic select fill, heavy clay, limestone, and construction debris, mortar, concrete, paint, chemicals, weeds, plastic, paper, steel, mortar, masonry, construction debris, and other substances that are harmful to plant growth. Remove the above items to these depths: 6" minimum in turf and seed areas, and 18" minimum in planting beds. The LA shall verify that the above items are removed before the Contractor is authorized to proceed with fill with specified topsoil or grading. DO NOT PLACE ANY FILL ON CONSTRUCTION DEBRIS.

23. Mow curbs shall be used at all planting bed edges when they are adjacent to lawn (see detail). Unless otherwise shown on plans, mow curbs shall intersect curbs, sidewalks, and buildings at 90 degrees (square). Mow curbs shall have expansion joints every 50' and at all abutments to other hardscape elements. Construction joints shall be saw cut at 10' on center. Mow curbs shall have curves that are smooth, flowing, and consistent in nature. Mow curbs with straight lines shall be straight. All formwork shall be within a ¼" tolerance of drawings. No mow curb shall have a radius smaller than 72" unless specifically called out on drawings.

24. Contractor shall fine grade all areas for approval by LA. Contractor shall be responsible for providing 2% positive drainage in all planting areas. No planting or mulching will take place until all construction, clean-up, fine grading, and irrigation is complete in the immediate area. Final finish grading shall be reviewed by the LA before any planting takes place. Contractor shall be responsible for any additional topsoil required to create a smooth condition prior to planting.

25.All planting beds shall be amended as per plans details and specs.Submit trip tickets to L.A. for approval of quantity and type of materials.

26. All sod and seed areas shall be amended as per plans and specifications.

27. Scarify all rootballs (#1 and larger) to prevent plants from remaining pot-bound. This is to be done by hand or with a 3-prong cultivator but never with a shovel or machete.

28. Place shrubs and groundcovers so that the top of the rootball is ¼" to ¾" above finish grade Trees shall be set 1" above finish grade for each caliper inch of trunk. Example: A 3" tree shall be set 3" above finish grade.

29. Water in and compact planting backfill to prevent formation of air pockets.

30. Plants shall be set plumb, unless otherwise directed by LA.

31. Back row of shrubs shall be planted 36" from face of building wall, groundcovers shall be 12" from building or as required by conditions. Front row of shrubs shall be planted a minimum of 24" behind (12" for ground cover) bed lines at lawns or walks and minimum 36" back from curbs, driveways, and parking areas.

32. After planting, remove strapping, wire "ears" and string, cords, burlap, etc. from top of B&B rootballs.

33. All planting beds and trees shall be mulched with 3" of mulch (2.5" after settlement).

34. All trees are to be stabilized per detail and specs immediately after planting.

35. All sod areas shall be thoroughly graded and smoothed with at least 8 passes in different directions using a drag-behind system such as a bunker rake or other device until very smooth and within 1/4" of specified grade (see civil sheets for grading plans).

36. Prior to sod installation, a fertilizer shall be applied and tilled into the prepared soil. Application must be done no longer than 24 hours prior to installation of sod. Do not apply fertilizer when a possibility of rain might occur before sod is installed. Reference specifications for specific type of fertilizer to be used.

37. Lay sod in parallel rows with tight joints. All sod must be placed perpendicular to slopes and staggered no less than 12" on each row. Slopes greater than 4:1 must be held in place with galvanized sod pins, wood pegs, or other method approved by LA. All sod shall be rolled with a 5-ton mechanical roller in at least two directions within 24 hours of laying. All sod areas shall be barricaded with wood stakes and ribbon for no less than 7 days.

38. Plant material shall be pruned as necessary to control size but not to disrupt the natural growth pattern or characteristic form of the plant except as necessary to achieve height clearance for visibility and pedestrian passage or to achieve a continuous opaque hedge if required.

39. All plant material shall be fully-maintained in a healthy and growing condition until final acceptance, and must be replaced with plant material of same variety and size if damaged, destroyed, or removed. This includes mowing, pruning, watering, and weeding.

40. Landscaped areas shall be kept free of trash, weeds, debris, and dead plant material until final acceptance. Any damage to landscape areas shall be repaired at no cost to owner.

PLANT SCHEDULE

SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE	HEIGHT	SPREAD	SPACING	REMARKS
TREES							
	GINKGO BILOBA	Ginkgo biloba	2" Cal.	8`-10`	6`-8`	As shown	CONTAINER GROWN, FULL DENSE HEAD, SYMMETRICAL SINGLE STRAIGHT TRUNK
	LACEBARK ELM	Ulmus parvifolia	3" Cal.	10`-12`	6`-8`	As shown	CONTAINER GROWN, FULL DENSE HEAD, SYMMETRICAL, SINGLE, STRAIGHT TRUNK
ORNAMENTAL TREES							
	VITEX	Vitex agnus-castus	45 Gal.	8`-10`	4`-6`	As shown	CONTAINER GROWN, FULL DENSE HEAD, SYMMETRICAL, MULTI TRUNK. 3 TO 5 CANE MIN.
SHRUBS							
	RED YUCCA	Hesperaloe parviflora	3 Gal.	18"-24"	12"-16"	As shown	CONTAINER GROWN, MATURE ROOT SYSTEM BUT NOT ROOT BOUND. FULL BROAD TOP.
SHRUB AREAS							
	BERKELEY SEDGE	Carex divulsa	1 Gal.	10"-12"	12"-16"	18" O.C.	CONTAINER GROWN, MATURE ROOT SYSTEM BUT NOT ROOT BOUND. FULL BROAD TOP
	MEXICAN FEATHER GRASS	Nassella tenuissima	1 Gal.	12"-15"	10"-12"	18" O.C.	CONTAINER GROWN, MATURE ROOT SYSTEM BUT NOT ROOT BOUND. FULL BROAD TOP.
GROUND COVERS							
	DECOMPOSED GRANITE	Decomposed Granite with Stabilizer	n/a	n/a	n/a	n/a	4" THICK WITH WEED BARRIER FABRIC. REF DETAIL AND SPECIFICATIONS. STABILIZER IS REQUIRED TO PREVENT RUNOFF.
SOD							
	TIF 419 BERMUDA SOD	`Tif 419` Cynodon Dactylon	Solid Sod / Roll	n/a	n/a	n/a	REF. PLANTING NOTES AND SPECIFICATIONS. ADD SF FOR SLOPES, CUT AND WASTE.

no.	revision	by	date

Crandall Independent School District

scale
horiz N/A
vert N/A
date
JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

REGISTERED LANDSCAPE ARCHITECT JOSE L. MADRID 3207 STATE OF TEXAS
07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
LANDSCAPE NOTES

tnp project DLR23073
sheet L1.02

DLRGROUP
© DLR Group

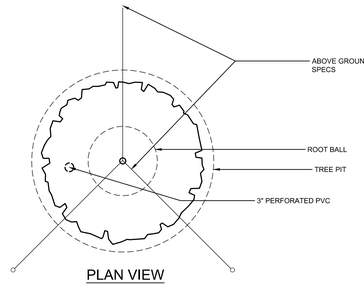
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

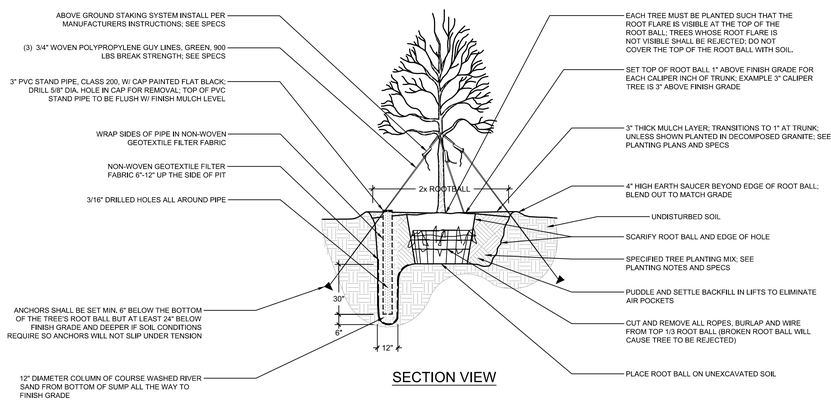
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

LANDSCAPE NOTES

L1.02



PLAN VIEW

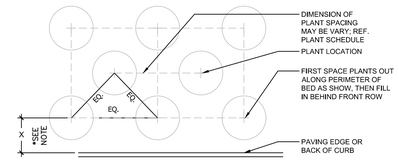


SECTION VIEW

NOTES:
1. ROOT BALL SIZE SHALL CONFORM TO THE LATEST EDITION OF AMERICAN STANDARD FOR NURSERY STOCK.
2. ROOT BALL WIDTH SHOULD BE DETERMINED BY THE FOLLOWING; 10" OF ROOT BALL FOR EACH CALIPER INCH OF TREE TRUNK.
3. ROOT BALL DEPTH IS 2/3 OF DIAMETER.
4. DO NOT HEAVILY PRUNE THE TREE AT PLANTING; PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.

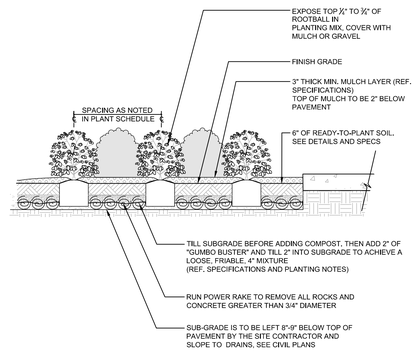
1 TREE PLANTING

NTS TNP-ST-01



*NOTES:
1. X = 12" MIN. FOR GROUNDCOVER
2. X = 24" MIN. FOR SHRUBS
3. SPACING DIAGRAM REFERS TO ALL PLANTING UNLESS OTHERWISE NOTED

PLAN VIEW



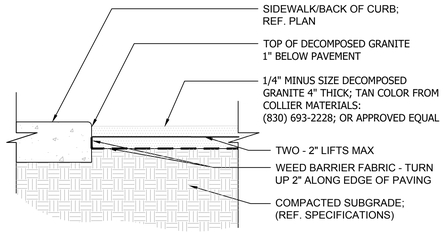
SECTION VIEW

2 SHRUB AND GROUNDCOVER PLANTING DETAIL

NTS TNP-ST-07

NOTES:
1. DETAIL IS INTENDED TO SHOW DESIGN INTENT, NOT FOR CONSTRUCTION PURPOSES. FINAL MATERIAL SELECTION TO BE DETERMINED.
2. REFER TO PRODUCT INSTALLATION GUIDE, CONTRACTOR TO DETERMINE FINAL CONSTRUCTION METHOD ON SITE.

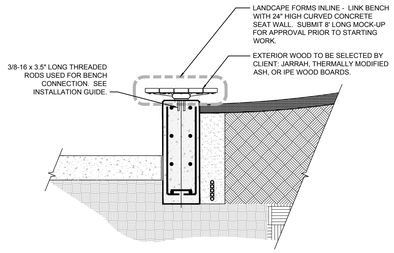
DG SHALL HAVE "STABILIZER SOLUTIONS" PRE-MIXED PRIOR TO DELIVERY TO SITE. INSTALL IN 2" LIFTS WHILE COMPACTING WITH WATER AND A ROLLER TO NOT LESS THAN 90% NOR MORE THAN 95% OF MAXIMUM DRY DENSITY. DO NOT COMPACT OVER THE ROOTS OF PLANTS OR TREES.



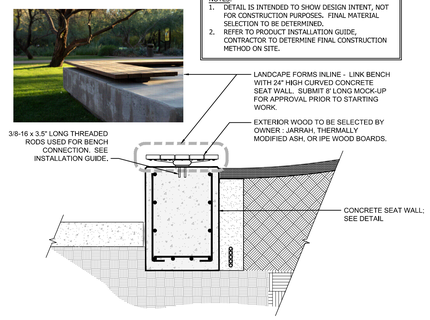
3 DECOMPOSED GRANITE

NTS TNP-ST-11

NOTES:
1. DETAIL IS INTENDED TO SHOW DESIGN INTENT, NOT FOR CONSTRUCTION PURPOSES. FINAL MATERIAL SELECTION TO BE DETERMINED.
2. REFER TO PRODUCT INSTALLATION GUIDE, CONTRACTOR TO DETERMINE FINAL CONSTRUCTION METHOD ON SITE.



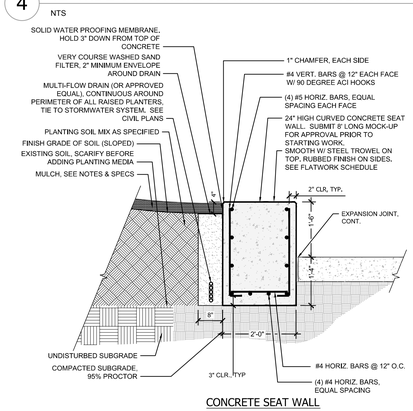
CONCRETE SEAT WALL WITH BENCH



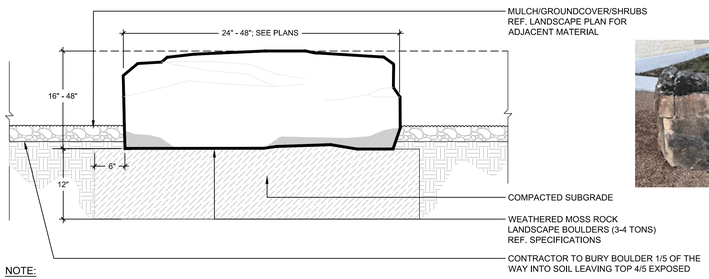
CONCRETE SEAT WALL WITH BENCH

4 12" WIDE CONCRETE SEAT WALL WITH BENCH

NTS



CONCRETE SEAT WALL



NOTE:
1. BOULDERS SHALL BE OF AN APPROVED SIZE AND SHAPE, SUBMIT PHOTOS FOR APPROVAL.
2. BOULDER DIMENSIONS SHALL BE NO LESS THAN FOURTEEN (14) INCHES IN HEIGHT NOR GREATER THAN FORTY-EIGHT (48) INCHES IN HEIGHT, NOT LESS THAN THREE (3) FEET IN THICKNESS, AND NOT LESS THAN FOUR (4) FEET IN WIDTH.
3. BOULDERS SHALL BE FINISHED AS NECESSARY TO ENSURE CONSISTENT FIT AND SMOOTH AND ROUNDED SHAPE WITH NO SHARP CORNERS OR ANGULAR PROJECTIONS.

5 BOULDER PLACEMENT

NTS TNP-ST1-01

6 24" WIDE CONCRETE SEAT WALL WITH BENCH

NTS TNP-SE-18

no.	revision	by	date

Crandall Independent School District

scale
horiz N/A
vert N/A
date JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

REGISTERED LANDSCAPE ARCHITECT JOE L. MADRID 3207 STATE OF TEXAS 01/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
LANDSCAPE DETAILS (1 of 2)

tnp project DLR23073
sheet L1.03

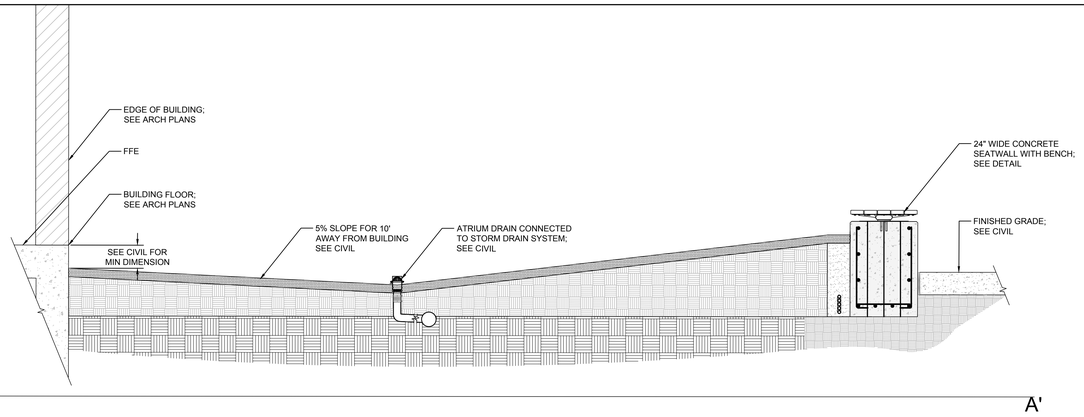
DLR GROUP
© DLR Group
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

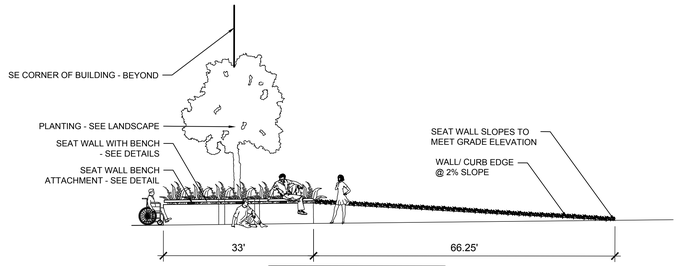
LANDSCAPE DETAILS (1 of 2)

L1.03



01 SECTION A-A'

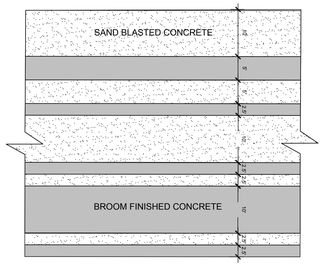
NTS



NOTE:
VERTICAL EXAGGERATED SCALE 3:1
DRAWING TO SHOW DESIGN INTENT,
NOT FOR CONSTRUCTION PURPOSES.

02 SLOPED SEATWALL AND PLANTER

NTS



NOTE:
ALTERNATING SANDBLASTED/ INTEGRAL CONCRETE PATTERN TO SHOW DESIGN INTENT. DESIGN REPEATS WHERE ABLE

03 CONCRETE BANDING PATTERN LAYOUT

NTS

no.	revision	by	date

Crandall Independent School District

scale
horiz N/A
vert N/A
date JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

REGISTERED LANDSCAPE ARCHITECT JOE L. MADRID 3207 STATE OF TEXAS 07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
LANDSCAPE DETAILS (2 of 2)

tnp project DLR23073
sheet L1.04

DLRGROUP © DLR Group

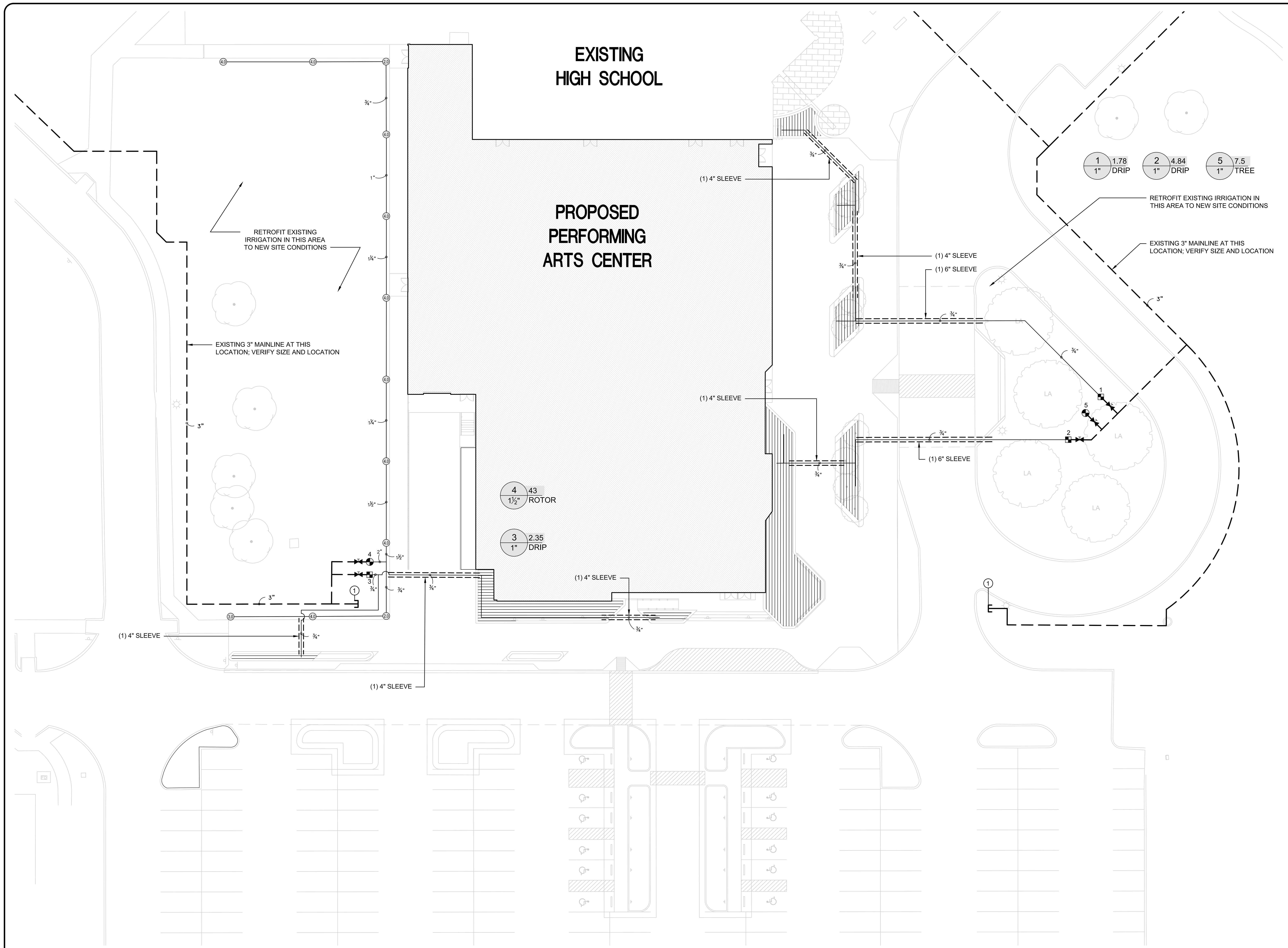
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

LANDSCAPE DETAILS (2 of 2)

L1.04



GRAPHIC SCALE
20 0 10 20 40
GRAPHIC SCALE: 1" = 20'

IRRIGATION KEY

SYMBOL	MANUFACTURER/MODEL
1401 1402 1404	Rain Bird 1804-SAM-PRS-1400 Flood

SYMBOL	MANUFACTURER/MODEL
2.0	Hunter I-20-04 2.0
3.0	Hunter I-20-04 3.0
4.0	Hunter I-20-04 4.0

SYMBOL	MANUFACTURER/MODEL
	Rain Bird XCZ-LF-100-PRF
	Area to Receive Dripline Netafim TLDL-4-18 (18)

SYMBOL	MANUFACTURER/MODEL
	Rain Bird PEB
	Ball Valve
	Irrigation Lateral Line: PVC Class 200 SDR 21
	Irrigation Mainline: PVC Class 200 SDR 21
	Pipe Sleeve: PVC Schedule 40

Valve Callout: Valve Number, Valve Flow, Valve Size

LEGEND:

1. L.I.C. TO LOCATE, CUT, AND CAP EXISTING MAINLINE AT THIS LOCATION

NOTES:

CONTRACTOR TO OPERATE AND CONFIRM PROPER OPERATION OF EXISTING SYSTEM PRIOR TO CONSTRUCTION

EXISTING VALVES, VALVES BOXES, AND IRRIGATION HEADS THAT ARE WITHIN CONSTRUCTION ZONES TO BE SALVAGED. PARTS TO BE REUSED OR GIVEN TO OWNER FOR INVENTORY

RETROFIT EXISTING IRRIGATION SYSTEM TO NEW SITE CONDITIONS

L.I.C. TO CONNECT PROPOSED CONTROL VALVES TO EXISTING CONTROLLER LOCATED IN PUMP HOUSE; COORDINATE WITH OWNER FOR CONTROLLER LOCATION

L.I.C. TO VERIFY PROPER OPERATION OF ENTIRE IRRIGATION SYSTEM POST CONSTRUCTION

no.	revision	by	date

Crandall Independent School District

scale horiz 1"=20' vert N/A
date JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS JOE L. MADRID 07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
IRRIGATION PLAN

tnp project DLR23073
sheet IR1.01

DLRGROUP © DLR Group

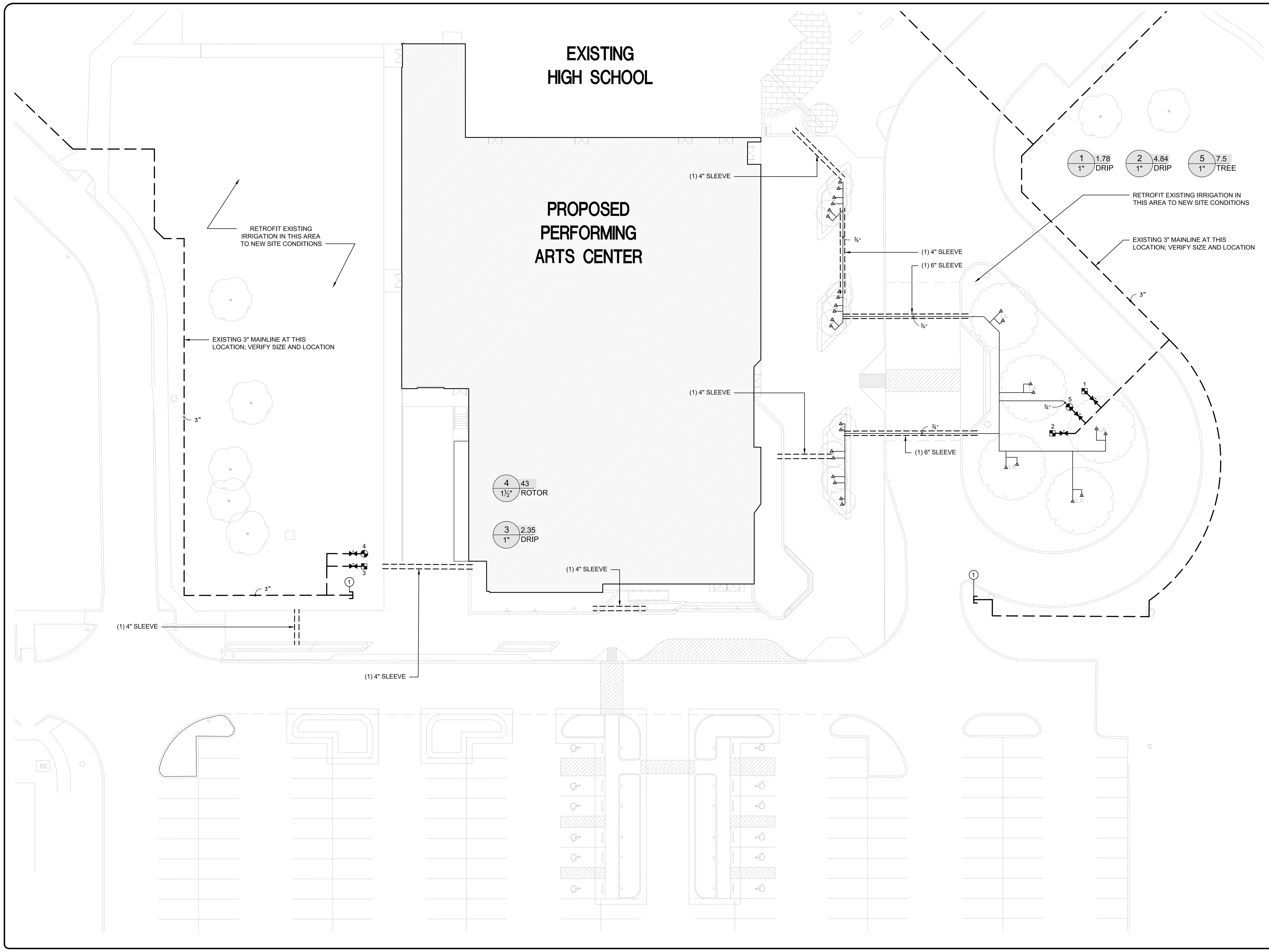
tnp teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

IRRIGATION PLAN

IR1.01



IRRIGATION KEY

SYMBOL	MANUFACTURER/MODEL
1401 1402 1404	Rain Bird 1804-SAM-PRS-1400 Flood
SYMBOL	**MANUFACTURER/MODEL**
2.0	Hunter I-20-04 2.0
3.0	Hunter I-20-04 3.0
4.0	Hunter I-20-04 4.0
SYMBOL	**MANUFACTURER/MODEL**
	Rain Bird XCZ-LF-100-PRF
	Area to Receive Dripline Netafim TLDL-4-18 (18)
SYMBOL	**MANUFACTURER/MODEL**
	Rain Bird PEB
	Ball Valve
	Irrigation Lateral Line: PVC Class 200 SDR 21
	Irrigation Mainline: PVC Class 200 SDR 21
	Pipe Sleeve: PVC Schedule 40

Valve Callout: # (Valve Number), # (Valve Flow), #" (Valve Size)

LEGEND:

1. L.I.C. TO LOCATE, CUT, AND CAP EXISTING MAINLINE AT THIS LOCATION

NOTES:

CONTRACTOR TO OPERATE AND CONFIRM PROPER OPERATION OF EXISTING SYSTEM PRIOR TO CONSTRUCTION

EXISTING VALVES, VALVES BOXES, AND IRRIGATION HEADS THAT ARE WITHIN CONSTRUCTION ZONES TO BE SALVAGED. PARTS TO BE REUSED OR GIVEN TO OWNER FOR INVENTORY

RETROFIT EXISTING IRRIGATION SYSTEM TO NEW SITE CONDITIONS

L.I.C. TO CONNECT PROPOSED CONTROL VALVES TO EXISTING CONTROLLER LOCATED IN PUMP HOUSE; COORDINATE WITH OWNER FOR CONTROLLER LOCATION

L.I.C. TO VERIFY PROPER OPERATION OF ENTIRE IRRIGATION SYSTEM POST CONSTRUCTION

no.	revision	by	date

Crandall Independent School District

scale: horiz 1"=20'; vert N/A
date: JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS — JOE L. MADRID — 7812 — LICENSED IRRIGATOR — 07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
TREE IRRIGATION PLAN

tnp project DLR23073
sheet IR1.02

DLR GROUP © DLR Group

tnp teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

TREE IRRIGATION PLAN

IR1.02

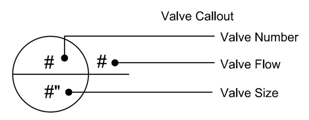
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI		
1401 1402 1404	Rain Bird 1804-SAM-PRS-1400 Flood Flood Bubbler 4.0in. popup with check valve and pressure regulator. Install w/ PA-80 adapter.	30		

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	GPM	RADIUS
2.0	Hunter I-20-04 2.0 Turf Rotor, 4in. Pop-Up. Adjustable and Full Circle. Plastic Riser. Drain Check Valve. Standard Nozzle.	45	2	34'
3.0	Hunter I-20-04 3.0 Turf Rotor, 4in. Pop-Up. Adjustable and Full Circle. Plastic Riser. Drain Check Valve. Standard Nozzle.	45	3	38'
4.0	Hunter I-20-04 4.0 Turf Rotor, 4in. Pop-Up. Adjustable and Full Circle. Plastic Riser. Drain Check Valve. Standard Nozzle.	45	4	40'

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird XCZ-LF-100-PRF Low Flow Drip Control Kit, 1" Low Flow Valve, 3/4" Pressure Regulating RBY Filter, and 30psi Pressure Regulator. 0.2gpm-5gpm.
	Area to Receive Dripline Netafim TLDL-4-18 (18) Techline Pressure Compensating Landscape Dripline. 0.4GPH emitters at 18.0" O.C. Dripline laterals spaced at 18.0" apart, with emitters offset for triangular pattern. Surface and Sub Surface Installations. UV Resistant.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird PEB 1in., 1-1/2in., 2in., 3in. Plastic Industrial Remote Control Valve. Low Flow Operating Capability, Globe Configuration.
	Ball Valve LASCO, Same size as mainline
	Irrigation Lateral Line: PVC Class 200 SDR 21
	Irrigation Mainline: PVC Class 200 SDR 21
	Pipe Sleeve: PVC Schedule 40



VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI	PRECIP
1	Rain Bird XCZ-LF-100-PRF	1"	Area for Dripline	1.78	37.5	0.3 in/h
2	Rain Bird XCZ-LF-100-PRF	1"	Area for Dripline	4.84	43.4	0.3 in/h
3	Rain Bird XCZ-LF-100-PRF	1"	Area for Dripline	2.35	37.7	0.3 in/h
4	Rain Bird PEB	1-1/2"	Turf Rotor	43	56.2	0.66 in/h
5	Rain Bird PEB	1"	Bubbler	7.5	33.5	1.06 in/h

IRRIGATION NOTES

*The following notes are provided as a courtesy to the landscape contractor. Please note that the contractor should refer to all relevant sections provided in the plans.

SECTION 1 - GENERAL

1. These notes are intended as a field reference for the Contractor. The Contractor will thoroughly review these notes, as well as the specifications, and drawings prior to start of any work. The Contractor shall visit the site prior to submitting his bid and prior to start of work to become completely familiar with site conditions.

2. Contractor shall provide a complete, functioning automatic irrigation system. This includes all materials, labor, fees, taxes, equipment, and other costs incidental to accomplishing the end.

3. Contractor shall be a licensed irrigator/installer in the State of Texas.

4. It is the responsibility of the Contractor to advise the Licensed Irrigator (hereinafter, LI) of any condition found on the site which prohibits installation as shown on these drawings. The term of "Licensed Irrigator" shall refer to Teague Nall and Perkins, Inc., 5237 N. Riverside Drive, Suite 100, Fort Worth, Texas 76137

5. Prior to submitting a bid, the Contractor shall verify any discrepancies between the notes, specifications, or the drawings with the LI for clarification. If there is a discrepancy between the number or quality of materials shown on the plans and the number of materials shown in the materials legend, the greater number of and greater quality materials will take precedence for bidding purposes. All quantities listed are for information only.

6. Written dimensions prevail over scaled dimensions. Notify LI of any discrepancies.

7. The Contractor bears all responsibility and costs for obtaining all licenses and permits required by federal, state, and local agencies to accomplish the work of this project. All work shall be installed in accordance with applicable codes and ordinances.

8. Contractor shall be responsible for coordinating their work with project's building contractor, other trades, and owner.

9. Warning! Call toll-free **811** *before* you dig! The contractor bears all responsibility for verifying all underground utilities, pipes, and structures in the field prior to construction. Any damage to utilities that are to remain shall be repaired immediately at no expense to the owner. The Contractor shall contact the building contractor and all utility authorities to mark location of site utilities. Install flags or stakes and maintain them in place throughout the project. Damage to utilities or other work shall be repaired at the expense of the contractor responsible for the damage. The locations of existing utilities as shown on these plans are approximate. There may be other underground utilities within the project area that are not shown. LI and/or Engineer and/or Surveyor assumes no responsibility for any utilities not shown on plans.

10. The design water pressure necessary for this system's proper operation is 65 p.s.i. Contractor shall verify static water pressure prior to commencement of construction/installation. Should a discrepancy occur between the design pressure and the actual pressure contact the LI before proceeding with the work. Failure to do so should a discrepancy occur will result in the Contractor making necessary changes to the irrigation system to the satisfaction of the LI without additional cost to the Owner or LI.

11. Contractor shall operate the existing irrigation system prior to the commencement of installation of the proposed work. Existing heads and mainline shall be located, and the proposed system adjusted to insure adequate irrigation coverage between the two systems.

12. Due to existing vegetation, utilities, and other site conditions, the Contractor should anticipate field adjustments by the LI and should understand such adjustments are not eligible for a change order.

13. The irrigation system shall have 100% coverage of all planting areas, head-to-head spacing, and matched precipitation rates on each zone. Contractor shall be responsible for the supply and installation of additional heads needed to cover "dry spots" or slight variations from the plan.

14. The Contractor shall give the LI notice of required inspections upon completion of each of the following phases:

A. Pre-Job Conference - 7 days.
B. Pressure supply line installation & testing - 48 hours
C. Automatic controller installation - 48 hours
D. Control wire installation - 48 hours
E. Lateral line and irrigation installation - 48 hours
F. Coverage test - 48 hours
G. Final inspection - 7 days

15. The entire system shall be unconditionally guaranteed by the Contractor against defective work and materials for a period of one year after final acceptance. Damage to the irrigation system or cutting off of water or electricity by other trades or persons shall not void the warranty.

16. It is the contractor's responsibility to insure the availability of water to the plants at all times until final acceptance.

17. LI assumes no responsibility for damages, liabilities, or cost resulting from changes or alterations made to the plan without the express written consent of LI.

SECTION 2 - MATERIALS

18. All materials are subject to approval or refusal by the LI. All material rejected by the LI shall be removed from the site and replaced with acceptable material at the Contractor's expense. All material to be new and first quality. The Contactor shall check all material for specified requirements, shipping damage, manufacturing defects, and shall reject all unsatisfactory materials.

19. Contractor shall install anti-drain devices (check valves) where necessary to prevent low head drainage and shall install pressure compensating devices where necessary to prevent overspray or misting.

20. Do not make substitutions. If specified material is not available, submit proof of non-availability to LI. If contractor wishes to use substitute equipment he shall submit cut sheets and detailed calculations for the LI's approval or rejection. All substitutions shall have written approval form the LI 30 days prior to installation.

21. Contractor shall install one extra control wire, routed with the common wire to each control valve, with the installation of the pilot and common wires. (for bidding clarity, consider the extra control wire as a second common wire, different color. The length of the extra control wire is equal to the length of the common wire).

22. All control wire shall be direct burial, 600 volt, single conductor solid copper, plastic insulated cable, rated for direct burial applications, U.F., U.L. approved 14 gauge (minimum) pilot and common ground return wire.
- Pilot Wire: red (color)
- Common Ground Wire: white (color)
- Extra Control Wire: blue (color)

23. Install all wire connections to valves with wire nuts inside DBY weather-sealed connectors.

SECTION 3 - EXECUTION

24. All locations and workmanship are subject to approval or refusal by the LI. All locations and workmanship rejected by the LI shall be remedied at the Contractor's expense. All piping and head layout is shown diagrammatically and is to be located in planting areas where possible. Locate lines in such a way so as to cause the least conflict with other built and natural features.

25. The Irrigation Contractor shall be responsible for the final electrical connection of the controller. This shall include all necessary fuse boxes or other electrical requirements.

26. No installation (except sleeving) of any piping will take place until all clean-up and rough grading (to within 2" of finish grade) is complete in the immediate area.

27. If an irrigation pump is specified, the Contractor shall test the pump in presence of LI to verify it meets specified flow at the specified pressure and submit test results to LI for approval. No irrigation work shall begin until specified water quality, pressure, and flow is provided.

28. Installation of irrigation sleeves under paving as indicated on the drawings, shall be the responsibility of the Irrigation Contractor, unless otherwise noted. Provide 12" to top of sleeve from bottom of pavement when going under pavement. All sleeves shall be PVC schedule 40 with #12 pull wire wherever electrical conduit, lateral irrigation lines, or main irrigation lines pass through or go under masonry, paving, etc. It is the responsibility of the Irrigation Contractor to locate and mark the sleeve ends.

29. Contractor to provide minimum cover of 18" for pressure mainline and 12" for lateral lines. Lateral lines may be installed over mainlines.

30. Contractor shall hand trench through the root zone (within the dripline) of existing trees taking care not to cut any roots larger than one (1") inch Where possible contractor shall trench around trees to avoid cutting roots. Where possible contractor shall trench directly towards tree trunk rather than across the root zone to minimize damage to tree roots. Irrigation trenches shall be routed to avoid proposed tree locations by a minimum of 5'-0". See landscape planting plans prior to trenching and installation and coordinate work with Landscape Contractors.

31. All heads shall installed a minimum 4" away from all hardscape and be straight and plumb to grade and evenly spaced to provide for uniform distribution. All heads shall be adjusted to provide even coverage and to keep water in landscaped areas and off of walls and pavement.

32. Contractor shall flush all lines prior to nozzle installation for pop-up spray heads and prior to head installation for rotor heads and bubblers.

33. Prior to installation, the final location of the automatic controller shall be determined by the Owner and LI.

34. Provide the LI and Owner a reproducible, As-Built Record Drawings (same size as drawing) and a reduced, laminated copy for the inside of the controller. As-built drawings shall show valves, controller, and sleeves dimensionally located from two permanent points of reference. Contractor shall also provide all irrigation product information and controller operating manuals.

35. All limestone, rocks, and building materials dug up during trenching shall be removed from the site and not put back into trenches.

36. Contractor is to test water for staining potential and submit results to LI. Install LI approved filtration system to prevent staining.

37. Contractor shall make every effort to prevent staining of walls, walks, driveways, vehicles, or other structures. Contractor guarantees job against such staining for thirty (30) days. Contractor shall install a suitable rust prevention system if required to prevent staining.

38. The entire irrigation system shall be fully-maintained until final acceptance by continuously checking the system to ensure that plants are receiving the proper amount of water. Any broken or defective materials shall be immediately replaced with material originally specified.

no.	revision	by	date

Crandall Independent School District

scale: horiz N/A, vert N/A; date: JUL 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS — JOE L. MADRID — 17812 — LICENSED IRRIGATOR — 07/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
IRRIGATION SCHEDULE & NOTES

tnp project DLR23073 — sheet IR1.03

DLRGROUP
© DLR Group

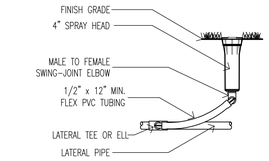
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

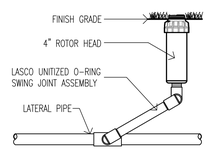
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

IRRIGATION SCHEDULE & NOTES

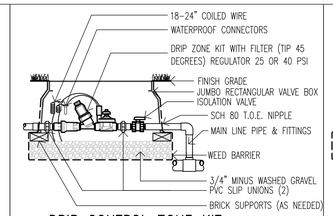
IR1.03



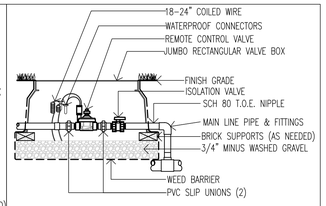
01 4" SPRAY HEAD
NOT TO SCALE



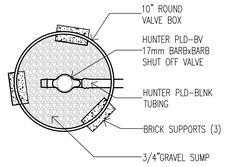
02 4" ROTOR HEAD
NOT TO SCALE



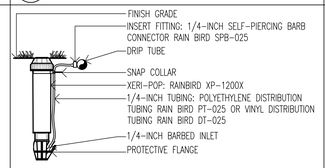
03 DRIP CONTROL ZONE KIT WITH ISOLATION VALVE
NOT TO SCALE



04 REMOTE CONTROL VALVE WITH ISOLATION VALVE
NOT TO SCALE

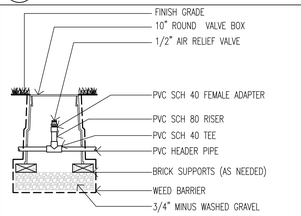


05 MANUAL FLUSH VALVE
NOT TO SCALE

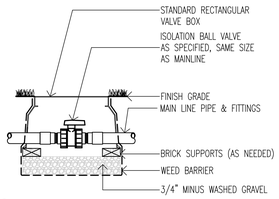


NOTE:
USE XERIMAN TOOL XM-TOOL TO INSERT BARB CONNECTOR DIRECTLY INTO 1/2-INCH POLYETHYLENE TUBING. LOCATE AT FURTHEST DISTANCE FROM DRIP VALVE ASSEMBLY, ADJACENT TO EDGING OR WITHIN LOW PLANTINGS FOR OPTIMUM VIEWING. WITH CLOSED SPRAY NOZZLE.

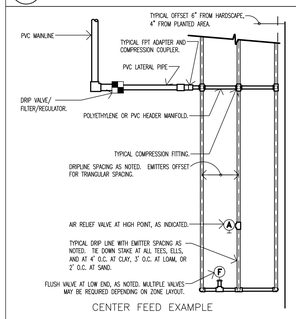
06 DRIP ZONE INDICATOR
NOT TO SCALE



07 AIR RELIEF VALVE IN PVC HEADER
NOT TO SCALE



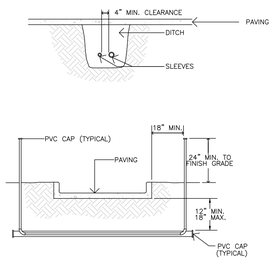
08 BALL ISOLATION VALVE
NOT TO SCALE



CENTER FEED EXAMPLE

NOTES:
1. SIZE EMITTER FLOW AND SPACING BASED ON PLANT AND SOIL TYPE.
2. ROW SPACING OF PLD TUBING BASED ON PLANT AND SOIL TYPE.
3. STAKE TUBING DOWN EVERY 5' AND WITHIN 1' OF ALL FITTING OUTLETS
4. DO NOT EXCEED VELOCITY OF 5 FPS WITHIN TUBING. IF SIZE OF DRIP AREA CREATES VELOCITIES GREATER THAN 5 FPS USE STANDARD LATERAL PIPE TO CREATE SUPPLY HEADER FOR THE DRIP AREA.
5. INSTALL FLUSH VALVE AT POINT FURTHEST FROM SUPPLY POINT.
6. THROUGHLY FLUSH LATERAL AND DRIPLINE PRIOR TO FINAL CONNECTIONS
7. TEST DRIP LINE FOR PROPER OPERATION PRIOR TO COVERING.

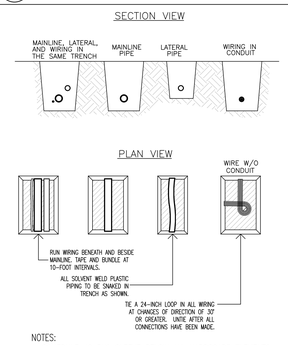
09 TYPICAL DRIPLINE LAYOUT
NOT TO SCALE



NOTES:

1. ALL PVC IRRIGATION SLEEVES TO BE SCHEDULE 40 PVC PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP TO 95% PROCTOR.

10 SLEEVING DETAIL
NOT TO SCALE



NOTES:
1. SCHEDULE 40 PVC SLEEVE BELOW ALL HARDSCAPE ELEMENTS SHALL BE TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE WITHIN, OR AS NOTED ON PLAN.
2. FOR PIPE AND WIRE BURIAL DEPTHS SEE SPECIFICATIONS.

11 TRENCH DETAIL
NOT TO SCALE

no.	revision	by	date

Crandall Independent School District

scale
horiz N/A
vert N/A
date
JUL 2024

tnp
teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

STATE OF TEXAS
JOE L. MADRID
1015
LICENSED IRRIGATOR
01/25/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
IRRIGATION DETAILS

tnp project
DLR23073
sheet
IR1.04

DLRGROUP
© DLR Group

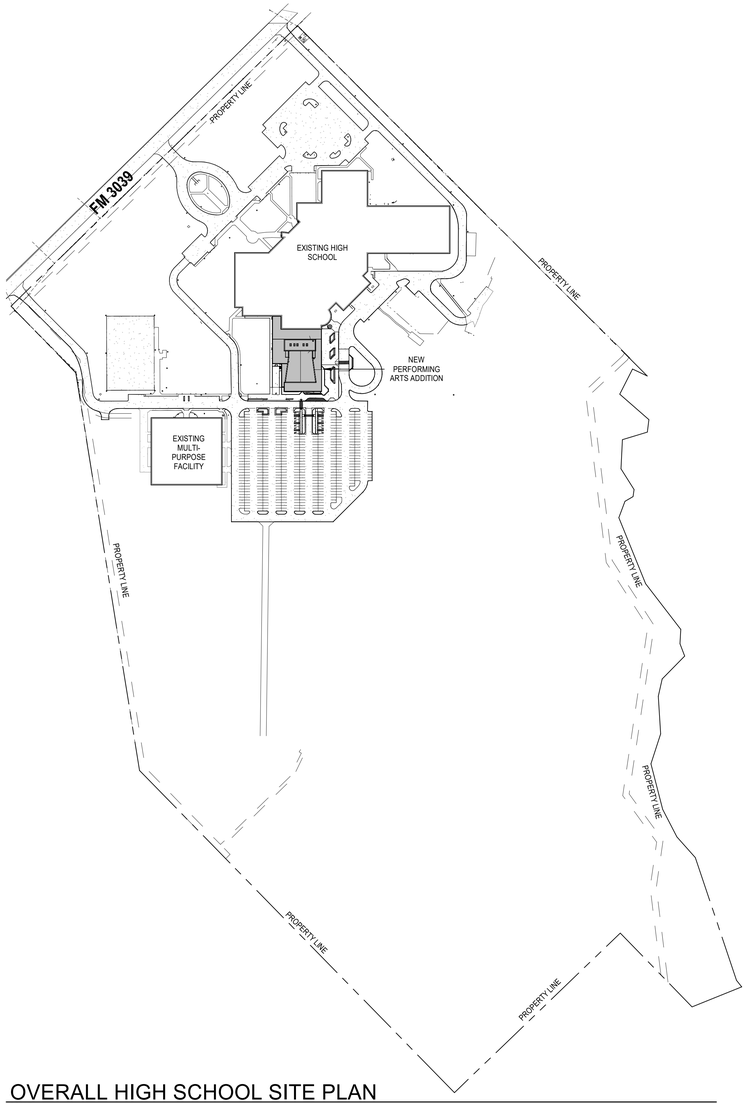
tnp
teague nall & perkins
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph
214.461.9864 fx
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673
www.tnpinc.com

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13386 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

IRRIGATION DETAILS

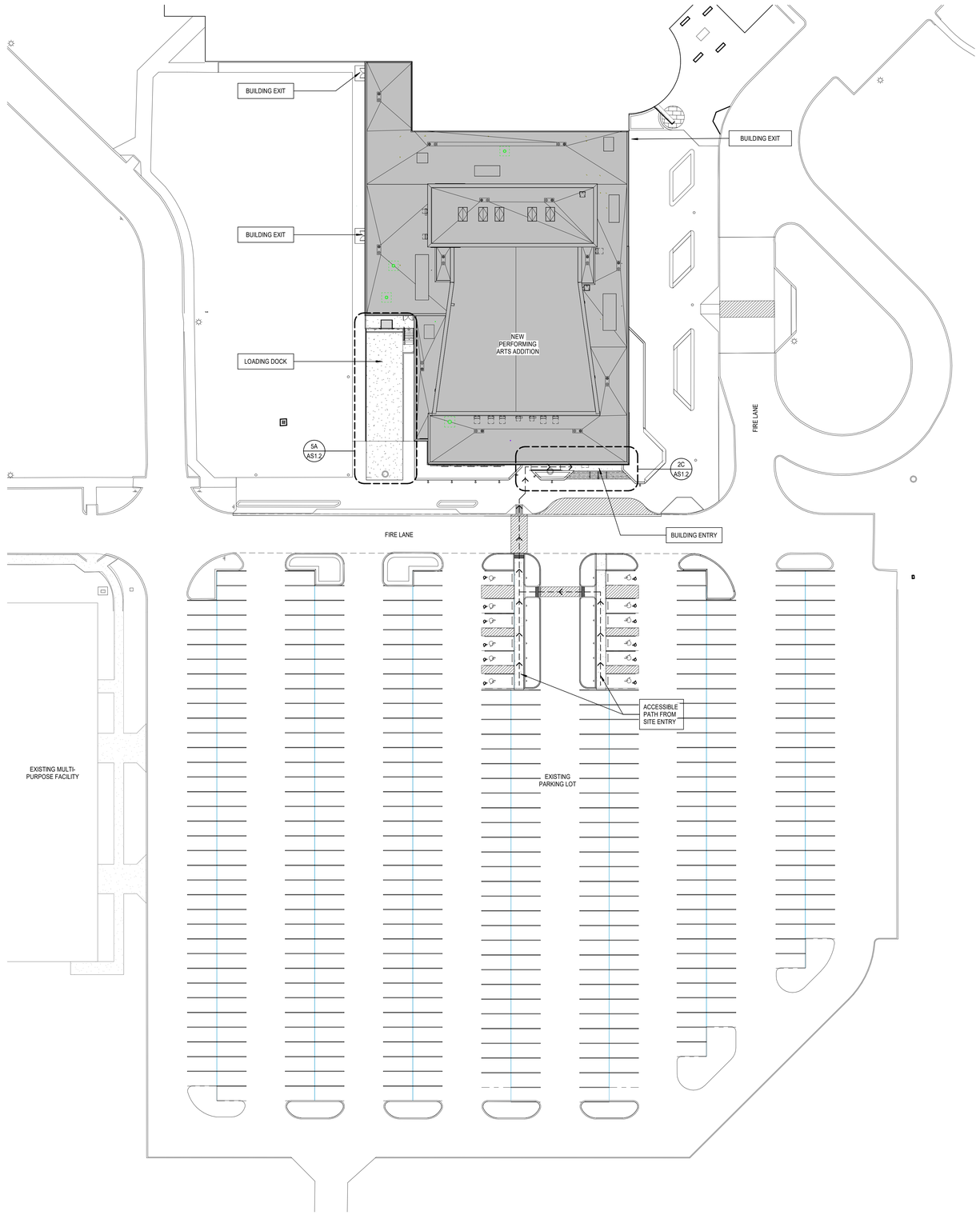
IR1.04



N
TRUE NORTH

OVERALL HIGH SCHOOL SITE PLAN

SCALE: 1" = 200'-0"



N
TRUE NORTH

PROJECT SITE PLAN

SCALE: 1" = 30'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
TEXAS

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

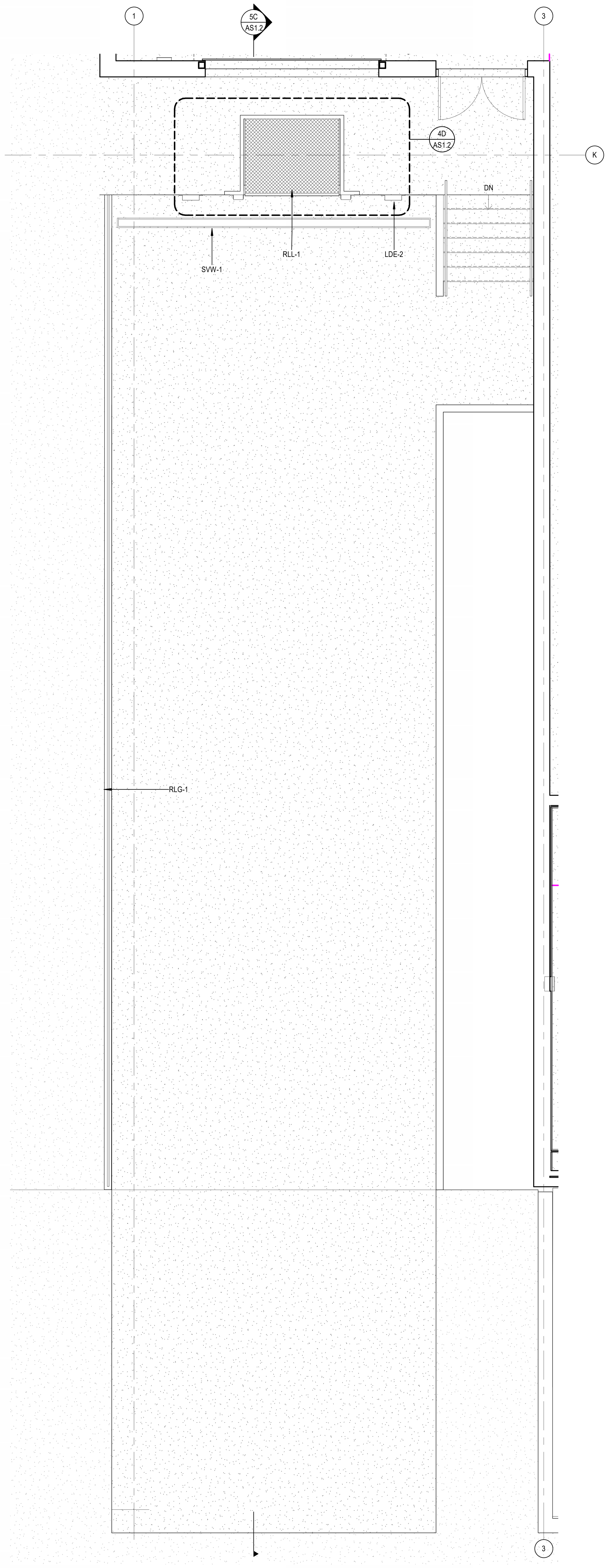
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

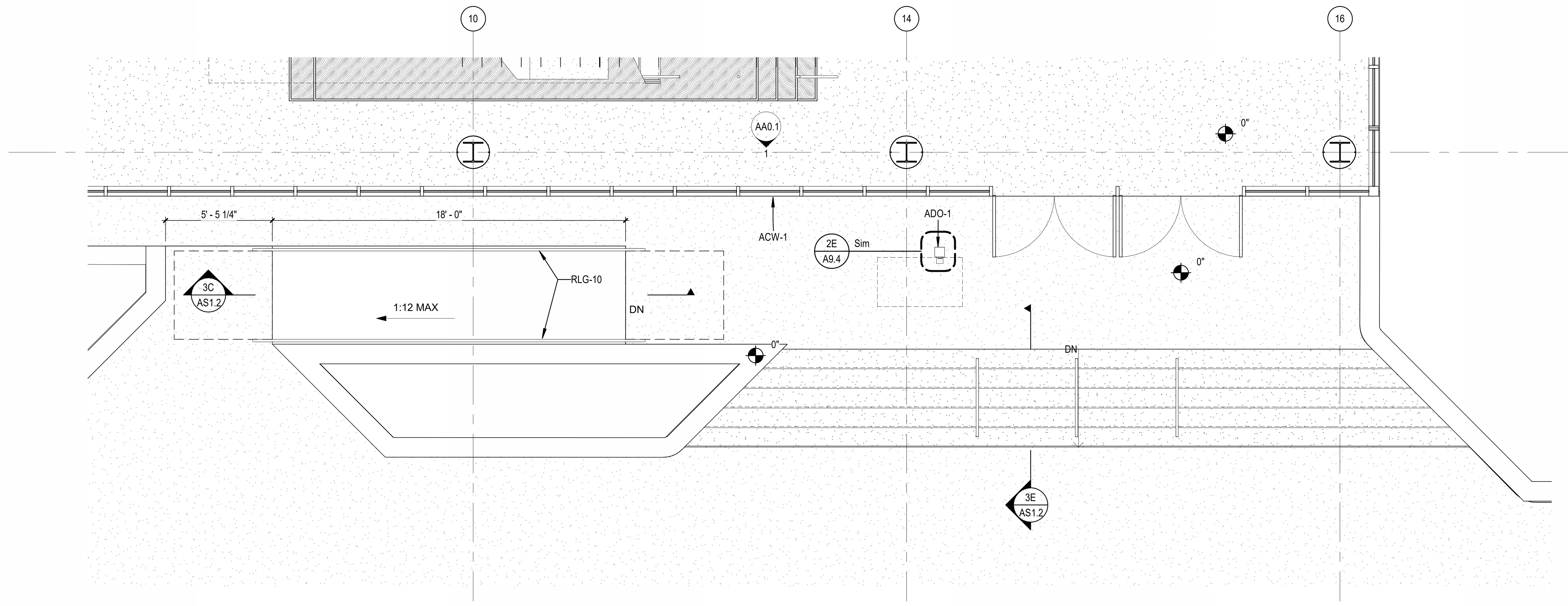
ARCHITECTURAL SITE PLAN

AS1.1

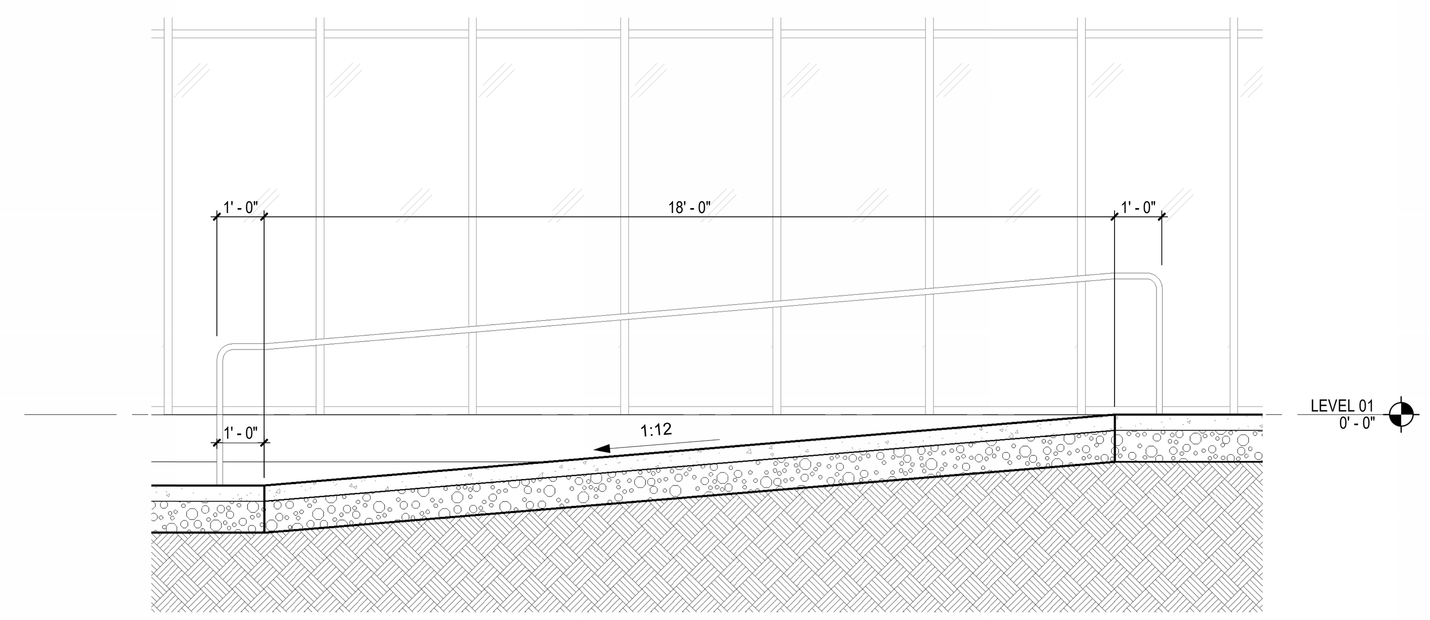
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:16 PM



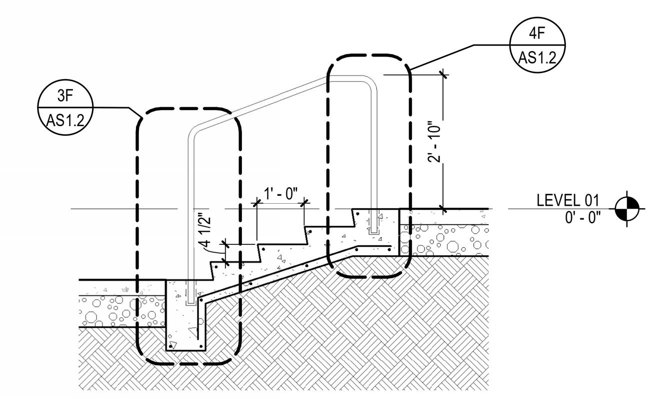
5A AS1.2 ENLARGED SITE PLAN - LOADING DOCK
SCALE: 1/4" = 1'-0"



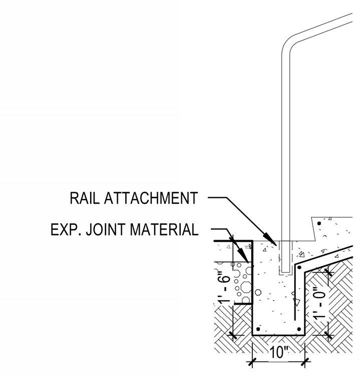
2C AS1.2 ENLARGED SITE PLAN - ENTRY
SCALE: 1/4" = 1'-0"



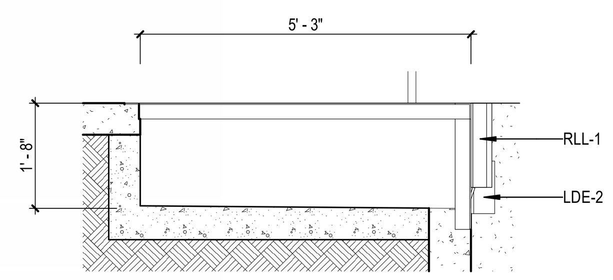
3C AS1.2 RAMP SECTION
SCALE: 3/8" = 1'-0"



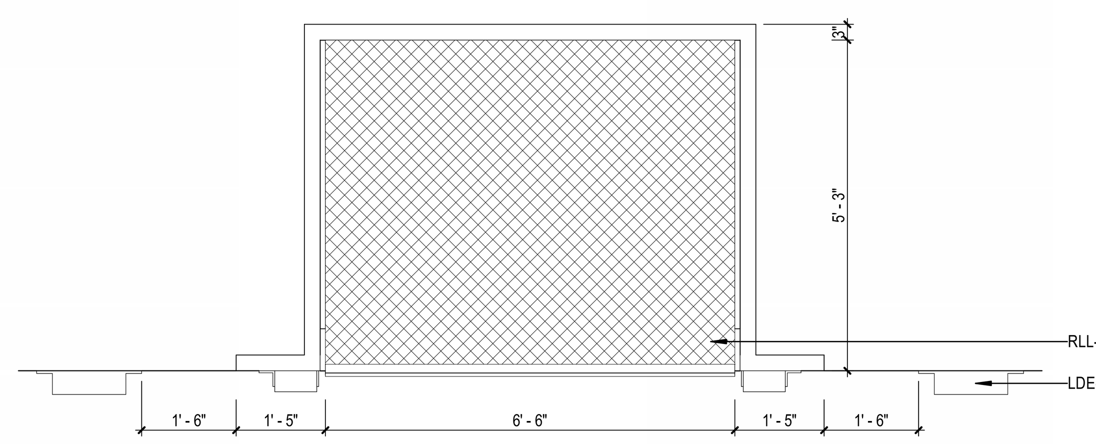
3E AS1.2 STAIR SECTION
SCALE: 3/8" = 1'-0"



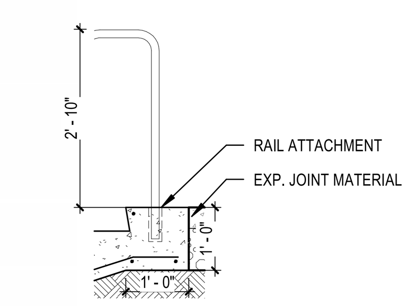
3F AS1.2 EXTERIOR STAIR BASE
SCALE: 1/2" = 1'-0"



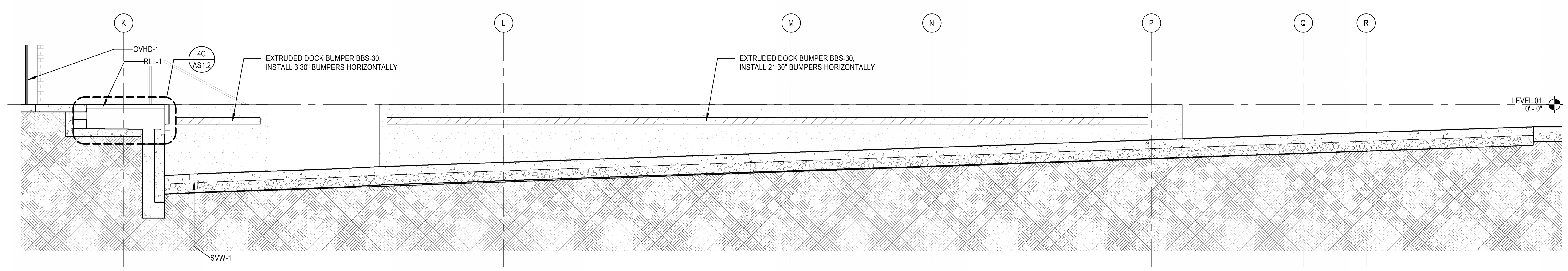
4C AS1.2 LOADING DOCK DETAIL
SCALE: 1/2" = 1'-0"



4D AS1.2 LOADING DOCK DETAIL - PLAN
SCALE: 1/2" = 1'-0"



4F AS1.2 EXTERIOR STAIR
SCALE: 1/2" = 1'-0"



5C AS1.2 SECTION - LOADING DOCK
SCALE: 1/4" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
ADO-1	ACCESSIBLE DOOR OPERATOR
LDE-2	LOADING DOCK BUMPERS
OVHD-1	OVERHEAD COILING DOOR
RLG-1	STEEL PIPE/TUBE RAIL
RLG-10	STEEL DECORATIVE RAILING
RLL-1	RECESSED DOCK LEVELER, 5,000 LBS. CAPACITY
SVW-1	TRENCH DRAIN

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

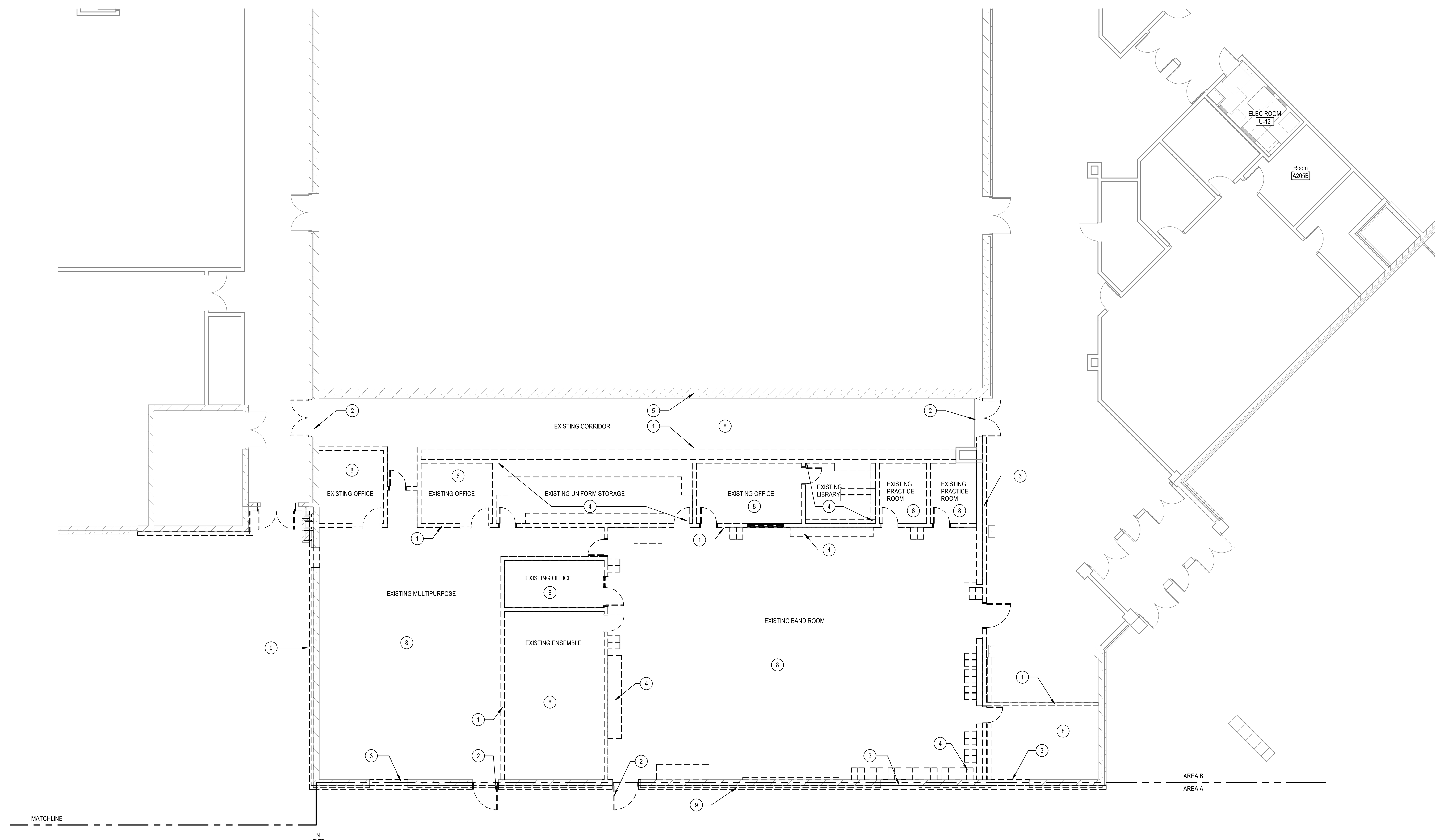
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ARCHITECTURAL SITE ENLARGED PLANS

AS1.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:25 PM



LEVEL 1 - AREA B - DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

DEMOLITION GENERAL NOTES

DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.

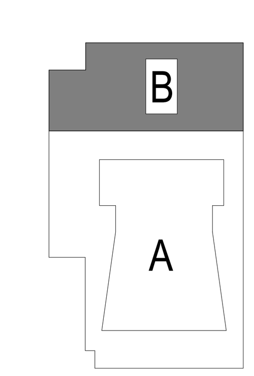
THE CONTRACTOR SHALL:

A. COORDINATE ALL DEMOLITION AND PHASING EFFORTS WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.

(#) SHEET NOTES

1 DEMOLISH EXISTING WALL
2 DEMOLISH EXISTING DOOR AND FRAME, INFILL WALL TO MATCH EXISTING CONDITION
3 DEMOLISH EXISTING WALL AND PREPARE FOR NEW DOOR OPENING AND FRAME
4 REMOVE ALL EXISTING FURNISHINGS
5 PRESERVE EXISTING WALL
6 DEMOLISH EXISTING LAY IN CEILING
7 DEMOLISH EXISTING ACOUSTICAL PANELS
8 DEMOLISH FLOORING AND PREPARE SURFACES FOR NEW INSTALLATION.
9 REMOVE EXTERIOR FACING BRICK, INSULATION AND WEATHER BARRIERS. STRUCTURAL MASONRY WALL TO REMAIN. PREPARE FOR INSTALLTION OF NEW SEPARATION WALL.

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA B- DEMOLITION PLAN

AD1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:28 PM

A B C D E F

1 2 3 4 5

DEMOLITION GENERAL NOTES

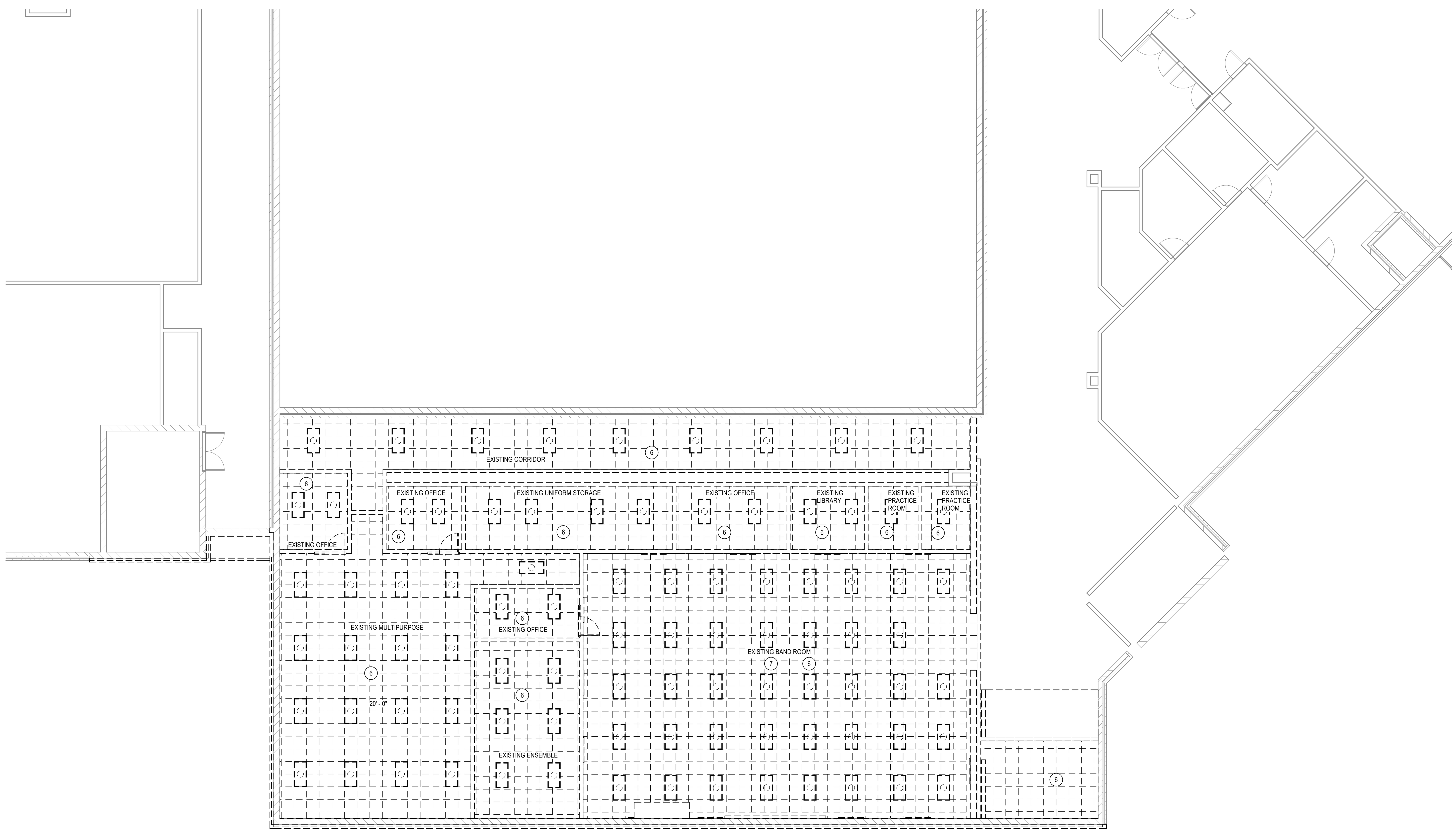
DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.

THE CONTRACTOR SHALL:

A. COORDINATE ALL DEMOLITION AND PHASING EFFORTS WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.

(#) SHEET NOTES

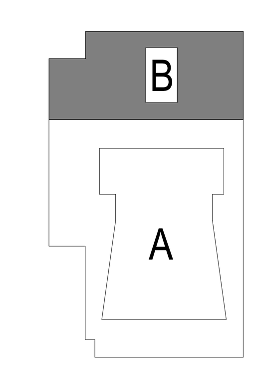
1 DEMOLISH EXISTING WALL
2 DEMOLISH EXISTING DOOR AND FRAME, INFILL WALL TO MATCH EXISTING CONDITION
3 DEMOLISH EXISTING WALL AND PREPARE FOR NEW DOOR OPENING AND FRAME
4 REMOVE ALL EXISTING FURNISHINGS
5 PRESERVE EXISTING WALL
6 DEMOLISH EXISTING LAY IN CEILING
7 DEMOLISH EXISTING ACOUSTICAL PANELS
8 DEMOLISH FLOORING AND PREPARE SURFACES FOR NEW INSTALLATION.
9 REMOVE EXTERIOR FACING BRICK, INSULATION AND WEATHER BARRIERS. STRUCTURAL MASONRY WALL TO REMAIN. PREPARE FOR INSTALLTION OF NEW SEPARATION WALL.



LEVEL 1 - AREA B - REFLECTED CEILING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

KEY PLAN



DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

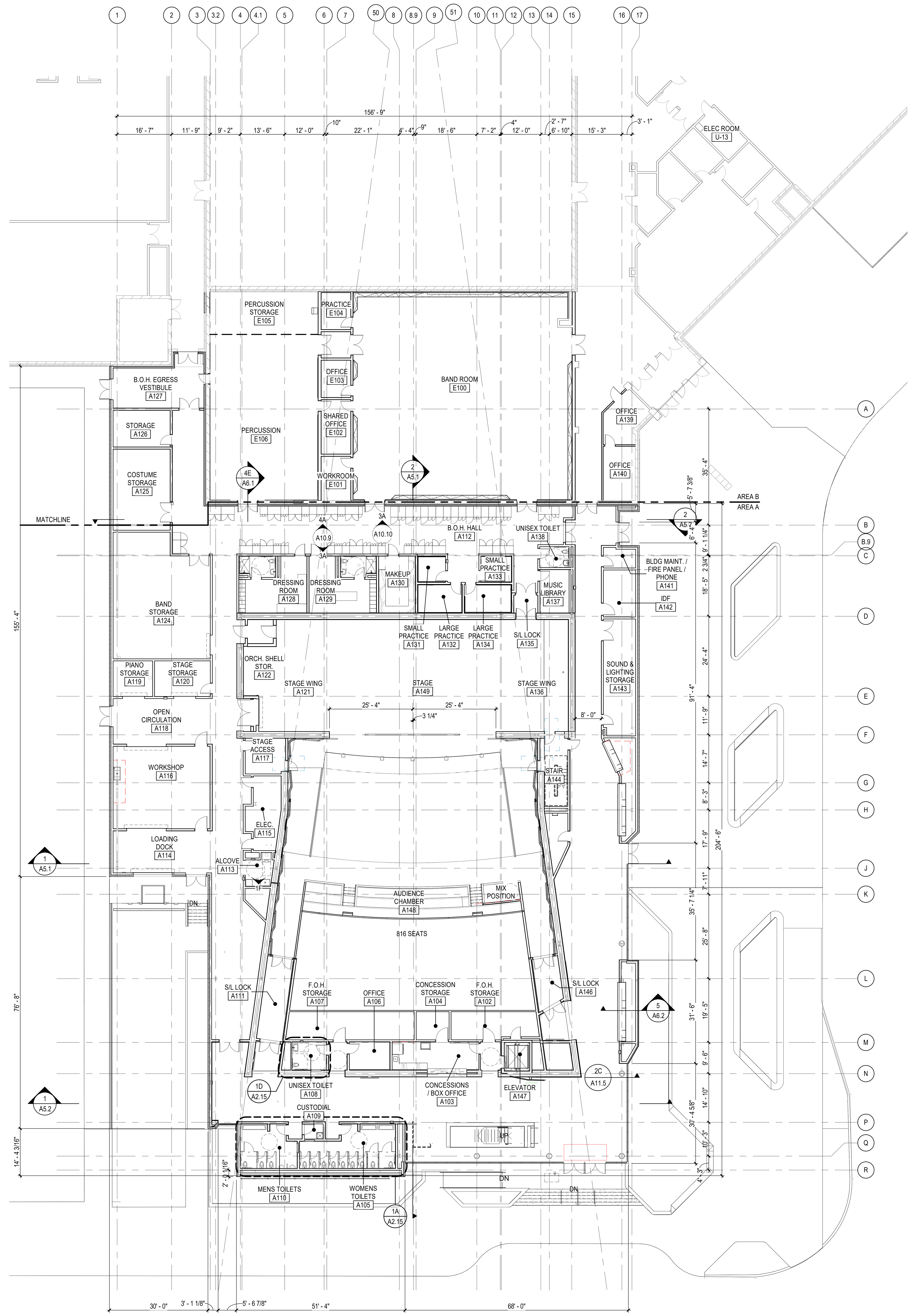
39-23712-00

LEVEL 01 - AREA B - REFLECTED CEILING DEMOLITION PLAN

AD3.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt

7/25/2024 3:21:30 PM



LEVEL 1 - OVERALL PLAN

SCALE: 1/16" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

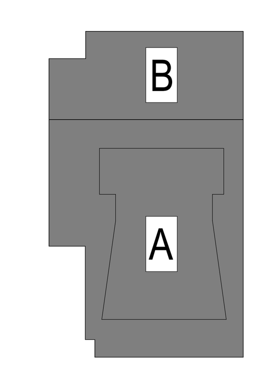
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

KEY PLAN

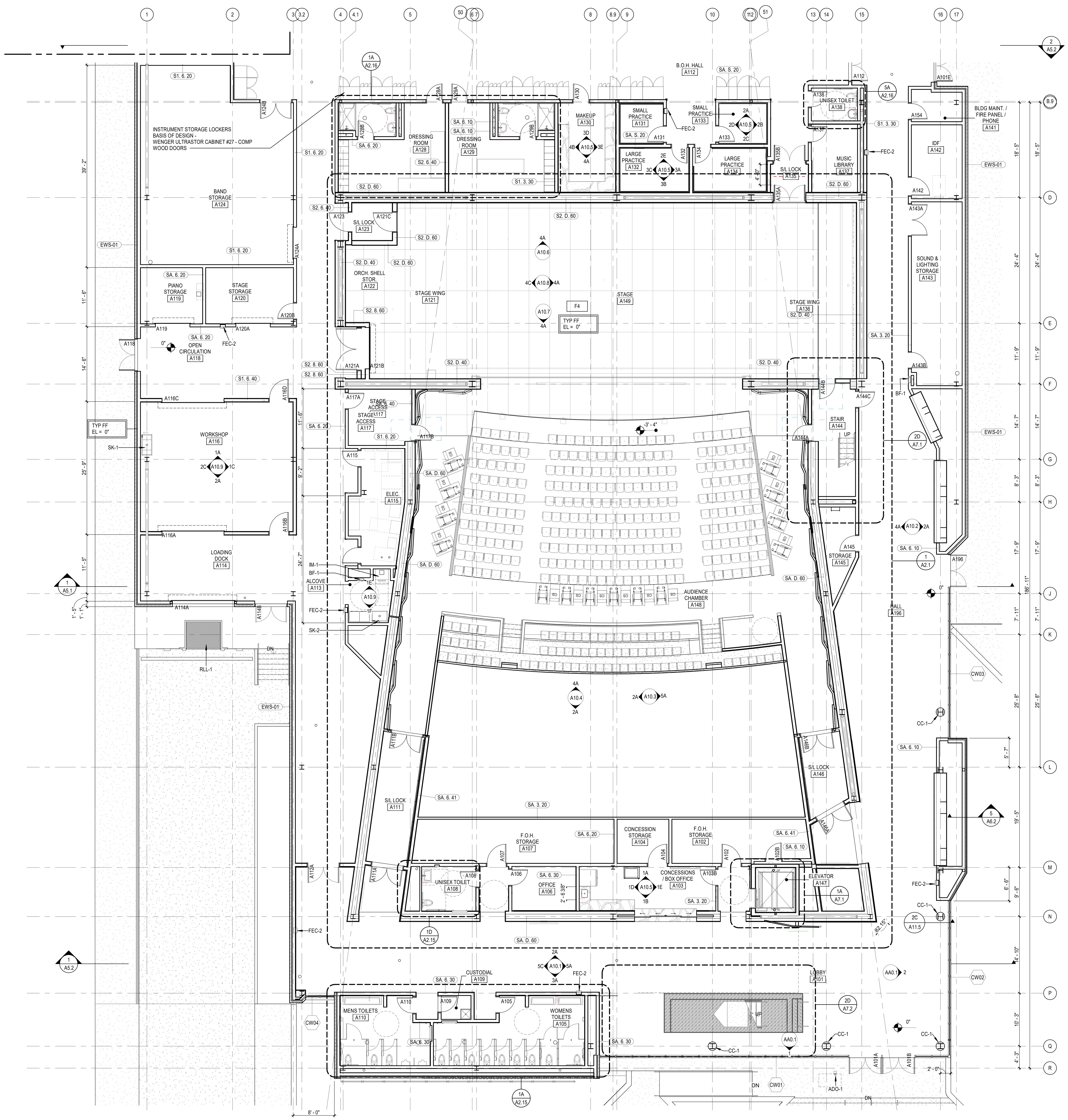


39-23712-00

LEVEL 01 - OVERALL PLAN

A1.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:34 PM



LEVEL 01 - AREA A - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

ADO-1	ACCESSIBLE DOOR OPERATOR
BF-1	BOTTLE FILLER
CC-1	COLUMN COVER, SNAP TOGETHER
FEC-2	FIRE EXTINGUISHER CABINET RECESSED
IM-1	ICE MACHINE
RLL-1	RECESSED DOCK LEVELER, 5,000 LBS. CAPACITY
SK-1	
SK-2	

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

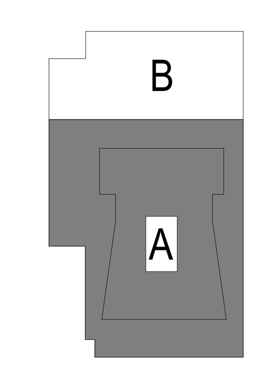
DLR GROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

KEY PLAN

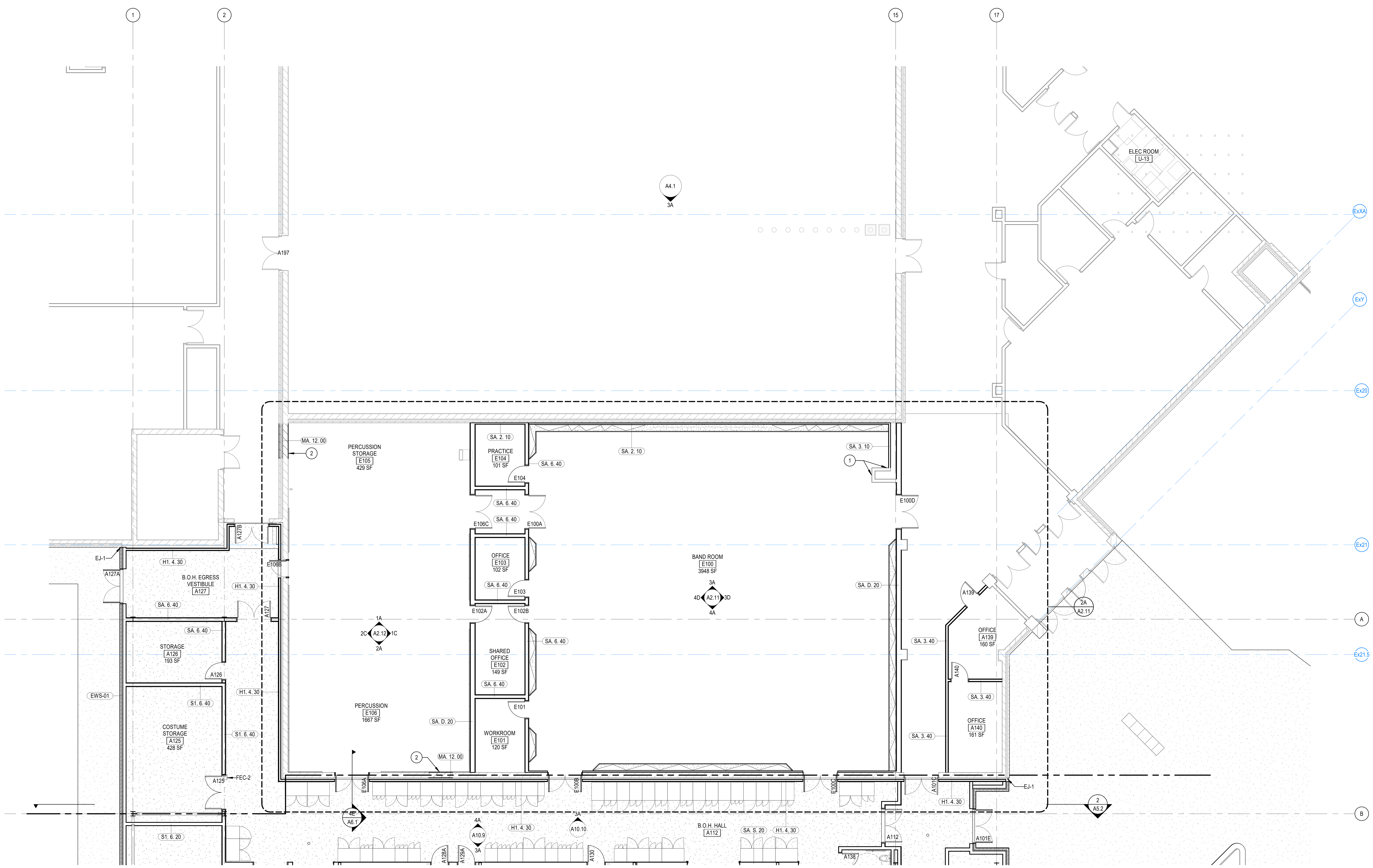


39-23712-00

LEVEL 01 - AREA A - FLOOR PLAN

A1.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:38 PM



LEVEL 01 - AREA B - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

EJ-1	EXPANSION JOINT TYPE 1
FEC-2	FIRE EXTINGUISHER CABINET RECESSED

(#) SHEET NOTES

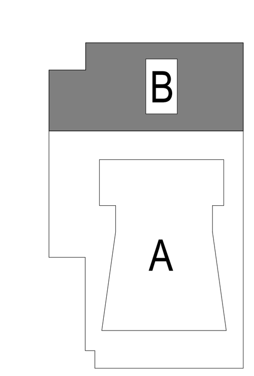
1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

KEY PLAN

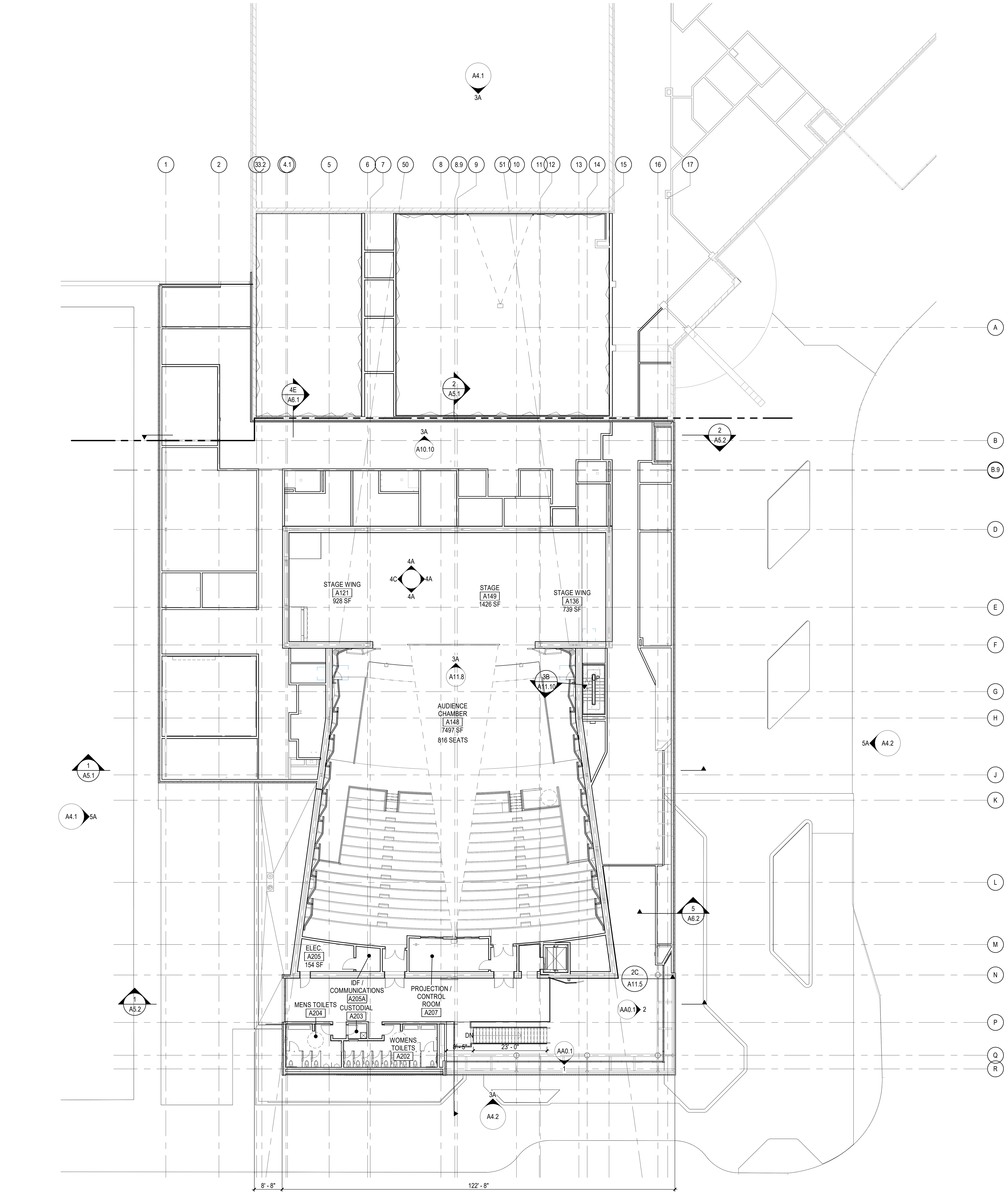


39-23712-00

LEVEL 01 - AREA B - FLOOR PLAN

A1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:42 PM



OVERALL FLOOR PLAN , LEVEL 2

SCALE: 1/16" = 1'-0"

GENERAL ARCHITECTURAL NOTES

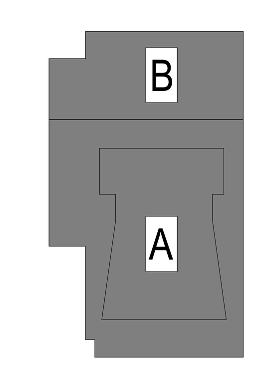
1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

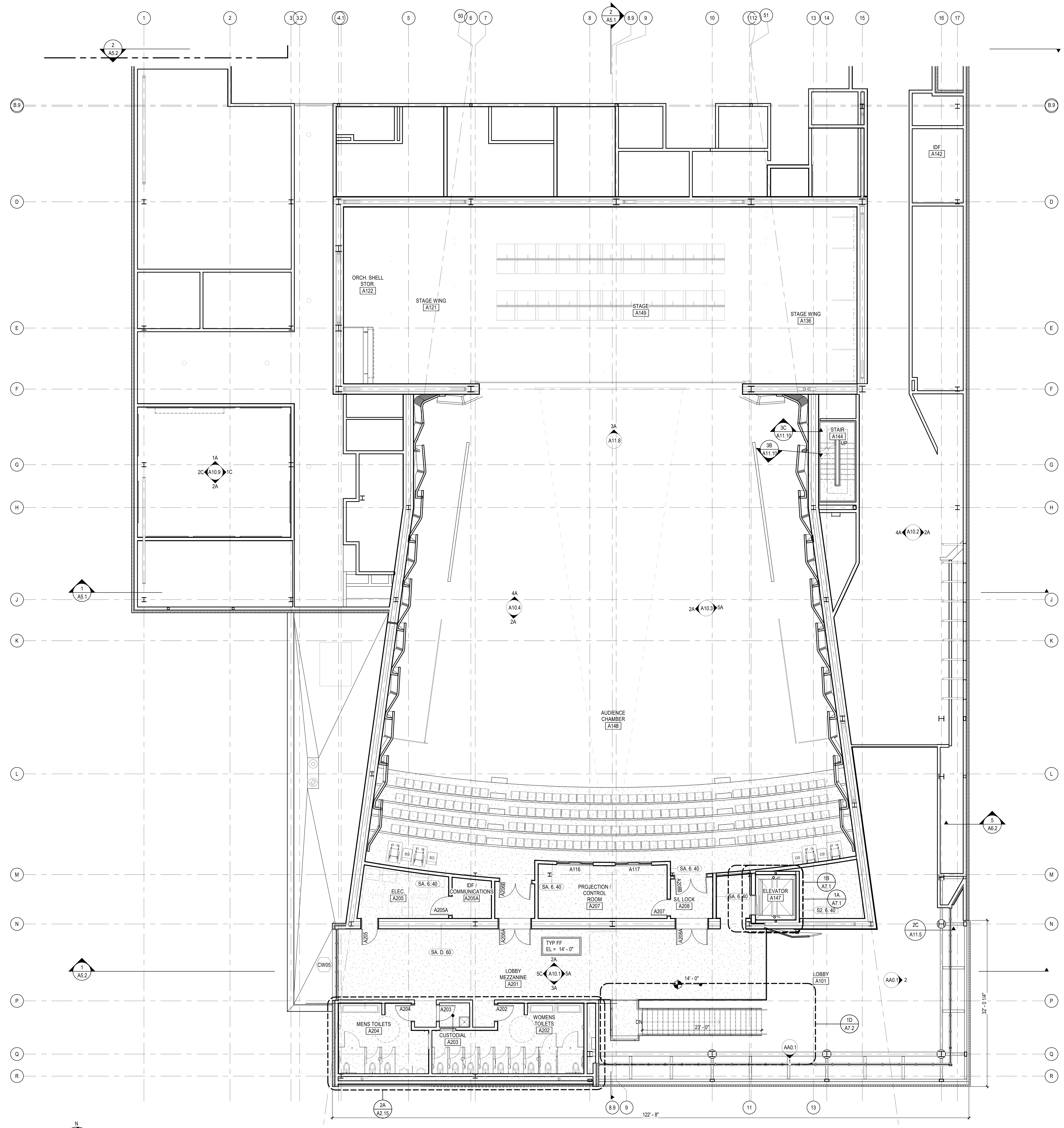
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 02 - OVERALL PLAN

A1.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:46 PM



LEVEL 02 MEZZANINE - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

(#) SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN

B
A

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

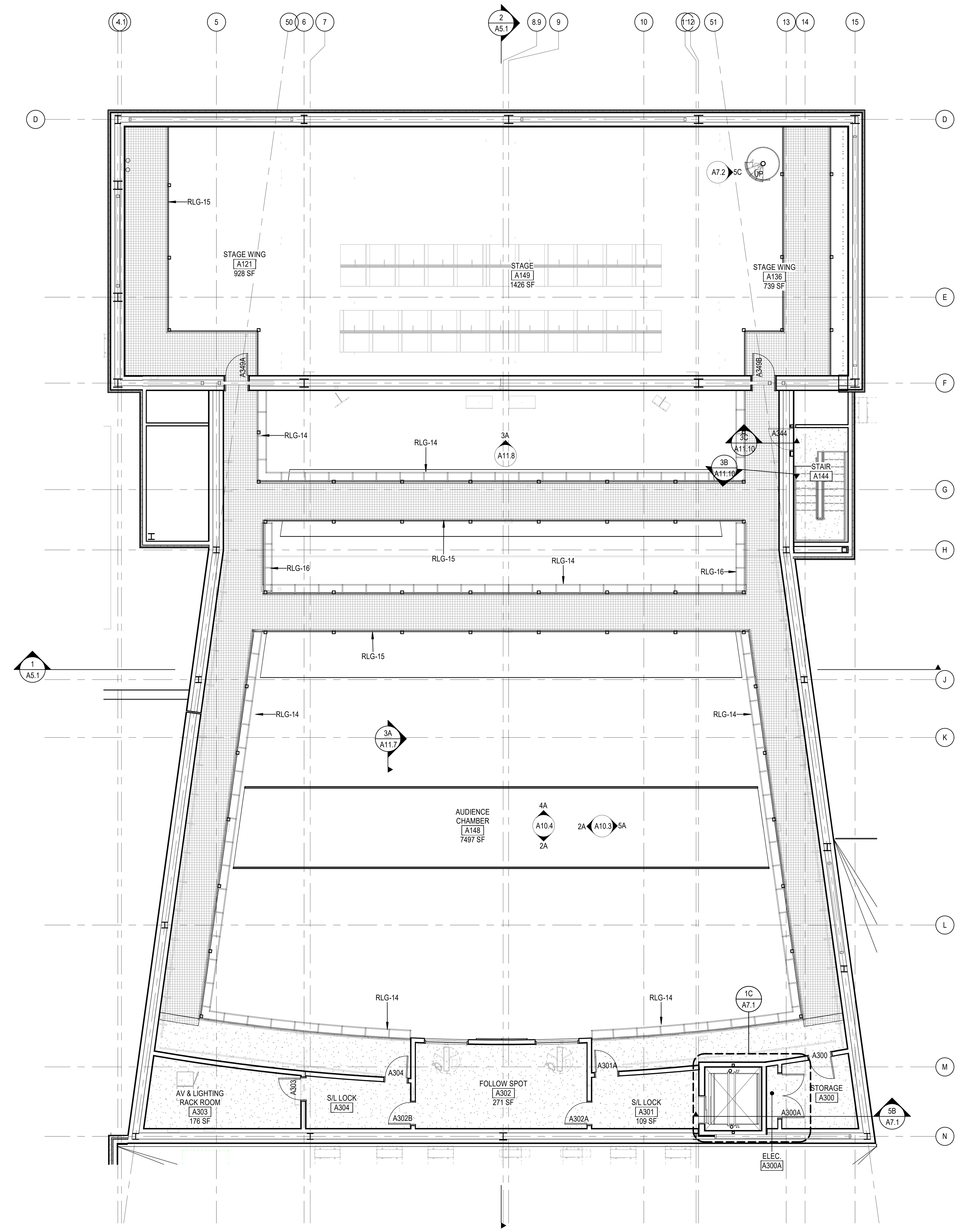
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - FLOOR PLAN

A1.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:51 PM



LEVEL 03 - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

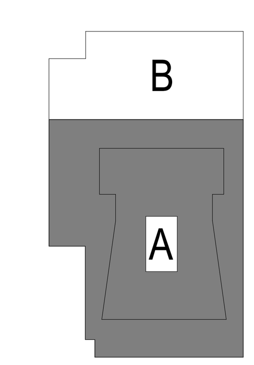
REFERENCE KEYNOTES

RLG-14	CATWALK STEEL PIPE / TUBE RAIL WITH LIGHTING OUTRIGGER; BLACK
RLG-15	CATWALK RAILING, NO OUTRIGGER
RLG-16	

(#) SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

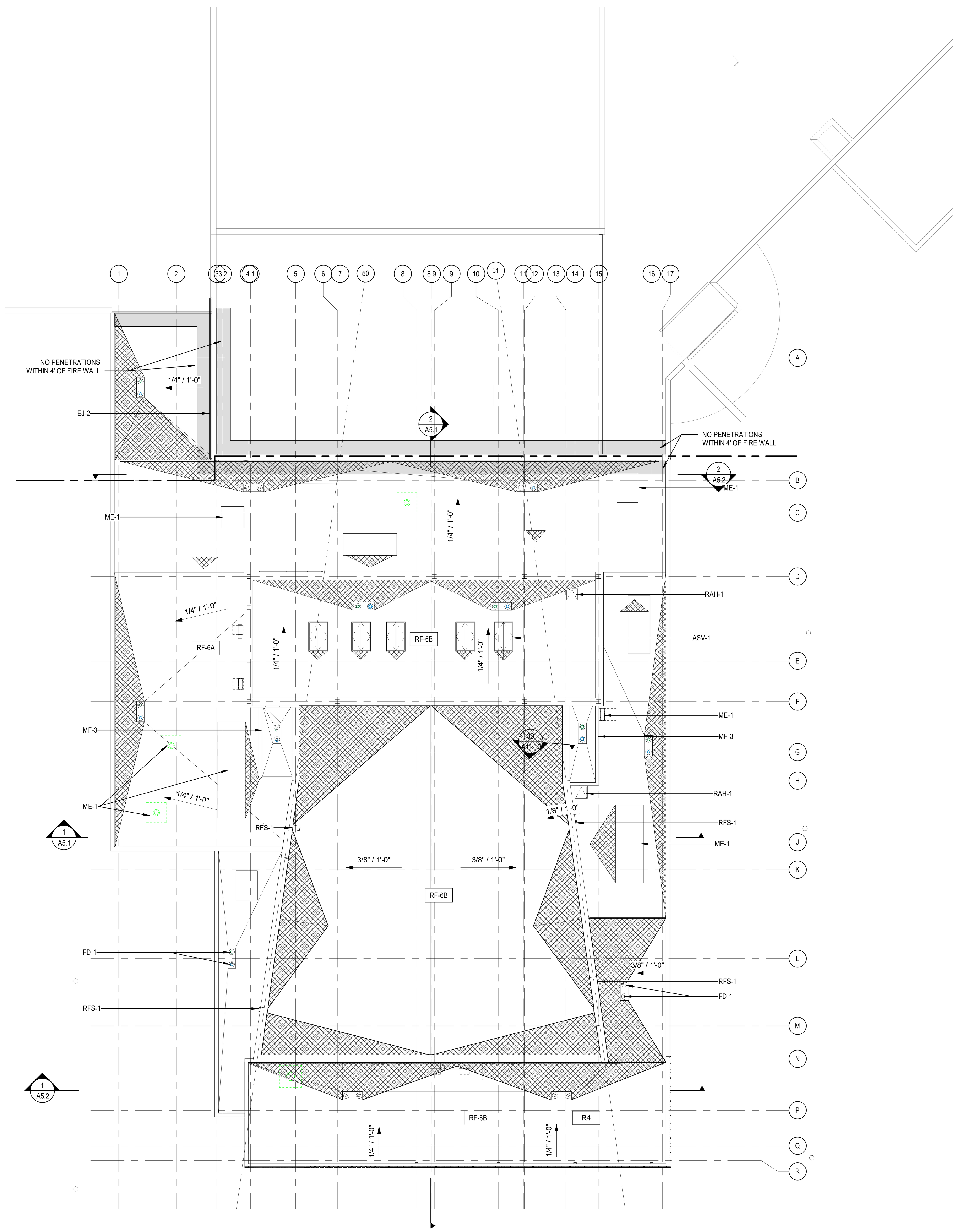
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 03 CATWALK - OVERALL PLAN

A1.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:53 PM



OVERALL ROOF PLAN

SCALE: 1/16" = 1'-0"

STAGEHOUSE SMOKE VENT INFORMATION:

- STAGE AREA: 3,508 SF
- 5% TOTAL AREA REQUIRED: .05 X 3508 SF = 175.4 SF PER IBC 410.2.7 ROOF VENTS
  5 X 40 SF ROOF VENT OPENINGS = 200 SF TOTAL ROOF VENT OPENING

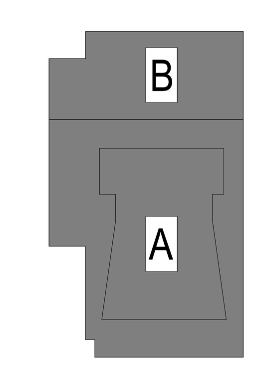
ROOF PLAN GENERAL NOTES

A. ROOF PLAN GENERAL NOTES APPLY TO ALL ROOF PLAN SHEETS.
B. ROOF SLOPES ARE CREATED BY SLOPING THE ROOF STRUCTURE UNLESS NOTED OTHERWISE. SEE STRUCTURAL DRAWINGS FOR ELEVATIONS OF THE HIGH AND LOW POINTS TO DETERMINE PROPER TAPER IN INSULATION.
C. TAPERED INSULATION SHALL PROVIDE A MINIMUM OF 1/4-INCH PER FOOT OF SLOPE TO ROOF DRAINS, UNLESS NOTED OTHERWISE.
D. AREAS MARKED WITH A HATCHED PATTERN INDICATE TAPERED INSULATION.
E. ALL ROOF CURBS TO BE A MINIMUM OF 12 INCHES ABOVE ROOFING LEVELS. PROVIDE TAPERED INSULATION ROOF SADDLES AT ROOF CURBS TO PROVIDE DRAINAGE AROUND CURB.
F. SEE STRUCTURAL DRAWINGS FOR FRAMING AROUND ROOF PENETRATIONS.
G. COORDINATE THE SIZE AND LOCATION OF ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN ON THIS DRAWING.
H. FLASH DRAINS, CURBS, VENTS AND STACKS PER MANUFACTURER'S RECOMMENDATIONS IF DETAIL NOT SHOWN ON DRAWINGS.
I. NO ROOF PENETRATIONS ALLOWED WITHIN 4'-0" EACH SIDE OF FIREWALL. SEE CODE PLAN FOR FIRE WALL LOCATIONS.

REFERENCE KEYNOTES

ASV-1	AUTOMATIC SMOKE VENT
EJ-2	EXPANSION JOINT COVER TYPE 2
FD-1	METAL ROOF DRAIN
ME-1	MECHANICAL EQUIPMENT
MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
RAH-1	ROOF ACCESS HATCH
RFS-1	ROOF SCUPPER

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

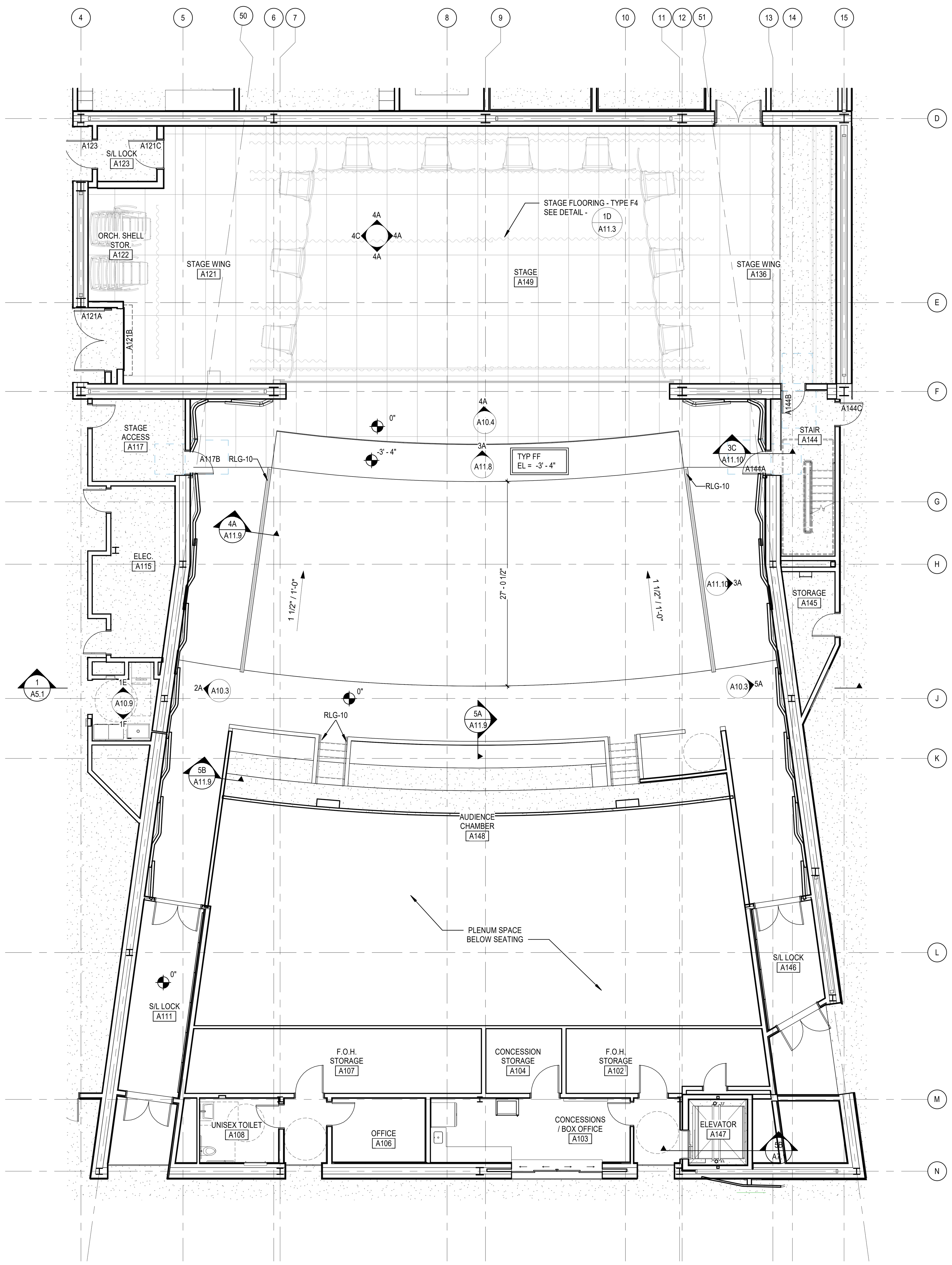
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

OVERALL ROOF PLAN

A1.4

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:21:58 PM



LEVEL 01 - AUDIENCE CHAMBER FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

RLG-10	STEEL DECORATIVE RAILING

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.

2 EXISTING WALL INFILL

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

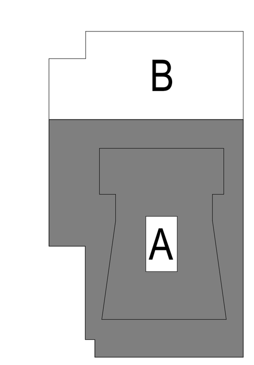
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

KEY PLAN

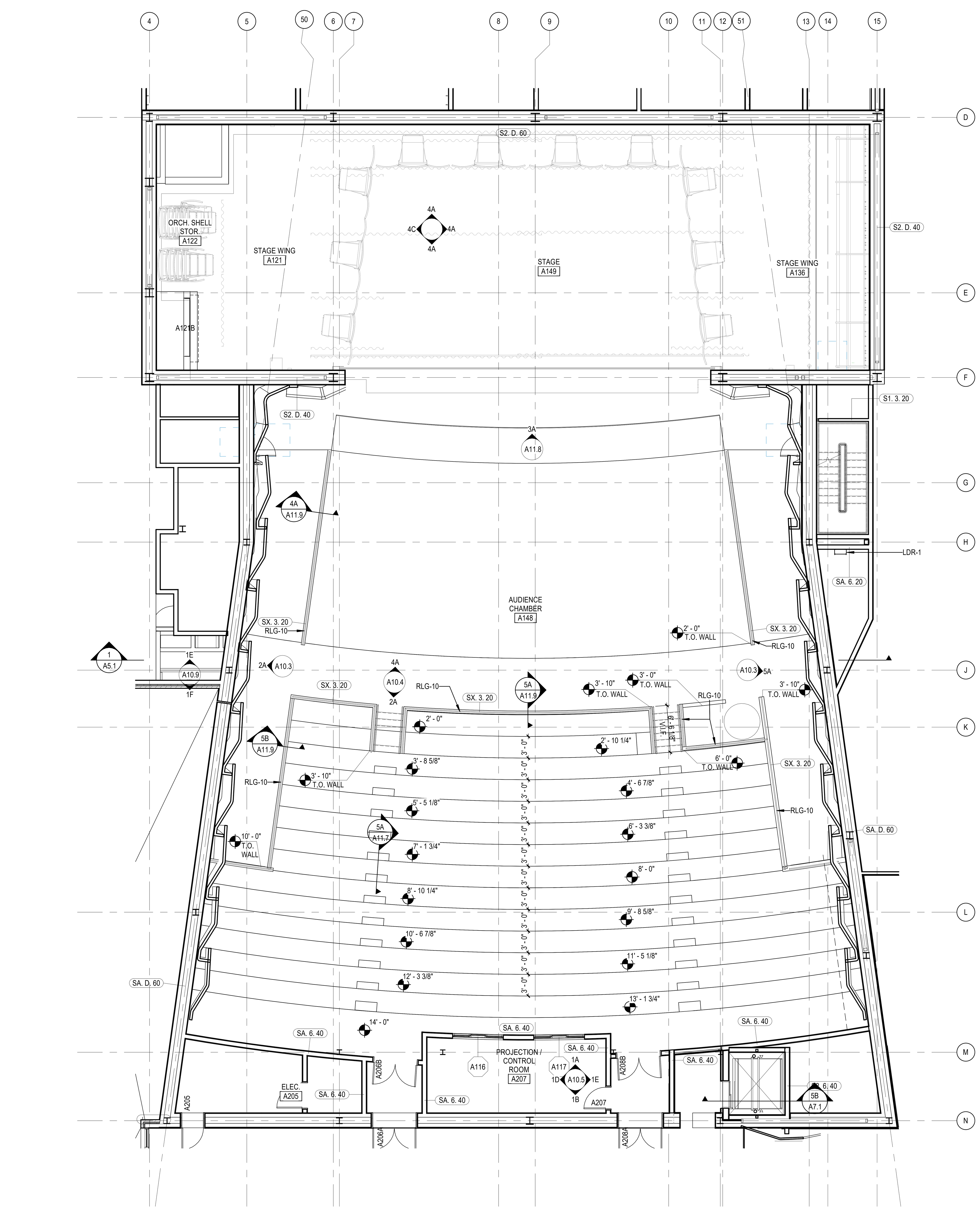


39-23712-00

ENLARGED PLAN - AUDIENCE CHAMBER - LEVEL 01

A2.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:00 PM



LEVEL 02 MEZZANINE - AREA A_C - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

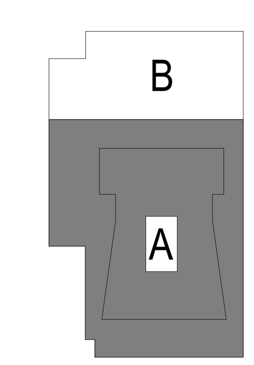
REFERENCE KEYNOTES

LDR-1	METAL LADDER
RLG-10	STEEL DECORATIVE RAILING

SHEET NOTES

1. EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2. EXISTING WALL INFILL

KEY PLAN



DLRGROUP

© DLR Group

REGISTERED ARCHITECT ☆ STATE OF TEXAS ☆ CHARLES E. BRANT 20568
07.25.2024

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

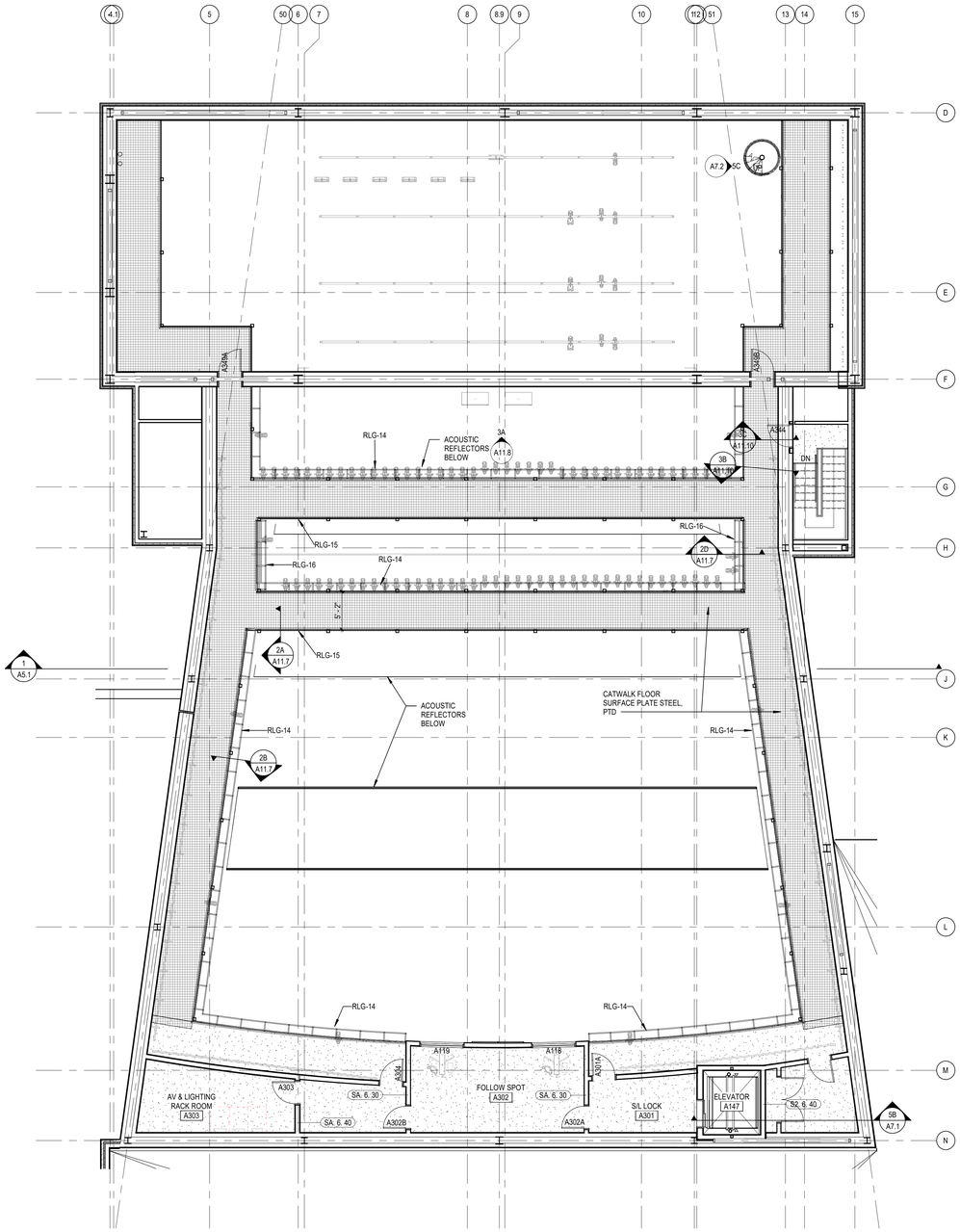
REVISIONS

39-23712-00

ENLARGED PLAN - AUDIENCE CHAMBER - LEVEL 02

A2.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:01 PM



LEVEL 03 - AREA A - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX). THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE 5A.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE. PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS. TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

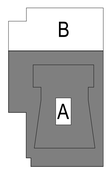
REFERENCE KEYNOTES

RLG-14	CATWALK STEEL PIPE / TUBE RAIL WITH LIGHTING OUTRIGGER; BLACK
RLG-15	CATWALK RAILING, NO OUTRIGGER
RLG-16	

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

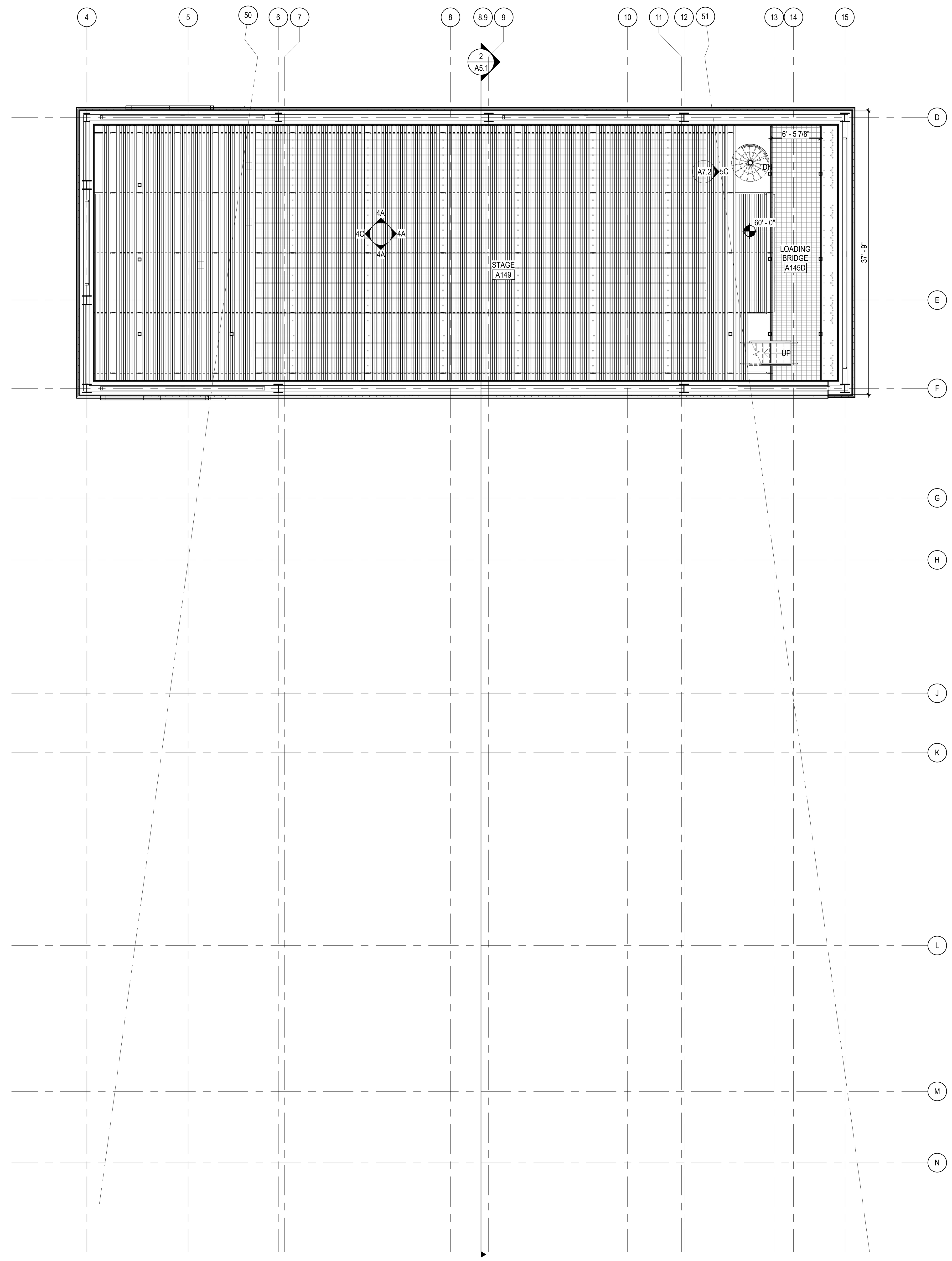
ENLARGED PLAN - AUDIENCE CHAMBER - CATWALK

A2.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:06 PM

A B C D E F

1 2 3 4 5



LEVEL 04 LOADING BRIDGE - AREA A_C - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

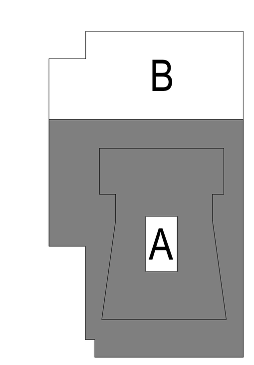
1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

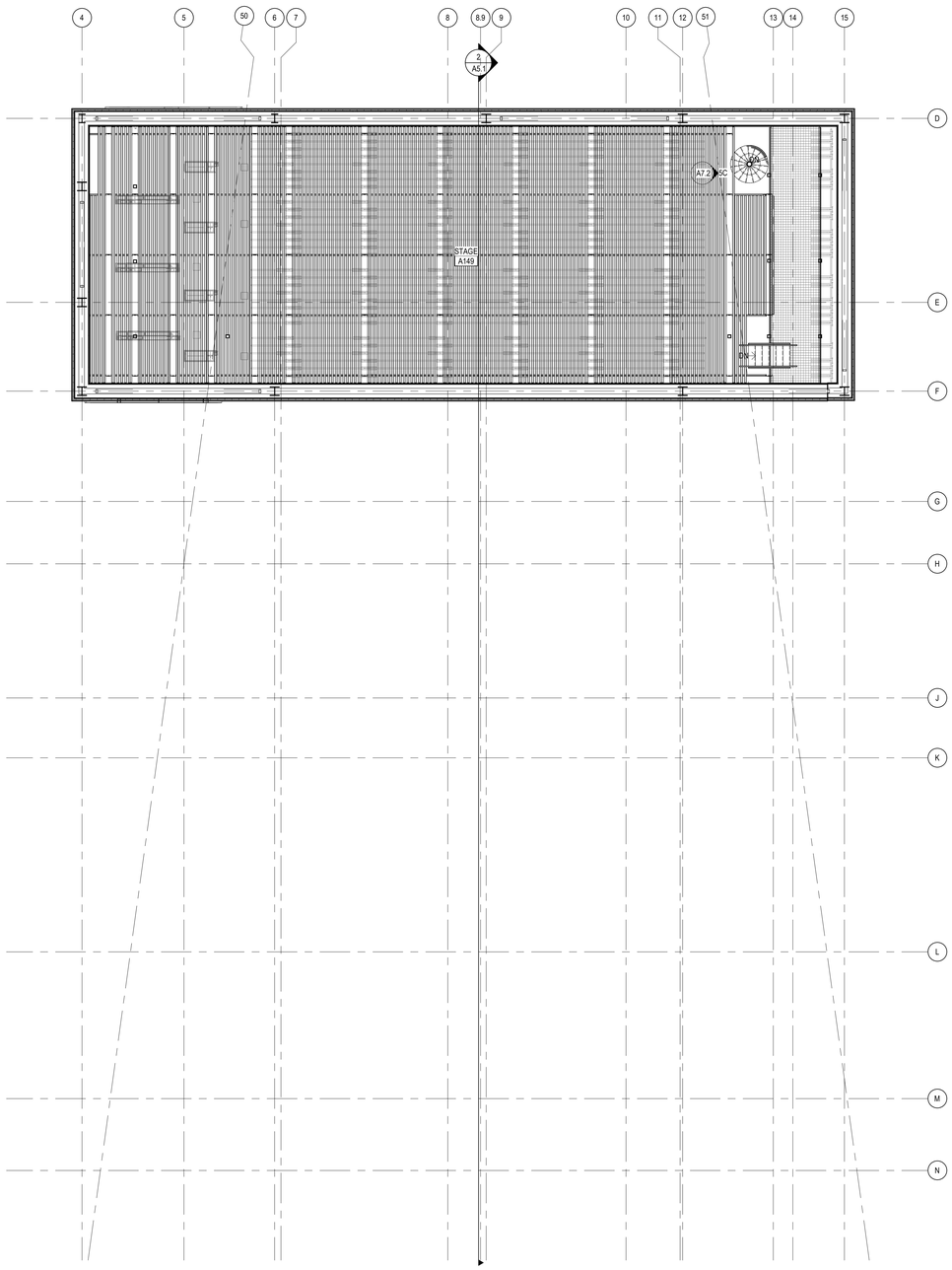
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ENLARGED PLAN - AUDIENCE CHAMBER - LOADING BRIDGE

A2.4

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:06 PM



GRID LEVEL 05 - AREA A_C - FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL ARCHITECTURAL NOTES

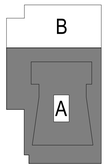
1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX). THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE 5A.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE. PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS. TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



DLRGROUP

© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

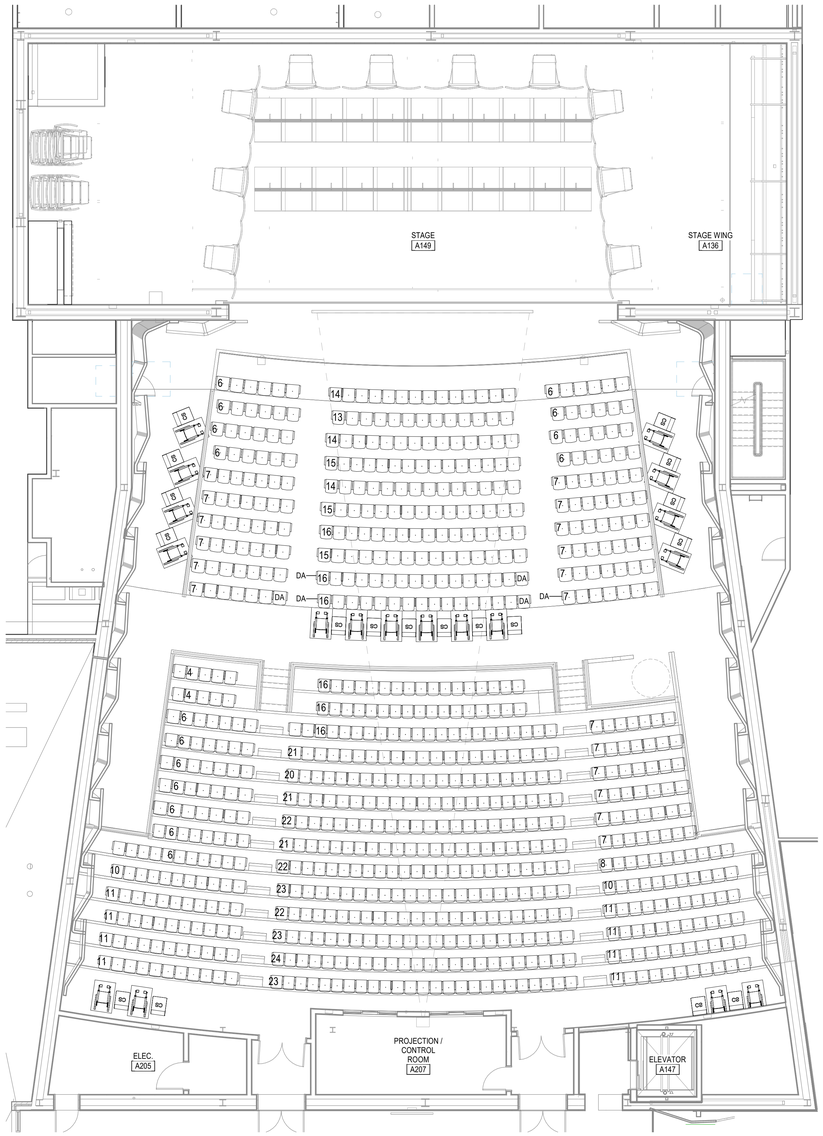
REVISIONS

39-23712-00

ENLARGED PLAN - AUDIENCE CHAMBER - GRID LEVEL

A2.5

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:07 PM



AUDIENCE CHAMBER - SEATING PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
TEXAS

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

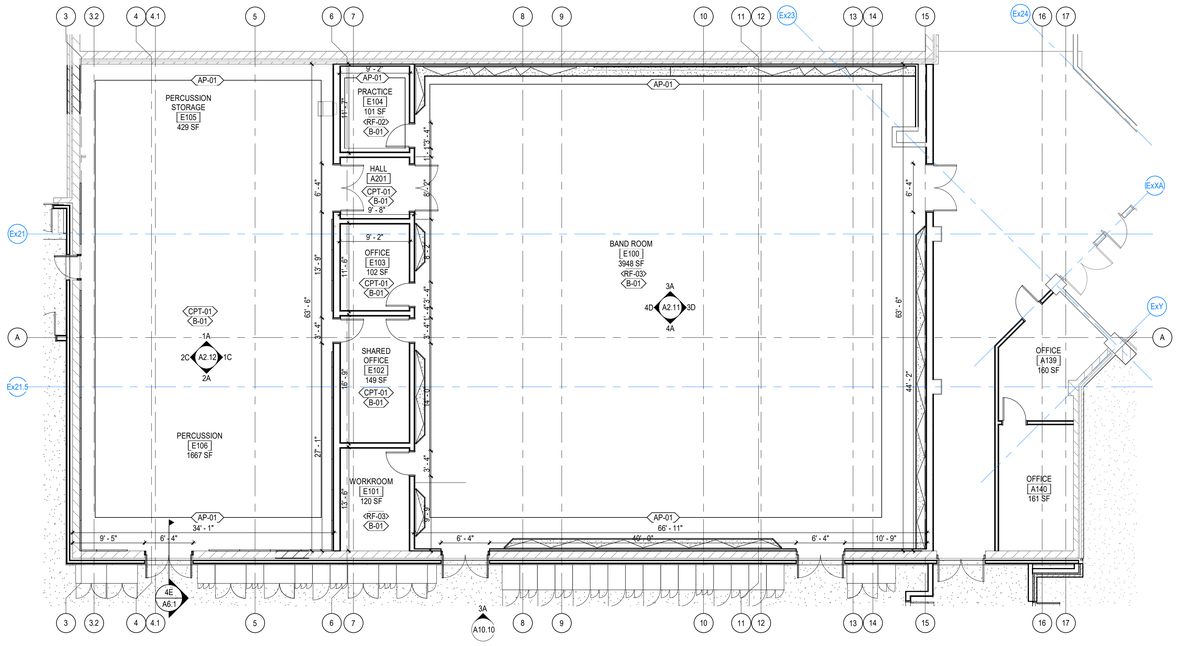
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

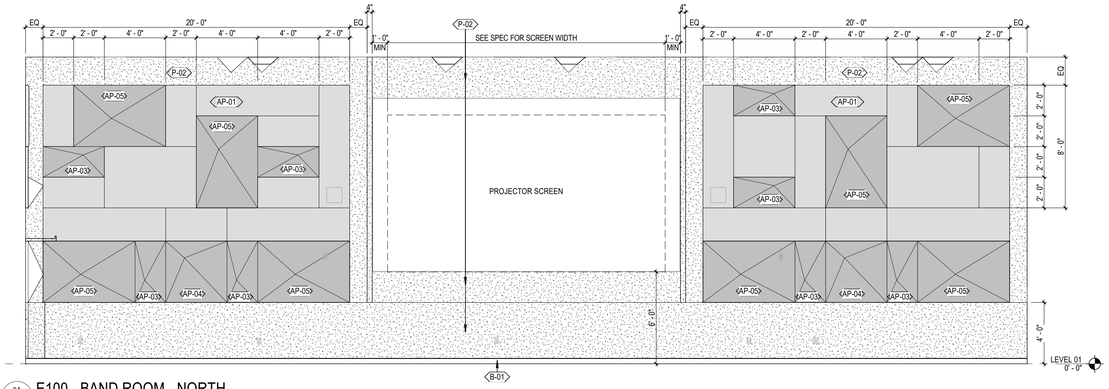
ENLARGED PLAN - AUDIENCE CHAMBER - SEATING PLAN

A2.6

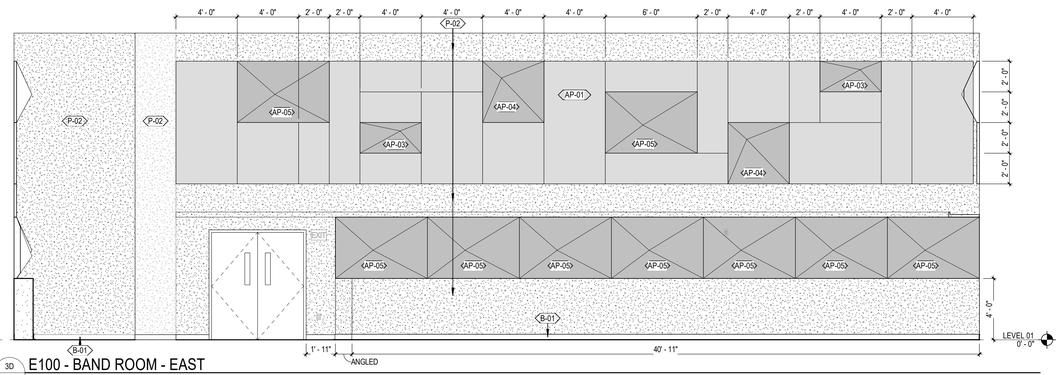
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:09 PM



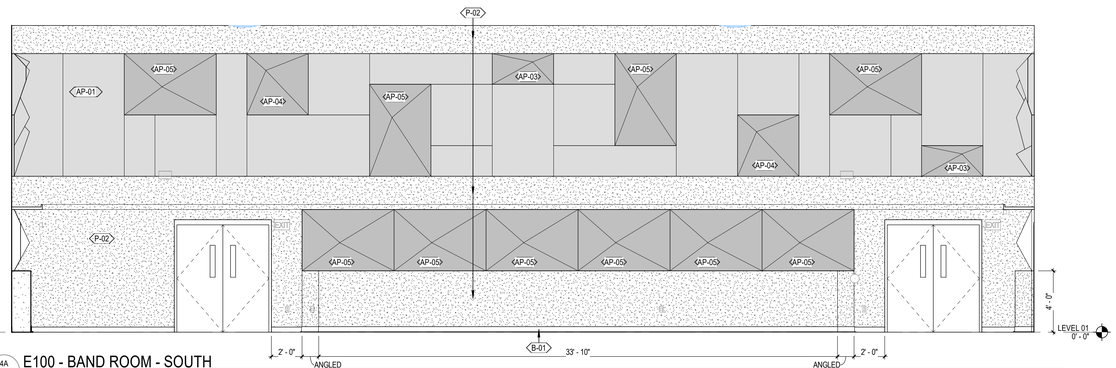
2A A2.11 BAND RENOVATION - ENLARGED PLAN
SCALE: 1/8" = 1'-0"



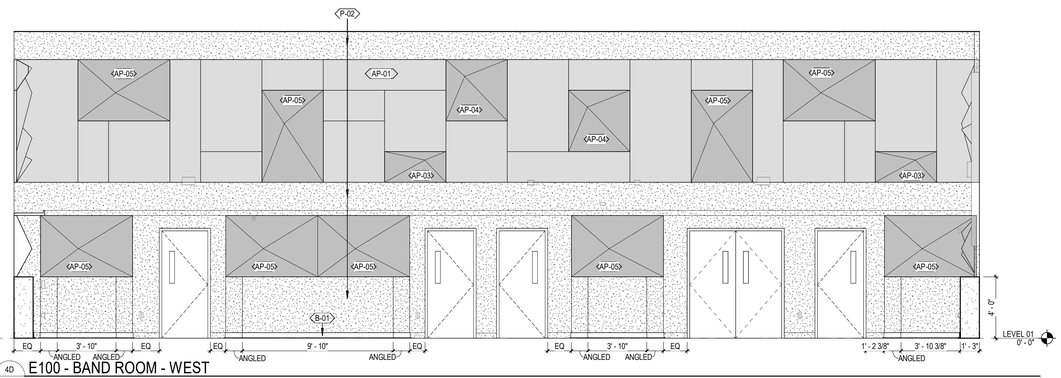
3A A2.11 E100 - BAND ROOM - NORTH
SCALE: 1/4" = 1'-0"



3D A2.11 E100 - BAND ROOM - EAST
SCALE: 1/4" = 1'-0"



4A A2.11 E100 - BAND ROOM - SOUTH
SCALE: 1/4" = 1'-0"



4D A2.11 E100 - BAND ROOM - WEST
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

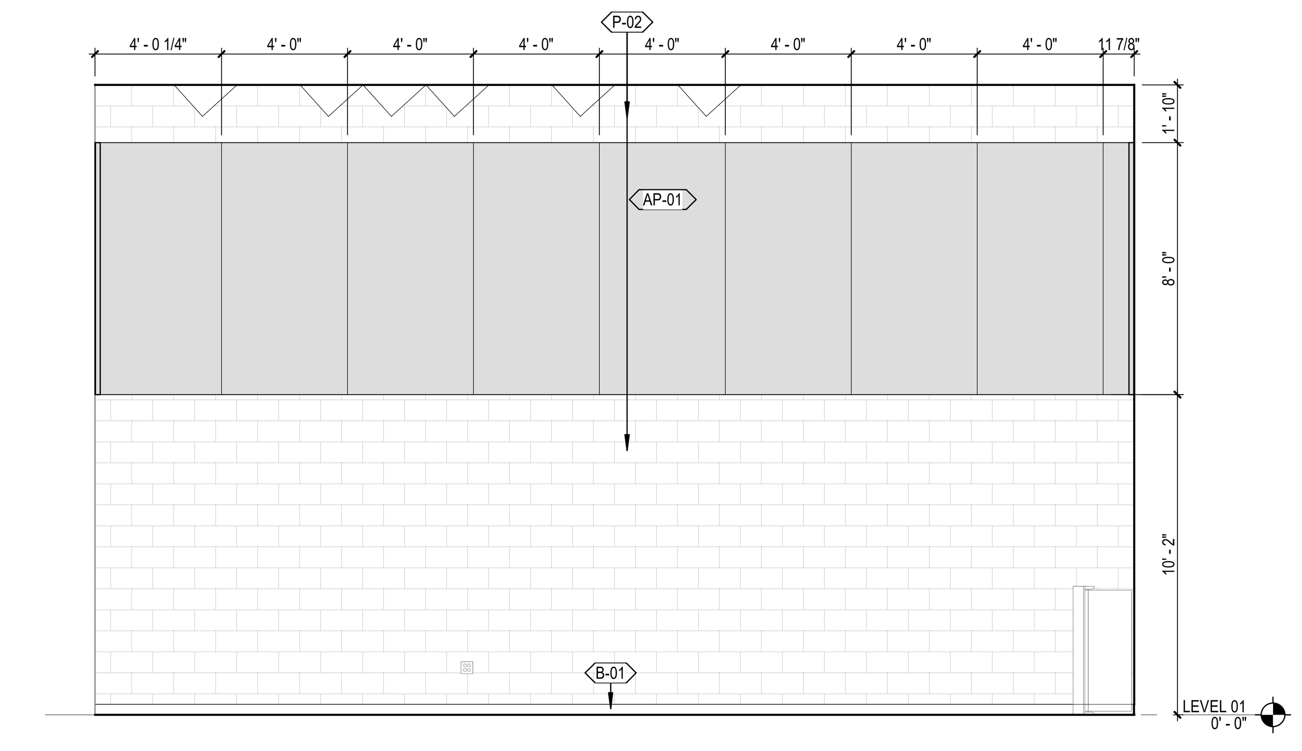
39-23712-00

ENLARGED PLAN - BAND / PERCUSSION ROOMS RENNOVATION

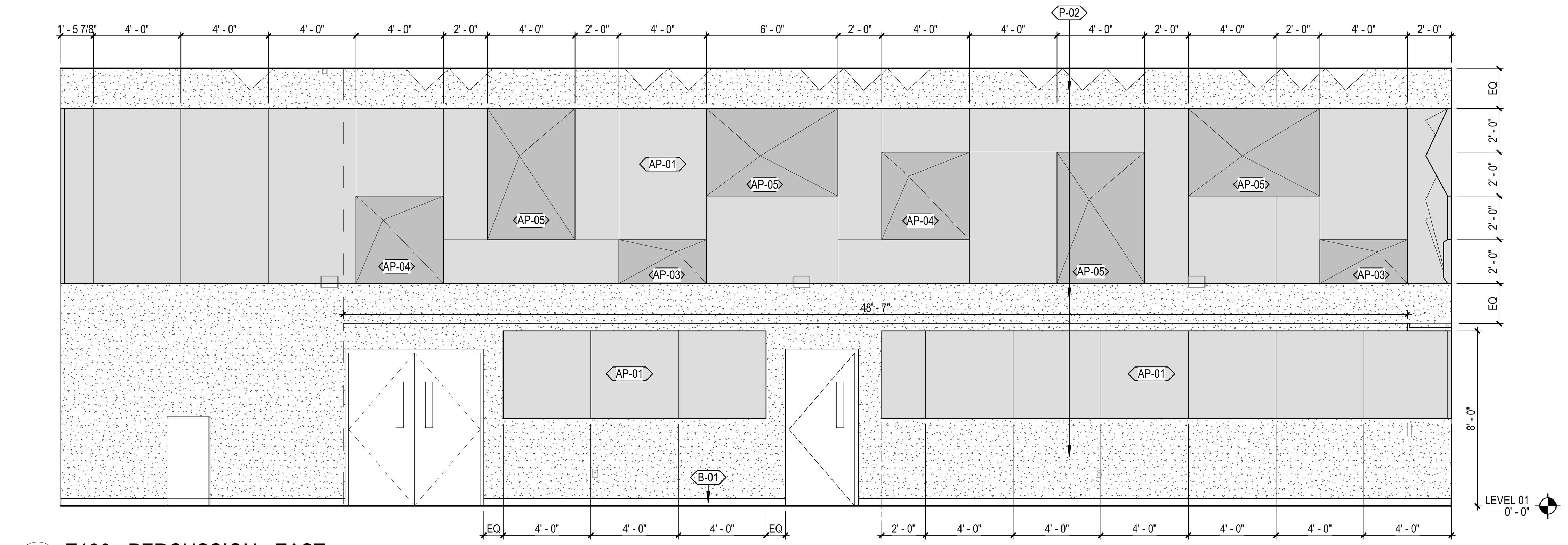
A2.11

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:10 PM

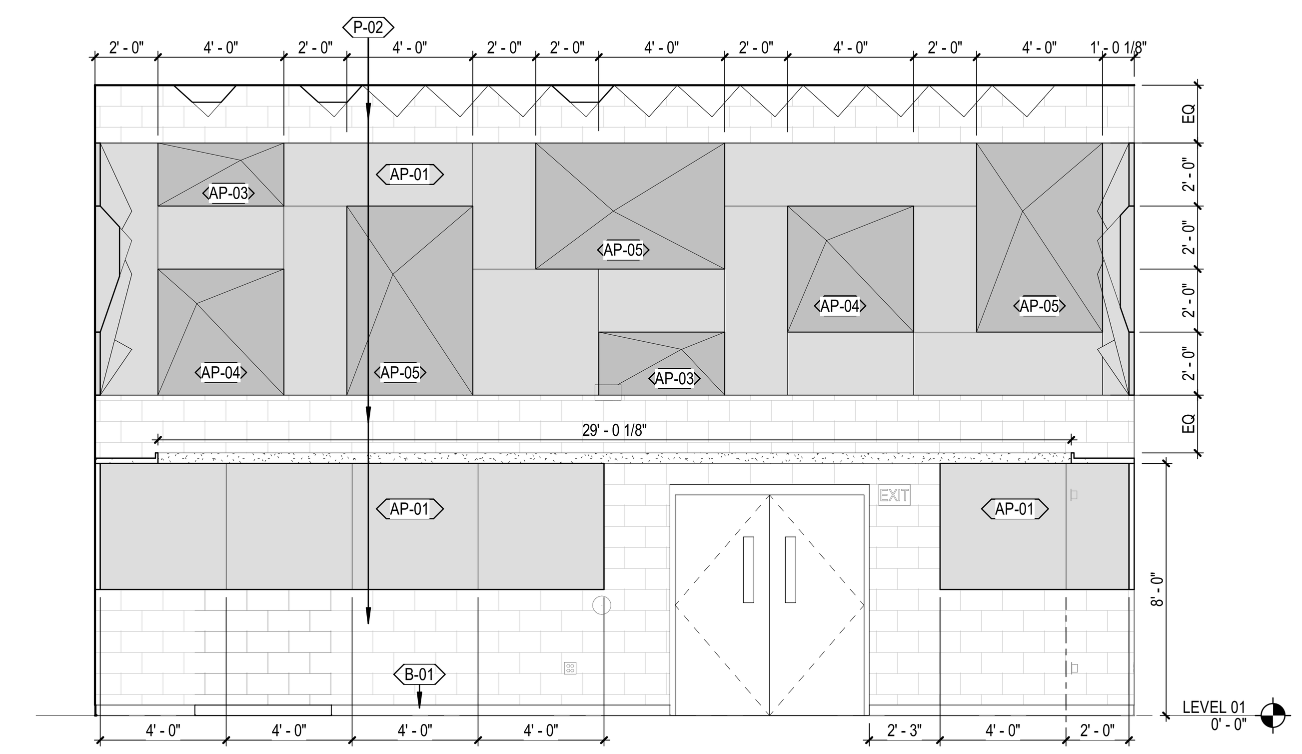
A B C D E F



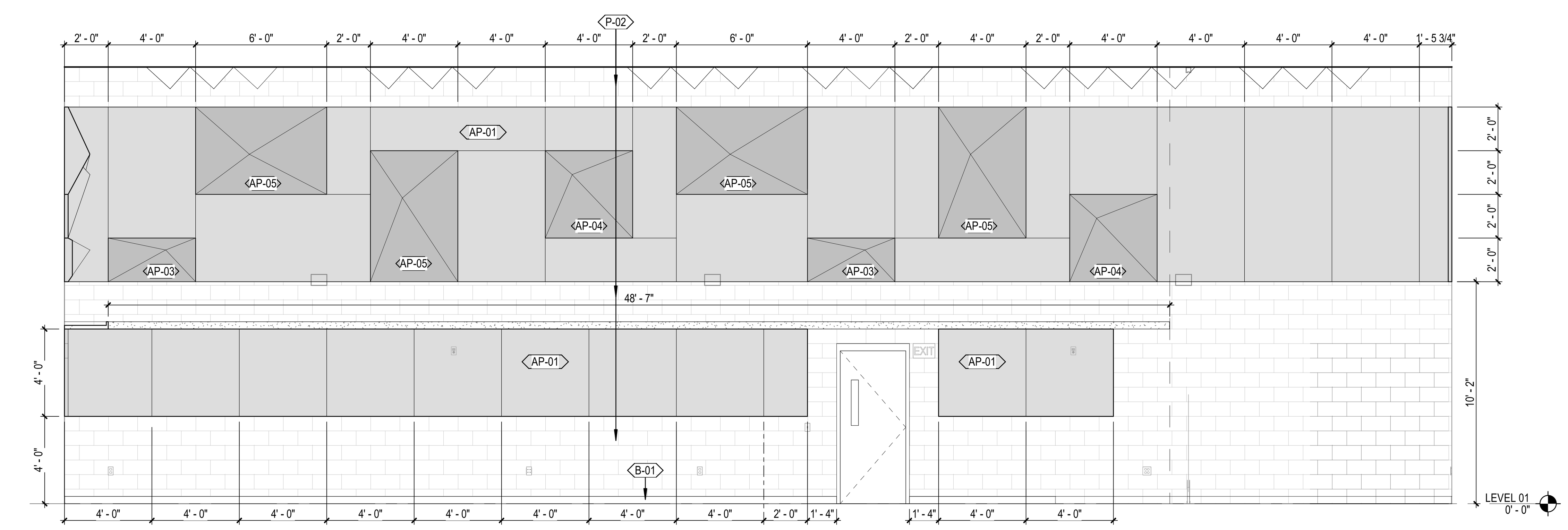
1A / A2.12 — E106 - PERCUSSION - NORTH
SCALE: 1/4" = 1'-0"



1C / A2.12 — E106 - PERCUSSION - EAST
SCALE: 1/4" = 1'-0"



2A / A2.12 — E106 - PERCUSSION - SOUTH
SCALE: 1/4" = 1'-0"



2C / A2.12 — E106 - PERCUSSION - WEST
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

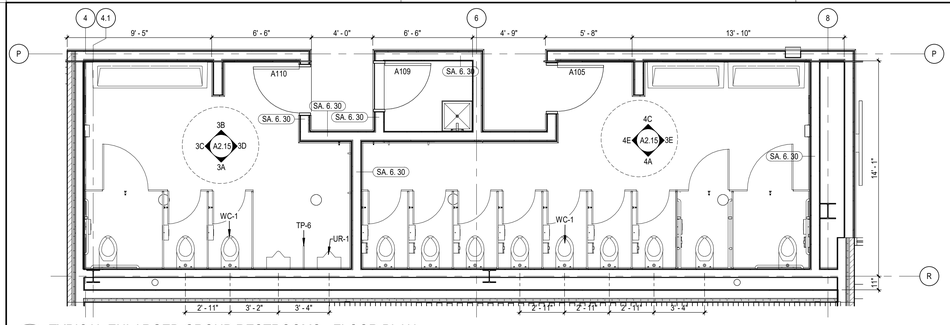
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

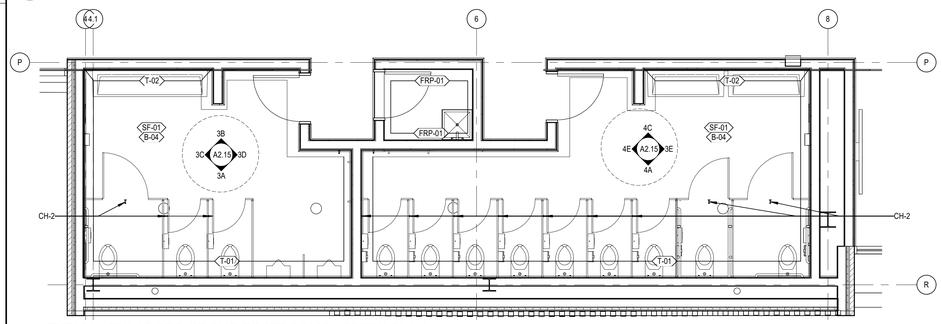
ENLARGED PLAN - BAND / PERCUSSION ROOMS RENNOVATION

A2.12

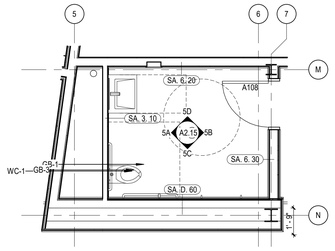
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:13 PM



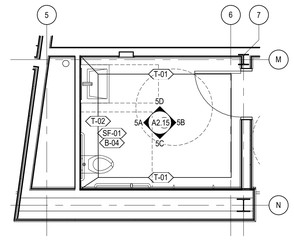
1A A2.15 TYPICAL ENLARGED GROUP RESTROOMS - FLOOR PLAN
SCALE: 1/4" = 1'-0"



2A A2.15 TYPICAL ENLARGED GROUP RESTROOMS - FINISH PLAN
SCALE: 1/4" = 1'-0"

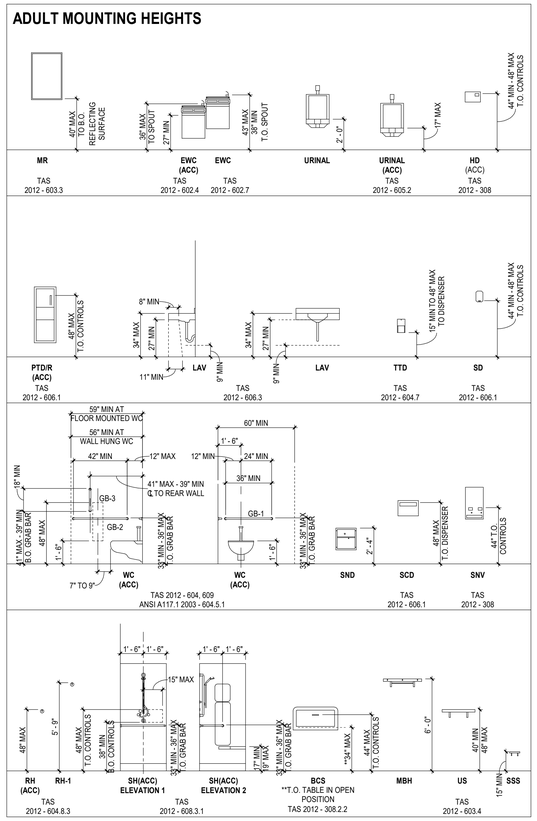


1D A2.15 ENLARGED RESTROOM A108
SCALE: 1/4" = 1'-0"



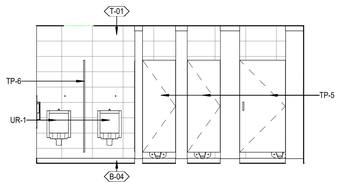
2D A2.15 ENLARGED FINISH PLAN RESTROOM A108
SCALE: 1/4" = 1'-0"

ADULT MOUNTING HEIGHTS

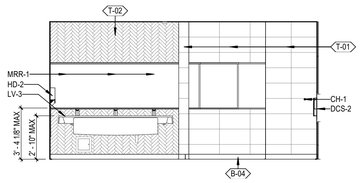


REFERENCE KEYNOTES

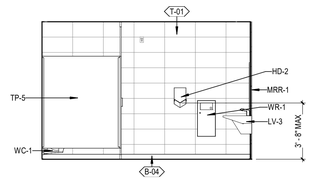
CH-1	COAT HOOK
CH-2	COAT HOOK
DCS-2	DIAPER CHANGING STATION - STAINLESS STEEL
GB-1	HORIZONTAL GRAB BAR - 36"
GB-3	VERTICAL GRAB BAR - 18"
HD-2	HAND DRYER - HIGH SPEED
LV-1	LAVATORY - SINGLE TROUGH
LV-2	LAVATORY - 2 FIXTURE TROUGH
LV-3	LAVATORY - 3 FIXTURE TROUGH
MRR-1	MIRROR
MRR-2	MIRROR WITH SHELF
PTDWR-1	PAPER TOWEL DISPENSER AND WASTE RECEPTACLE - SURFACE MOUNTED
TP-5	PHENOLIC TOILET PARTITION
TP-6	PHENOLIC URINAL PARTITION
UR-1	URINAL
WC-1	TOILET - WALL MOUNT
WR-1	WATER REPELLENT



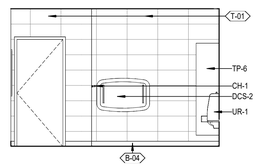
3A A2.15 A173 RESTROOM - SOUTH
SCALE: 1/4" = 1'-0"



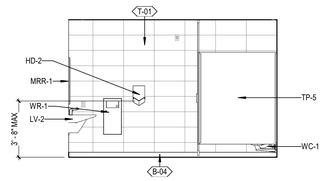
3B A2.15 A173 RESTROOM - NORTH
SCALE: 1/4" = 1'-0"



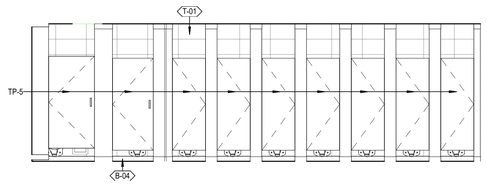
3C A2.15 A173 RESTROOM - WEST
SCALE: 1/4" = 1'-0"



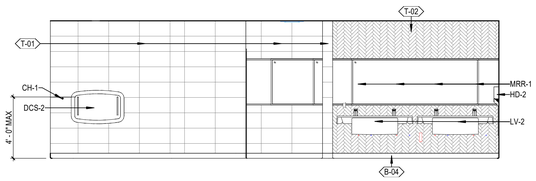
3D A2.15 A173 RESTROOM - EAST
SCALE: 1/4" = 1'-0"



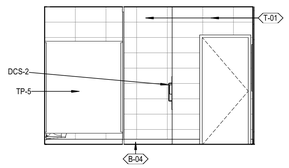
3E A2.15 A171 RESTROOM - EAST
SCALE: 1/4" = 1'-0"



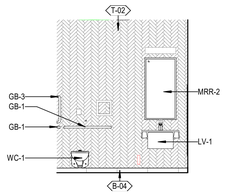
4A A2.15 A171 RESTROOM - SOUTH
SCALE: 1/4" = 1'-0"



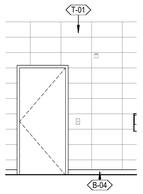
4C A2.15 A171 RESTROOM - NORTH
SCALE: 1/4" = 1'-0"



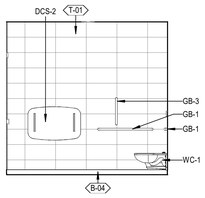
4E A2.15 A171 RESTROOM - WEST
SCALE: 1/4" = 1'-0"



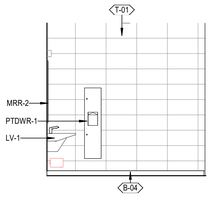
5A A2.15 A167 RESTROOM - WEST
SCALE: 1/4" = 1'-0"



5B A2.15 A167 RESTROOM - EAST
SCALE: 1/4" = 1'-0"



5C A2.15 A167 RESTROOM - SOUTH
SCALE: 1/4" = 1'-0"



5D A2.15 A167 RESTROOM - NORTH
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 303b, Crandall, TX 75114

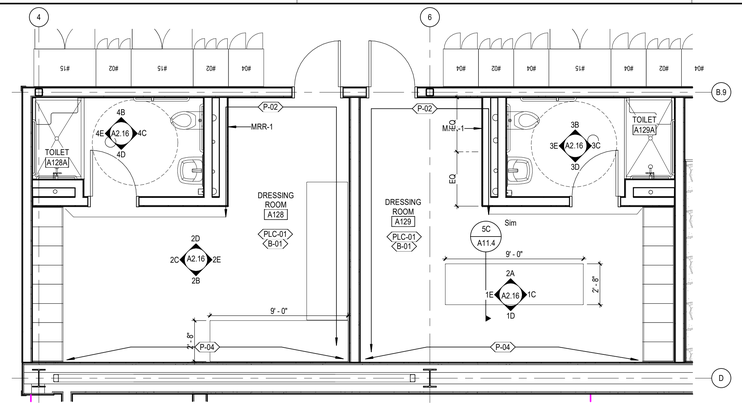
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

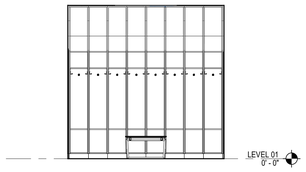
ENLARGED RESTROOM PLANS AND ELEVATIONS - FRONT OF HOUSE

A2.15

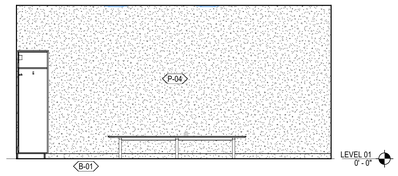
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:22 PM



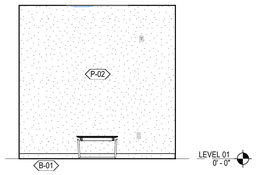
1A A2.16 ENLARGED RESTROOM A128 & A129
SCALE: 1/4" = 1'-0"



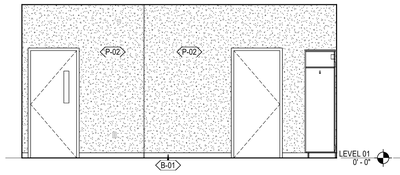
1C A2.16 A129 - DRESSING ROOM - EAST
SCALE: 1/4" = 1'-0"



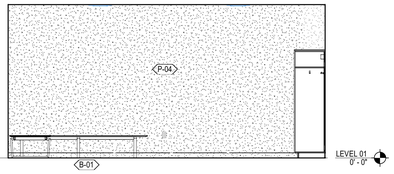
1D A2.16 A129 - DRESSING ROOM - SOUTH
SCALE: 1/4" = 1'-0"



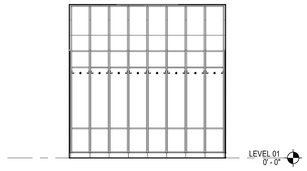
1E A2.16 A129 - DRESSING ROOM - WEST
SCALE: 1/4" = 1'-0"



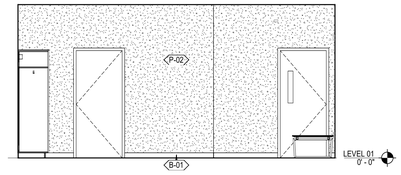
2A A2.16 A129 - DRESSING ROOM - NORTH
SCALE: 1/4" = 1'-0"



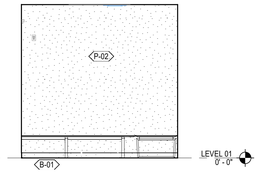
2B A2.16 A128 - DRESSING ROOM - SOUTH
SCALE: 1/4" = 1'-0"



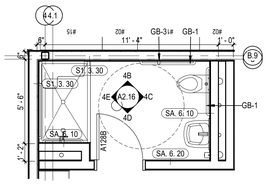
2C A2.16 A128 - DRESSING ROOM - WEST
SCALE: 1/4" = 1'-0"



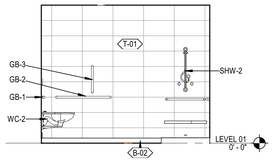
2D A2.16 A128 - DRESSING ROOM - NORTH
SCALE: 1/4" = 1'-0"



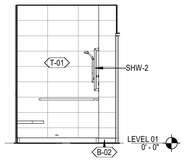
2E A2.16 A128 - DRESSING ROOM - EAST
SCALE: 1/4" = 1'-0"



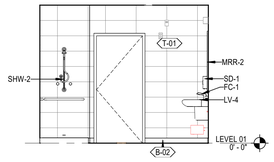
3A A2.16 A145A TOILET - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"



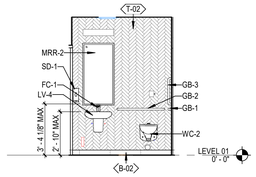
3B A2.16 A129A - TOILET - NORTH
SCALE: 1/4" = 1'-0"



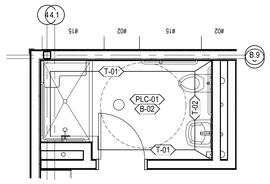
3C A2.16 A129A - TOILET - EAST
SCALE: 1/4" = 1'-0"



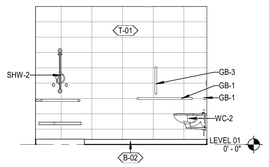
3D A2.16 A129A - TOILET - SOUTH
SCALE: 1/4" = 1'-0"



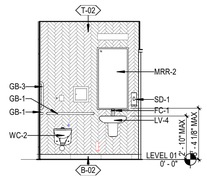
3E A2.16 A129A - TOILET - WEST
SCALE: 1/4" = 1'-0"



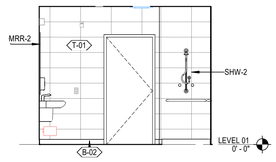
4A A2.16 A145A TOILET - ENLARGED FINISH PLAN
SCALE: 1/4" = 1'-0"



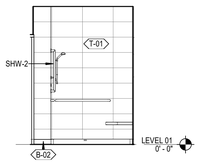
4B A2.16 A128A - TOILET - NORTH
SCALE: 1/4" = 1'-0"



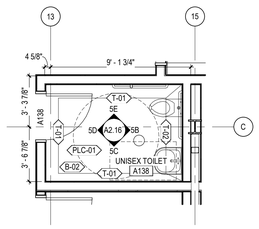
4C A2.16 A128A - TOILET - EAST
SCALE: 1/4" = 1'-0"



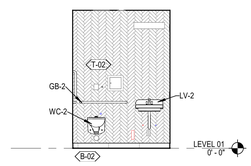
4D A2.16 A128A - TOILET - SOUTH
SCALE: 1/4" = 1'-0"



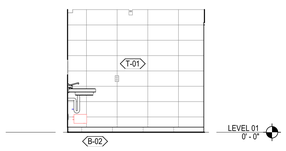
4E A2.16 A128A - TOILET - WEST
SCALE: 1/4" = 1'-0"



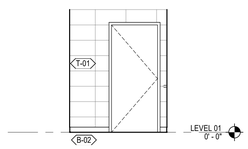
5A A2.16 A138 UNISEX TOILET - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"



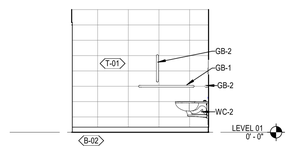
5B A2.16 A138 - UNISEX TOILET - EAST
SCALE: 1/4" = 1'-0"



5C A2.16 A138 - UNISEX TOILET - SOUTH
SCALE: 1/4" = 1'-0"



5D A2.16 A138 - UNISEX TOILET - WEST
SCALE: 1/4" = 1'-0"



5E A2.16 A138 - UNISEX TOILET - NORTH
SCALE: 1/4" = 1'-0"

REFERENCE KEYNOTES

FC-1	FAUCET
GB-1	HORIZONTAL GRAB BAR - 36"
GB-2	HORIZONTAL GRAB BAR - 42"
GB-3	VERTICAL GRAB BAR - 18"
LV-2	LAVATORY - 2 FIXTURE TROUGH
LV-4	LAVATORY - SINGLE
MRR-1	MIRROR
MRR-2	MIRROR WITH SHELF
SD-1	SOAP DISPENSER - LAVATORY MOUNTED
SHW-2	SHOWER VALVE AND HAND SHOWER ON ADJUSTABLE BAR
WC-2	TOILET - WALL MOUNT

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS
2024-07-25

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ENLARGED RESTROOM PLANS AND ELEVATIONS - BACK OF HOUSE

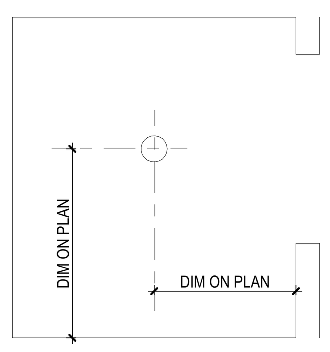
A2.16

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:37 PM

TYPICAL RULES FOR DETERMINING LOCATIONS OF VISIBLE CEILING ITEMS, DIMENSIONS, AND CONFIGURATIONS

LOCATE ITEMS AS INDICATED WHEN SHOWN DIMENSIONED BY A REFLECTED CEILING PLAN, ENLARGED REFLECTED CEILING PLAN, OR DETAIL.

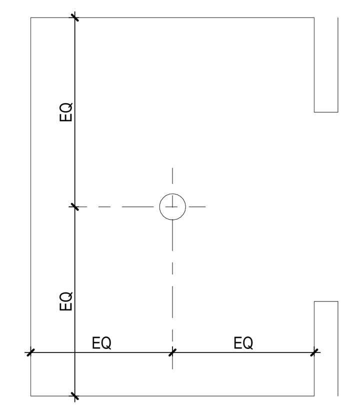
SPECIFIC DIMENSIONS SHOWN BY REFLECTED CEILING PLANS, ELEVATIONS, OR DETAILS TAKE PRECEDENCE OVER TYPICAL LOCATION RULES.



RULE 1

WHEN COMPLETELY DIMENSIONED ON REFLECTED CEILING PLAN

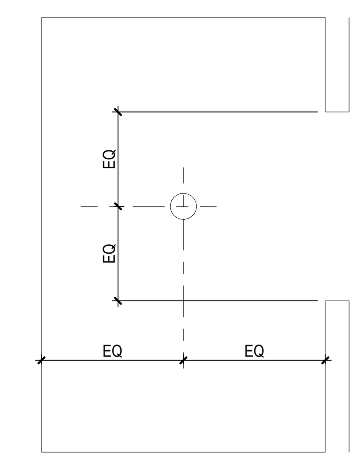
LOCATE ITEMS CENTERED IN SPACE (OR CEILING PLANE) WHEN SHOWN (BUT NOT DIMENSIONED) VISUALLY AT APPROXIMATE CENTER OF SPACE.



RULE 2

WHEN NOT DIMENSIONED BUT SHOWN CENTERED

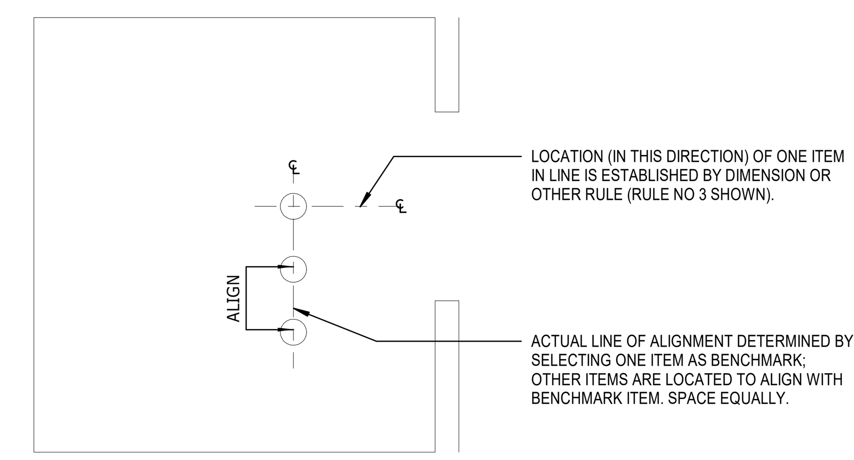
LOCATE ITEMS CENTERED ON ADJACENT OPENING OR FEATURE WHEN SHOWN (BUT NOT DIMENSIONED) OFF-CENTER IN OVERALL SPACE BUT CENTERED AGAINST ADJACENT FEATURE.



RULE 3

WHEN OFF-CENTER IN SPACE BUT CENTERED ON ADJACENT FEATURE

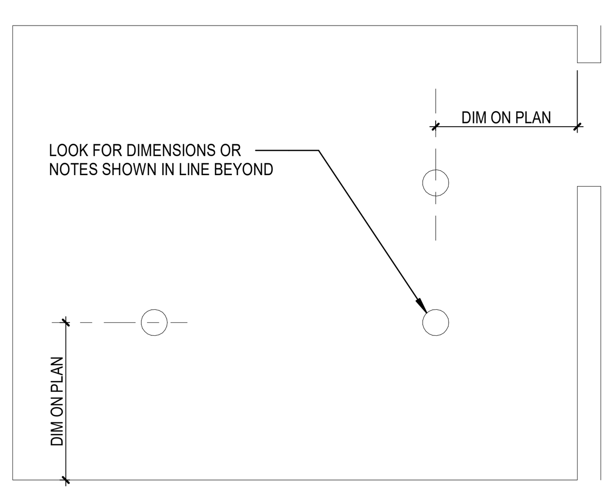
LOCATE ITEMS (LIGHT FIXTURES, SPRINKLER HEADS, DEVICES, ETC) ALIGNED WITH ADJACENT ITEMS FOR WHICH DIMENSIONS OR RULES ARE PROVIDED. VISUAL ALIGNMENT IS CRITICAL. THE CONTRACTOR SHALL SELECT ONE ITEM IN EACH LINE (ON BASIS OF TOLERANCES, SEQUENCE OF CONSTRUCTION, TRADE, OR OTHER CRITERIA) TO SERVE AS THE BENCHMARK FOR EACH ALIGNMENT.



RULE 4

WHEN ALIGNED WITH OTHER FEATURES

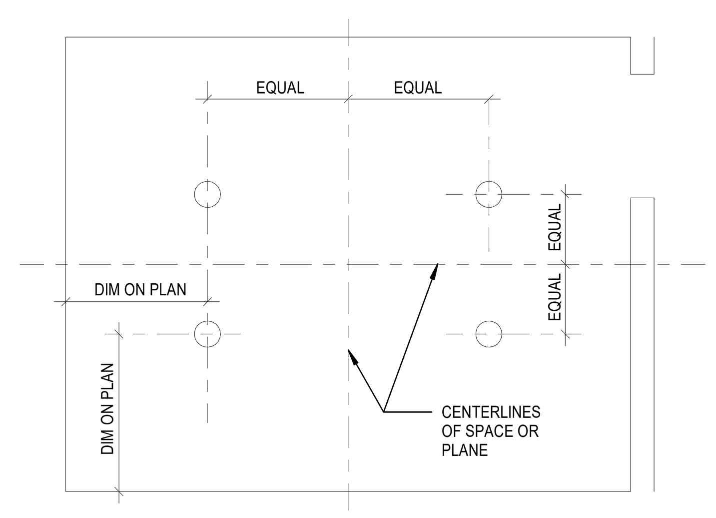
LOCATE ITEMS ALIGNED WITH OTHER ITEMS SHOWN DIMENSIONED ELSEWHERE IN SPACE (OR CEILING PLANE).



RULE 5

ALIGN WITH FEATURES SHOWN DIMENSIONED ELSEWHERE IN SPACE

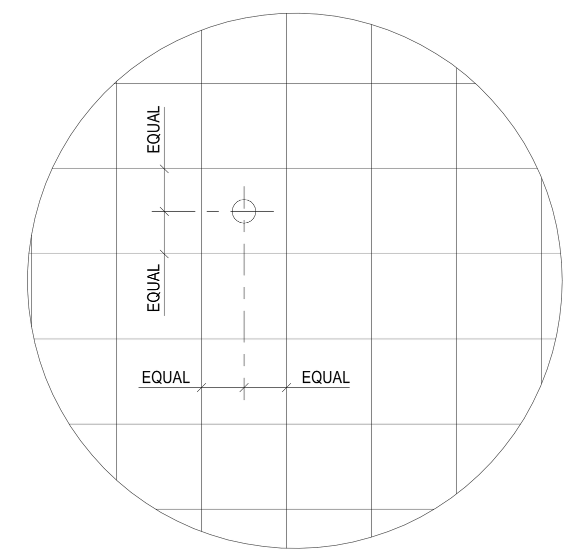
LOCATE ITEMS ALIGNED WITH OTHER ITEMS SHOWN DIMENSIONED ELSEWHERE IN SPACE (OR CEILING PLANE).



RULE 6

LOCATE FEATURES SYMMETRICALLY

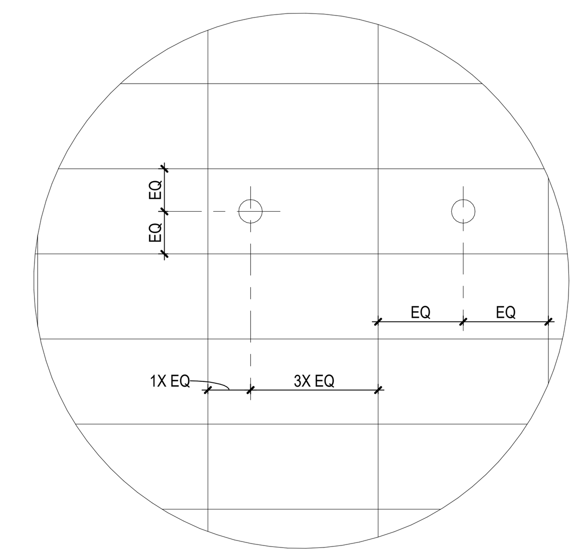
LOCATE ITEMS (LIGHT FIXTURES, SPRINKLER HEADS, DEVICES, ETC) AT CENTER OF OF PANEL ON SQUARE GRID-TYPE CEILINGS



RULE 7

WHEN NOT DIMENSIONED BUT OCCURS ON A SQUARE GRID-TYPE CEILING

LOCATE ITEMS (LIGHT FIXTURES, SPRINKLER HEADS, DEVICES, ETC) AT CENTER OF SHORT DIRECTION OF RECTANGULAR PANEL; LOCATE AT 1/4, 1/2, OR 3/4 POINT OF LONG DIRECTION OF RECTANGULAR PANEL



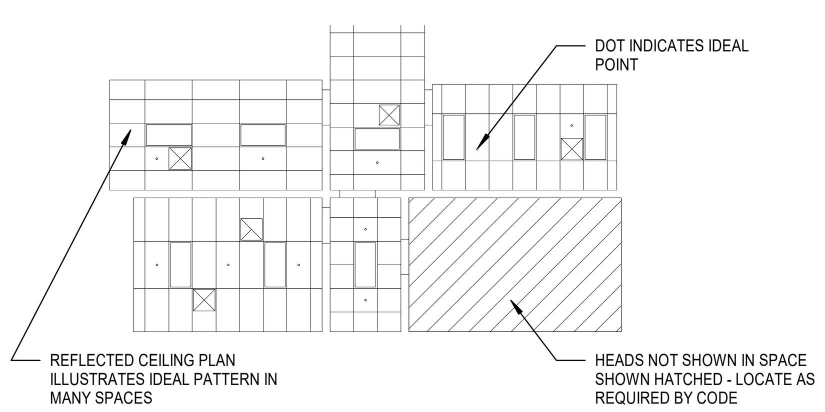
RULE 8

WHEN NOT DIMENSIONED BUT OCCURS ON A RECTANGULAR GRID-TYPE CEILING

TYPICAL TOLERANCES FOR LOCATING SPRINKLER HEADS

FOR MANY SPACES, THE ARCHITECTURAL REFLECTED CEILING PLANS ESTABLISH AN IDEAL PATTERN FOR LOCATING SPRINKLER HEADS. IN SPACES WHERE HEADS ARE SHOWN, FOLLOW PATTERN ESTABLISHED BY THE DRAWINGS. WHERE ADDL HEADS ARE REQUIRED TO CONFORM WITH CODE, PROVIDE HEADS IN GENERAL CONFORMITY WITH PATTERN ESTABLISHED BY THE DRAWINGS.

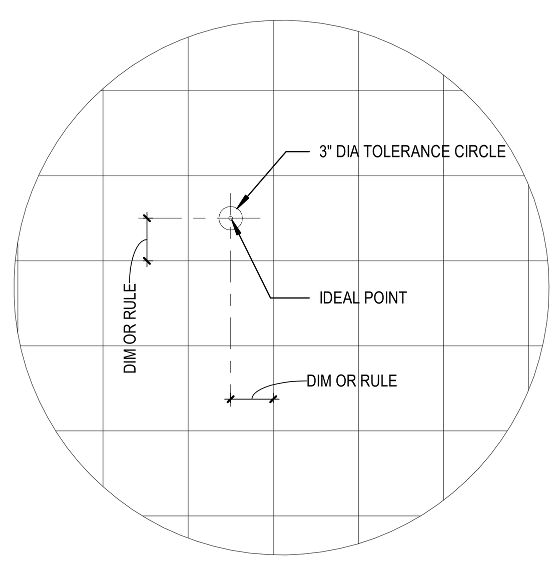
IN SPACES WHERE SPRINKLER HEADS ARE NOT SHOWN IN THE ARCHITECTURAL REFLECTED CEILING PLANS, PROVIDE HEADS AS REQUIRED BY CODE.



RULE 1

LOCATE HEADS AS SHOWN ON A-SERIES DRAWINGS

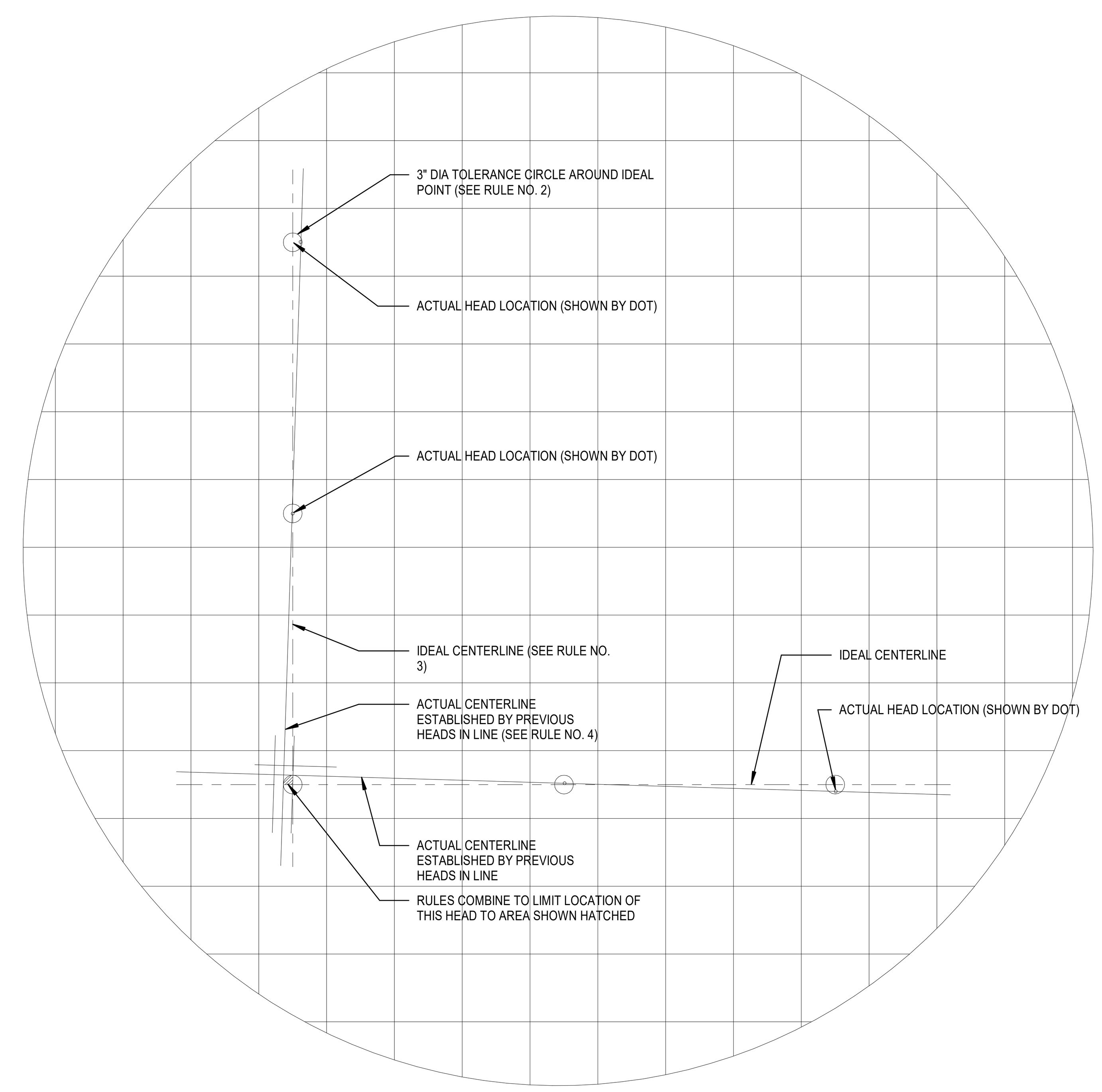
LOCATE SPRINKLER HEADS WITHIN 3" DIAMETER OF IDEAL POINT DIMENSIONED (OR SHOWN BY RULE) ON REFLECTED CEILING PLAN.



RULE 2

LOCATE HEADS WITHIN 3" DIAMETER OF IDEAL LOCATION POINT

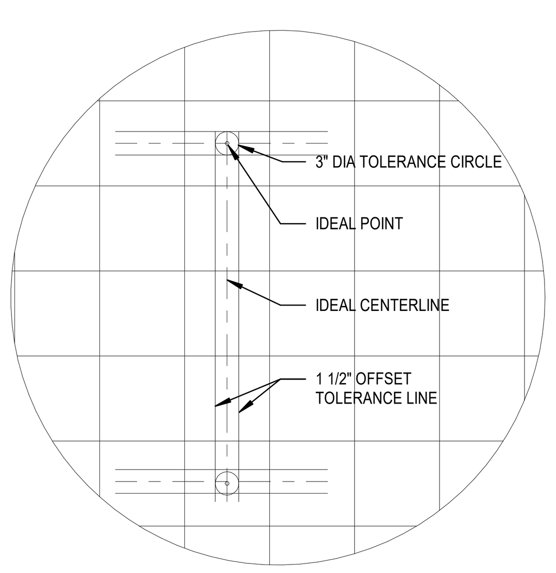
RULES NO. 2, NO. 3, AND 4 WHEN COMBINED MAY RESULT IN MORE RESTRICTIVE TOLERANCES



RULE 5

RULES COMBINED

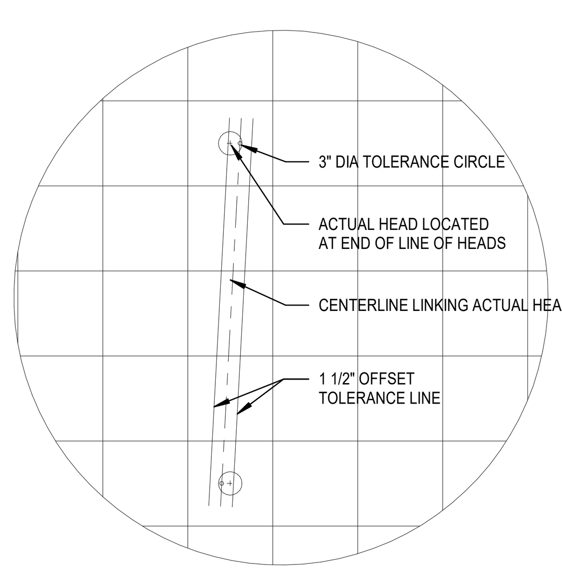
LOCATE SPRINKLER HEADS WITHIN 3" DIAMETER OF IDEAL POINT DIMENSIONED (OR SHOWN BY RULE) ON REFLECTED CEILING PLAN.



RULE 3

LOCATE LINES OF HEADS WITHIN 1 1/2" OF IDEAL CENTERLINE

LOCATE SPRINKLER HEADS WITHIN 3" DIAMETER OF IDEAL POINT DIMENSIONED (OR SHOWN BY RULE) ON REFLECTED CEILING PLAN.



RULE 4

LOCATE LINES OF HEADS WITHIN 1 1/2" OF LINE LINKING ACTUAL END HEADS

GENERAL NOTES

A. THE A-SERIES DRAWINGS ESTABLISH AND COORDINATE THE FINISHED APPEARANCE AND LOCATION OF ALL EXPOSED ELEMENTS. THE A-SERIES DRAWINGS TAKE PRECEDENCE FOR THE FINISHED APPEARANCE AND LOCATION OF ALL PARTS OF THE WORK.

EXCEPTION: DIMENSIONED LOCATIONS SHOWN ON ON DRAWINGS OF OTHER DISCIPLINES SHALL GOVERN ONLY WHERE:

1. SPECIFICALLY AND INDIVIDUALLY INDICATED BY SYMBOL, KEYED NOTE, OR NOTATION ON THE ARCHITECTURAL DRAWINGS.
2. OCCURRING WITHIN A ROOM OR OTHER IDENTIFIABLE SPACE FOR WHICH ARCHITECTURE SHEET OR SCHEDULE NOTES INDICATE THAT DIMENSIONS PROVIDED ELSEWHERE SHALL GOVERN.

B. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE THE TYPICAL RULES WHICH GOVERN THE LOCATION, CONFIGURATION IN RELATIONSHIP TO OTHER ELEMENTS OF THE WORK, AND FINISHED ALIGNMENT OF ALL ITEMS OCCURRING ON REFLECTED CEILING PLANS OF THE PROJECT.

C. THE A-SERIES FLOOR PLANS, REFLECTED CEILING PLANS, SECTIONS, ELEVATIONS, AND DETAILS ILLUSTRATE THE DIMENSIONED LOCATION OF MANY - BUT NOT ALL - EXPOSED PARTS OF THE WORK. APPLY THE RULES ON THIS SHEET - IN DESCENDING ORDER - TO DETERMINE THE LOCATION OF EXPOSED PART OF THE WORK.

1. WHEN UNIQUELY AND SPECIFICALLY DIMENSIONED ON THE A-SERIES PLANS, SECTIONS, OR ELEVATIONS (OR COMBINATION THEREOF), LOCATE AS DIMENSIONED.
2. IF NOT SHOWN, OR IF SHOWN BUT NOT DIMENSIONED, BY THE A-SERIES PLANS OR ELEVATIONS, LOCATE AS INDICATED BY THE APPLICABLE RULE.

D. REFER TO THE "ARCHITECTURAL GENERAL NOTES" FOR ADDITIONAL NOTES WHICH MAY BE APPLICABLE TO THE WORK SHOWN ON THIS SHEET.

E. REFER TO THE "PROJECT GENERAL NOTES" FOR ADDITIONAL NOTES WHICH APPLY TO THE ENTIRE PROJECT.

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

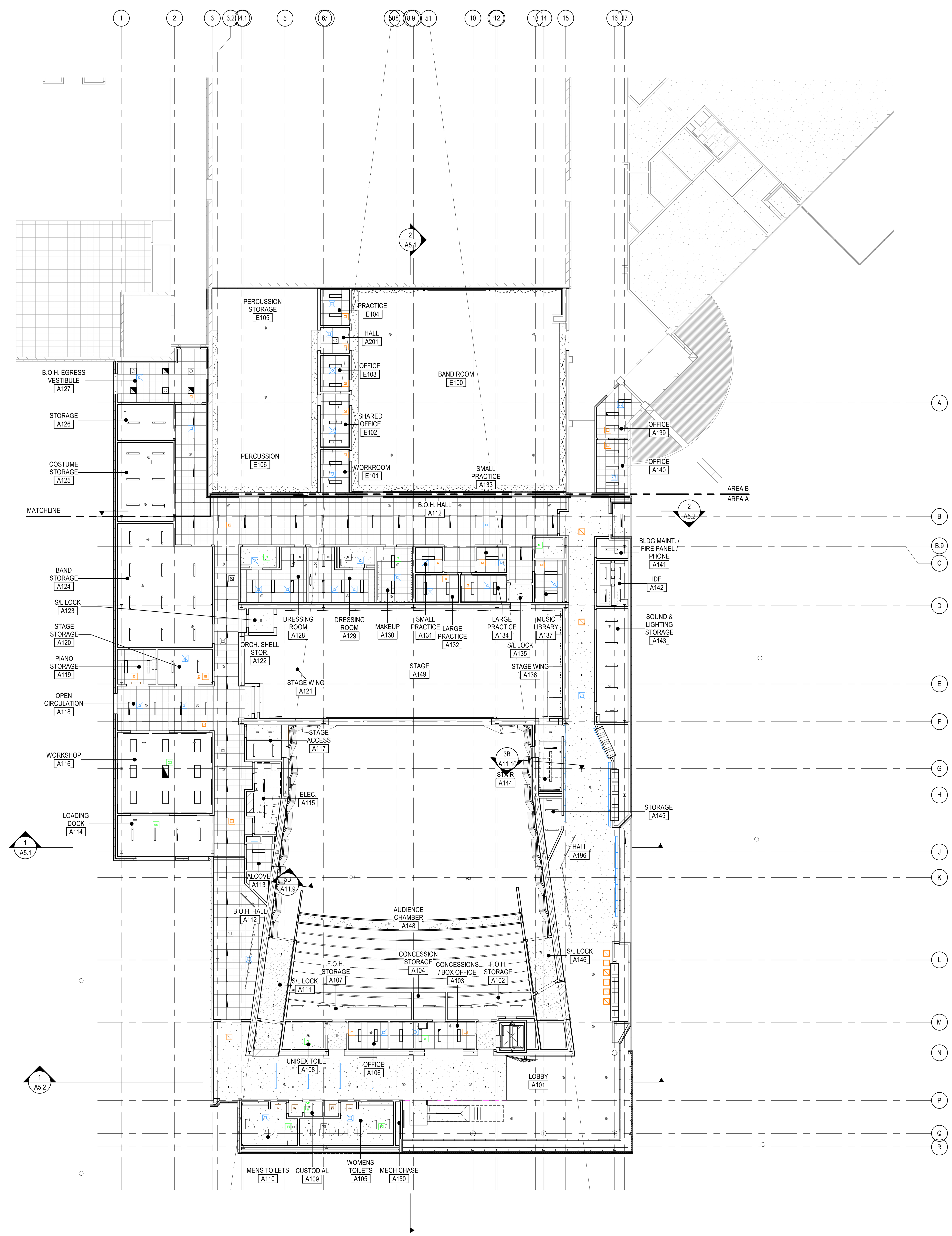
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

TYPICAL CEILING PLANS RULES

A3.0

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:38 PM



LEVEL 01 - REFLECTED CEILING PLAN

SCALE: 1/16" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

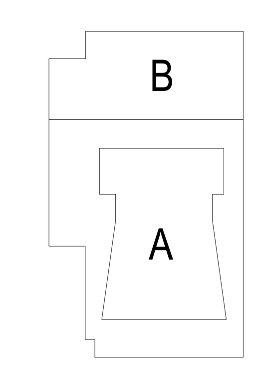
A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, ALL STRUCTURE, DUCTS, PIPES, CONDUIT TO BE PAINTED.
J. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

REFERENCE KEYNOTES

SHEET NOTES

1	DEMOLISH EXISTING LAY IN CEILING
2	DEMOLISH EXISTING LIGHT FIXTURES
3	DEMOLISH EXISTING ACOUSTICAL PANELS

KEY PLAN



DLR GROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

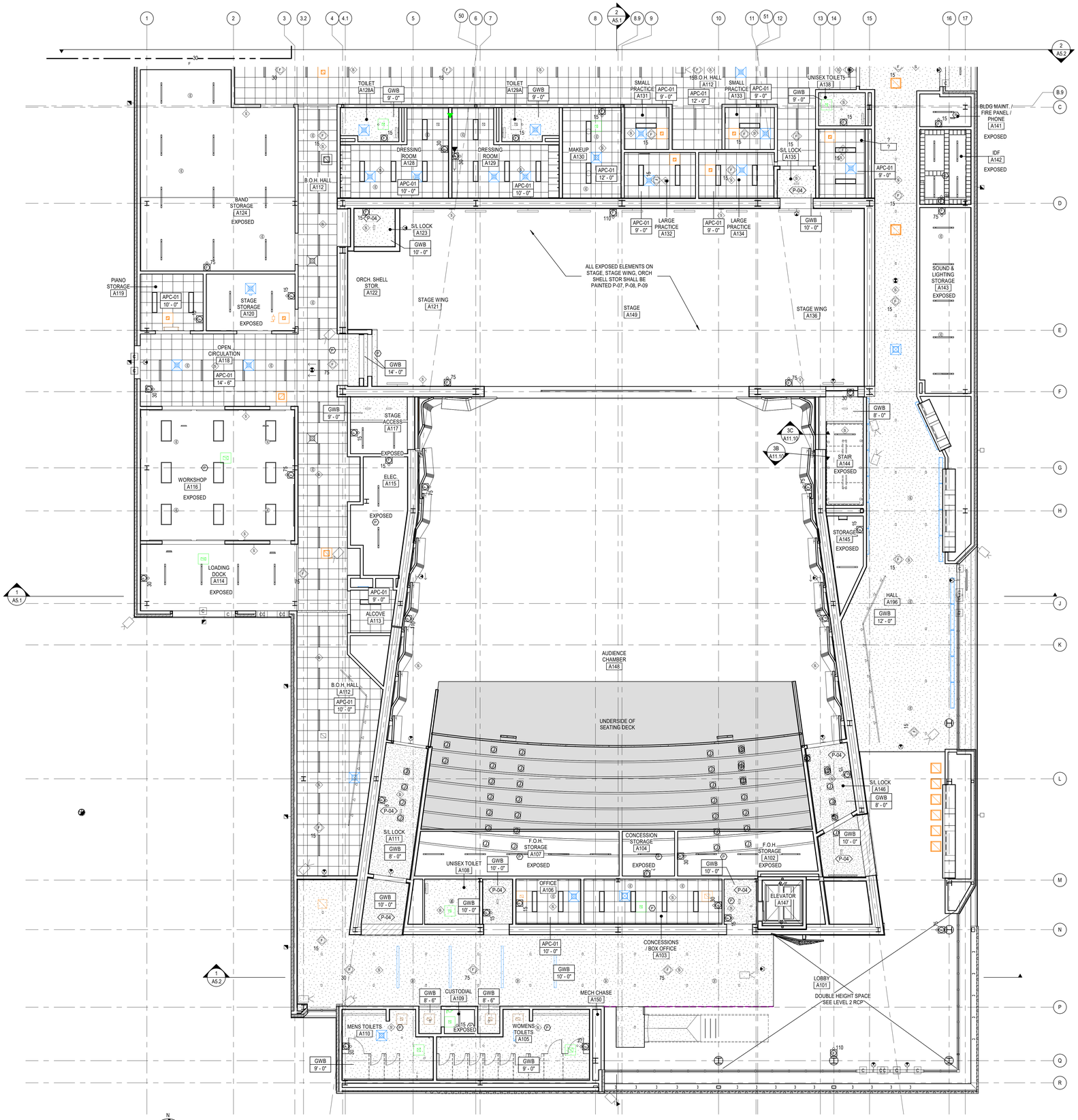
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - OVERALL REFLECTED CEILING PLAN

A3.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:44 PM



LEVEL 01 - AREA A - REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

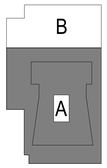
A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, ALL STRUCTURE, DUCTS, PIPES, CONDUIT TO BE PAINTED.
J. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

REFERENCE KEYNOTES

SHEET NOTES

1 DEMOLISH EXISTING LAY IN CEILING
2 DEMOLISH EXISTING LIGHT FIXTURES
3 DEMOLISH EXISTING ACOUSTICAL PANELS

KEY PLAN



DLRGROUP
© DLR Group

REGISTERED ARCHITECT STEVEN E. BRANT CHARLES
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

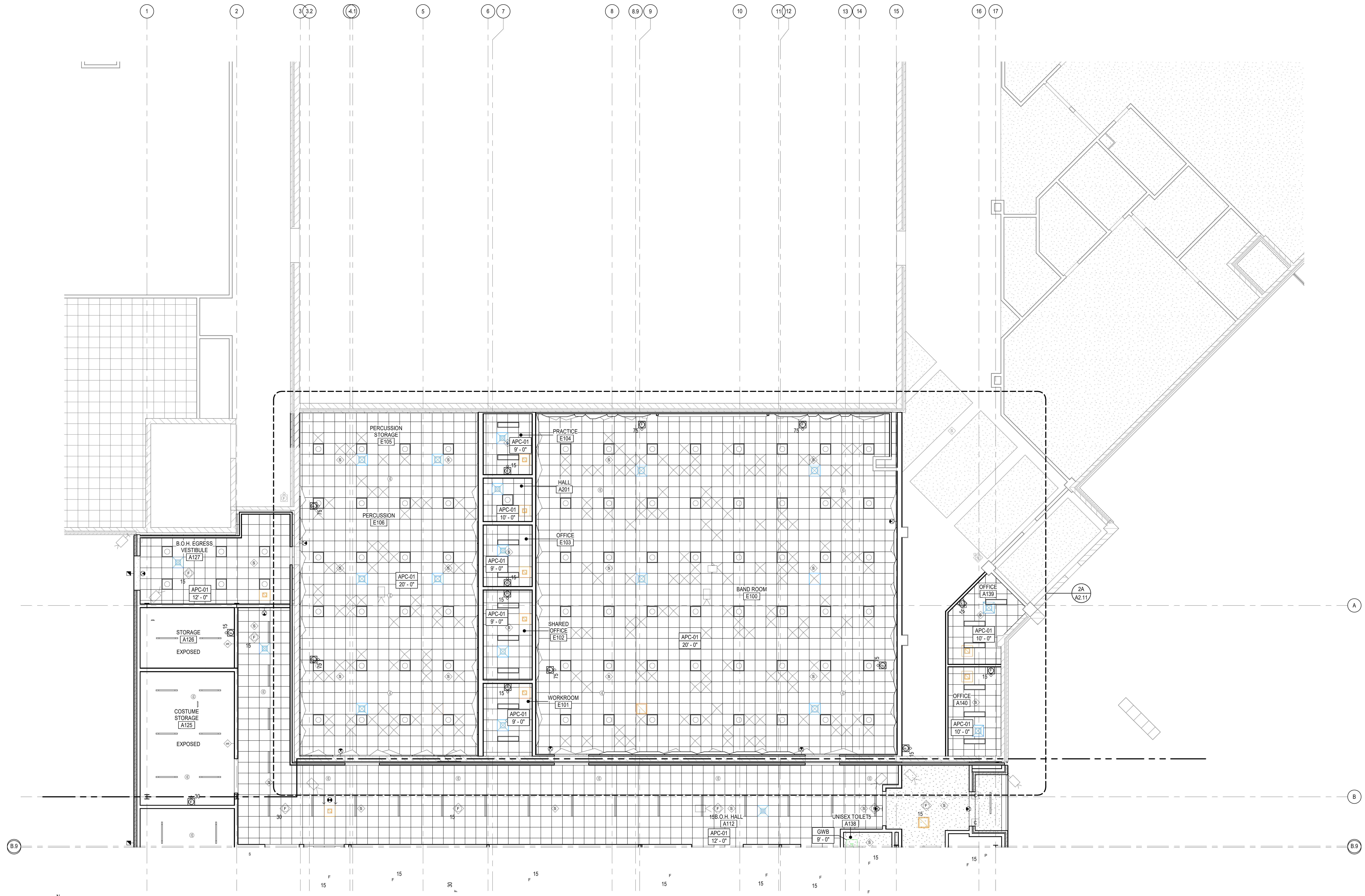
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA A - REFLECTED CEILING PLAN

A3.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:52 PM



LEVEL 01 - AREA B - REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

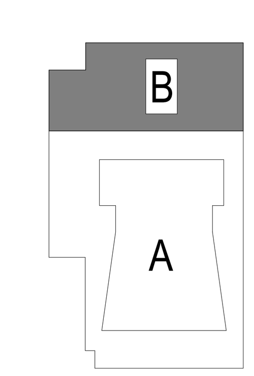
A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, ALL STRUCTURE, DUCTS, PIPES, CONDUIT TO BE PAINTED.
J. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

REFERENCE KEYNOTES

SHEET NOTES

1	DEMOLISH EXISTING LAY IN CEILING
2	DEMOLISH EXISTING LIGHT FIXTURES
3	DEMOLISH EXISTING ACOUSTICAL PANELS

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

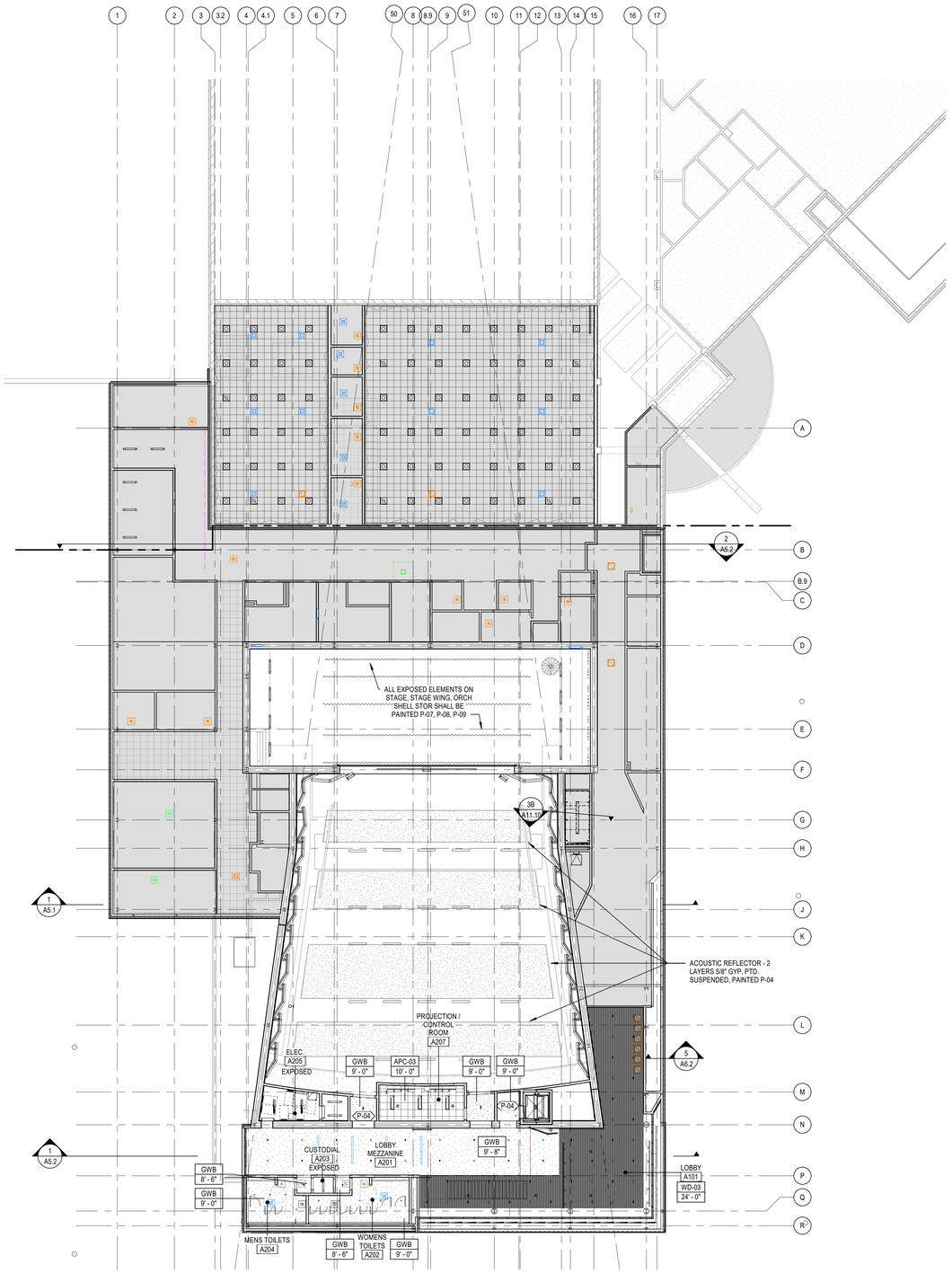
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA B - REFLECTED CEILING PLAN

A3.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:55 PM

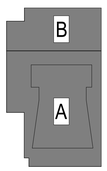


N

OVERALL REFLECTED CEILING PLAN, LEVEL 2

SCALE: 1/16" = 1'-0"

KEY PLAN



DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

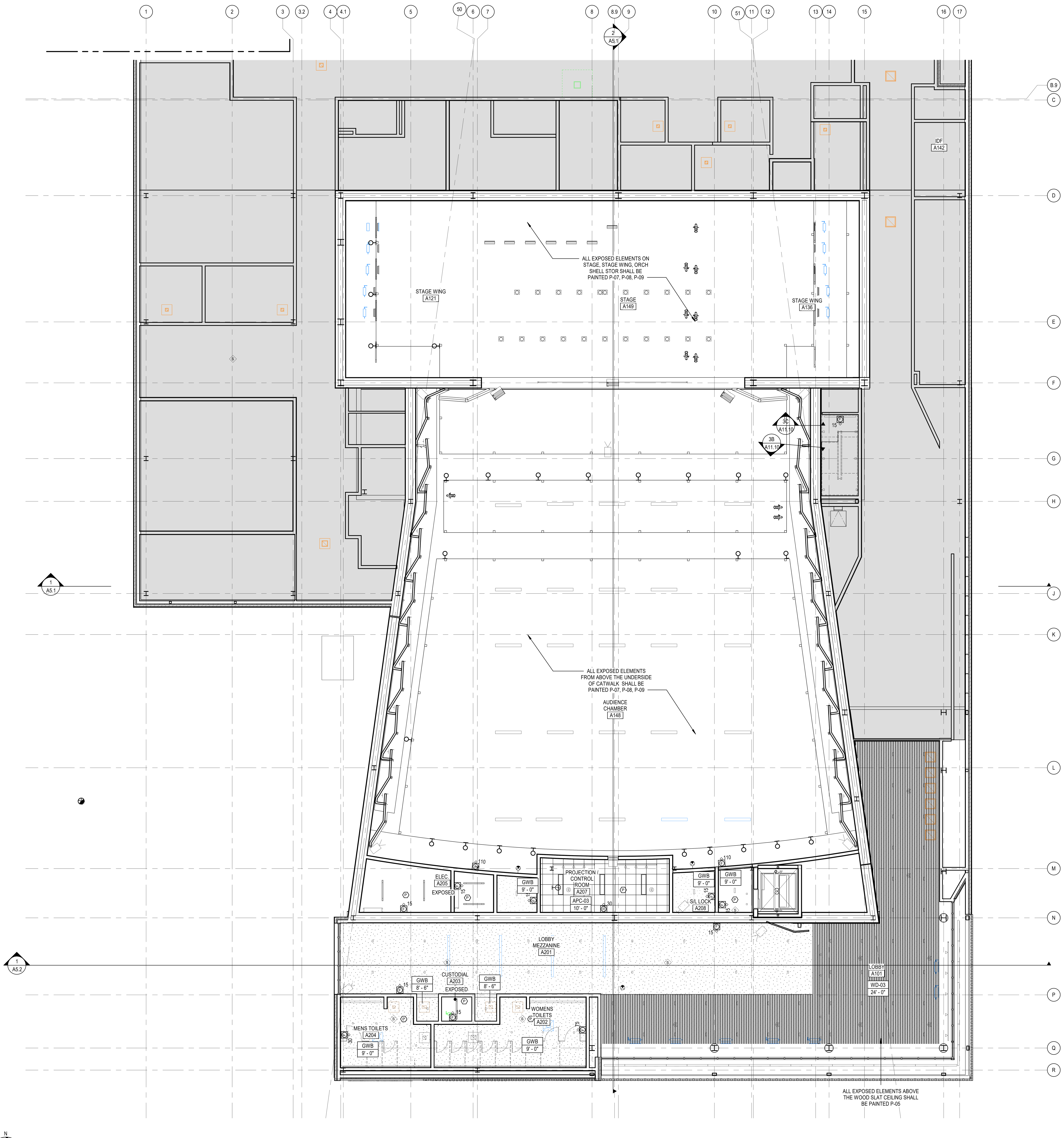
REVISIONS

39-23712-00

LEVEL 02 - OVERALL REFLECTED CEILING PLAN

A3.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:22:58 PM



LEVEL 02 MEZZANINE - AREA A - REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

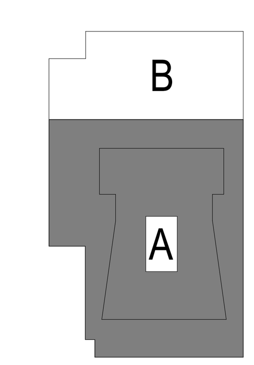
A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, ALL STRUCTURE, DUCTS, PIPES, CONDUIT TO BE PAINTED.
J. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

REFERENCE KEYNOTES

SHEET NOTES

1	DEMOLISH EXISTING LAY IN CEILING
2	DEMOLISH EXISTING LIGHT FIXTURES
3	DEMOLISH EXISTING ACOUSTICAL PANELS

KEY PLAN



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

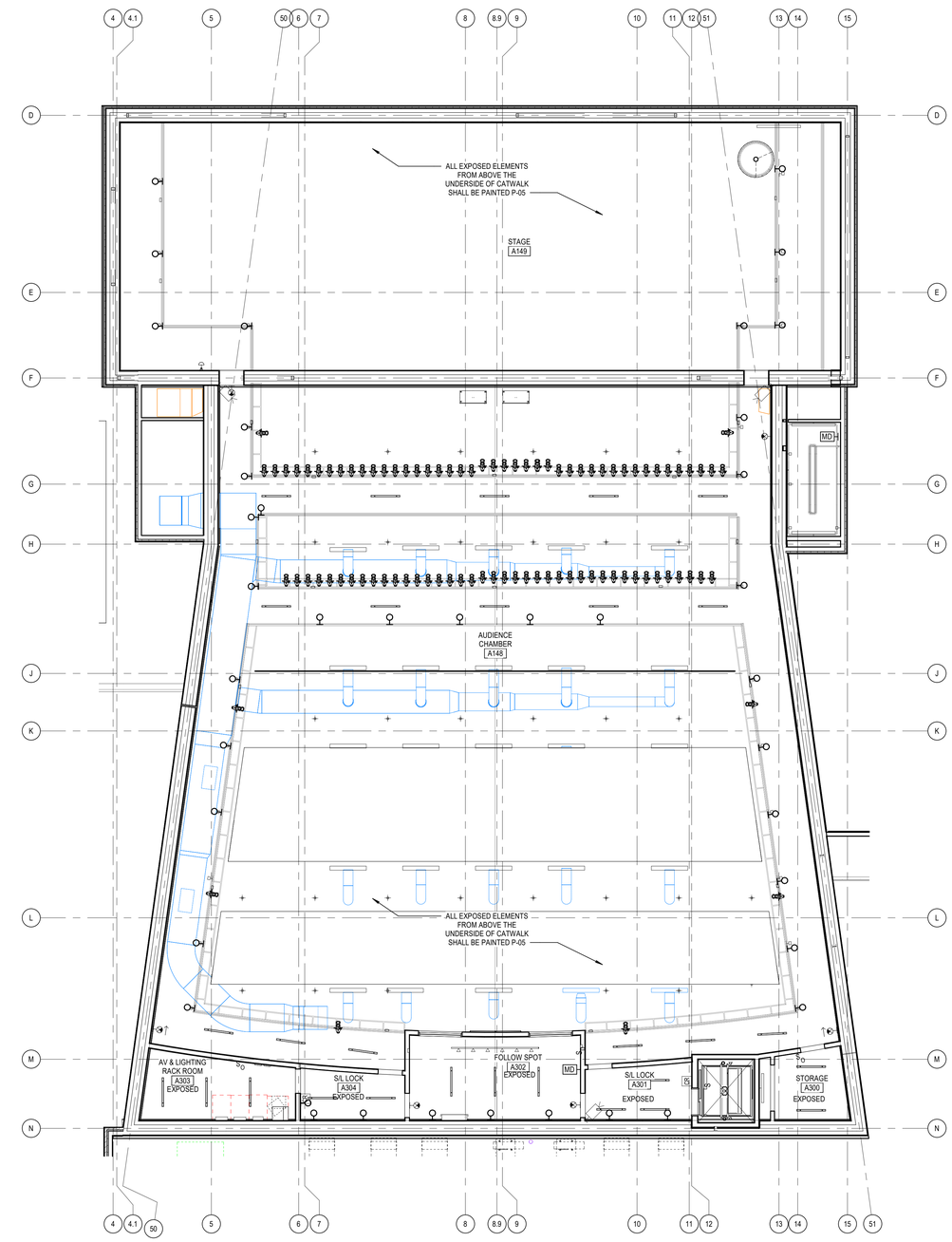
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 02 - MEZZANINE - AREA A - REFLECTED CEILING PLAN

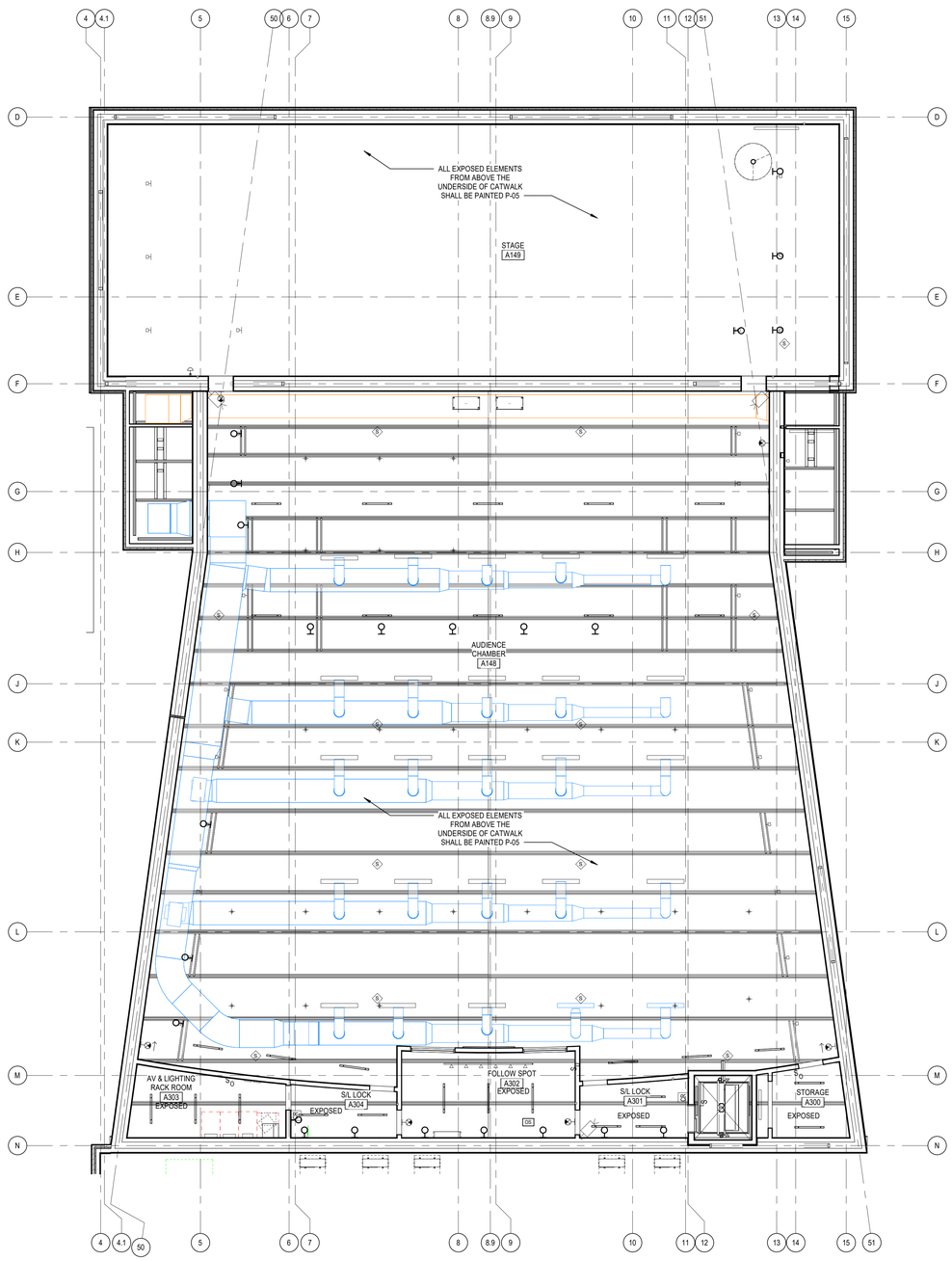
A3.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:04 PM



LEVEL 03 - CATWALK - LOWER REFLECTED CEILING PLAN

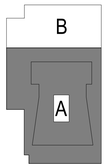
SCALE: 1/8" = 1'-0"



LEVEL 03 - CATWALK - UPPER REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

KEY PLAN



DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

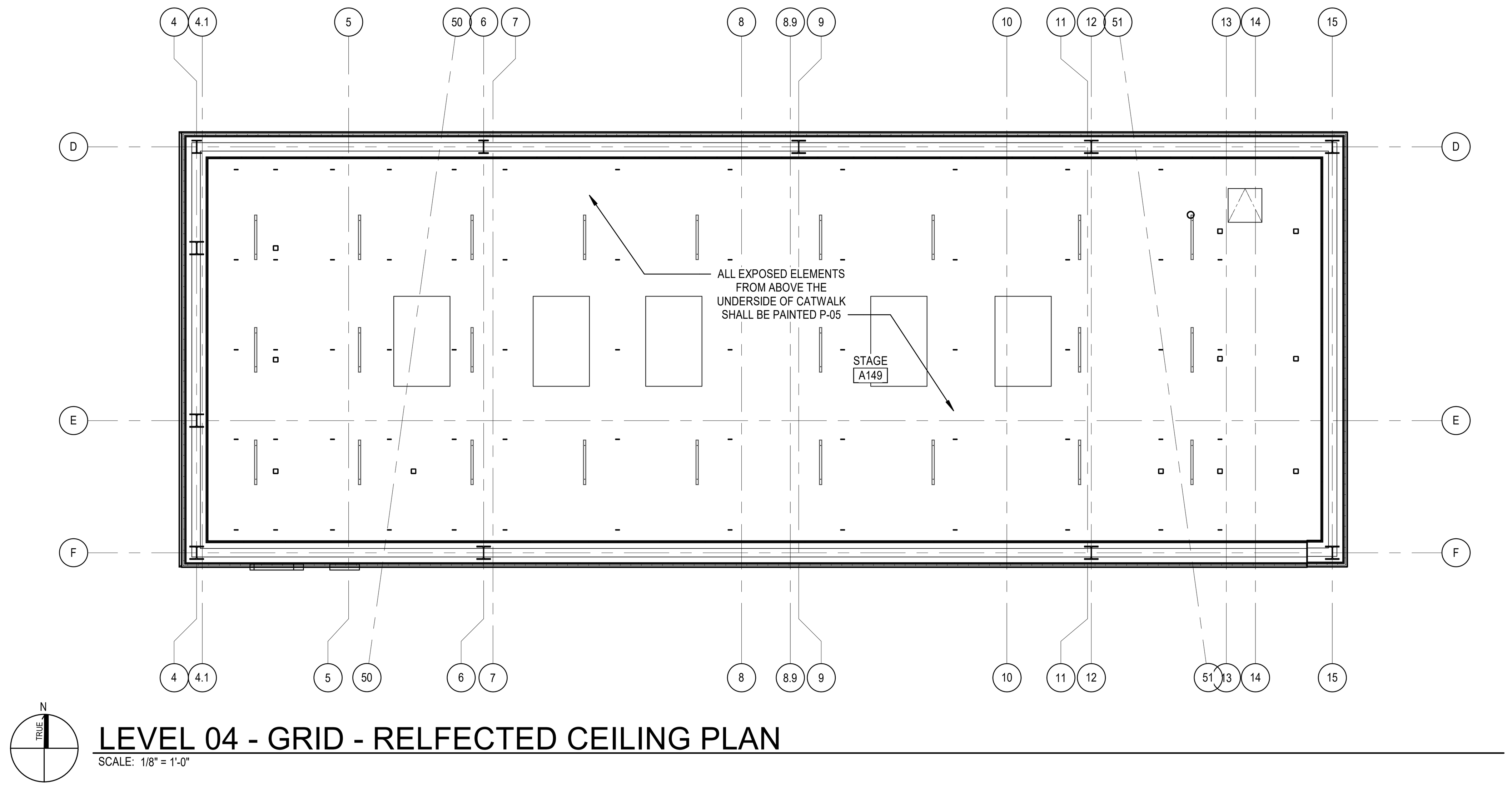
39-23712-00

LEVEL 03 - CATWALK & GRID - REFLECTED CEILING PLAN

A3.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt

7/25/2024 3:23:05 PM



LEVEL 04 - GRID - RELFECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

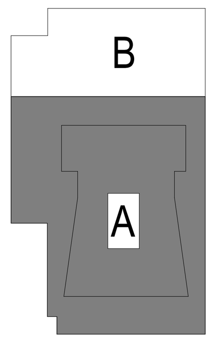
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

KEY PLAN



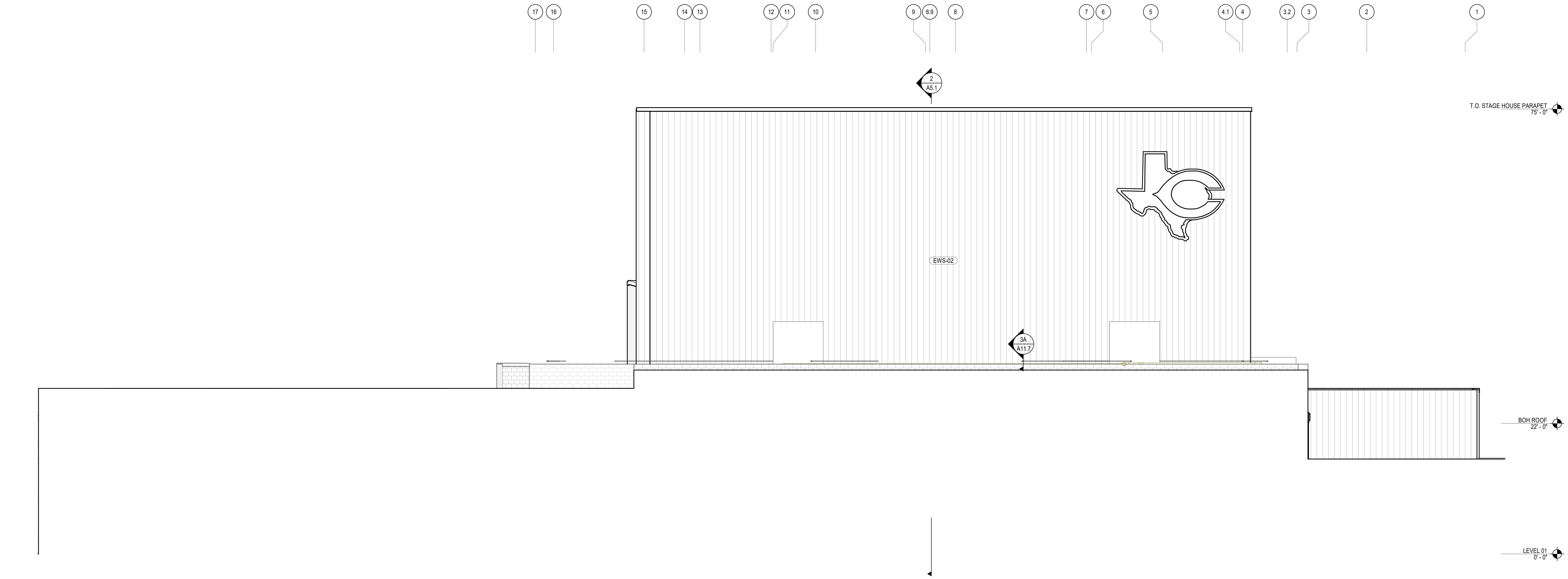
39-23712-00

LEVEL 04 - GRID - REFLECTED CEILING PLAN

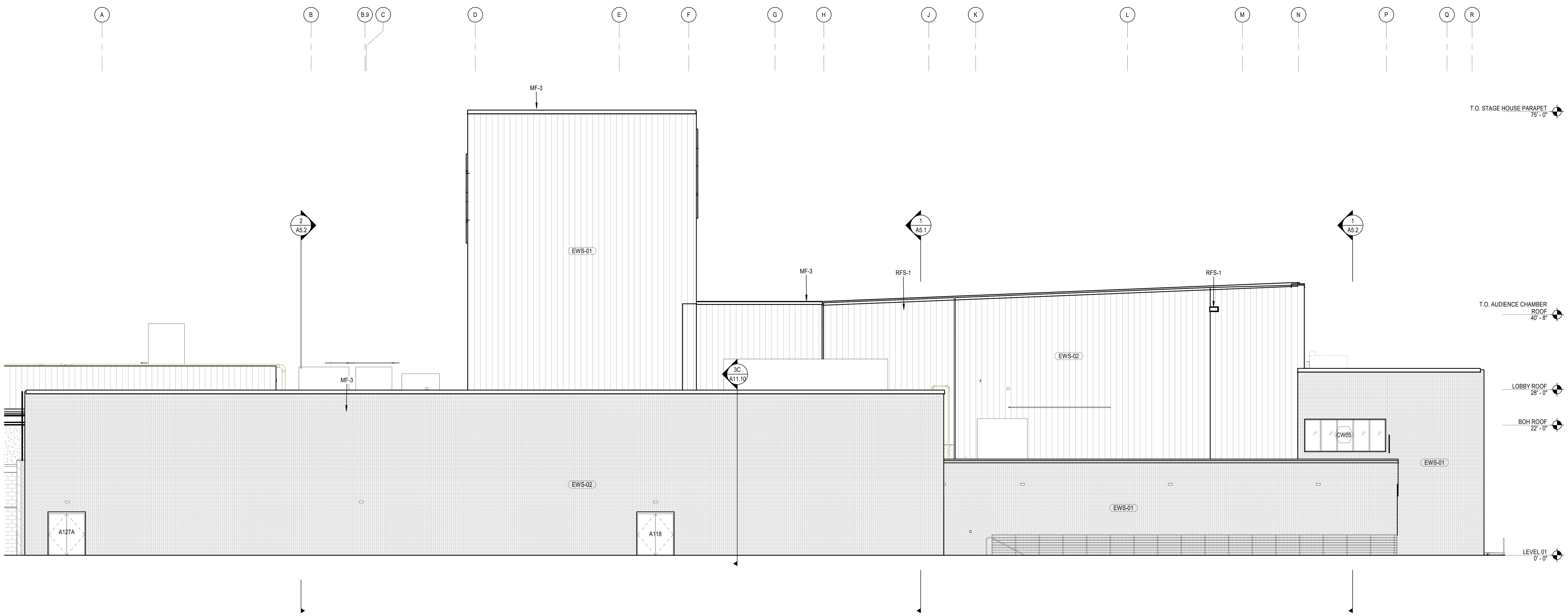
A3.4

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt

7/25/2024 3:23:09 PM



3A A4.1 NORTH BUILDING ELEVAION
SCALE: 1/8" = 1'-0"



5A A4.1 WEST BUILDNIG ELEVATION
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
RFS-1	ROOF SCUPPER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

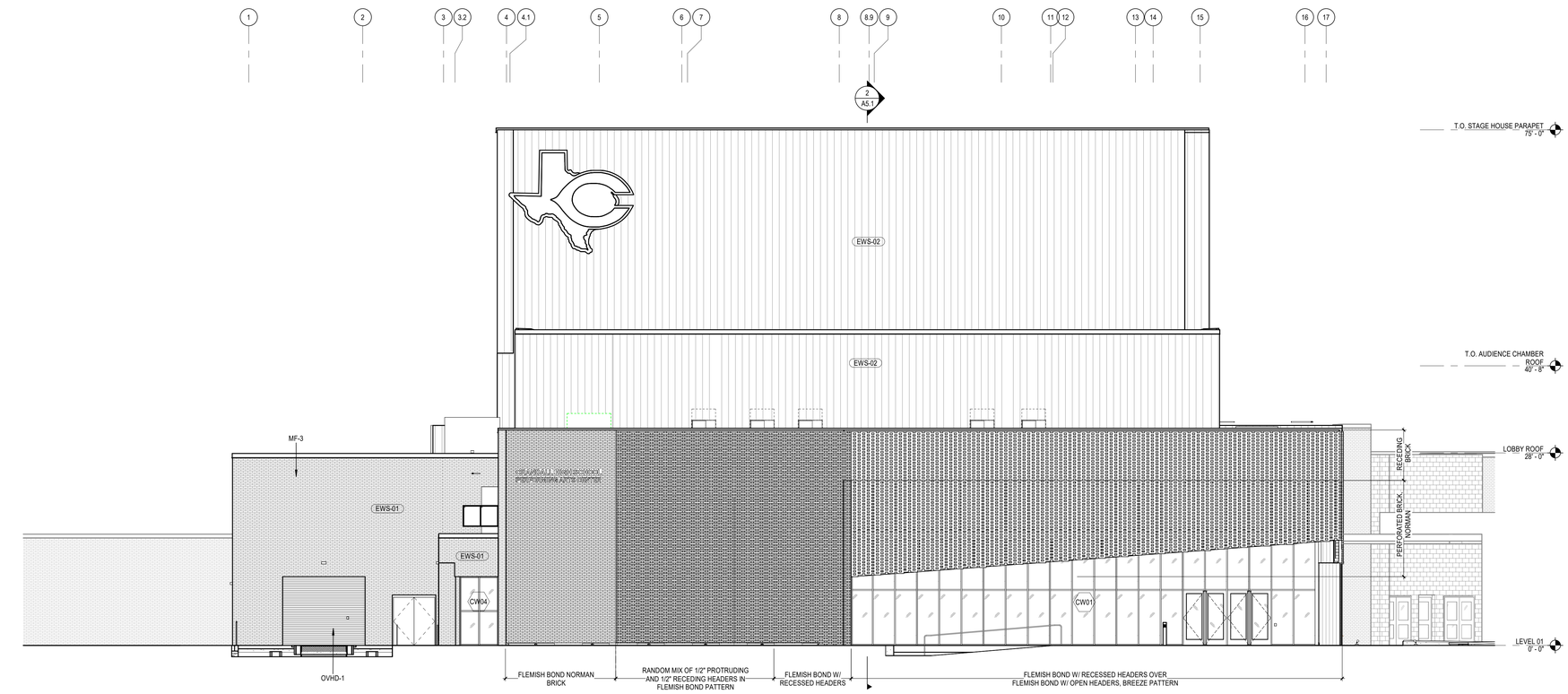
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

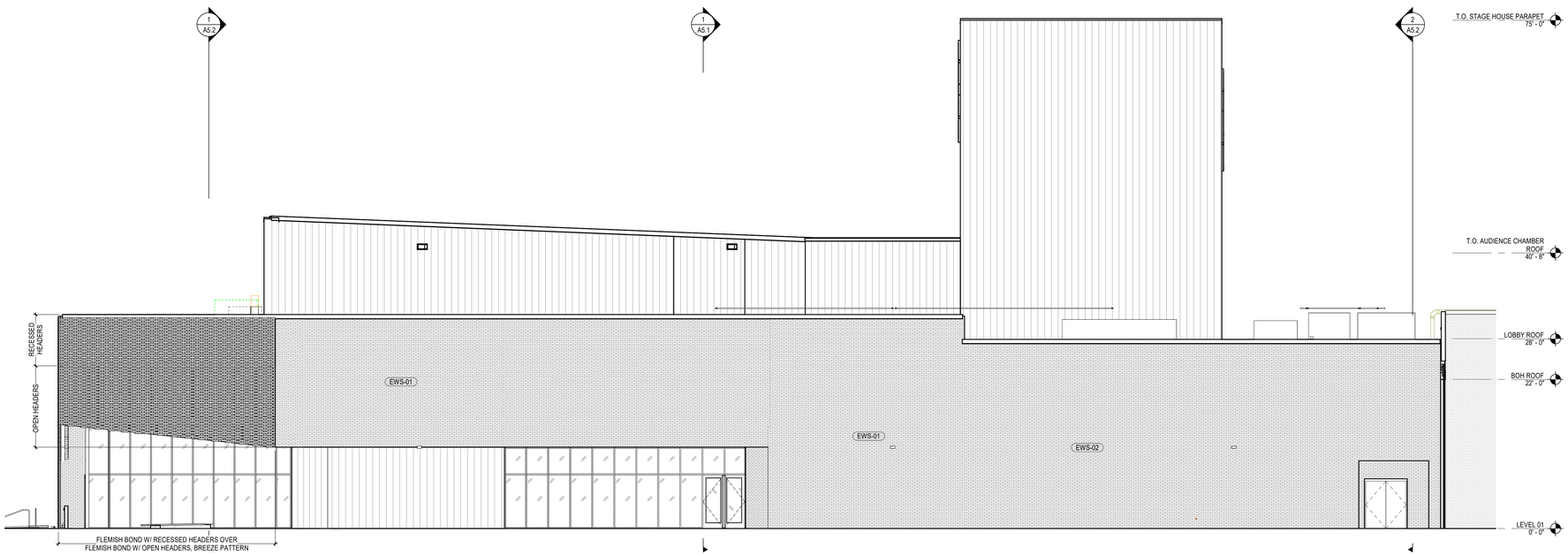
EXTERIOR ELEVATIONS

A4.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:15 PM



3A A4.2 SOUTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



5A A4.2 EAST BUILDING ELEVATION
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
OVHD-1	OVERHEAD COILING DOOR

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

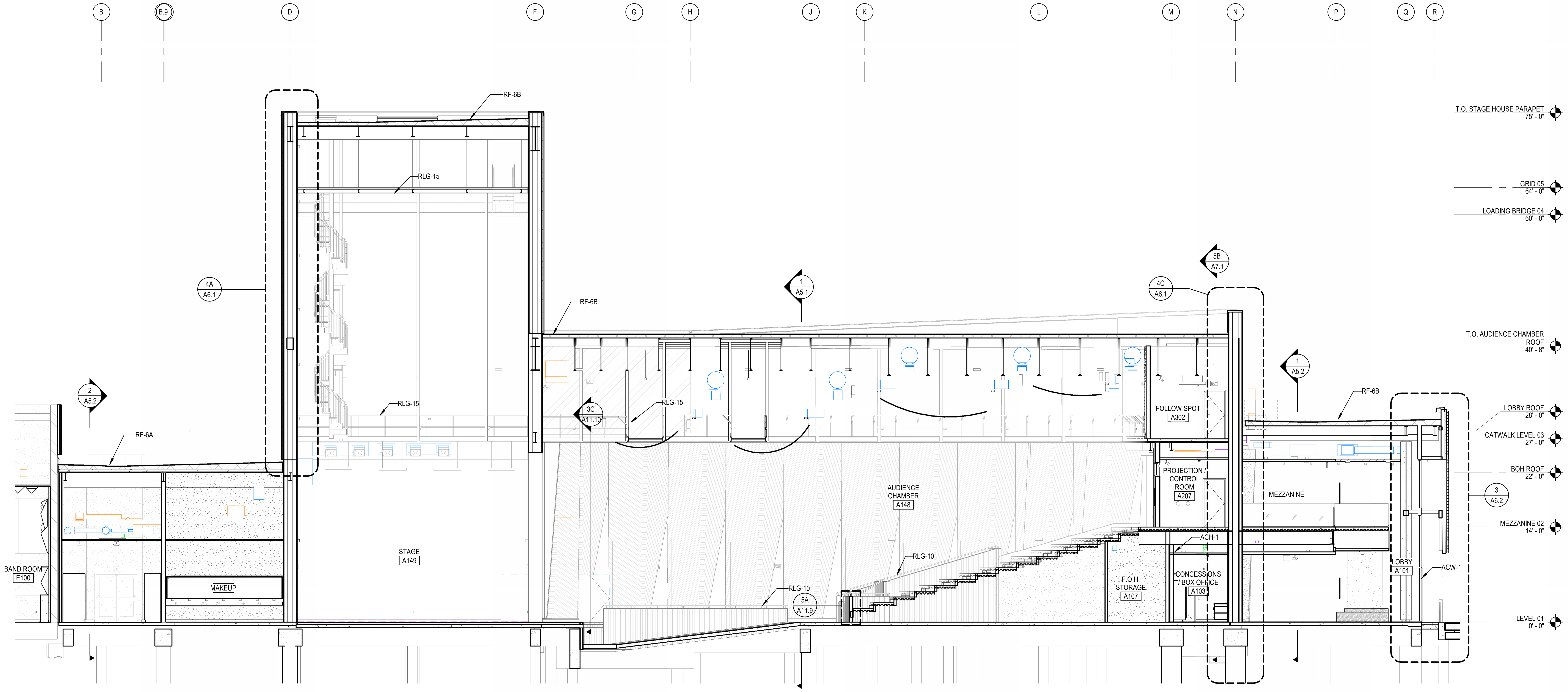
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

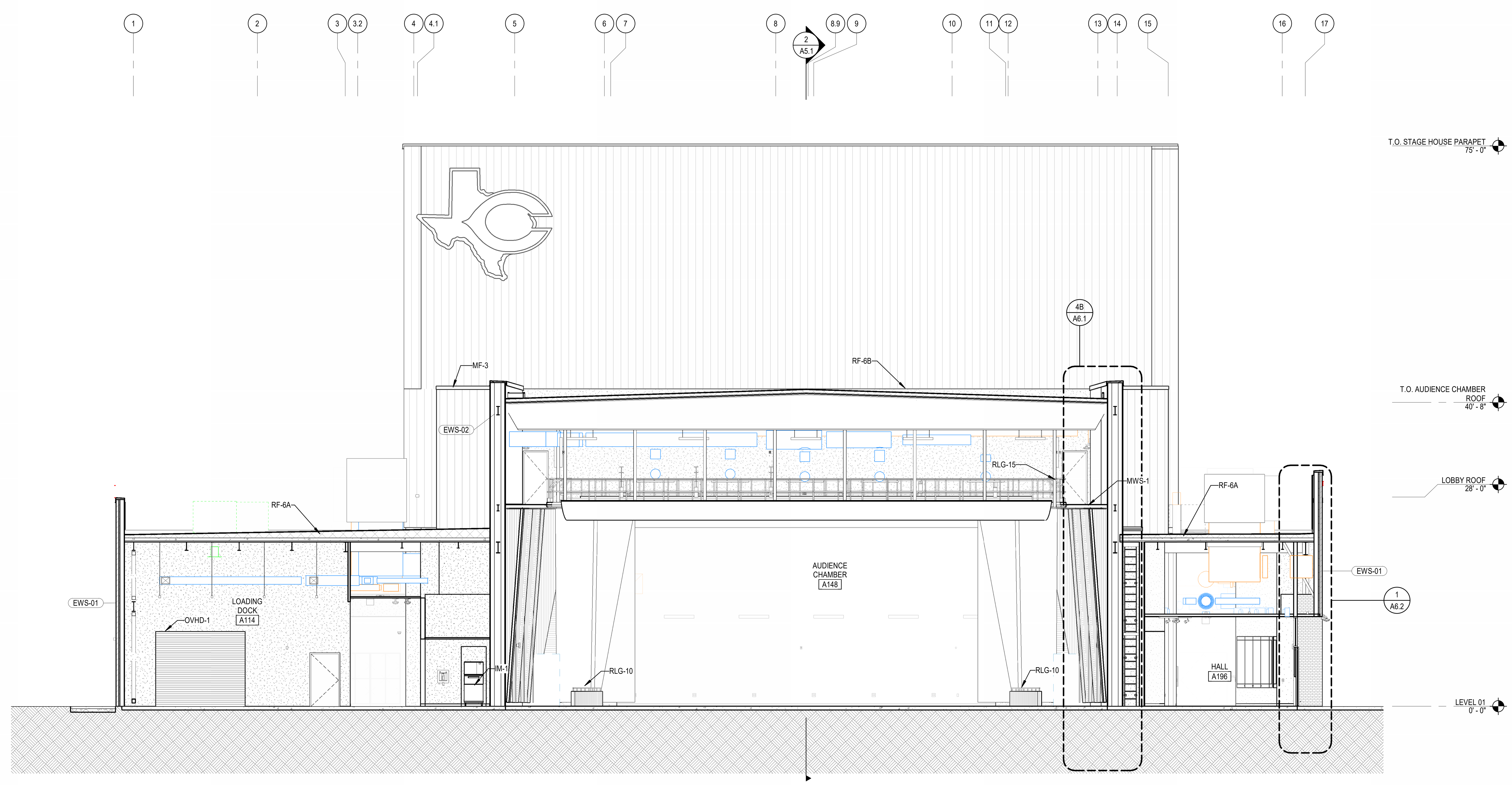
EXTERIOR ELEVATIONS

A4.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:25 PM



BUILDING SECTION A
2 A5.1 SCALE: 1/8" = 1'-0"



BUILDING SECTION B
1 A5.1 SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

ACH-1	ACOUSTIC ISOLATION CEILING HANGER
ACW-1	ALUM CURTAIN WALL TYPE 1
IM-1	ICE MACHINE
MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
MWS-1	CATWALK WALKING SURFACE, STEEL PLATE, PTD BLACK
OVHD-1	OVERHEAD COILING DOOR
RF-6A	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER COMPOSITE METAL DECK
RF-6B	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER METAL ROOF DECK
RLG-10	STEEL DECORATIVE RAILING
RLG-15	CATWALK RAILING, NO OUTRIGGER

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

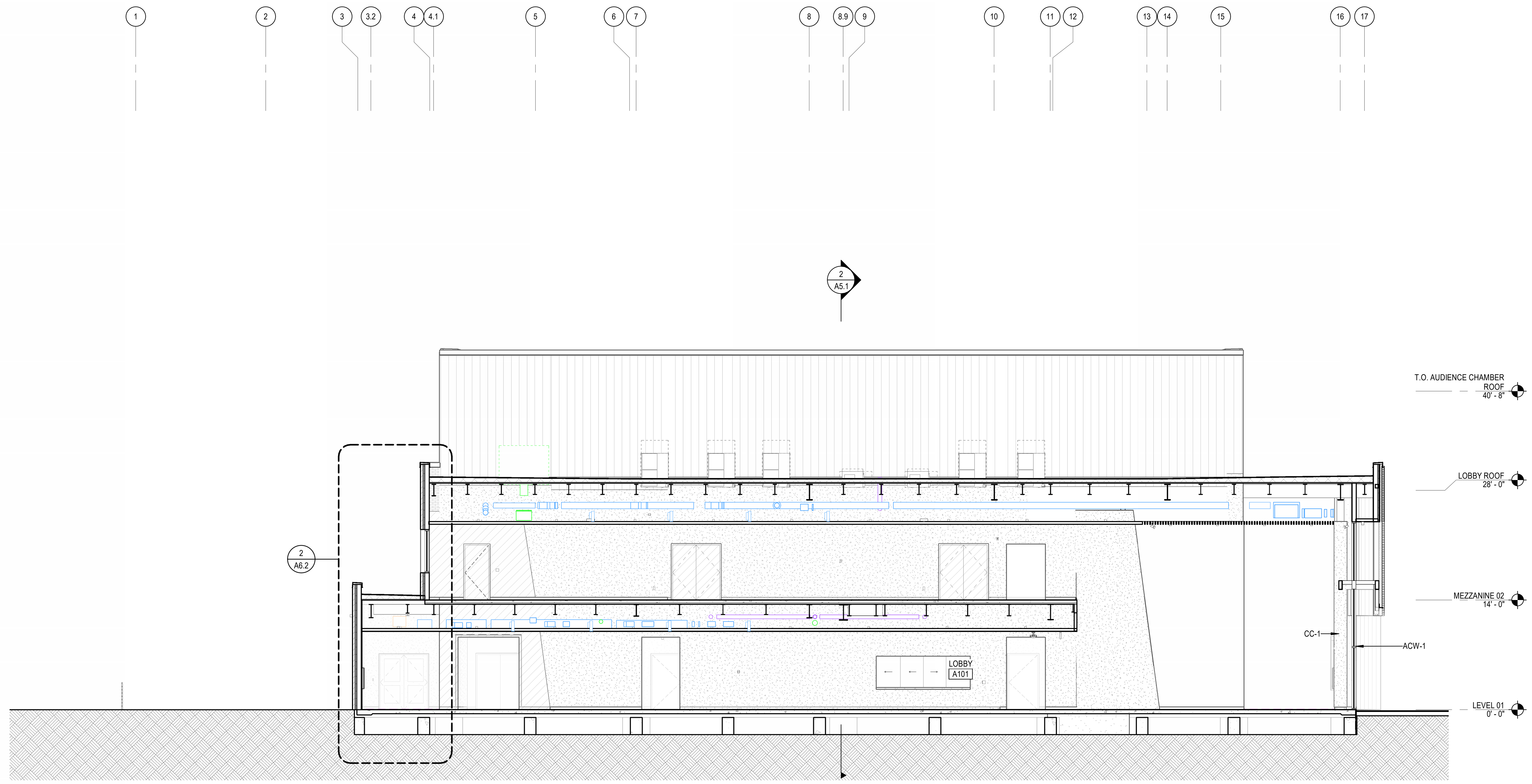
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

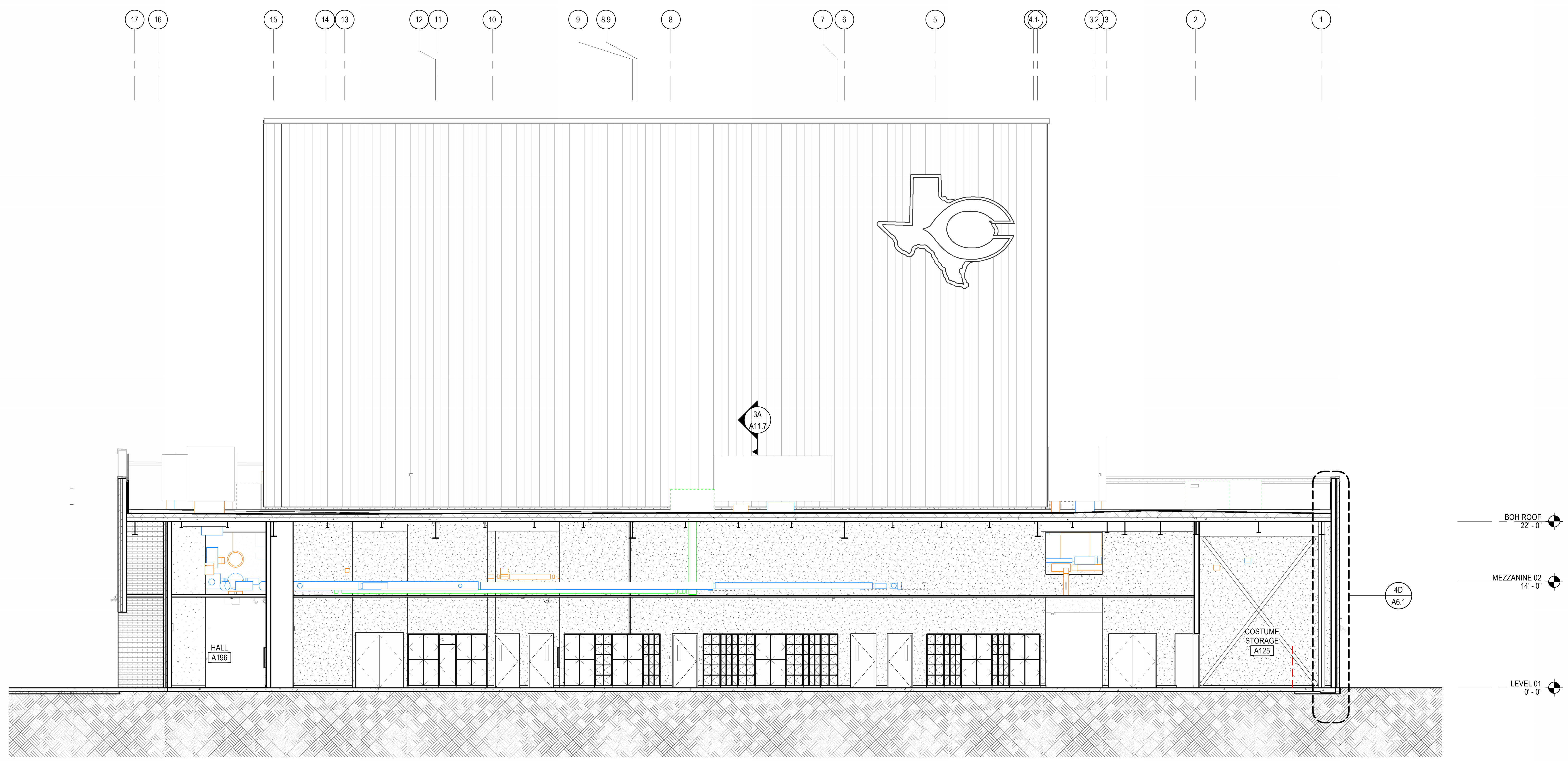
BUILDING SECTIONS

A5.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:33 PM



BUILDING SECTION C
SCALE: 1/8" = 1'-0"



BUILDING SECTION D
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
CC-1	COLUMN COVER, SNAP TOGETHER

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

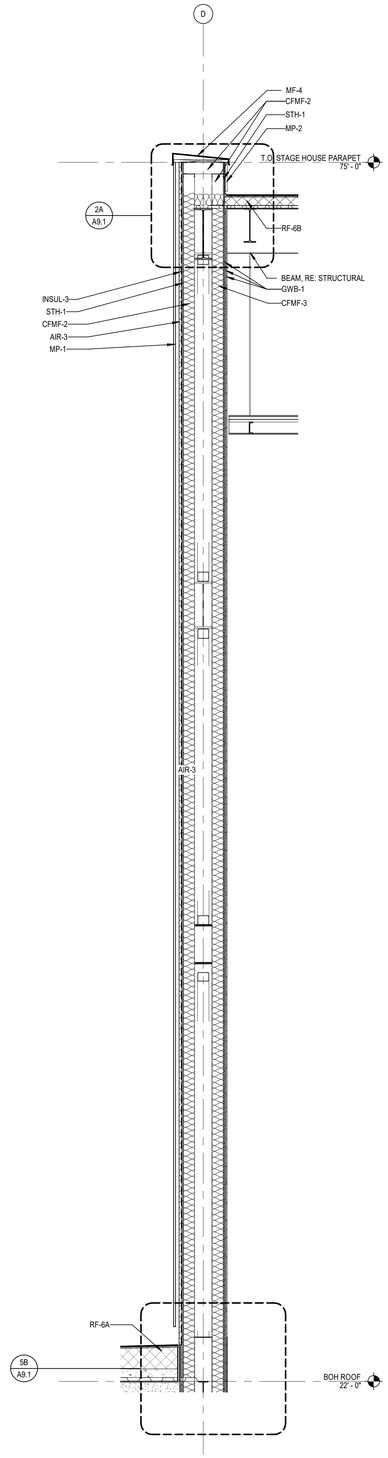
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

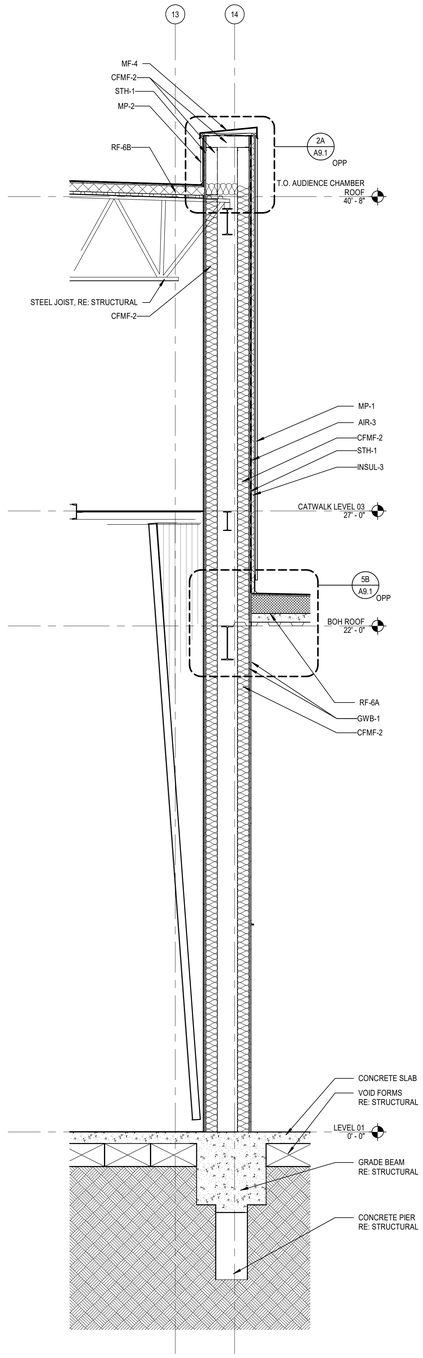
BUILDING SECTIONS

A5.2

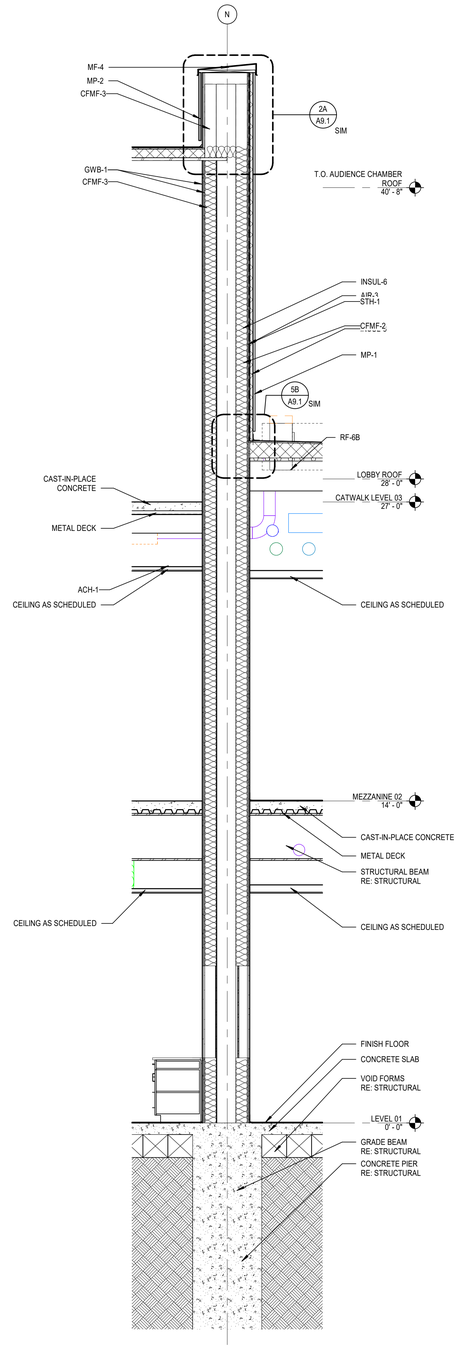
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:41 PM



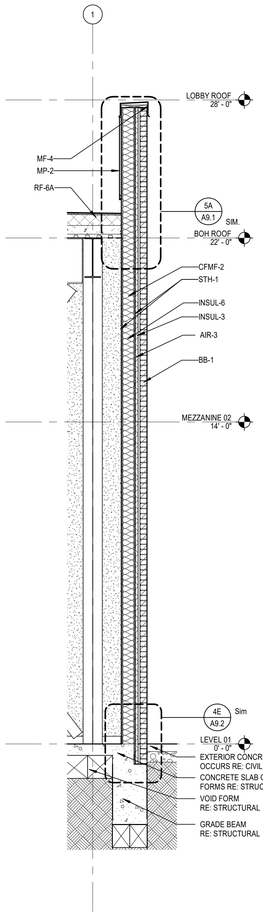
4A A6.1 WALL SECTION A
SCALE: 3/8" = 1'-0"



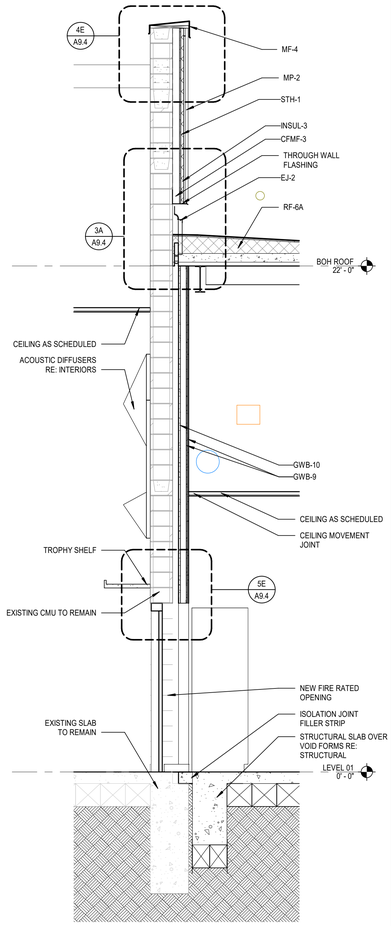
4B A6.1 WALL SECTION B
SCALE: 3/8" = 1'-0"



4C A6.1 WALL SECTION C
SCALE: 3/8" = 1'-0"



4D A6.1 WALL SECTION D
SCALE: 3/8" = 1'-0"



4E A6.1 WALL SECTION E
SCALE: 3/8" = 1'-0"

REFERENCE KEYNOTES

ACH-1	ACOUSTIC ISOLATION CEILING HANGER
AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
EJ-2	EXPANSION JOINT COVER TYPE 2
GWB-1	TYPE X GYPSUM WALL BOARD
GWB-9	PROPRIETARY FIRE CODE BOARD 5/8"
GWB-10	GYPSUM SHAFT LINER 1"
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MF-4	PREFINISHED SHEET METAL COPING W/ CONT CLEAT
MP-1	FORMED METAL WALL PANEL, PAC-CLAD BOX RIB 3, OR SIMILAR
MP-2	FORMED METAL WALL PANEL, PAC-CLAD FLUSH PANEL, OR SIMILAR. AT ALL PLACES WHERE ROOF TO CAP EXCEEDS 12" AS SHOWN, LAP UNDER COPING
RF-6A	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER COMPOSITE METAL DECK
RF-6B	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER METAL ROOF DECK
STH-1	GLASS-MAT GYPSUM SHEATHING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS
CHARLES E. BRANT
7/25/24

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

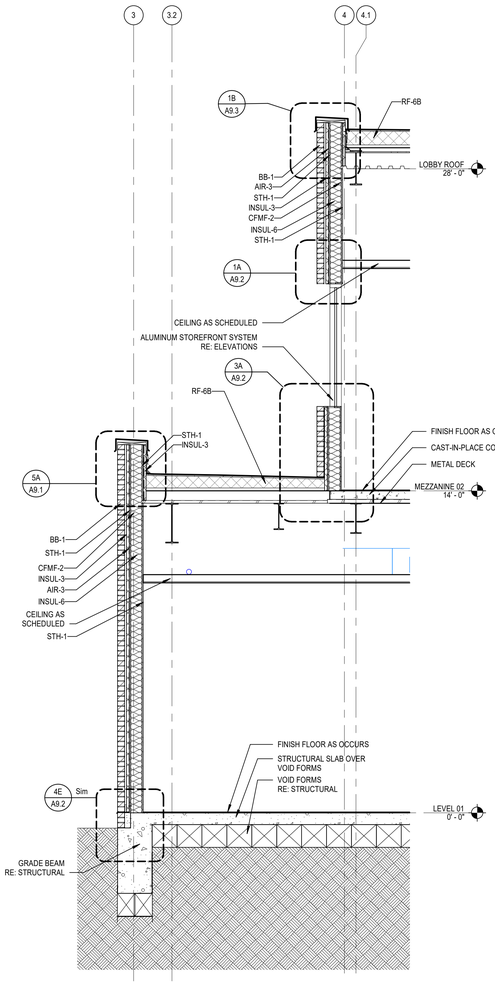
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

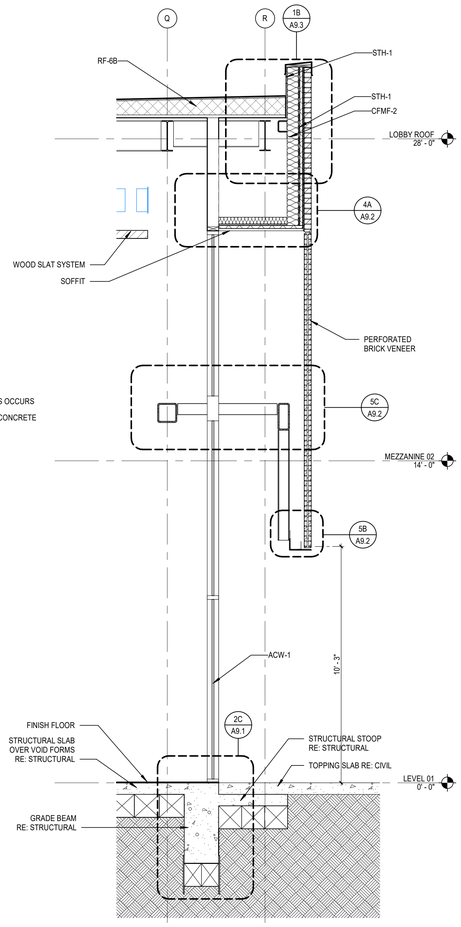
WALL SECTIONS

A6.1

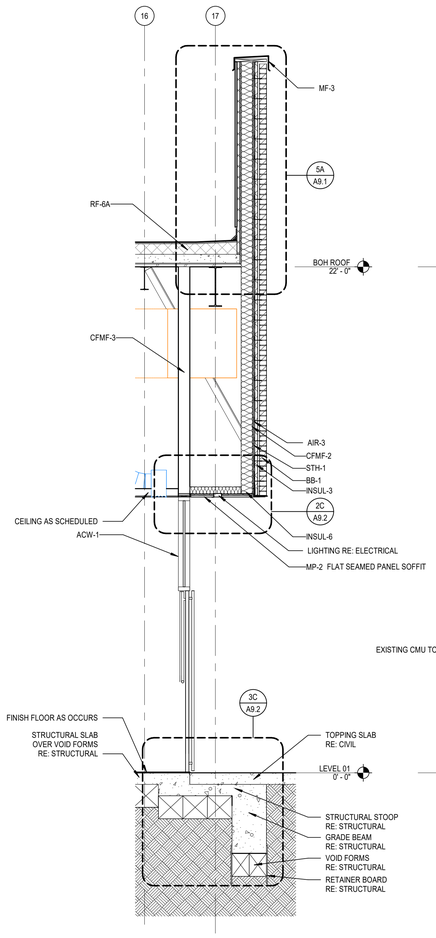
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:44 PM



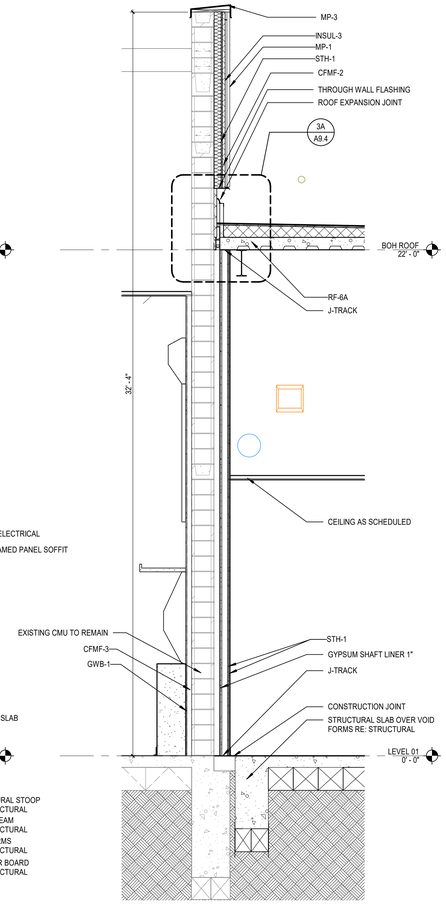
2 A6.2 WALL SECTION F
SCALE: 3/8" = 1'-0"



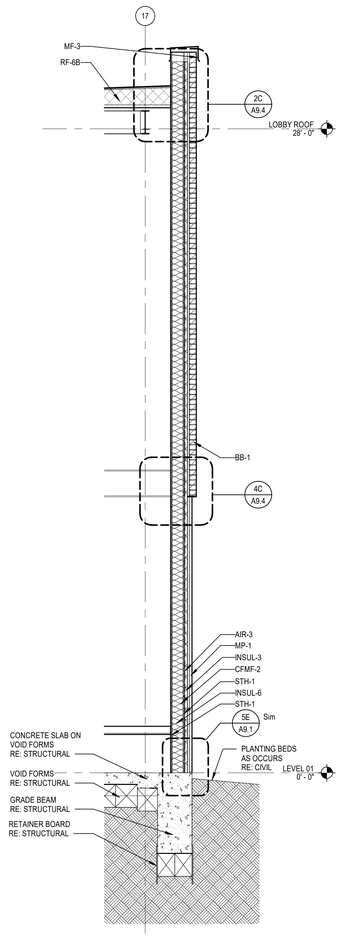
3 A6.2 WALL SECTION G
SCALE: 3/8" = 1'-0"



1 A6.2 WALL SECTION H
SCALE: 3/8" = 1'-0"



4 A6.2 WALL SECTION I
SCALE: 3/8" = 1'-0"



5 A6.2 WALL SECTION J
SCALE: 3/8" = 1'-0"

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
GWB-1	TYPE X GYPSUM WALL BOARD
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
MP-1	FORMED METAL WALL PANEL, PAC-CLAD BOX RIB 3, OR SIMILAR
MP-2	FORMED METAL WALL PANEL, PAC-CLAD FLUSH PANEL, OR SIMILAR, AT ALL PLACES WHERE ROOF TO CAP EXCEEDS 12" AS SHOWN, LAP UNDER COPING
RF-6A	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER COMPOSITE METAL DECK
RF-6B	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER METAL ROOF DECK
STH-1	GLASS-MAT GYPSUM SHEATHING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 2024.07.25

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

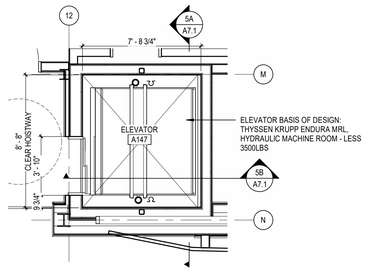
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

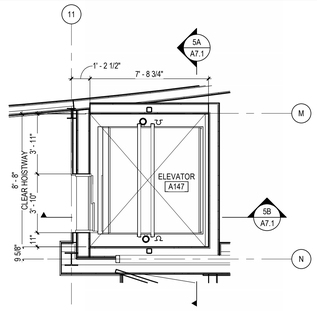
WALL SECTIONS

A6.2

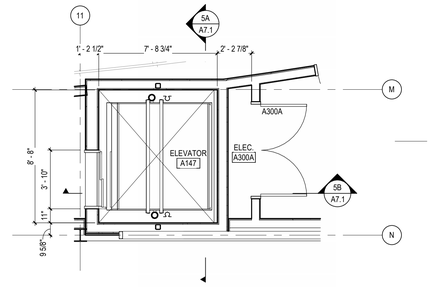
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:23:50 PM



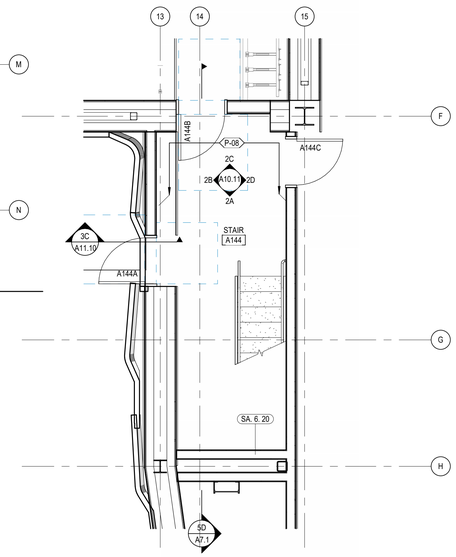
1A A7.1 ELEVATOR-LEVEL 01
SCALE: 1/4" = 1'-0"



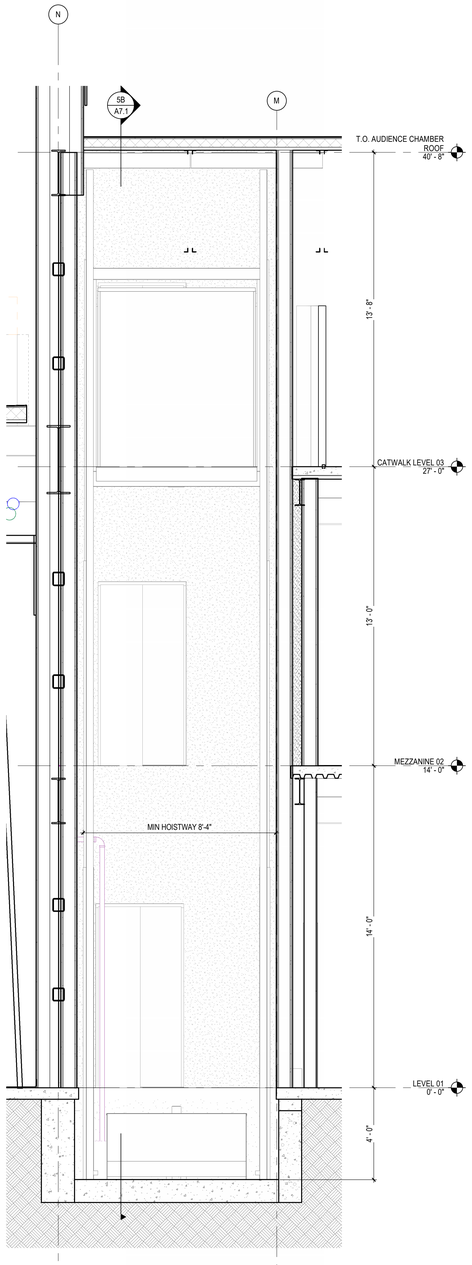
1B A7.1 ELEVATOR - LEVEL 02
SCALE: 1/4" = 1'-0"



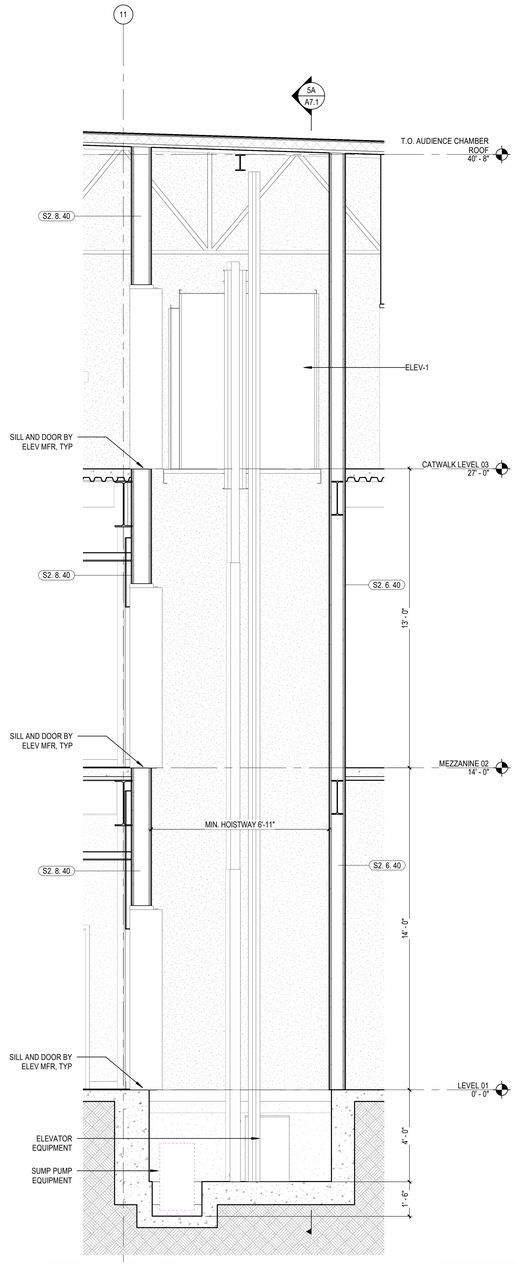
1C A7.1 ELEVATOR - CATWALLK LEVEL
SCALE: 1/4" = 1'-0"



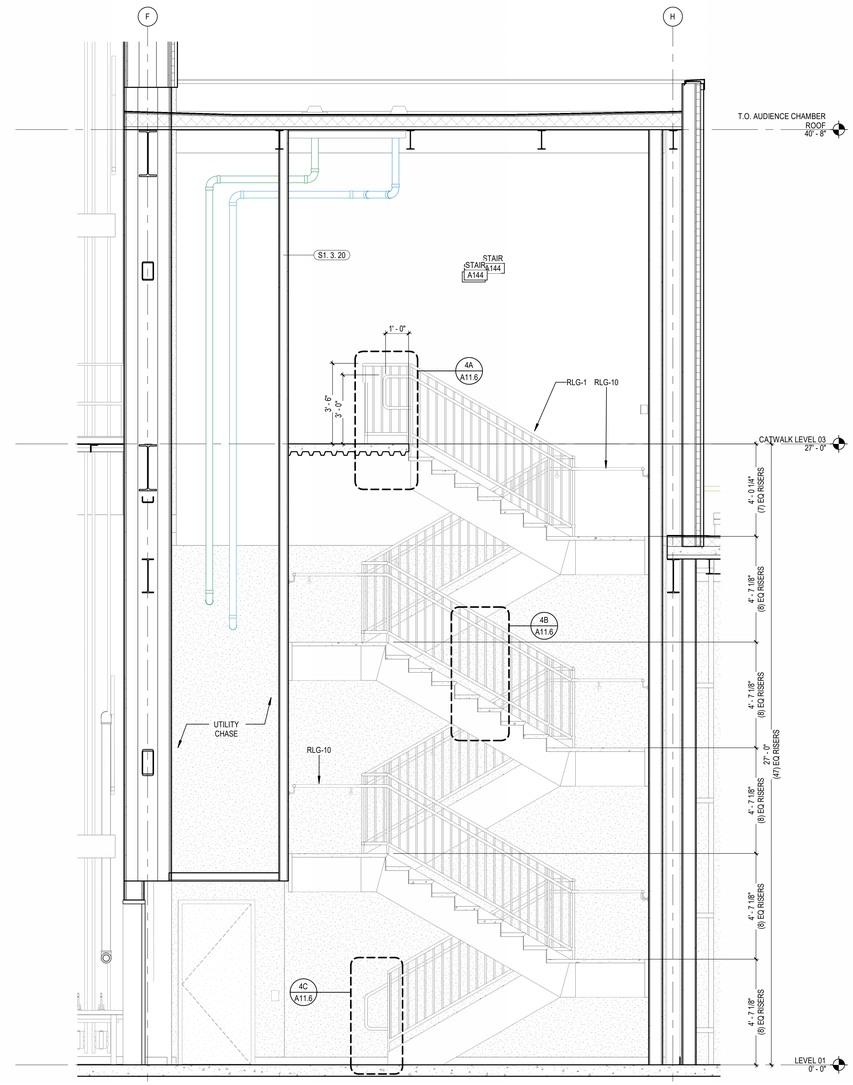
2D A7.1 STAIR-LEVEL 01
SCALE: 1/4" = 1'-0"



5A A7.1 STAIR ELEVATOR-SECTION 2
SCALE: 3/8" = 1'-0"



5B A7.1 STAIR ELEVATOR-SECTION
SCALE: 3/8" = 1'-0"



5D A7.1 STAIR-SECTION
SCALE: 3/8" = 1'-0"

REFERENCE KEYNOTES

ELEV-1	HYDRAULIC MACHINE ROOM LESS ELEVATOR
RLG-1	STEEL PIPE/TUBE RAIL
RLG-10	STEEL DECORATIVE RAILING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3038, Crandall, TX 75114

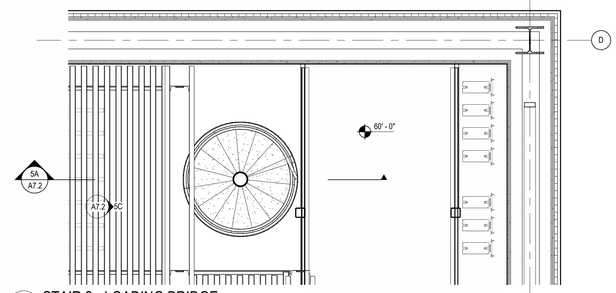
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

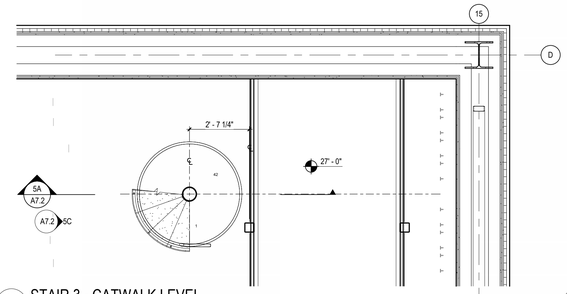
STAIR VIEWS

A7.1

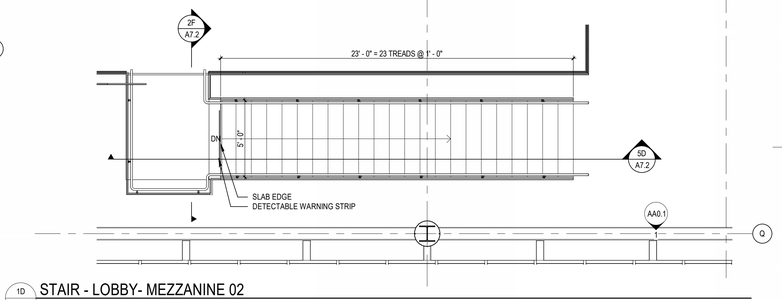
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:00 PM



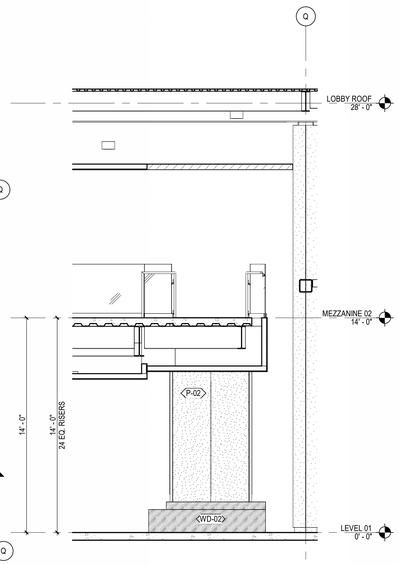
1A A7.2 STAIR 3 - LOADING BRIDGE
SCALE: 3/8" = 1'-0"

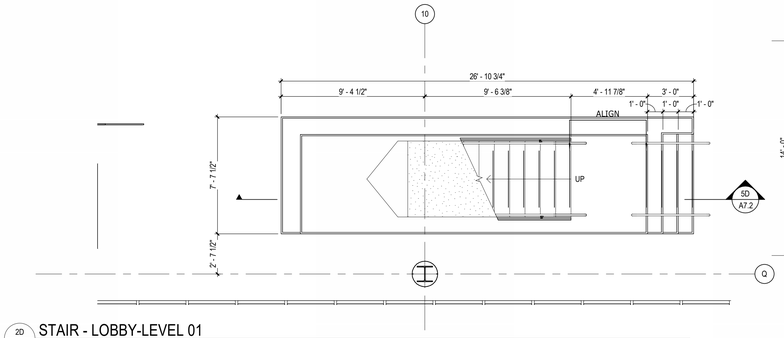


1B A7.2 STAIR 3 - CATWALK LEVEL
SCALE: 3/8" = 1'-0"



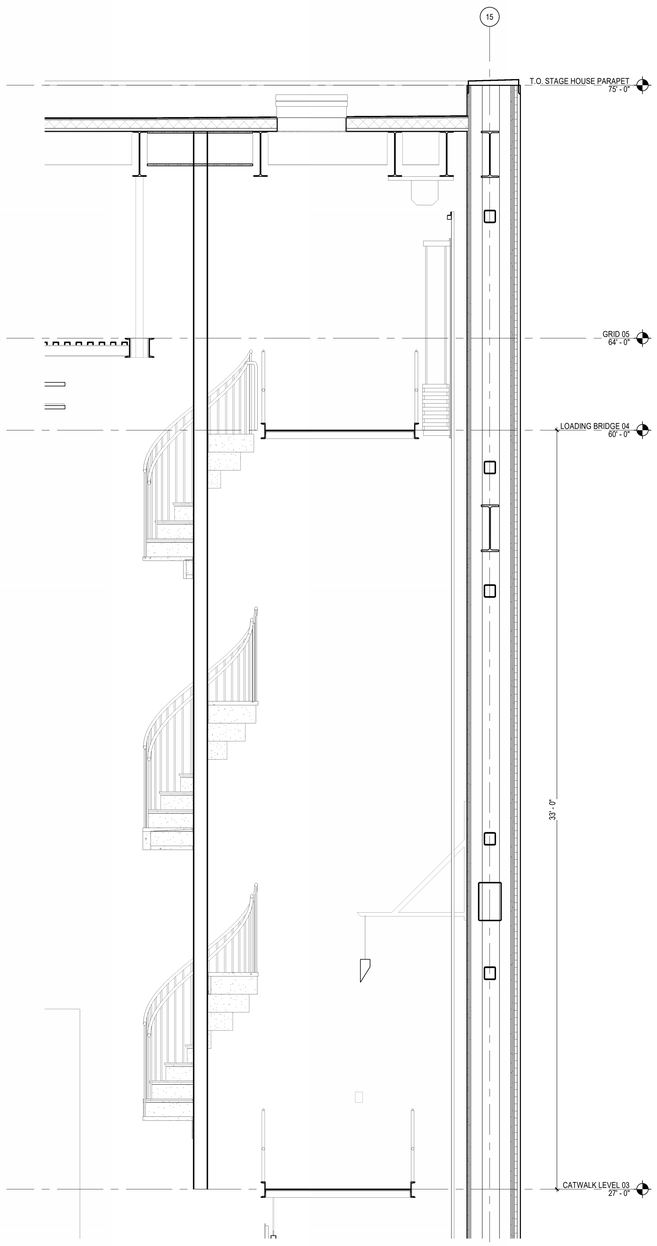
1D A7.2 STAIR - LOBBY- MEZZANINE 02
SCALE: 1/4" = 1'-0"



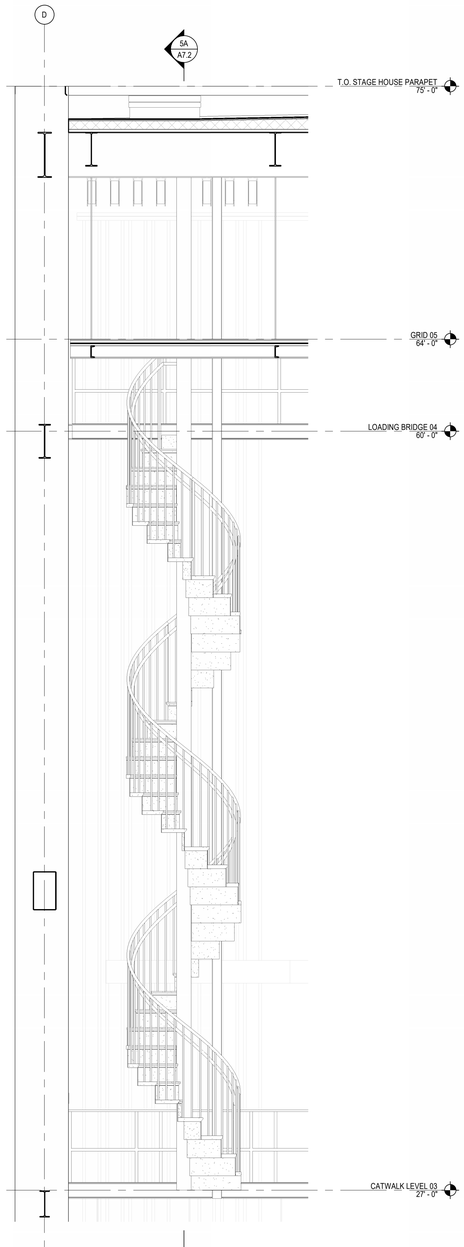


2D A7.2 STAIR - LOBBY-LEVEL 01
SCALE: 1/4" = 1'-0"

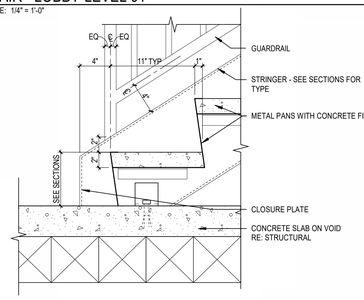
2F A7.2 STAIR - LOBBY-SECTION 2
SCALE: 1/4" = 1'-0"



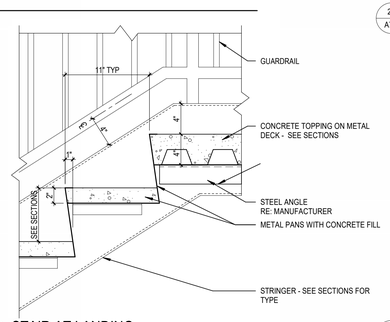
5A A7.2 STAIR 3 - SECTION
SCALE: 3/8" = 1'-0"



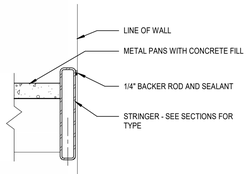
5C A7.2 STAIR 3 - ELEVATION
SCALE: 3/8" = 1'-0"



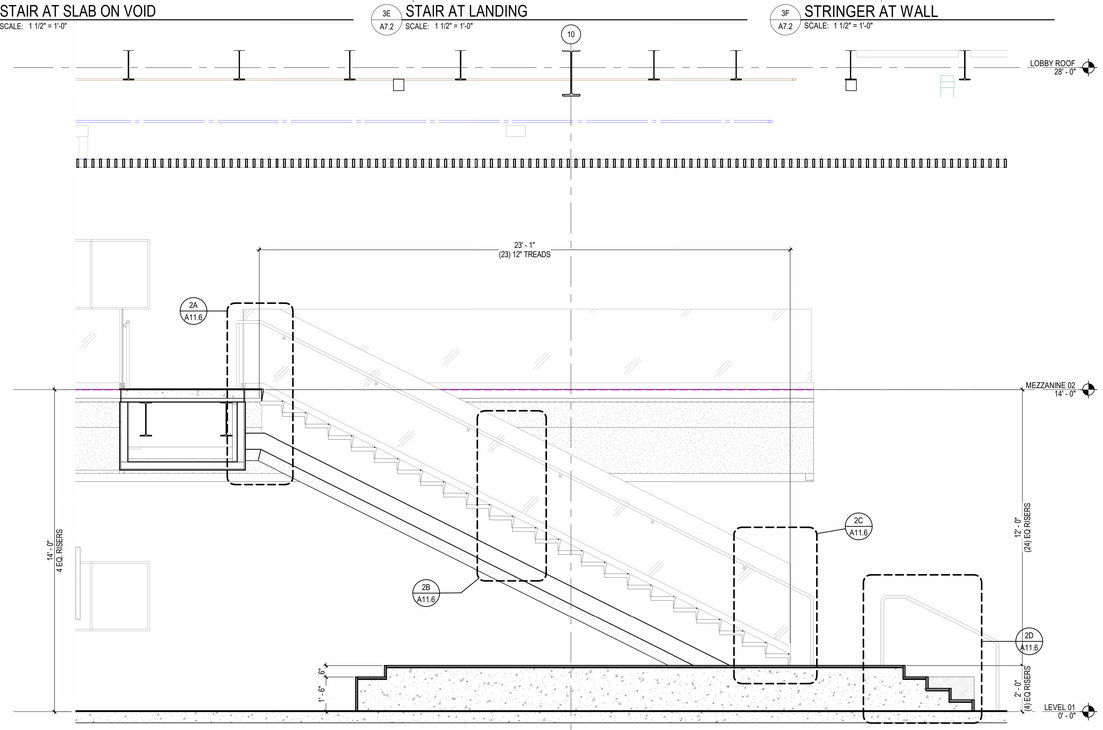
3D A7.2 STAIR AT SLAB ON VOID
SCALE: 1 1/2" = 1'-0"



3E A7.2 STAIR AT LANDING
SCALE: 1 1/2" = 1'-0"



3F A7.2 STRINGER AT WALL
SCALE: 1 1/2" = 1'-0"



5D A7.2 STAIR - LOBBY-SECTION
SCALE: 3/8" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

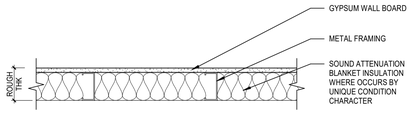
39-23712-00

STAIR VIEWS

A7.2

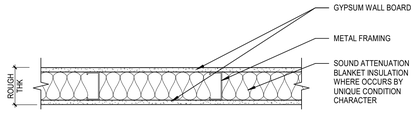
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:05 PM

A B C D E F



S_-_-1_ NON-RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
SA	2	10	3 1/8"	NR	NA			
SA	3	10	<varies>	NR	NA			
SA	6	10	6 5/8"	NR	NA			

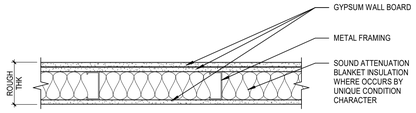


S_-_-2_ NON-RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
SA	2	20	3 3/4"	NR	NA			
SA	3	20	<varies>	NR	NA			
SA	6	20	7 1/4"	NR	NA			
SA	8	20	9 1/4"	NR	NA			
SX	3	20	<varies>	NR	NA			

S1-_-2_ 1-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
S1	3	20	4 7/8"	1	UL 419			
S1	6	20	7 1/4"	1	UL 419			



S_-_-3_ NON-RATED STUD PARTITION

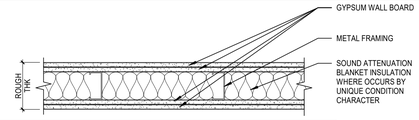
MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
SA	6	30	7 7/8"	NR	NA			

S1-_-3_ 1-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
S1	3	30	7 7/8"	1	UL U419			

S2-_-4_ 2-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
S2	6	40	8 1/2"	2	UL U419			
S2	8	40	10 1/2"	2	UL U419			
S2	8	60	10 1/2"	2	UL U419			
S2	D	40	2' - 0 3/4"	2	UL U493			
S2	D	60	2' - 0 3/4"	2	UL U493			



S_-_-4_ NON-RATED STUD PARTITION

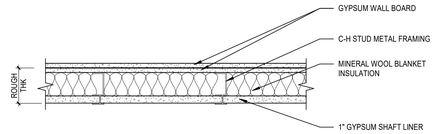
MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	B.O. WALL DETAIL	COMMENTS
SA	3	40	<varies>	NR	NA		
SA	6	40	8 1/2"	NR	NA		

S0-_-4_ 0-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DEAIL	COMMENTS
SA	6	41	10 1/8"	0	NA			

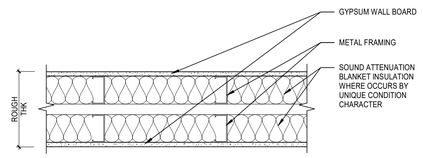
S1-_-4_ 1-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
S1	6	40	8 1/2"	1	UL 419			



H1-_-2_ 1-HOUR RATED SHAFT PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
H1	4	30	5 1/4"	2	UL 417			

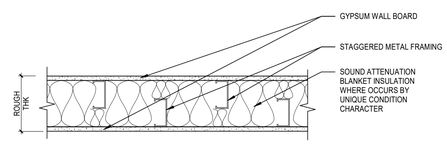


S_-D-2_ NON-RATED DOUBLE STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
SA	D	20	11 1/2"	NR	NA			

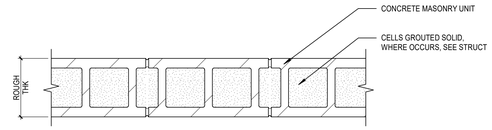
S2-D-2_ 2-HOUR RATED DOUBLE STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
S2	D	40	24 3/4"	2	UL U493			
S2	D	60	24 3/4"	2	UL U493			



S_-S-2_ 1-HOUR RATED STAGGERED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
SA	S	20	7 1/4"	1	UL W472			



2-HOUR RATED MASONRY PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE RATING	FIRE/SMOKE TESTED ASSEMBLIES	T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
MA	12	00	<varies>	2	IBC T21.1 (2) - 4-1.1			EXISTING WALL INFILL, FULLY GROUTED, MATCH CONSTRUCTION AND FINISH

PARTITION TYPES DESCRIPTIONS

MATERIAL DESCRIPTION
S = STEEL (METAL STUDS)
W = WOOD STUDS
H = SHAFT WALLS
M = MASONRY
C = CONCRETE

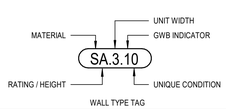
RATING / HEIGHT
A = FULL HEIGHT / UNDERSIDE OF STRUCT (NOT RATED)
B = 6" ABOVE CEILING (NOT RATED)
C = UNDERSIDE OF CEILING (NOT RATED)
D = PARTIAL HEIGHT (NOT RATED)
X = VARIABLE HEIGHT (NOT RATED)
S = SMOKE PARITTON (NOT RATED)
0 = 0 HOUR RATED (CORRIDOR)
5 = 0.5 HOUR RATED
1 = 1 HOUR RATED
2 = 2 HOUR RATED
3 = 3 HOUR RATED
4 = 4 HOUR RATED

UNIT WIDTH / CONFIGURATION
F = FURRING STRIPS / CHANNELS
1 = 1 5/8" METAL
2 = 2 1/2" METAL / 1 1/2" WOOD
3 = 3 5/8" METAL
4 = 4" METAL / 3 1/2 WOOD / 3 5/8" CMU
6 = 6" METAL / 5 1/2" WOOD / 5 5/8" CMU / 8" CONC
8 = 8" METAL / 7 1/4" WOOD / 7 5/8" CMU / 8" CONC
10 = 10" CONC
12 = 11 5/8" CMU / 12" CONC
X = NON-STANDARD WIDTH, SEE DETAILS
D = DOUBLE STUD FRAMING
S = STAGGERED STUD FRAMING

GYPSUM WALLBOARD INDICATOR
(NOT INCLUDING SHAFT LINER)
0 = NO GWB
1 = ONE LAYER, TAG SIDE
2 = ONE LAYER, EACH SIDE
3 = TWO LAYERS TAG SIDE, ONE LAYER OTHER
4 = TWO LAYERS, EACH SIDE
5 = TWO LAYERS TAG SIDE, NO GWB OTHER
6 = THREE LAYERS, EACH SIDE

UNIQUE CONDITION (SEE SCHEDULE)
UNIQUE CONDITIONS ARE SEPARATELY NUMBERED ON A WALL TYPE - SPECIFIC BASIS.

0 = NO UNIQUE CONDITION
1 = RESILIENT CHANNELS WITH SOUND ATTENUATION BLANKET



WALL TYPE TAG

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

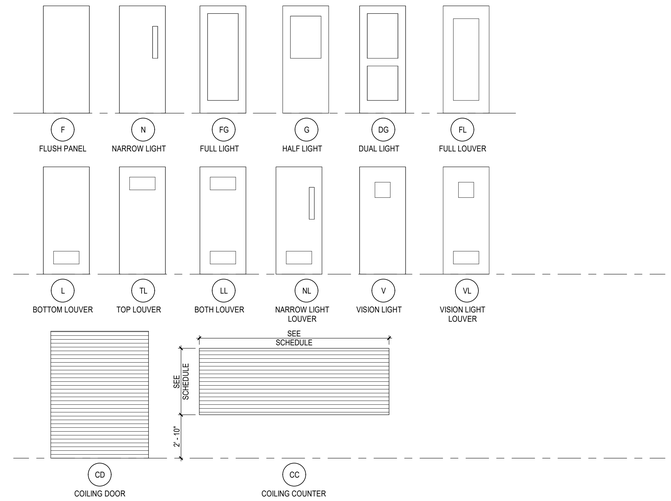
PARTITION TYPES

A8.2

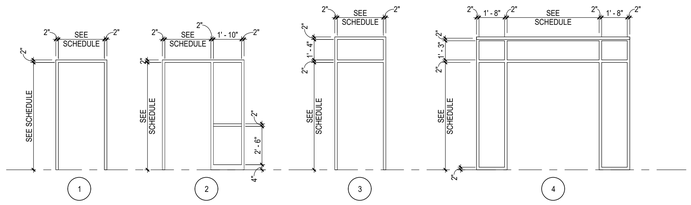
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:05 PM

DOOR AND FRAME SCHEDULE

NUMBER	PANEL NO. OF PANELS	PANEL WIDTH	PANEL HEIGHT	PANEL THICKNESS	PANEL MATERIAL	PANEL GLASS	PANEL TYPE	FRAME MATERIAL	FRAME TYPE	FIRE RATING	Door STC Rating	Door Gasket Type	Door Hardware Set	DETAILS HEAD	DETAILS JAMB LEFT	DETAILS JAMB RIGHT	DETAILS SILL	Comments	Door Security	KICK PLATE
LEVEL 01																				
A101A	2	3' - 1 171/256"	7' - 11 171/256"	1 3/4"	ALUM	TIG	DG	ALUM		-			1.0						Yes	NO
A101B	2	3' - 1 171/256"	7' - 11 171/256"	1 3/4"	ALUM	TIG	DG	ALUM		-			1.5						Yes	NO
A101C	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	DG	HM	1	90 MIN			25.0						No	YES
A101E	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-										NO
A101M	2	3' - 1"	4' - 0"	1 3/4"	WD			*Interior - Wood		-										-
A101N	2	3' - 1"	4' - 0"	1 3/4"	WD			*Interior - Wood		-										-
A102	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			12.0						No	YES
A102B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-									No	NO
A103B	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	-			13.0						No	NO
A104	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			12.0						No	YES
A105	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			44.0						No	YES
A106	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	-			38.0						No	NO
A107	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			12.0						No	YES
A108	1	3' - 0"	7' - 0"	1 3/4"	WD		F	HM	1	-			32.0						No	NO
A109	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	-			13.0						No	NO
A110	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			44.0						No	YES
A111A	2	3' - 0"	7' - 0"	1 3/4"	WD - P06		F	WD - P06	1	-		G1	24.0						No	NO
A111B	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	-			43.0						No	NO
A112	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	DG	HM	1	-			26.0						No	YES
A112A	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	DG	HM	1	-			27.0						Yes	NO
A114A		12' - 0"	10' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		-			45.0						No	-
A114B	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			3.0						Yes	YES
A115	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			19.0						No	NO
A116A		12' - 0"	10' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		45 MIN			45.0						No	-
A116B	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			15.0						No	YES
A116C		12' - 0"	14' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		45 MIN			45.0						No	-
A116D	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			16.0						No	YES
A117A	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	45 MIN		G1	9.0						No	YES
A117B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			5.0						No	YES
A118	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	4.0					EXIT ONLY - NO EXTERIOR HARDWARE		YES
A119		6' - 8"	8' - 0"		STL		CD	STL		-			45.0						No	-
A120A		6' - 8"	8' - 0"		STL		CD	STL		-			45.0						No	-
A120B	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	-			8.0						No	YES
A121A	2	4' - 0"	9' - 0"	1 3/4"	HM		F	ALUM	1	-	STC 51		28.0						No	YES
A121B		8' - 0"	14' - 0"		STL		CD	STL		90 MIN			45.0						No	-
A121C	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			40.0						No	YES
A123	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	90 MIN		G1	20.0						No	YES
A124A		6' - 0"	8' - 0"		STL		CD	STL		45 MIN			45.0						No	-
A124B	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	45 MIN			17.0						No	YES
A125	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	45 MIN			17.0						No	YES
A126	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			8.0						No	YES
A127	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	DG	HM	1	-			26.0						No	YES
A127A	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			3.0							YES
A127B	2	3' - 0"	7' - 0"	1 3/4"	WD		DG	HM	1										No	
A128A	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN			35.0						No	NO
A128B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			34.0						No	NO
A129A	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN			35.0						No	NO
A129B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			34.0						No	NO
A130	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN			35.0						No	NO
A131	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN		G2	7.0						No	YES
A132	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN		G2	10.0						No	YES
A133	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN		G2	10.0						No	YES
A134	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	45 MIN		G2	10.0						No	YES
A135A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	F	HM	1	-			42.0							YES
A135B	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	F	HM	1	90 MIN		G1	23.0							YES
A135D	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1										No	
A137	1	3' - 0"	7' - 0"	1 3/4"	WD		N	HM	1	45 MIN		G2							No	NO
A138	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1										No	NO
A139	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	NI	HM	1	-			36.0						No	NO
A140	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	-			39.0						No	NO
A142	1	3' - 6"	7' - 0"	1 3/4"	HM		F	HM	1	-			13.0						Yes	NO
A143A	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	-			18.0						No	YES
A143B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-									No	NO
A144A	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			43.0						No	YES
A144B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	90 MIN			31.0						No	YES
A144C	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	41.0						No	YES
A145	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			13.0						No	NO
A146A	2	3' - 0"	7' - 0"	1 3/4"	WD - P06		F	WD - P06	1	-		G1	24.0						No	NO
A146B	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	-			43.0						No	NO
A154	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			13.0						No	NO
A196	2	3' - 1 17/256"	7' - 11"	1 3/4"	ALUM	TIG	DG	ALUM		-			1.0					EXIT ONLY - NO EXTERIOR HARDWARE	No	NO
E100A	2	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	23.0							YES
E100B	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	23.0							YES
E100C	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	23.0							YES
E100D	2	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G2	29.0							YES
E101	1	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	22.0						No	NO
E102A	1	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	37.0						No	NO
E102B	1	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	37.0						No	NO
E103	1	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	37.0						No	NO
E104	1	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G2	22.0						No	NO
E106A	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	23.0							YES
E106B	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1				21.0						Yes	YES
E106C	2	3' - 0"	7' - 0"	1 3/4"	WD	FRG	N	HM	1	-		G1	23.0							YES
MEZZANINE 02																				
A202	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			44.0						No	YES
A203	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	-			13.0						No	NO
A204	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			44.0						No	YES
A205	1	3' - 0"	7' - 0"	1 3/4"	WD		F	HM	1	-			30.0						No	YES
A205A	1	3' - 6"	7' - 0"	1 3/4"	HM		F	HM	1	-									Yes	NO
A206A	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	-		G1	24.0						No	NO
A206B	2	3' - 0"	7' - 0"	1 3/4"	WD - P06		F	WD - P06	1	-			43.0						No	NO
A207	1	3' - 0"	7' - 0"	1 3/4"	WD - P06		F	WD - P06	1	-		G1	11.0						No	YES
A208A	2	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	ALUM	1	-		G1	24.0						No	NO
A208B	2	3' - 0"	7' - 0"	1 3/4"	WD - P06		F	WD - P06	1	-			43.0						No	NO
CATWALK LEVEL 03																				
A300	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-									No	NO
A300A	2	3' - 0"	7' - 0"	1 3/4"	WD		N	ALUM	1	-									No	NO
A301A	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	11.0						No	NO
A302A	1	3' - 0"	7' - 0"	1 3/4"	WD	TIG	N	HM	1	-			14.0						No	NO
A302B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			11.0						No	NO
A303	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	-			13.0							NO
A304	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	11.0						No	NO
A344	1	3' - 0"	7' - 2"	1 3/4"	HM - P05		F	HM - P05	1	-		G1	41.0						No	YES
A349A	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	90 MIN			6.0						No	YES
A349B	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	90 MIN			6.0							YES



DOOR PANEL TYPES



INTERIOR FRAME TYPES

DOOR AND FRAME SCHEDULE GENERAL NOTES

A. ALL EXTERIOR HOLLOW METAL FRAMES SHALL BE FILLED WITH INSULATION.
B. ALL INTERIOR HOLLOW METAL FRAMES SET IN MASONRY AND CONCRETE WALLS SHALL BE GROUTED SOLID.
C. ALL HOLLOW METAL FRAMES SET IN METAL STUD WALLS SHALL BE FILLED WITH MINERAL WOOL BLANKET INSULATION.
D. ALL EXTERIOR FRAMES SHALL BE INSTALLED WITH 1/4" SHIM AND SEALANT AROUND PERIMETER OF FRAME.
E. MASONRY LINTELS AND STEEL LINTELS ARE SHOWN ON STRUCTURAL DRAWINGS.
F. GLASS TYPES FOR DOORS ARE INDICATED IN THE DOOR GLAZING COLUMN OF THE DOOR AND FRAME SCHEDULE. GLASS TYPES FOR FRAMES ARE INDICATED ON THE FRAME ELEVATIONS.
G. FOR COILING DOORS, GRILLES AND SECTIONAL DOORS, WIDTH AND HEIGHT DIMENSIONS SHOWN IN DOOR AND FRAME SCHEDULE REPRESENT FINISHED OPENING SIZE. CONTRACTOR TO COORDINATE EXACT SIZE OF DOOR WITH MANUFACTURER.
H. FRAME MANUFACTURER SHALL COORDINATE LOCATIONS OF ALL CONCEALED CONDUIT AND J-BOXES REQUIRED FOR SECURITY SYSTEM HARDWARE PRIOR TO MANUFACTURING OF HOLLOW METAL FRAMES AND COORDINATE WITH SECURITY HARDWARE AND DEVICES.
I. PROVIDE HEAD RECEIVERS AT ALUMINUM STOREFRONTS AND CURTAIN WALLS AS REQUIRED FOR STRUCTURAL DEFLECTION ALLOWANCE.
J. SEE SPECIFICATIONS HARDWARE SECTION FOR HARDWARE SETS NOTED IN DOOR AND FRAME SCHEDULE.

DOOR PANEL TYPE DESCRIPTIONS

DG	DUAL LITE GLASS
F	FLUSH PANEL
FG	FULL LITE GLASS
FL	FULL LOUVERED
G	HALF LITE GLASS
GL	HALF LITE GLASS & LOUVERED
L	LOUVERED (BOTTOM)
LL	LOUVERED (TOP & BOTTOM)
N	NARROW LITE GLASS
NL	NARROW LITE GLASS & LOUVERED
TL	LOUVERED (TOP)
V	VISION LITE GLASS (10" SQUARE)
VL	VISION LITE GLASS & LOUVERED

GLAZING TYPE DESCRIPTIONS

CG	CLEAR FLOAT GLASS
CIG	CLEAR INSULATING GLASS
CTG	CLEAR TEMPERED FLOAT GLASS
CTIG	CLEAR TEMPERED INSULATING GLASS
GL	GLASS
IIP	INSULATED INFILL PANEL GLASS
LG	LAMINATED GLASS
PG	PATTERN GLASS
PIG	PATTERN INSULATING GLASS
SG	SPANDREL GLASS
SG	SPECIALTY GLASS
TFG	TINTED FLOAT GLASS
TG	TEMPERED GLASS
TIG	TINTED INSULATING GLASS
TTG	TINTED TEMPERED FLOAT GLASS
TTIG	TINTED TEMPERED INSULATING GLASS
WG	POLISHED WIRE GLASS

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

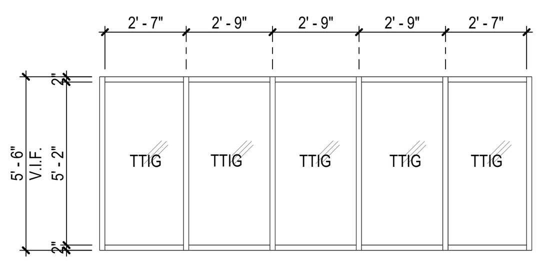
39-23712-00

DOOR & FRAME TYPE & SCHEDULE

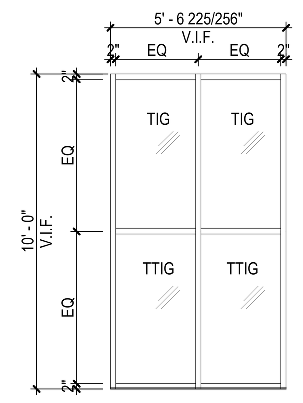
A8.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:48 PM

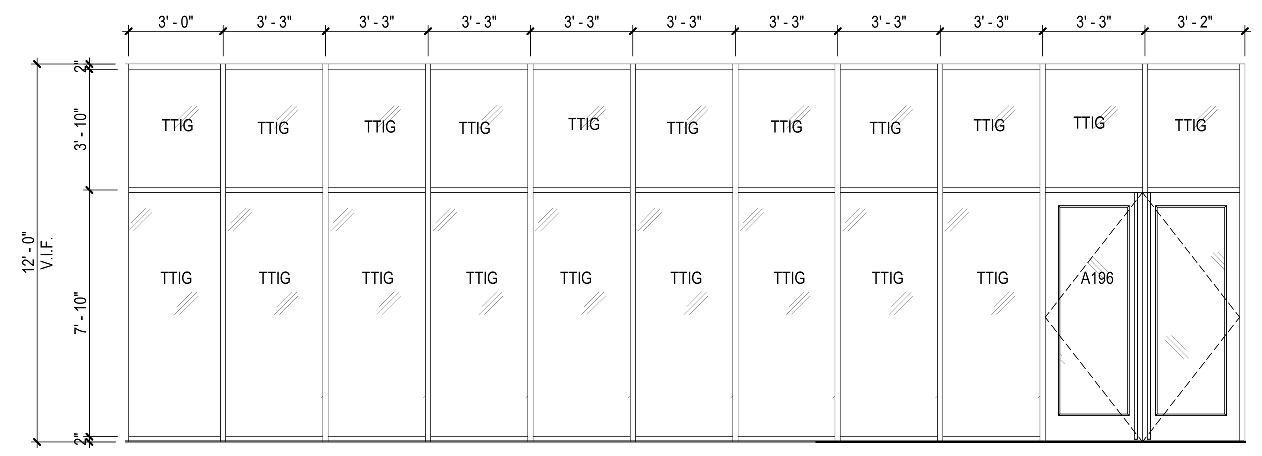
A	B	C	D	E	F



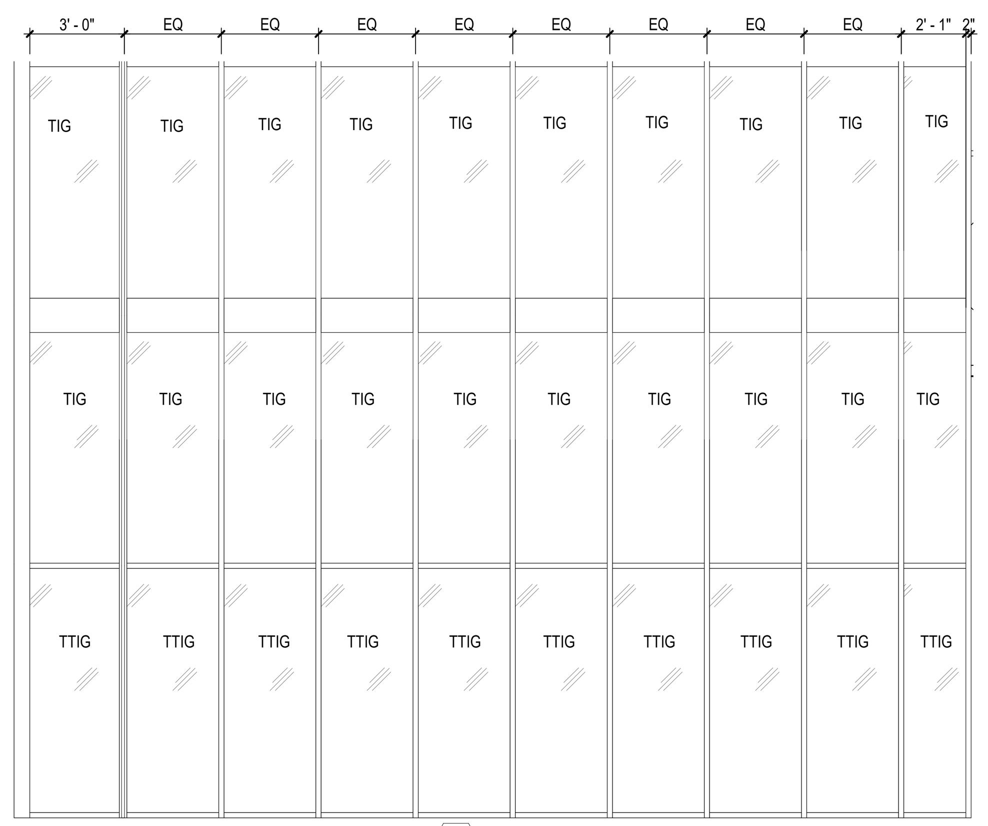
1A A8.5 WEST LEVEL 02 EXTERIOR GLAZING CW05
SCALE: 1/4" = 1'-0"



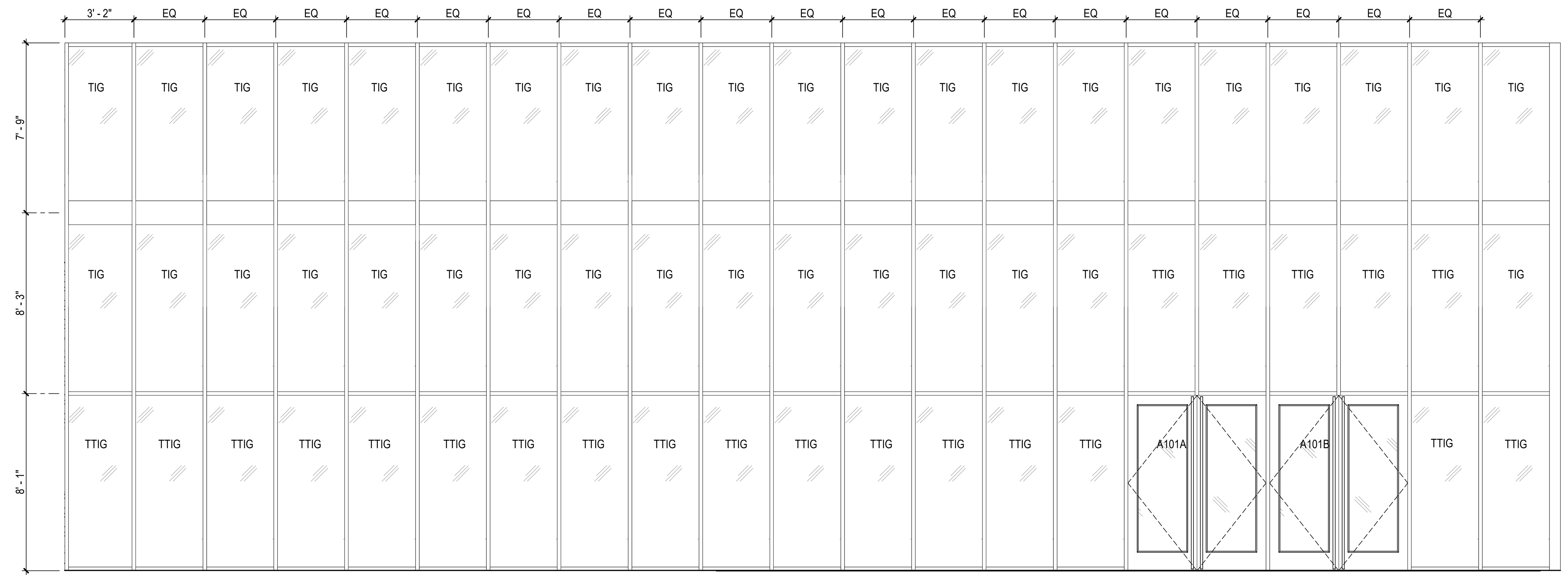
1B A8.5 SOUTH LEVEL 01 EXTERIOR GLAZING CW04
SCALE: 1/4" = 1'-0"



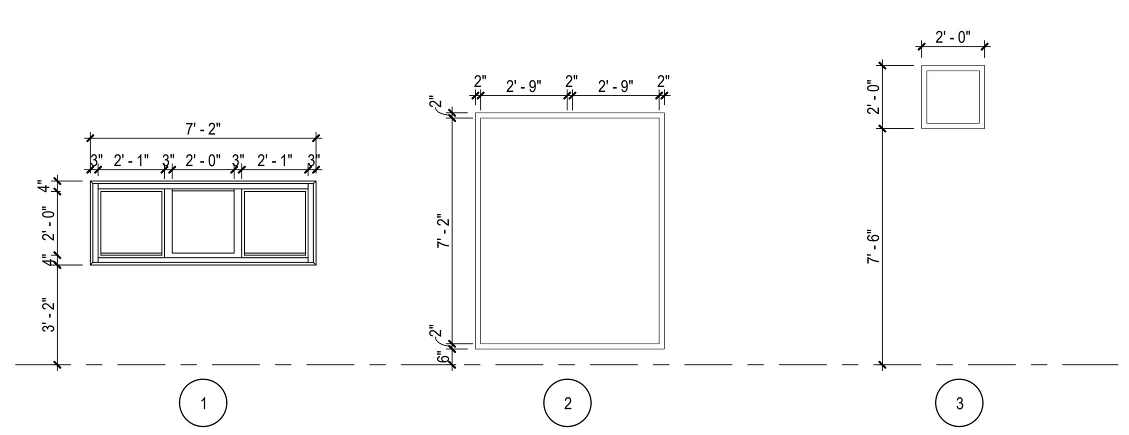
1C A8.5 EAST LEVEL 01 EXTERIOR GLAZING CW03
SCALE: 1/4" = 1'-0"



2A A8.5 EAST LEVEL 01 EXTERIOR GLAZING CW02
SCALE: 1/4" = 1'-0"



2C A8.5 SOUTH LEVEL 01 EXTERIOR GLAZING CW01
SCALE: 1/4" = 1'-0"



INTERIOR WINDOW ELEVATIONS

EXTERIOR CURTAIN WALL SCHEDULE

MARK	FRAME			DETAILS				COMMENTS
	TYPE	DEPTH	MATERIAL	HEAD	JAMB LEFT	JAMB RIGHT	SILL	
CW01	A	6"	ALUM					
CW02	B	6"	ALUM					
CW03		6"	ALUM					
CW04		6"	ALUM					
CW05		6"	ALUM					

INTERIOR WINDOW SCHEDULE

FRAME			FIRE RATING	DETAILS				COMMENTS
NUMBER	TYPE	MATERIAL		HEAD	JAMB LEFT	JAMB RIGHT	SILL	
A116	1	ALUM	-					ACOUSTICALLY RATED, BASIS OF DESIGN -DEVAC 450 GLIDER, LAMINATED GLASS
A117	1	ALUM	-					ACOUSTICALLY RATED, BASIS OF DESIGN -DEVAC 450 GLIDER, LAMINATED GLASS
A118	4	HM	-					ACOUSTICALLY RATED, BASIS OF DESIGN -DEVAC 450 GLIDER, LAMINATED GLASS
A119	4	HM	-					ACOUSTICALLY RATED, BASIS OF DESIGN -DEVAC 450 GLIDER, LAMINATED GLASS
A121	3	HM	-					PROJECTION WINDOW, OPTICALLY CLEAR, LOW-IRON FLOAT GLASS. 1. Basis-of-Design: AMIRAN, Schott North America

GLAZING TYPE DESCRIPTIONS

CG	CLEAR FLOAT GLASS
CIG	CLEAR INSULATING GLASS
CTG	CLEAR TEMPERED FLOAT GLASS
CTIG	CLEAR TEMPERED INSULATING GLASS
GL	GLASS
IIP	INSULATED INFILL PANEL GLASS
LG	LAMINATED GLASS
PG	PATTERN GLASS
PIG	PATTERN INSULATING GLASS
SG	SPANDREL GLASS
SG	SPECIALTY GLASS
TFG	TINTED FLOAT GLASS
TG	TEMPERED GLASS
TIG	TINTED INSULATING GLASS
TTG	TINTED TEMPERED FLOAT GLASS
TTIG	TINTED TEMPERED INSULATING GLASS
WG	POLISHED WIRE GLASS

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

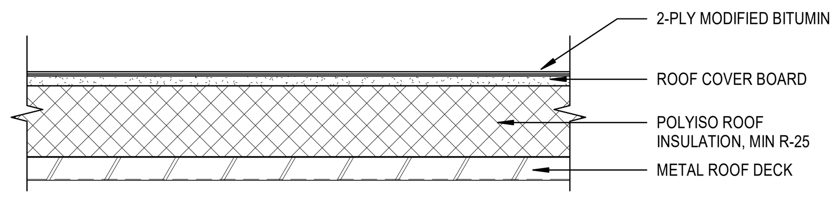
WINDOW TYPES, SCHEDULES, & ELEVATIONS

A8.5

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:11 PM

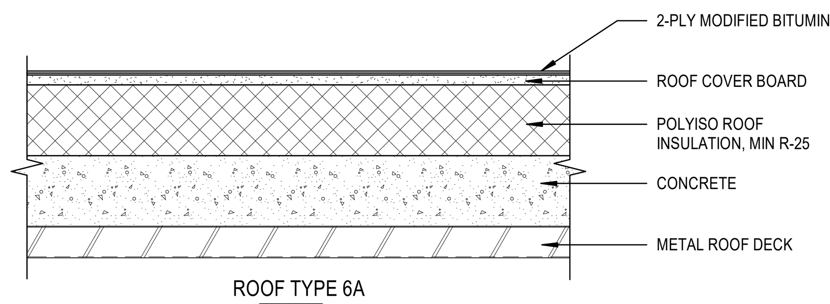
A B C D E F

1 2 3 4 5



ROOF TYPE 6B

6B

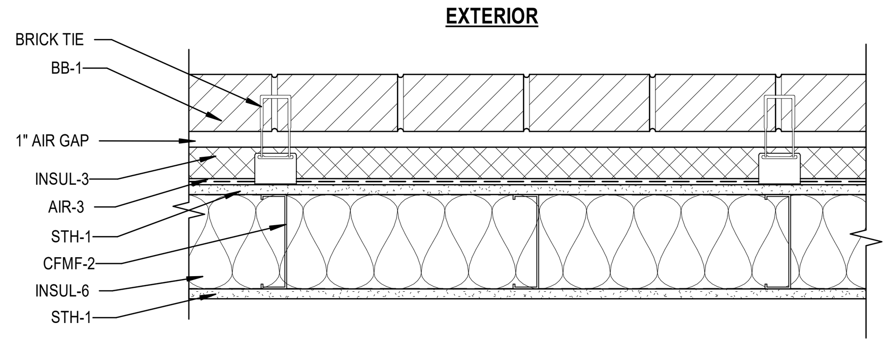


ROOF TYPE 6A

6A

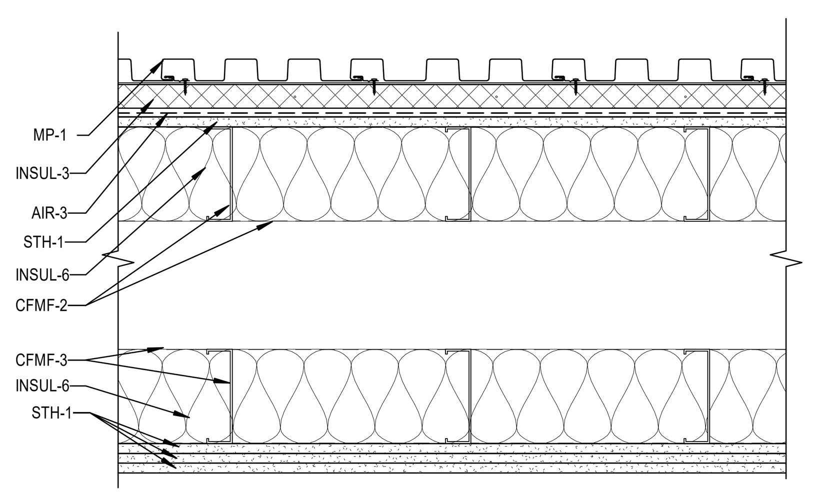
1A A9.0 ROOF TYPE LEGEND

SCALE: 1 1/2" = 1'-0"



2A A9.0 EWS-01 WALL ASSEMBLY

SCALE: 1 1/2" = 1'-0"



3A A9.0 EWS-02 WALL ASSEMBLY

SCALE: 1 1/2" = 1'-0"

REFERENCE KEYNOTES

AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
STH-1	GLASS-MAT GYPSUM SHEATHING

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

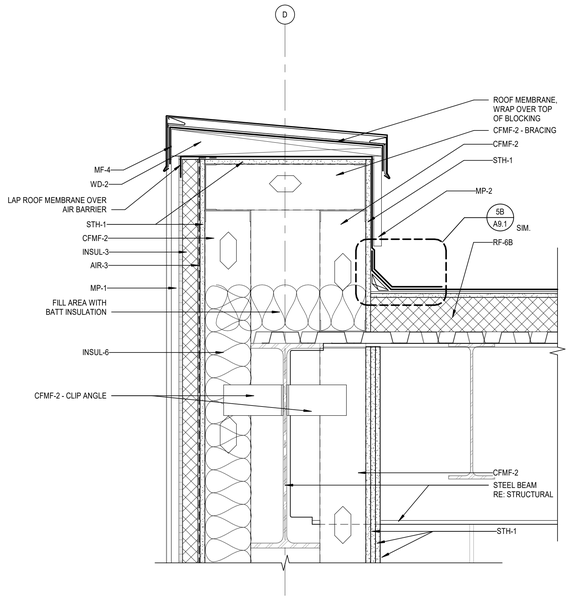
REVISIONS

39-23712-00

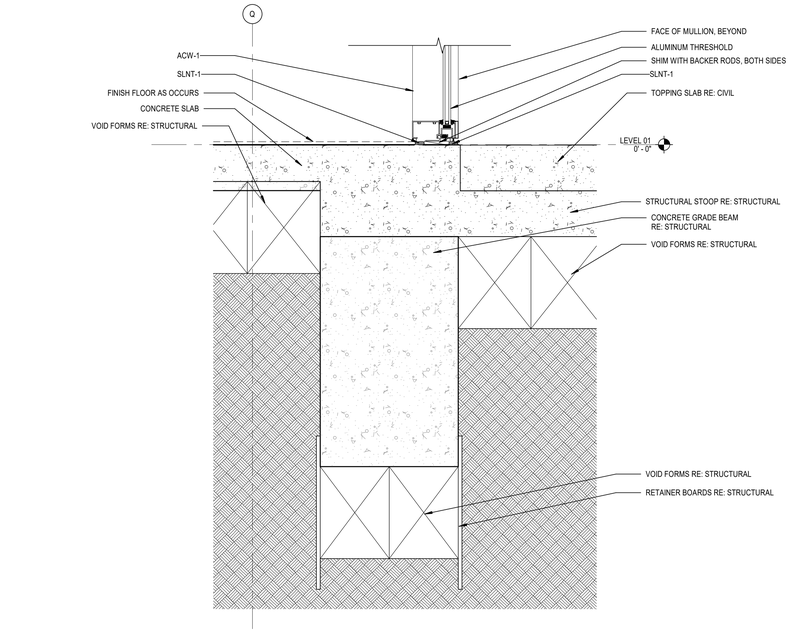
EXTERIOR ASSEMBLIES

A9.0

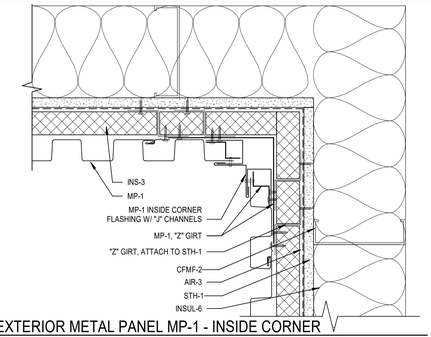
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:12 PM



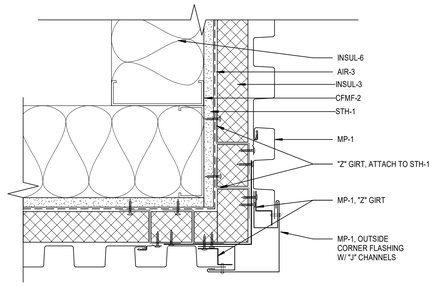
2A A9.1 PARAPET CAP AT METAL WALL PANEL
SCALE: 1 1/2" = 1'-0"



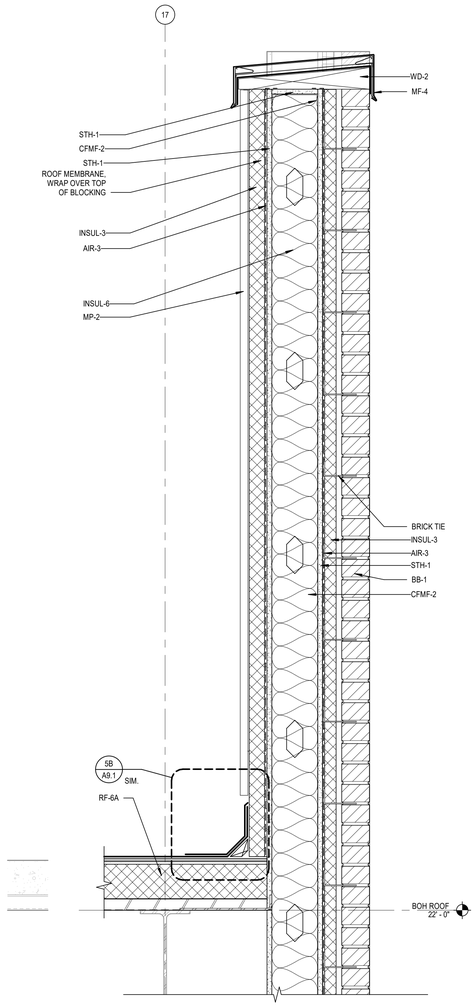
2C A9.1 WALL SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



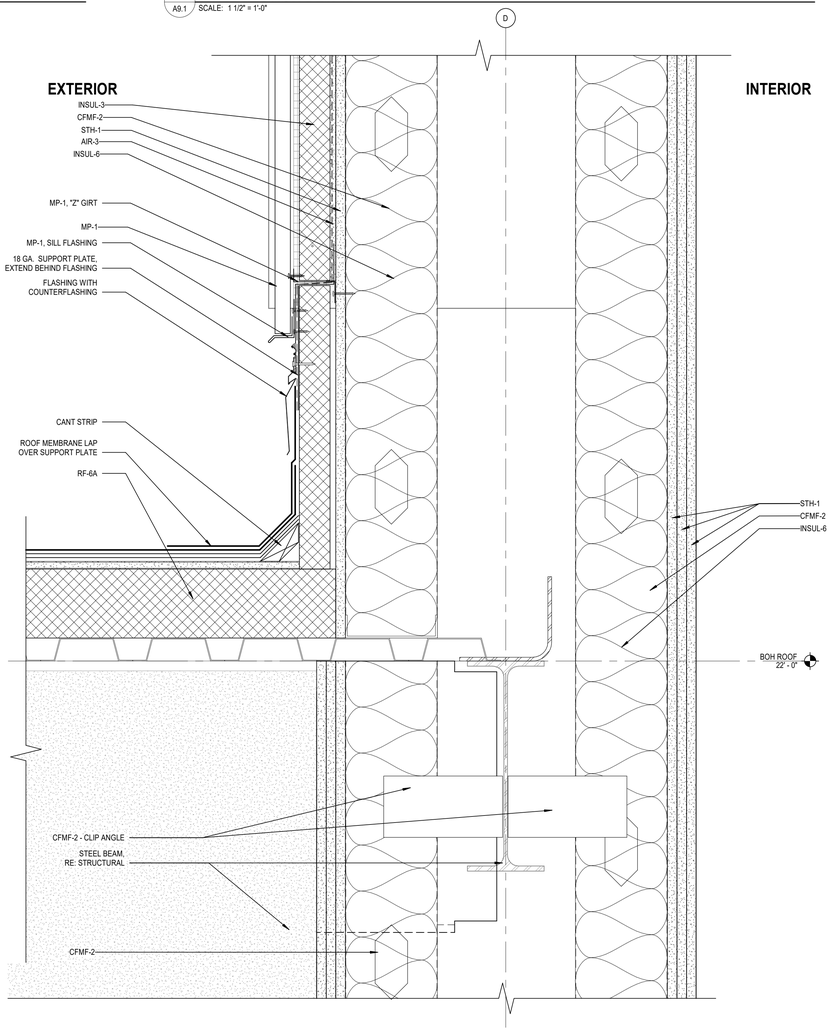
1E A9.1 EXTERIOR METAL PANEL MP-1 - INSIDE CORNER
SCALE: 3" = 1'-0"



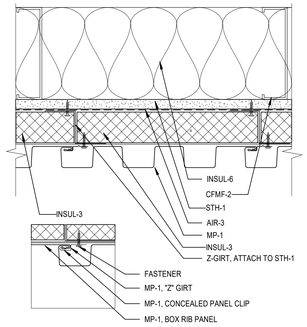
2E A9.1 EXTERIOR METAL PANEL MP-1 - OUTSIDE CORNER
SCALE: 3" = 1'-0"



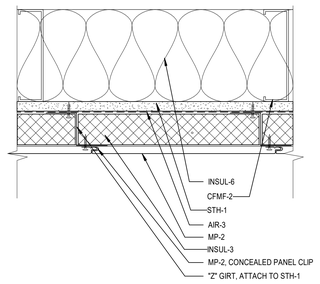
5A A9.1 PARAPET CAP AT BRICK VENEER WALL
SCALE: 1 1/2" = 1'-0"



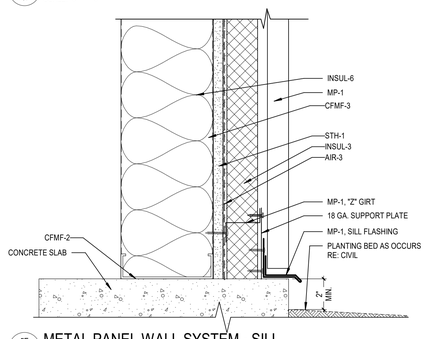
5B A9.1 EXTERIOR METAL WALL PANELS AT ROOF
SCALE: 3" = 1'-0"



3E A9.1 METAL PANEL SYSTEM MP-1
SCALE: 3" = 1'-0"



4E A9.1 METAL PANEL SYSTEM MP-2
SCALE: 3" = 1'-0"



5E A9.1 METAL PANEL WALL SYSTEM - SILL
SCALE: 3" = 1'-0"

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
AIR-3	WEATHER BARRIER
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MF-4	PREFINISHED SHEET METAL COPING W/ CONT CLEAT
MP-1	FORMED METAL WALL PANEL, PAC-CLAD BOX RIB 3, OR SIMILAR
MP-2	FORMED METAL WALL PANEL, PAC-CLAD FLUSH PANEL, OR SIMILAR. AT ALL PLACES WHERE ROOF TO CAP EXCEEDS 12" AS SHOWN, LAP UNDER COPING
RF-6B	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER METAL ROOF DECK
SLNT-1	SEALANT TYPE 1
STH-1	GLASS-MAT GYPSUM SHEATHING
WD-2	2X TREATED WOOD BLOCKING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 24000

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

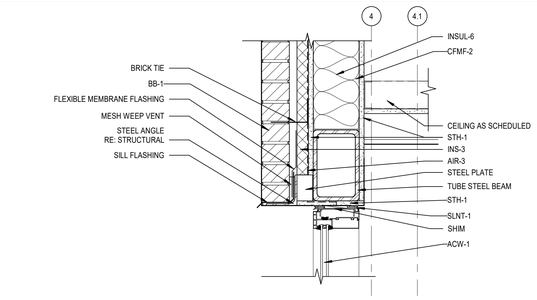
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

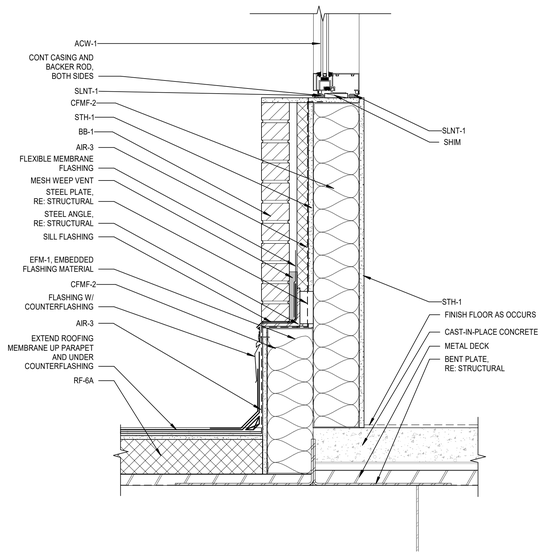
EXTERIOR DETAILS

A9.1

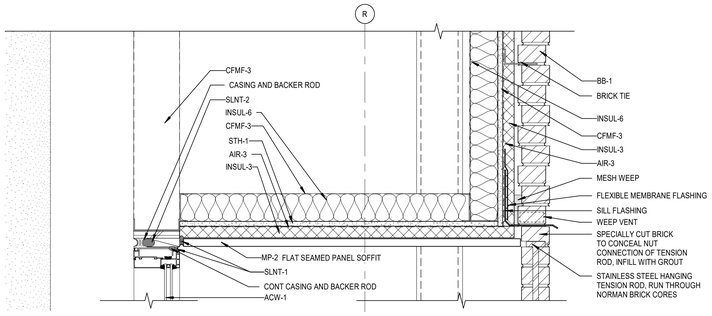
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:15 PM



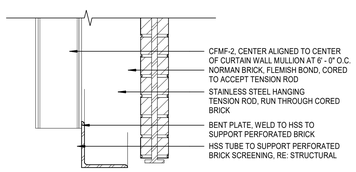
1A A9.2 SECTION DETAIL AT WINDOW HEAD
SCALE: 1 1/2" = 1'-0"



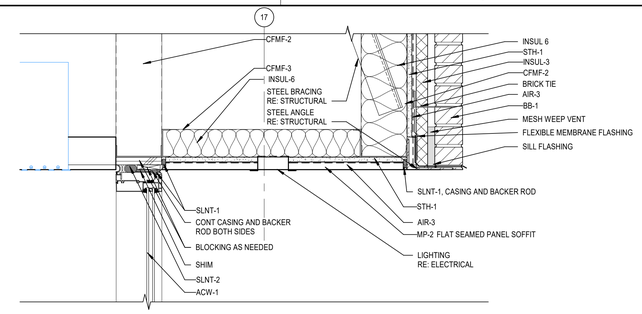
3A A9.2 SECTION DETAIL AT WINDOW SILL
SCALE: 1 1/2" = 1'-0"



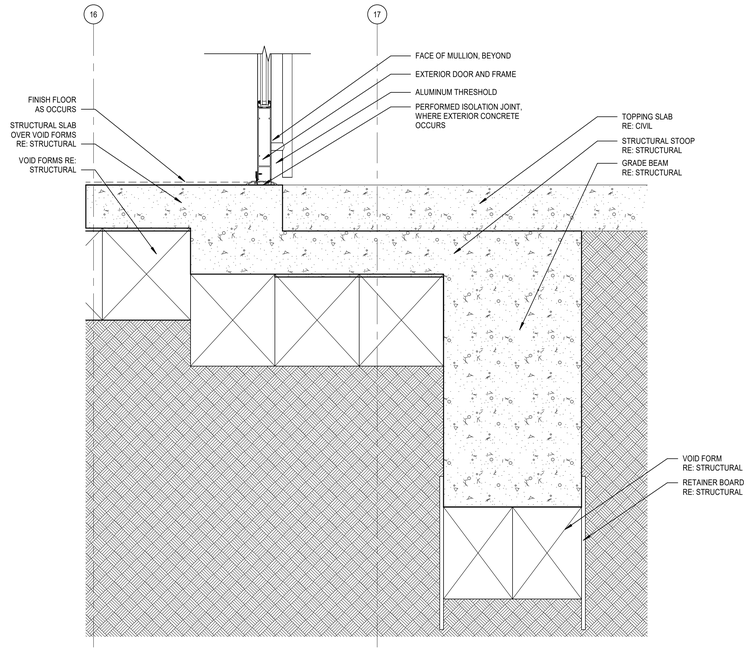
4A A9.2 SECTION DETAIL AT PERFORATED BRICK SOFFIT
SCALE: 1 1/2" = 1'-0"



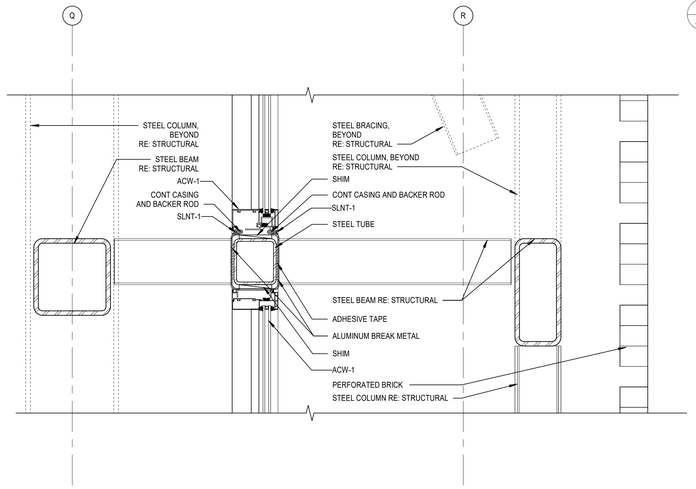
5B A9.2 SECTION DETAIL AT PERFORATED BRICK LEDGE
SCALE: 1 1/2" = 1'-0"



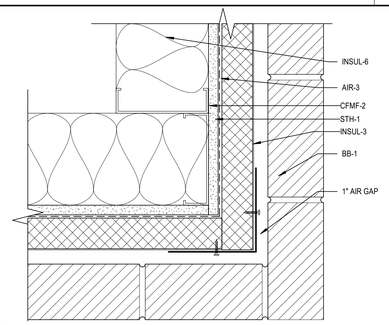
2C A9.2 SECTION DETAIL AT SOFFIT
SCALE: 1 1/2" = 1'-0"



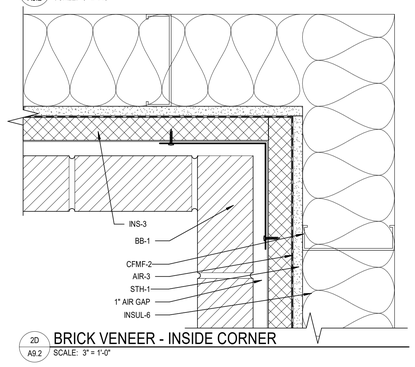
3C A9.2 SECTION DETAIL AT ENTRY
SCALE: 1 1/2" = 1'-0"



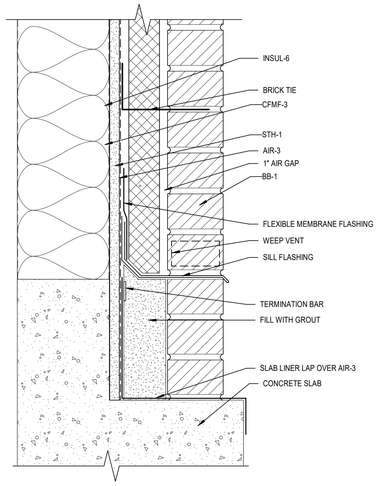
5C A9.2 SECTION DETAIL AT CURTAIN WALL
SCALE: 1 1/2" = 1'-0"



1E A9.2 BRICK VENEER - OUTSIDE CORNER
SCALE: 3" = 1'-0"



2D A9.2 BRICK VENEER - INSIDE CORNER
SCALE: 3" = 1'-0"



4E A9.2 BRICK VENEER - SILL
SCALE: 3" = 1'-0"

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MP-2	FORMED METAL WALL PANEL, PAC-CLAD FLUSH PANEL, OR SIMILAR. AT ALL PLACES WHERE ROOF TO CAP EXCEEDS 12" AS SHOWN, LAP UNDER COPING
SLNT-1	SEALANT TYPE 1
SLNT-2	SEALANT TYPE 2
STH-1	GLASS-MAT GYPSUM SHEATHING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 7/25/24

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

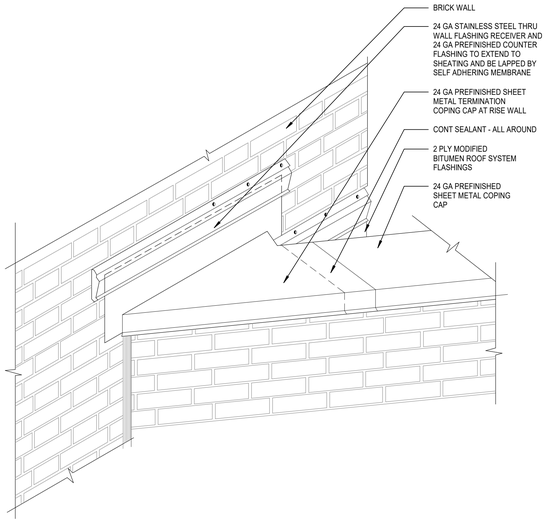
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

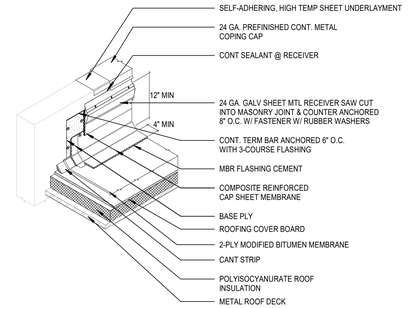
EXTERIOR DETAILS

A9.2

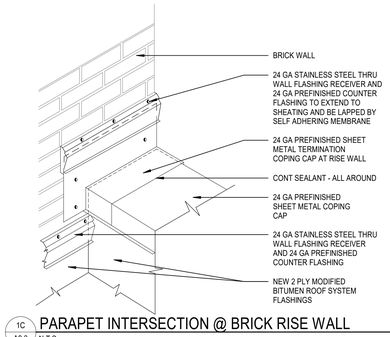
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:18 PM



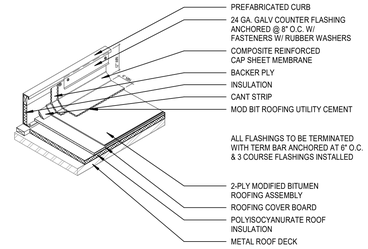
2A A9.3 ANGLED PARAPET INTERSECTION @ BRICK RISE WALL
N.T.S.



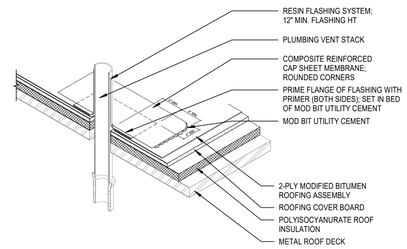
1B A9.3 PARAPET COPING
N.T.S.



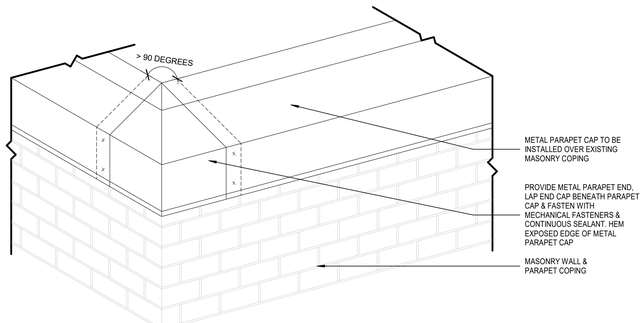
1C A9.3 PARAPET INTERSECTION @ BRICK RISE WALL
N.T.S.



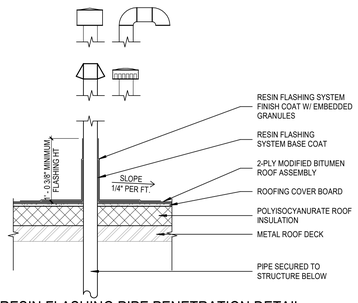
1E A9.3 PREFABRICATED ROOF CURB
N.T.S.



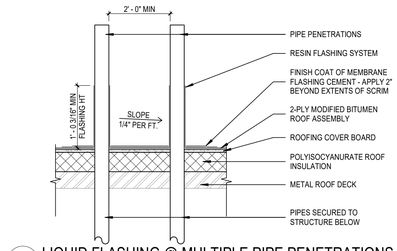
1F A9.3 PLUMBING VENT STACK
N.T.S.



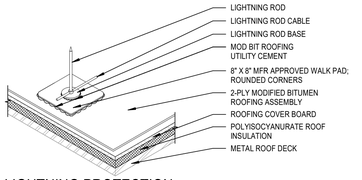
3A A9.3 NON-90 DEGREE OBTUSE INSIDE ANGLE PARAPET COPING
N.T.S.



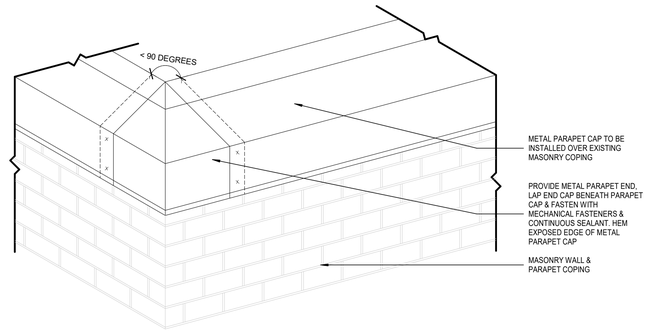
2C A9.3 RESIN FLASHING PIPE PENETRATION DETAIL
SCALE: 1" = 1'-0"



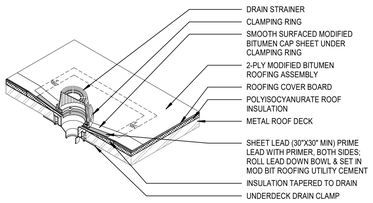
2D A9.3 LIQUID FLASHING @ MULTIPLE PIPE PENETRATIONS
SCALE: 1" = 1'-0"



2E A9.3 LIGHTNING PROTECTION
N.T.S.

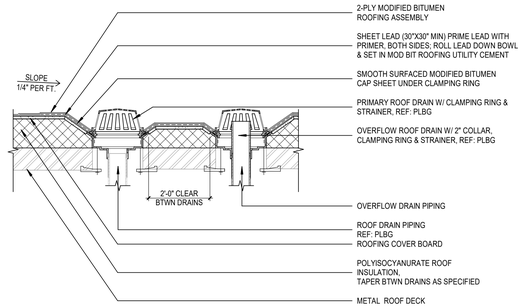


4A A9.3 NON-90 DEGREE OBTUSE OUTSIDE ANGLE PARAPET COPING
N.T.S.

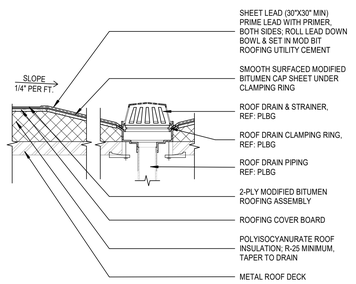


REF: 5B & 5C/AR9.0

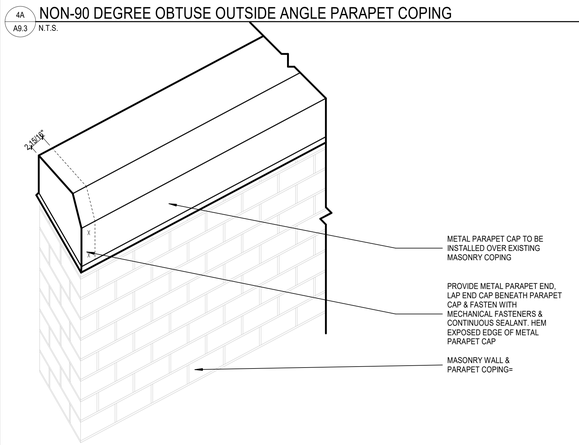
3C A9.3 ROOF DRAIN
N.T.S.



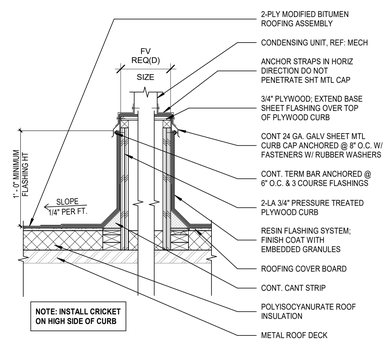
3D A9.3 SEPARATE ROOF & OVERFLOW DRAIN
SCALE: 1" = 1'-0"



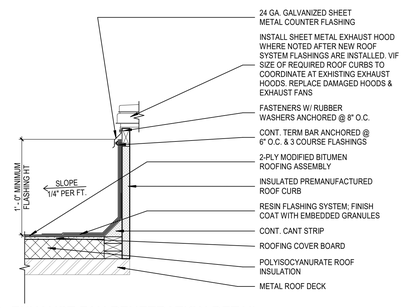
3E A9.3 SINGLE ROOF DRAIN
SCALE: 1" = 1'-0"



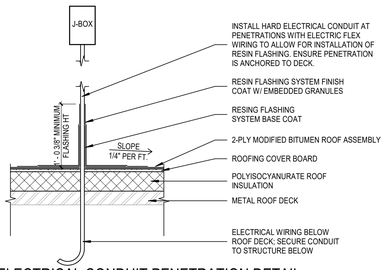
5A A9.3 PARAPET COPING END CAP
N.T.S.



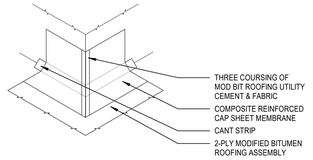
5C A9.3 CONDENSING UNIT DETAIL
SCALE: 1" = 1'-0"



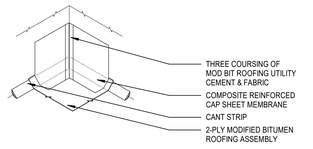
5D A9.3 EXHAUST FAN PENETRATION DETAIL
SCALE: 1" = 1'-0"



5E A9.3 ELECTRICAL CONDUIT PENETRATION DETAIL
SCALE: 1" = 1'-0"



4F A9.3 FLASHING - OUTSIDE CORNER
N.T.S.



5F A9.3 FLASHING - INSIDE CORNER
N.T.S.

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS
2024-07-25

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

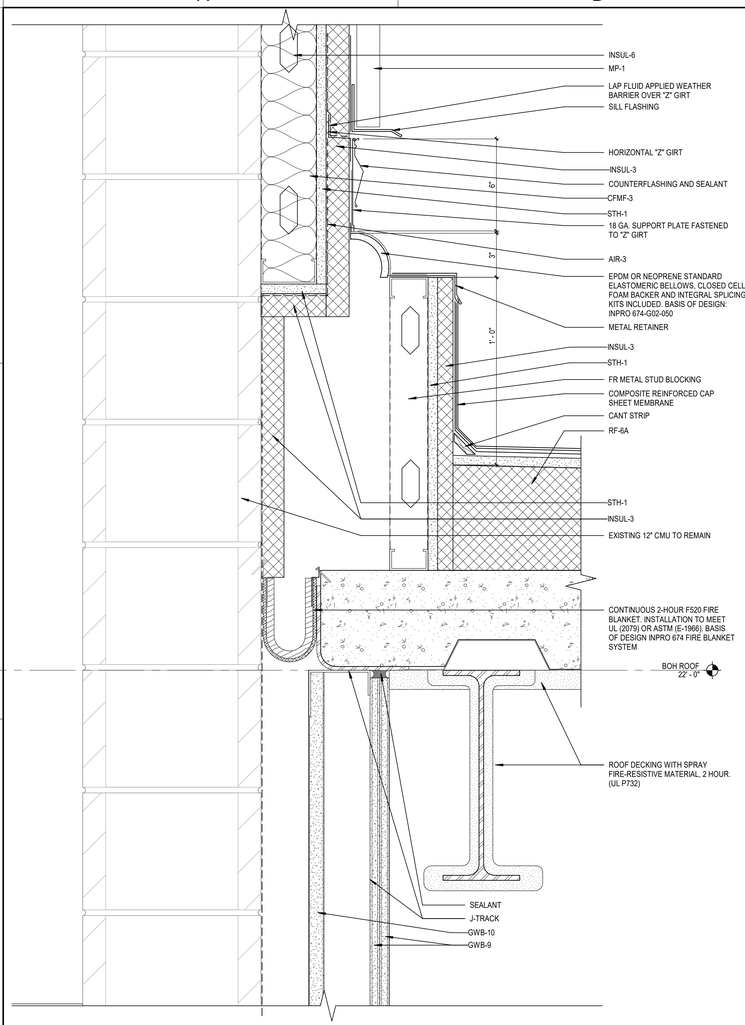
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

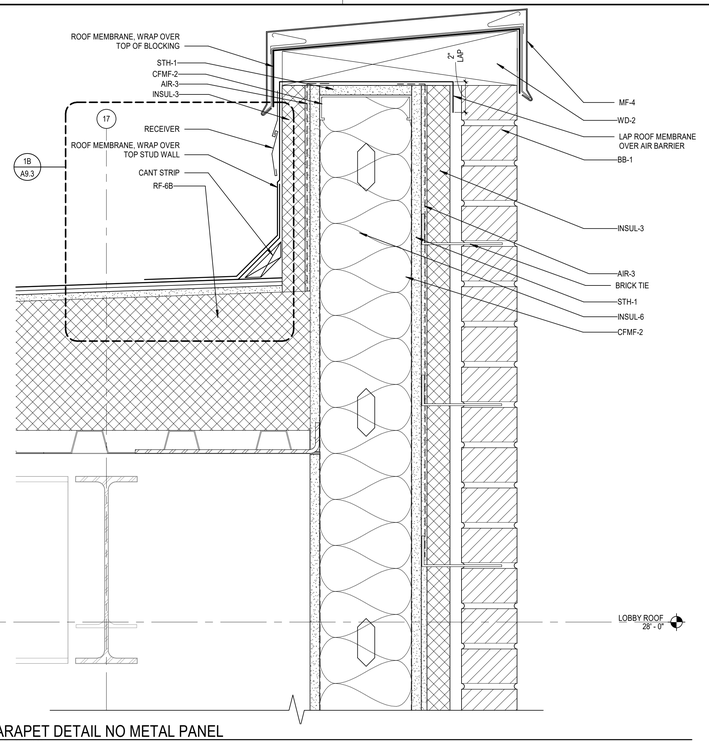
EXTERIOR DETAILS

A9.3

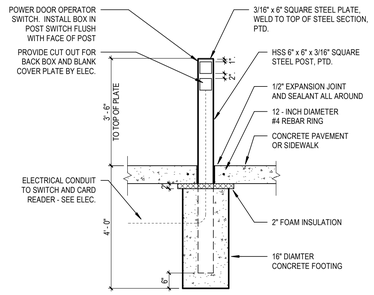
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:20 PM



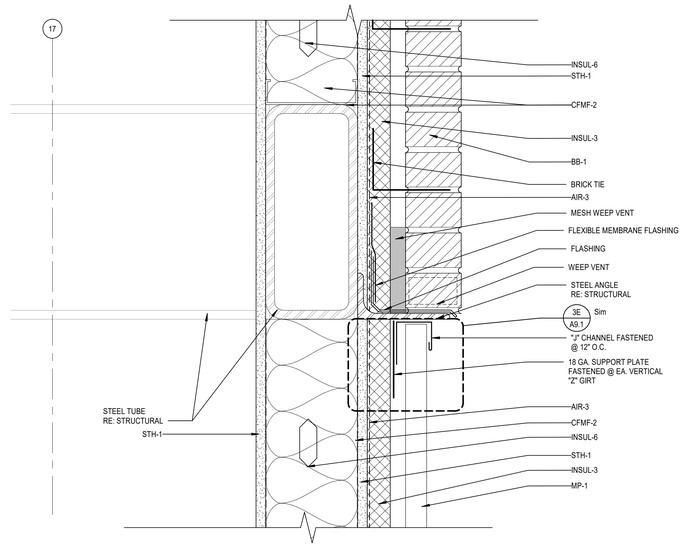
3A / A9.4 SECTION DETAIL AT ROOF EXPANSION JOINT
SCALE: 3" = 1'-0"



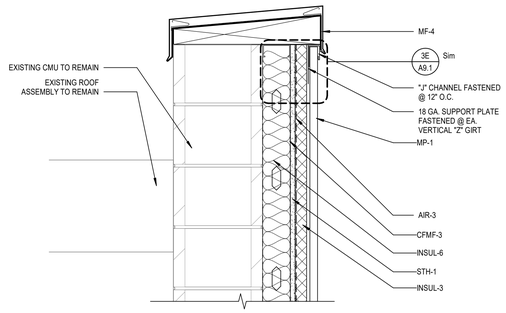
2C / A9.4 PARAPET DETAIL NO METAL PANEL
SCALE: 3" = 1'-0"



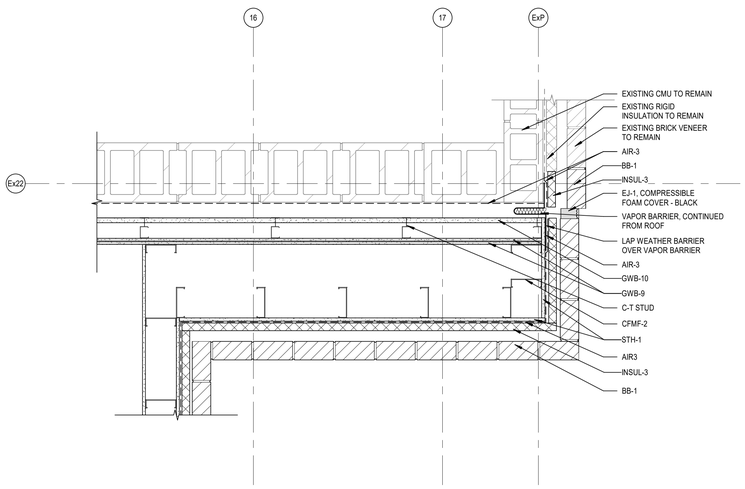
2E / A9.4 DOOR OPERATOR POST
SCALE: 1/2" = 1'-0"



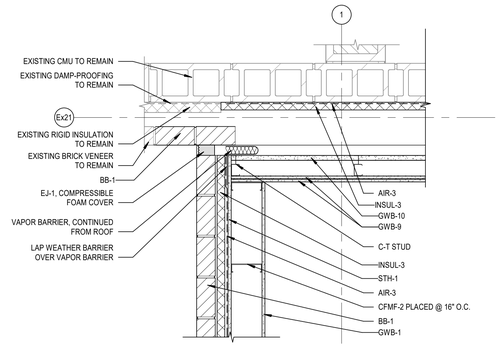
4C / A9.4 BRICK TO METAL PANEL FACADE TRANSITION
SCALE: 3" = 1'-0"



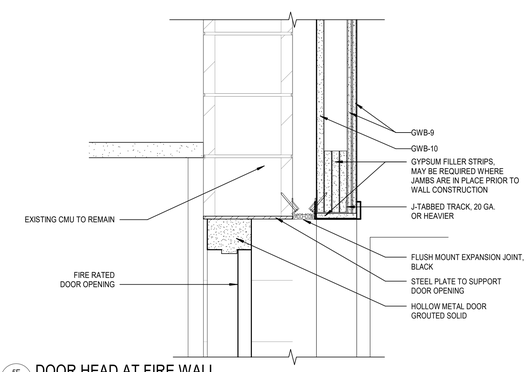
4E / A9.4 SECTION DETAIL AT EXISTING WALL PARAPET
SCALE: 1 1/2" = 1'-0"



5A / A9.4 PLAN DETAIL - EXPANSION JOINT AT EXISTING WALL
SCALE: 1" = 1'-0"



5C / A9.4 PLAN DETAIL - EXPANSION JOINT AT EXISTING WALL
SCALE: 1" = 1'-0"



5E / A9.4 DOOR HEAD AT FIRE WALL
SCALE: 1 1/2" = 1'-0"

REFERENCE KEYNOTES

AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
GWB-1	TYPE X GYPSUM WALL BOARD
GWB-9	PROPRIETARY FIRE CODE BOARD 5/8"
GWB-10	GYPSUM SHAFT LINER 1"
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MP-1	FORMED METAL WALL PANEL, PAC-CLAD BOX RIB 3, OR SIMILAR
RF-6B	2-PLY MODIFIED BITUMINOUS MEMBRANE ROOFING OVER METAL ROOF DECK
STH-1	GLASS-MAT GYPSUM SHEATHING
WD-2	2X TREATED WOOD BLOCKING

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

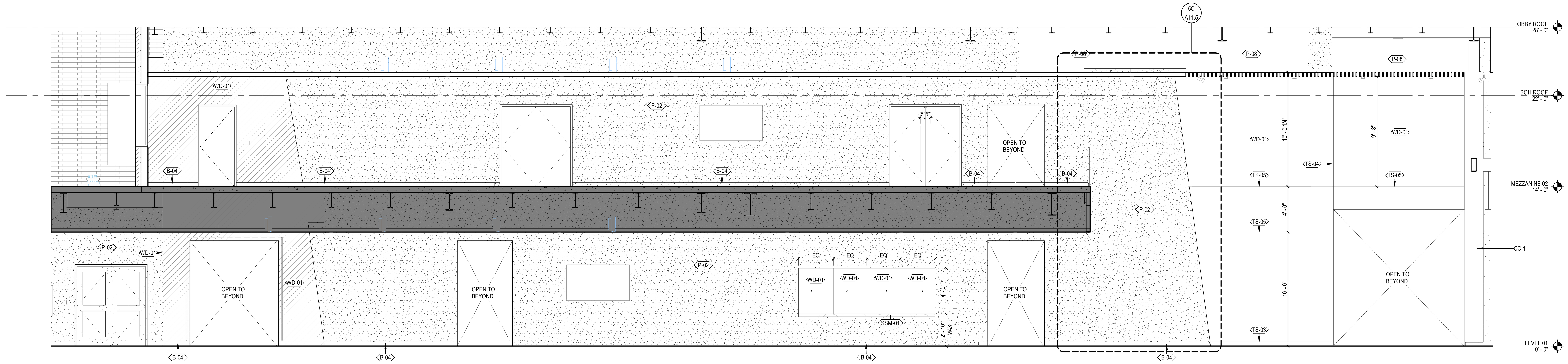
39-23712-00

EXTERIOR DETAILS

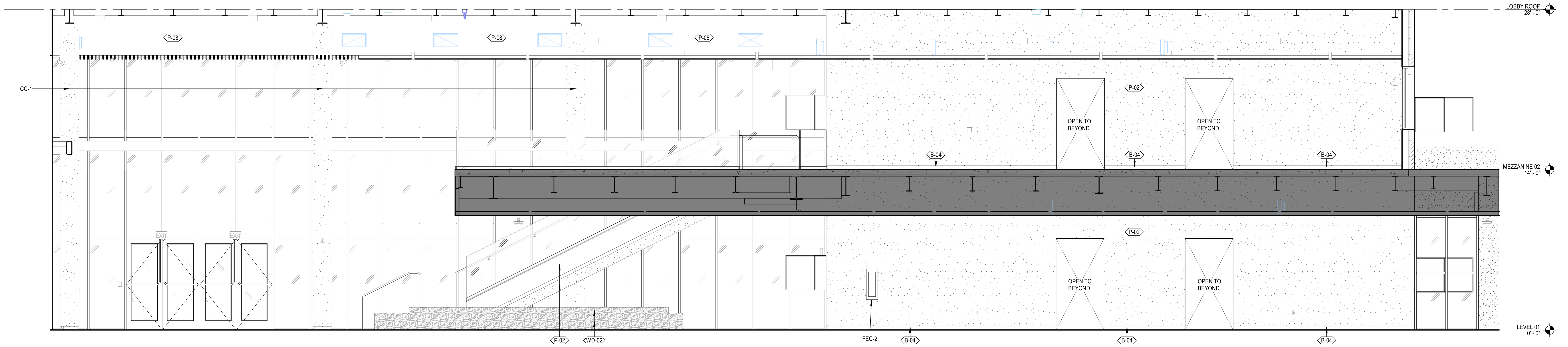
A9.4

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:24 PM

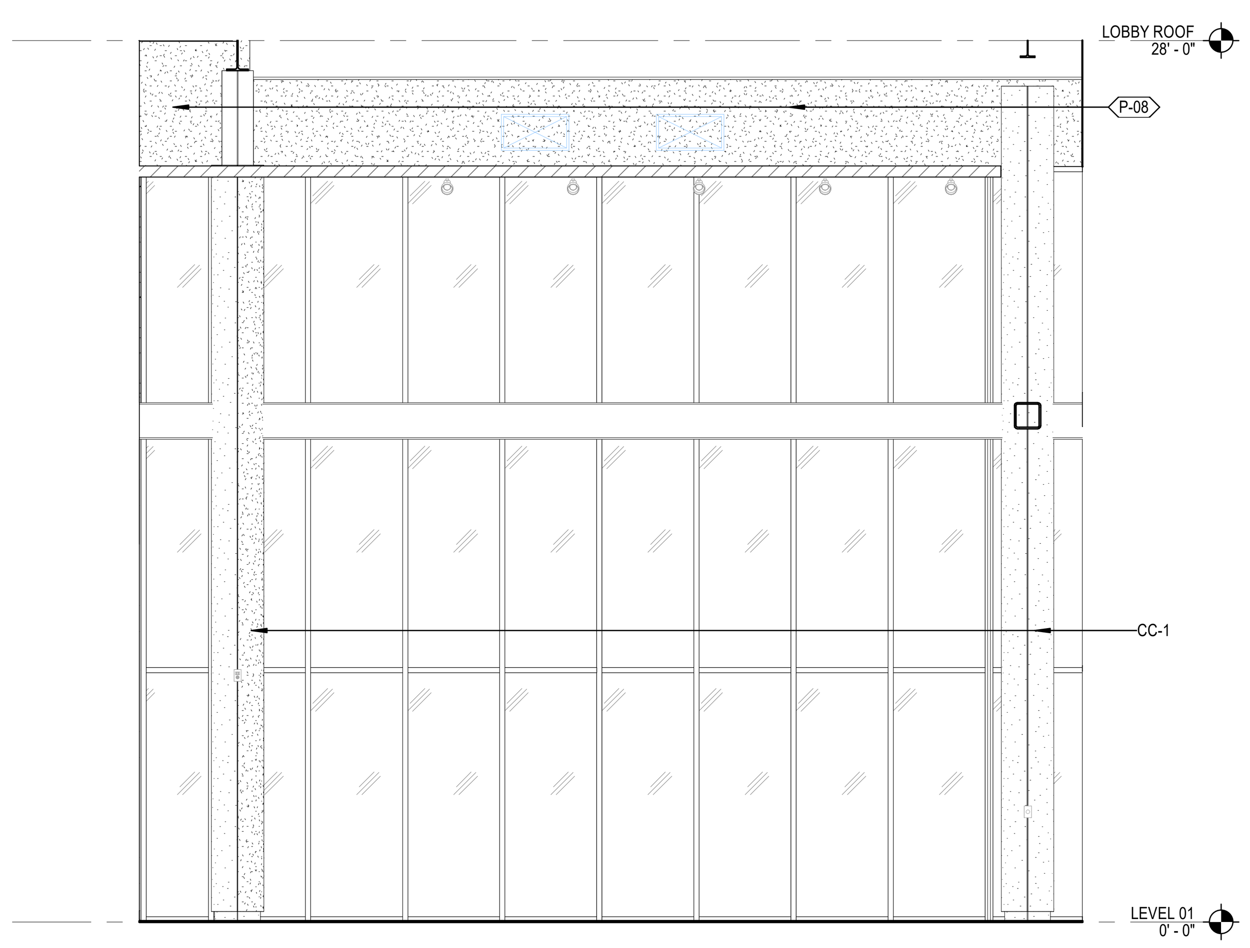
A B C D E F



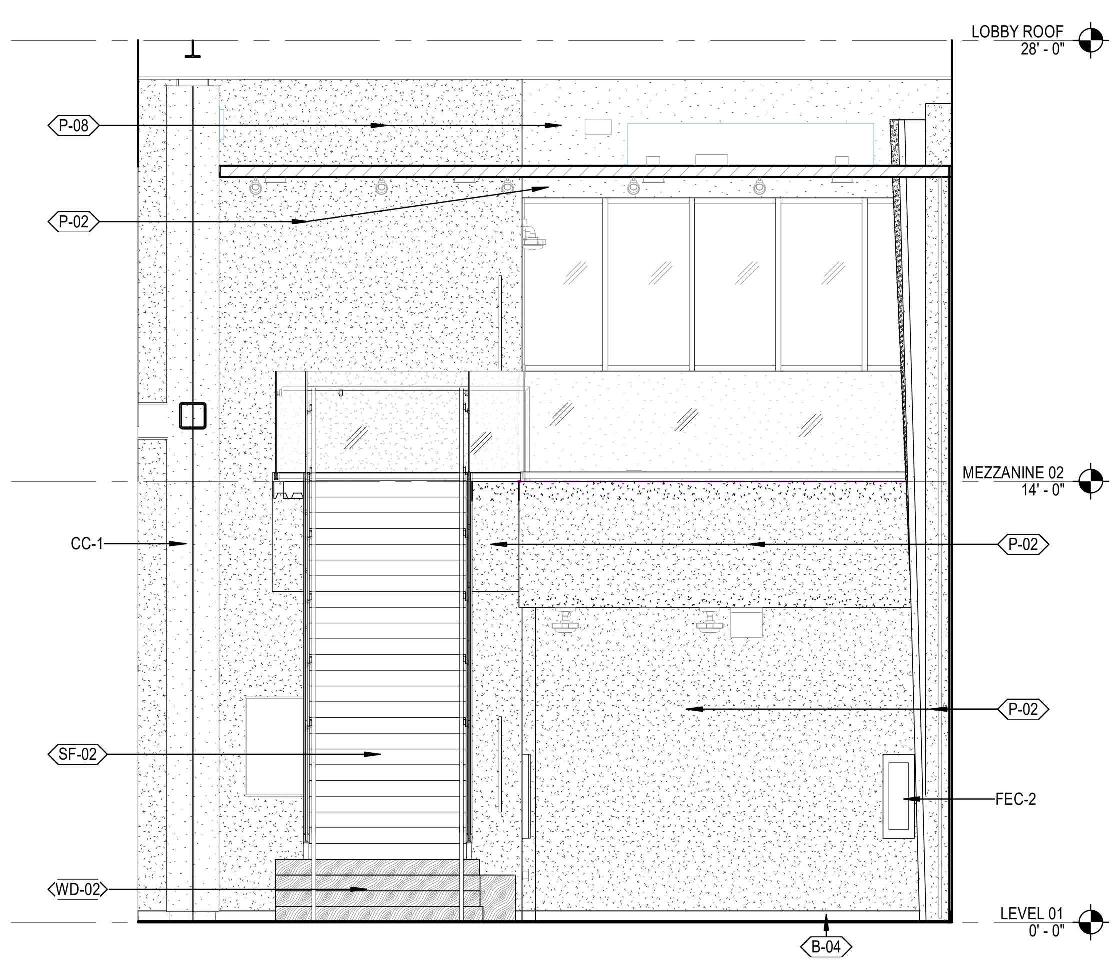
2A A10.1 A101 - LOBBY - NORTH
SCALE: 1/4" = 1'-0"



3A A10.1 A101 - LOBBY - SOUTH
SCALE: 1/4" = 1'-0"



5A A10.1 A101 - LOBBY - EAST
SCALE: 1/4" = 1'-0"



5C A10.1 A101 - LOBBY - WEST
SCALE: 1/4" = 1'-0"

1 2 3 4 5

ROOM FINISH SCHEDULE GENERAL NOTES

A. SEE SPECIFICATION FOR PAINTING OF ITEMS NOT NOTED IN THE ROOM FINISH SCHEDULE OR FINISH PLANS.
B. EXPOSED CONCRETE FLOORS NOT SHOWN TO RECEIVE A FINISH SHALL RECEIVE LIQUID FLOOR TREATMENT OR CURING AND SEALING COMPOUND UNLESS NOTED OTHERWISE. SEE SPEC SECTION 033000.
C. ALL GYPSUM WALLBOARD BULKHEADS SHALL BE PAINTED P-02 UNLESS NOTED OTHERWISE.
D. SEE REFLECTED CEILING PLANS FOR CEILING MATERIAL AND HEIGHT.
E. CEILING HEIGHTS, AS NOTED ON THE REFLECTED CEILING PLANS, ARE MEASURED FROM FINISH FLOOR OF THE ROOM.
F. CONTRACTOR SHALL FURNISH AND INSTALL WALL BASE AROUND CASEWORK AND MILLWORK.
G. WHERE FLOOR FINISH CHANGES FROM ONE ROOM TO ANOTHER, SET JOINT OF THE MATERIALS AT THE CENTER OF THE COMMUNICATING DOOR.
H. SEE SHEET XX.X FOR ACOUSTICAL WALL PANEL ELEVATIONS AND DETAILS.

REFERENCE KEYNOTES

CC-1	COLUMN COVER, SNAP TOGETHER
FEC-2	FIRE EXTINGUISHER CABINET RECESSED

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

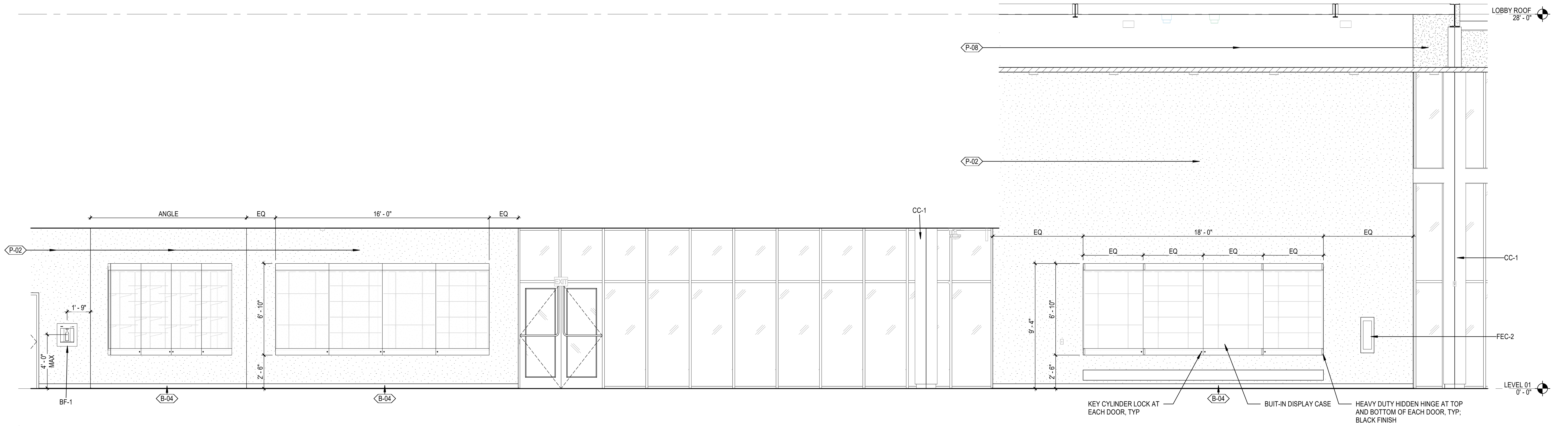
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

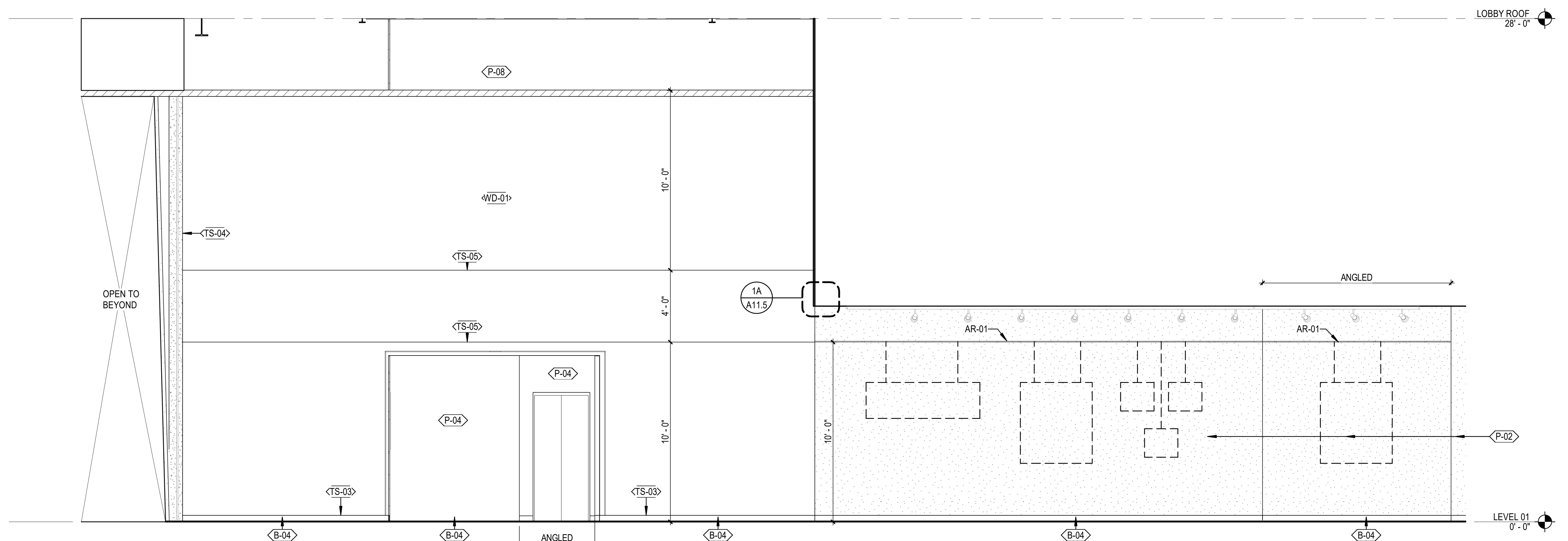
INTERIOR ELEVATIONS

A10.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:31 PM



2A
A10.2
A196 - HALL - EAST
SCALE: 1/4" = 1'-0"



4A
A10.2
A196 - HALL - WEST
SCALE: 1/4" = 1'-0"

CASEWORK AND MILLWORK GENERAL NOTES

A. CASEWORK AND MILLWORK GENERAL NOTES APPLY TO ALL CASEWORK/MILLWORK SHEETS.
B. ELEVATIONS DENOTED AS MILLWORK ARE SPECIFIED UNDER DIVISION 06. ALL OTHERS SHALL BE SPECIFIED UNDER DIVISION 12, UNLESS NOTED OTHERWISE.
C. ALL BASE CABINETS TO BE 2'-0" DEEP UNITS, UNLESS NOTED OTHERWISE.
D. ALL UPPER WALL CABINETS TO BE 1'-2" DEEP UNITS, UNLESS NOTED OTHERWISE.
E. ALL TALL STORAGE CABINETS TO BE 2'-0" DEEP UNITS, UNLESS NOTED OTHERWISE.
F. ALL SHELVING IN CASEWORK TO BE ADJUSTABLE SHELVING, UNLESS NOTED OTHERWISE.
G. CATALOG NUMBERS SHOWN ON THE ELEVATIONS FOR CASEWORK ARE XXXXX MANUFACTURER, UNLESS NOTED OTHERWISE. (M) AFTER THE CATALOG NUMBER INDICATES THE CABINET IS SHOWN MODIFIED FROM THE MANUFACTURER'S STANDARD.
H. INDICATES CASEWORK TO BE BID AS AN ALTERNATE. SEE ALTERNATES SECTION IN THE SPECIFICATIONS FOR DESCRIPTIONS.
I. WHERE PLUMBING OR ELECTRICAL DEVICES ARE LOCATED IN CASEWORK, CASEWORK CONTRACTOR SHALL PROVIDE OPENINGS. COORDINATE LOCATION AND QUANTITY WITH THE PLUMBING OR ELECTRICAL CONTRACTOR.
J. PROVIDE SEALANT AT ALL PERIMETER JOINTS WHERE COUNTERTOPS, BACK AND SIDE SPLASHES, CASEWORK AND MILLWORK ABUT WALLS.
K. FIELD VERIFY ALL DIMENSIONS OF CABINET LOCATIONS IN THE BUILDING PRIOR TO FABRICATION.
L. PROVIDE LOCKS WHERE INDICATED AT DOORS AND DRAWERS.
M. PROVIDE FINISHED ENDS AT ALL EXPOSED ENDS OF CASEWORK AND MILLWORK.
N. ALL EXPOSED SURFACES IN OPEN SHELVING SHALL BE PLASTIC LAMINATE COVERED.
O. SEE DETAIL XX/AX.X FOR TYPICAL COUNTERTOP DETAIL.

REFERENCE KEYNOTES

AR-01	
BF-1	BOTTLE FILLER
CC-1	COLUMN COVER, SNAP TOGETHER
FEC-2	FIRE EXTINGUISHER CABINET RECESSED

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

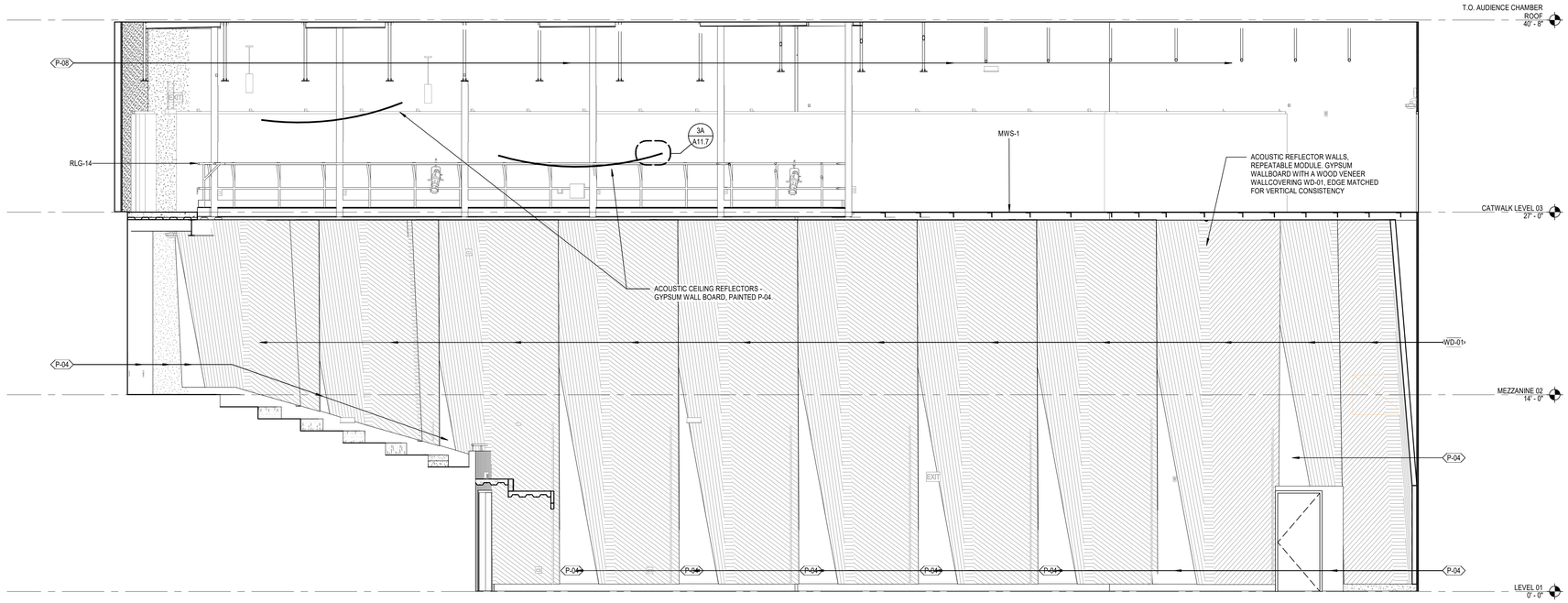
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

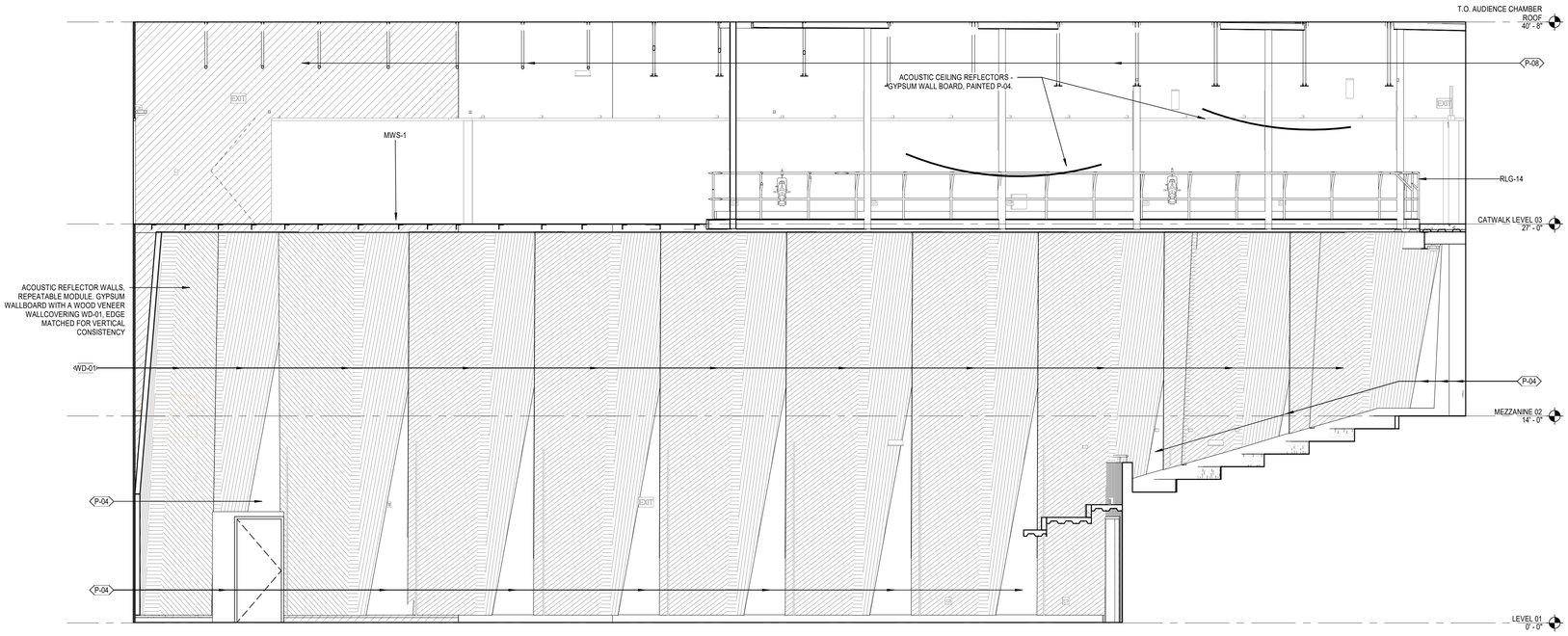
INTERIOR ELEVATIONS

A10.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:34 PM



2A A10.3 A126 - AUDIENCE CHAMBER - WEST
SCALE: 1/4" = 1'-0"



5A A10.3 A126 - AUDIENCE CHAMBER - EAST
SCALE: 1/4" = 1'-0"

REFERENCE KEYNOTES

MWS-1	<varies>
RLG-14	CATWALK STEEL PIPE / TUBE RAIL WITH LIGHTING OUTRIGGER

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 24009

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

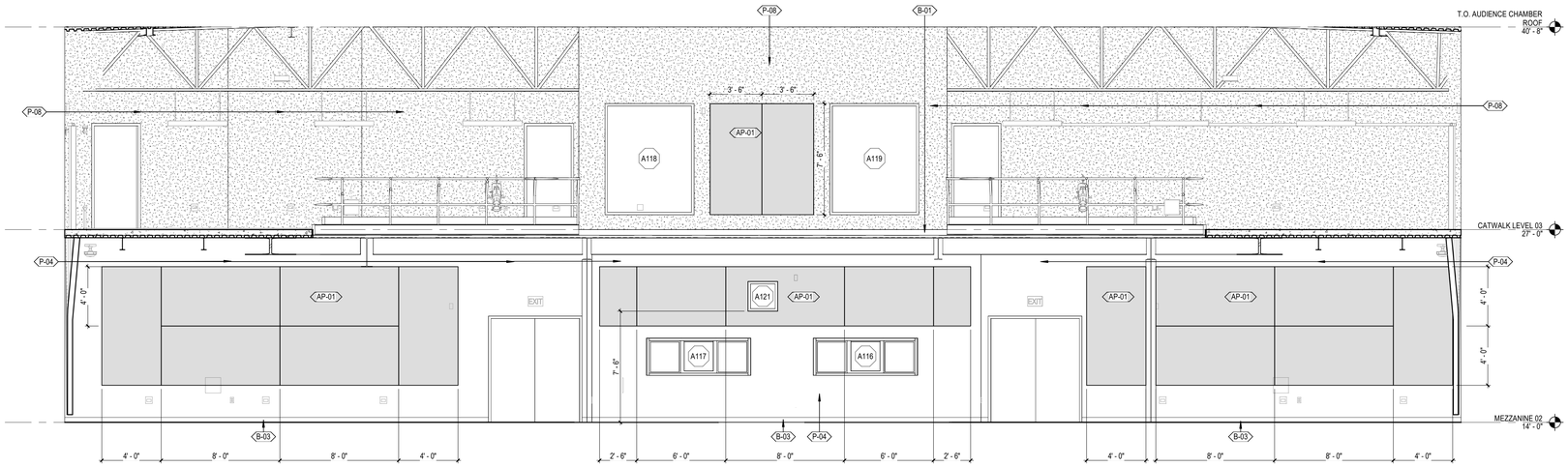
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

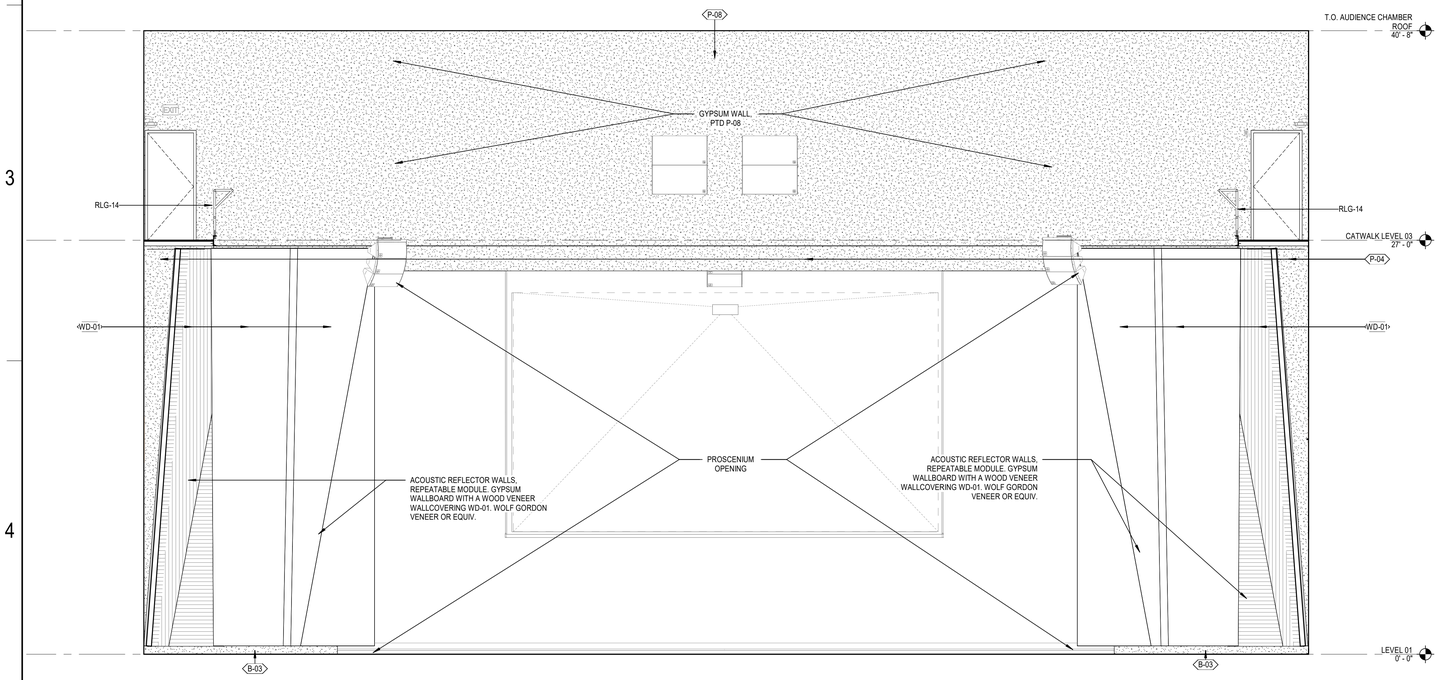
INTERIOR ELEVATIONS

A10.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:37 PM



2A A10.4 A126 - AUDIENCE CHAMBER - SOUTH
SCALE: 1/4" = 1'-0"



4A A10.4 A126 - AUDIENCE CHAMBER - NORTH
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

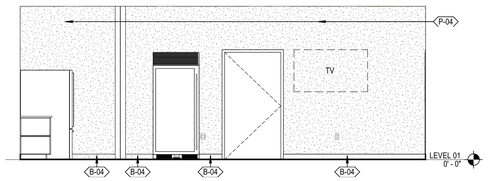
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

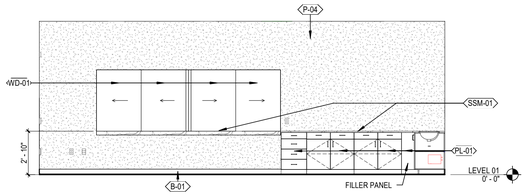
INTERIOR ELEVATIONS

A10.4

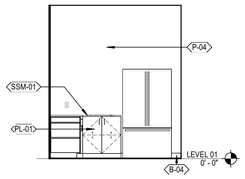
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:41 PM



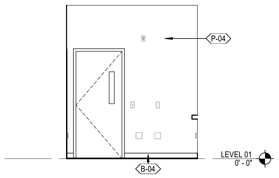
1A A10.5 A103 CONCESSION / BOX OFFICE NORTH ELEVATION
SCALE: 1/4" = 1'-0"



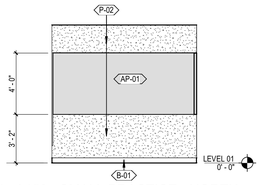
1B A10.5 A103 CONCESSIONS / BOX OFFICE SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



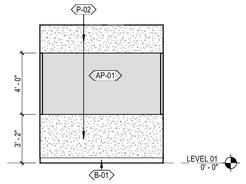
1D A10.5 A103 CONCESSION / BOX OFFICE WEST ELEVATION
SCALE: 1/4" = 1'-0"



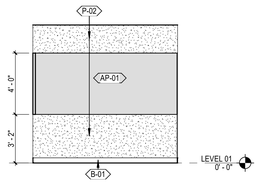
1E A10.5 A103 CONCESSION / BOX OFFICE EAST ELEVATION
SCALE: 1/4" = 1'-0"



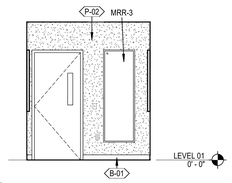
2A A10.5 A150 - SMALL PRACTICE - NORTH
SCALE: 1/4" = 1'-0"



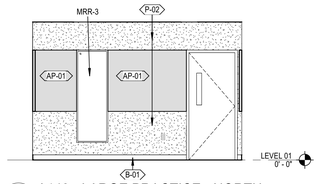
2B A10.5 A150 - SMALL PRACTICE - EAST
SCALE: 1/4" = 1'-0"



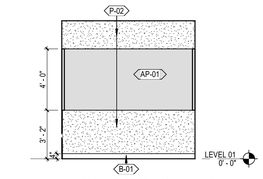
2C A10.5 A150 - SMALL PRACTICE - SOUTH
SCALE: 1/4" = 1'-0"



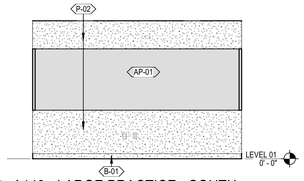
2D A10.5 A150 - SMALL PRACTICE - WEST
SCALE: 1/4" = 1'-0"



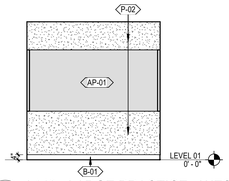
2E A10.5 A148 - LARGE PRACTICE - NORTH
SCALE: 1/4" = 1'-0"



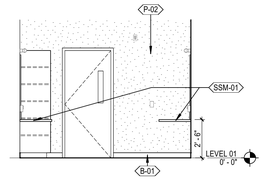
3A A10.5 A148 - LARGE PRACTICE - EAST
SCALE: 1/4" = 1'-0"



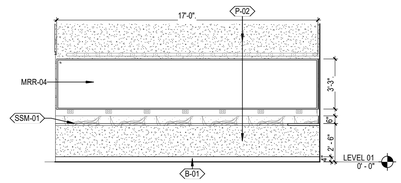
3B A10.5 A148 - LARGE PRACTICE - SOUTH
SCALE: 1/4" = 1'-0"



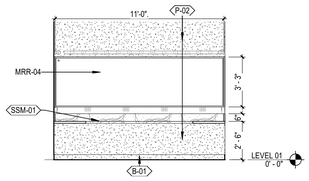
3C A10.5 A148 - LARGE PRACTICE - WEST
SCALE: 1/4" = 1'-0"



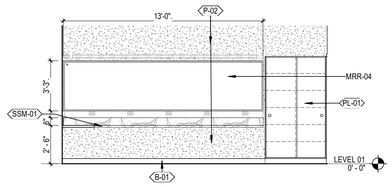
3D A10.5 A147 - MAKEUP - NORTH
SCALE: 1/4" = 1'-0"



3E A10.5 A147 - MAKEUP - EAST
SCALE: 1/4" = 1'-0"



4A A10.5 A147 - MAKEUP - SOUTH
SCALE: 1/4" = 1'-0"



4B A10.5 A147 - MAKEUP - WEST
SCALE: 1/4" = 1'-0"

REFERENCE KEYNOTES

MRR-3	MIRROR - TILT
MRR-04	

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
TEXAS

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

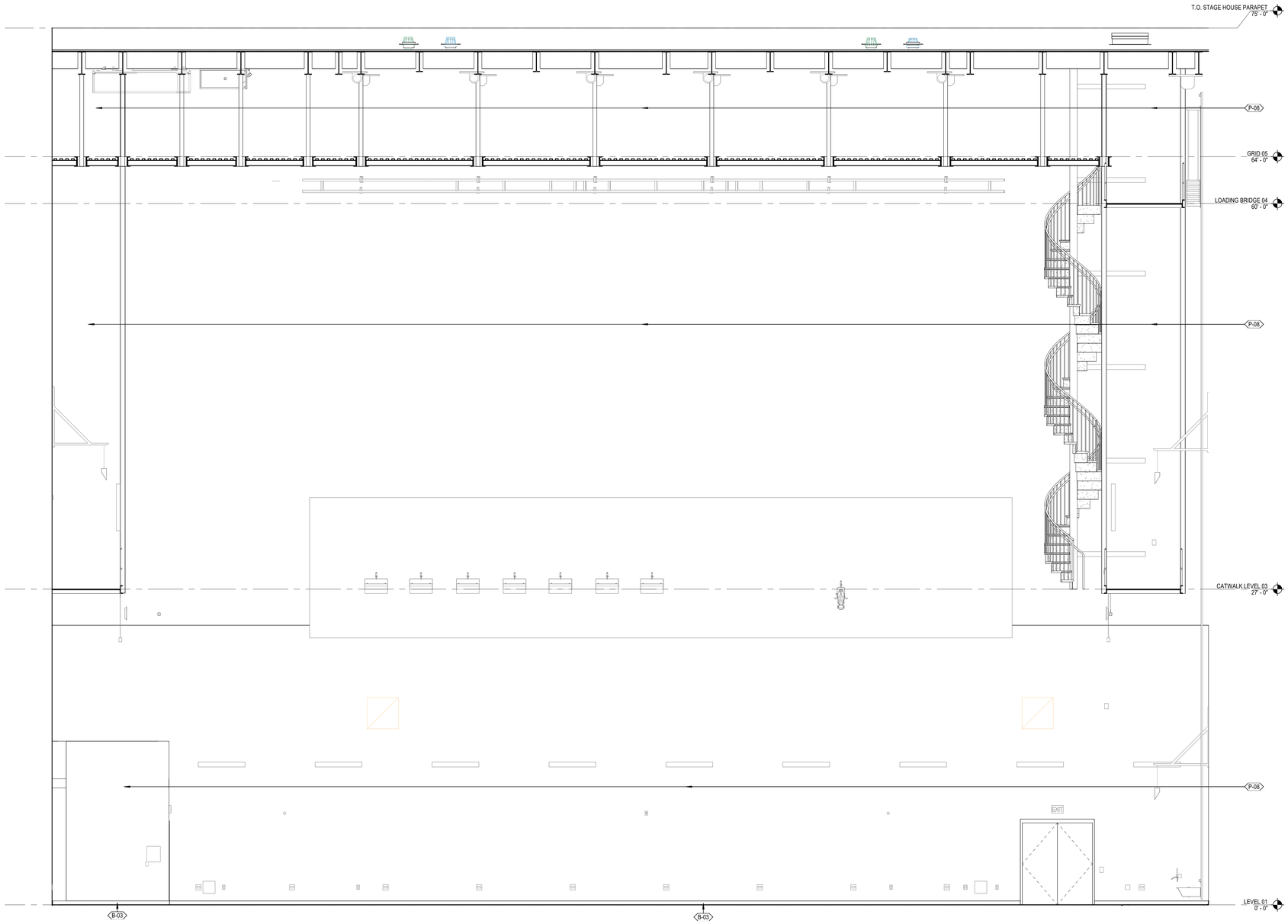
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

INTERIOR ELEVATIONS

A10.5

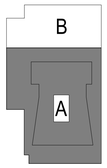
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:48 PM



4A / A10.6 A149 STAGE - NORTH

SCALE: 1/4" = 1'-0"

KEY PLAN



DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

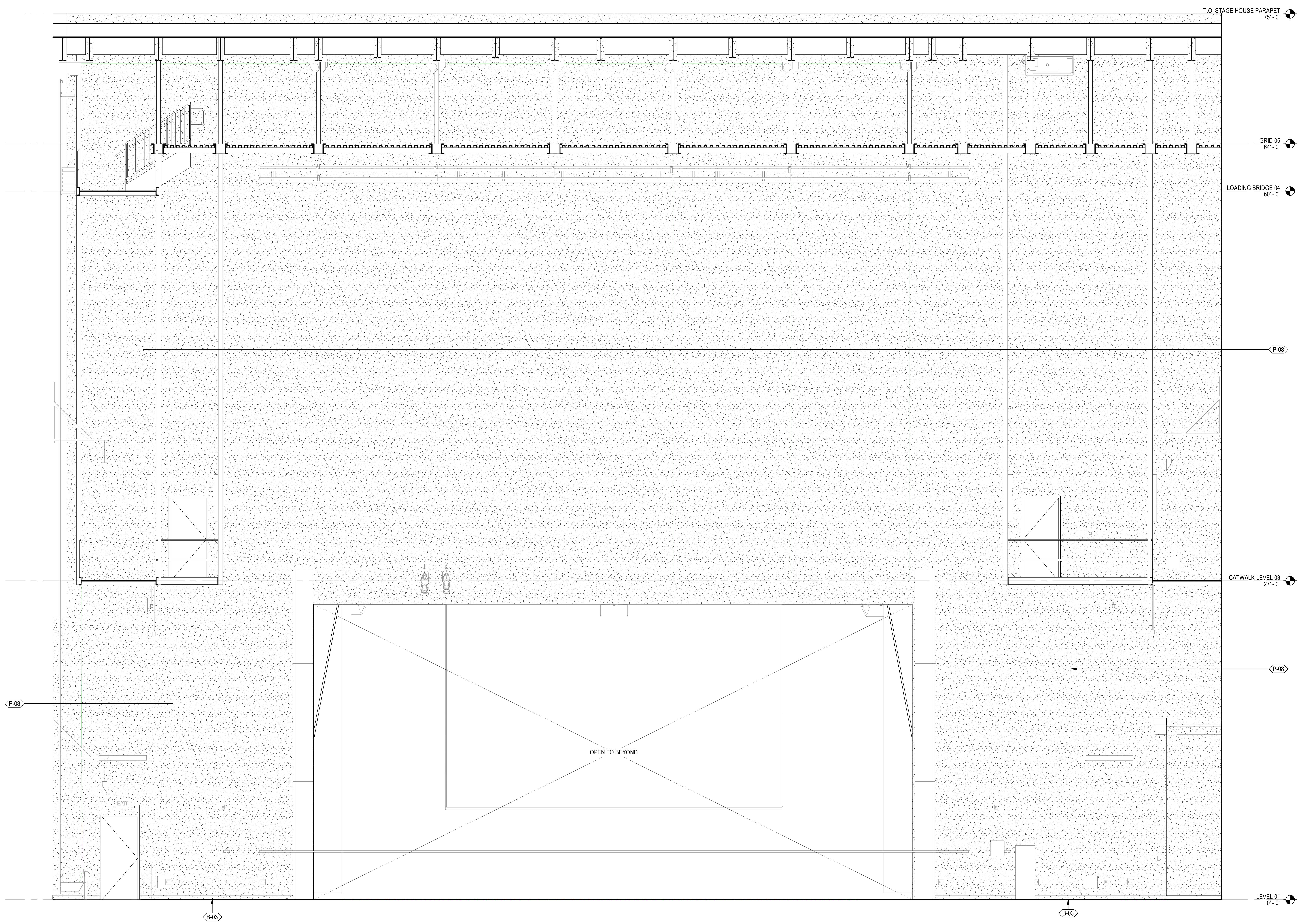
REVISIONS

39-23712-00

INTERIOR ELEVATIONS

A10.6

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:49 PM



4A
A10.7

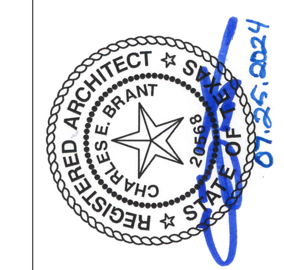
A149 STAGE - SOUTH

SCALE: 1/4" = 1'-0"

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:51 PM

DLRGROUP

© DLR Group



CRANDALL ISD HIGH SCHOOL

PAC ADDITION

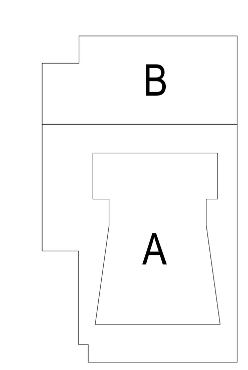
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

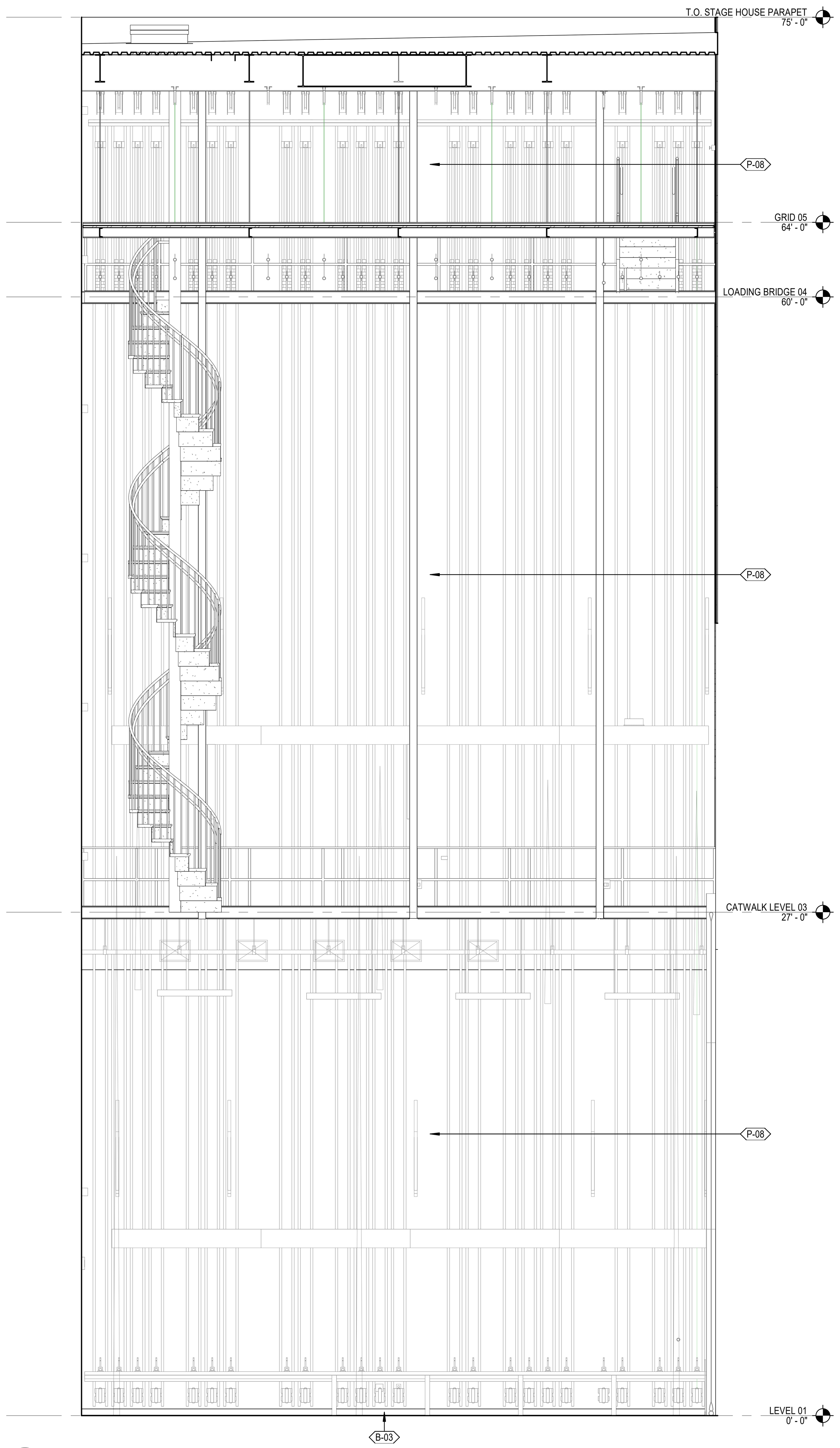
KEY PLAN



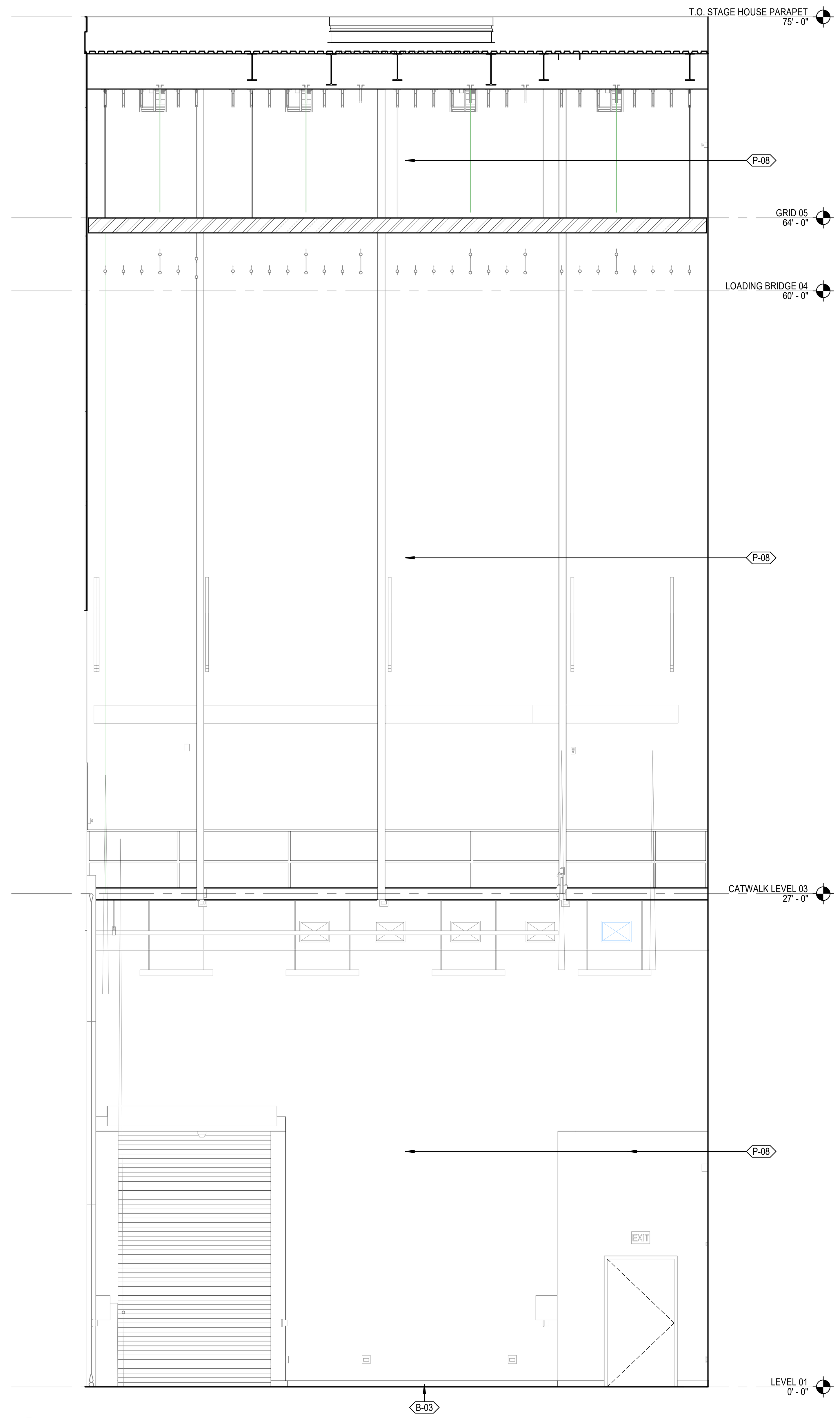
39-23712-00

INTERIOR ELEVATIONS

A10.7



4A A10.8 A149 STAGE - EAST
SCALE: 1/4" = 1'-0"



4C A10.8 A149 STAGE - WEST
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

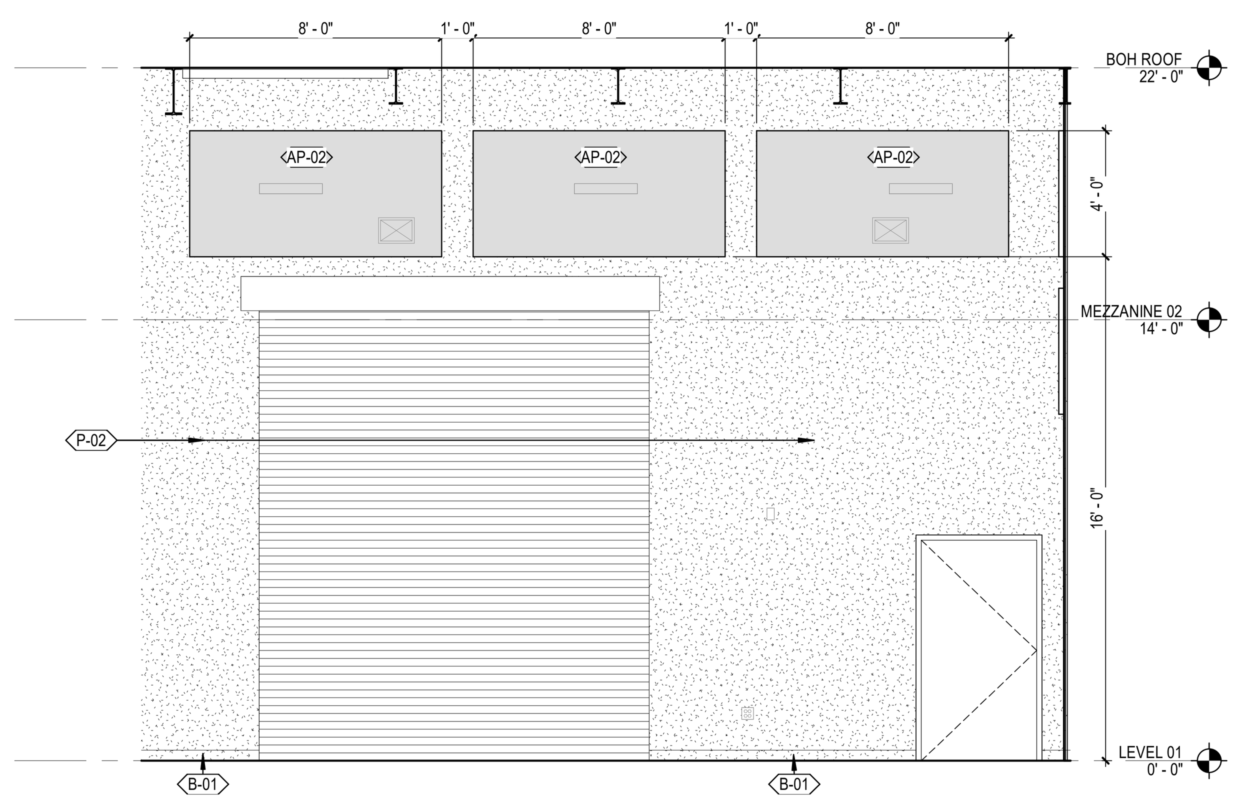
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

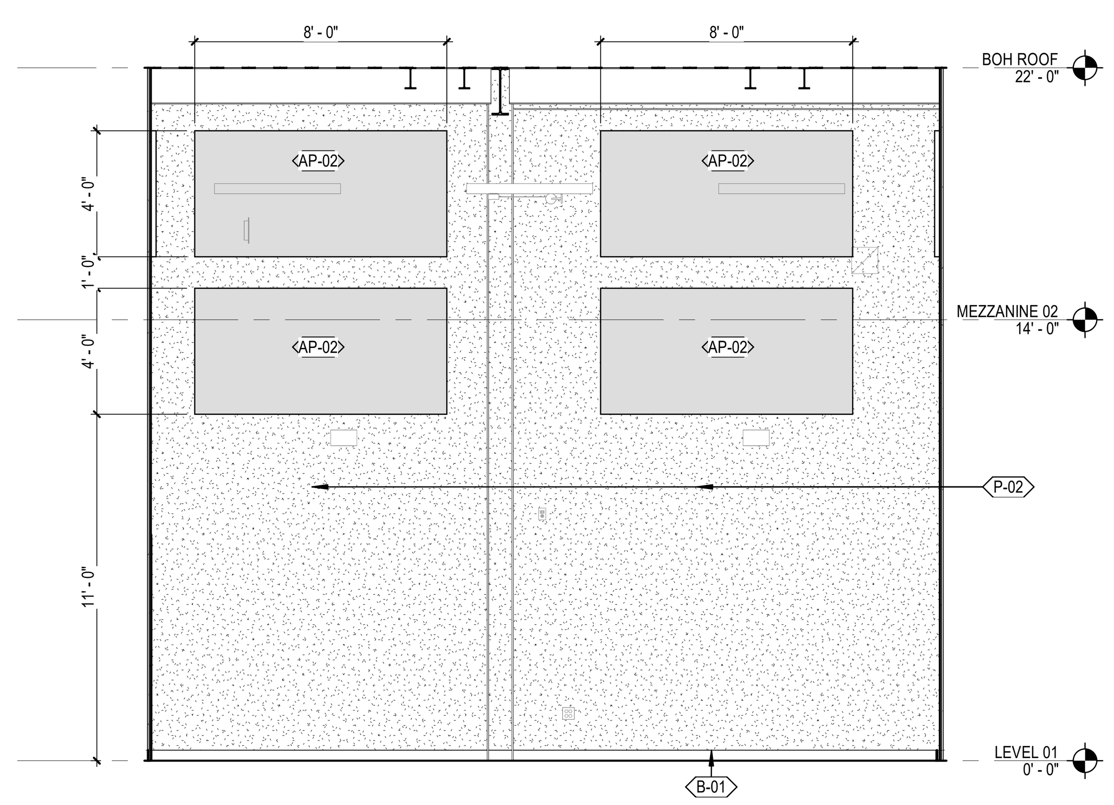
INTERIOR ELEVATIONS

A10.8

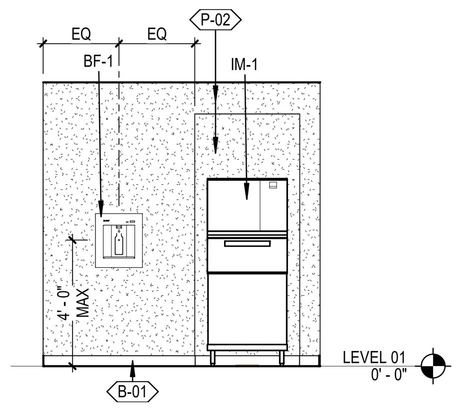
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:54 PM



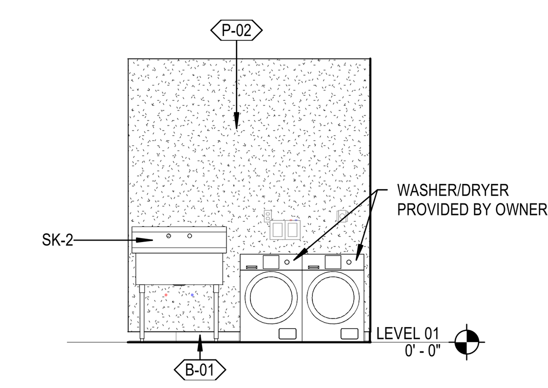
1A A10.9 A116 - WORKSHOP - NORTH
SCALE: 1/4" = 1'-0"



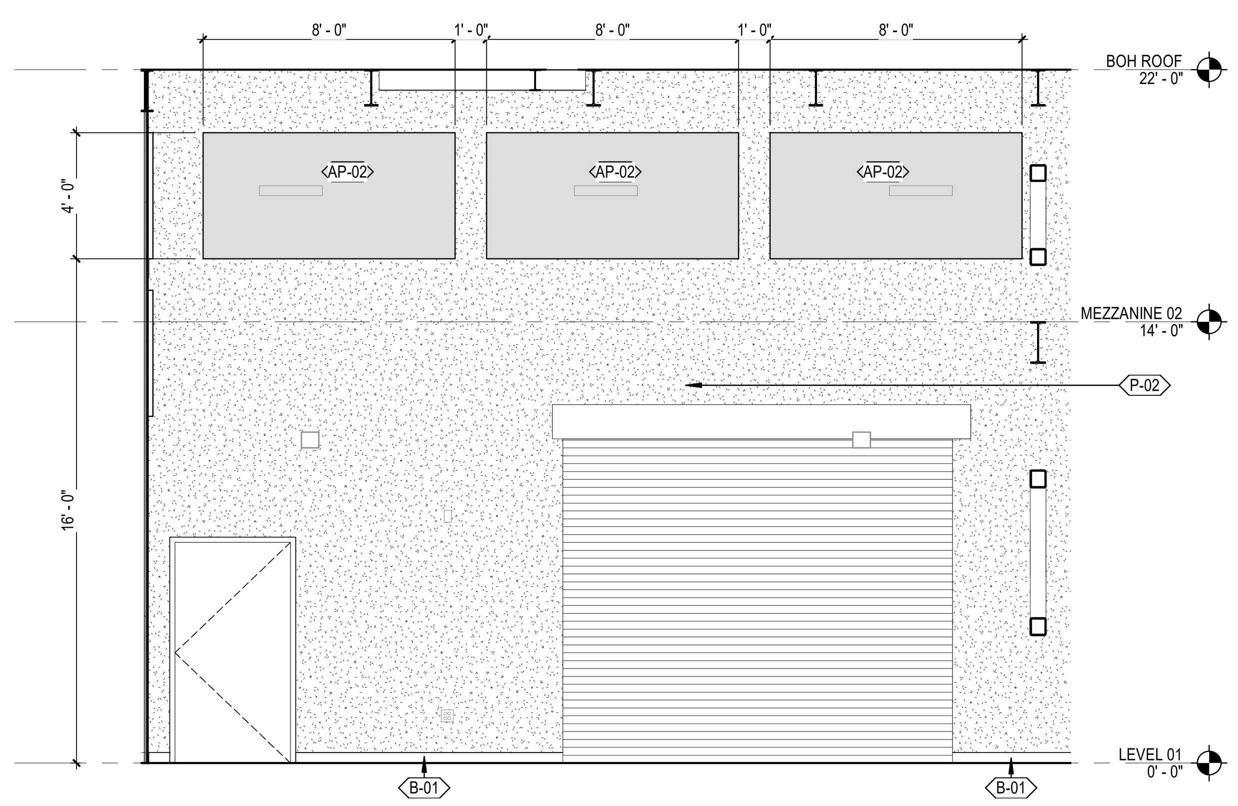
1C A10.9 A116 - WORKSHOP - EAST
SCALE: 1/4" = 1'-0"



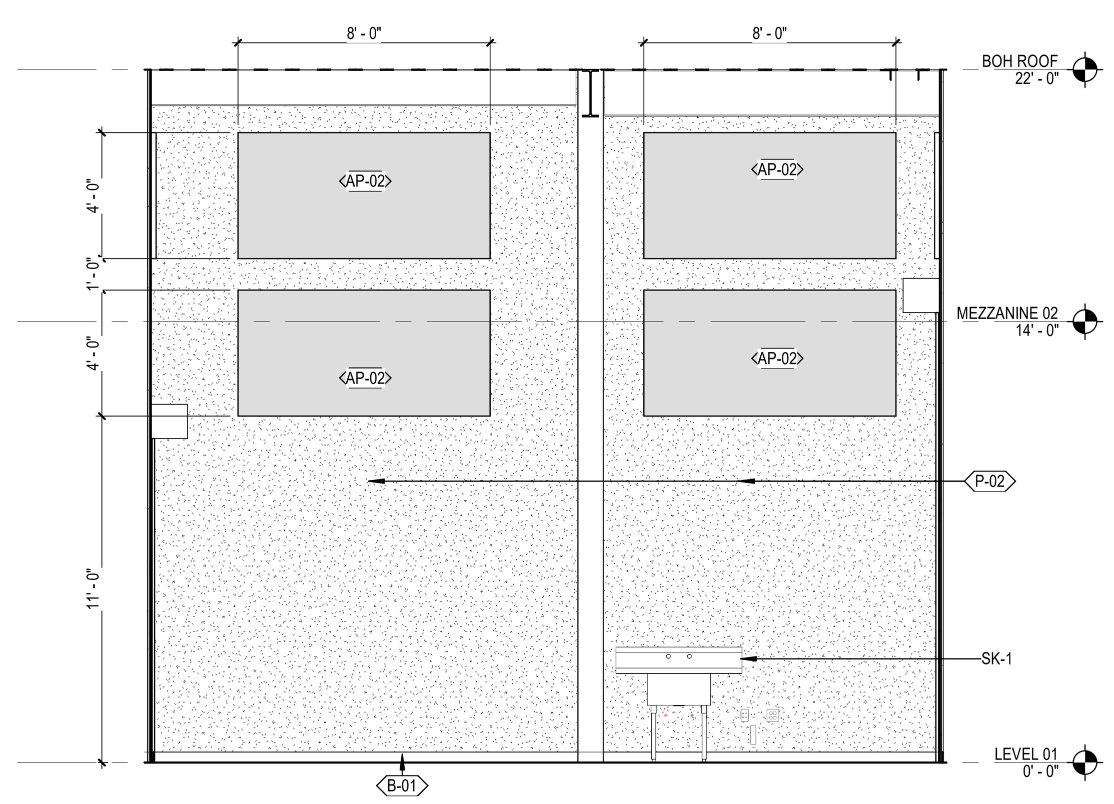
1E A10.9 A113 - ALCOVE - NORTH
SCALE: 1/4" = 1'-0"



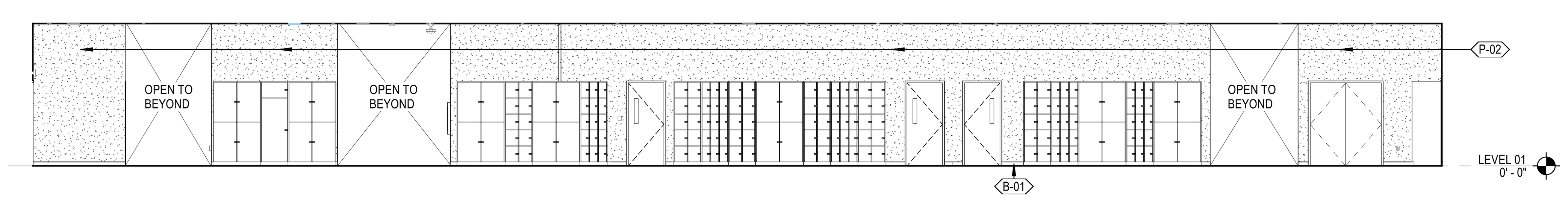
1F A10.9 A113 - ALCOVE - SOUTH
SCALE: 1/4" = 1'-0"



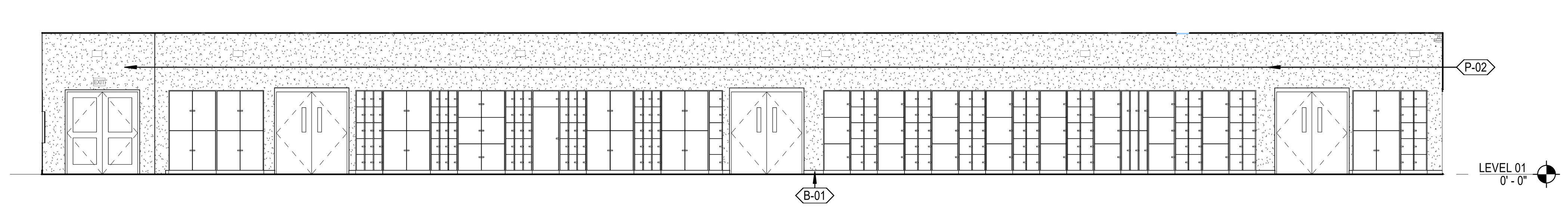
2A A10.9 A116 - WORKSHOP - SOUTH
SCALE: 1/4" = 1'-0"



2C A10.9 A116 - WORKSHOP - WEST
SCALE: 1/4" = 1'-0"



3A A10.9 A112 - B.O.H. CORRIDOR - SOUTH
SCALE: 1/8" = 1'-0"



4A A10.9 A112 - B.O.H. CORRIDOR - NORTH
SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

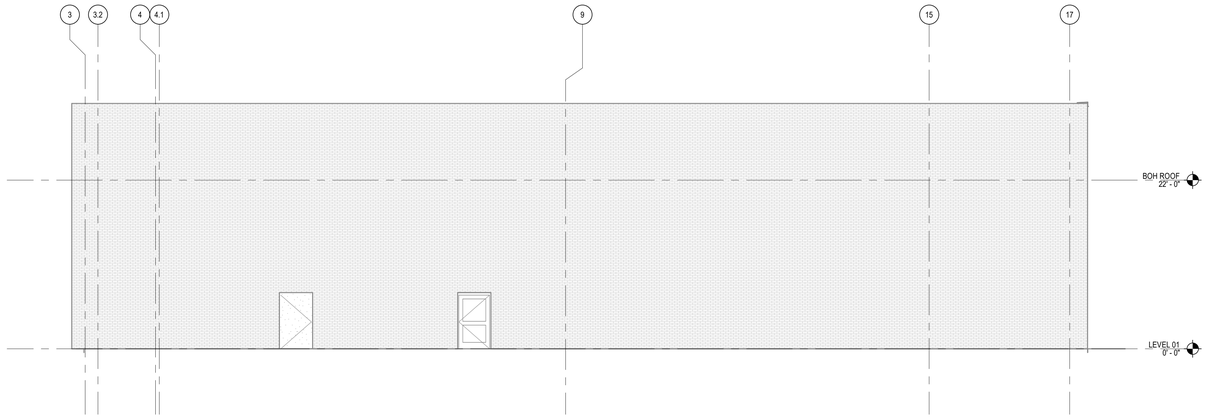
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

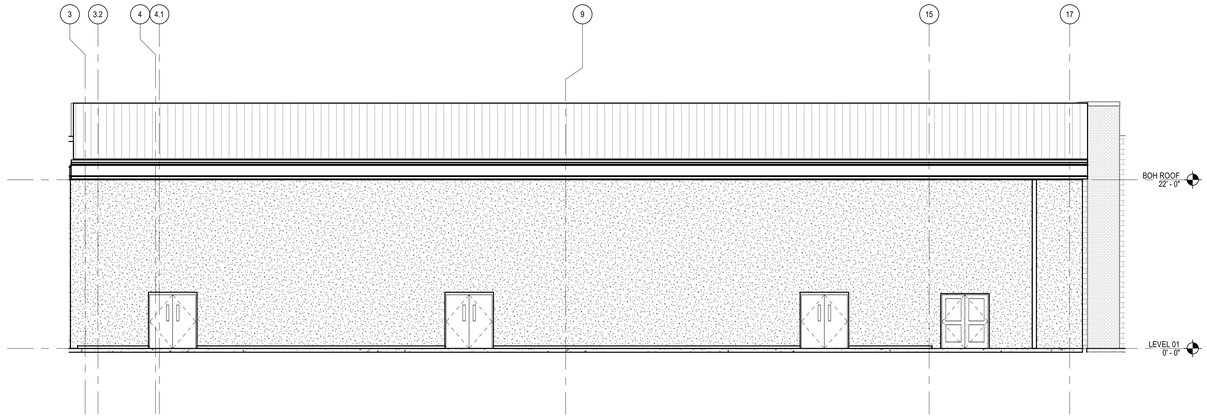
INTERIOR ELEVATIONS

A10.9

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:24:59 PM

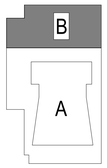


1A
A10.10
DEMO FIRE WALL ELEVATION
SCALE: 1/8" = 1'-0"



3A
A10.10
FIRE WALL ELEVATION
SCALE: 1/8" = 1'-0"

KEY PLAN



DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

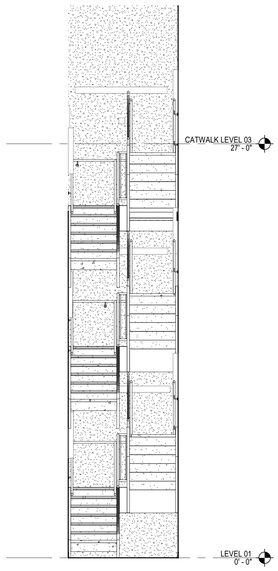
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

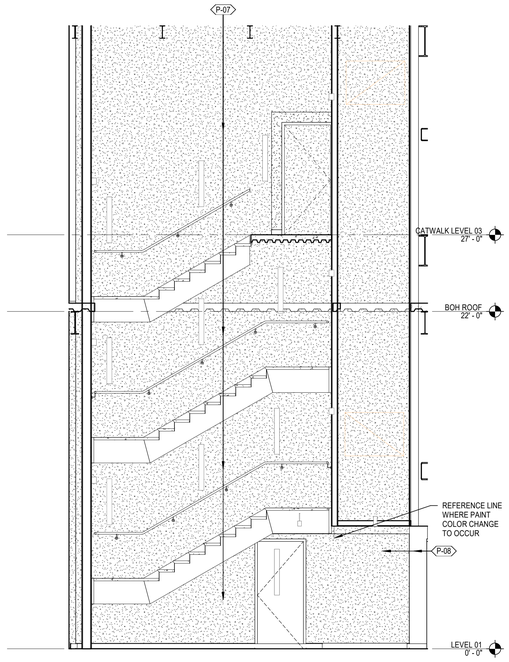
INTERIOR ELEVATIONS

A10.10

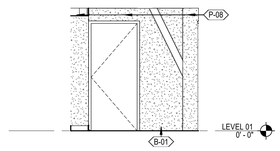
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:00 PM



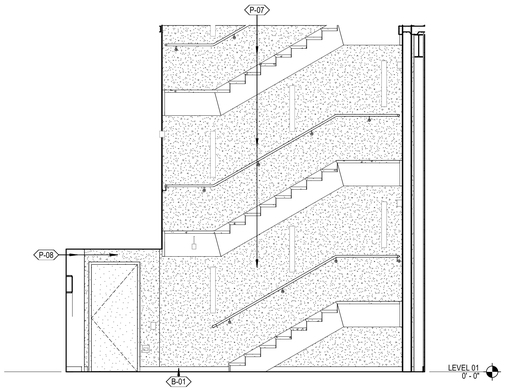
2A A10.11 A144 - STAIR - SOUTH
SCALE: 1/4" = 1'-0"



2B A10.11 A144 - STAIR - WEST
SCALE: 1/4" = 1'-0"

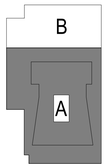


2C A10.11 A144 - STAIR - NORTH
SCALE: 1/4" = 1'-0"



2D A10.11 A144 - STAIR - EAST
SCALE: 1/4" = 1'-0"

KEY PLAN



DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
TEXAS

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

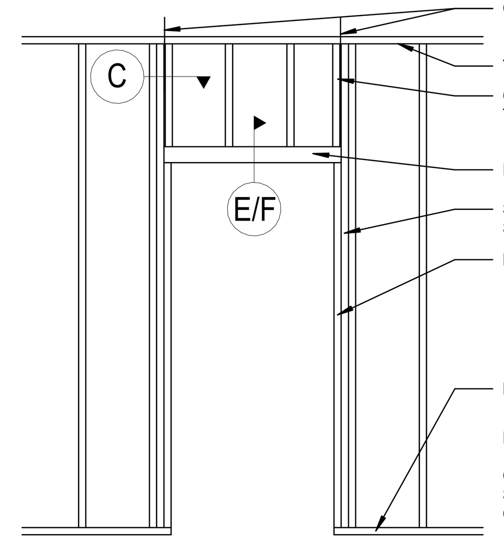
39-23712-00

INTERIOR
ELEVATIONS

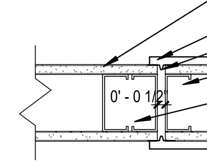
A10.11

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:03 PM

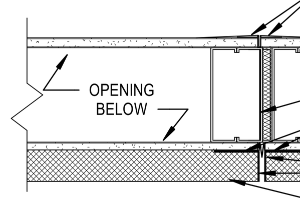
A | B | C | D | E | F



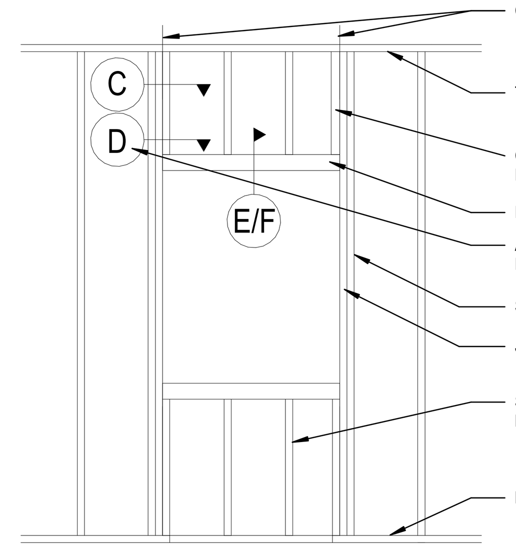
A TYP METAL STUD FRAMING AT DOOR OPENING
NO SCALE



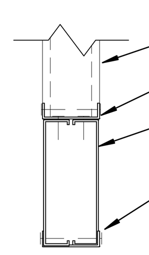
C TYP GWB CONTROL JOINT ABOVE
SCALE: 1-1/2" = 1'-0"



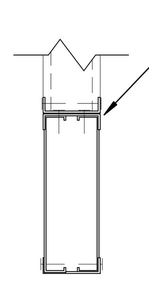
D TYP. VERT. SLIP CONTROL JOINT
SCALE: 1-1/2" = 1'-0"



B TYP. METAL STUD FRAMING AT FRAME OPENING
NO SCALE



E SPAN UP TO 10'-0"



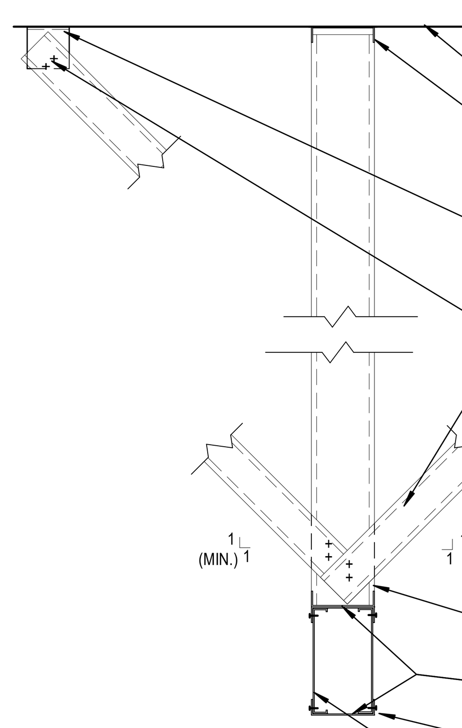
INTERIOR HEADER SCHEDULE

OPENING WIDTH	FRAMING MEMBERS
0' TO 5'-0"	TWO - 3-5/8" x 20 GA
5'-1" TO 10'-0"	TWO - 8" x 20 GA
10'-1" TO 15'-0"	TWO - 10" x 20 GA

NOTE:
1. HEADER SHALL BE UNPUNCHED AND OF THE SIZE AND GAUGE LISTED.
2. SEE STRUCTURAL DETAILS FOR OPENINGS OVER 15'-1".

F SPAN GREATER THAN 10'-0"

2A / A11.1 METAL STUD OPENINGS AND CONTROL JOINTS
SCALE: 1 1/2" = 1'-0"

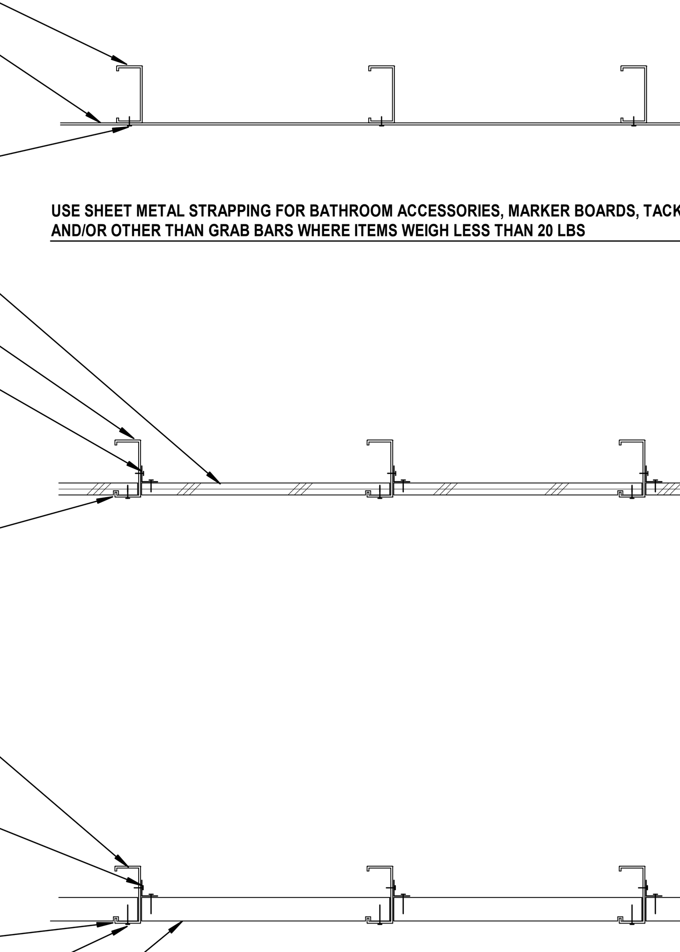


HEADER SCHEDULE

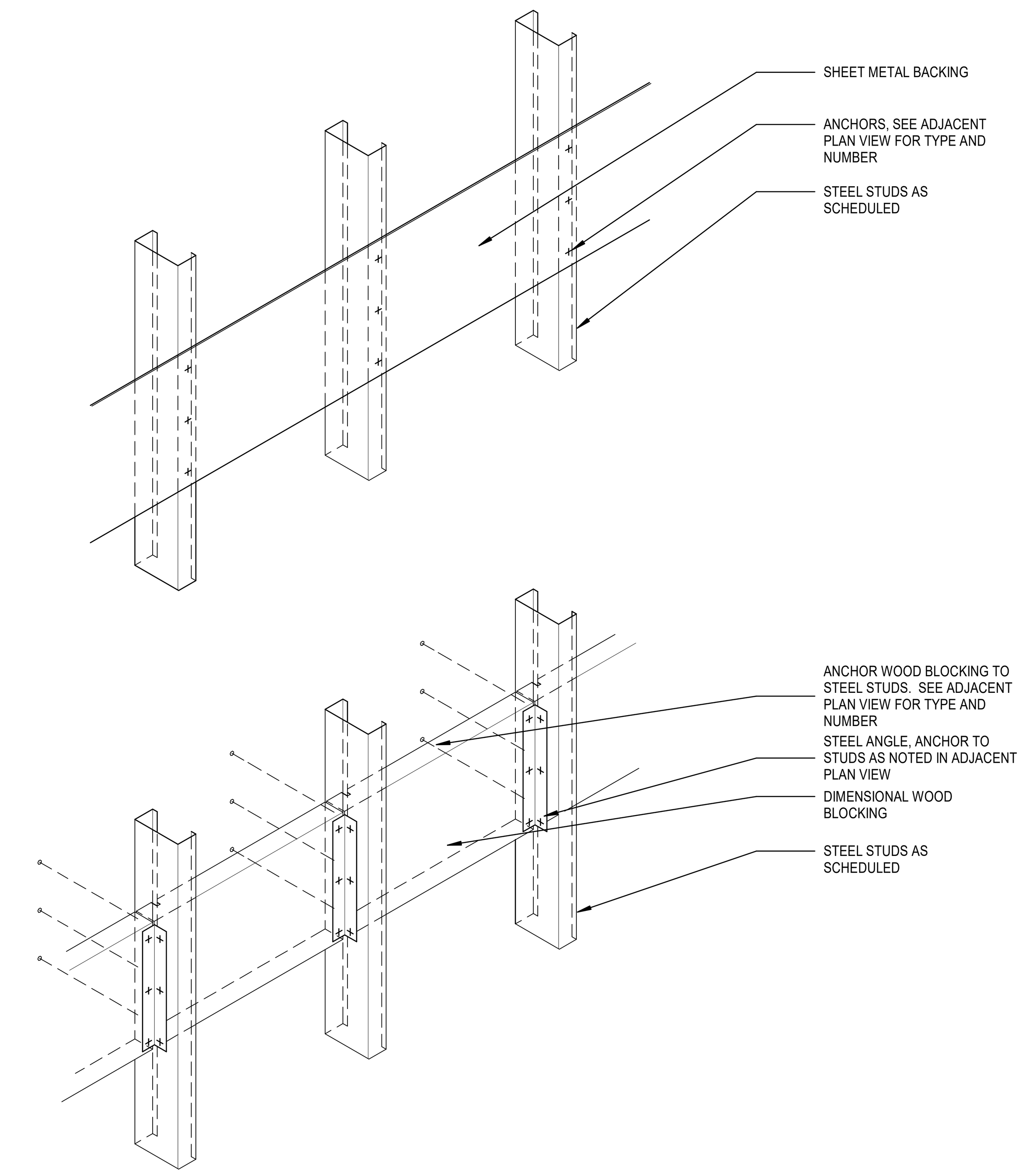
OPENING WIDTH	HEADER SIZE
0 TO 5'-0"	2 - 3-5/8" x 20 GA.
5'-1" TO 10'-0"	2 - 8" x 20 GA.
10'-1" TO 15'-0"	2 - 10" x 20 GA.
15-1" TO 20'-0"	2 - 12" x 18 GA.

NOTES:
1. HEADERS SHALL BE UNPUNCHED AND OF THE SIZE AND GAUGE LISTED.
2. PROVIDE BRACES TO STRUCTURE FOR OPENINGS OVER 15'-0"
3. HEADERS SHALL BE FILLED WITH SOUND DEADENING INSULATION MATERIAL.
4. SEE STRUCTURAL DRAWINGS FOR HEADER CONSTRUCTION AT EXTERIOR STUD WALLS.

2C / A11.1 TYPICAL PARTITION HEADER
SCALE: 1" = 1'-0"



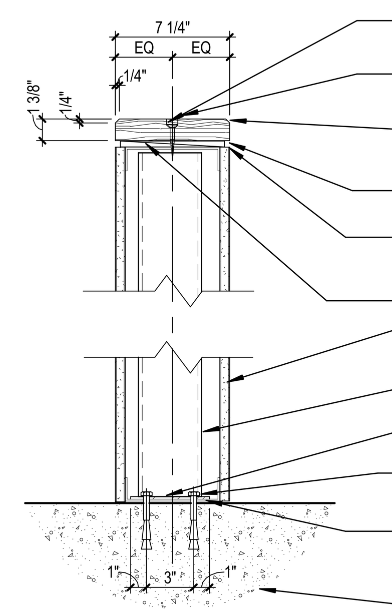
USE SHEET METAL STRAPPING FOR BATHROOM ACCESSORIES, MARKER BOARDS, TACK BOARDS, AND/OR OTHER THAN GRAB BARS WHERE ITEMS WEIGH LESS THAN 20 LBS



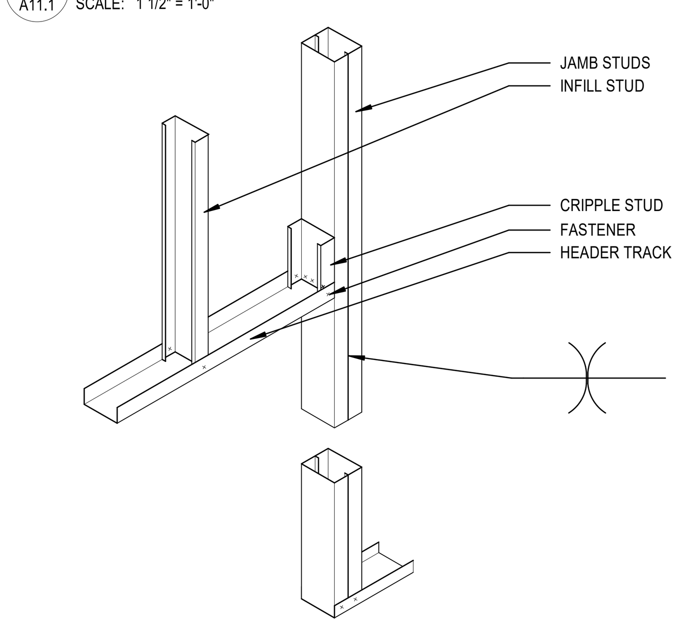
NOTE: DIMENSIONAL WOOD AND PLYWOOD BLOCKING MUST BE FIRE-RETARDANT IN CONSTRUCTION TYPES I AND II AND CAN ONLY BE PERMITTED AT NONBEARING PARTITION WALLS WITH A FIRE RATING OF 2 HOURS OR LESS AND AT NONBEARING EXTERIOR WALLS WHERE NO FIRE RATING IS REQUIRED. REFER TO CODE SHEETS FOR CONSTRUCTION TYPE.

USE WOOD BLOCKING AT DOOR STOPS, GRAB BARS, HANDRAILS, WALL HUNG CABINETS, TOILET PARTITIONS AND/OR OTHER ITEMS WITH A WEIGHT OF 20 LBS OR MORE OR IF ITEM IS CANTILEVERED FROM WALL.

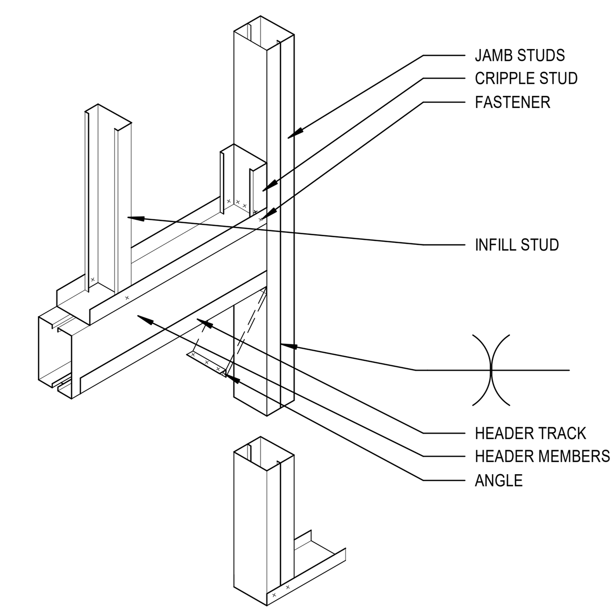
2D / A11.1 TYPICAL BLOCKING IN FRAME WALLS
SCALE: 1 1/2" = 1'-0"



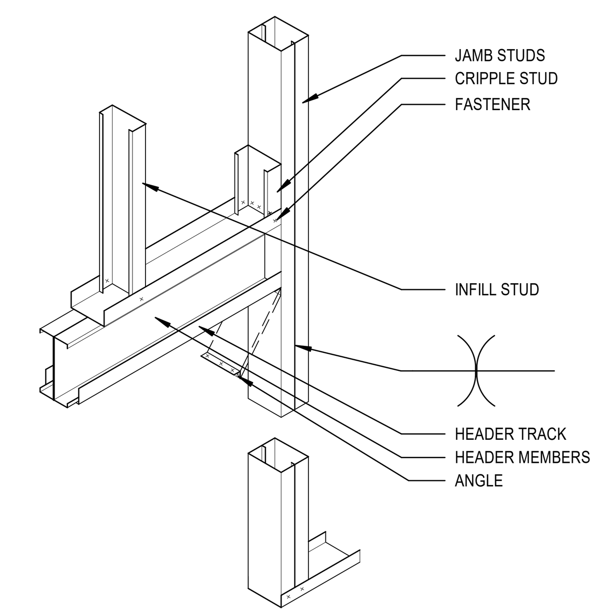
3C / A11.1 WALL DETAIL
SCALE: 1 1/2" = 1'-0"



NON-LOAD BEARING SINGLE TRACK HEADER AT DOOR

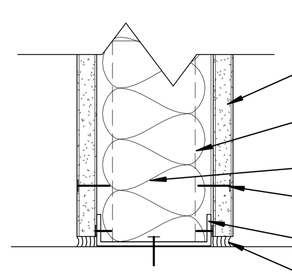


LOAD BEARING BOX HEADER AT DOOR

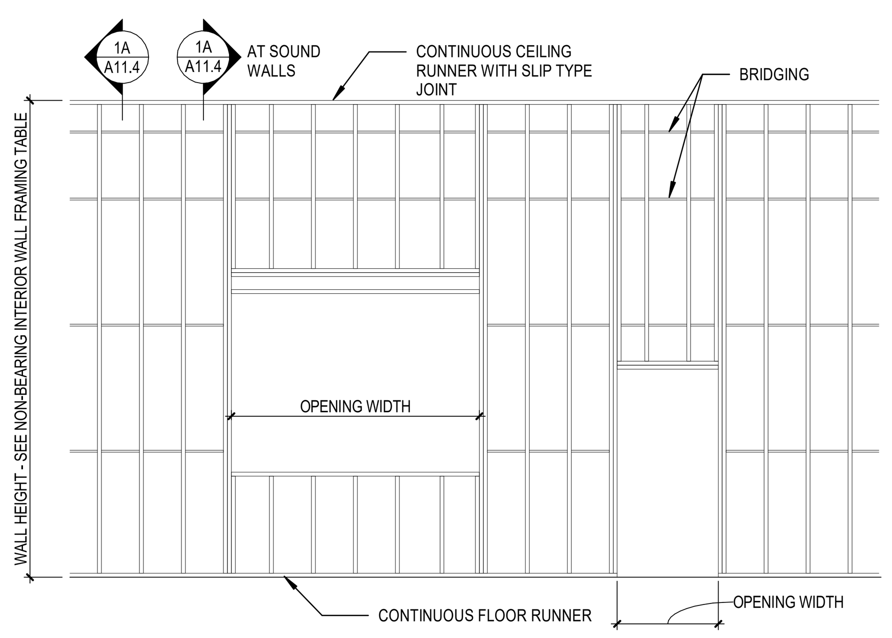


LOAD BEARING BACK TO BACK HEADER AT DOOR

3D / A11.1 TYPICAL DOOR OPENING FOR LIGHT GAUGE FRAMING
SCALE: 1" = 1'-0"



5C / A11.1 TYPICAL SOUND WALL SILL JOINT
SCALE: 3" = 1'-0"

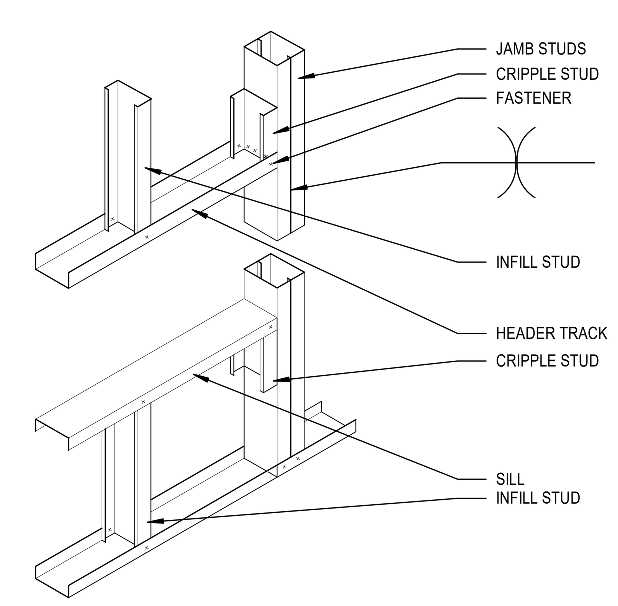


NON-BEARING INTERIOR WALL FRAMING TABLE

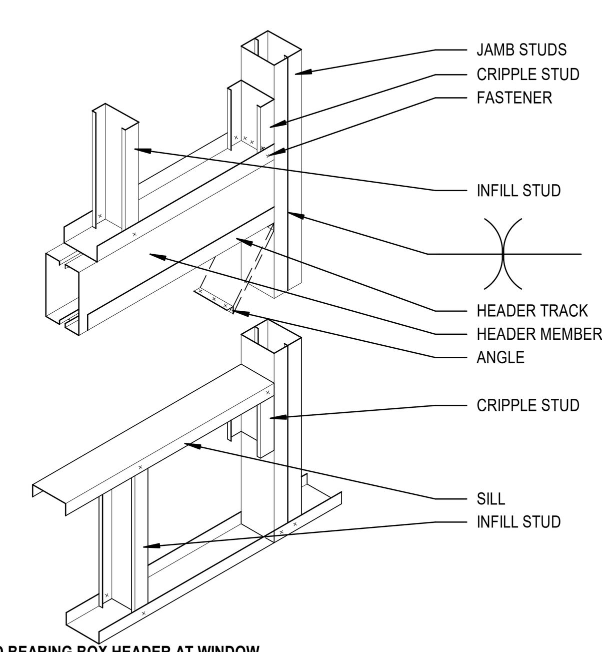
STUD SIZE	MAXIMUM HEIGHT, SPACING IN INCHES: 12	16	24	DESIGN BASED ON SSMA SIZE
3-5/8" X 25 GAUGE	13'-8"	12'-5"	10'-10"	350S125-18
3-5/8" X 20 GAUGE	18'-5"	16'-9"	14'-7"	362S137-33
6" X 20 GAUGE	27'-5"	24'-11"	21'-9"	6000S137-33
8" X 20 GAUGE	34'-8"	31'-6"	27'-6"	8000S137-33

(SSMA - STEEL STUD MANUFACTURER'S ASSOCIATION)

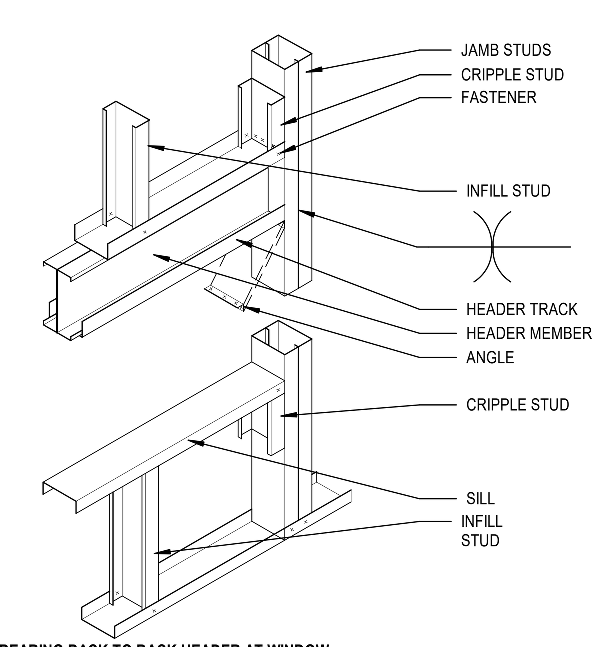
4B / A11.1 NON-LOAD BEARING INTERIOR WALL FRAMING AND SCHEDULE
SCALE: 1/4" = 1'-0"



SINGLE TRACK WINDOW HEADER AT NON-LOAD BEARING INTERIOR WALL

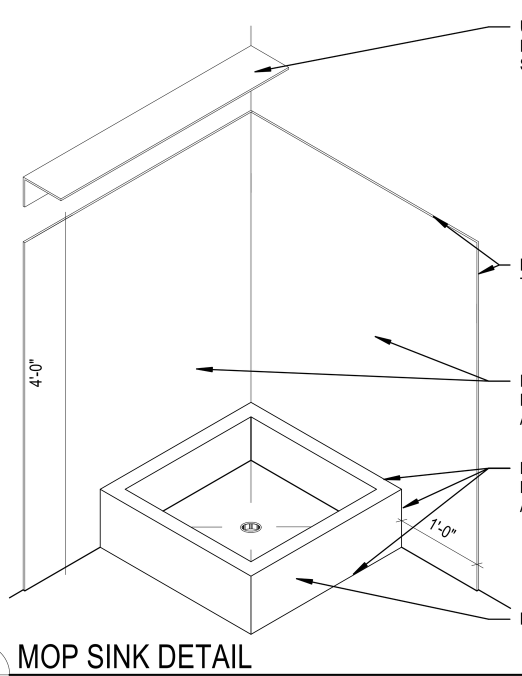


LOAD BEARING BOX HEADER AT WINDOW

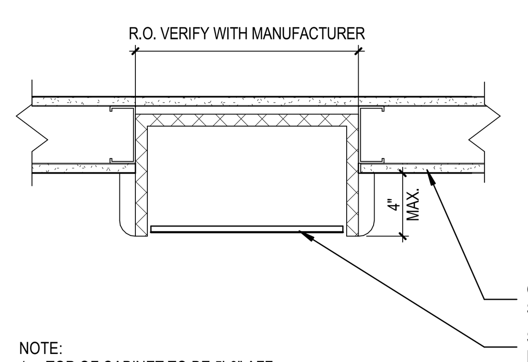


LOAD BEARING BACK TO BACK HEADER AT WINDOW

4D / A11.1 TYP. WINDOW OPENING FOR LIGHT GAUGE FRAMING
SCALE: 1" = 1'-0"

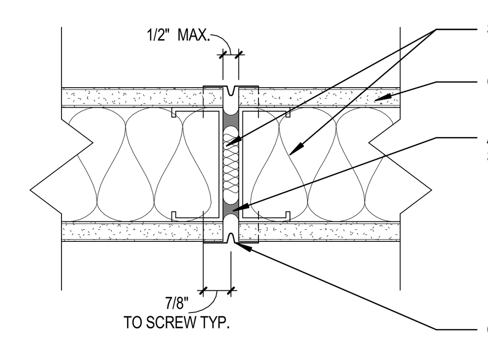


5A / A11.1 MOP SINK DETAIL
SCALE: 3/4" = 1'-0"

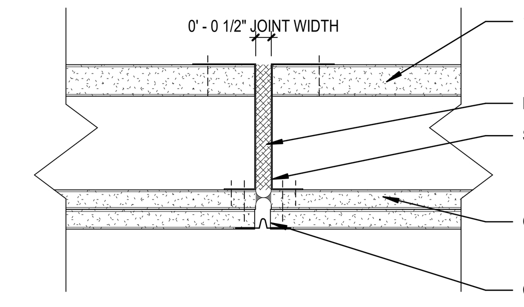


NOTE:
1. TOP OF CABINET TO BE 5'-0" AFF
2. VERIFY DIMENSIONS AND WALL SUPPORT REQ'S W/ CABINET MFR
3. PROVIDE FIRE RATED CABINET ASSEMBLY AT FIRE RATED WALL LOCATIONS

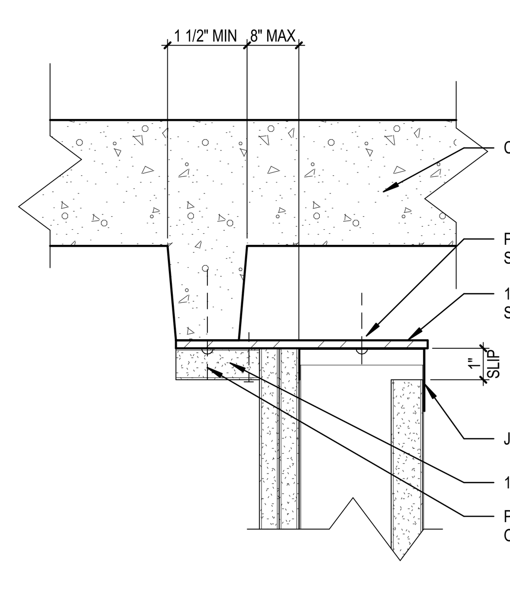
5B / A11.1 SEMI-RECESSED FEC AT METAL STUD WALL
SCALE: 1 1/2" = 1'-0"



5D / A11.1 CONTROL JOINT - SOUND WALL
SCALE: 3" = 1'-0"



5E / A11.1 CONTROL JOINT - SHAFT WALL
SCALE: 3" = 1'-0"



5F / A11.1 SHAFT WALL TO DECK CONNECTION
SCALE: 3" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 20568
07.25.2024

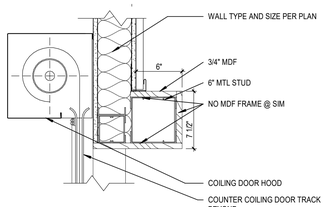
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

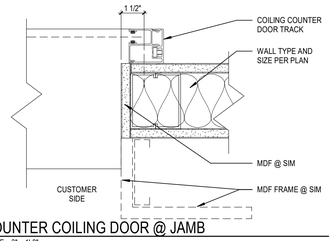
39-23712-00

INTERIOR DETAILS - PARTITIONS

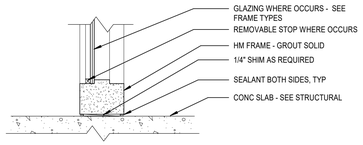
A11.1



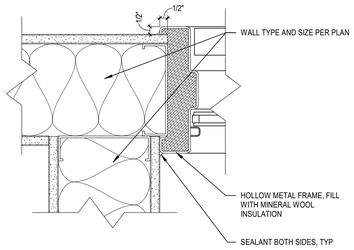
1A A11.2 HEAD @ COILING COUNTER DOOR, WALL MOUNT
SCALE: 1 1/2" = 1'-0"



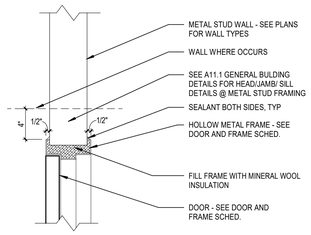
1B A11.2 COUNTER COILING DOOR @ JAMB
SCALE: 3" = 1'-0"



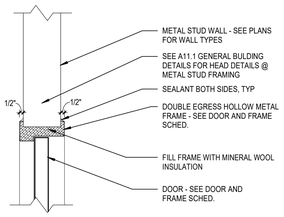
1C A11.2 SILL @ FLOOR
SCALE: 1 1/2" = 1'-0"



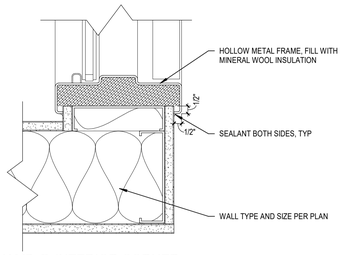
1D A11.2 HM JAMB @ INTERIOR CORNER
SCALE: 3" = 1'-0"



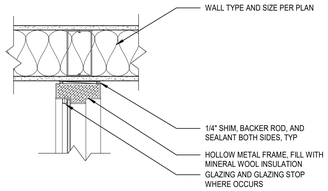
1E A11.2 HEAD / JAMB @ DOOR
SCALE: 1 1/2" = 1'-0"



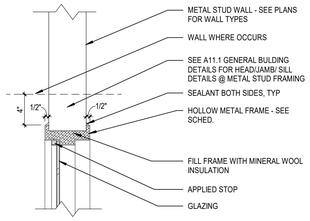
2A A11.2 HEAD @ DOUBLE EGRESS DOOR
SCALE: 1 1/2" = 1'-0"



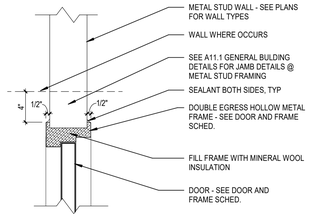
2B A11.2 HM JAMB @ INTERIOR CORNER
SCALE: 3" = 1'-0"



2C A11.2 HM JAMB @ INTERIOR PERP. TO WALL
SCALE: 1 1/2" = 1'-0"



2D A11.2 HEAD / JAMB / SILL @ WINDOW
SCALE: 1 1/2" = 1'-0"



2E A11.2 JAMB @ DOUBLE EGRESS DOOR
SCALE: 1 1/2" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT 24000

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

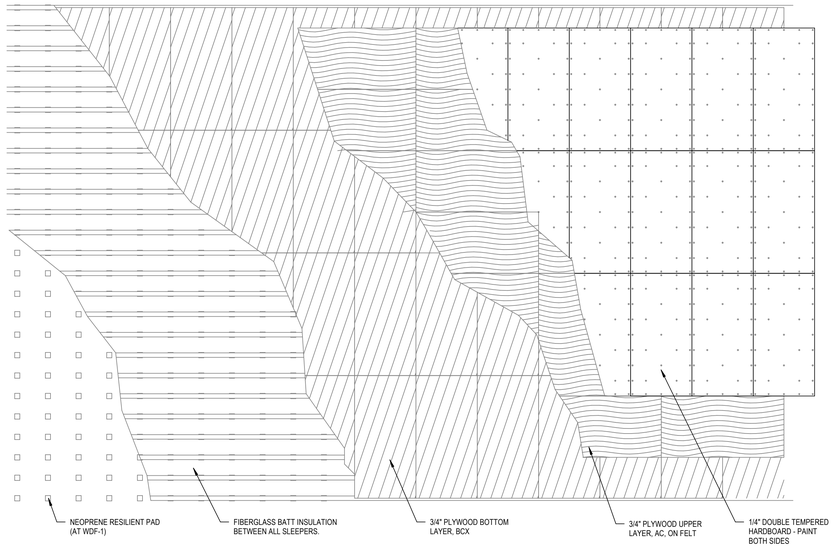
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

INTEROR DETAILS - DOOR AND FRAME

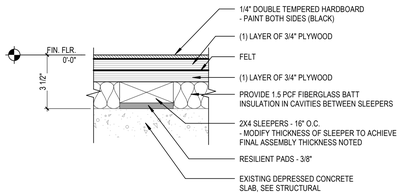
A11.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:06 PM

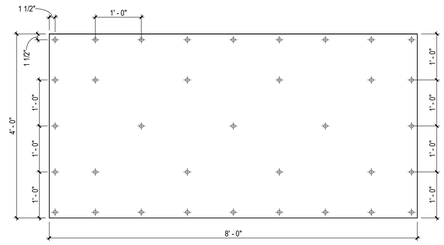


NOTE:
BASIS OF DESIGN FOR RESILIENT PADS: MASON, SEE SPECS

2A A11.3 STAGE FLOOR - LAYERS
SCALE: 1/4" = 1'-0"

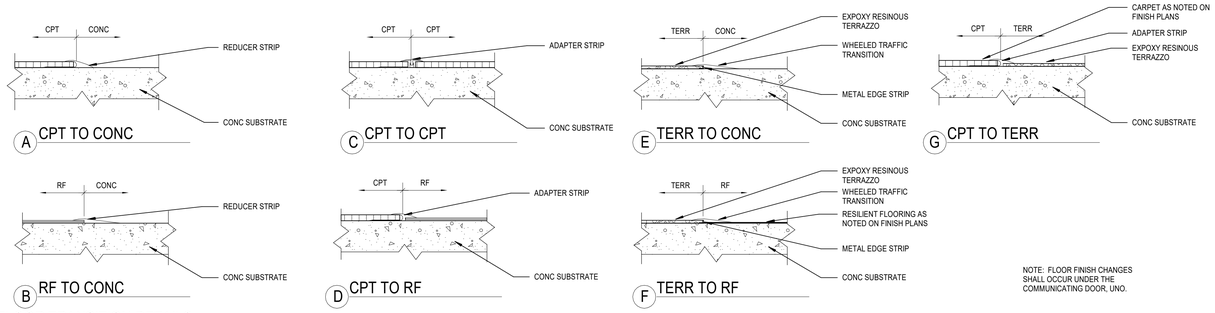


1D A11.3 FLOOR TYPE F-4 (THEATER STAGE)
SCALE: 3" = 1'-0"



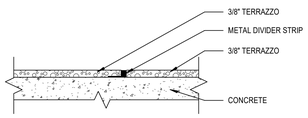
- 4' X 8' X 1/4" DOUBLE TEMPERED (TEMPERED BOTH SIDES) PRESSED HARDBOARD PANELS (DPI PREMIUM SIGNATURE S2S)
- MAXIMUM 1/16" SPACE BETWEEN PANELS
- SCREW DOWN ONLY - DO NOT NAIL, STAPLE OR GLUE
- USE MIN. 1" #10 FLAT HEAD TAPPING SCREWS - DO NOT USE DRYWALL SCREWS
- SCREW HEADS MUST BE COUNTERSUNK AND FLUSH TO PANEL SURFACE

1E A11.3 STAGE FLOOR - SCREW PATTERN
SCALE: 3/4" = 1'-0"



NOTE: FLOOR FINISH CHANGES SHALL OCCUR UNDER THE COMMUNICATING DOOR, UNO.

1 A11.3 FLOOR TRANSITION DETAILS
SCALE: 1 1/2" = 1'-0"



4 A11.3 TERRAZZO DIVIDER STRIP DETAIL
SCALE: 12" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

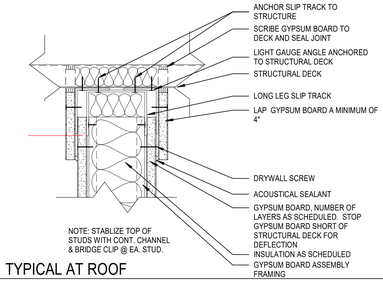
INTERIOR DETAILS - FLOORING

A11.3

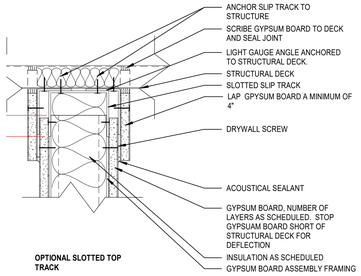
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:07 PM

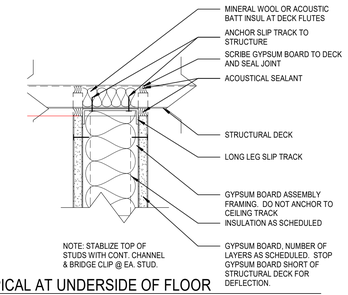
A B C D E F

1



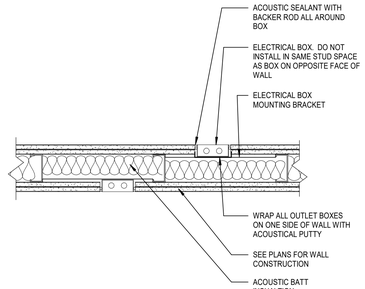
TYPICAL AT ROOF



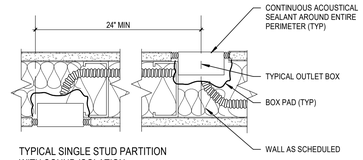


TYPICAL AT UNDERSIDE OF FLOOR

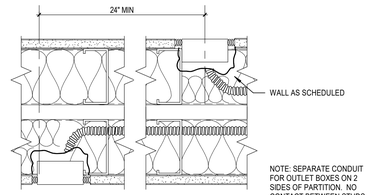
1A A11.4 TYP WALL DEFLECTION HEAD OF WALL JOINT
SCALE: 3" = 1'-0"



1D A11.4 TYP SOUND WALL ELEC/COMM OUTLET BOX INSTALL
SCALE: 1 1/2" = 1'-0"



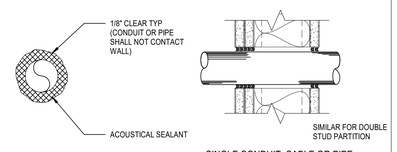
TYPICAL SINGLE STUD PARTITION WITH SOUND ISOLATION



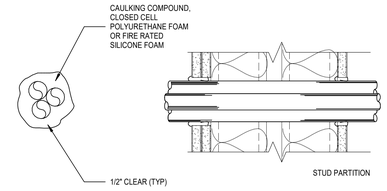
TYPICAL DOUBLE STUD PARTITION WITH SOUND ISOLATION (SIMILAR FOR STAGGERED STUDS)

NOTES:
1. PLACE OUTLET BOXES IN SEPARATE STUD SPACES
2. BACK-TO-BACK OUTLETS NOT PERMITTED.
3. PLUG ALL UNUSED KNOCK-OUTS IN OUTLET BOXES WITH KNOCK-OUT CAPS.
4. PROVIDE BACKING EQUIVALENT TO "LOWRY'S" OUTLET BOX PADS(HARRY A. LOWRY & ASSOCIATES INC. (800) 225-8231)
5. DEPTH OF OUTLET BOX MUST BE COMPATIBLE WITH STUD SIZE IN ORDER TO ACCOMMODATE BOX PAD.
6. ACOUSTICAL BOX PAD REQUIREMENT APPLIES TO ALL PARTITION WITH ACOUSTICAL INSULATION.
7. USE OF MUD RINGS WITHOUT ELECTRICAL BOXES SHOULD NOT BE ALLOWED.

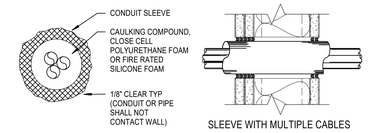
APPLIES TO POWER, PHONE, COMMUNICATIONS, ETC.



SINGLE CONDUIT, CABLE OR PIPE



MULTIPLE CONDUIT

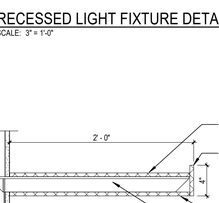


SLEEVE WITH MULTIPLE CABLES

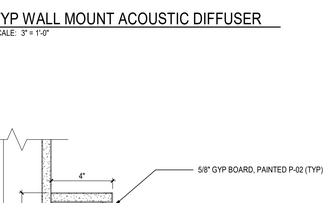
PENETRATIONS OF ACOUSTICAL PARTITIONS BY CONDUIT, CABLE, PIPES ETC SHALL BE ACOUSTICALLY SEALED AS SHOWN. ANY GAP LARGER THAN 1/2" SHALL BE COVERED WITH GYPSUM BOARD, LAPPED A MINIMUM OF 2" AND SCREWED BEFORE USING ACOUSTICAL SEALANT. CABLE TRAYS SHOULD NOT PENETRATE SLAB-TO-SLAB PARTITIONS. A CONDUIT SLEEVE SHOULD BE USED AT SUCH PENETRATIONS AND SEALED AS SHOWN ON THIS DETAIL.

FLEXIBLE DUCT, PIPE, CONDUIT, ETC CONNECTIONS SHOULD BE INCORPORATED BETWEEN ROOMS WHERE RESILIENTLY ISOLATED FLOORS, WALLS OR CEILING LIDS OCCUR.

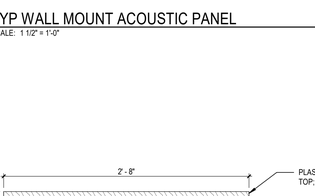
2



GYPSUM BOARD TO GYPSUM BOARD INTERSECTION

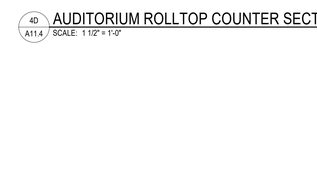


GYPSUM BOARD TO MASONRY WALL WITH FURRING INTERSCTION



GYPSUM BOARD TO MASONRY INTERSECTION

2A A11.4 TYPICAL SOUND WALL INTERSECTION
SCALE: 1 1/2" = 1'-0"

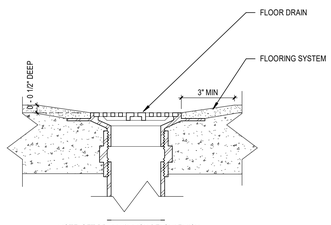


2E A11.4 CONTROL JOINT - SOUND WALL
SCALE: 3" = 1'-0"

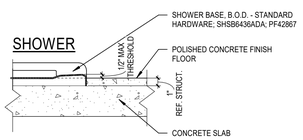
2D A11.4 TYPICAL SOUNDWALL OUTLET BOX INSTALLATION
SCALE: 3" = 1'-0"

2F A11.4 ACOUSTIC-TREATED PENETRATIONS @ SOUND WALLS
SCALE: 3" = 1'-0"

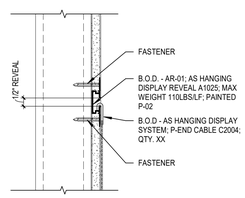
3



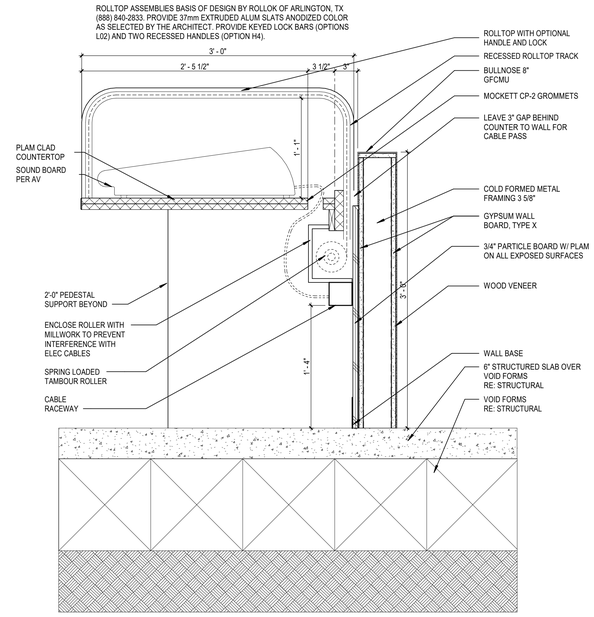
3A A11.4 DRAIN IN RESINOUS FLOORING
SCALE: 3" = 1'-0"



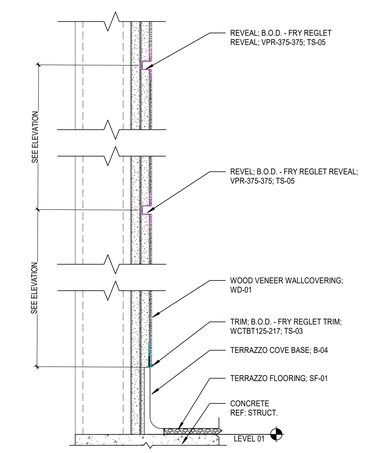
3B A11.4 ACCESSIBLE SHOWER CURB
SCALE: 1 1/2" = 1'-0"



3C A11.4 ART RAIL DETAIL
SCALE: 3" = 1'-0"

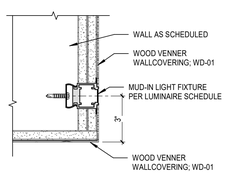


4D A11.4 AUDITORIUM ROLLTOP COUNTER SECTION
SCALE: 1 1/2" = 1'-0"

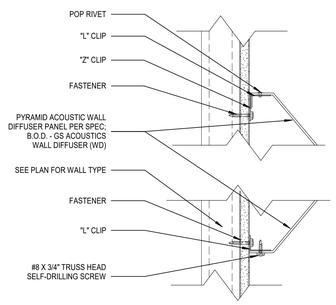


4E A11.4 WOOD VENEER REVEAL DETAIL
SCALE: 3" = 1'-0"

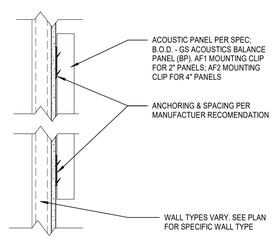
4



4A A11.4 RECESSED LIGHT FIXTURE DETAIL
SCALE: 3" = 1'-0"

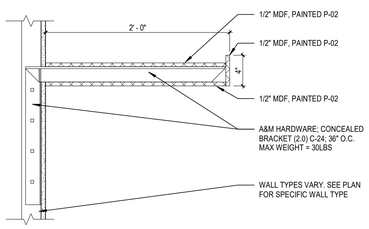


4B A11.4 TYP WALL MOUNT ACOUSTIC DIFFUSER
SCALE: 3" = 1'-0"

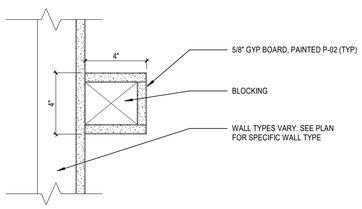


4C A11.4 TYP WALL MOUNT ACOUSTIC PANEL
SCALE: 1 1/2" = 1'-0"

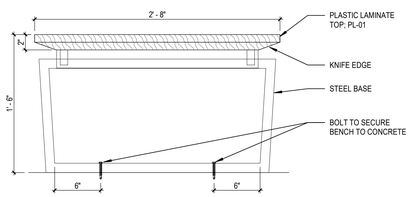
5



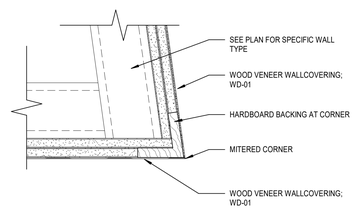
5A A11.4 TROPHY SHELF
SCALE: 1 1/2" = 1'-0"



5B A11.4 WALL DETAIL
SCALE: 3" = 1'-0"



5C A11.4 MILLWORK - BENCH DETAIL
SCALE: 1 1/2" = 1'-0"



5F A11.4 WOOD VENEER CORNER DETAIL
SCALE: 3" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

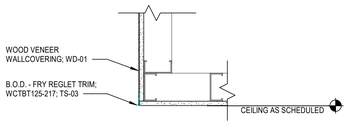
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

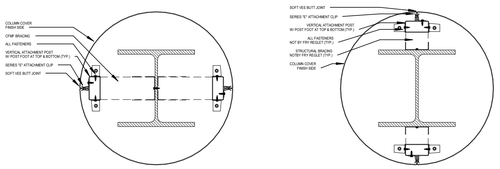
INTERIOR DETAILS - GENERAL

A11.4

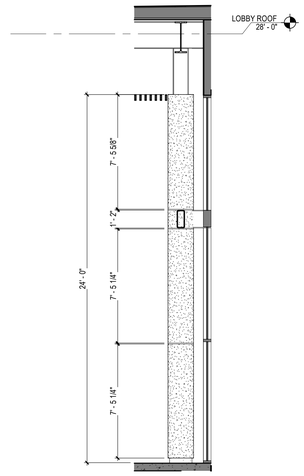
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:08 PM



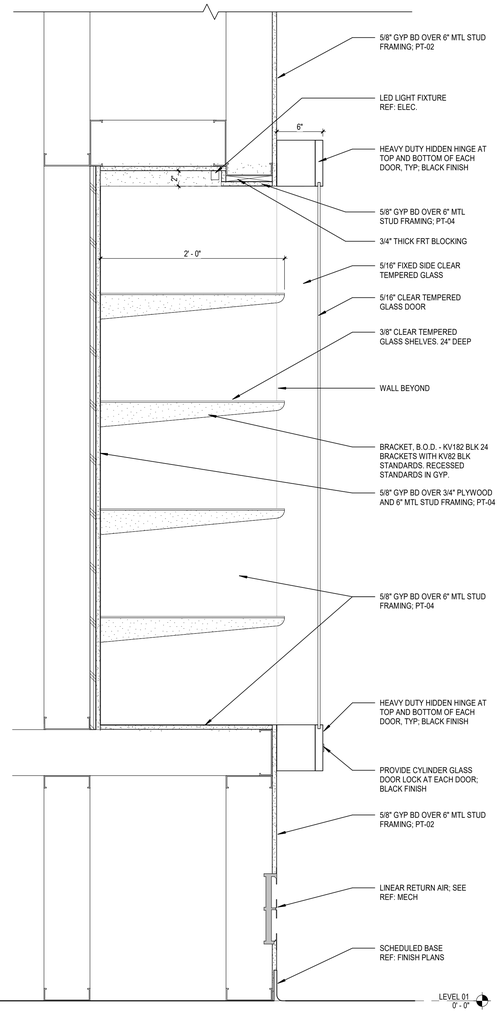
1A A11.5 WOOD VENEER CORNER DETAIL
SCALE: 1 1/2" = 1'-0"



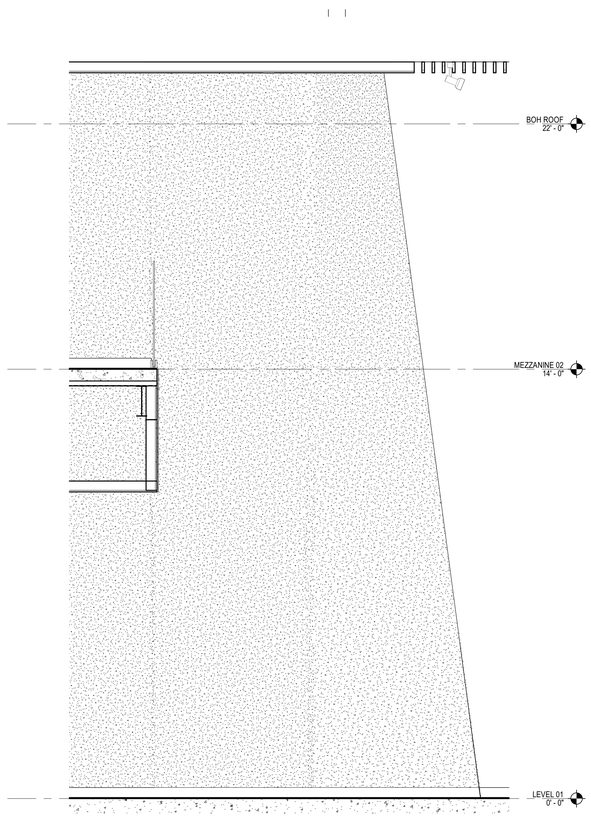
2A A11.5 COLUMN WRAP CONNECTION DETAIL
SCALE: 1 1/2" = 1'-0"



2C A11.5 COLUMN WRAP CONNECTION
SCALE: 1/4" = 1'-0"



5A A11.5 SECTION DETAIL DISPLAY CASE
SCALE: 1 1/2" = 1'-0"



5C A11.5 LOBBY ARTICULATING WALL
SCALE: 1/2" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

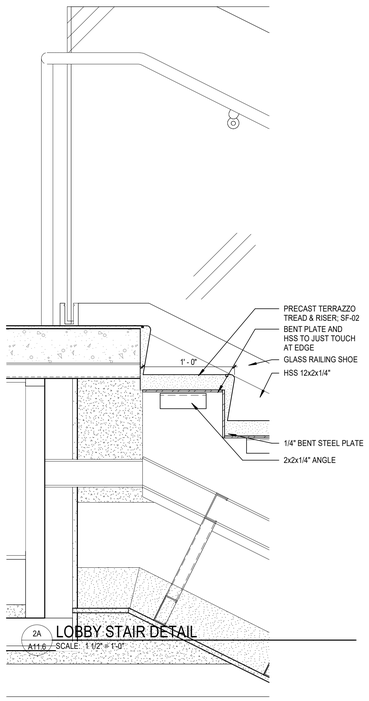
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

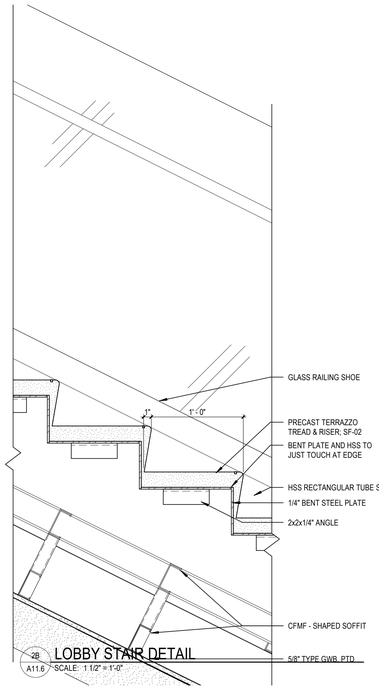
INTERIOR
DETAILS -
GENERAL CONT.

A11.5

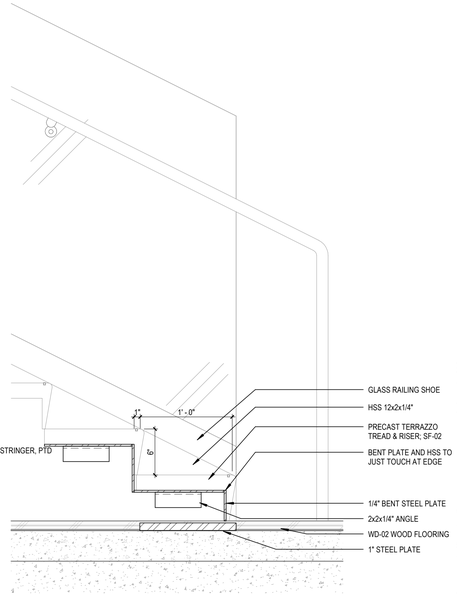
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:11 PM



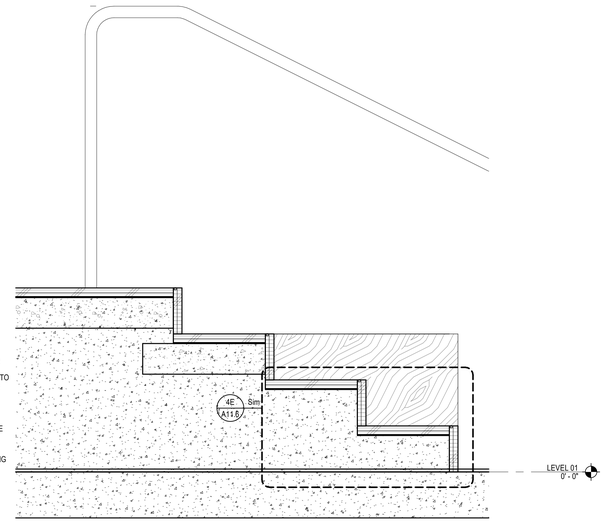
2A A11.6 LOBBY STAIR DETAIL
SCALE: 1 1/2" = 1'-0"



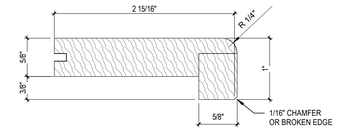
2B A11.6 LOBBY STAIR DETAIL
SCALE: 1 1/2" = 1'-0"



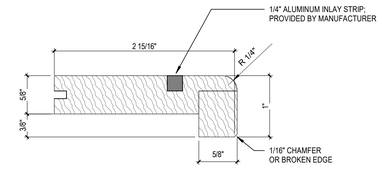
2C A11.6 LOBBY STAIR DETAIL
SCALE: 1 1/2" = 1'-0"



2D A11.6 LOBBY STAIR DETAIL
SCALE: 1 1/2" = 1'-0"



1F A11.6 WD-04 NOSING DETAIL
SCALE: 12" = 1'-0"



2F A11.6 WD-05 NOSING DETAIL WITH INLAY STRIP
SCALE: 12" = 1'-0"

4A A11.6 B.O.H. STAIR DETAIL
SCALE: 1 1/2" = 1'-0"

4B A11.6 B.O.H. STAIR DETAIL
SCALE: 1 1/2" = 1'-0"

4C A11.6 B.O.H. STAIR DETAIL
SCALE: 1 1/2" = 1'-0"

4D A11.6 PLINTH SEATING DETAIL
SCALE: 3" = 1'-0"

4E A11.6 PLINTH STAIR NOSING
SCALE: 3" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT STATE OF TEXAS
7/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

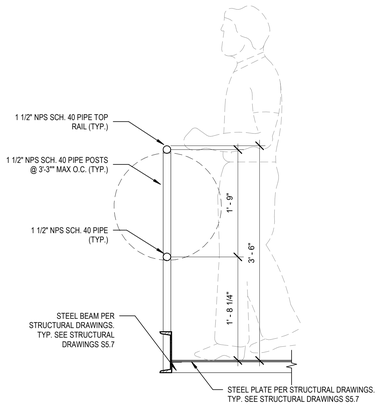
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

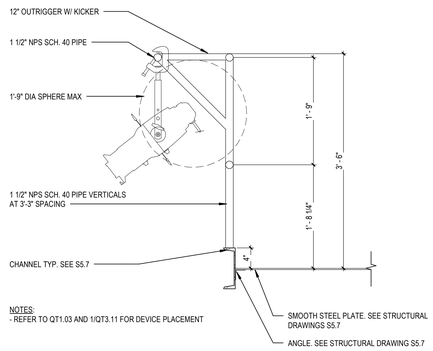
INTERIOR DETAILS - VERTICAL CIRCULATION

A11.6

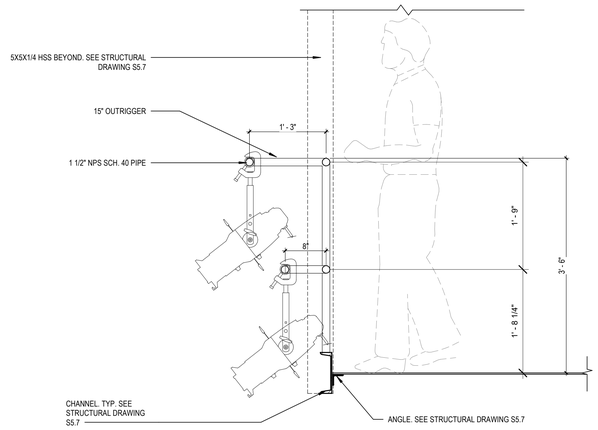
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:12 PM



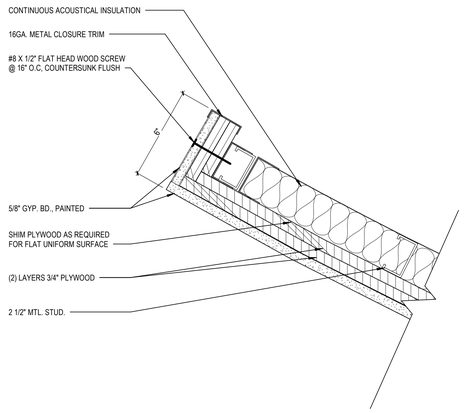
2A A11.7 RLG-15 - RAILING SECTION @ CATWALK
SCALE: 1" = 1'-0"



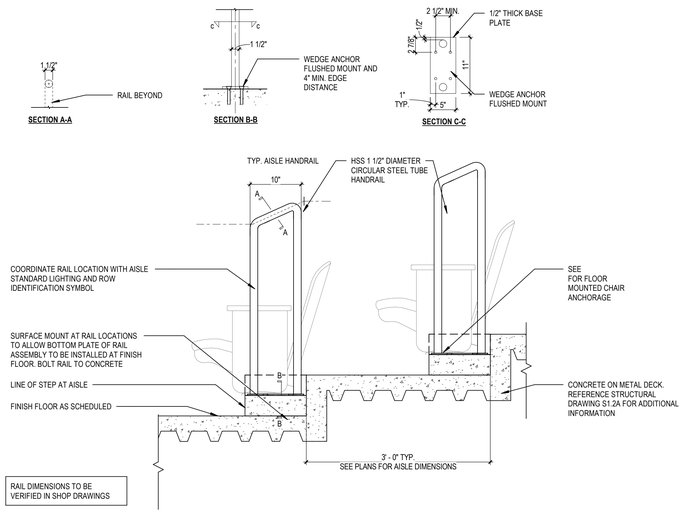
2B A11.7 RLG-14 - RAILING WITH LIGHTING OUTRIGGER @ CATWALK
SCALE: 1" = 1'-0"



2D A11.7 RLG-16 - RAILING WITH DOUBLE LIGHTING OUTRIGGER @ CATWALK
SCALE: 1" = 1'-0"



3A A11.7 ACOUSTIC REFLECTOR PROFILE EDGE DETAIL
SCALE: 3" = 1'-0"



5A A11.7 AISLE RAIL DETAILS
SCALE: 1" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT 12-06-23

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

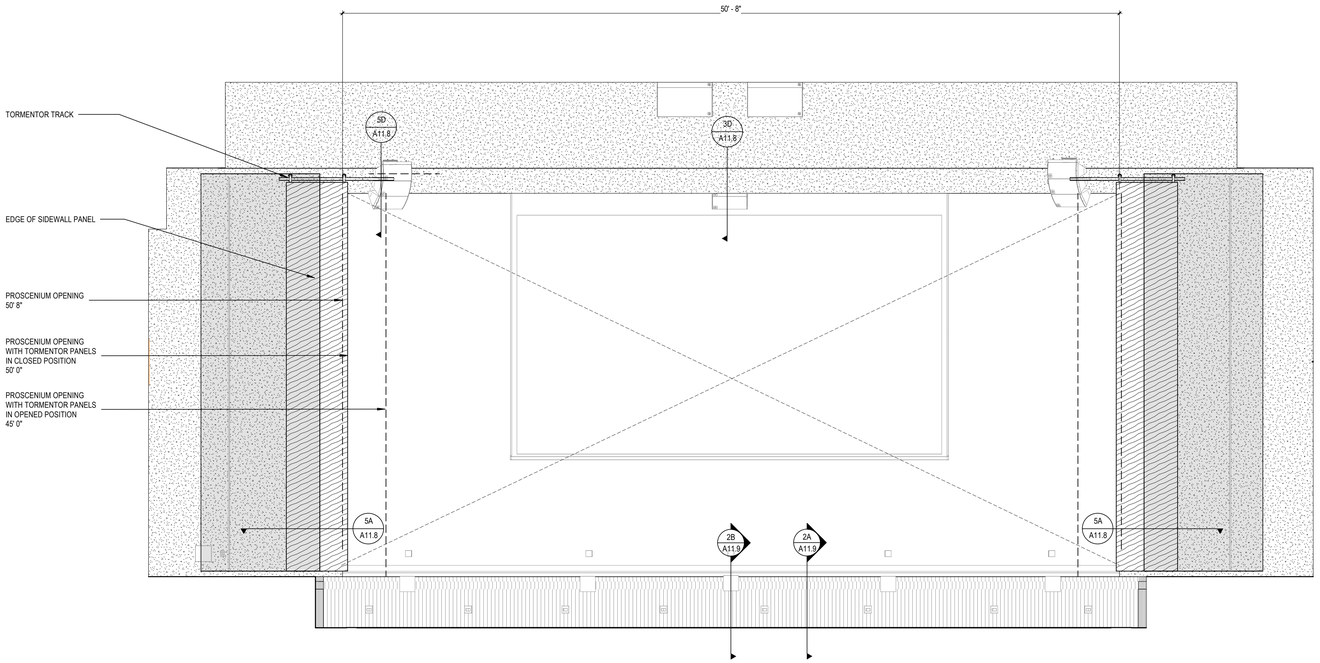
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

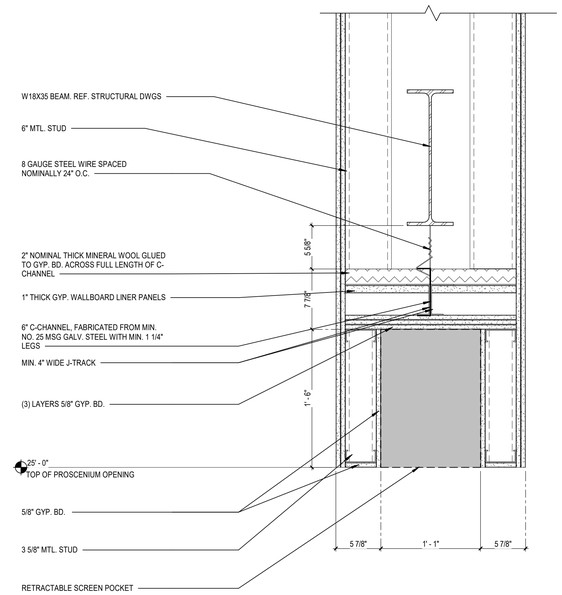
INTERIOR DETAILS - AUDIENCE CHAMBER

A11.7

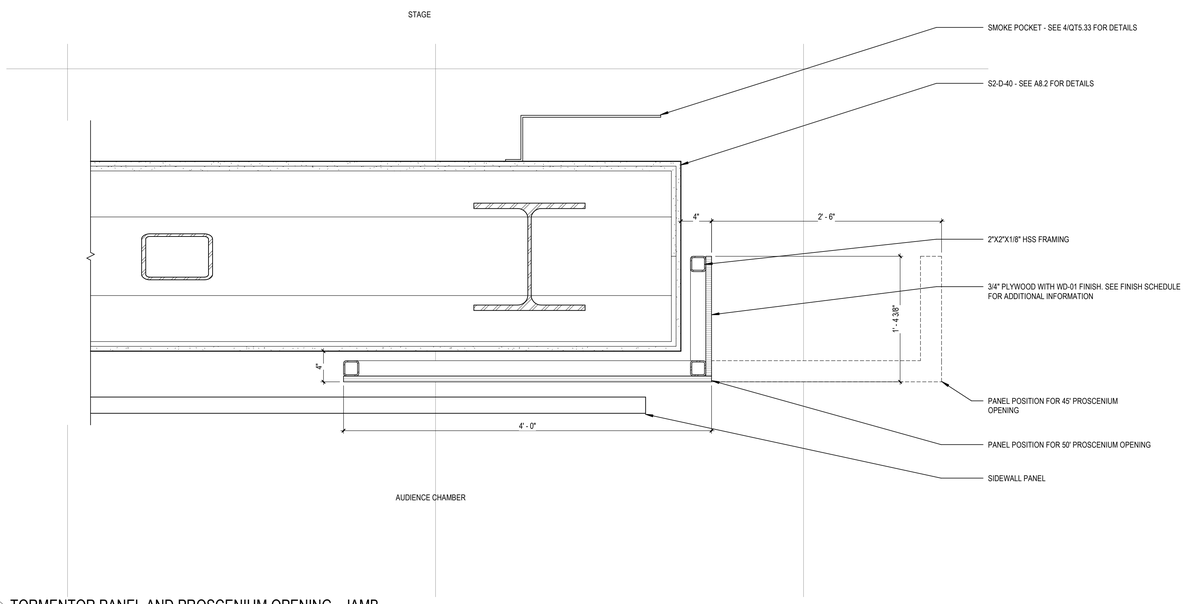
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:12 PM



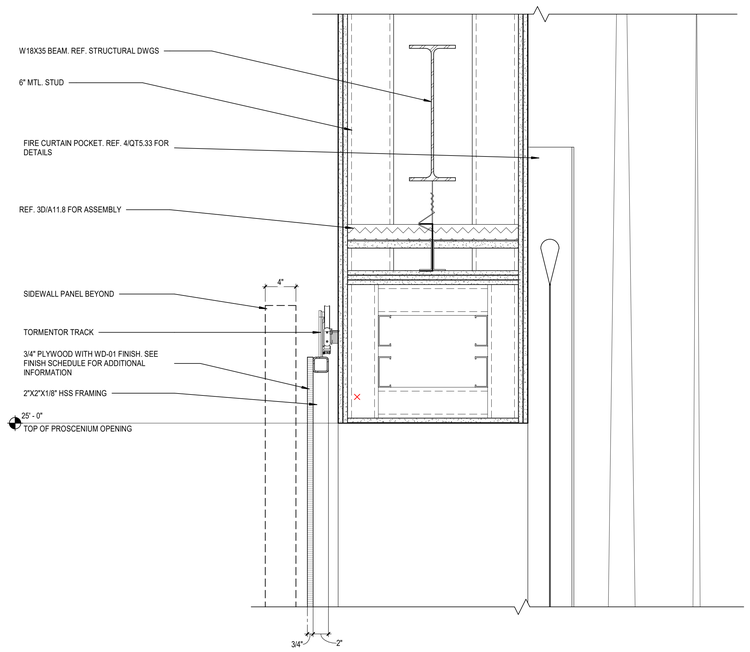
3A / A11.8 PROSCENIUM OPENING ELEVATION
SCALE: 1/4" = 1'-0"



3D / A11.8 PROSCENIUM HEADER AT PROJECTION SCREEN POCKET
SCALE: 1 1/2" = 1'-0"



5A / A11.8 TORMENTOR PANEL AND PROSCENIUM OPENING - JAMB
SCALE: 1 1/2" = 1'-0"



5D / A11.8 TORMENTOR PANEL AND PROSCENIUM OPENING - HEADER
SCALE: 1 1/2" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT
CHARLES E. BRANT
TEXAS
07/25/2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

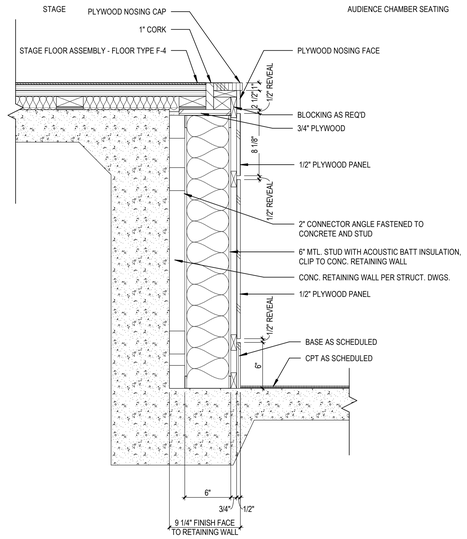
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

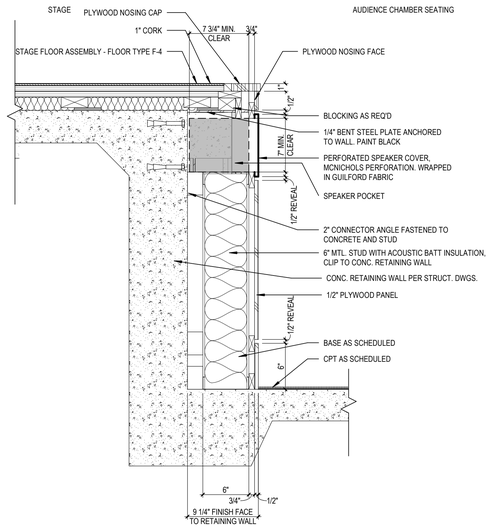
INTERIOR
DETAILS -
AUDIENCE
CHAMBER

A11.8

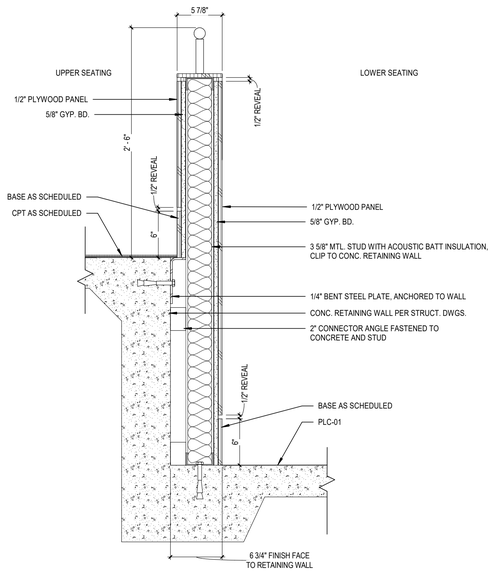
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:13 PM



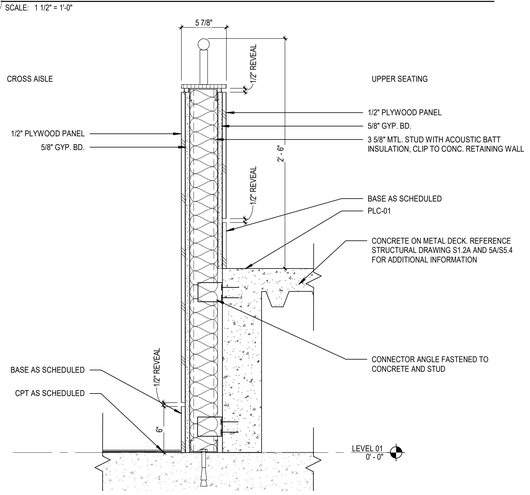
2A A11.9 STAGE APRON DETAIL (TYP.)
SCALE: 1 1/2" = 1'-0"



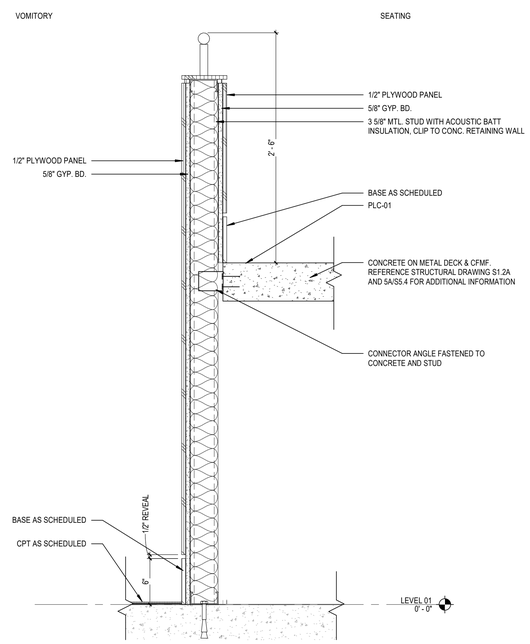
2B A11.9 STAGE APRON DETAIL @ SPEAKER
SCALE: 1 1/2" = 1'-0"



4A A11.9 PARTERRE WALL DETAIL
SCALE: 1 1/2" = 1'-0"



5A A11.9 CROSS AISLE WALL DETAIL
SCALE: 1 1/2" = 1'-0"



5B A11.9 VOMITORY AISLE WALL DETAIL
SCALE: 1 1/2" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 24008

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

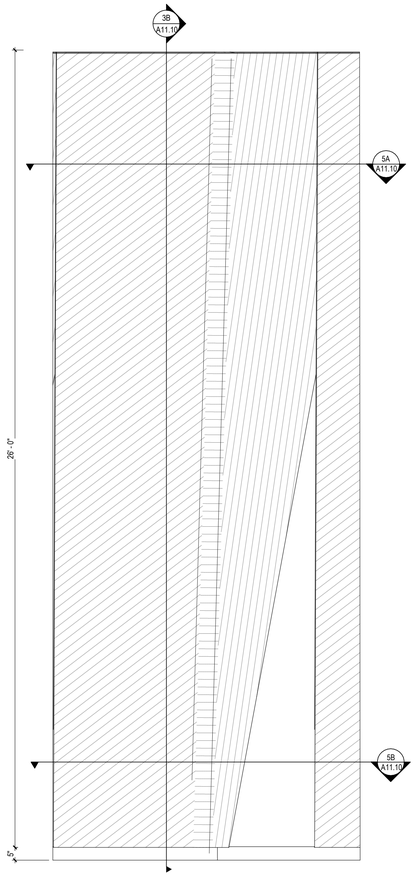
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

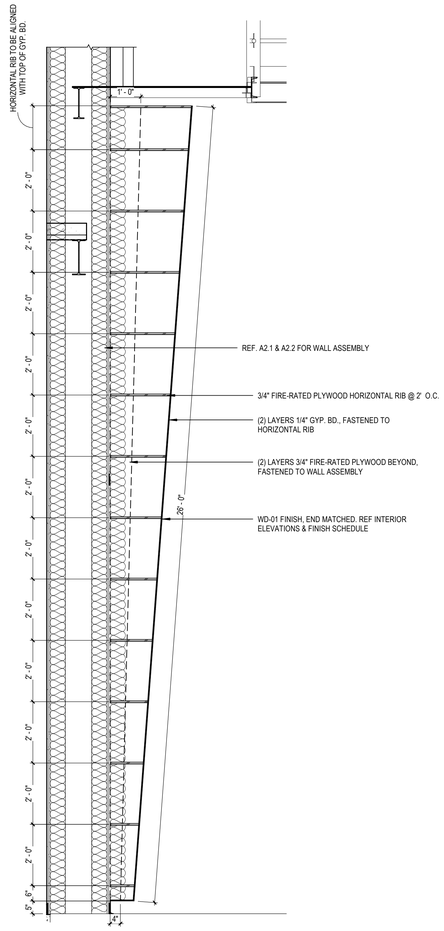
INTERIOR DETAILS - AUDIENCE CHAMBER

A11.9

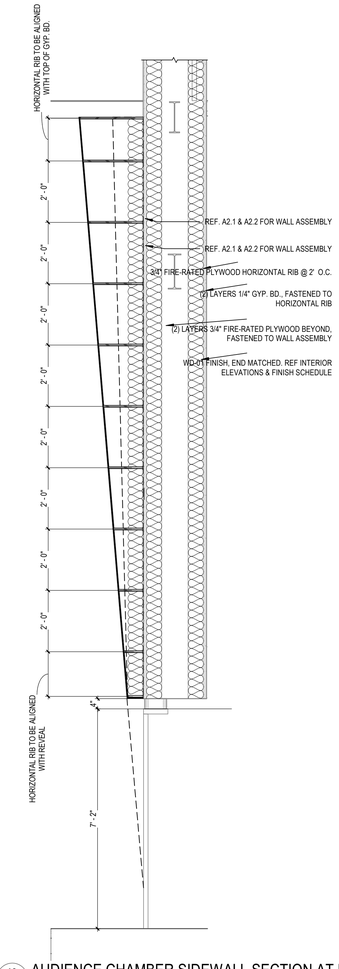
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:14 PM



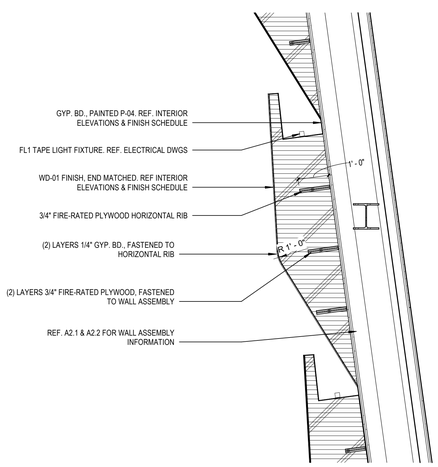
3A A11.10 AUDIENCE CHAMBER TYP. SIDEWALL ELEVATION
SCALE: 1/2" = 1'-0"



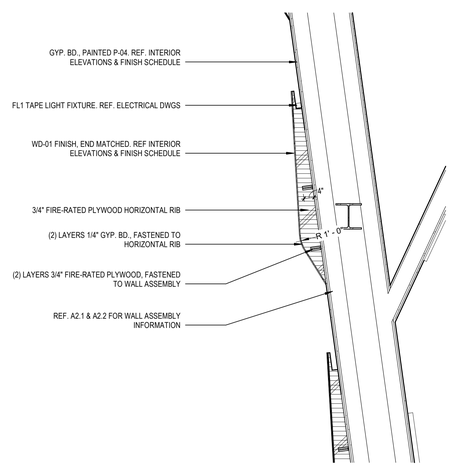
3B A11.10 AUDIENCE CHAMBER TYP. SIDEWALL SECTION
SCALE: 1/2" = 1'-0"



3C A11.10 AUDIENCE CHAMBER SIDEWALL SECTION AT DOOR
SCALE: 1/2" = 1'-0"



5A A11.10 TYP. SIDEWALL UPPER PLAN
SCALE: 1/2" = 1'-0"



5B A11.10 TYP. SIDEWALL LOWER PLAN
SCALE: 1/2" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT TEXAS
07-25-2024

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

INTERIOR DETAILS - AUDIENCE CHAMBER

A11.10

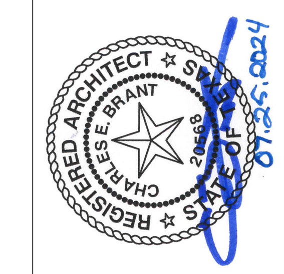
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:15 PM

FINISH SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	PRODUCT	COLOR/FINISH	SIZE	COMMENTS
033300 CONCRETE FINISHING						
PLC-01	POLISHED CONCRETE BOH					CLEAR SEALER, PREMIUM QUALITY, LOW VOC
SCE-01	SEALED CONCRETE BOH					CLEAR SEALER, PREMIUM QUALITY, LOW VOC
064000 INTERIOR ARCHITECTURAL WOODWORK						
CH-01	COAT HOOKS					
G-01	GROMMET					
HW-01	HARDWARE PULLS					WIRE PULLS ARE NOT ACCEPTABLE
SB-01	SHELF BRACKET					
TR-01	PULL-OUT TRASH BIN					
066400 CUSTOM CASEWORK						
F-02	UPHOLSTERY					
PL-01	PLASTIC LAMINATE	WILSONART	7954-38	NATURAL RIFT, FINE VELVET TEXTURED FINISH		
PL-02	PLASTIC LAMINATE	WILSONART	15515-31	NILE VELVET, TRACELESS FINISH		
TS-03	WOOD VENEER REVEAL	FRY REGLET	BASE & TERMINATION - WCTBT125-217	BUFFED SATIN STAINLESS STEEL		
TS-04	WOOD VENEER REVEAL	FRY REGLET	OUTSIDE CORNER - WCTOSC	BUFFED SATIN STAINLESS STEEL		
TS-05	WOOD VENEER REVEAL	FRY REGLET	REVEAL MOLDING - VPR-375-375	BLACK		
WD-01	WOOD VENEER WALLCOVERING	WOLF GORDON	WONDERWOOD	WWDF 208F; WHITE OAK, RIFT	10' X 2'	INSTALL OVER LEVEL 4 FINISH GWB; PROVIDE MANUFACTURER'S PRIMER/COATING
066400 PLASTIC PANELING						
FRP-01	SERVICE WALLS	CRANE COMPOSITES	GLASSBOARD CLASS C	WHITE		
083500 FOLDING DOORS AND GRILLES						
F-01	COM FABRIC	GUILDFORD OF MAINE	ACOUSTICAL PANEL FABRIC	QUARRY BLUE 2026		
088000 GLAZING						
GF-01	GLAZING FILM	3M	FASARA 7725SE-314	DUSTED CRYSTAL FILM	STD ROLL: 60"WIDE X 50 YDS	
GL-01	GLAZING CLEAR TEMPERED				3/8"	
GL-02	GLAZING CLEAR TEMPERED				1/2"	
GL-03	GLAZING PATTERN TEMPERED					
GL-04	GLAZING LOW IRON				3/8"	
GL-05	GLAZING CERAMIC					
088300 MIRRORS						
MRR-01	MIRROR					
093000 TILING						
B-02	TILE COVE BASE	DALTILE	PORTFOLIO COVE BASE	WHITE	6" X 12"	GROUT: TBD
T-01	TILE	DALTILE	PORTFOLIO	WHITE	12" X 24"	GROUT: TBD
T-02	TILE	DALTILE	SCRAPBOOK	KEEPSAKE BLUE SB34	2" x 8"	INSTALL:HERRINGBOWNGROUT: 3/16", COLOR: TBD
TS-01	TRANSITION	SCHLUTER				
TS-06	TRANSITION	SCHLUTER	FINEC	SATIN ANODIZED ALUMINUM		
TS-07	TRANSITION	SCHLUTER	DECO-SQ	SATIN ANODIZED ALUMINUM		
095000 CEILING						
WD-03	WOOD SLAT CEILING	ARMSTRONG	WOODWORKS GRILLE - FORTE SOLID CEILING PANELS	NATURAL WALNUT (GWN)		SHOP DRAWINGS REQUIRED; ACOUSTIC INFILL PANEL- 2820BK, NCR 0.85,CAC 35
095100 ACOUSTIC CEILING TILE						
APC-01	STANDARD LAY-IN CEILING TILE	ARMSTRONG	ULTIMA HIGH NRC 15/16"	WHITE	2' X 2'	
APC-02	STANDARD LAY-IN CEILING TILE	ARMSTRONG	BACKSTAGE NOIR 15/16"	BLACK	2' X 2'	
096200 SPEICIALTY FLOORING						
B-04	TERRAZZO COVE BASE	TERRAZZO & MARBLE	TERRAZZO COVE BASE	MATCH SF-01	4"H, 3/4" RADIUS	
SF-01	TERRAZZO FLOORING	TERRAZZO & MARBLE SUPPLY	TERROXY POURED IN PLACE	CUSTOM AGGREGATE COLORS TBD		DIVIDER STRIPS
SF-02	PRECAST TERRAZZO	TERRAZZO & MARBLE SUPPLY	TERROXY PRECAST STAIR TREAD/RISER	MATCH SF-01	1/2" THICK	1/4" WIDE ALLUMINUM INLAY STRIP
SF-03	TEMPERED HARDBOARD FLOORING			PAINTED P-10	SEE DRAWINGS	
096400 WOOD FLOORING						
B-03	WOOD BASE	TBD		TBD		
TS-08	1/2" WOOD REVEAL F	FRY REGLET	MILLWORK REVEAL F - MWRF7550	CLEAR ANODIZED	3/4"D	COORDINATE WITH WOODWRIGHT
WD-02	ENGINEERED WOOD FLOORING	WOODWRIGHT	#30,509 - ENGINEERED WOOD FLOORING	WHITE OAK, SELECT GRADE, PLAIN SAWN, CUSTOM STAIN TO MATCH WD-01	5/8" X 3" X 4MM WEAR LAYER	1/4" WIDE ALLUMINUM INLAY AT STAIR TREADS PROVIDED BY MANUFACTURER.
WD-04	SOLID WOOD NOSING	WOODWRIGHT	#30,510 - SOLID WOOD NOSING	WHITE OAK, SELECT GRADE, PLAIN SAWN, CUSTOM STAIN TO MATCH WD-02	5/8" X 3" X 1" DROP	
WD-05	SOLID WOOD NOSING WITH INLAY STRIP	WOODWRIGHT	#30,510 - SOLID WOOD NOSING	WHITE OAK, SELECT GRADE, PLAIN SAWN, CUSTOM STAIN TO MATCH WD-02	5/8" X 3" X 1" DROP	1/4" WIDE ALLUMINUM INLAY AT STAIR TREADS PROVIDED BY MANUFACTURER.
096500 RESILIENT FLOORING						
B-01	RESILIENT BASE	JOHNSONITE	BASEWORK THERMOSET RUBBER, TYPE TS	63 BURNT UMBER B	4" H	TOE
RF-01	RESILIENT FLOORING	INTERFACE	BRUSHED LINES 3.0MM	C00705 SANDALWOOD		INSTALL: ASHLAR
RF-02	RESILIENT FLOORING	FORBO	MARMOLEUM FRESCO	ETERNITY 3866/386635		
RF-03	RESILIENT SHEET FLOORING	TARKETT	IQ OPTIMA	ANGEL KISS 0262	25MX2M ROLL; 2MM THICK	
TS-02	RESILIENT FLOOR TRANSITION	JOHNSONITE	SLIMLINE	BURNT UMBER		
096800 CARPET						
CPT-01	CARPET	INTERFACE	WORLD WOVEN COLLECTION WW895	103215 TUNDRA WEAVE	25cm x 1m	
CPT-02	AUDIENCE CHAMBER CARPET	INTERFACE	SECOND STORY COLLECTION DUPLEX	105894 SUTTON PLACE	50CM X 50CM	INSTALL: ASHLAR, JOHNSONITE RUBBER TRANSITION STRIPS
097200 WALL COVERING						
GWC-01	GRAPHIC WALLCOVERING		CUSTOM			
WC-01	WALL COVERING	WOLF GORDON	TAIGA, TIG 9113	LATTE		
098400 ACOUSTIC ROOM COMPONENTS						
AP-01	ACOUSTIC WALL PANEL	GS ACOUSTICS	BALANCE	F-01	VARY SIZES - SEE ELEVATIONS;	2" THICK IN BAND ROOM; 4" THICK IN PERCUSSION ROOM
AP-02	ACOUSTIC WALL PANEL	ARMSTRONG WORLD INDUSTRIES	TECTUM FINALE WALL PANELS	WHITE	2" THICK	
AP-03	ACOUSTIC WALL DIFFUSER	GS ACOUSTICS	PYRAMIDAL WALL SOUND DIFFUSERS	F-01	2' X 4'	
AP-04	ACOUSTIC WALL DIFFUSER	GS ACOUSTICS	PYRAMIDAL WALL SOUND DIFFUSERS	F-01	4' X 4'	
AP-05	ACOUSTIC WALL DIFFUSER	GS ACOUSTICS	PYRAMIDAL WALL SOUND DIFFUSERS	F-01	6' X 4'	
AP-06	ACOUSTIC CEILING DIFFUSER	GS ACOUSTICS	PYRAMIDAL CEILING SOUND DIFFUSERS	STANDARD TEXTURED WHITE	2' X 2'	
099000 PAINTING						
P-01	GENERAL CEILING PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7004 SNOWBOUND; FLAT FINISH		
P-02	GENERAL WALL PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7004 SNOWBOUND; EGGSHELL FINISH (OR SATIN)		
P-03	GENERAL HM DOORS AND TRIM	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7004 SNOWBOUND; SEMI-GLOSS FINISH		
P-04	ACCENT WALL PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7604 SMOKY BLUE, EGGSHELL FINISH (OR SATIN)		
P-05	ACCENT CEILING PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7604 SMOKY BLUE, FLAT FINISH		
P-06	ACCENT HM DOORS AND TRIM	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7604 SMOKEY BLUE; SEMI-GLOSS FINISH		
P-07	ACCENT CEILING & WALL PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7668 MARCH WIND; EGSHELL FINISH		
P-08	ACCENT CEILING & WALL PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW7674 PEPPERCORN; EGGSHELL FINISH		
P-09	ACCENT CEILING & WALL PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW6991 BLACK MAGIC; EGGSHELL FINISH		
P-10	STAGE PAINT	ROSCO	TOUGH PRIME; PRIMER & SEALANT	BLACK 6055; SATIN FINISH		
102100 TOILET COMPARTMENTS						
TC-01	TOILET COMPARTMENT					
102600 WALL PROTECTION						
CR-01	CHAIR RAIL					
DP-01	074200 CUSTOM CASEWORK					
102613 CORNER GUARDS						
CGD-01	CORNER GUARD	INPRO	3/4" TAPE-ON CORNER GUARD			ALTERNATES: KOROGUARD AND CS ACROVYN
CGD-02	CORNER GUARD	INPRO	1 1/2" STAINLESS STEEL CORNER GUARD	STAINLESS STEEL, SATIN		ALTERNATES: KOROGUARD AND CS ACROVYN
104400 FIRE PROTECTION SPECIALTIES						
FEC-01	PAINTED FIRE EXTINGUISHER CABINET	LARSEN		PAINTED TO MATCH ADJACENT WALL	FULLY RECESSED - 2409-R2, SEMI RECESSED 2409-R4	
FEC-02	STAINLESS STEEL FIRE EXTINGUISHER CABINET	LARSEN		STAINLESS STEEL	FULLY RECESSED - 2409-R2, SEMI RECESSED 2409-R4	
122000 WINDOW TREATMENT						
WT-01	WINDOW TREATMENT	MECHOSHADE				MOTORIZED AT DOUBLE HEIGHT WINDOWS, MANUAL AT LEVEL 01
WT-02	WINDOW TREATMENT		DRAPERY			
WT-03	WINDOW TREATMENT		BLINDS			
123661 SOLID SURFACING						
SSM-01	SOLID SURFACE	CAESARSTONE	QUARTZ SURFACE	5112 ATERRA BLANCA	2CM	

DLRGROUP

© DLR Group



CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

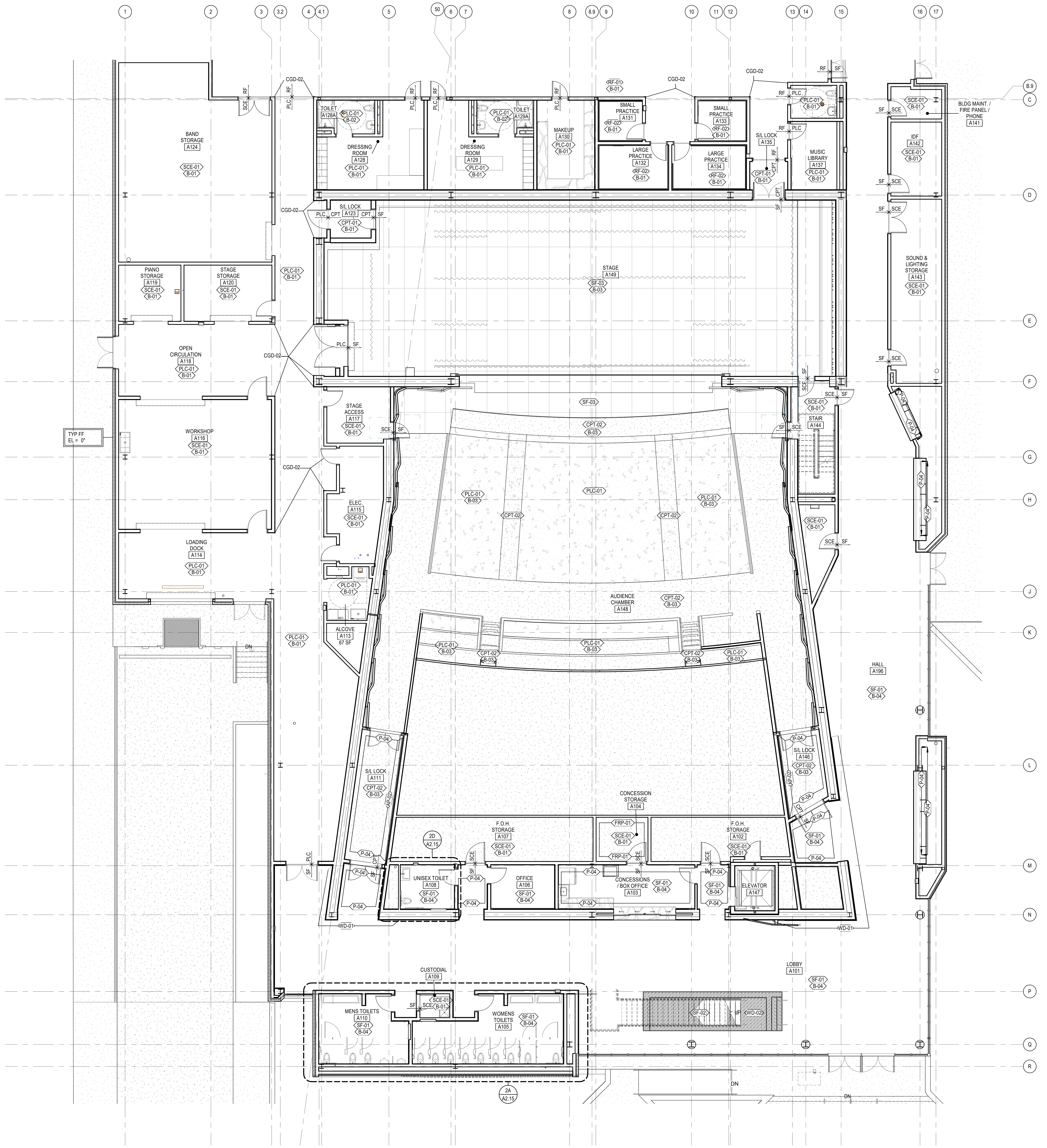
FINISH SCHEDULES

A12.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:16 PM

INTERIOR FINISH PLAN GENERAL NOTES

A. ROOM FINISH SCHEDULE GENERAL NOTES APPLY TO ALL ROOM FINISH SCHEDULE SHEETS.
B. INTERIOR FINISH PLAN GENERAL NOTES APPLY TO ALL INTERIOR FINISH PLAN SHEETS.
C. NOT ALL FLOOR AND WALL FINISHES ARE NOTED ON THE INTERIOR FINISH PLANS. SEE ROOM FINISH SCHEDULE FOR FLOOR AND WALL FINISHES NOT NOTED.
D. FLOOR PATTERN DIMENSIONS AND LOCATIONS ARE APPROXIMATE. MINOR ADJUSTMENTS MAY BE MADE FOR LAYOUT AND TO MINIMIZE WASTE AS LONG AS THE DESIGN INTENT IS MAINTAINED.
E. FOR FLOOR TILE PRODUCTS, ADJUST LAYOUT AS NECESSARY TO AVOID USING CUT WIDTHS THAT EQUAL LESS THEN ONE-HALF OF A TILE AT ROOM PERIMETER.



LEVEL 01 - AREA A - FINISH PLAN
SCALE: 1/8" = 1'-0"

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:20 PM

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

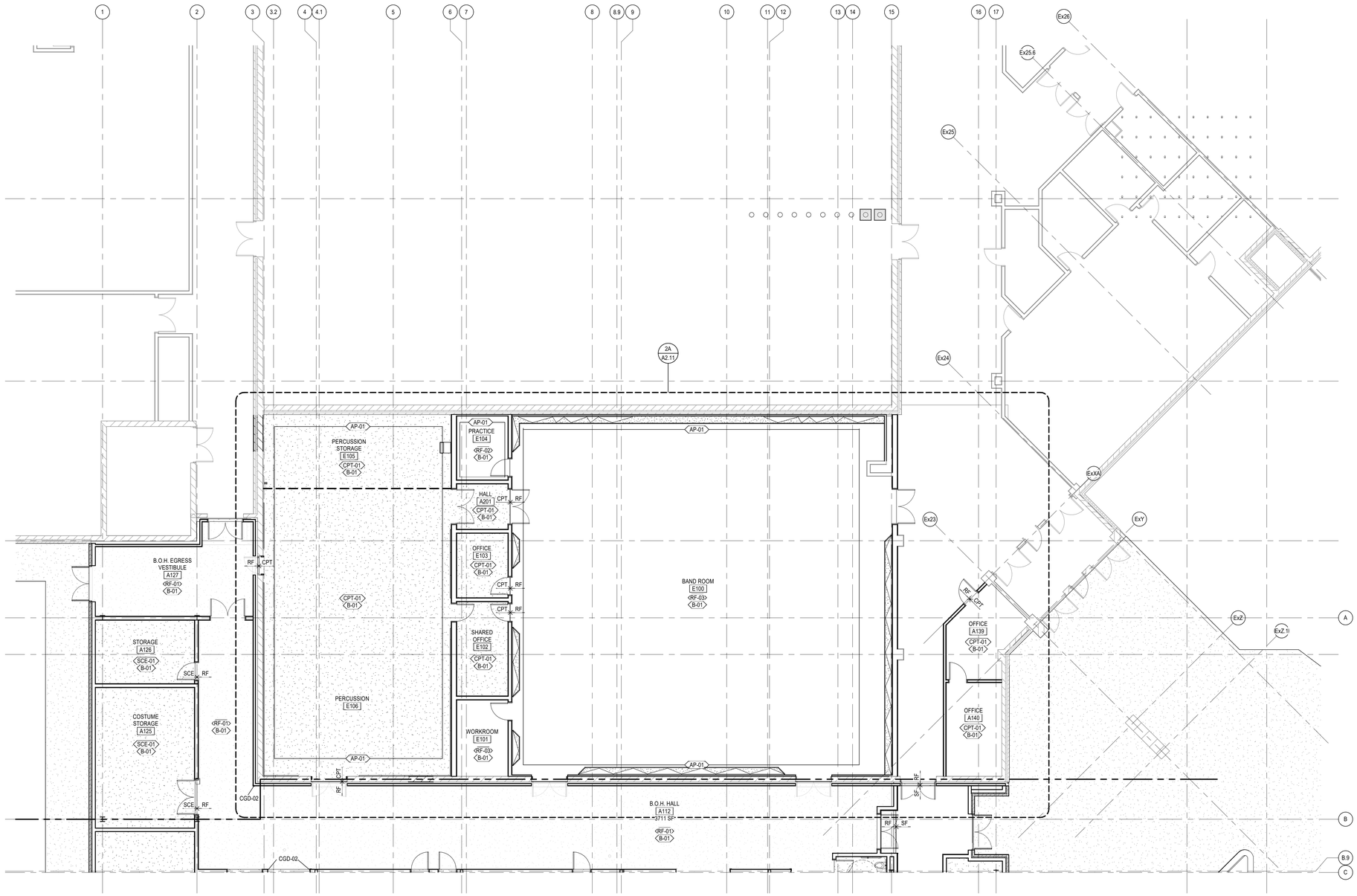
39-23712-00

LEVEL 01 - AREA A - FINISH PLAN

A12.1A

INTERIOR FINISH PLAN GENERAL NOTES

A. ROOM FINISH SCHEDULE GENERAL NOTES APPLY TO ALL ROOM FINISH SCHEDULE SHEETS.
B. INTERIOR FINISH PLAN GENERAL NOTES APPLY TO ALL INTERIOR FINISH PLAN SHEETS.
C. NOT ALL FLOOR AND WALL FINISHES ARE NOTED ON THE INTERIOR FINISH PLANS. SEE ROOM FINISH SCHEDULE FOR FLOOR AND WALL FINISHES NOT NOTED.
D. FLOOR PATTERN DIMENSIONS AND LOCATIONS ARE APPROXIMATE. MINOR ADJUSTMENTS MAY BE MADE FOR LAYOUT AND TO MINIMIZE WASTE AS LONG AS THE DESIGN INTENT IS MAINTAINED.
E. FOR FLOOR TILE PRODUCTS, ADJUST LAYOUT AS NECESSARY TO AVOID USING CUT WIDTHS THAT EQUAL LESS THEN ONE-HALF OF A TILE AT ROOM PERIMETER.



LEVEL 01 - AREA B - FINISH PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

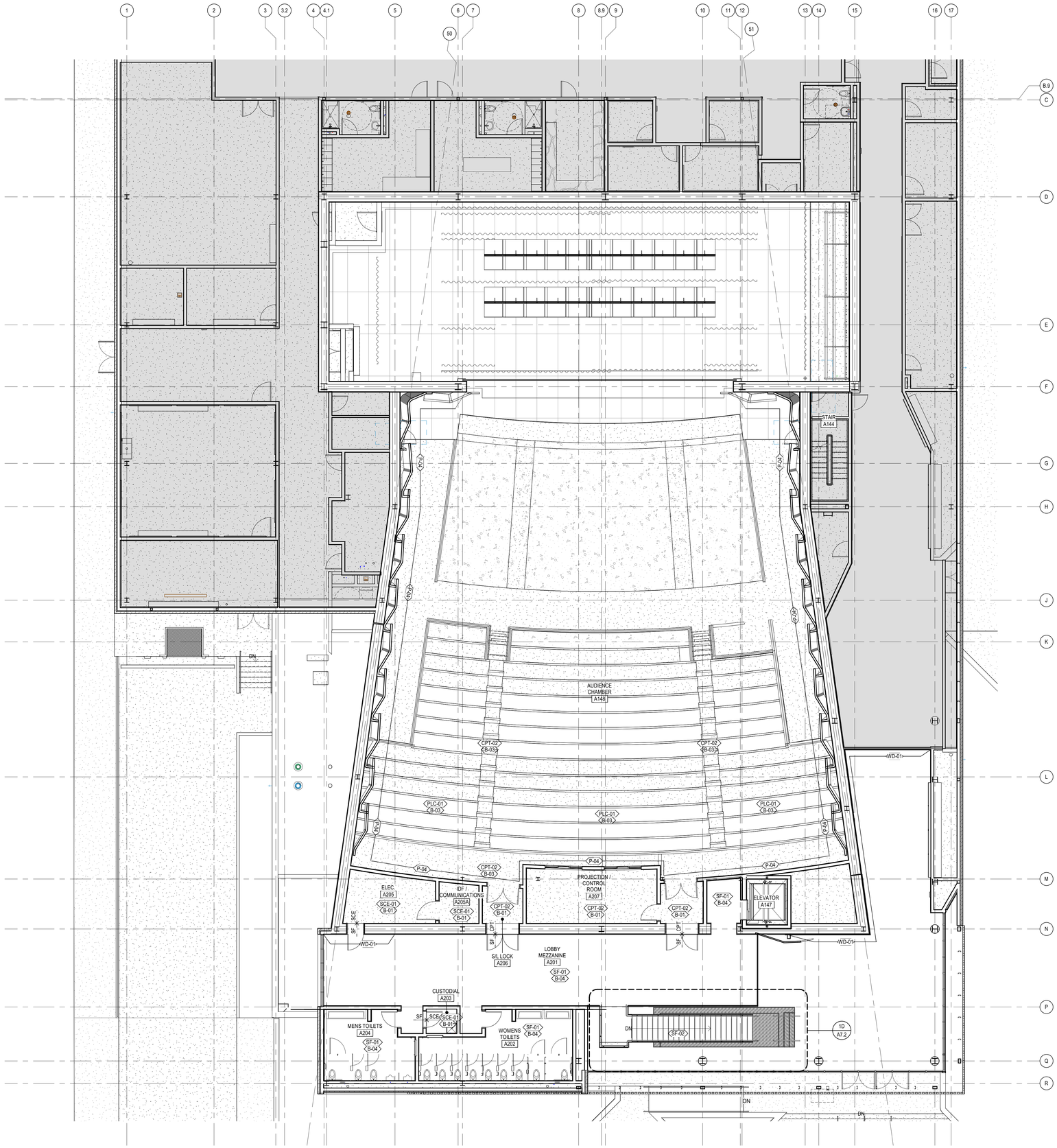
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA B - FINISH PLAN

A12.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:22 PM



LEVEL 02 MEZZANINE - AREA A - FINISH PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

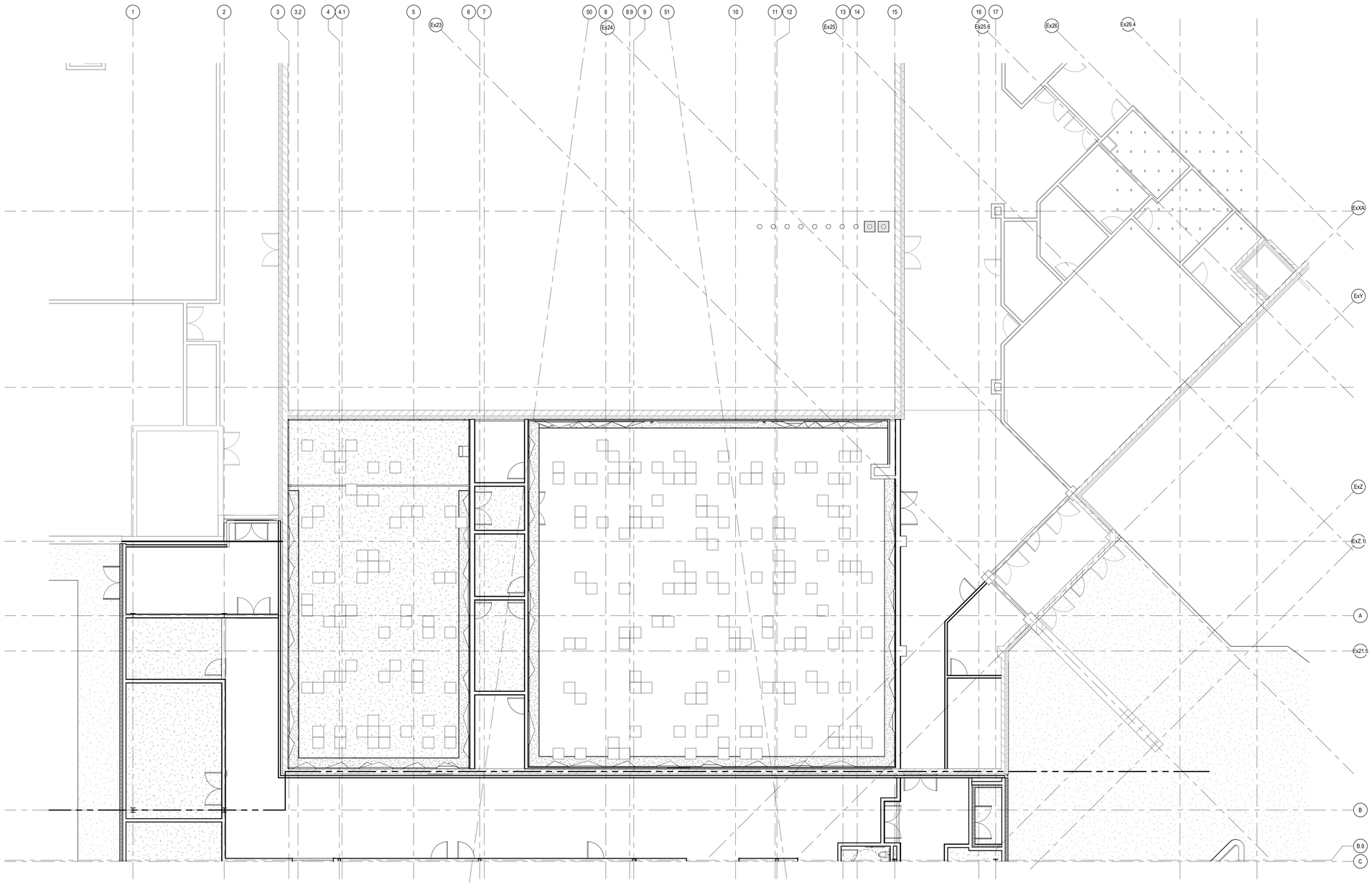
39-23712-00

LEVEL 02 - AREA A - FINISH PLAN

A12.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt

7/25/2024 3:25:29 PM



LEVEL 02 MEZZANINE - AREA B - FINISH PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

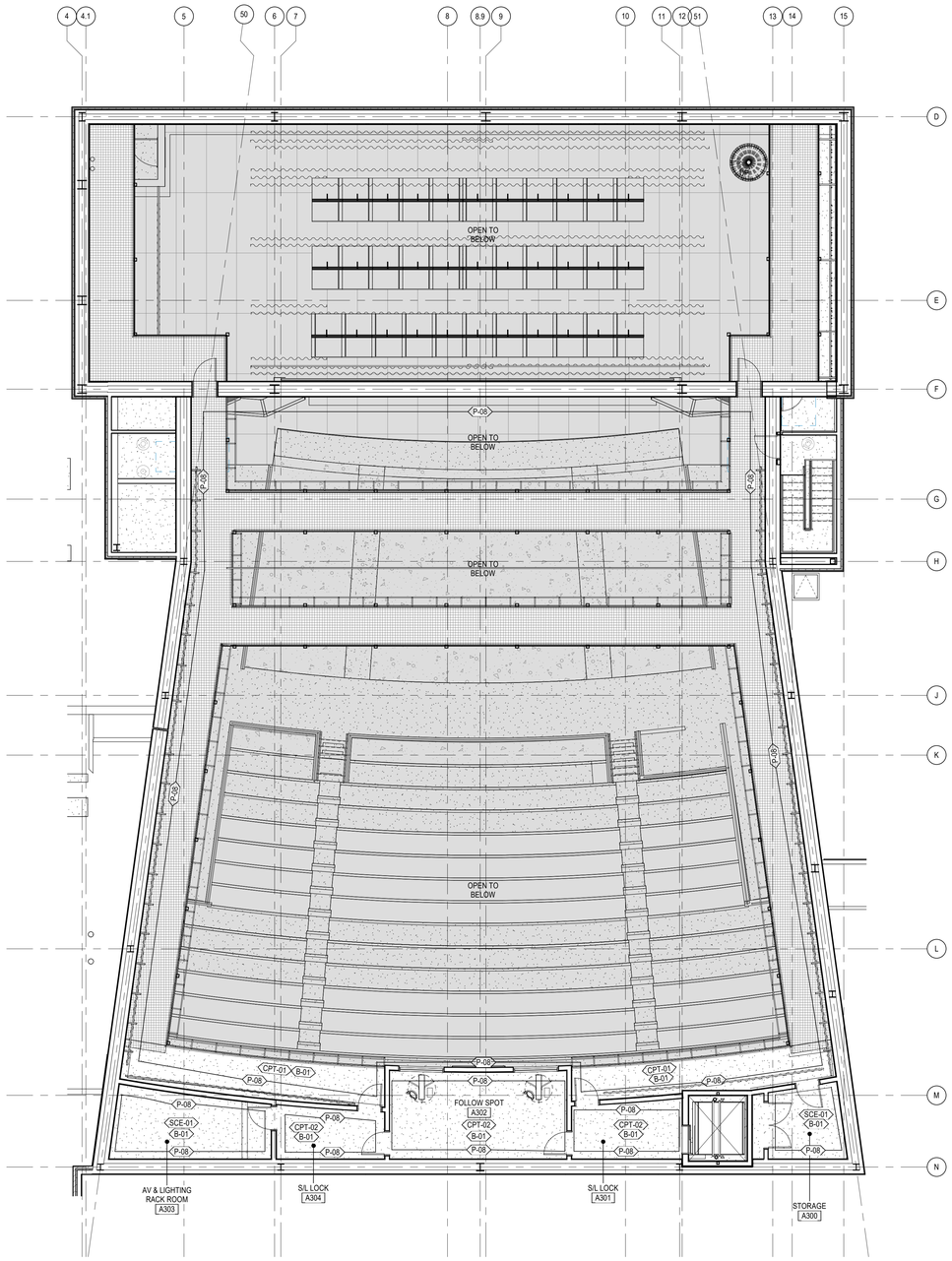
39-23712-00

LEVEL 02 - AREA B - FINISH PLAN

A12.2B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt

7/25/2024 3:25:31 PM



LEVEL 03 - CATWALK - FINISH PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

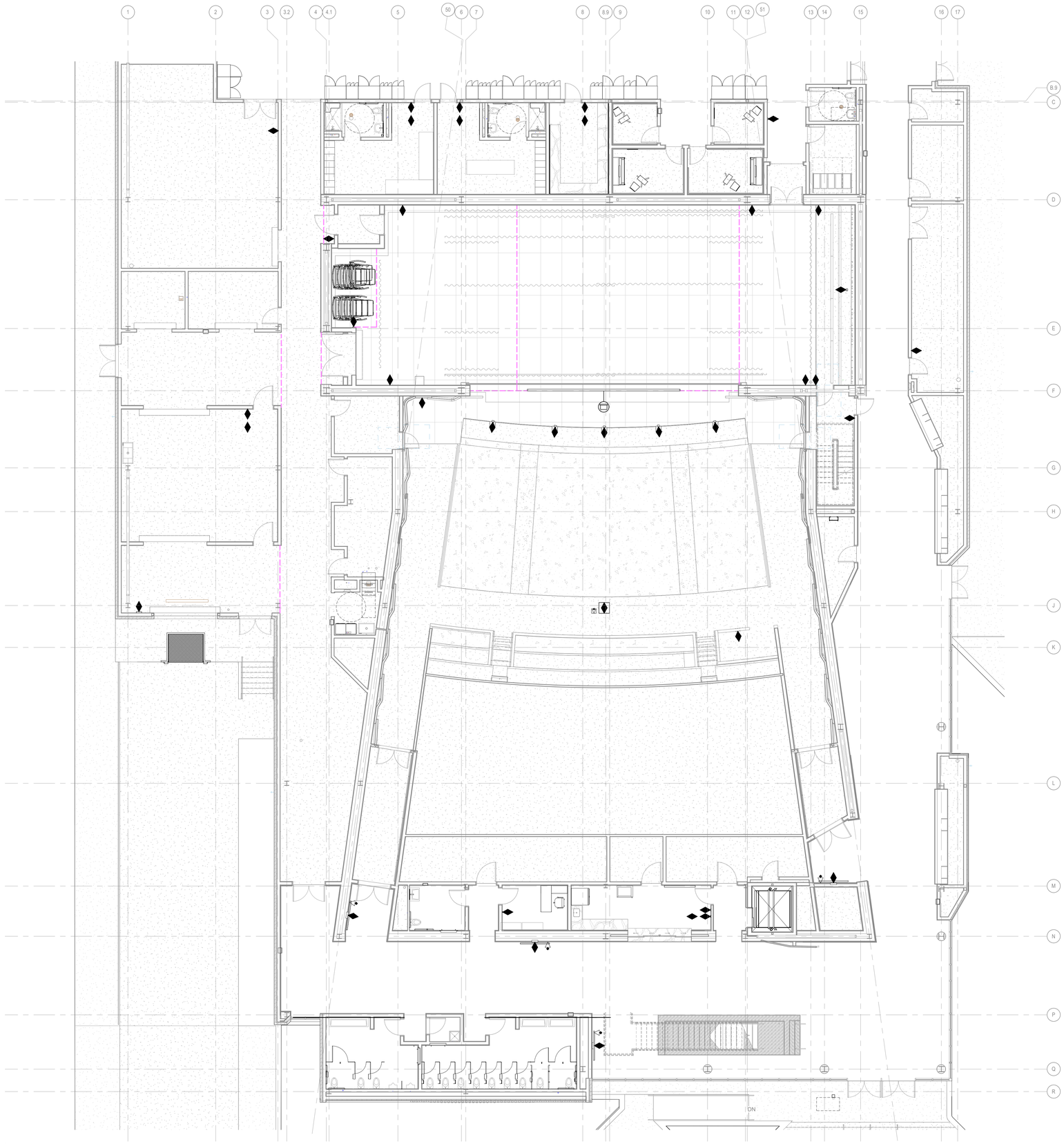
REVISIONS

39-23712-00

LEVEL 03 - CATWALK - FINISH PLAN

A12.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:35 PM



LEVEL 01 - AREA A - FF&E PLAN

SCALE: 1/8" = 1'-0"

FURNITURE PLAN NOTES

A. 5% MINIMUM EMPLOYEE WORKSTATIONS TO BE ADA-COMPLIANT.
B. PROVIDE PORTABLE ASSISTED LISTENING DEVICES FOR ALL CONFERENCE ROOMS/ASSEMBLY AREAS PER 11B-216.1-, 11B-210 & 11B-706.
C. PROVIDE HEARING IMPAIRED SIGNAGE FOR PORTABLE LISTENING DEVICES STATING THESE DEVICES ARE AVAILABLE UPON REQUEST FOR EACH LOCATION.

FURNITURE PLAN LEGEND

AREA NOT IN CONTRACT (NIC)

XX-XX FURNITURE TAG

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

LEVEL 01 - AREA A - FF&E PLAN

A13.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:38 PM

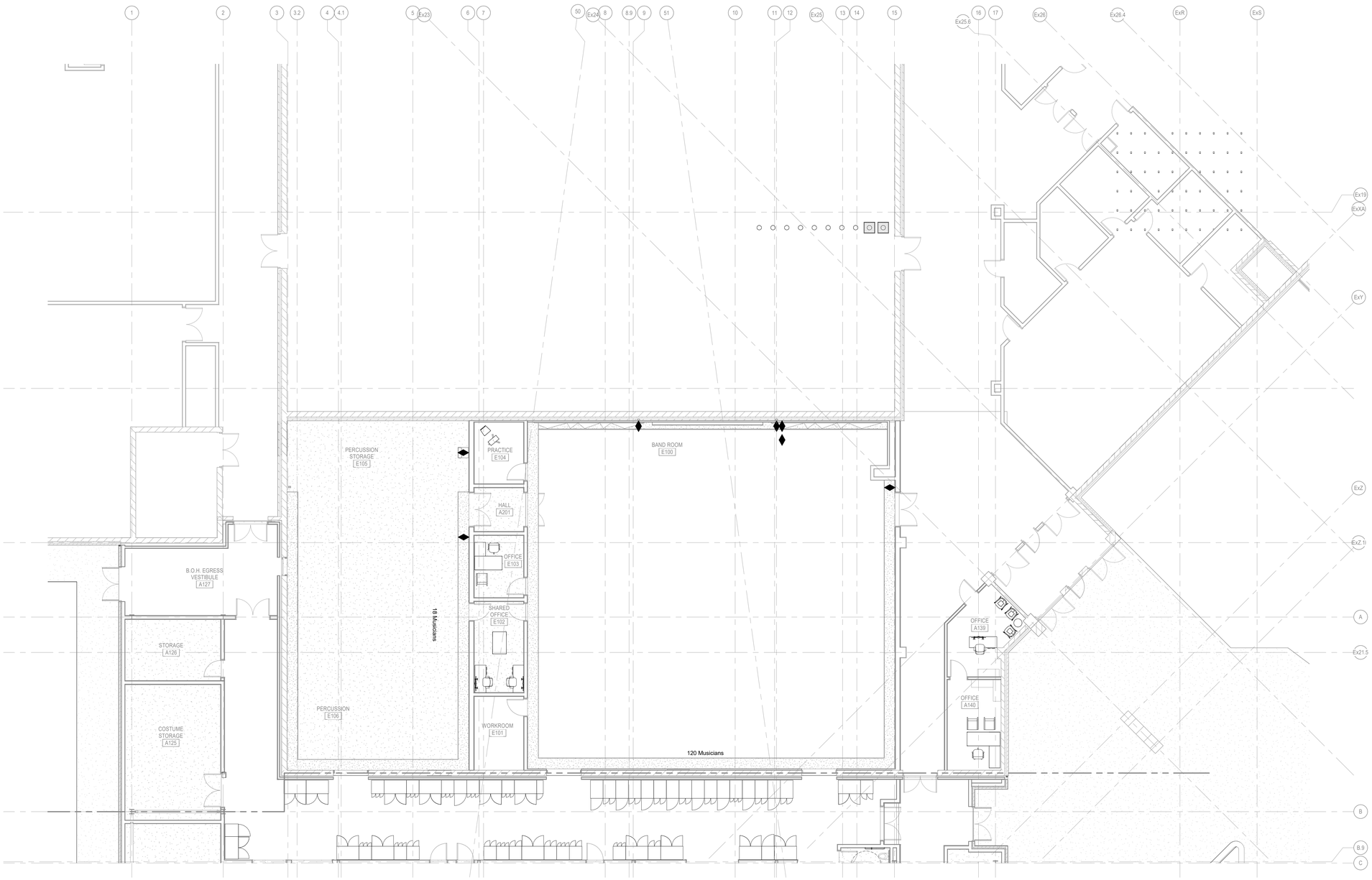
FURNITURE PLAN NOTES

A. 5% MINIMUM EMPLOYEE WORKSTATIONS TO BE ADA COMPLIANT.
B. PROVIDE PORTABLE ASSISTED LISTENING DEVICES FOR ALL CONFERENCE ROOMS/ASSEMBLY AREAS PER 11B-216.1-, 11B-210 & 11B-706.
C. PROVIDE HEARING IMPAIRED SIGNAGE FOR PORTABLE LISTENING DEVICES STATING THESE DEVICES ARE AVAILABLE UPON REQUEST FOR EACH LOCATION.

FURNITURE PLAN LEGEND

AREA NOT IN CONTRACT (NIC)

XX-XX FURNITURE TAG



LEVEL 01 - AREA B - FF&E PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

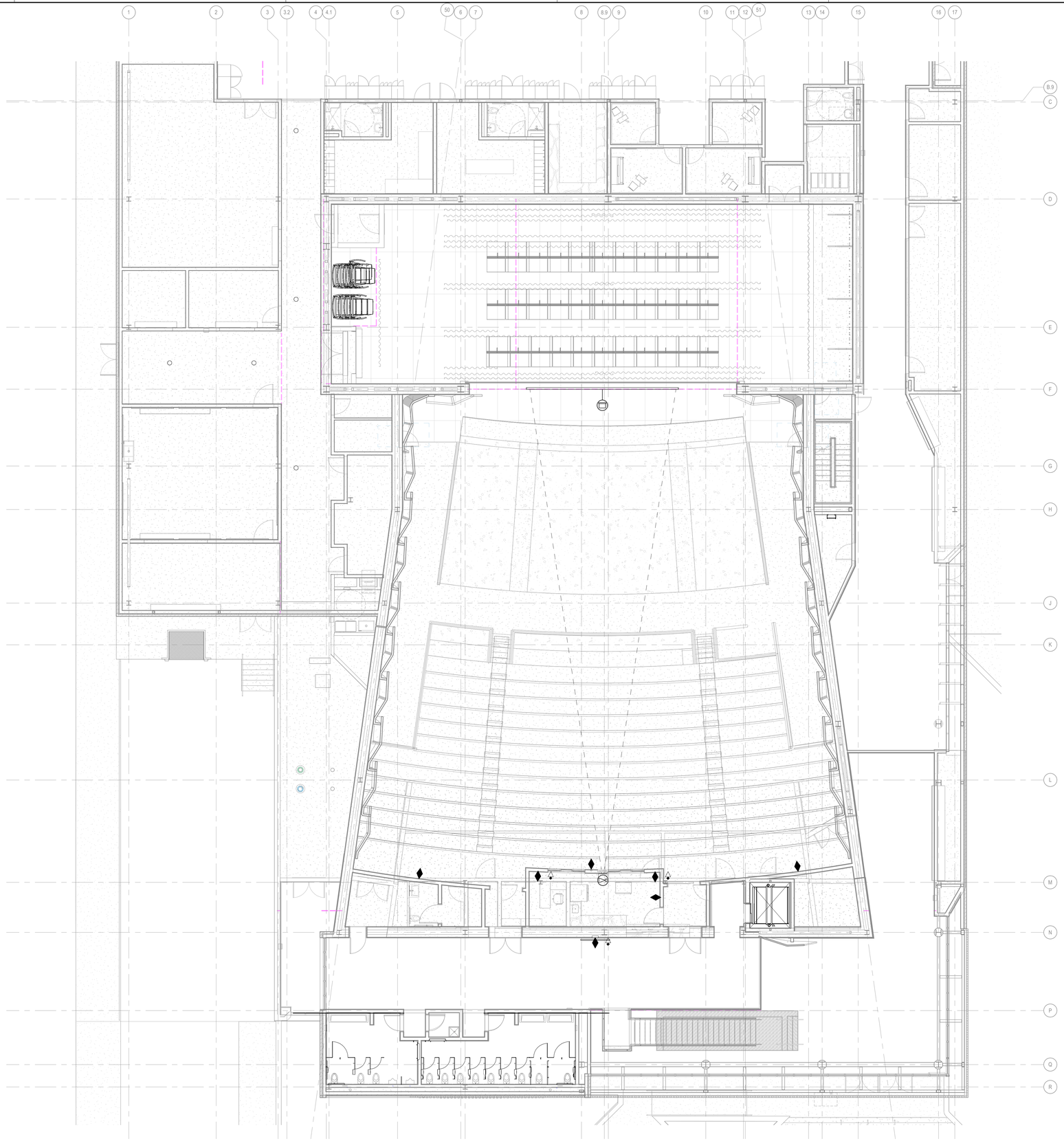
REVISIONS

39-23712-00

LEVEL 01 - AREA B - FF&E PLAN

A13.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:39 PM



FURNITURE PLAN NOTES

A. 5% MINIMUM EMPLOYEE WORKSTATIONS TO BE ADA-COMPLIANT.
B. PROVIDE PORTABLE ASSISTED LISTENING DEVICES FOR ALL CONFERENCE ROOMS/ASSEMBLY AREAS PER 11B-216.1-, 11B-210 & 11B-706.
C. PROVIDE HEARING IMPAIRED SIGNAGE FOR PORTABLE LISTENING DEVICES STATING THESE DEVICES ARE AVAILABLE UPON REQUEST FOR EACH LOCATION.

FURNITURE PLAN LEGEND

AREA NOT IN CONTRACT (NIC)

XX-XX FURNITURE TAG

LEVEL 02 - AREA A - FF&E PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

REGISTERED ARCHITECT CHARLES E. BRANT

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

LEVEL 02 - AREA A - FF&E PLAN

A13.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_AR_2024.rvt
7/25/2024 3:25:44 PM

GENERAL STRUCTURAL NOTES

GENERAL

1. THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL ALL STRUCTURAL WORK AND CONNECTIONS HAVE BEEN COMPLETED. THE RESEARCH, DESIGN, SAFETY, ADEQUACY, AND INSPECTION OF ERECTION BRACING, SHORING, GUYING, TEMPORARY SUPPORTS, ETC, IS THE RESPONSIBILITY OF THE CONTRACTOR.

2. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS AND METHODS, SEQUENCES OF CONSTRUCTION, OR CONSTRUCTION TECHNIQUES USED TO PERFORM THE WORK. OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.

3. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PROGRAM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE ON, NOR ISSUE DIRECTION, AS TO SAFETY PRECAUTIONS AND PROGRAMS. OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.

4. CONTRACTOR IS TO ESTABLISH AND VERIFY OPENINGS AND INSERTS FOR ITEMS TO BE INSTALLED BY OTHER TRADES PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.

5. CONSTRUCTION MATERIAL AND EQUIPMENT LOADS PLACED ON THE STRUCTURE DURING THE CONSTRUCTION PROCESS SHALL NOT EXCEED THE DESIGN LIVE LOAD OF THE STRUCTURE NOTED IN THESE DRAWINGS. THE ENGINEER SHALL NOT BE RESPONSIBLE TO INVESTIGATE, NOR APPROVE, THE STRUCTURE FOR CONSTRUCTION MATERIAL OR EQUIPMENT LOADING. ERECTION OR CONSTRUCTION LOADS ARE NOT TO BE APPLIED UNTIL PROPER STRUCTURAL FRAMING CONNECTIONS ARE MADE, AND ALL TEMPORARY BRACING IS IN PLACE. THE CONTRACTOR SHALL DESIGN AND PROVIDE TEMPORARY BRACING OF THE STRUCTURE WHERE NECESSARY FOR CONSTRUCTION LOADS.

6. DETAILS THAT ARE NOTED AS "TYPICAL" OR "TYP" ON DETAIL TITLES ARE TO BE APPLIED TO THE PROJECT CONSTRUCTION AS GENERAL CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. THESE DETAILS ARE NOT CUT AT ALL LOCATIONS WHERE THEY OCCUR, AND THEY MAY NOT BE CUT AT ALL. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR CONDITIONS ELSEWHERE ON THE PROJECT, SUBJECT TO APPROVAL OF THE ENGINEER.

7. DO NOT SCALE DRAWINGS. CONTRACTOR IS TO VERIFY ALL DIMENSIONS RELATIVE TO ARCHITECTURAL OR OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

8. WHERE DISCREPANCIES OCCUR BETWEEN GENERAL NOTES, PLANS, DETAILS, AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN, UNLESS APPROVED OTHERWISE BY THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.

9. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND SPECIFICATIONS. THE CONTRACTOR SHALL ESTABLISH AND VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERT ANCHORS, HOLES, AND OTHER ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK. DO NOT PENETRATE ANY STRUCTURAL ELEMENTS (BEAMS, COLUMNS, WALLS, SLABS, STEEL DECKS, ETC) WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.

10. IF THE ENGINEER'S SEAL AND SIGNATURE IS NOT AFFIXED TO THESE DRAWINGS, THESE DRAWINGS ARE INTENDED FOR PRELIMINARY PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

11. STRUCTURAL JOINT DIMENSIONS SHOWN ON PLANS AND DETAILS (EXPANSION, SEISMIC, SEPARATION, ETC) INDICATE THE MINIMUM CLEAR DISTANCE REQUIRED. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

DESIGN CRITERIA

1. ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THESE DRAWINGS, SPECIFICATIONS, AND THE CODES, RULES AND REGULATIONS OF THE 2021 INTERNATIONAL BUILDING CODE (IBC), AS ADOPTED AND AMENDED BY THE CITY OF CRANDALL, HEREAFTER REFERRED TO AS THE BUILDING CODE.

2. MATERIAL SPECIFIC DESIGN STANDARDS LISTED IN THESE GENERAL NOTES ARE THE VERSION REFERENCED BY THE BUILDING CODE. IF NOT REFERENCED BY THE BUILDING CODE, USE THE LATEST EDITION APPROVED BY THE AUTHORITY HAVING JURISDICTION ON THE DATE OF THE PERMIT ISSUANCE.

3. RISK CATEGORY — III

4. DESIGN DEAD LOADS
   - ROOF - TOTAL — 40 PSF (INCLUDES BALLAST WEIGHT)
   - SECOND FLOOR — 15 PSF (SUPERIMPOSED)

5. DESIGN LIVE LOADS
   - FIRST FLOOR — 100 PSF
   - STAIRS & EXIT WAYS — 100 PSF
   - FIXED SEATS (R) — 60 PSF
   - STAGE FLOOR — 150 PSF
   - LOBBIES — 100 PSF
   - CORRIDORS — 100 PSF
   - UPPER LEVEL CORRIDORS (R) — 80 PSF
   - LIGHT STORAGE — 125 PSF
   - ROOF LIVE LOAD — 20 PSF

   FLOOR LIVE LOADS NOTED '(R)' HAVE BEEN REDUCED PER THE BUILDING CODE.

6. SNOW LOADS
   - GROUND SNOW LOAD, P_g — 5 PSF

7. WIND LOADS
   - BASIC WIND SPEED (3 SECOND GUST), V — 111 MPH
   - NOMINAL WIND SPEED, Vasd — 86 MPH
   - EXPOSURE CATEGORY — C
   - TOPOGRAPHIC FACTOR, Kzt — 1.0
   - AIR DENSITY FACTOR, Ke — 1.0
   - INTERNAL PRESSURE COEFFICIENT, GC_{pi} — +/- 0.18
   - COMPONENTS AND CLADDING:
     - WALLS: +31 PSF / -33 PSF
     - CORNERS: +31 PSF / -41 PSF
     - ROOF ZONE 1: +20 PSF / -53 PSF
     - ROOF ZONE 2: +31 PSF / -70 PSF
     - ROOF ZONE 3: +31 PSF / -70 PSF

8. SEISMIC LOADS
   - SITE LATITUDE — 32.6149398
   - SITE LONGITUDE — -96.461528
   - SITE CLASS — C
   - MAPPED SPECTRAL RESPONSE ACCELERATIONS — S_S = 0.093, S_1 = 0.054
   - DESIGN SPECTRAL RESPONSE ACCELERATIONS — S_{DS} = 0.081, S_{D1} = 0.054
   - SEISMIC DESIGN CATEGORY — A
   - IMPORTANCE FACTOR, I_e — 1.25
   - SEISMIC FORCE RESISTING SYSTEM: — STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
   - RESPONSE MODIFICATION FACTOR, R — 3.0
   - OVERSTRENGTH FACTOR, Ωo — 3.0
   - DEFLECTION AMPLIFICATION FACTOR, Cd — 3.0
   - REDUNDANCY FACTOR, ρ — 1.0
   - ANALYSIS PROCEDURE — EQUIVALENT LATERAL FORCE
   - SEISMIC RESPONSE COEFFICIENT, Cs — 0.017
   - DESIGN BASE SHEAR, Vbase — 0.01W

9. RAIN INTENSITY — 3.8 INCH/HOUR

10. STAGE RIGGING
    UNIFORM AND CONCENTRATED RIGGING LOADS LISTED BELOW DO NOT ACT CONCURRENTLY UNLESS OTHERWISE NOTED.
    - MOTORIZED HOISTS: 600 PLF (INCLUDES 20% INCREASE FOR IMPACT AND 70% DIVERSIFICATION FACTOR)
    - LOFT BLOCK BEAMS: 600 PLF APPLIED VERTICAL AND HORIZONTAL; 1000 LB CONCENTRATED APPLIED VERTICAL AND HORIZONTAL (INCLUDES 20% INCREASE FOR IMPACT AND 70% DIVERSIFICATION FACTOR)
    - HEADBLOCK BEAMS: 3000 PLF APPLIED VERTICAL AND HORIZONTAL
    - GRID FLOOR: 100 PSF; 2000 LB CONCENTRATED LOAD OVER 4 SQ FT AREA NOT TO EXCEED 40% OF THE GRID IRON AREA AND SPACED NO CLOSER THAN 3' OC
    - LOADING BRIDGE: 400 PSF; 500 LB CONCENTRATED LOAD OVER 4 SQ IN AREA
    - LOCKING/PIN RAILS: 500 PLF UP; 1000 LB CONCENTRATED UP AT ANY POINT
    - FLY FLOORS: 150 PSF
    - STAGE: 150 PSF
    - PROJECTION ROOM: 100 PSF
    - LIGHTING CATWALKS: 40 PSF
    - LIGHTING RAILS: 35 PLF; 250 LB CONCENTRATED LOAD AT ANY POINT
    - SPEAKER CLUSTER SUPPORTS: 2400 LBS (INCLUDES 20% INCREASE FOR IMPACT)

GEOTECHNICAL & FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL INVESTIGATION PERFORMED BY ALPHA TESTING, REPORT NO. G240443, DATED APRIL 19, 2024. BASED ON THE GEOTECHNICAL REPORT, THE FOLLOWING HAS BEEN ASSUMED:
   - PIER ALLOWABLE BEARING IN GRAY MARL — 20.0 KSF
   - ALLOWABLE SKIN FRICTION, MARL (DOWNWARD) — 4.0 KSF
   - ALLOWABLE SKIN FRICTION, MARL (UPLIFT) — 3.2 KSF
   - ALLOWABLE SKIN FRICTION, CLAY BELOW 20-FT AND UPPER 3 FT OF MARL (DOWNWARD) — 0.3 KSF
   - ALLOWABLE SKIN FRICTION, CLAY BELOW 20-FT AND UPPER 3 FT OF MARL (UPLIFT) — 0.2 KSF

2. SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS.

3. IF DISCREPANCIES EXIST BETWEEN THE CONTRACT DOCUMENTS AND THE GEOTECHNICAL REPORT, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN, UNLESS DETERMINED OTHERWISE BY THE ENGINEER IN WRITING.

4. ALL FOUNDATION EXCAVATIONS AND BEARING SURFACES SHALL BE OBSERVED AND APPROVED BY THE GEOTECHNICAL ENGINEER / TESTING AGENCY PRIOR TO PLACING FOUNDATION CONCRETE.

5. DEPTHS/ELEVATIONS SHOWN ON PLANS AND DETAILS ARE MINIMUM. NOTIFY ENGINEER OF ANY NECESSARY DEVIATIONS FROM THE FOOTING ELEVATIONS SHOWN ON THE DRAWINGS PRIOR TO CONSTRUCTING THE FOOTINGS.

6. UNLESS NOTED OTHERWISE, COLUMN FOOTINGS SHALL BE CENTERED ON COLUMNS, AND WALL FOOTING SHALL BE CENTERED ON WALLS.

7. BACKFILL FOUNDATION WALLS WITH FREE DRAINING FILL AND PROVIDE A SUBSURFACE DRAINAGE SYSTEM BASED ON THE GEOTECHNICAL REPORT RECOMMENDATIONS.

8. ALL FOUNDATION WALLS WHERE GRADE IS NOT PRESENT ON BOTH SIDES ARE DESIGNED TO BE RESTRAINED IN THE COMPLETED STRUCTURE. CONNECTING CONSTRUCTION SHALL BE INSTALLED, INCLUDING INSTALLATION OF FLOOR/ ROOF DIAPHRAGM AND THEIR ATTACHMENTS, PRIOR TO BACKFILLING WALL. CONCRETE DIAPHRAGMS SHALL REACH 100% OF REQUIRED 28 DAY COMPRESSIVE STRENGTH PRIOR TO BACKFILLING. ALTERNATIVELY, THE CONTRACTOR SHALL PROVIDE DESIGN AND CONSTRUCTION OF TEMPORARY BRACING THAT PROTECTS THE WALL AGAINST OVERSTRESS OR MOVEMENT UNTIL ALL SUPPORTING CONSTRUCTION IS COMPLETE AND CURED. THE CONTRACTOR'S ENGINEER IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY BRACING.

9. BACKFILLING AGAINST FOUNDATION WALLS WHERE GRADE IS PRESENT ON BOTH SIDES SHALL BE PERFORMED SO DIFFERENCE IN SOIL HEIGHT ON EACH SIDE OF THE WALL DOES NOT EXCEED 2-FT.

10. NEW FOOTINGS LOCATED IMMEDIATELY ADJACENT TO EXISTING FOOTINGS SHALL BE FOUNDED AT THE SAME ELEVATION AS THE EXISTING FOUNDATIONS, UNO. THE EXISTING FOOTINGS SHALL NOT BE UNDERMINED BY NEW CONSTRUCTION, UNO.

11. DETERMINE THE LOCATION OF ALL NEW/EXISTING UNDERGROUND UTILITIES IN AND ADJACENT TO THE AREA OF WORK PRIOR TO COMMENCING EXCAVATION. COORDINATE UTILITY LOCATIONS WITH FOUNDATIONS AS REQUIRED.

12. CONTRACTOR SHALL CONFIRM THE AS-BUILT LOCATION OF ANY POTENTIAL NEW OR EXISTING STRUCTURES OR OBJECTS WITHIN THE ZONE OF EXCAVATION INCLUDING WORK PERFORMED AS A PORTION OF THIS PROJECT BEFORE EXCAVATING OR INSTALLING FOUNDATION ELEMENTS. NOTIFY THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY EXCAVATIONS OR OTHER SITE WORK, IF THE EXCAVATION WILL CUT BELOW AN ADJACENT STRUCTURE'S BOTTOM OF FOOTING ELEVATION OR IF AN ADJACENT STRUCTURE IS UP SLOPE FROM THE PLANNED SITE WORK.

13. THE EXTERIOR VERTICAL FACE OF ALL EXPOSED SLAB TURNDOWNS SHALL BE FORMED. THE SIDES OF FOOTINGS MAY BE EARTH FORMED AS LONG AS THE SOIL WILL MAINTAIN A VERTICAL FACE. ALL FOUNDATION STEM WALLS AND RETAINING WALLS SHALL BE FORMED ON BOTH SIDES OF THE WALL.

14. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER OR SEEPAGE.

15. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, UNDERPINNING AND PROTECTION OF EXISTING CONSTRUCTION. COMPLY WITH ALL APPLICABLE OSHA REGULATIONS.

CONTINUOUS FOOTINGS

1. CONTINUOUS FOOTING REINFORCING SHALL CONTINUE THROUGH ISOLATED SPREAD COLUMN FOOTINGS WHERE THEY OCCUR.

2. CONSTRUCTION JOINT LOCATIONS SHALL NOT OCCUR WITHIN EXTENTS OF ISOLATED SPREAD FOOTINGS.

3. FOOTINGS SHALL NOT HAVE CONSTRUCTION JOINTS IN A HORIZONTAL PLANE.

GRADE BEAMS

1. TOP GRADE BEAM REINFORCING SHALL BE SPLICED ONLY AT MIDSPAN AND BOTTOM GRADE BEAM REINFORCING SHALL BE SPLICED ONLY AT SUPPORTS. SIDE BARS MAY BE SPLICED ANYWHERE ALONG LENGTH.

2. CONSTRUCTION JOINT LOCATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION AND TYPICALLY SHALL OCCUR WITHIN THE CENTER THIRD OF THE GRADE BEAM SPAN. CONSTRUCTION JOINT SURFACES SHALL BE ROUGHENED AND TREATED TO IMPROVE BOND IN ACCORDANCE WITH THE SPECIFICATIONS.

3. GRADE BEAMS SHALL NOT HAVE CONSTRUCTION JOINTS IN A HORIZONTAL PLANE.

4. VOID FORM SHALL BE CORRUGATED PAPER PRODUCT CAPABLE OF SUPPORTING THE CAST WEIGHTS OF THE CONCRETE AND CONSTRUCTION LOADS, MANUFACTURED BY "SUREVOID" PRODUCTS, INC OR EQUAL.

CAST-IN-PLACE CONCRETE MIX DESIGNS

1. THE CONCRETE MIX TABLE SHOWN BELOW SHALL APPLY TO ALL CONCRETE MIX DESIGNS USED FOR STRUCTURAL ITEMS IN THIS PROJECT. MIX DESIGN SUBMITTALS SHALL BE IDENTIFIED FOR INTENDED STRUCTURAL USE AND SUBMITTED TO THE OWNER'S REPRESENTATIVE AND ENGINEER FOR REVIEW PRIOR TO PLACING ANY CONCRETE. WHEN CONCRETE MIX DESIGNS ARE A DELEGATED DESIGN ITEM, THE SUBMITTED MIX DESIGN SHALL BEAR THE SEAL AND SIGNATURE OF THE ENGINEER RESPONSIBLE FOR THEIR DESIGN.

CONCRETE MIX DESIGNS

PLACEMENT LOCATION	28 DAY f'c (psi)	MAX W/C RATIO	ENTRAINED AIR	MAX AGG SIZE	WEIGHT	MAX DRY UNIT WEIGHT (pcf)	EXPOSURE CLASS	CEMENT TYPE
FOOTINGS	3,500	0.55	6% ± 1.5%	1 1/2"	NWC	150	C1-W1	II/V OR IL
DRILLED PIERS	3,000	0.55	6% ± 1.5%	1 1/2"	NWC	150	C1-W1	II/V OR IL
FOUNDATION WALLS & RETAINING WALLS	4,500	0.45	6% ± 1.5%	1"	NWC	150	C1-W1	II/V OR IL
SLAB ON METAL DECK	4,000	0.55	—	3/4"	NWC	150	-	II/V OR IL
INTERIOR SLAB ON GRADE	4,000	0.45	—	3/4"	NWC	150	-	II/V OR IL

A. EXPOSURE CLASSES ARE F0, S0, P0, C0 UNLESS NOTED OTHERWISE IN THE TABLE ABOVE.

B. THE WATER-CEMENT RATIO IN CONCRETE CONTAINING POLYSILICATE ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF THE ADMIXTURE SUPPLIER. SUBMIT ADMIXTURE PRODUCT DATA FOR REVIEW WITH THE MIX DESIGN SUBMITTAL. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

C. CONCRETE MIXES SHALL COMPLY WITH ACI 318 SECTION 19.3 FOR THE EXPOSURE CLASSES INDICATED THE TABLE ABOVE. FOR CLASSES F1 THROUGH F3, AIR ENTRAINMENT SHALL MEET THE REQUIREMENTS OF ACI-318 TABLE 19.3.3.1.

D. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 OF THE TYPE SPECIFIED IN THE TABLE ABOVE.

E. AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C-33. AGGREGATE FOR LIGHT WEIGHT CONCRETE SHALL CONFORM TO ASTM C-330.

F. VERIFY THE UNIT WEIGHT OF LIGHT WEIGHT CONCRETE IN ACCORDANCE WITH ASTM C567.

G. WATER SHALL BE CLEAR, POTABLE AND SHALL CONFORM TO ASTM C-94.

H. CONCRETE MIXING OPERATION SHALL CONFORM TO ASTM C-94.

1. REFER TO PROJECT SPECIFICATION FOR ADDITIONAL INFORMATION.

2. FLY ASH MAY BE USED TO REPLACE 15% TO 25% OF PORTLAND CEMENT. FLY ASH SHALL CONFORM TO ASTM C618, TYPE F. PERCENTAGE LISTED IS BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL INCLUDING ASTM C150, C595, C845, AND C1157 CEMENT. DO NOT USE FLY ASH IF CONTENT WITHIN THE PERCENTAGES SHOWN CANNOT BE ACHIEVED.

3. EXPOSED SLABS, TOPPING SLABS & ELEVATED FLOORS SHALL HAVE A MAXIMUM SHRINKAGE RATE OF 0.04% AT 28 DAYS PER ASTM C157 (CURING TEST SPECIMENS TO BE CONSISTENT WITH FIELD CONDITIONS). RESULTS OF TESTING SHALL BE SUBMITTED TO ENGINEER WITH CONCRETE MIX SUBMITTAL.

CONCRETE CONSTRUCTION

1. THESE NOTES APPLY TO CONCRETE USED IN BUILDING CONSTRUCTION ONLY. SEE CIVIL/SITE WORK DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2. CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 301 AND ACI 318.

3. REFER TO DRAWINGS OF OTHER DISCIPLINES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON STRUCTURAL DRAWINGS.

4. SLEEVES OR OPENINGS, EXCEPT AS DETAILED ON THE STRUCTURAL DRAWINGS, SHALL NOT BE PLACED IN WALLS, JOISTS, BEAMS, GIRDERS, OR IN SLABS ADJACENT TO A COLUMN (WITHIN A DISTANCE EQUAL TO THE SLAB THICKNESS) UNLESS APPROVED BY THE ENGINEER. PLUMBING, MECHANICAL, & ELECTRICAL CONTRACTORS SHALL SUBMIT SIZES AND LOCATIONS OF ALL PENETRATIONS IN STRUCTURAL SLABS FOR THE ENGINEER'S APPROVAL BEFORE THE SLAB IS PLACED. ALL PIPE PENETRATIONS THROUGH SLABS SHALL BE SLEEVED AND REINFORCING SHALL NOT BE CUT. CORING OF CONCRETE AFTER PLACEMENT IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER.

5. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318. SUBMIT DRAWINGS SHOWING PLACEMENT SEQUENCE FOR ENGINEERING REVIEW.

6. ALL CONCRETE SHALL BE MECHANICALLY CONSOLIDATED IN ACCORDANCE WITH ACI 309.

7. PROVIDE A FORMED CONSTRUCTION KEYWAY BETWEEN ALL HORIZ AND VERT PLACEMENT EDGES EXCEPT CONCRETE TOPPING SLABS. PROVIDE WATERSTOPS FOR ALL CONSTRUCTION JOINTS BELOW WATER TABLE AND WHERE INTERIOR SLAB ON GRADE IS BELOW EXTERIOR GRADE.

8. INTENTIONALLY ROUGHEN ALL CONCRETE SURFACES TO A MINIMUM 1/4" AMPLITUDE AGAINST WHICH CONCRETE IS TO BE PLACED UNO.

9. ALL EDGES OF PERMANENTLY EXPOSED CONCRETE SURFACES SHALL BE CHAMFERED 3/4", UNO.

10. RIGID INSULATION USED TO FORM BUILT-UP SLABS SHALL BE CLOSED-CELL EXPANDED POLYSTYRENE CONFORMING TO ASTM D6817 WITH MINIMUM COMPRESSIVE RESISTANCE @ 1% DEFORMATION OF 2.2 PSI.

CONCRETE REINFORCEMENT

1. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60, UNO.

2. REINFORCING STEEL TO BE WELDED SHALL BE ASTM A706, GRADE 60. NO WELDING OF REINFORCEMENT SHALL BE PERMITTED UNLESS SPECIFICALLY CALLED FOR OR REVIEWED AND APPROVED BY THE ENGINEER.

3. DEFORMED BAR ANCHORS (DBA) SHALL BE PROVIDED IN ACCORDANCE WITH NELSON STUD WELDING, INC ICC ESR 2907. ANCHORS SHALL BE SHOP WELDED TO STEEL USING A STUD WELDING GUN.

4. CONCRETE COVER REQUIREMENTS FOR CAST-IN-PLACE, NON-PRESTRESSED REINFORCEMENT UNLESS OTHERWISE NOTED ON DETAILS SHALL BE AS FOLLOWS:
   - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
   - FORMED CONCRETE EXPOSED TO EARTH OR WEATHER:
     - #6 BARS AND LARGER: 2"
     - #5 BARS AND SMALLER: 1 1/2"
   - CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
     - SLABS, WALLS, AND JOISTS:
       - #14 AND #18 BARS: 1 1/2"
       - #11 BARS AND SMALLER: 1"
     - BEAMS, COLUMNS:
       - PRIMARY REINFORCEMENT: 1 1/2"
       - TIES, STIRRUPS, SPIRALS: 1 1/2"

1. REINFORCING BAR SPLICES SHALL BE AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318 AND THE REINFORCING SPLICE LENGTH SCHEDULE. PROVIDE CLASS 'B' LAP SPLICE, UNO.

2. ALL HORIZONTAL WALL AND BEAM REINFORCING SHALL BEND AROUND ALL CORNERS, LAP WITH INTERSECTING REINFORCEMENT, AND LAP SHALL CONFORM TO LAP SPLICE AND ANCHORAGE SCHEDULE PROVIDED, UNO.

3. ALL REINFORCEMENT SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND ACI 315 DURING CONCRETE PLACEMENT. NO WET SETTING OF REINFORCEMENT OR ACCESSORIES.

4. PROVIDE CORROSION RESISTANT ACCESSORIES SUCH AS PLASTIC COATED (NOT PLASTIC TIPPED) OR STAINLESS-STEEL CHAIRS IN ALL EXPOSED CONCRETE CONSTRUCTION. PRECAST CONCRETE CHAIRS OR SAND PLATE CHAIRS SHALL BE USED FOR THE SUPPORT OF REINFORCING ON GRADE. CONCRETE BLOCK OR CLAY MASONRY BRICK ARE NOT PERMITTED.

5. NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY DETAILED AS SUCH OR APPROVED BY THE ENGINEER IN WRITING.

6. WELDED WIRE REINFORCING (WWR) SHALL COMPLY WITH ASTM A1064. USE ONLY FLAT SHEETS. LAP ALL WWR AT LEAST TWO FULL WIRE SPACING OR 8", WHICHEVER IS GREATER. ALL WWR SHALL BE CHAIRED TO ITS PROPER HEIGHT AND MAINTAINED AT THE PROPER LEVEL THROUGHOUT THE CONCRETE PLACING OPERATION. LIFTING OF WWR WITH A HOOK DURING CONCRETE PLACEMENT SHALL NOT BE PERMITTED.

7. MECHANICAL COUPLERS SHALL BE TYPE 2 COUPLERS CAPABLE OF SUSTAINING 125% Fy.

8. ALL BARS INTERRUPTED BY STRUCTURAL STEEL SHALL EXTEND TO WITHIN 1" OF STRUCTURAL STEEL FLANGE OR WEB AND HAVE A 90 DEGREE HOOK, UNO.

9. REINFORCING STEEL PROJECTING FROM THE CONCRETE OR MASONRY AND CONNECTING DIRECTLY TO STRUCTURAL STEEL WHERE DIMENSIONAL CONTROL IS CRITICAL OR WHERE SPECIFICALLY NOTED ON THE PLAN SHALL BE TREATED AS AN ANCHOR ROD AND SHALL CONFORM TO THE TOLERANCES SPECIFIED IN SECTION 7.5 OF AISC 303-16 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

10. WELDING OF REINFORCEMENT SHALL CONFORM TO THE 2017 EDITION OF AWS D1.4 "STRUCTURAL WELDING CODE - REINFORCING STEEL". WELDED CONNECTIONS NOT SPECIFIED ON THE PLANS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.

11. DOWELS BETWEEN FOOTINGS AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE AND SPACING AS THE VERTICAL REINFORCING, RESPECTIVELY, UNO.

DRILLED CONCRETE PIERS AND SHAFTS

1. DRILLED PIERS SHALL EXTEND INTO SUITABLE MATERIAL CAPABLE OF MEETING GEOTECHNICAL REQUIREMENTS AND AS NOTED ON THE DRAWINGS. HEAVY DUTY DRILL BITS MAY BE NEEDED TO INSTALL PIERS TO FINAL BEARING ELEVATION AND SHOULD BE ANTICIPATED IN THE CONTRACT PRICE. SEE GEOTECHNICAL REPORT FOR BORINGS.

2. HOLES SHOULD BE FILLED WITH CONCRETE WITHIN 12 HOURS OF BEING DRILLED. HOLES WILL NEED TO BE CLEANED, REBAR CAGE INSTALLED, AND INSPECTED PRIOR TO PLACING CONCRETE.

3. REFER TO ACI 336.1 "SPECIFICATION FOR THE CONSTRUCTION OF DRILLED PIERS" FOR TOLERANCE REQUIREMENTS.

4. DRILLED PIERS SHALL BEAR ON MACHINE CLEANED, INSPECTED SOIL STRATA. BOTTOM OF DRILLED PIER ELEVATIONS NOTED ON THE DRAWINGS ARE APPROXIMATE AND ARE INCLUDED FOR BIDDING PURPOSES ONLY. FINAL BEARING ELEVATIONS SHALL BE ADJUSTED SUCH THAT EACH DRILLED PIER BEARS LEVEL AT BOTTOM OF SOCKET.

5. THE GEOTECHNICAL ENGINEER/TESTING LABORATORY SHALL VERIFY SHAFT DIAMETER, DEPTH, BEARING STRATA, AND PROPER CLEANING OF INSTALLATION.

6. REBAR CAGE POSITION IN CENTER OF SHAFT SHALL BE HELD IN PLACE BY MEANS OF "WAGON WHEEL" REBAR POSITIONERS OR EQUIVALENT.

7. CONTRACTOR TO DETERMINE THE NEED FOR REMOVABLE STEEL CASINGS TO MAINTAIN DRILLED PIER SHAPE IN UNSTABLE SOIL STRATA AND INCLUDE COST IN THE CONTRACT PRICE.

STRUCTURAL STEEL

1. FABRICATOR QUALIFICATIONS: FABRICATOR SHALL BE AISC CERTIFIED OR AN "APPROVED FABRICATOR" IN ACCORDANCE WITH THE BUILDING CODE AND APPROVED BY THE AHJ. IN LIEU OF THE PREVIOUS, FABRICATOR SHALL INCLUDE IN THEIR BID THE SERVICES OF A SPECIAL INSPECTOR TO PROVIDE IN-PLANT INSPECTION/TESTING SERVICES FOR WORK COMPLETED ON THE FABRICATOR'S PREMISES TO MEET BUILDING CODE REQUIREMENTS. AT THE COMPLETION OF WORK, FABRICATOR SHALL SUBMIT A "CERTIFICATE OF COMPLIANCE" TO THE ARCHITECT AND AHJ STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

2. STRUCTURAL STEEL SHAPES AND CONNECTING COMPONENTS SHALL CONFORM TO THE FOLLOWING MATERIAL SPECIFICATIONS UNO:
   FOLLOWING MATERIAL SPECIFICATIONS:
   - WIDE FLANGE SHAPES — ASTM A992, Fy = 50 KSI
   - HOLLOW STRUCTURAL SECTIONS (HSS)
     - RECTANGULAR & SQUARE — ASTM A500, GRADE C, Fy = 50 KSI
     - ROUND — ASTM A500, GRADE C, Fy = 46 KSI
   - STEEL PIPE — ASTM A53, GRADE B, Fy = 35 KSI
   - OTHER STEEL SHAPES AND PLATES — ASTM A36, Fy = 36 KSI
   - HIGH STRENGTH STRUCTURAL BOLTS — ASTM F3125, GRADE A325N
   - COLUMN ANCHOR RODS — ASTM F1554, GRADE 55 WELDABLE (S1)
   - THREADED RODS — ASTM A36
   - WELDING ELECTRODES — E70XX
   - DEFORMED BAR ANCHORS (DBA) — ASTM A496, Fy = 70 KSI
   - WELDED HEADED STUDS (WHS) — ASTM A108, Fu = 65 KSI

3. CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE BUILDING SYSTEM AT ALL TIMES DURING THE ERECTION PROCESS. ELEMENTS HAVE BEEN DESIGNED FOR THE FINAL COMPLETED CONDITION AND HAVE NOT BEEN INVESTIGATED FOR TEMPORARY LOADING DURING CONSTRUCTION. INVESTIGATION OF THE STRUCTURAL ELEMENTS FOR ADEQUACY DURING THE STEEL ERECTION AND CONSTRUCTION PROCESS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO PROVIDE TEMPORARY SUPPORTS AS REQUIRED TO MAINTAIN STABILITY.

4. COLUMNS AND BEAMS WITH BASE, CAP OR END PLATES SHALL HAVE SQUARE CUT OR MILLED ENDS.

5. NON-METALLIC, NON-SHRINK, CHLORIDE FREE GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL CONSIST OF A PRE-MIXED PRODUCT COMPLYING WITH ALL REQUIREMENTS OF ASTM C1107. THE 28-DAY COMPRESSIVE STRENGTH OF THE GROUT SHALL BE TWICE THE FOUNDATION REQUIRED CONCRETE COMPRESSIVE STRENGTH, 5,000 PSI MINIMUM.

6. UNO, ALL STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER, INCLUDING ALL BRICK SHELF ANGLES AND EXTERIOR LINTELS, SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALL DAMAGED GALVANIZING SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A780. STAINLESS AND WEATHERING STEELS, WHERE SPECIFIED, ARE EXEMPT FROM THIS REQUIREMENT.

7. COAT STEEL BELOW GRADE WITH COLD-APPLIED ASPHALT EMULSION PER ASTM D1187.

8. ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10. REFER TO DRAWINGS FOR LOCATIONS OF AESS.

9. WHERE CONNECTIONS ARE NOTED TO BE SLIP CRITICAL (EXAMPLE: A325-SC), BOLTS SHALL BE TIGHTENED TO THE MINIMUM PRETENSION FOR FULLY TIGHTENED BOLTS BY ONE OF THE AISC APPROVED METHODS. SLIP-CRITICAL BOLTS SHALL HAVE CLASS "A" FAYING SURFACES.

10. ALL BOLTS (HIGH STRENGTH, ANCHOR BOLTS, EXPANSION BOLTS, ADHESIVE ANCHORS, ETC.) SHALL BE INSTALLED WITH STEEL NUTS AND WASHERS. NUTS AND WASHERS FOR HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A563 AND TO ASTM F436, RESPECTIVELY.

11. WELDING PROCEDURES, ELECTRODES, AND WELDER QUALIFICATIONS SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE D1.1, AISC STANDARDS, AND LOCAL CODE REQUIREMENTS.

12. ALL WELDS SHOWN ON THE DRAWINGS SHALL BE SHOP WELDS, UNO. WHERE SHOWN, FIELD WELDING SHALL BE USED. CONTRACTOR MAY SUBSTITUTE FIELD WELDS FOR SHOP WELDS AT THEIR DISCRETION. SHOP DRAWINGS SHALL CLEARLY NOTE ALL WELDING USING AWS A2.4 SYMBOLS.

13. WHERE CONTINUOUS ANGLES OR BENT PLATES ARE INDICATED, PROVIDE A CONTINUOUS BUTT WELD OR FULL PENETRATION WELD AT THE SPLICE POINTS, UNO. THE STEEL FABRICATOR MAY SUBMIT AN ALTERNATE BOLTED CONNECTION DETAIL FOR APPROVAL.

14. COORDINATE WITH ALL OTHER TRADES WHICH STEEL INTERACTS. THIS INCLUDES BUT IS NOT LIMITED TO COORDINATING WITH MASONRY, PRECAST CONCRETE, CAST-IN-PLACE CONCRETE, JOIST, AND METAL DECK SUPPLIERS.

STEEL DECK

1. ALL STEEL DECK SHALL BE MANUFACTURED, DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, AND ROOF DECKS" BY THE STEEL DECK INSTITUTE (SDI).

2. STEEL DECK & ACCESSORIES SHALL BE FABRICATED FROM STEEL PER ASTM A1008 OR A653.

3. DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:
   A. 2" COMPOSITE DECK:
      a. MINIMUM YIELD STRENGTH — Fy = 50 KSI
      b. DEPTH/GAGE: — 2" / 20
      c. MOMENT OF INERTIA (Ip): — 0.407 IN^4 / FT
      d. SECTION MODULUS (Sp): — 0.337 IN^3 / FT
   B. WIDE RIB ROOF DECK (TYPE B):
      a. MINIMUM YIELD STRENGTH — Fy = 50 KSI
      b. DEPTH/GAGE: — 1 1/2" / 20
      c. MOMENT OF INERTIA (Ip): — 0.197 IN^4 / FT MIN
      d. SECTION MODULUS (Sp): — 0.224 IN^3 / FT MIN

1. COMPOSITE DECK SHALL BE ATTACHED TO SUPPORTING STRUCTURAL MEMBERS BY 5/8" EFFECTIVE DIAMETER PUDDLE WELDS PLACED AT EACH DECK RIB OR 18 INCHES ON CENTER MAX. THIS WELD CAN BE OMITTED IN RIBS THAT HAVE SHEAR STUD CONNECTORS. SIDE LAPS BETWEEN ADJACENT UNITS ARE TO BE ATTACHED WITH #10 TEK SCREWS, CRIMP OR BUTTON PUNCH OR 5/8" EFFECTIVE ARCH SPOT WELDS AT 36 INCHES MAXIMUM (MINIMUM 2 SCREWS PER SPAN).

2. MINIMUM DECK BEARING SHALL BE 2" AT EXTERIOR SUPPORTS & 3" FOR INTERIOR SUPPORTS, UNO.

3. ALL DECK SHALL BE CONTINUOUS OVER 3 SPANS. WHERE LESS THAN 3 SPANS ARE AVAILABLE, THE DECK SUPPLIER SHALL INCREASE THE DECK GAGE OR PROVIDE TEMPORARY SHORING AS REQUIRED SO THAT DECK IS CAPABLE OF SUPPORTING THE REQUIRED DEAD AND LIVE LOAD CAPACITIES INDICATED ON DRAWINGS.

4. COMPOSITE DECK DESIGN IS INTENDED TO BE UNSHORED, UNO.

5. CONCRETE REQUIRED FOR COMPOSITE ACTION SHALL MEET 28-DAY COMPRESSIVE STRENGTH PRIOR TO SUPPORTING TOPPING SLABS, MASONRY WALLS, AND/OR OTHER HEAVY LOADS.

6. NO DIRECT ATTACHMENT TO UNDERSIDE OF METAL ROOF DECK IS ALLOWED UNLESS INDICATED ON THE STRUCTURAL DRAWINGS. ALL SUSPENDED LOADS, INCLUDING BUT NOT LIMITED TO, CEILINGS, LIGHT FIXTURES, DUCTWORK, PIPING, AND OTHER UTILITIES TO BE SUPPORTED FROM THE PRIMARY STRUCTURAL MEMBERS OR SECONDARY SUPPORTS BETWEEN STRUCTURAL FRAMING. COORDINATE HANGER AND/OR WIRE SUPPORTS WITH ASSOCIATED SPECIFICATIONS AND TRADES.

7. CONDUITS LOCATED IN THE COMPOSITE SLAB SHALL BE LIMITED TO THE LARGER OF 3/4-INCH OR ONE-FOURTH OF THE TOPPING THICKNESS (MEASURED TOP OF DECK TO TOP OF CONCRETE) AND SPACED A MINIMUM OF THREE DIAMETERS ON CENTER. CONDUITS RUNNING PERPENDICULAR TO THE DECK FLUTES SHALL BE LAID DIRECTLY ON THE DECK WITH CONDUITS PARALLEL TO THE DECK FLUTES LOCATED IN THE DECK VALLEY BELOW THE CONDUITS RUNNING PERPENDICULAR TO THE DECK FLUTES. ALUMINUM CONDUIT IS PROHIBITED.

8. THE STEEL DECK SUPPLIER SHALL PROVIDE CLOSURE PLATES, AND ALL MISCELLANEOUS COLD-FORMED STEEL NECESSARY TO COMPLETE THE WORK.

COMPOSITE BEAM SHEAR CONNECTOR STUDS

1. SHEAR STUDS SHALL BE 3/4-INCH DIAMETER X LENGTH SHOWN ON PLANS, WITH A FINAL LENGTH NOT LESS THAN DEPTH OF DECK PLUS 1.5" CONFORMING TO AWS D1.1. PROVIDE SHEAR STUDS AT 2'-0" OC MAXIMUM FOR ALL BEAMS SUPPORTING SLAB WITHOUT A DESIGNATED STUD QUANTITY. ACCEPTABLE TYPES SHALL BE "TRU-WELD" (ICC ESR 2577) OR "NELSON" (ICC ESR 2856).

LATERAL LOAD RESISTANCE SYSTEM

1. *LATERAL LOAD SYSTEM CONSISTS OF FLOOR/ROOF DIAPHRAGMS TRANSFERRING LATERAL LOADS TO STRUCTURAL STEEL BRACED FRAMES/MOMENT RESISTING FRAMES.*

2. STEEL FRAME IS A "NON-SELF-SUPPORTING" STEEL FRAME REQUIRING INTERACTION OF THE STEEL FRAMING, FLOOR/ROOF DIAPHRAGMS AND SHEAR WALLS/BRACED FRAMES. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS NECESSARY TO PROVIDE SUPPORT OF FRAMING UNTIL ALL ATTACHMENTS ARE COMPLETE, INCLUDING STRUCTURAL STEEL, STRUCTURAL STEEL TO DIAPHRAGM/SHEAR WALLS, AND DIAPHRAGM TO SHEAR WALLS/BRACED FRAMES.

STEEL JOISTS

1. THESE NOTES ARE APPLICABLE TO THE DESIGN OF STEEL JOISTS (K-SERIES, LH-SERIES, DLH-SERIES, SLH-SERIES) AND JOIST GIRDERS.

2. STEEL JOIST FABRICATOR SHALL BE AN "APPROVED FABRICATOR" IN ACCORDANCE WITH THE BUILDING CODE, REGISTERED AND APPROVED BY THE AHJ. AT THE COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A "CERTIFICATE OF COMPLIANCE" TO THE A/E AND AHJ STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS.

3. FABRICATE AND ERECT JOISTS IN ACCORDANCE WITH THE BUILDING CODE, OPEN WEB STEEL JOISTS AND THE STANDARD SPECIFICATIONS FOR STEEL JOIST, K-SERIES, LH-SERIES, DLH-SERIES, SLH-SERIES AND JOIST GIRDERS, PUBLISHED BY THE STEEL JOIST INSTITUTE. TEMPORARY BRACING AND BRACING DESIGN REQUIRED FOR ERECTION ARE THE RESPONSIBILITY OF THE CONTRACTOR.

4. ALL STEEL JOISTS SHALL BE DESIGNED FOR THE SPAN, LOADING, AND SPACING INDICATED ON THE DRAWINGS. WHERE LOADS ARE NOT INDICATED, DESIGN JOIST FOR UNIFORM LOADING SHOWN IN STEEL JOIST INSTITUTE (SJI) LOAD TABLES BASED ON THE JOIST SPAN IN ADDITION TO LOADING IDENTIFIED IN THESE NOTES OR ON PLANS.

5. SIZE, TYPE, AND SPACING OF JOIST BRIDGING SHALL BE IN ACCORDANCE WITH SJI. USE 'X'-BRIDGING AT DISCONTINUOUS ENDS OF BRIDGING. LOCATE BRIDGING TO AVOID MECHANICAL OPENINGS.

6. DESIGN JOISTS AND BRIDGING TO RESIST AN ASD NET UPLIFT OF 15 PSF IN THE FIELD OF THE ROOF, 25 PSF WITHIN 10'-0" OF BUILDING EDGES, AND 35 PSF WITHIN 10'-0" OF EXPOSED CORNERS.

7. UNO, JOIST SEAT DEPTH SHALL BE 2 1/2" AT K-SERIES JOIST, 5" LH AND DLH10-17 SERIES JOISTS, 7 1/2" AT DLH18-25 AND JOIST GIRDERS, AND 10" AT JOIST GIRDERS WITH A SELF WEIGHT GREATER THAN OR EQUAL TO 150 PLF. JOIST SUPPLIER SHALL COORDINATE TOP OF STEEL BEAM ELEVATIONS WITH STEEL SUPPLIER PRIOR TO FABRICATION. PROVIDE SLOPED AND/OR SLOPED AND SKEWED BEARING SEATS AS REQUIRED FOR ROOF SLOPE.

8. FABRICATOR SHALL SUBMIT CALCULATIONS AND SHOP DRAWINGS SEALED BY AN ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED FOR ALL SPECIAL JOISTS AND JOIST GIRDERS. CALCULATIONS SHALL INCLUDE DEFLECTION AND CAMBER REQUIREMENTS AND CLEARLY SHOW ALL DESIGN LOADS.

9. LIVE LOAD DEFLECTIONS SHALL BE LIMITED TO SPAN/240 AT SIMPLE SPAN ROOF MEMBERS AND SPAN/360 AT SIMPLE SPAN FLOOR MEMBERS. ALL JOISTS AND JOIST GIRDERS SHALL BE CAMBERED PER SJI STANDARDS, UNO.

10. JOIST CANTILEVERS SHALL BE DESIGNED FOR ALL APPLICABLE LOADS. LIMIT TOTAL DEFLECTION TO L/360 OF THE 2 TIMES THE CANTILEVER LENGTH.

11. ALL JOISTS AND JOIST GIRDERS SHALL BE DESIGNED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE APPLICABLE FIRE RESISTANCE RATINGS PER ARCHITECTURAL.

12. REFER TO SNOW DRIFT DIAGRAM FOR SNOW DRIFT LOADS FOR -SP JOISTS. LOADS SHALL BE COMBINED WITH OTHER ROOF LOADS INDICATED IN ACCORDANCE WITH THE BUILDING CODE. SNOW DRIFT LOADS SHALL BE DISTRIBUTED OVER THE TRIBUTARY WIDTH SUPPORTED BY THE JOIST.

13. DO NOT ALTER DEPTHS SHOWN ON PLANS UNLESS REQUESTED AND APPROVED IN WRITING PRIOR TO SHOP DRAWING SUBMITTAL.

14. DESIGN ALL JOIST CHORDS FOR BENDING BETWEEN PANEL POINTS WITH A TOP CHORD BEND CHECK LOAD OF 400 LBS AND A BOTTOM CHORD BEND CHECK LOAD OF 200 LBS. WHERE CONCENTRATED LOADS EXCEED THESE LOADS, CONTRACTOR SHALL PROVIDE FIELD REINFORCEMENT PER TYPICAL JOIST REINFORCEMENT DETAIL.

15. WHERE JOISTS ARE INDICATED WITH A DEPTH AND SERIES ONLY ALONG WITH -SP (SHOWN THUS "20K-SP") MANUFACTURER SHALL DESIGN JOISTS FOR THE LOADS NOTED ON THE PLANS AND GENERAL NOTES PLUS AN ADDITIONAL 500 LB CONCENTRATED DEAD LOAD TO OCCUR ANYWHERE ALONG SPAN, TOP OR BOTTOM CHORD.

16. WHERE A COMPLETE JOIST DESIGNATION IS INDICATED ALONG WITH AN "SP" (SHOWN THUS "20K4-SP") THE JOIST SHALL BE DESIGNED WITH THE LOADS INDICATED ON THE PLANS AND GENERAL NOTES WITH A MINIMUM EQUIVALENT UNIFORM LOAD CAPACITY EQUAL TO OR GREATER THAN THAT OF THE SIZE INDICATED.

17. COORDINATE EXACT MECHANICAL EQUIPMENT WEIGHT AND LOCATION WITH MECHANICAL CONTRACTOR. COORDINATE JOIST WEBS WHERE MECHANICAL DUCTS SHOWN ON MECHANICAL DRAWINGS ARE DESIGNED TO PENETRATE THROUGH JOIST WEBS.

18. JOISTS SHALL BE DESIGNED FOR A 500 LBS CONCENTRATED SERVICE WIND LOAD AT ALL STEEL ANGLE BRACES. REFERENCE THE ROOF SECTIONS FOR ANGLE BRACE SPACING REQUIREMENTS.

19. DESIGN JOIST GIRDERS FOR REACTIONS FROM JOISTS AND BEAMS SUPPORTING UNIFORM AND TRIBUTARY LOADS NOTED ON PLANS AND IN THE GENERAL STRUCTURAL NOTES. JOIST GIRDER LOAD DIAGRAMS AS NOTED IN SJI'S SPECIFICATION ARE THE RESPONSIBILITY OF THE CONTRACTOR AND THE DESIGNATED ENGINEER RESPONSIBLE FOR THEIR DESIGN.

STRUCTURAL STEEL DELEGATED CONNECTION DESIGN

1. THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHICH THE PROJECT IS LOCATED TO DESIGN ALL STEEL CONNECTIONS NOT FULLY DETAILED IN THE DRAWINGS. CONNECTION DESIGN CALCULATIONS BEARING THE SEAL AND SIGNATURE OF THE ENGINEER RESPONSIBLE FOR THEIR PREPARATION SHALL BE SUBMITTED WITH THE SHOP DRAWING SUBMITTAL.

2. CONNECTIONS SHOWN ON CONSTRUCTION DOCUMENTS ARE FOR CONCEPTUAL PURPOSES ONLY. CONNECTIONS SHALL BE DESIGNED TO SUSTAIN THE FACTORED REACTIONS SHOWN IN ACCORDANCE WITH AISC LRFD SPECIFICATIONS. WHERE NO REACTION HAS BEEN PROVIDED, THE CONNECTION CAPACITY SHALL NOT BE LESS THAN ONE-HALF THE MAXIMUM FACTORED UNIFORM LOAD LISTED IN THE AISC CONSTRUCTION MANUAL FOR THE GIVEN BEAM, SPAN, AND GRADE OF STEEL SPECIFIED.

3. COMPOSITE BEAM-TO-BEAM AND BEAM-TO-COLUMN CONNECTIONS SHALL DEVELOP THE END REACTION SHOWN FOR THE CONNECTED BEAM. WHERE BEAM REACTIONS ARE NOT SHOWN ON THE DRAWINGS, THE END REACTION OF THE CONNECTED BEAM SHALL BE OBTAINED BY MULTIPLYING END REACTIONS DEVELOPED AS DESCRIBED IN NOTE 2 BY THE FOLLOWING FACTORS:

W12 & W14	2.00	W21 & W24	1.50
W16 & W18	1.75	W27 &W30	1.33

4. CONTRACTOR IS RESPONSIBLE FOR DESIGNING ALL STEEL TRUSS AND BRACE CONNECTIONS FOR THE FACTORED FORCES SHOWN IN ACCORDANCE WITH AISC LRFD SPECIFICATIONS. IF A MEMBER FORCE IS NOT SHOWN, THE CONNECTION SHALL BE DESIGNED FOR THE FULL LRFD TENSION CAPACITY OF THE MEMBER. CONNECTIONS SHALL BE DESIGNED TO TRANSFER THE MAXIMUM COMBINATION OF THE FORCES OF ALL MEMBERS, FRAMING INTO THE JOINT.

5. CONTRACTOR IS RESPONSIBLE FOR DESIGNING ALL MOMENT CONNECTIONS FOR THE FACTORED FORCES SHOWN IN ACCORDANCE WITH AISC LRFD SPECIFICATIONS. IF A MEMBER FORCE IS NOT SHOWN, THE CONNECTION SHALL BE DESIGNED FOR THE FULL PLASTIC MOMENT CAPACITY OF THE MEMBER. CONNECTIONS SHALL BE DESIGNED TO TRANSFER THE MAXIMUM COMBINATION OF THE FORCES OF ALL MEMBERS, FRAMING INTO THE JOINT.

6. ALL MEMBER FORCES SHOWN ARE TO BE TRANSFERRED TO THE WORK POINT. THE WORK POINT IS DEFINED AS THE INTERSECTION OF ALL CENTROIDS OF THE MEMBERS FRAMING INTO THE JOINT. AT BRACED FRAMES WHERE HORIZONTAL MEMBERS FRAMING INTO THE JOINT HAVE VARYING DEPTHS, AND SIMILAR TOP OF STEEL ELEVATIONS, THE WORK POINT SHALL BE BASED ON THE CENTER LINE OF THE HORIZONTAL MEMBER OF LEAST DEPTH (IE, THE WORKPOINT WILL NOT NECESSARILY CORRESPOND TO THE DEEPER MEMBER).

SUBMITTALS

1. THE FOLLOWING ITEMS ARE REQUIRED STRUCTURAL SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS.
   a. 033000 CAST-IN-PLACE CONCRETE REINFORCING
   b. 042000 UNIT MASONRY
   c. 051200 STRUCTURAL STEEL FRAMING
   d. 052100 STEEL JOIST FRAMING
   e. 053100 STEEL DECKING
   f. 054000 COLD-FORMED METAL FRAMING

2. THE FOLLOWING ITEMS ARE DELEGATED DESIGN (DEFERRED SUBMITTALS PER THE BUILDING CODE) AS DESCRIBED IN THE SPECIFICATIONS.
   a. 033000 CAST-IN-PLACE CONCRETE MIX DESIGNS
   b. 051200 STRUCTURAL STEEL CONNECTIONS
   c. 052100 STEEL JOIST FRAMING
   d. 054000 COLD-FORMED METAL FRAMING
   e. 055000 METAL FABRICATIONS
   f. 055113 METAL PAN STAIRS
   g. 055213 PIPE AND TUBE RAILINGS

1. DELEGATED DESIGN SUBMITTAL CALCULATIONS AND/OR SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY THE ENGINEER RESPONSIBLE FOR THEIR PREPARATION AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW WITH THE SHOP DRAWING SUBMITTAL. ONCE REVIEWED, CONTRACTOR SHALL FORWARD TO THE AHJ FOR APPROVAL. FABRICATION AND INSTALLATION OF THE DELEGATED DESIGN SUBMITTAL ITEMS SHALL NOT OCCUR UNTIL APPROVAL OF THE AHJ IS RECEIVED.

COLD FORMED METAL FRAMING

1. DESIGN, FABRICATE, AND ERECT COLD-FORMED STEEL STRUCTURAL MEMBERS PER THE REQUIREMENTS OF THE LATEST EDITION OF THE SPECIFICATION FOR THE DESIGN OF COLD-FORMED STRUCTURAL MEMBERS BY THE AMERICAN IRON AND STEEL INSTITUTE, INCLUDING ALL APPLICABLE AMENDMENTS. WHERE REQUIRED, THE SEISMIC DESIGN OF COLD-FORMED STRUCTURAL MEMBERS, AISI S100 & S200, AND SHALL BE IN ACCORDANCE WITH THE ADDITIONAL PROVISIONS OF THE BUILDING CODE.

2. COLD FORMED METAL FRAMING (CFMF) AND CONNECTIONS TO THE STRUCTURAL SYSTEM SHALL BE DESIGNED AND DETAILED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE WHICH THE PROJECT IS LOCATED.

3. CFMF SHALL BE DESIGNED BY THE SUPPLIER TO RESIST LOADS INDICATED ON THE DRAWINGS. SEE LOADING PLANS AND ADDITIONAL LOADS NOTED.

4. CONNECTIONS AND ATTACHMENT TO THE STRUCTURE SHALL BE INSTALLED AS DESIGNED AND DETAILED BY THE CFMF SUPPLIER TO RESIST ALL LOADS INDICATED.

5. SUBMIT SIGNED AND SEALED CFMF SHOP DRAWINGS AND SPECIFICATIONS TO THE SEOR FOR REVIEW PRIOR TO FABRICATION.

6. MINIMUM YIELD STRENGTH FOR 43 AND 33 MIL STUDS, JOISTS, STRAPS, BRIDGING, ETC, SHALL BE 33 KSI MINIMUM. YIELD STRENGTH FOR 97, 68, AND 54 MIL STUDS, JOISTS, STRAPS, BRIDGING, ETC, SHALL BE 50 KSI MINIMUM.

7. PROVIDE CFMF MEMBERS WITH SECTION PROPERTIES REQUIRED TO RESIST APPLIED LOADING AND AS MANUFACTURED BY MEMBERS OF THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA) COMPLYING WITH ICC ESR-3064P AND THE BUILDING CODE.

8. STUDS IN LOAD BEARING WALLS SHALL ALIGN VERTICALLY WITH THE JOIST OR TRUSS BEARING LOCATION ABOVE AND BELOW. UNLESS NOTED OTHERWISE, PROVIDE DOUBLE STUDS AT ALL JAMBS, CORNERS, INTERSECTIONS, BEAM BEARINGS, AND JOIST BEARINGS. PROVIDE ADDITIONAL STUDS AT JAMBS AS REQUIRED BY THE CFMF SUPPLIER. ALL STUDS SHALL BE SECURELY SEATED FOR FULL END BEARING ON TOP AND BOTTOM TRACK.

9. TEMPORARY BRACING SHALL BE INSTALLED AND LEFT IN PLACE UNTIL OTHER MEANS IS PROVIDED TO ADEQUATELY BRACE THE STRUCTURE. STUD SUPPLIER AND INSTALLER SHALL PROVIDE ALL CONNECTORS, FASTENERS, BRIDGING AND BRACING AS REQUIRED TO PROVIDE A COMPLETE STABLE INSTALLATION.

UNDERPINNING EXISTING WALLS AND FOOTINGS

1. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF ALL UNDERPINNING, WHETHER PERMANENT OR TEMPORARY, AND ANY OTHER PRECAUTIONARY, OR PROTECTIVE CONSTRUCTION NECESSARY TO SUPPORT THE EXISTING BUILDING.

2. UNDERPINNING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DESIGN ASPECTS INCLUDING ESTIMATING EXISTING BUILDING/SOIL LOADING, COMPLIANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS INCLUDING LOADING FOR PERMANENT STRUCTURES WHERE UNDERPINNING IS TO REMAIN AS PART OF THE COMPLETED STRUCTURE.

3. UNDERPINNING SYSTEMS REQUIRED TO SUPPORT THE EXISTING STRUCTURE OR FACILITATE EXCAVATION SHALL BE PROVIDED BY THE CONTRACTOR AND DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

4. UNDERPINNING SHALL BE PERFORMED BY A CONTRACTOR FAMILIAR WITH THIS TYPE OF WORK AND SHOWING A HISTORY OF 5 YEARS EXPERIENCE ON PROJECTS OF SIMILAR SIZE AND SCOPE.

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

GENERAL STRUCTURAL NOTES

S0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:39 PM

STATEMENT OF SPECIAL INSPECTIONS

1. IN ACCORDANCE WITH IBC, SECTION 1704, THE OWNER'S REPRESENTATIVE SHALL EMPLOY ONE OR MORE QUALIFIED SPECIAL INSPECTORS AND/OR TESTING AGENCIES TO PERFORM STRUCTURAL TESTS AND SPECIAL INSPECTIONS ON THE TYPES OF WORK LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.

2. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE AHJ, AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE BUILDING CODE.

3. THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO VERIFY CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.

4. THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE OWNER'S REPRESENTATIVE, AHJ AND ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER AND THE AHJ.

5. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL COMPLETE, SIGN AND SEAL A FINAL REPORT CERTIFYING THAT TO THE BEST OF THEIR KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.

6. SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE AHJ AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR AUTHORIZED AGENT FROM REQUESTING THE INSPECTIONS REQUIRED BY IBC SECTION 110.

7. CONTRACTOR RESPONSIBILITY: EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND- OR SEISMIC FORCE-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE AHJ AND THE OWNER'S REPRESENTATIVE ACKNOWLEDGING AWARENESS OF REQUIRED SPECIAL INSPECTIONS PRIOR TO COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT.

8. CONCRETE: PER IBC SECTION 1705.3 AND TABLE 1705.3 WITH EXCEPTIONS. THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION: ALL CONCRETE, EXCEPT; SLAB-ON-GRADE, SIDE WALKS, AND PAVEMENT.

9. STRUCTURAL MASONRY: MASONRY CONSTRUCTION SHALL BE INSPECTED AND VERIFIED IN ACCORDANCE WITH TMS 402/602-16:
   a. ENGINEERED MASONRY IN RISK CATEGORY I, II, OR III STRUCTURES: THE MINIMUM SPECIAL INSPECTION PROGRAM FOR MASONRY SHALL COMPLY WITH LEVEL 2 QUALITY ASSURANCE, TABLE 4.
   b. ENGINEERED MASONRY IN RISK CATEGORY IV STRUCTURES: THE MINIMUM SPECIAL INSPECTION PROGRAM FOR MASONRY SHALL COMPLY WITH LEVEL 3 QUALITY ASSURANCE, TABLE 4.

10. STEEL CONSTRUCTION: SPECIAL INSPECTIONS FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360-16. PROVIDE INSPECTION PER IBC SECTION 1704.2.5 FOR STRUCTURAL LOADING-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP. THESE INSPECTIONS SHALL BE AT CONTRACTOR'S EXPENSE IF THE FABRICATOR IS NOT AN APPROVED FABRICATOR PER SECTION 1704.2.5.1.

11. WELDING: WELDING INSPECTION SHALL BE IN COMPLIANCE WITH AWS D1.1. THE BASIS FOR WELDING INSPECTOR QUALIFICATIONS SHALL BE AWS D1.1. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH AISC 360-16 TABLE N5.4-1 THROUGH TABLE N5.4-3.

12. STEEL DETAILING: AN INSPECTION OF THE STEEL FRAME SHALL BE PERFORMED TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS, SUCH AS BRACING, STIFFENING, MEMBER LOCATIONS AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.

13. HIGH STRENGTH BOLTING: INSTALLATION OF HIGH STRENGTH BOLTS SHALL BE PERIODICALLY INSPECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. HIGH STRENGTH BOLTING. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH AISC 360-16 TABLE N5.6-1 THROUGH TABLE N5.6-3.

14. COLD-FORMED STEEL DECK: SPECIAL INSPECTION AND QUALIFICATION OF MATERIAL VERIFICATION, WELDING AND MECHANICAL FASTENERS FOR COLD FORMED STEEL FLOOR AND ROOF DECK SHALL BE IN ACCORDANCE WITH THE STEEL DECK INSTITUTE (SDI) QA/QC STANDARD.

15. STEEL OPEN WEB STEEL JOIST AND JOIST GIRDERS: INSPECTION SHALL BE PER TABLE 1705.2.3.

16. COLD-FORMED STEEL TRUSSES SPANNING 60 FEET OR GREATER: THE INSPECTOR SHALL VERIFY THAT THE TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE PER SECTION 1705.2.4.

17. GRADING, EXCAVATION AND FILLING: PER SECTION 1705.6 AND TABLE 1705.6.

18. PILING, DRILLED PIERS AND CAISSONS: PER SECTION 1705.7 & 1705.8 AND TABLES 1705.7 & 1705.8.

19. HELICAL PILE FOUNDATIONS: CONTINUOUS SPECIAL INSPECTION SHALL BE PERFORMED DURING THE INSTALLATION OF HELICAL PILE FOUNDATIONS. THE INFORMATION RECORDED SHALL INCLUDE INSTALLATION EQUIPMENT USED, PILE DIMENSIONS, TIP ELEVATIONS, FINAL DEPTH, FINAL INSTALLATION TORQUE AND OTHER PERTINENT INSTALLATION INFORMATION PER SECTION 1705.9.

20. SPRAY-APPLIED FIREPROOFING: PER SECTION 1705.14.

21. MASTIC AND INTUMESCENT FIRE RESISTING COATINGS: PER SECTION 1705.15.

22. EXTERIOR INSULATION AND FINISH SYSTEM (EIFS): PER SECTION 1705.16.

23. FIRE-RESISTANT PENETRATIONS AND JOINTS: PER SECTION 1705.17.

24. SMOKE CONTROL: PER SECTION 1705.18.

25. EXPANSION BOLT, SCREW ANCHOR AND ADHESIVE ANCHORS: INSTALLATION TO VERIFY INSTALLATION IN ACCORDANCE WITH ICC-ES REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.

26. HEADED CONCRETE SHEAR CONNECTORS: INSPECTED AND TESTED PER AMERICAN WELDING SOCIETY CODE AWS D1.1.

IBC — TABLE 1705.2.3

REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD (a)
1. Installation of open-web steel joists and joist girders.			
a. End connections – welding or bolted.	—	X	SJI specifications listed in Section 2207.1.
b. Bridging – horizontal or diagonal.	—	—	—
1) Standard bridging.	—	X	SJI specifications listed in Section 2207.1. ACI 318: Section 3.5.2
2) Bridging that differs from the SJI specifications listed in Section 2207.1	—	X	
a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.			

IBC — TABLE 1705.3

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD (a)	IBC REFERENCE
1. Inspect reinforcement, including prestressing tendons, and verify placement.	—	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. Reinforcing bar welding:				
a. Verify weldability of reinforcing bars other than ASTM A706;	—	X	AWS D1.4 ACI 318: 26.6.4	—
b. Inspect single-pass fillet welds, maximum 5/16"; and	—	X		
c. Inspect all other welds.	X	—		
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2	—
4. Inspect anchors post-installed in hardened concrete members. (b)				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	—	ACI 318: 17.8.2.4	—
b. Mechanical anchors and adhesive anchors not defined in 4.a.	—	X	ACI 318: 17.8.2	—
5. Verify use of required design mix.	—	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.10
7. Inspect concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8. Verify maintenance of specified curing temperature and techniques.	—	X	ACI 318: 26.5.3-26.5.5	1908.9
9. Inspect prestressed concrete for:				
a. Application of prestressing forces; and	X	—	ACI 318: 26.10	—
b. Grouting of bonded prestressing tendons.	X	—		—
10. Inspect erection of precast concrete members.	—	X	ACI 318: 26.9	—
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	—	X	ACI 318: 26.11.2	—
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 26.11.1.2(b)	—

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

IBC — TABLE 1705.6

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS	PERIODIC
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	—	X
2. Verify excavations are extended to proper depth and have reached proper material.	—	X
3. Perform classification and testing of compacted fill materials.	—	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	—
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	—	X

IBC — TABLE 1705.8

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS

TYPE	CONTINUOUS	PERIODIC
1. Inspect drilling operations and maintain complete and accurate records for each element.	X	—
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	—
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.	—	—

TMS 402 / 602 — TABLE 3

MINIMUM VERIFICATION REQUIREMENTS

MINIMUM VERIFICATION	REQUIRED FOR QUALITY ASSURANCE (a)			REFERENCE FOR CRITERIA
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 602
Prior to construction, verification of compliance of submittals.	R	R	R	Art. 1.5
Prior to construction, verification of f'm and f'AAC, except where specifically exempted by the Code.	NR	R	R	Art. 1.4B
During construction, verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site.	NR	R	R	Art. 1.5 & 1.6.3
During construction, verification of f'm and f'AAC for every 5,000 square feet (465 square meters).	NR	NR	R	Art. 1.4B
During construction, verification of proportions of materials as delivered to the project site for premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout.	NR	NR	R	Art. 1.4B

a. R = Required, NR = Not Required

TMS 402 / 602 — TABLE 4

MINIMUM SPECIAL INSPECTION

INSPECTION TASK	FREQUENCY (a)			REFERENCE FOR CRITERIA	
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602
1. As masonry construction begins, verify that the following are in compliance:					
a. Proportions of site-prepared mortar	NR	P	P		Art. 2.1, 2.6A, & 2.6C
b. Grade and size of prestressing tendons and anchorages	NR	P	P		Art. 2.4B & 2.4H
c. Grade, type, and size of reinforcement, connectors, anchor bolts, and prestressing tendons and anchorages	NR	P	P		Art. 3.4 & 3.6A
d. Prestressing technique	NR	P	P		Art. 3.6B
e. Properties of thin-bed mortar for AAC masonry	NR	C (b) / P (c)	C		Art. 2.1C.1
f. Sample panel construction	NR	P	C		Art. 1.6D
2. Prior to grouting, verify that the following are in compliance					
a. Grout Space	NR	P	C		Art. 3.2D & 3.2F
b. Placement of prestressing tendons and anchorages	NR	P	P	Sec. 10.8 & 10.9	Art. 2.4 & 3.6
c. Placement of reinforcement, connectors, and anchor bolts	NR	P	C		Art. 3.2E & 3.4
d. Proportions of site-prepared grout and prestressing grout for bonded tendons	NR	P	P		Art. 2.6B & 2.4G.1.b
3. Verify compliance of the following during construction:					
a. Materials and procedures with the approved submittals	NR	P	P		Art. 1.5
b. Placement of masonry units and mortar joint construction	NR	P	P		Art. 3.3B
c. Size and location of structural members	NR	P	P		Art. 3.3F
d. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction	NR	P	C	Sec. 1.2.1(e), 6.2.1 & 6.3.1	
e. Welding of reinforcement	NR	C	C	Sec. 6.1.6.1.2	
f. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F)	NR	P	P		Art. 1.8C & 1.8D
g. Application and measurement of prestressing force	NR	C	C		Art. 3.6B
h. Placement of grout and prestressing grout for bonded tendons is in compliance	NR	C	C		Art. 3.5 & 3.6C
i. Placement of AAC masonry units and construction of thin-bed mortar joints	NR	C (b) / P (c)	C		Art. 3.3B.9 & 3.3F.1.b
4. Observe preparation of grout specimens, mortar specimens, and / or prisms	NR	P	C		Art. 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3.& 1.4B.4

a. Frequency refer to the frequency of inspection, which may be continuous during the task listed or periodically during the listed task, as defined in the table.
NR = Not Required, P = Periodic C = Continuous
b. Required for the first 5,000 square feet (465 square meters) of AAC masonry.
c. Required after the first 5,000 square feet (465 square meters) of AAC masonry.

AISC 360 — TABLE N5.4-1

INSPECTION TASKS PRIOR TO WELDING

INSPECTION TASKS PRIOR TO WELDING	QC	QA
Welder qualification records and continuity records	P	O
Welding procedure specifications (WPS) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type / grade)	O	O
Welder identification system [a]	O	O
Fit-up of groove welds (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Fit-up of CJP groove welds of HSS T-, Y- and K-joints without backing (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	P	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	—

[a] The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

AISC 360 — TABLE N5.4-2

INSPECTION TASKS DURING WELDING

INSPECTION TASKS DURING WELDING	QC	QA
Control and handling of welding consumables • Packaging • Exposure Control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS Followed • Settings on welding equipment • Travel Speed • Selected welding materials • Shielding gas type / flow rate • Preheat applied • Interpass temperature maintained (min. / max.) • Proper position (F, V, H, OH)	O	O
Welding techniques • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements	O	O
Placement and installation of steel headed stud anchors	P	P

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

AISC 360 — TABLE N5.4-3

INSPECTION TASKS AFTER WELDING

INSPECTION TASKS AFTER WELDING	QC	QA
Welds cleaned	O	O
Size, length and location of welds	P	P
Welds meet visual acceptance criteria • Crack prohibition • Weld / base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity	P	P
Arc strikes	P	P
k-area [a]	P	P
Weld access holes in rolled heavy shapes and build-up heavy shapes [b]	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P
No prohibited welds have been added without the approval of the EOR	O	O

[a] When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches (75 mm) of the weld.

[b] After rolled heavy shapes (see Section A3.1c) and built-up heavy shapes (see Section A3.1d) are welded, visually inspect the weld access hole for cracks.

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

AISC 360 — TABLE N5.6-1

INSPECTION TASKS PRIOR TO BOLTING

INSPECTION TASKS PRIOR TO BOLTING	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers, and other fastener components	O	O

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

AISC 360 — TABLE N5.6-2

INSPECTION TASKS DURING BOLTING

INSPECTION TASKS DURING BOLTING	QC	QA
Fastener assemblies placed in all holes and washers and nuts are positioned as required	O	O
Joint brought to the snug-tight condition prior to the pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	O	O

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

AISC 360 — TABLE N5.6-3

INSPECTION TASKS AFTER BOLTING

INSPECTION TASKS AFTER BOLTING	QC	QA
Document acceptance or rejection of bolted connections	P	P

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

ANSI / SDI QA/QC— TABLE 1.1

INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT

TASK	QC	QA
A. Verify complaiance of materials (deck and all deck accessories) with construction documents, including profiles, material properties, and base metal thickness	P	P
B. Document acceptance or rejection of deck and deck accessories	P	P

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.2

INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT

TASK	QC	QA
A. Verify complaiance of deck and all deck accessories installation with construction documents	P	P
B. Verify deck materials are represented by the mill certifications that comply with the construction documents	N/A	P
C. Document acceptance or rejection of installation of deck and deck accessories	P	P

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.3

INSPECTION OR EXECUTION TASKS PRIOR TO WELDING

TASK	QC	QA
A. Welding procedure specifications (WPS) available	O	O
B. Manufacturer certifications for welding consumables available	O	O
C. Material identification (type / grade)	O	O
D. Check welding equipment	O	O

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.4

INSPECTION OR EXECUTION TASKS DURING WELDING

TASK	QC	QA
A. Use of qualified welders.	O	O
B. Control and handling of welding consumables	O	O
C. Environmental conditions (wind speed, moisture, temperature)	O	O
D. WPS followed	O	O

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.5

INSPECTION OR EXECUTION TASKS AFTER WELDING

TASK	QC	QA
A. Verify size and location of welds, including support, sidelap, and perimeter welds	P	P
B. Welds meet visual acceptance criteria	P	P
C. Verify repair activities	P	P
D. Document acceptance or rejection of welds	P	P

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.6

INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING

TASK	QC	QA
A. Manufacturer installation instructions available for mechanical fasteners	O	O
B. Proper tools available for fastener installation	O	O
C. Proper storage for mechanical fasteners	O	O

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.7

INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING

TASK	QC	QA
A. Fasteners are positioned as required	O	O
B. Fasteners are installed in accordance with manufacturer's instructions	O	O

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

ANSI / SDI QA/QC— TABLE 1.8

INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING

TASK	QC	QA
A. Check spacing, type, and installation of support fasteners	P	P
B. Check spacing, type, and installation of sidelap fasteners	P	P
C. Check spacing, type, and installation of perimeter fasteners	P	P
D. Verify repair activities	P	P
E. Document acceptance or rejection on mechanical fasteners	P	P

O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections.
P - Perform these tasks prior to final acceptance for each item or element.

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

GENERAL STRUCTURAL NOTES & SPECIAL INSPECTIONS

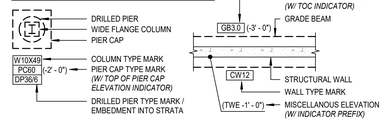
S0.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:44 PM

ABBREVIATIONS

#	REINFORCING BAR SIZE, SHEET METAL SCREW SIZE
@	AT (SPACING)
Ø	DIAMETER
A	AXIAL
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR
APPROX	APPROXIMATE
AR	ANCHOR ROD
ARCH	ARCHITECTURAL
B/	BOTTOM OF
BDE	BOTTOM OF DECK ELEVATION
BLDG	BUILDING
BLKG	BLOCKING
BM(S)	BEAM(S)
BOF	BOTTOM OF FOOTING
BOL	BOTTOM OF LINTEL
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BP	BASE PLATE
BPL	BEARING PLATE
BRBF	BUCKLING RESTRAINED BRACE FRAME
BRDG	BRIDGING
BRG	BEARING
BS	BEARING SEAT
BTWN	BETWEEN
C	CHANNEL
CANT	CANTILEVER
CFMF	COLD-FORMED METAL FRAMING
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CSTJ	CONSTRUCTION JOINT
CTR	CENTER
CW	CONCRETE WALL
CY	CUBIC YARD
(D)	DEMOLISH
db	BAR DIAMETER
DBA	DEFORMED BAR ANCHOR
DCW	DEMAND CRITICAL WELD
DEG	DEGREE
DEPR	DEPRESS(ION)(ED)
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DP	DRILLED PIER
DT	PRESTRESSED PRECAST DOUBLE TEE
DTL	DETAIL
DWA	DEFORMED WIRE ANCHOR
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
(E)	EXISTING
EA	EACH
EBF	ECCENTRICALLY BRACED FRAME
EBOF	EXISTING BOTTOM OF FOOTING
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT
EN	EDGE NAILING
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EP	EMBED PLATE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ETOF	EXISTING TOP OF FOOTING
EW	EACH WAY
EWP	ENGINEERED WOOD PRODUCT
EXP	EXPANSION
EXT	EXTERIOR
F'c	28 DAY CONCRETE STRENGTH
fc	MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS
fm	SPECIFIED COMPRESSIVE STRENGTH OF MASONRY
FA	FACE
FAB	FABRICATE(D)
FD	FLOOR DRAIN
FDN	FOUNDATION
FRT	FIRE RESISTANCE TREATED
FS	FAR SIDE
FT	FEET
FTG	FOOTING
FV	FIELD VERIFY
FY	YIELD STRENGTH
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GEN	GENERAL
GLB	GLUE LAMINATED BEAM
GR	GRADE
H	HEIGHT
HC	HOLLOW CORE
HD	HOLD DOWN
HDR	HEADER
HGR	HANGER
HORIZ	HORIZONTAL
HS	HEADED STUD
HSA	HEAD STUD ANCHOR
HSS	HOLLOW STRUCTURAL SHAPE
ID	INSIDE DIAMETER
IF	INSIDE FACE
IMF	INTERMEDIATE MOMENT FRAME
IN	INCH
INC	INCLUDE(ING)
INT	INTERIOR
JBE	JOIST BEARING ELEVATION
JST	JOIST
JT	JOINT
k	KIPS
KSF	KIPS PER SQUARE FOOT
L	ANGLE
LB(S)	POUND(S)
Ld	REINFORCING BAR DEVELOPMENT LENGTH
Ldh	HOOKED REINFORCING BAR DEVELOPMENT LENGTH
LF	LINEAR FOOT
LFRS	LINEAR FOOT RESISTING SYSTEM
LIN	LINEAR
LL	LIVE LOAD
LLBB	LONG LEG BACK TO BACK
LLH	LONG LENGTH HORIZONTAL
LLV	LONG LENGTH VERTICAL
LONG	LONGITUDINAL
Ls	REINFORCING BAR LAP SPLICE LENGTH
LSH	LONG SLOTTED HOLE
LV	LAMINATED VENEER LUMBER
LW	LONG WAY
LWC	LIGHT WEIGHT CONCRETE
M	MOMENT
MAS	MASONRY
MAX	MAXIMUM
MC	MOMENT CONNECTION
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL & PLUMBING
MF	MOMENT FRAME
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
ML	MASONRY LINTEL
MTL	METAL
MW	MASONRY WALL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
(N)	NEW
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE
OC	ON CENTER
OCBF	ORDINARY CONCENTRICALLY BRACED FRAME
OCCS	ORDINARY CANTILEVER COLUMN SYSTEM
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OMF	ORDINARY MOMENT FRAME
OPG(S)	OPENING(S)
OPP	OPPOSITE
OWJ	OPEN WEB JOIST
PAF	POWDER ACTUACTED FASTENER
PC	PRECAST CONCRETE, PILE CAP
PCBE	PRECAST CONCRETE BEARING ELEVATION
PCF	POUNDS PER CUBIC FOOT
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PL	PRECAST LINTEL
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PROJ	PROJECT(OR) (ION)
PRS	PER ROOF SLOPE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST-TENSIONED(ING)
PTW	PRESERVATIVE TREATED WOOD
PW	PRECAST WALL
RAD	RADIUS
RC	REINFORCED CONCRETE
REF	REFERENCE
REINF	REINFORCEMENT
REQ(D)	REQUIRE(D)
REV	REVISION(S)
RTU	ROOF TOP UNIT
SC	SHEAR CONNECTOR(S)
SCBF	SPECIAL CONCENTRICALLY BRACED FRAME
SCCS	SPECIAL CANTILEVER COLUMN SYSTEM
SCHED	SCHEDULE
SDL	SUPERIMPOSED DEAD LOAD
SDS	SELF-DRILLING SCREWS
SECT	SECTION
SF	SQUARE FEET
SFRS	SEISMIC FORCE RESISTING SYSTEM
SHT	SHEET
SIM	SIMILAR
SL	SNOW LOAD
SLBB	SHORT LEG BACK TO BACK
SMF	SPECIAL MOMENT FRAME
SOG	SLAB ON GROUND/GRADE
SPA	SPACE (ING)
SPEC	SPECIFICATION(S)
SQ	SQUARE
SR	STRUCTURAL ROOF
SSH	SHORT SLOTTED HOLE
SST	STAINLESS STEEL
STAG'D	STAGGERED
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMETRICAL
t	PLATE THICKNESS
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T.O.	TOP OF
T/	TOP OF
TC	TENSION CONTROL
TCW	TOP OF CONCRETE WALL
TEMP	TEMPORARY
THRD	THREADED
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPE	TOP OF PEDESTAL/PIER ELEVATION
TRANS	TRANSVERSE
TSE	TOP OF SLAB ELEVATION
TWE	TOP OF WALL ELEVATION
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	SHEAR
VERT	VERTICAL
VFY	VERIFY
W	WIDE FLANGE
W/	WITH
W/O	WITHOUT
WD	WOOD
WF	WALL FOOTING
WFRS	WIND FORCE RESISTING SYSTEM
WGT	WEIGHT
WHA	WATER HAMMER ARRESTOR
WP	WORK POINT
WPS	WELDING PROCEDURE SPECIFICATION
WT	STEEL TEE SECTION
WWR	WELDED WIRE REINFORCEMENT
X-STR	EXTRA STRONG
XX-STR	DOUBLE EXTRA STRONG
YD	YARD
ZRC	ZINC RICH COATING

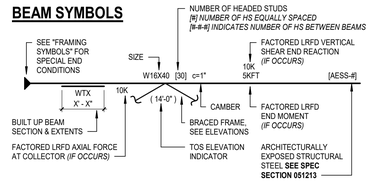
DEEP FOUNDATION SYMBOLS



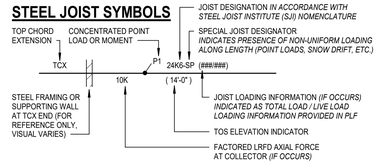
SLAB & DECK SYMBOLS

- 8" / TS — TOP OF SLAB ELEVATION CHANGE *(W/ STEP DIMENSION)*
- TOP OF SLAB SLOPED *(SLOPED UP OR SLOPED DOWN)*
- SS# — SLAB ON VOID TYPE INDICATOR
- ROOF OR FLOOR PENETRATION
- SF# (13' - 6") — STRUCTURAL FLOOR TYPE INDICATOR & SPAN DIRECTION *(W/ TOP OF SLAB ELEVATION INDICATOR)*
- SUPPLEMENTAL SLAB REINFORCEMENT *(REINFORCEMENT SIZE & EXTENTS PER PLAN)*
- SR# A — STRUCTURAL ROOF TYPE INDICATOR & SPAN DIRECTION *(LETTER BELOW INDICATES DECK ATTACHMENT TYPE, IF APPLICABLE)*

BEAM SYMBOLS



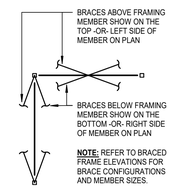
STEEL JOIST SYMBOLS



LOADING SYMBOLS

- V = 10K (WIND) — FACTORED (LRFD) SHEAR LOAD ALONG LINE FOR DELEGATED DESIGN OF LATERAL FORCE RESISTING ELEMENTS *(WIND AND / OR SEISMIC AS INDICATED)*
- P1 — CONCENTRATED LOAD ON JOIST OR BEAM *(SEE SCHEDULE FOR MAGNITUDE & TYPE)*
- FALL PROTECTION DAVIT *(SCHEMATIC ONLY; DELEGATED DESIGN)*

BRACED FRAME SYMBOLS



NOTE: REFER TO BRACED FRAME ELEVATIONS FOR BRACE CONFIGURATIONS AND MEMBER SIZES.

FRAMING SYMBOLS

- CW# — CONCRETE WALL TYPE MARK
- CJ — CONCRETE WALL CONTROL JOINT
- (12) #6 x 14'-0" — CONCRETE SLAB REINFORCEMENT BAR TYPE, # OF BARS & EXTENTS *SOLID LINE INDICATES TOP BARS* *DASHED LINE INDICATES BOTTOM BARS* *BARS SHOWN W/ 180°, 135°, OR 90° HOOKS (IF OCCURS)*
- STEEL BEAM TO HSS COLUMN MOMENT CONN OR CANTILEVERED BEAM CONN
- STEEL BEAM CONT OVER TOP OF HSS COLUMN
- STEEL BEAM TO HSS COLUMN SHEAR CONN
- STEEL BEAM TO HSS COLUMN COLLECTOR CONN
- STEEL BEAM TO WF COLUMN MOMENT CONN
- STEEL BEAM CONT OVER TOP OF WF COLUMN
- STEEL BEAM TO WF COLUMN SHEAR CONN
- STEEL BEAM TO WF COLUMN COLLECTOR CONN
- STEEL BEAM TO STEEL BEAM MOMENT CONN
- STEEL BEAM TO STEEL BEAM SHEAR CONN
- STEEL BEAM TO STEEL BEAM COLLECTOR CONN
- STEEL BEAM TO STEEL BEAM SHEAR SPLICE CONN
- EP# — WF BEAM TO CONCRETE WALL EMBED CONN *(W/ EMBED PLATE TYPE MARK IF OCCURS)*
- EP# — WF BEAM TO PRECAST WALL EMBED CONN *(W/ EMBED PLATE TYPE MARK IF OCCURS)*
- BPL# — WF BEAM OR JOIST BEARING PL AT MASONRY WALL *(W/ BEARING PLATE TYPE MARK IF OCCURS)*
- WF BEAM TO CONCRETE WALL COLLECTOR CONN
- WF BEAM TO MASONRY WALL COLLECTOR CONN
- STEEL ANGLE KICKER (DIAGONAL) BRACE *'X' INDICATES CONN POINT TO STRUCTURE*
- S — STAIR STRINGER CONN TO STRUCTURE *(SCHEMATIC ONLY; DELEGATED DESIGN)*
- 5" BS / 5" BS — JOIST BEARING SEAT HEIGHT *(ONE OR BOTH ENDS)*
- W16X40 — WF BEAM ROTATED 90° DEGREES *(PLACED NEXT TO BEAM SIZE TAG)*
- W8x40 — WIDE FLANGE OR HSS POST ABOVE BEAM *W/ COLUMN SIZE OR TYPE MARK*
- HSS34x4x1/4 / HGR — HSS, ANGLE OR DOUBLE ANGLE HANGER INDICATED ALL LEVELS WHERE HANGER PROVIDES SUPPORT
- # Ø / #"x #" — PENETRATION IN BEAM WEB (CENTERED, UNO) SIZE INDICATED AS # Ø OR #" x #" (HEIGHT x WIDTH)

STRUCTURAL HATCHES

CONCRETE	PLYWOOD (LARGE SCALE)
PRECAST CONCRETE	BRICK VENEER
CONCRETE MASONRY UNIT	EARTH
STEEL	GRAVEL
GROUT	SAND
ISOLATION JOINT / EXPANSION JOINT	STONE
GEOFOAM	RIGID INSULATION
	(E) STRUCTURAL ELEMENT

GENERAL STRUCTURAL NOTES

A. STRUCTURAL GENERAL NOTES APPLY TO ALL SHEETS.
B. STRUCTURAL ELEVATION 0' - 0" = ARCHITECTURAL ELEVATION 0' - 0". REFERENCE CIVIL DRAWINGS FOR SITE SURVEY ELEVATIONS.
C. ELEVATIONS ARE REFERENCED FROM DATUM ELEVATION AND ARE SHOWN THUS #'- #", -#' - #".
D. SEE ARCHITECTURAL DRAWINGS FOR LAYOUT AND DIMENSIONS NOT SHOWN.
E. SEE CIVIL, LANDSCAPE, AND ARCHITECTURAL DRAWINGS FOR SIDEWALKS, PAVING AND SITE DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS.
F. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND EXTENTS OF SPECIAL FINISHES OR TREATMENTS TO EXPOSED CONCRETE.
G. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND EXTENTS OF FLOOR AND ROOF SLOPES, ELEVATION CHANGES, THICKENED SLABS, RECESSES, RAISES AND DEPRESSIONS.
H. SEE ARCHITECTURAL DRAWINGS FOR FIREPROOFING REQUIREMENTS.
I. LINTELS ARE REQUIRED AT ALL MASONRY WALL OPENINGS, WHETHER INDICATED ON STRUCTURAL PLANS OR NOT. LINTELS NOT INDICATED ON STRUCTURAL PLANS ARE TO BE SIZED BASED ON WIDTH OF OPENING PER LINTEL TABLE. SEE ARCHITECTURAL DRAWINGS FOR BOTTOM OF LINTEL ELEVATIONS.
J. SEE ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS STEEL NOT SHOWN ON STRUCTURAL DRAWINGS, INCLUDING BUT NOT LIMITED TO STEEL AT ROOF DRAINS, INSERTS, EMBEDDED ITEMS AND STEEL ASSOCIATED WITH ARCHITECTURAL DETAILS.
K. SEE MEP AND ARCHITECTURAL DRAWINGS FOR LOCATIONS AND SIZES OF EQUIPMENT PADS AND SUPPORTS.
L. SEE ARCHITECTURAL AND MEP DRAWINGS FOR SLAB AND ROOF PENETRATIONS, WHETHER INDICATED ON STRUCTURAL DRAWINGS OR NOT.
M. SEE MEP AND OTHER SPECIALTY DRAWINGS FOR THE FOLLOWING, WHETHER INDICATED ON STRUCTURAL DRAWINGS OR NOT:
   a. SUMPS
   b. PIPE RUNS, SLEEVES, HANGERS, AND TRENCHES.
   c. CONDUIT RUNS, BOXES, AND OUTLETS.
   d. EMBEDS, ANCHORAGE AND BRACING FOR EQUIPMENT, DUCTS, PIPING, ETC.
N. EQUIPMENT SIZES, LOCATIONS AND WEIGHTS INDICATED ON STRUCTURAL DRAWINGS ARE SCHEMATIC AND SUBJECT TO CHANGE. COORDINATE FINAL SELECTION AND PLACEMENT WITH CERTIFIED EQUIPMENT MANUFACTURER DRAWINGS. NOTIFY ENGINEER IF FINAL SELECTION DIFFERS FROM THOSE INDICATED.

DLR GROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

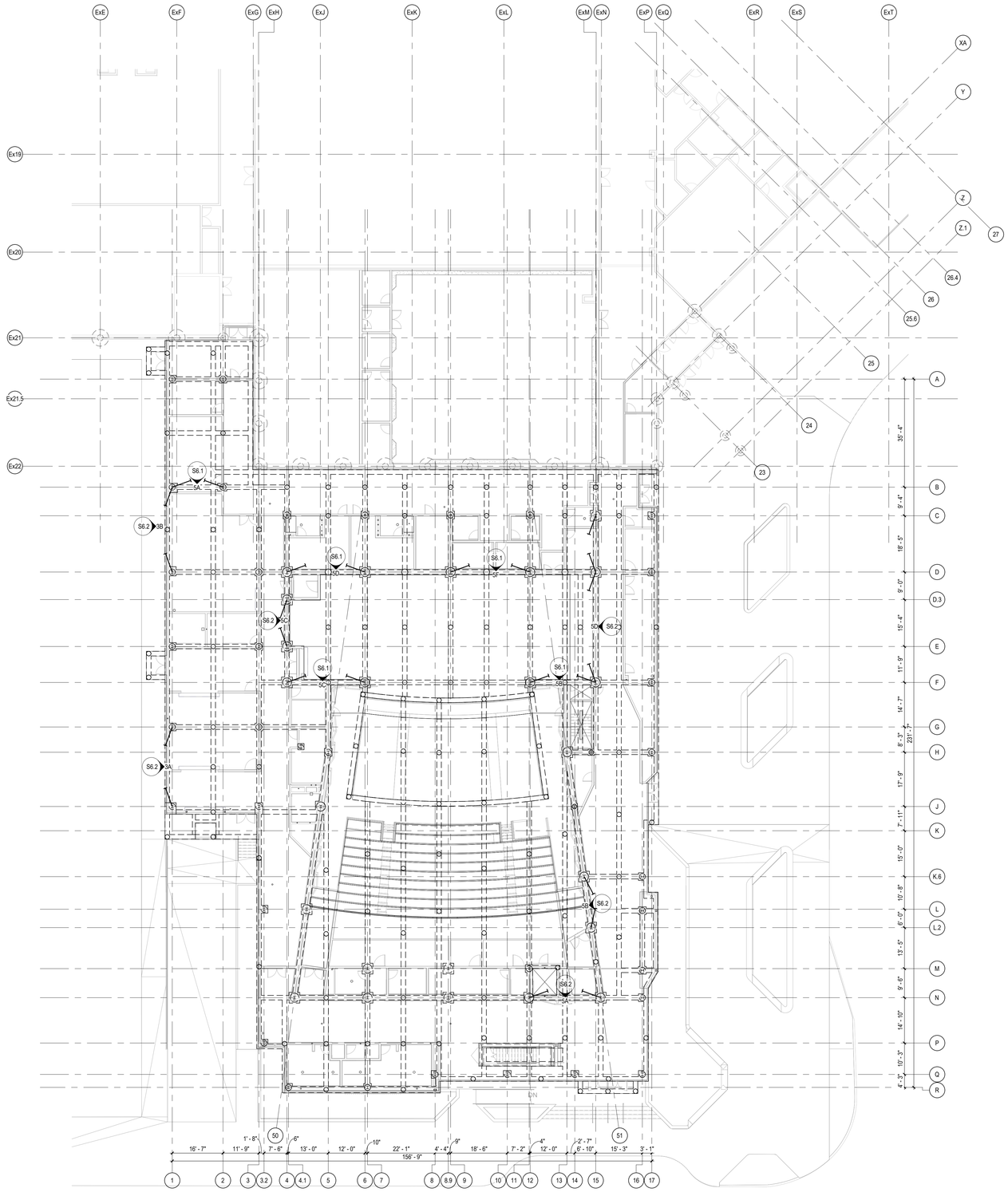
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

GENERAL STRUCTURAL NOTES, SYMBOLS & ABBREVIATIONS

S0.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:45 PM



N

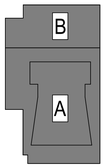
OVERALL FOUNDATION PLAN - LEVEL 01

SCALE: 1/16" = 1'-0"

FOUNDATION PLAN GENERAL NOTES

A. TOP OF STRUCTURAL SLAB ELEVATION = 0' - 0" UNO. COORDINATE TOP OF SLAB WITH FLOOR FINISHES, SEE ARCHITECTURAL DRAWINGS.
B. TOP OF PIER ELEVATION (TPE) = -3' - 2" UNO.
C. SS1 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 8" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
D. SS2 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 6" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
E. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB THICKNESS = 6-1/2". REINF W/ 6x6-W2.9XW2.9 WWR
F. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9Xw2.9
G. SEE GEOTECHNICAL REPORT FOR SITE AND SUBGRADE PREPARATIONS.
H. PROVIDE STOOPS/FROST SLABS AT ALL EXTERIOR DOORS. COORDINATE WITH CIVIL AND ARCHITECTURAL DRAWINGS.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

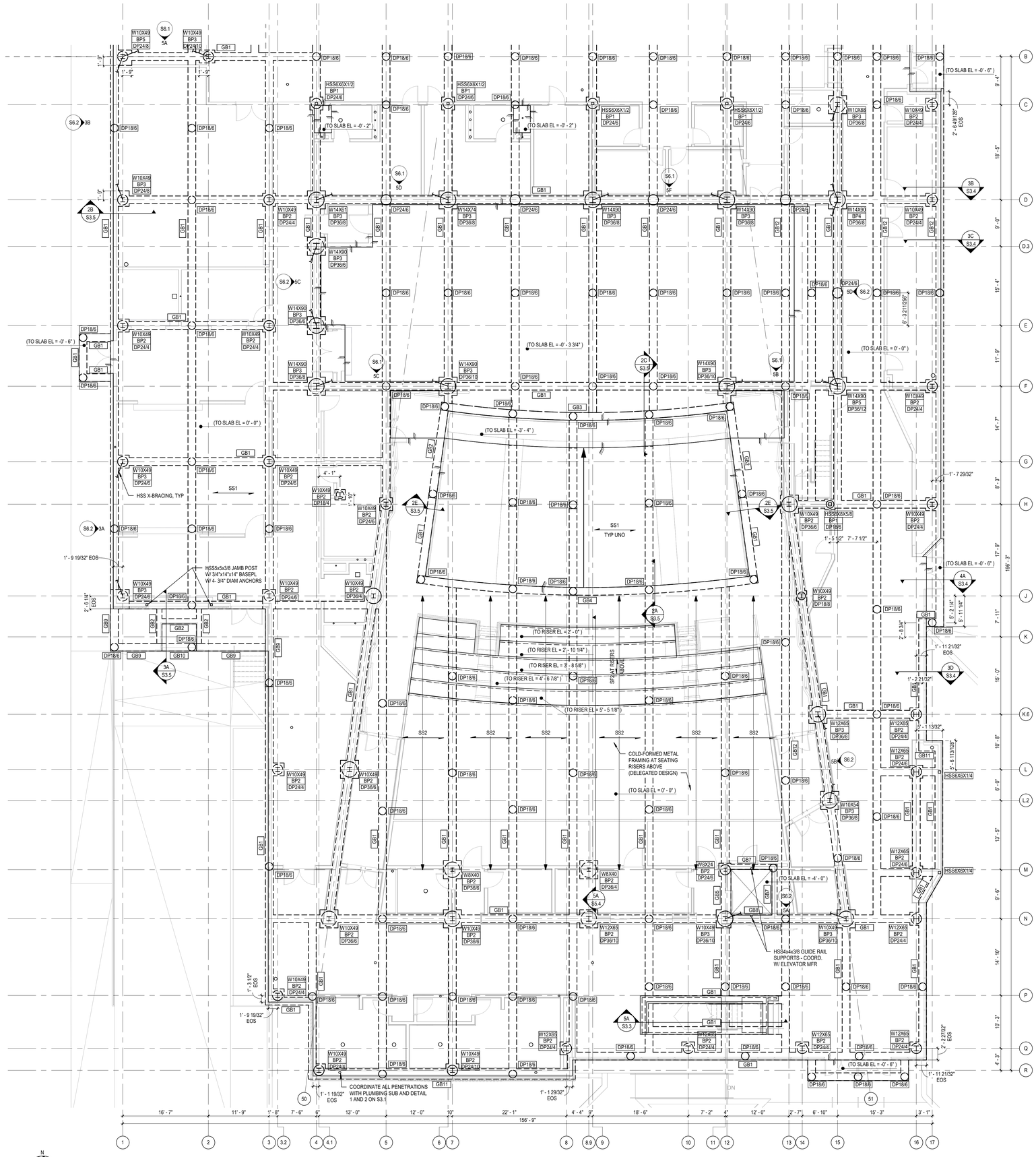
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 OVERALL FOUNDATION PLAN

S1.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:47 PM



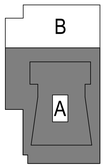
LEVEL 01 - AREA A - FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOUNDATION PLAN GENERAL NOTES

A. TOP OF STRUCTURAL SLAB ELEVATION = 0' - 0" UNO. COORDINATE TOP OF SLAB WITH FLOOR FINISHES, SEE ARCHITECTURAL DRAWINGS.
B. TOP OF PIER ELEVATION (TPE) = -3' - 2" UNO.
C. SS1 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 8" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
D. SS2 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 6" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
E. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB THICKNESS = 6-1/2". REINF W/ 6x6-W2.9XW2.9 WWR
F. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9Xw2.9
G. SEE GEOTECHNICAL REPORT FOR SITE AND SUBGRADE PREPARATIONS.
H. PROVIDE STOOPS/FROST SLABS AT ALL EXTERIOR DOORS. COORDINATE WITH CIVIL AND ARCHITECTURAL DRAWINGS.

KEY PLAN



DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

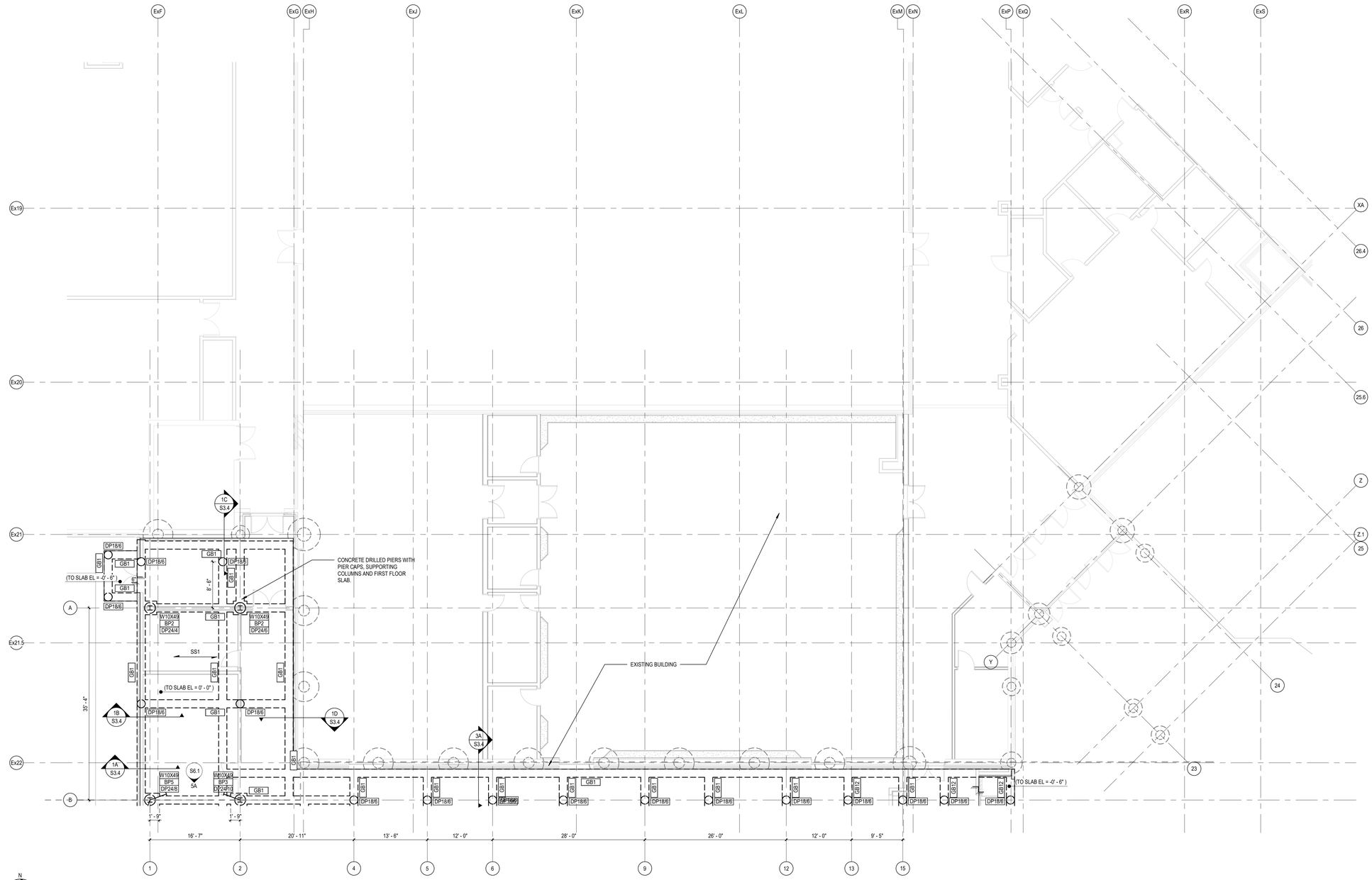
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 AREA A - FOUNDATION PLAN

S1.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:48 PM



N

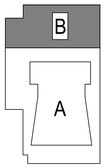
LEVEL 01 - AREA B - FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOUNDATION PLAN GENERAL NOTES

A. TOP OF STRUCTURAL SLAB ELEVATION = 0' - 0" UNO. COORDINATE TOP OF SLAB WITH FLOOR FINISHES, SEE ARCHITECTURAL DRAWINGS.
B. TOP OF PIER ELEVATION (TPE) = -3' - 2" UNO.
C. SS1 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 8" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
D. SS2 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 6" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
E. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB THICKNESS = 6-1/2". REINF W/ 6x6-W2.9XW2.9 WWR
F. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9Xw2.9
G. SEE GEOTECHNICAL REPORT FOR SITE AND SUBGRADE PREPARATIONS.
H. PROVIDE STOOPS/FROST SLABS AT ALL EXTERIOR DOORS. COORDINATE WITH CIVIL AND ARCHITECTURAL DRAWINGS.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

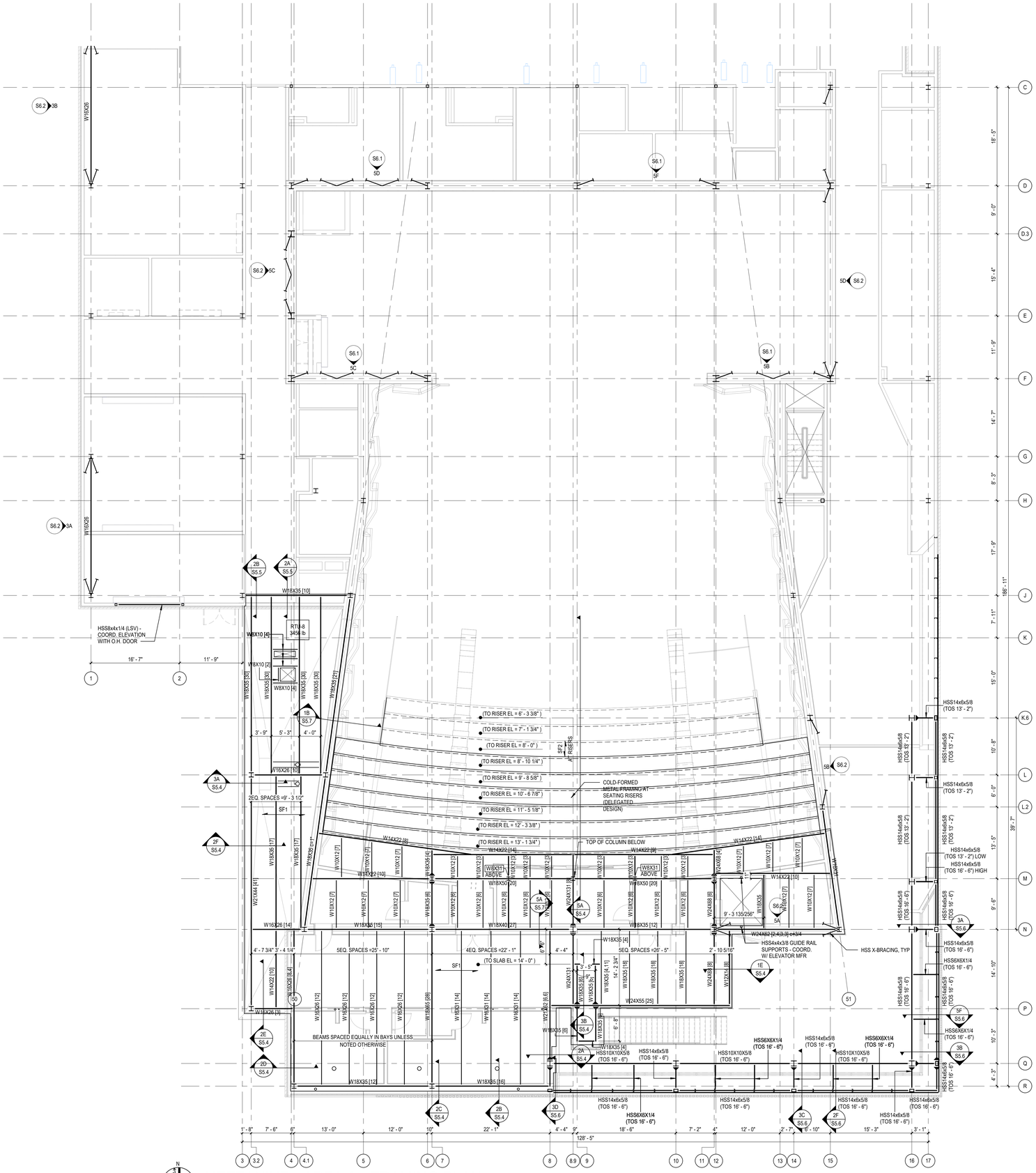
REVISIONS

39-23712-00

LEVEL 01 AREA B - FOUNDATION PLAN

S1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:55:49 PM



MEZZANINE - AREA A - FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

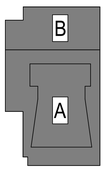
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

KEY PLAN

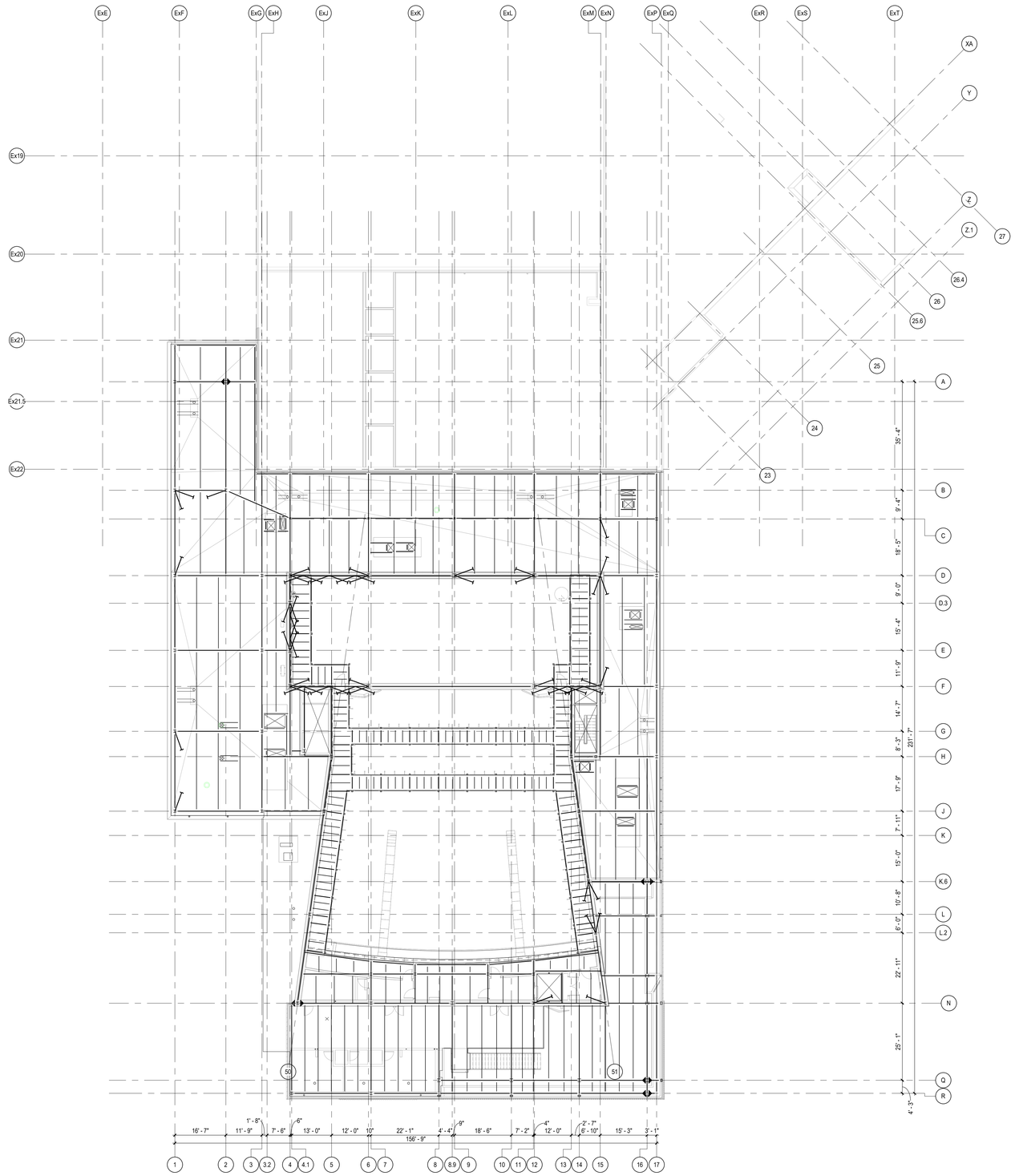


39-23712-00

LEVEL 02 MEZZANINE - AREA A - FRAMING PLAN

S1.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:35:52 PM



N

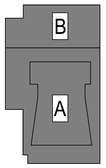
OVERALL FRAMING PLAN - LEVEL CATWALK

SCALE: 1/16" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

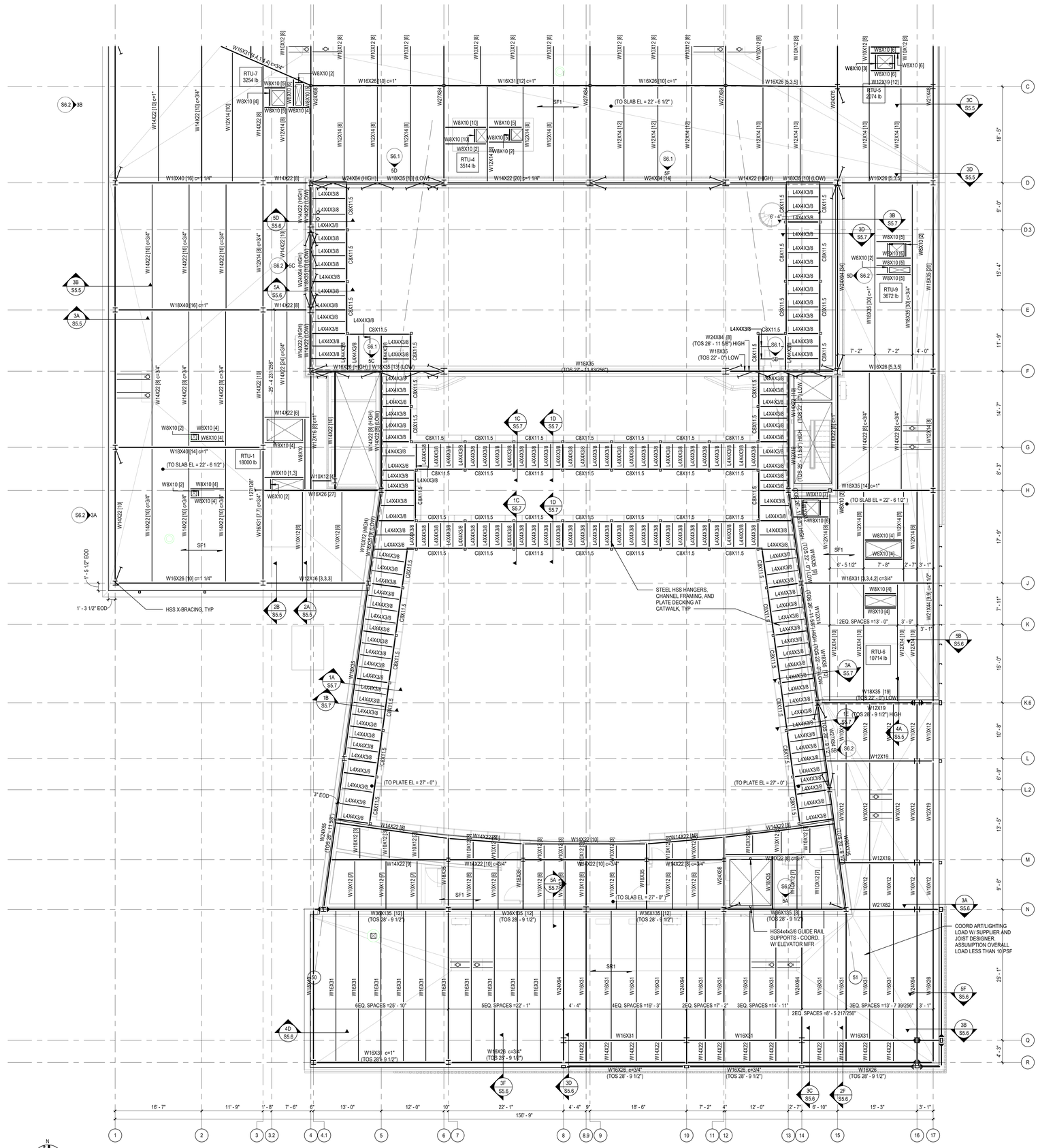
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 03 CATWALK - OVERALL FRAMING PLAN

S2.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:35:55 PM



CATWALK - AREA A - FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV.
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

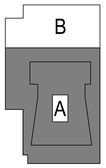
CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

KEY PLAN

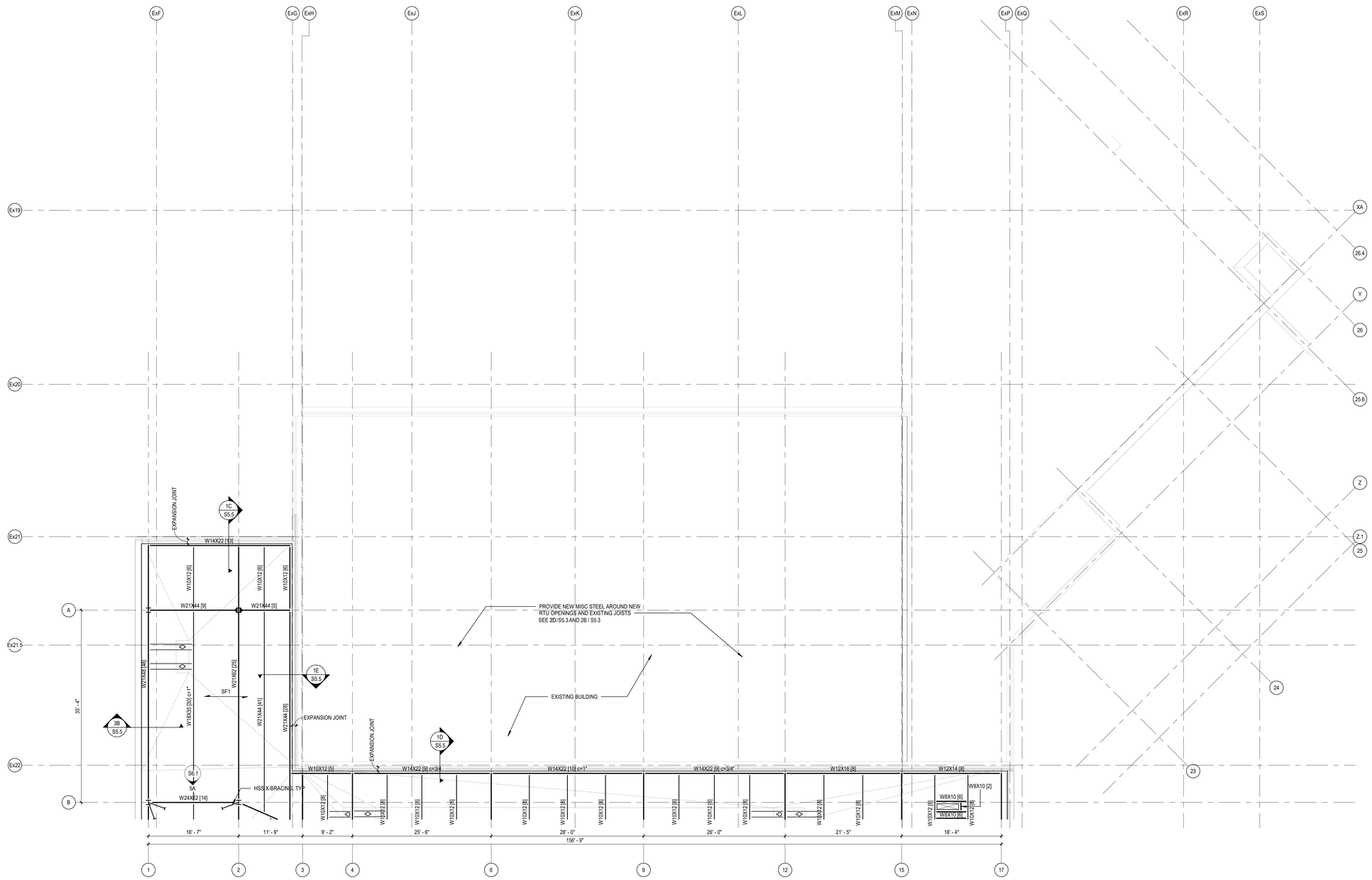


39-23712-00

LEVEL 03
CATWALK - AREA A - FRAMING PLAN

S2.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:01 PM



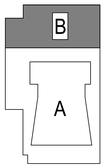
LEVEL 03 CATWALK - AREA B - FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

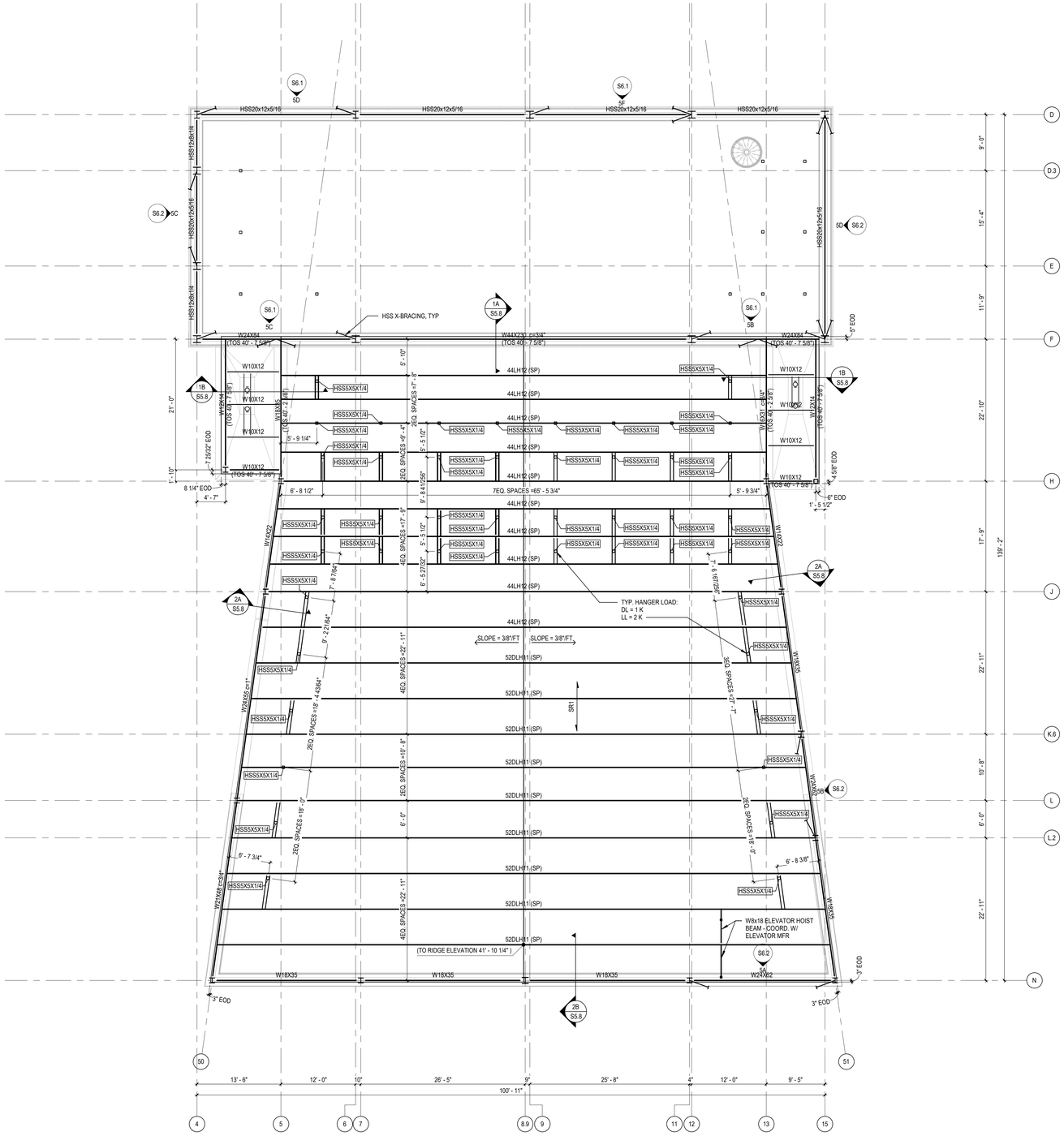
REVISIONS

39-23712-00

LEVEL 03 CATWALK - AREA B - FRAMING PLAN

S2.3B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:02 PM



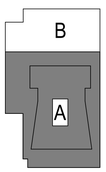
LEVEL 04 AUDIENCE CHAMBER - AREA A - FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

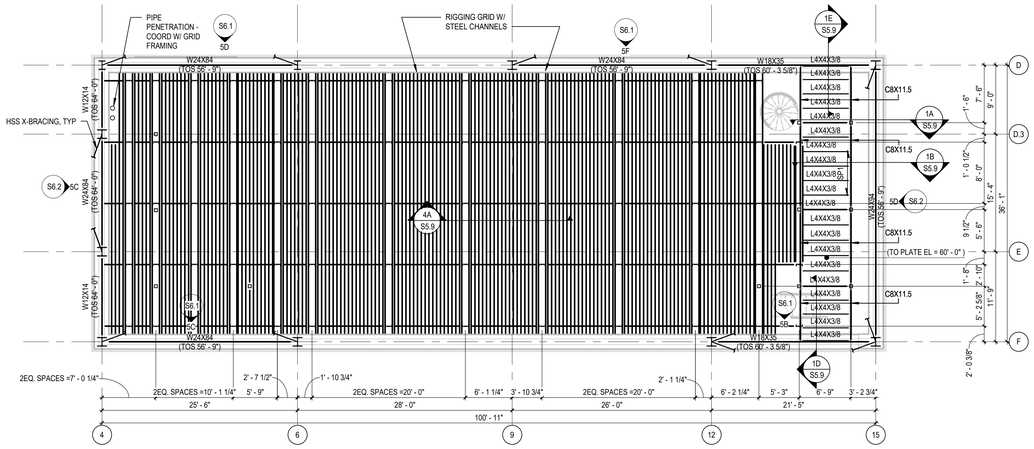
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 04 AUDIENCE CHAMBER - AREA A - FRAMING PLAN

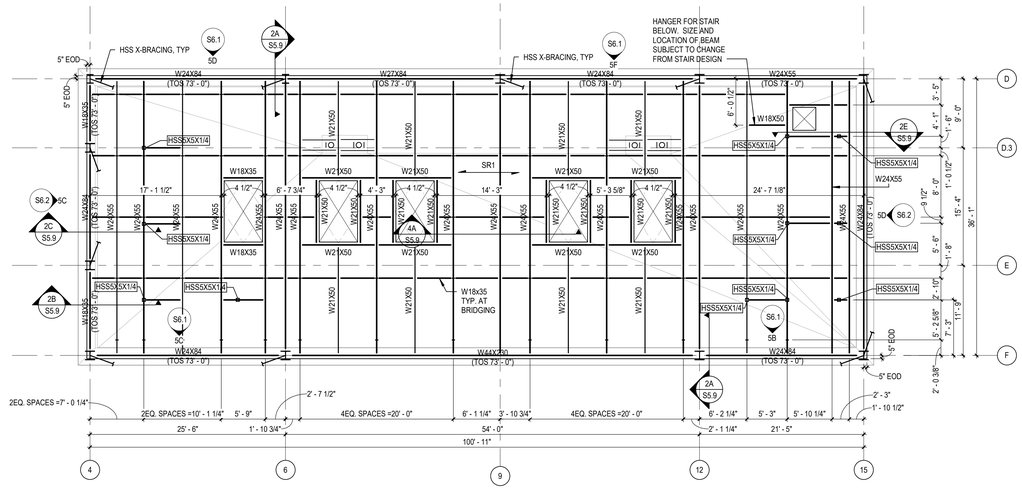
S2.4A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:04 PM



LEVEL 05 LOADING BRIDGE - AREA A - FRAMING PLAN

SCALE: 1/8" = 1'-0"



LEVEL 06 STAGE HOUSE - AREA A - FRAMING PLAN

SCALE: 1/8" = 1'-0"

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

DLRGROUP

© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

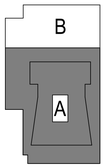
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

KEY PLAN



39-23712-00

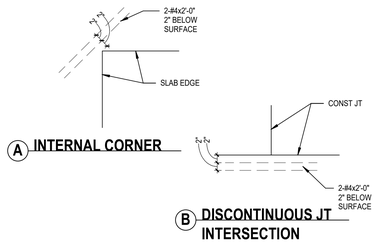
LEVEL 06 STAGE HOUSE - AREA A - FRAMING PLAN

S2.6A

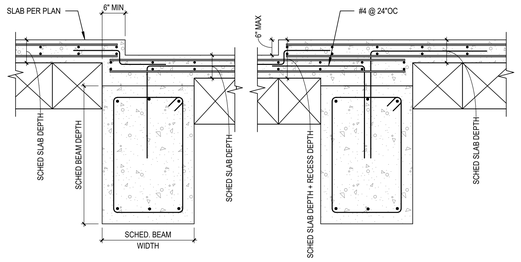
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:07 PM

A B C D E F

1 2 3 4 5



1A S3.1 TYP SLAB CORNERS
NO SCALE

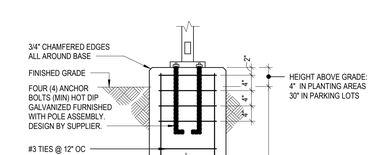


NOTE:
SEE ARCHITECTURAL PLANS FOR LOCATION OF RECESSED SLABS

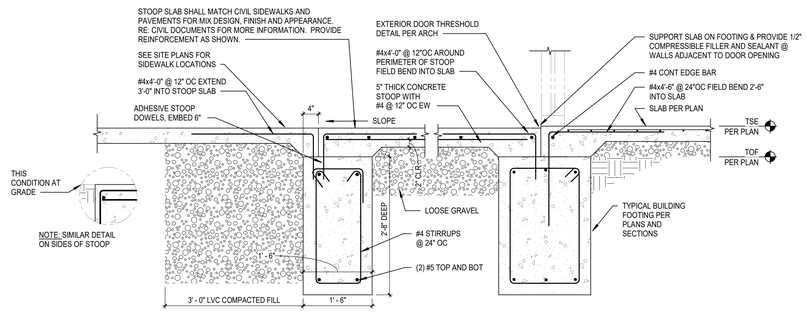
1B S3.1 TYPICAL FLOOR SLAB RECESS DETAIL
SCALE: 3/4" = 1'-0"

GRADE BEAM SCHEDULE

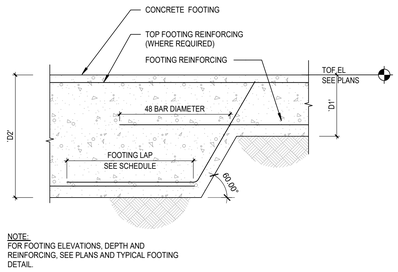
MARK	WIDTH	THICKNESS	LONGITUDINAL REINFORCEMENT	TRANSVERSE REINFORCEMENT
GB1	1' - 6"	2' - 6"	(3) #8 CONT T&B	#3 @ 12" OC
GB2	1' - 6"	4' - 4"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB3	1' - 6"	5' - 10"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB4	1' - 6"	3' - 6"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB5	1' - 10 1/4"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB7	1' - 0"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB8	1' - 6"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB9	1' - 6"	6' - 8"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB10	1' - 6"	5' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB11	2' - 0"	2' - 6"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB12	1' - 6"	2' - 6"	(4) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC



3 S3.1 TYP STAIR POST BASE DETAIL
NO SCALE

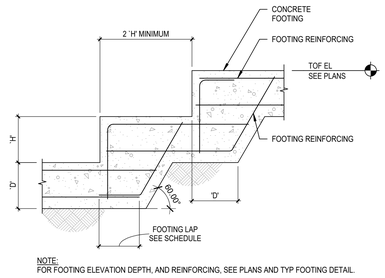


3A S3.1 TYPICAL STRUCTURAL STOOP DETAIL
NO SCALE



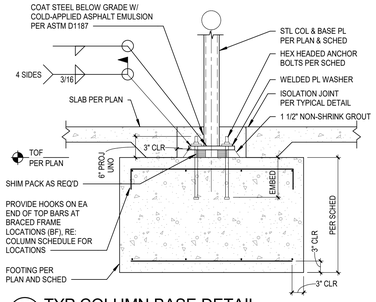
NOTE:
FOR FOOTING ELEVATIONS, DEPTH AND
REINFORCING, SEE PLANS AND TYPICAL FOOTING
DETAIL.

3C S3.1 TYP BOT STEP FTG DETAIL
NO SCALE

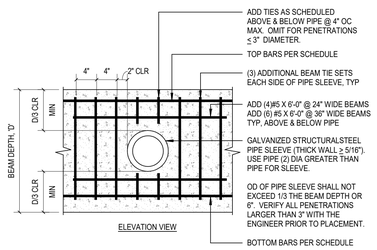


NOTE:
FOR FOOTING ELEVATION DEPTH, AND REINFORCING, SEE PLANS AND TYP FOOTING DETAIL.

3D S3.1 TYP STEP FOOTING DETAIL
NO SCALE

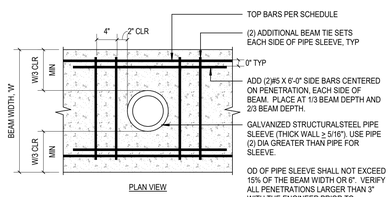


3E S3.1 TYP COLUMN BASE DETAIL
NO SCALE



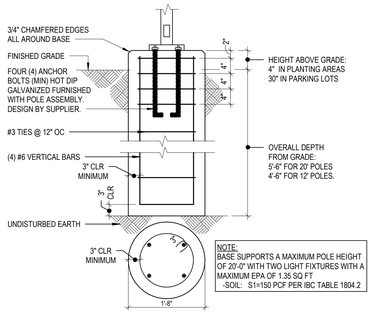
NOTES:
1. PRIOR TO PLACEMENT OF REINFORCING AND CONCRETE, THE CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE, AND ELEVATION OF ALL REQUIRED PENETRATIONS THROUGH CONCRETE BEAMS.
2. WHERE NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ENGINEER FOR REVIEW SHOWING DIMENSIONS AND LOCATIONS OF ALL REQUIRED PENETRATIONS PRIOR TO CONSTRUCTION. THIS MAY BE INCLUDED ON REINFORCING STEEL SHOP DRAWINGS.
3. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS SHALL BE 24".
4. SCHEDULED TIES ARE NOT SHOWN FOR CLARITY.
5. PENETRATIONS SHOWN ON PLANS WITHOUT DIMENSIONS FROM TOP OF CONCRETE SHALL BE CENTERED AT HALF THE BEAM DEPTH.

1 S3.1 TYP GRADE BEAM HORIZ PIPE PENETRATION
NO SCALE



NOTES:
1. PRIOR TO PLACEMENT OF REINFORCING AND CONCRETE, THE CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE, AND ELEVATION OF ALL REQUIRED PENETRATIONS THROUGH CONCRETE BEAMS.
2. WHERE NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ENGINEER FOR REVIEW SHOWING DIMENSIONS AND LOCATIONS OF ALL REQUIRED PENETRATIONS PRIOR TO CONSTRUCTION. THIS MAY BE INCLUDED ON REINFORCING STEEL SHOP DRAWINGS.
3. SLEEVES MUST BE CENTERED ON BEAM CENTERLINE.
4. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS SHALL BE 24".
5. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS AND THE FACE OF PILE CAPS SHALL BE 4".
6. PENETRATIONS ON EACH SIDE OF PILE CAPS MUST ALIGN.
7. SCHEDULED TIES ARE NOT SHOWN FOR CLARITY.
8. CONTINUOUS BEAM REINFORCING MAY BE DISPLACED (3" MAXIMUM) OR ADJACENT BARS BUNDLED (2 BAR BUNDLES MAXIMUM) TO FACILITATE SLEEVE INSTALLATION. DO NOT CUT, OFFSET, OR BEND REINFORCING.

2 S3.1 TYP GRADE BEAM VERTICAL PIPE PENETRATION
NO SCALE



4 S3.1 TYP LIGHT POLE BASE
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

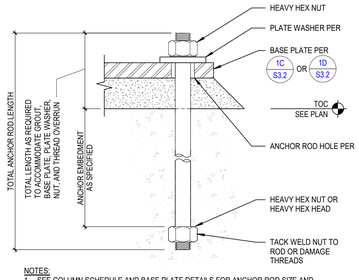
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STRUCTURAL
DETAILS

S3.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:36:08 PM



NOTES:
1. SEE COLUMN SCHEDULE AND BASE PLATE DETAILS FOR ANCHOR ROD SIZE AND EMBEDMENT.
2. UNLESS NOTED OTHERWISE, ALL ANCHOR ROD NUTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC AFTER THE CONCRETE IS AT LEAST 14 DAYS OLD.

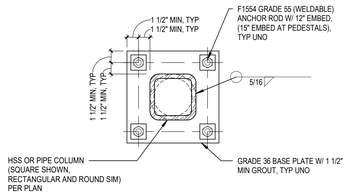
1A S3.2 TYPICAL ANCHOR ROD
NO SCALE

BASE PLATE ANCHOR ROD HOLE AND PLATE WASHER SCHEDULE

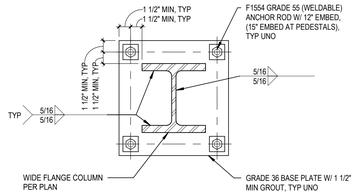
ANCHOR ROD DIAMETER (in)	MAX HOLE DIAMETER (in)	WASHER SIZE (in)	MINIMUM WASHER THICKNESS (in)		
			F1554 GR 36	F1554 GR 55	F1554 GR 105
3/4	1 5/16	2	1/4	1/4	3/8
7/8	1 9/16	2 1/2	3/8	3/8	1/2
1	1 7/8	3	3/8	3/8	1/2
1 1/4	2 1/8	3 1/2	3/8	1/2	5/8
1 1/2	2 3/8	4	3/8	1/2	5/8
1 3/4	2 7/8	4 1/2	3/4	3/4	3/4
2	3 1/4	5	3/4	3/4	3/4
2 1/2	3 3/4	5 1/2	3/4	3/4	7/8

NOTES:
1. HOLE IN PLATE WASHER SHALL BE 1/16" LARGER THAN THE ROD DIAMETER.
2. CIRCULAR OR SQUARE WASHERS MEETING THE SIZE SHOWN ARE ACCEPTABLE.

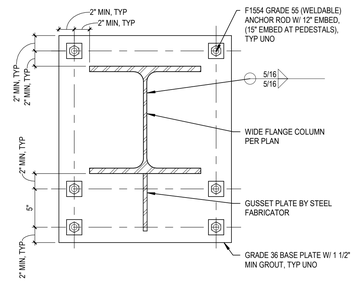
1B S3.2 TYPICAL BASE PLATE ANCHOR ROD HOLE AND PLATE WASHER SCHEDULE
NO SCALE



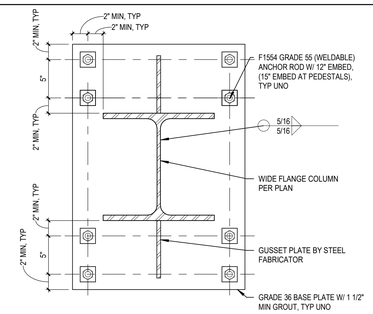
1C S3.2 TYPICAL HSS COLUMN BASE PLATE
NO SCALE



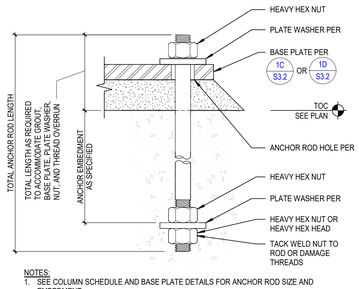
1D S3.2 TYP WIDE FLANGE COLUMN BASE PLATE
NO SCALE



1E S3.2 TYP WIDE FLANGE COL BASE PL AT BRACE
SCALE: 1 1/2" = 1'-0"

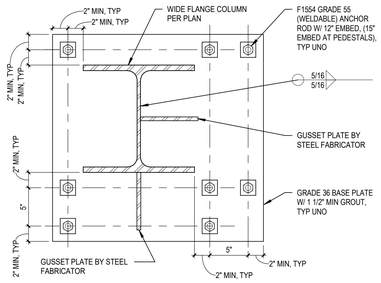


1F S3.2 TYP WIDE FLANGE COL BASE PL AT BRACE
SCALE: 1 1/2" = 1'-0"



NOTES:
1. SEE COLUMN SCHEDULE AND BASE PLATE DETAILS FOR ANCHOR ROD SIZE AND EMBEDMENT.
2. UNLESS NOTED OTHERWISE, ALL ANCHOR ROD NUTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC AFTER THE CONCRETE IS AT LEAST 14 DAYS OLD.

2A S3.2 TYPICAL ANCHOR ROD
NO SCALE



2B S3.2 TYP WIDE FLANGE COL BASE PL AT BRACE
SCALE: 1 1/2" = 1'-0"

BASEPLATE SCHEDULE

MARK	THICKNESS	LENGTH	WIDTH	ANCHOR BOLTS
BP1	3/4"	SEE 1C/S3.2	SEE 1C/S3.2	4 - 3/4" DIA
BP2	3/4"	SEE 1D/S3.2	SEE 1D/S3.2	4 - 3/4" DIA
BP3	1 1/2"	SEE 1E/S3.2	SEE 1E/S3.2	6 - 1 1/2" DIA
BP4	1 1/2"	SEE 1F/S3.2	SEE 1F/S3.2	8 - 1 1/2" DIA
BP5	1 1/2"	SEE 2B/S3.2	SEE 2B/S3.2	8 - 1 1/2" DIA

2C S3.2 DRILLED PIER (DP) NOTES
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

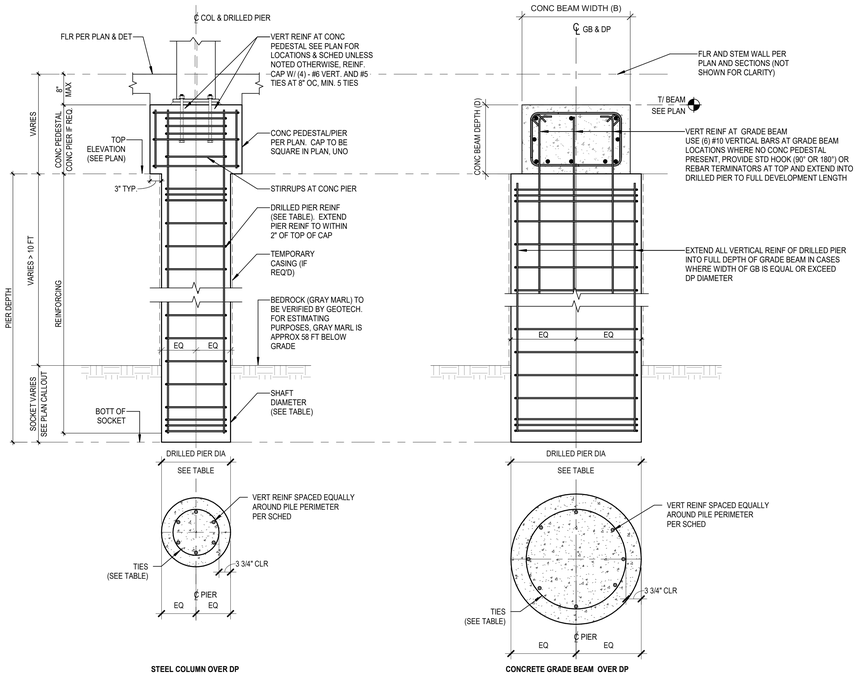
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STRUCTURAL DETAILS

S3.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:09 PM

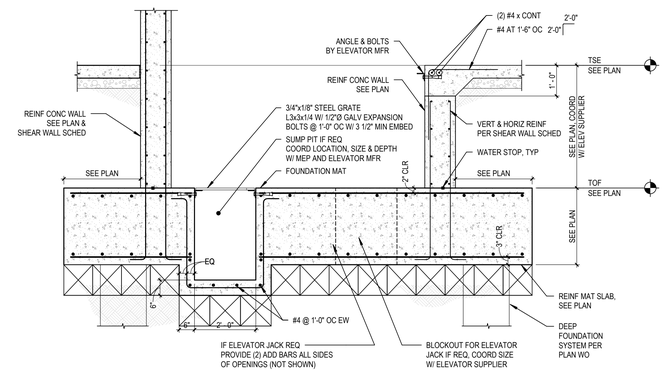


2A / S3.3 TYPICAL DRILLED PIER
SCALE: 3/4" = 1'-0"

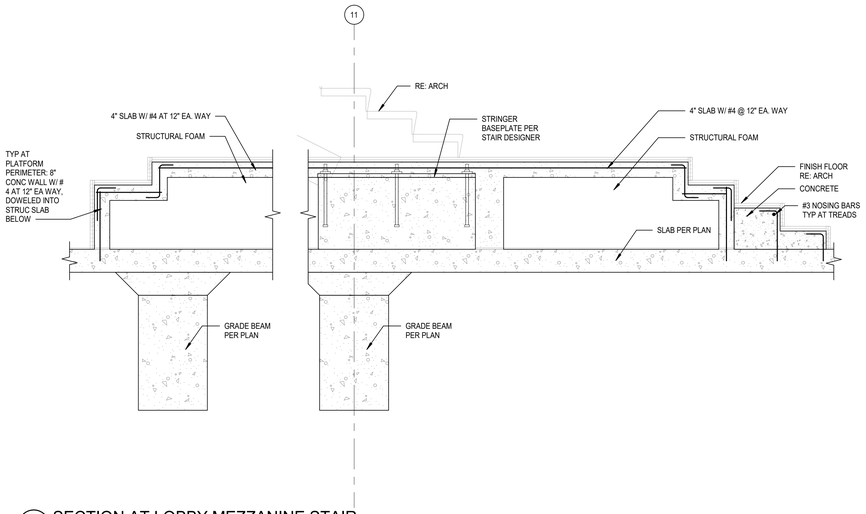
DRILLED PIER SCHEDULE		
PIER DIAMETER	REINFORCING	
	VERTICAL REINFORCING	TIES
18"	6-#6	#3 @ 10" O.C.
24"	6-#7	#3 @ 12" O.C.
30"	7-#7	#3 @ 12" O.C.
36"	8-#8	#3 @ 16" O.C.
42"	8-#9	#3 @ 18" O.C.
48"	8-#10	#3 @ 18" O.C.

DRILLED PIER MARK LEGEND = DPXX/YY
XX = DIAMETER, IN INCHES
YY = PENETRATION INTO BEARING STRATA

1C / S3.3 DRILLED PIER (DP) NOTES
NO SCALE



4A / S3.3 CONCRETE ELEVATOR PIT
SCALE: 1/2" = 1'-0"



5A / S3.3 SECTION AT LOBBY MEZZANINE STAIR
NO SCALE

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

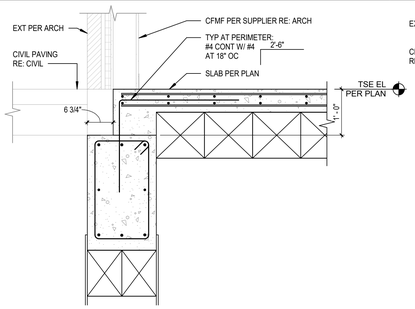
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
Revision Date 1
1

39-23712-00

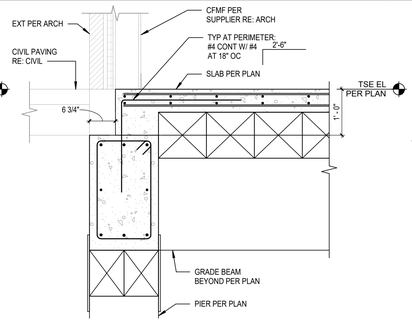
STRUCTURAL DETAILS

S3.3

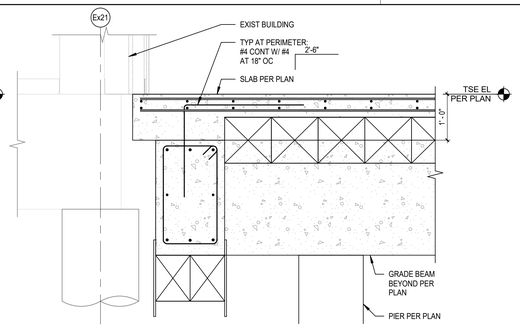
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:10 PM



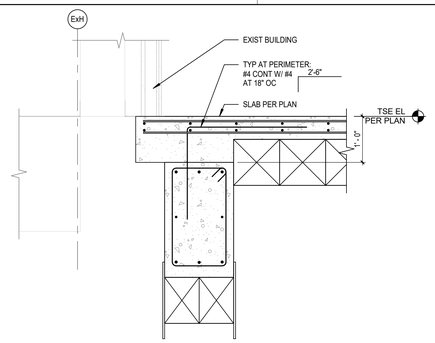
1A S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



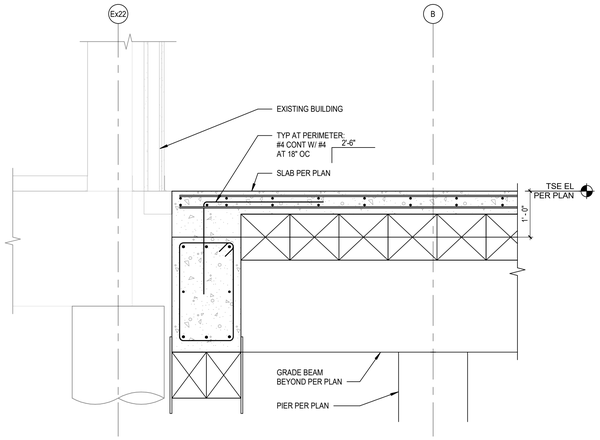
1B S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



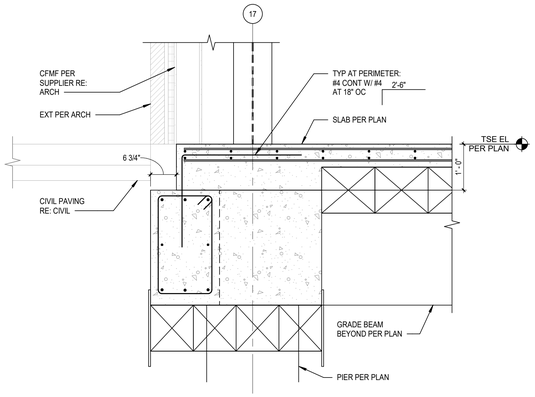
1C S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



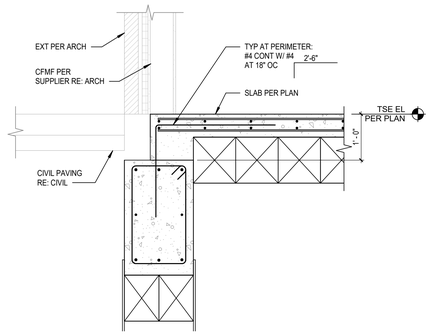
1D S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



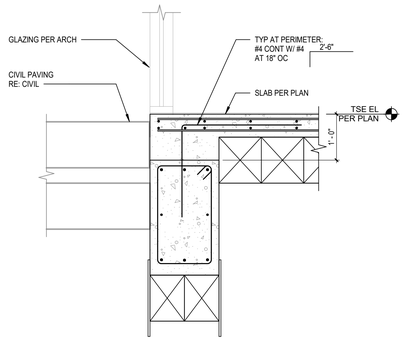
3A S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



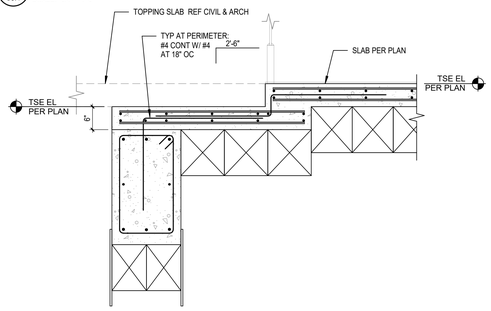
3B S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



3C S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



3D S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



4A S3.4 SECTION AT ENTRY
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

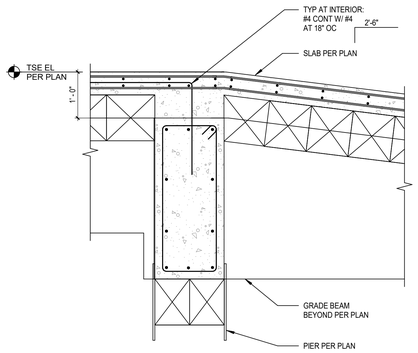
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

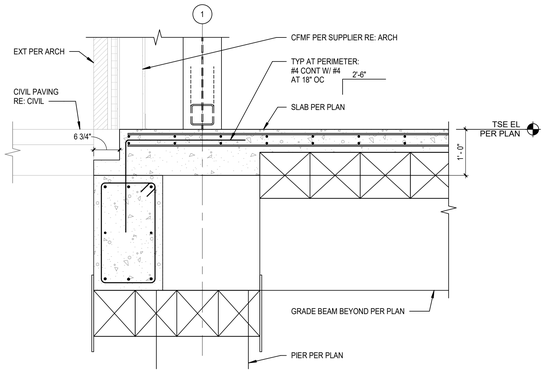
STRUCTURAL DETAILS

S3.4

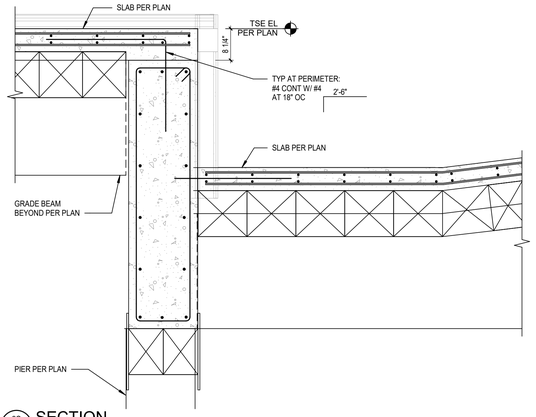
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:12 PM



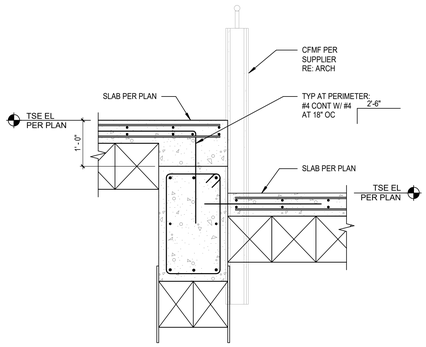
2A / S3.5 SECTION
SCALE: 3/4" = 1'-0"



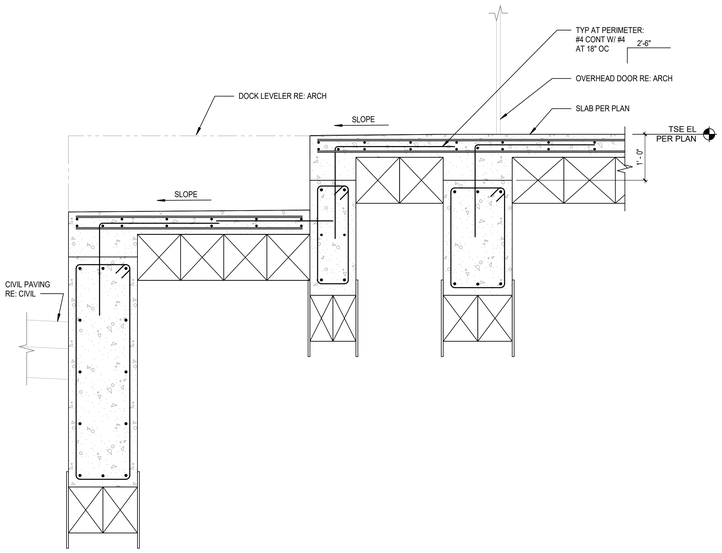
2B / S3.5 SECTION
SCALE: 3/4" = 1'-0"



2C / S3.5 SECTION
SCALE: 3/4" = 1'-0"



2E / S3.5 SECTION
SCALE: 3/4" = 1'-0"



3A / S3.5 SECTION AT DOCK LEVELER
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

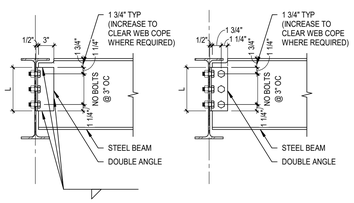
STRUCTURAL
DETAILS

S3.5

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:36:13 PM

CONNECTION SCHEDULE		
BM SIZE	MIN NO OF BOLTS	L=ANGLE LENGTH
W8, W10	2	5 1/2"
W12, W14	3	8 1/2"
W16, W18	4	11 1/2"
W21	5	14 1/2"
W24	6	17 1/2"
W27	7	20 1/2"
W30, W33	8	23 1/2"
W36	9	26 1/2"

NOTES:
1. USE SIMILAR CONNECTION AT WIDE FLANGE COLUMN FLANGE OR WEB.
2. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN USING MIN NUMBER OF BOLTS PER THIS SCHEDULE.
3. IF NO REACTIONS ARE PROVIDED, DESIGN CONNECTIONS TO RESIST 1/2 THE MAXIMUM TOTAL UNIFORM LRFD LOAD BASED ON SPAN LISTED IN TABLE 3-6 OF THE AISC STEEL CONNECTION MANUAL.

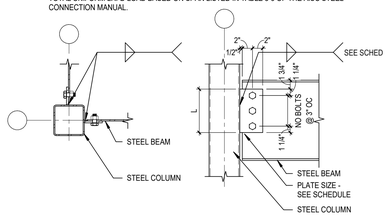


A WELDED CONN B BOLTED CONN

2A S5.1 TYP STEEL BEAM CONNECTION DETAIL
SCALE: 1" = 1'-0"

CONNECTION SCHEDULE		
EACH BM SIZE	MIN NO OF BOLTS	L=ANGLE LENGTH
W8, W10	2	5 1/2"
W12, W14	3	8 1/2"
W16, W18	4	11 1/2"
W21	5	14 1/2"
W24	6	17 1/2"
W27	7	20 1/2"
W30, W33	8	23 1/2"
W36	9	26 1/2"

NOTES:
1. USE SIMILAR CONNECTION AT WIDE FLANGE COLUMN FLANGE OR WEB.
2. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN USING MIN NUMBER OF BOLTS PER THIS SCHEDULE.
3. IF NO REACTIONS ARE PROVIDED, DESIGN CONNECTIONS TO RESIST 1/2 THE MAXIMUM TOTAL UNIFORM LRFD LOAD BASED ON SPAN LISTED IN TABLE 3-6 OF THE AISC STEEL CONNECTION MANUAL.

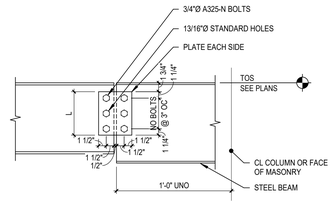


A PLAN B BOLTED CONN

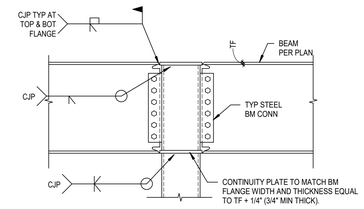
2B S5.1 TYP STEEL BEAM CONNECTION DETAIL
SCALE: 1" = 1'-0"

CONNECTION SCHEDULE		
BM SIZE	MIN NO OF BOLTS	L=PLATE LENGTH
W8, W10	2	5 1/2"
W12, W14	3	8 1/2"
W16, W18	4	11 1/2"
W21	5	14 1/2"
W24	6	17 1/2"
W27	7	20 1/2"
W30, W33	8	23 1/2"
W36	9	26 1/2"

NOTES:
1. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN USING MIN NUMBER OF BOLTS PER THIS SCHEDULE.
2. IF NO REACTIONS ARE PROVIDED, DESIGN CONNECTIONS TO RESIST 1/2 THE MAXIMUM TOTAL UNIFORM LRFD LOAD BASED ON SPAN LISTED IN TABLE 3-6 OF THE AISC STEEL CONNECTION MANUAL.

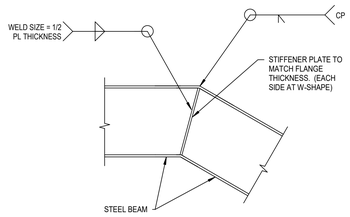


2C S5.1 TYP STEEL BEAM CONNECTION DETAIL
SCALE: 1" = 1'-0"

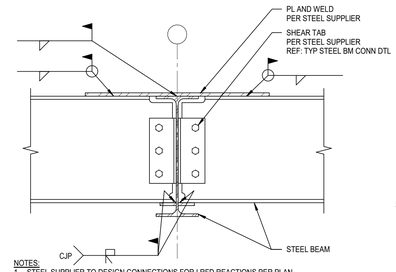


NOTES:
1. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN.

1D S5.1 TYP WF BM TO HSS COL MOMENT CONN DETAIL
SCALE: 3/4" = 1'-0"

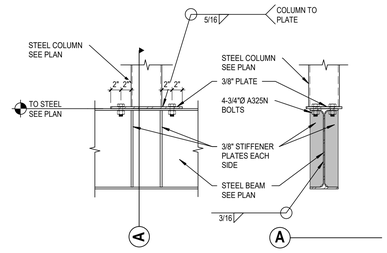


2D S5.1 BEAM MITER OR SPLICE DETAIL
SCALE: 1" = 1'-0"

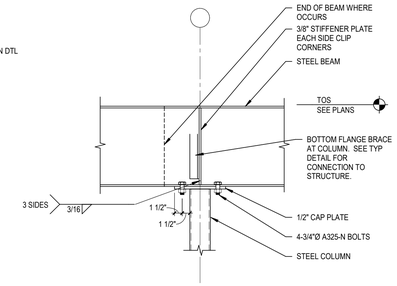


NOTES:
1. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN.
2. IF NO REACTIONS ARE PROVIDED, DESIGN CONNECTIONS TO RESIST 1/2 THE MAXIMUM TOTAL UNIFORM LRFD LOAD BASED ON SPAN LISTED IN TABLE 3-6 OF THE AISC STEEL CONNECTION MANUAL.

1E S5.1 TYP WF BEAM MOMENT CONNECTION DETAIL
SCALE: 1 1/2" = 1'-0"

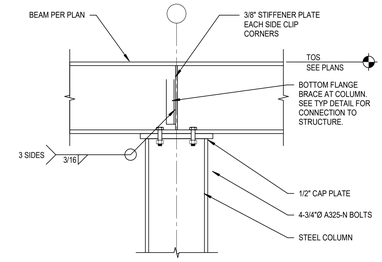


2E S5.1 COLUMN / BEAM CONNECTION DETAIL
SCALE: 1" = 1'-0"

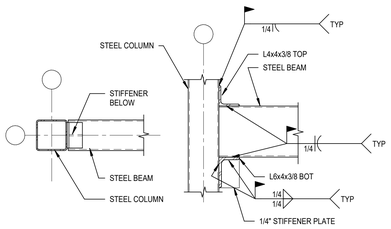


NOTES:
1. STEEL SUPPLIER TO DESIGN CONNECTIONS FOR LRFD REACTIONS PER PLAN.

1F S5.1 TYP BEAM OVER COLUMN DETAIL
SCALE: 1" = 1'-0"

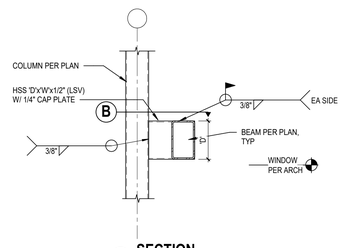


2F S5.1 TYP BEAM OVER COLUMN DETAIL
SCALE: 1" = 1'-0"

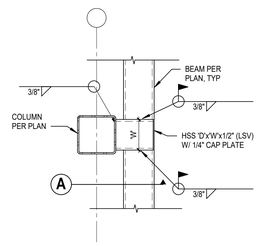


A PLAN B ELEVATION

3A S5.1 TYP HSS BEAM TO HSS COL CONN
SCALE: 1" = 1'-0"

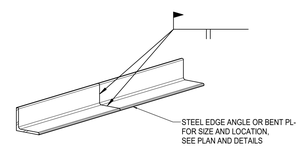


A SECTION



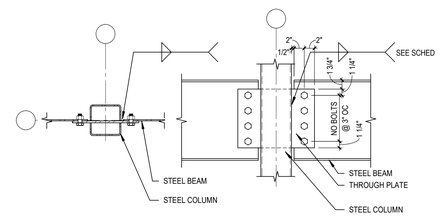
B PLAN

3B S5.1 TYP HSS BM TO HSS COL CONN DETAIL
SCALE: 3/4" = 1'-0"



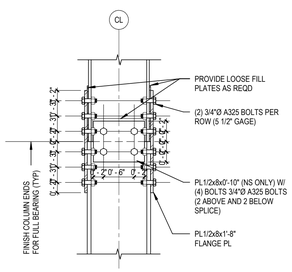
NOTE:
ALL ROOF DECK EDGE AND FLOOR SLAB EDGES SHALL BE CONT AND SPLICED PER THIS DETAIL

3D S5.1 TYP CONT BENT PL SPLICE DET
SCALE: 3/4" = 1'-0"



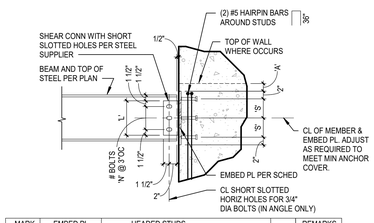
A PLAN B BOLTED CONN

3E S5.1 TYP STEEL BEAM AXIAL CONNECTION DETAIL
SCALE: 1" = 1'-0"



NOTES:
1. ALL PLATES SHALL BE ASTM A572 GRADE 50 MINIMUM
2. ALL BOLTS SHALL BE ASTM A325 PRE-TENSIONED IN STANDARD HOLES
3. FAYING SURFACES SHALL MEET MINIMUM SC-A REQUIREMENTS
4. 3/4" MASIMUM LOOSE FILL PLATE EACH FLANGE
5. CONTRACTOR SHALL VEERIFY CAPACITY OF CONNECTION FOR TEMPORARY CONDITIONS

4A S5.1 TYP COLUMN SPLICE DETAIL
SCALE: 1" = 1'-0"



MARK	EMBED PL	HEADED STUDS			'A'	REMARKS
		'S'	GAGE	SIZE		
EP-1	3/4"x12"x2'-1"	7"	6"	(4) ROWS OF (2), (8) 3/4"Ø x 6" LONG	2"	--
EP-2						

NOTE:
1. PROVIDE EP-X FOR ALL BEAMS, UNLESS NOTED OTHERWISE ON PLANS.
2. EMBED PLATE REQUIRES A LARGER COVER AT TOP OF WALL CONDITIONS.

4B S5.1 TYP EMBED PLATE SCHEDULE
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STEEL TYPICAL DETAILS

S5.1

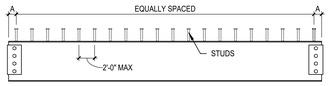
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:15 PM

A. BEAMS:

1. THE NUMBER SHOWN THUS (NO) FOLLOWING THE BEAM SIZE INDICATES THE NUMBER OF 3/4" HEADED STUDS TO BE PLACED ON THE BEAM. ALL BEAMS (AND GIRDERS) SHALL HAVE HEADED STUDS ATTACHED TO THE TOP FLANGE. IF NO SPECIFIC STUD QUANTITY IS NOTED ON PLANS, THE MAXIMUM STUD SPACING SHALL BE 2'-0"OC. DECK VALLEYS WITHOUT STUDS SHALL BE WELDED.

2. STUD PLACEMENT SHALL BE AS FOLLOWS:
   A. NUMBER OF STUDS IS LESS THAN THE NUMBER OF DECK VALLEYS.
      UNIFORMLY SPACE STUDS SYMMETRICALLY WITH THE BEAM CENTERLINE.
   B. NUMBER OF STUDS IS GREATER THAN THE NUMBER OF DECK VALLEYS.
      PLACE ONE STUD IN EACH VALLEY STARTING AT THE ENDS OF THE BEAM. WHEN TWO STUDS ARE REQUIRED, PLACE STUDS 1 1/2" EACH SIDE OF THE BEAM WEB.

NOTE: SPACE 'A' TO COORDINATE WITH DECK LAYOUT.

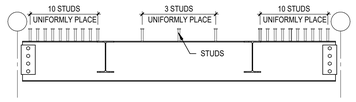


EXAMPLE LAYOUT

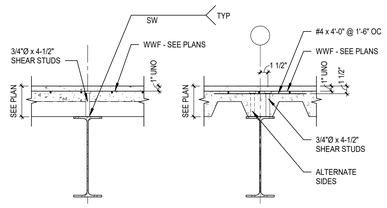
B. GIRDERS:

1. THE SERIES OF NUMBERS SHOWN THUS [NO-NO-NO] FOLLOWING THE GIRDER SIZE WHEN ADDED TOGETHER, REPRESENT THE TOTAL NUMBER OF STUDS TO BE PLACED ON THE GIRDER. FOR EXAMPLE, [10-3-10] REPRESENTS THE TOTAL OF 23 STUDS TO BE LOCATED ON THE GIRDER. THE FIRST AND LAST NUMBERS REPRESENTS THE NUMBER OF STUDS TO BE PLACED BETWEEN THE END OF THE GIRDER AND THE FIRST (OR LAST) INTERSECTING BEAM. THE MIDDLE NUMBER REPRESENTS THE NUMBER OR STUDS TO BE LOCATED BETWEEN THE TWO INTERSECTING BEAMS.

2. PLACE STUDS UNIFORMLY ALONG THE BEAMS OR PORTION OF BEAM INDICATED. CENTER THE STUDS OVER THE WEB AND PROVIDE A MAXIMUM SPACING OF 2'-0" AND A MINIMUM SPACING OF 4 1/2". IF THE REQUIRED NUMBER OF STUDS EXCEEDS WHAT CAN BE PLACED AT 4 1/2", PLACE A SECOND ROW OF STUDS SPACED AT 4 1/2" CENTERS STARTING AT THE END OF THE BEAM UNTIL THE REQUIRED NUMBER OF STUDS IS REACHED. WHEN TWO ROWS OF STUDS ARE REQUIRED, PLACE STUDS 1 1/2" EACH SIDE OF THE BEAM CENTER LINE.



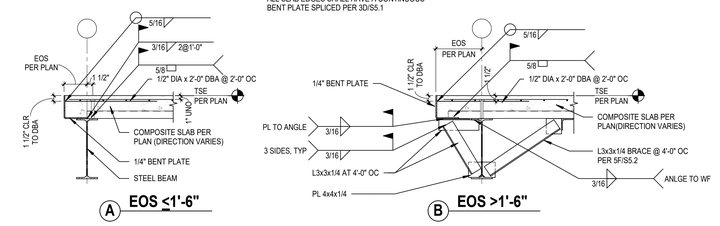
EXAMPLE LAYOUT
EXAMPLE: [10-3-10]



A AT COMP BEAM

B AT COMP GIRDER
NOTE:
PROVIDE DECK GIRDER FILLER PLATE IF REQUIRED.

NOTE:
ALL SLAB EDGES SHALL HAVE A CONTINUOUS BENT PLATE SPLICED PER 3D/S5.1



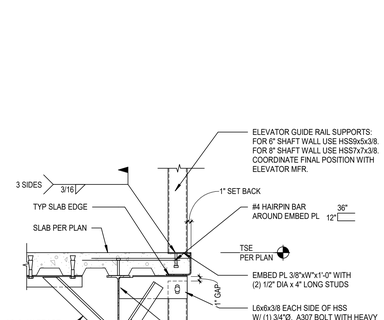
A EOS ≤1'-6"

B EOS >1'-6"

1A S5.2 TYP STUD PLACEMENT DETAIL
SCALE: 1/2" = 1'-0"

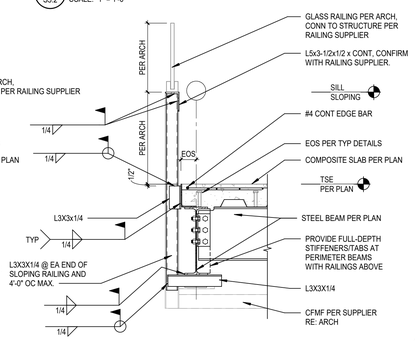
1C S5.2 TYP COMPOSITE BM & GIRDER DETAIL
SCALE: 1" = 1'-0"

1E S5.2 TYP SLAB EDGE DETAIL
SCALE: 3/4" = 1'-0"

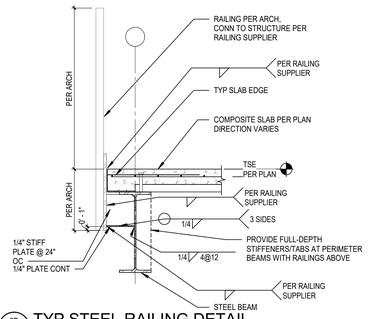


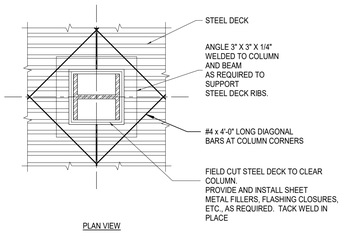
2A S5.2 TYP CFMF RAILING DETAIL
SCALE: 3/4" = 1'-0"

2B S5.2 TYP GLASS RAILING DETAIL
SCALE: 3/4" = 1'-0"

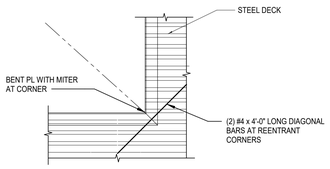


2D S5.2 TYP STEEL RAILING DETAIL
SCALE: 3/4" = 1'-0"





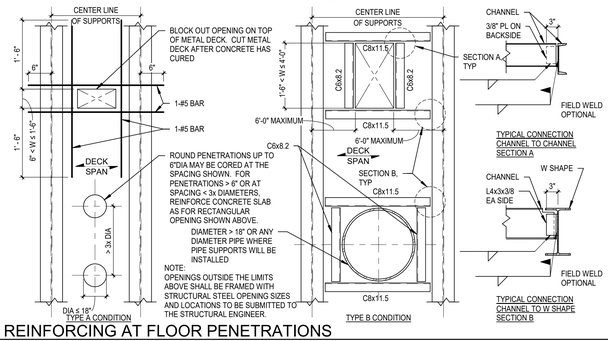
PLAN VIEW



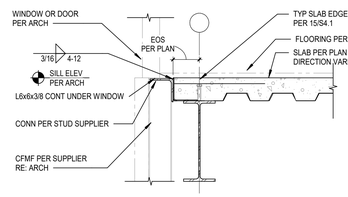
PLAN VIEW

2E S5.2 TYP STEEL DECK FRAMING
SCALE: 3/4" = 1'-0"

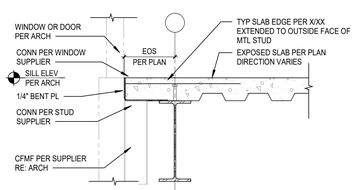
2F S5.2 TYP SLAB REENTRANT CORNER DETAIL
SCALE: 3/4" = 1'-0"



3A S5.2 TYP REINFORCING AT FLOOR PENETRATIONS
SCALE: 3/4" = 1'-0"



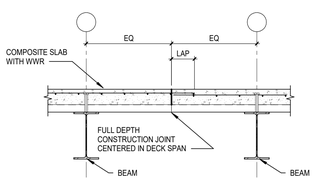
DETAIL AT COVERED CONCRETE



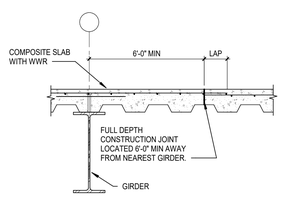
DETAIL AT EXPOSED CONCRETE

NOTE: SEE ARCHITECTURAL PLANS FOR FLOOR FINISH

3C S5.2 TYP WINDOW AT FLOOR SLAB DETAIL
SCALE: 3/4" = 1'-0"



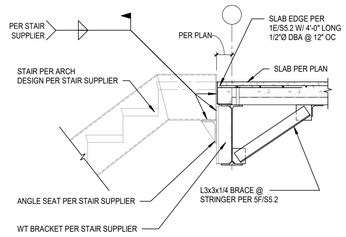
PERPENDICULAR TO DECK FLUTES



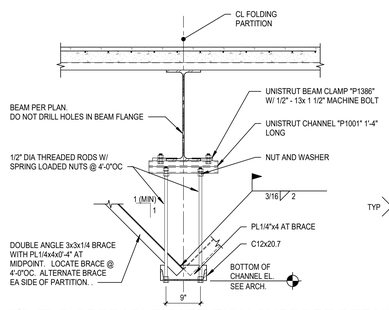
PARALLEL TO DECK FLUTES

NOTE:
EXTEND WWR THROUGH CONSTRUCTION JOINT AND LAP PER SPECIFICATIONS.
DO NOT CUT STEEL DECKING.

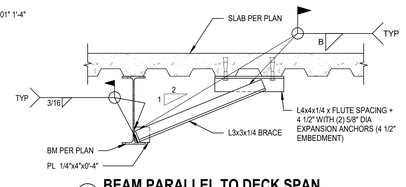
3E S5.2 TYP CONSTRUCTION JOINT IN COMPOSITE SLAB
SCALE: 3/4" = 1'-0"



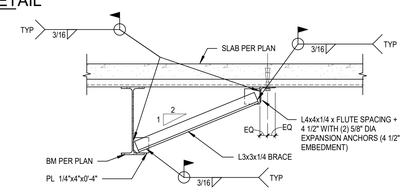
4D S5.2 TYP STAIR CONN TO FLOOR SLAB DETAIL
SCALE: 3/4" = 1'-0"



4E S5.2 TYP OPERABLE PARTITION SUPPORT DETAIL
SCALE: 3/4" = 1'-0"



A BEAM PARALLEL TO DECK SPAN



B BEAM PERPENDICULAR TO DECK SPAN

NOTES:
1. FIELD WELDING OF CONNECTION PLATES SHALL BE AT FABRICATOR'S OPTION.
2. SEE PLANS AND DETAILS FOR LOCATIONS OF BRACES.
3. CLIP CONNECTION PLATES TO CLEAR BEAM AND ANGLE FILLETS.

5F S5.2 TYP BOTTOM FLANGE BRACE DETAIL
SCALE: 3/4" = 1'-0"

NOTE:
COORDINATE ELEVATOR SHAFT LOCATION AND SIZE WITH ARCHITECTURAL DRAWINGS AND THE ELEVATOR SUPPLIER.

5A S5.2 TYP ELEVATOR SHAFT DETAIL
SCALE: 3/4" = 1'-0"

STRUCTURAL FLOOR SCHEDULE

MARK	DESCRIPTION
SF1	4-1/2" SLAB ON 2" DEEP x 20 GA GALVANIZED COMPOSITE METAL DECK (6-1/2" TOTAL THICKNESS). REINFORCE SLAB WITH 6x6-W2.9xW2.9 WELDED WIRE REINF.

NOTES:
1. REFER TO FLOOR TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT AT COMPOSITE BEAMS.
2. ALL REINFORCEMENT, INCLUDING WWR, SHALL BE PROPERLY CHAIRED BY THE CONTRACTOR.
3. REFERENCE GENERAL NOTES AND SPECIFICATIONS FOR FURTHER INFORMATION.

5D S5.2 COMPOSITE FLOOR SLAB SCHEDULE
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

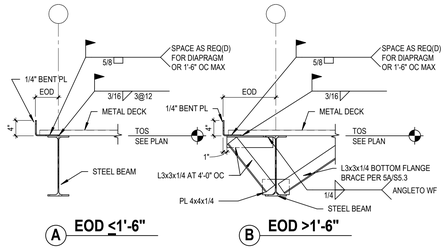
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STEEL TYPICAL DETAILS

S5.2

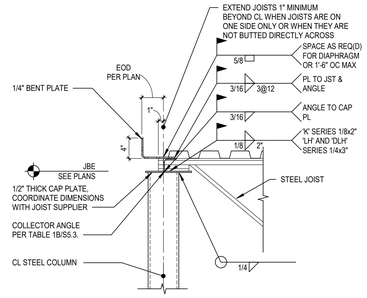
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:36:17 PM



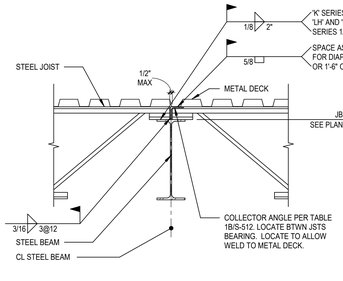
1A S5.3 TYP EDGE OF DECK DETAIL
SCALE: 3/4" = 1'-0"

JST SEAT DEPTH	ANGLE SIZE
2-1/2"	L2-1/2x2-1/2x3/16
3-1/2"	L3-1/2x3x1/4 LLV
5"	L5x3x1/4 LLV
'D'	BENT PL 'D'x3"x1/4" LLV

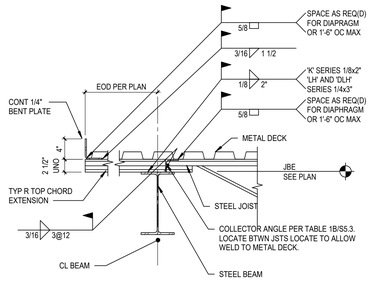
1B S5.3 COLLECTOR ANGLE TABLE
SCALE: 1" = 1'-0"



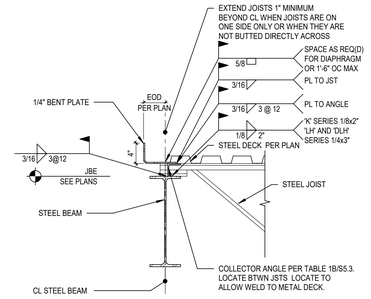
1C S5.3 TYP JOIST BEARING DETAIL
SCALE: 1" = 1'-0"



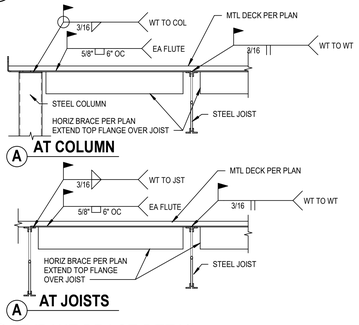
1D S5.3 TYP JOIST BEARING DETAIL
SCALE: 1" = 1'-0"



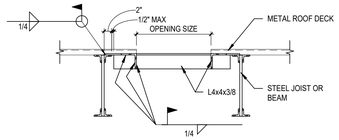
1E S5.3 TYP EXTENDED END JST BEARING DETAIL
SCALE: 1" = 1'-0"



1F S5.3 TYP JOIST BEARING DETAIL
SCALE: 1" = 1'-0"

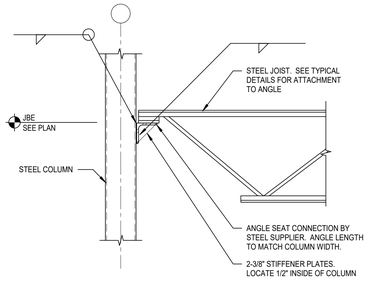


2A S5.3 TYP WT BRACE DETAIL
SCALE: 3/4" = 1'-0"

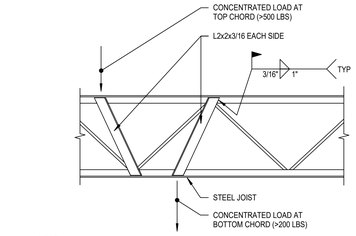


NOTE:
TYPICAL DETAIL APPLIES TO ALL OPENINGS 6" AND LARGER.

2B S5.3 TYP ROOF OPENING DETAIL
SCALE: 3/4" = 1'-0"

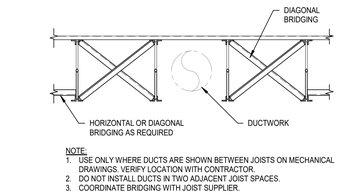


2C S5.3 TYP JOIST BEARING DETAIL
SCALE: 1" = 1'-0"



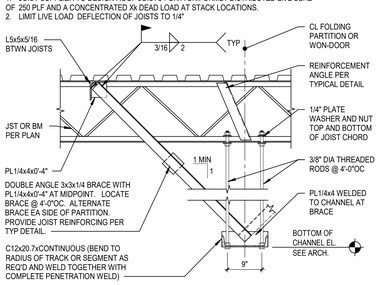
NOTE:
1. DESIGN ALL JOIST TOP AND BOTTOM CHORDS FOR BEND CHECK LOADS AS SHOWN. REINFORCEMENT ONLY REQUIRED WHERE LOADS EXCEED LOADS SHOWN.
2. PROVIDE REINFORCEMENT WHEN CONCENTRATED LOAD IS MORE THAN 3" FROM PANEL POINT AND EXCEEDS LOAD SHOWN.

2D S5.3 TYP JOIST REINFORCING DETAIL
SCALE: 1" = 1'-0"

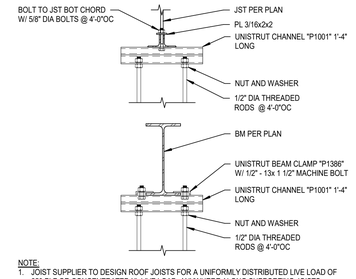


NOTE:
1. USE ONLY WHERE DUCTS ARE SHOWN BETWEEN JOISTS ON MECHANICAL DRAWINGS. VERIFY LOCATION WITH CONTRACTOR.
2. DO NOT INSTALL DUCTS IN TWO ADJACENT JOIST SPACES.
3. COORDINATE BRIDGING WITH JOIST SUPPLIER.

2E S5.3 TYP JOIST BEARING DETAIL
SCALE: 3/4" = 1'-0"

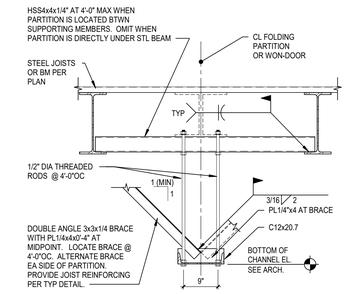


2F S5.3 TYP OPERABLE PARTITION WALL CONN DTL
SCALE: 3/4" = 1'-0"

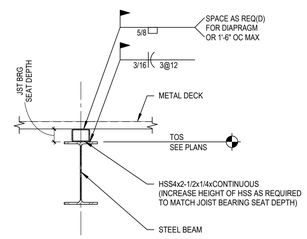


NOTE:
1. JOIST SUPPLIER TO DESIGN ROOF JOISTS FOR A UNIFORMLY DISTRIBUTED LIVE LOAD OF 250 PLF OR CONCENTRATED Xk LIVE LOAD ANYWHERE ALONG SUPPORTING JOISTS
2. LIMIT LIVE LOAD DEFLECTION OF JOISTS TO 1/4"

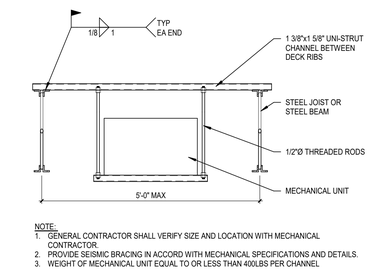
3A S5.3 TYP OPERABLE PARTITION WALL CONN DTL
SCALE: 1" = 1'-0"



3B S5.3 TYP OPERABLE PARTITION WALL CONN DTL
SCALE: 3/4" = 1'-0"

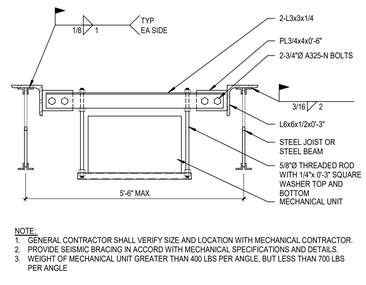


3C S5.3 TYP LOWERED BEAM DETAIL
SCALE: 1" = 1'-0"



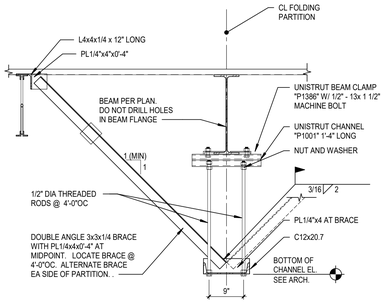
NOTE:
1. GENERAL CONTRACTOR SHALL VERIFY SIZE AND LOCATION WITH MECHANICAL CONTRACTOR.
2. PROVIDE SEISMIC BRACING IN ACCORD WITH MECHANICAL SPECIFICATIONS AND DETAILS.
3. WEIGHT OF MECHANICAL UNIT EQUAL TO OR LESS THAN 400LBS PER CHANNEL

3D S5.3 TYP HANGING MECH UNIT DETAIL
SCALE: 1" = 1'-0"

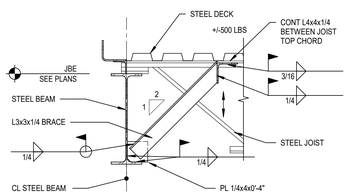


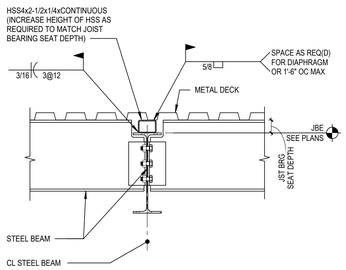
NOTE:
1. GENERAL CONTRACTOR SHALL VERIFY SIZE AND LOCATION WITH MECHANICAL CONTRACTOR.
2. PROVIDE SEISMIC BRACING IN ACCORD WITH MECHANICAL SPECIFICATIONS AND DETAILS.
3. WEIGHT OF MECHANICAL UNIT GREATER THAN 400 LBS PER ANGLE, BUT LESS THAN 700 LBS PER ANGLE

3E S5.3 TYP HANGING MECH UNIT DETAIL
SCALE: 1" = 1'-0"

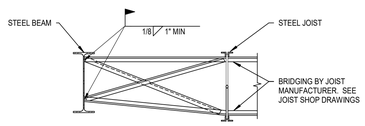


3F S5.3 TYP OPERABLE PARTITION WALL CONN DTL
SCALE: 3/4" = 1'-0"

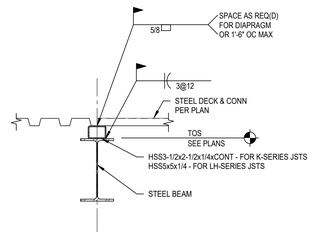




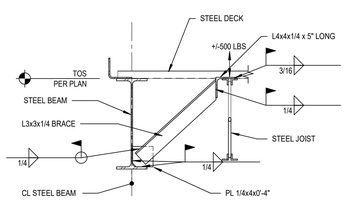
4B S5.3 TYP BEAM CONNECTION DETAIL
SCALE: 1" = 1'-0"



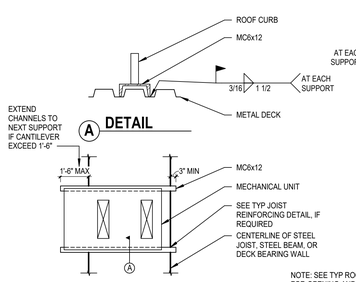
4C S5.3 TYP JOIST BRIDGING DETAIL
SCALE: 3/4" = 1'-0"



4D S5.3 DECK DIRECTION CHANGE DETAIL
SCALE: 1" = 1'-0"

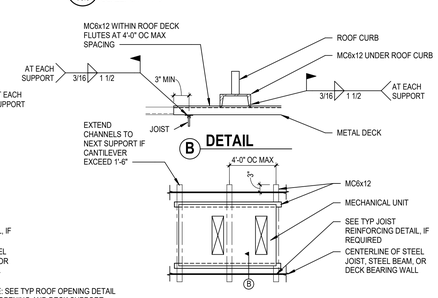


5A S5.3 TYP BOTTOM FLANGE BRACE DETAIL
SCALE: 1" = 1'-0"



MECH UNIT PERPENDICULAR WITH ROOF FRAMING

NOTE: SEE TYP ROOF OPENING DETAIL FOR OPENING AND DECK SUPPORT



MECH UNIT PARALLEL WITH ROOF FRAMING

5B S5.3 TYP ROOF TOP UNIT SUPPORT DETAIL AT 1-1/2" DEEP ROOF DECK
SCALE: 1/2" = 1'-0"

STRUCTURAL ROOF SCHEDULE

MARK	DESCRIPTION	ALLOWABLE DIAPHRAGM SHEAR
SR1	1-1/2" DEEP x 20 GA. WIDE RIB GALVANIZED STEEL ROOF DECK. 1.5B20. PROVIDE 5/8"Ø PUDDLE WELDS IN A 36/5 PATTERN AND 5 #10 TEK SCREW SIDE LAPS PER SPAN.	540 PLF

5D S5.3 ROOF DECK SCHEDULE
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Frn 3039, Crandall, TX 75114

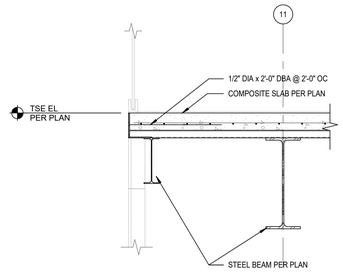
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

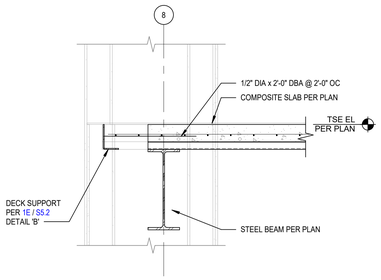
STEEL TYPICAL DETAILS

S5.3

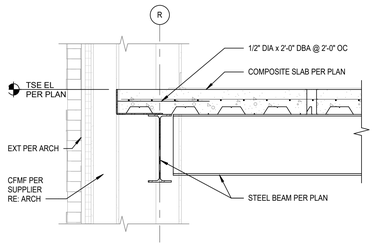
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:36:20 PM



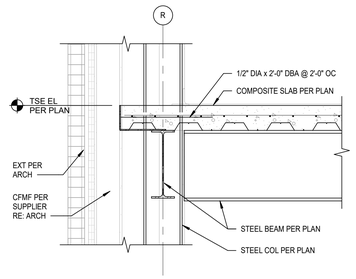
1E / S5.4 SECTION AT LOBBY MEZZANINE
SCALE: 3/4" = 1'-0"



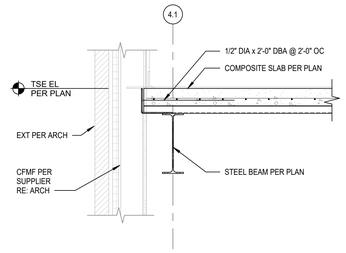
2A / S5.4 SECTION AT LOBBY MEZZANINE
SCALE: 3/4" = 1'-0"



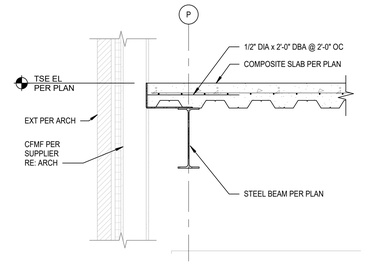
2B / S5.4 SECTION AT LOBBY MEZZANINE
SCALE: 3/4" = 1'-0"



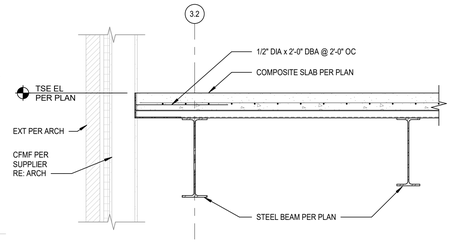
2C / S5.4 SECTION AT LOBBY MEZZANINE
SCALE: 3/4" = 1'-0"



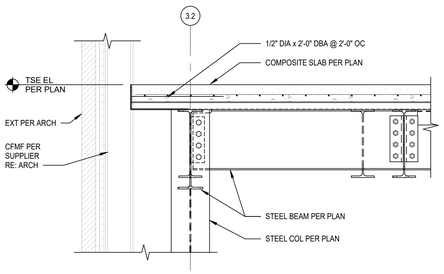
2D / S5.4 SECTION AT LOBBY MEZZANINE
SCALE: 3/4" = 1'-0"



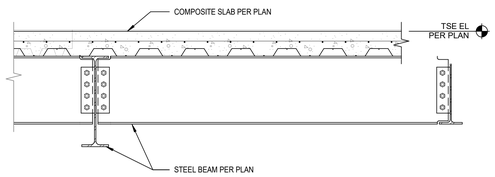
2E / S5.4 SECTION AT LOW ROOF
SCALE: 3/4" = 1'-0"



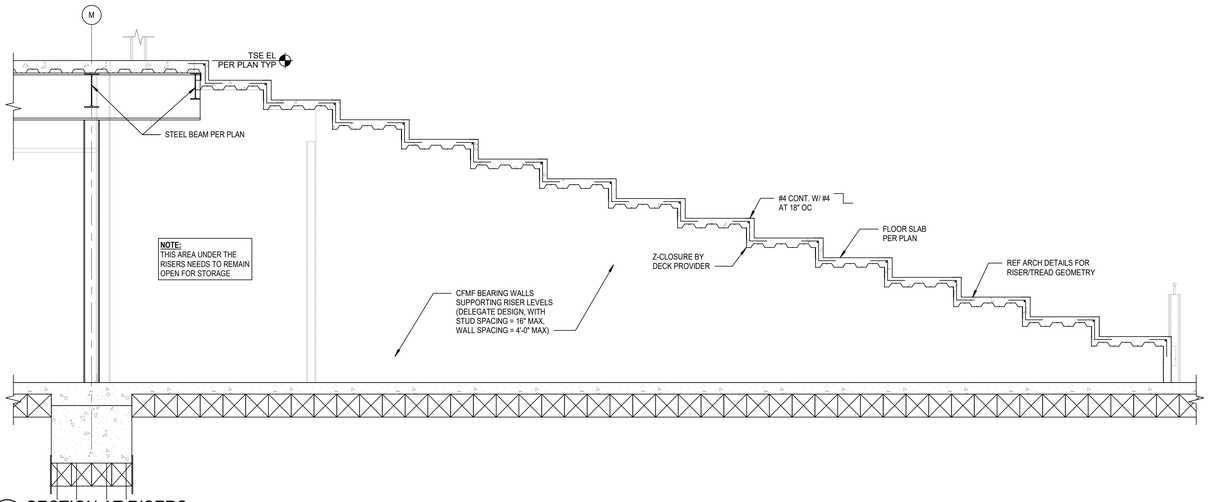
2F / S5.4 SECTION AT LOW ROOF
SCALE: 3/4" = 1'-0"



3A / S5.4 SECTION AT LOW ROOF
SCALE: 3/4" = 1'-0"



3B / S5.4 SECTION AT LOBBY MEZZANINE STAIR
SCALE: 3/4" = 1'-0"



5A / S5.4 SECTION AT RISERS
SCALE: 3/8" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

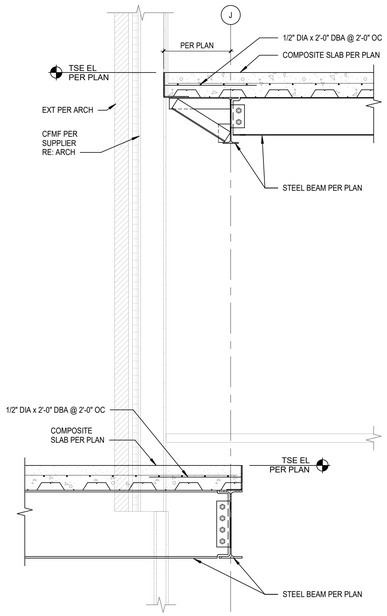
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

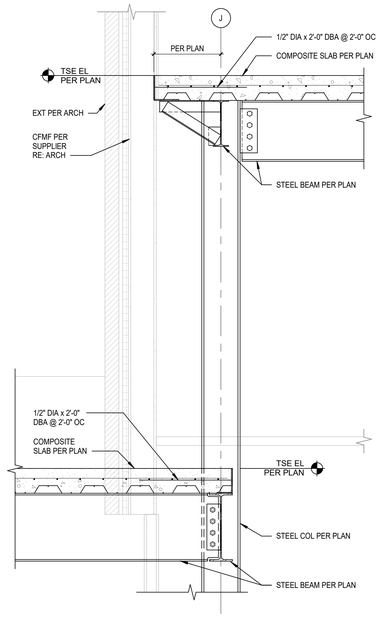
STEEL SECTIONS

S5.4

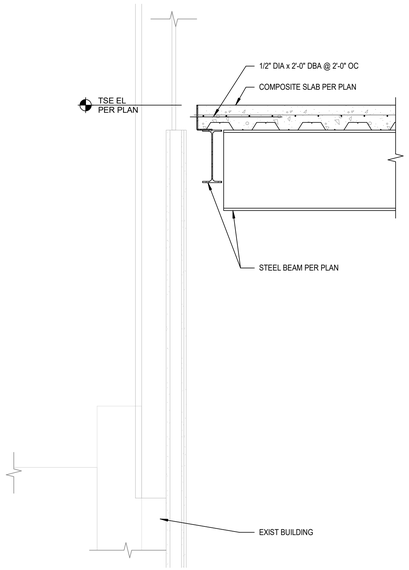
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:34 PM



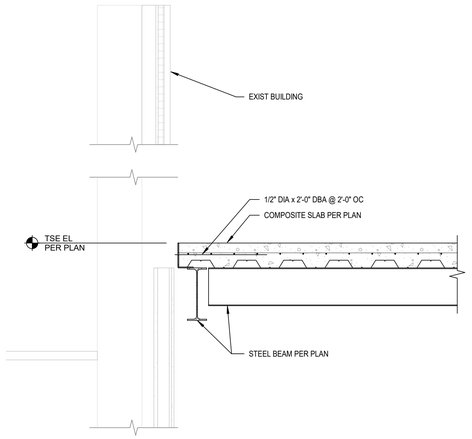
2A S5.5 SECTION AT ROOF STEP
SCALE: 3/4" = 1'-0"



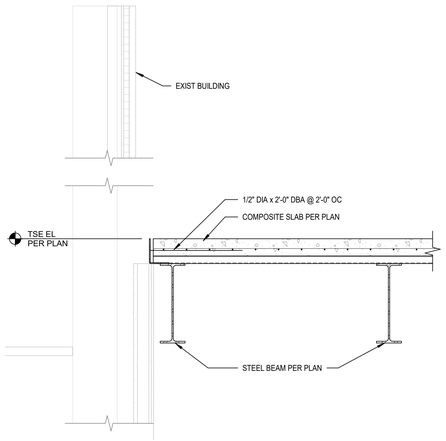
2B S5.5 SECTION AT ROOF STEP
SCALE: 3/4" = 1'-0"



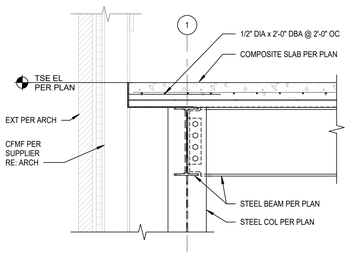
1C S5.5 SECTION AT ROOF NEAR EXISTING BUILDING
SCALE: 3/4" = 1'-0"



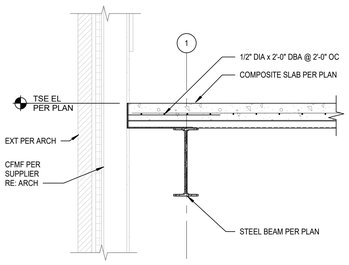
1D S5.5 SECTION AT ROOF NEAR EXISTING BUILDING
SCALE: 3/4" = 1'-0"



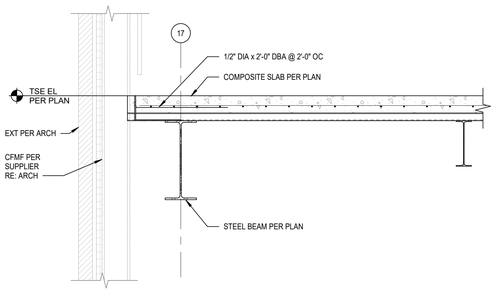
1E S5.5 SECTION AT ROOF NEAR EXISTING BUILDING
SCALE: 3/4" = 1'-0"



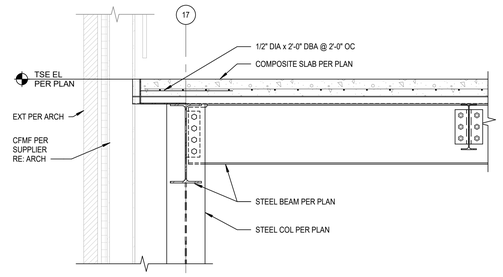
3A S5.5 SECTION AT ROOF
SCALE: 3/4" = 1'-0"



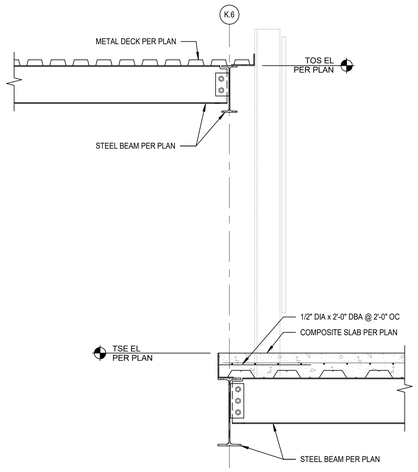
3B S5.5 SECTION AT ROOF
SCALE: 3/4" = 1'-0"



3C S5.5 SECTION AT ROOF
SCALE: 3/4" = 1'-0"



3D S5.5 SECTION AT ROOF
SCALE: 3/4" = 1'-0"



4A S5.5 SECTION AT ROOF STEP
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

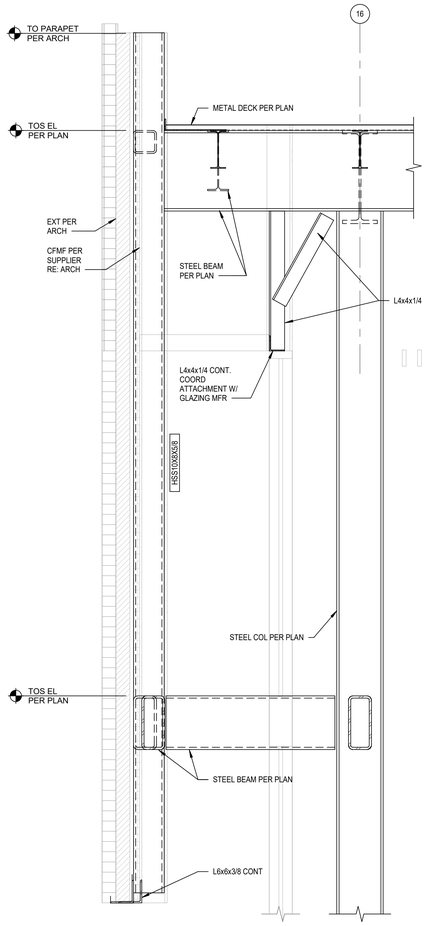
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

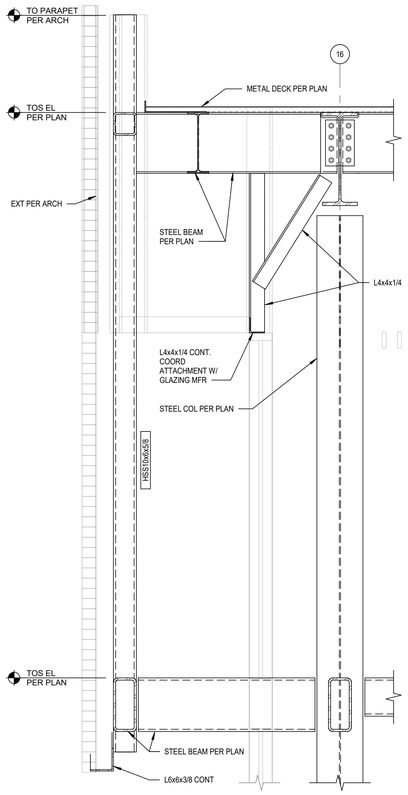
STEEL SECTIONS

S5.5

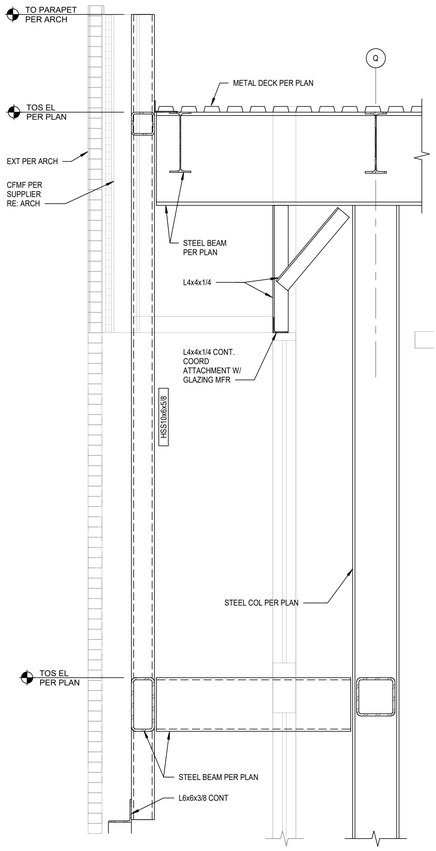
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:38 PM



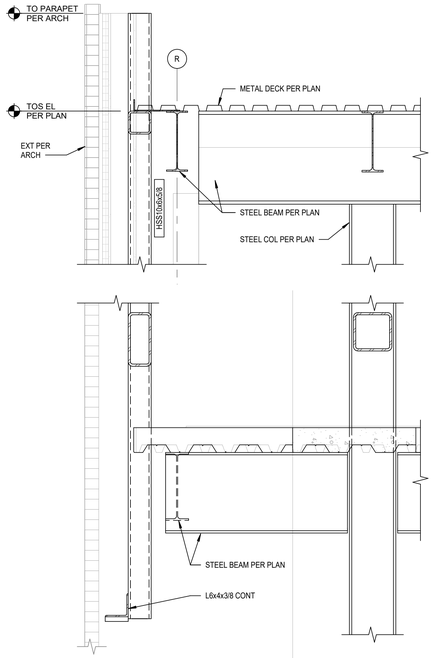
3A SECTION AT LOBBY ROOF
S5.6 SCALE: 3/4" = 1'-0"



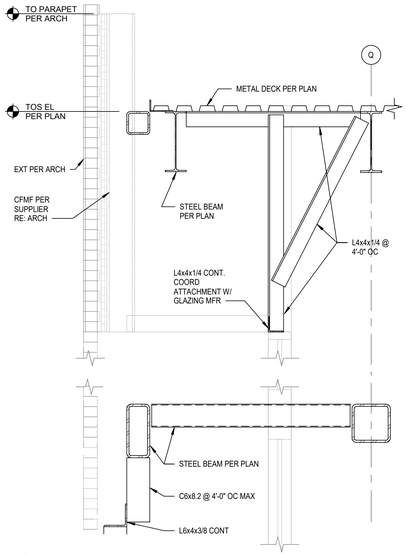
3B SECTION AT LOBBY ROOF
S5.6 SCALE: 3/4" = 1'-0"



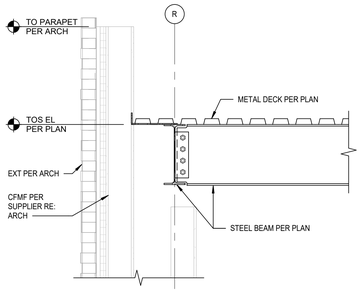
3C SECTION AT LOBBY ROOF
S5.6 SCALE: 3/4" = 1'-0"



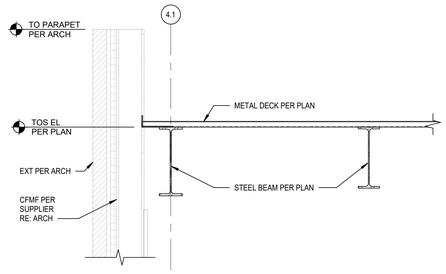
3D SECTION AT LOBBY ROOF
S5.6 SCALE: 3/4" = 1'-0"



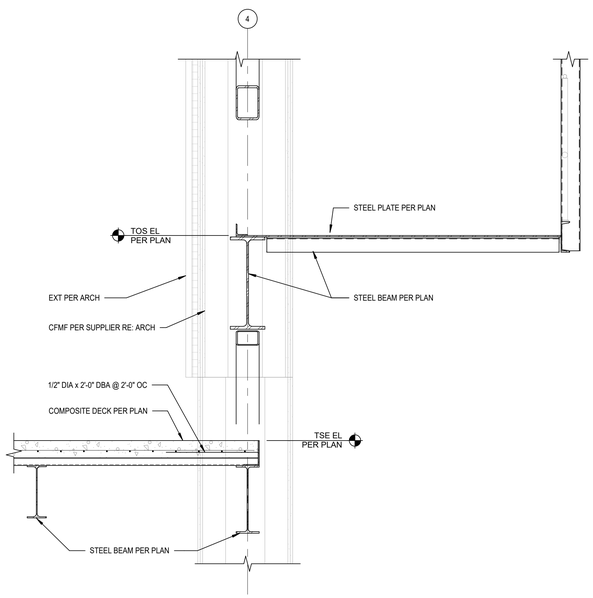
2F S5.6 SECTION AT LOBBY ROOF
SCALE: 3/4" = 1'-0"



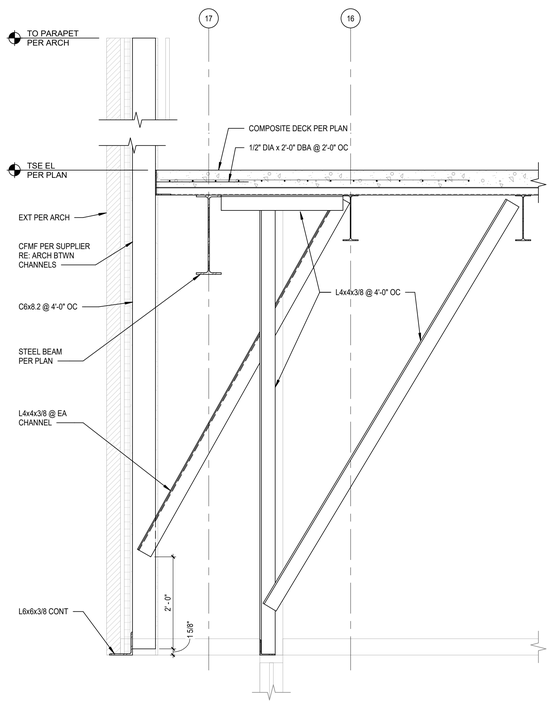
3F SECTION AT LOBBY ROOF
S5.6 SCALE: 3/4" = 1'-0"



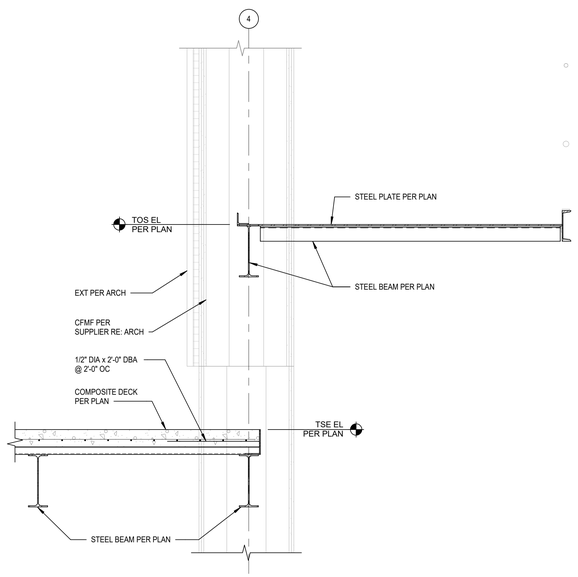
4D S5.6 SECTION AT LOBBY ROOF
SCALE: 3/4" = 1'-0"



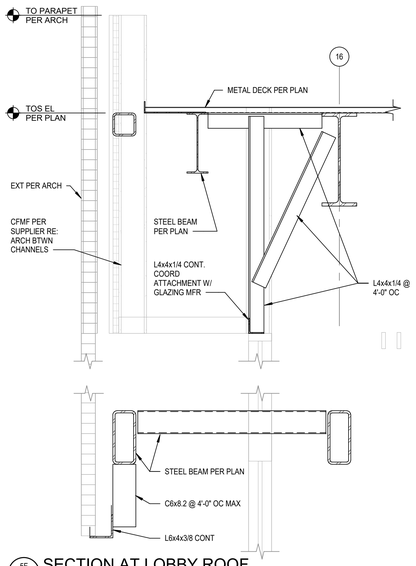
5A S5.6 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



5B S5.6 SECTION AT BRICK SUPPORT
SCALE: 3/4" = 1'-0"



5D S5.6 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



5F S5.6 SECTION AT LOBBY ROOF
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

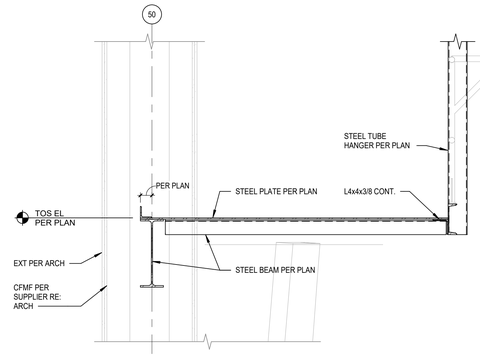
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

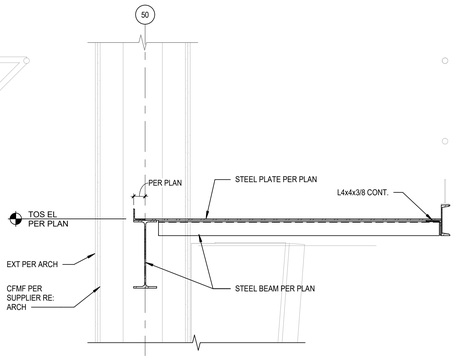
STEEL SECTIONS

S5.6

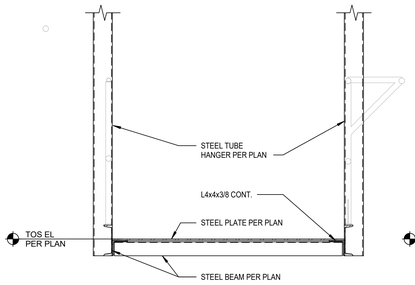
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:50 PM



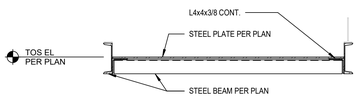
1A S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



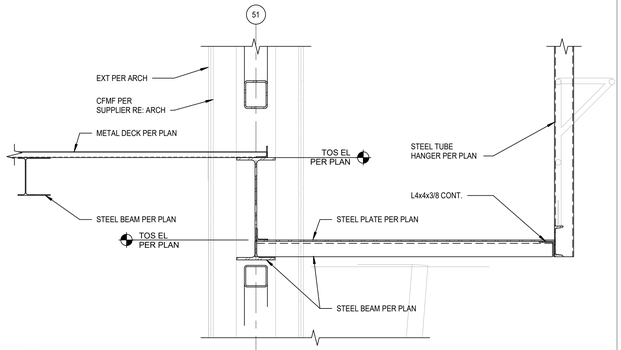
1B S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



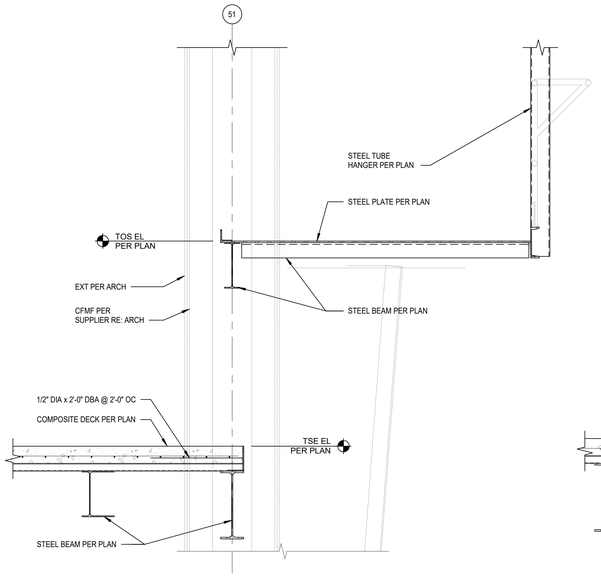
1C S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



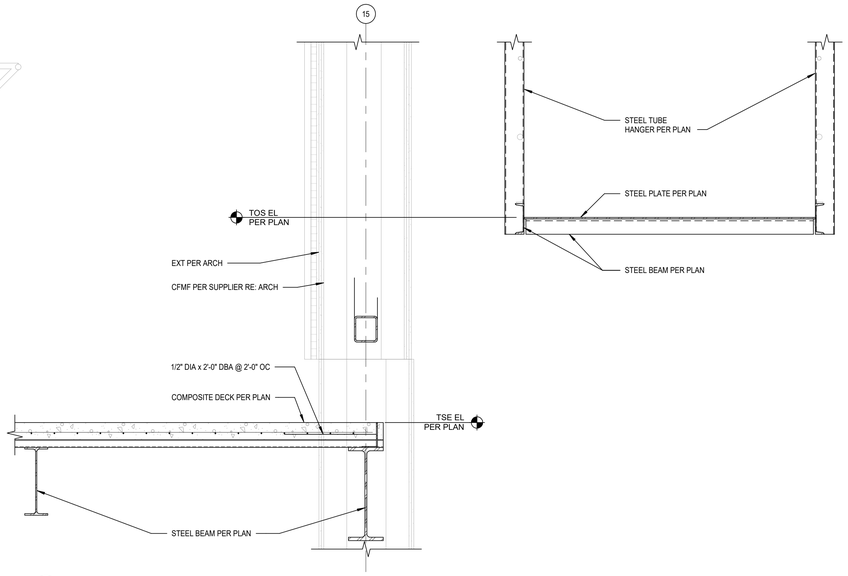
1D S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



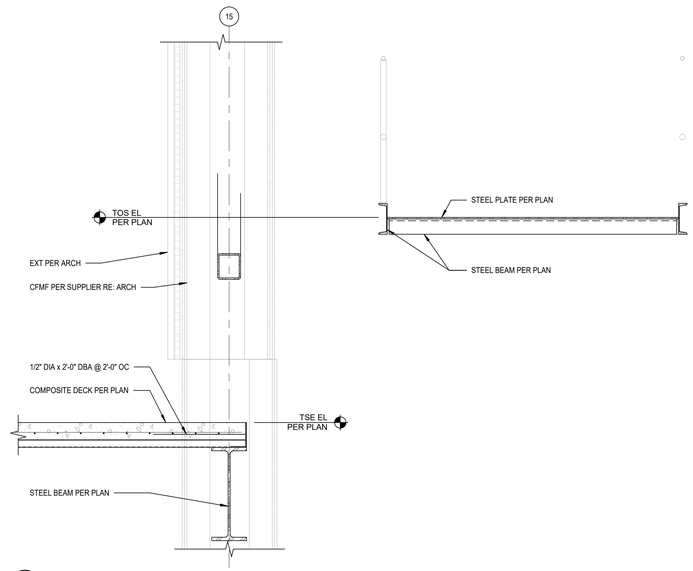
1E S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



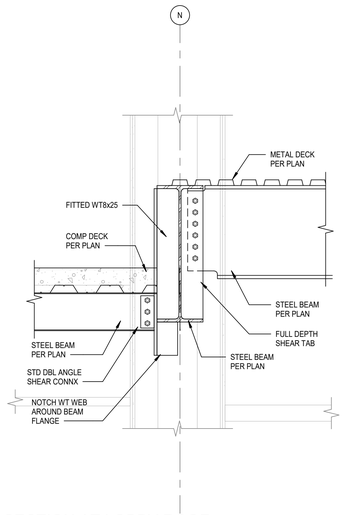
3A S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



3B S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



3D S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



5A S5.7 SECTION AT LOBBY ROOF
NO SCALE

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

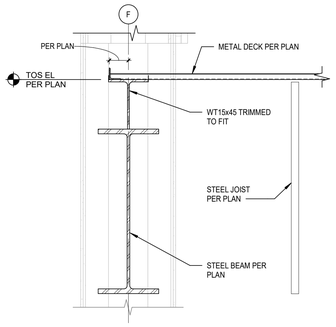
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

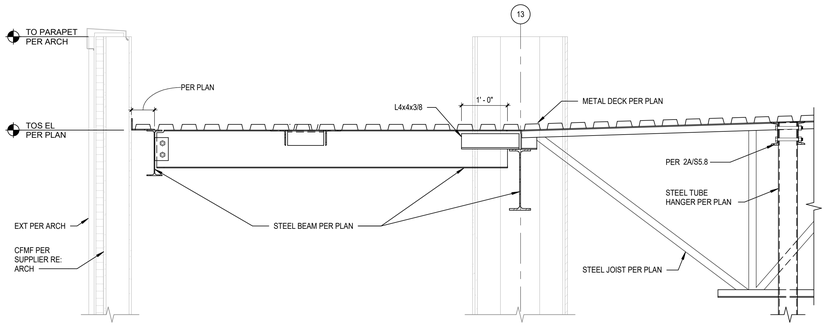
STEEL SECTIONS

S5.7

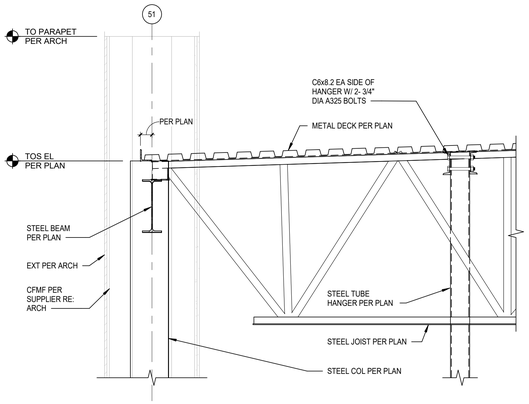
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:50 PM



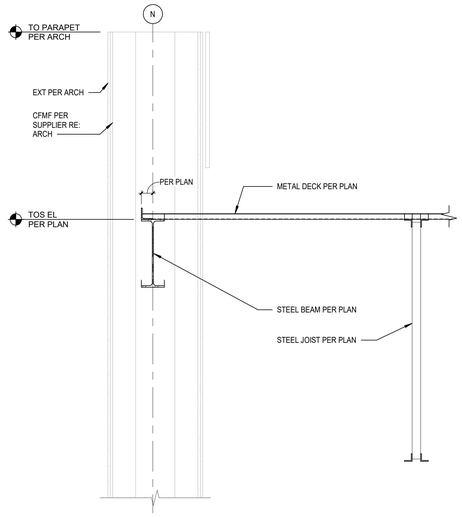
1A S5.8 SECTION AT AUDIENCE CHAMBER ROOF
SCALE: 3/4" = 1'-0"



1B S5.8 SECTION AT AUDIENCE CHAMBER ROOF
SCALE: 3/4" = 1'-0"



2A S5.8 SECTION AT AUDIENCE CHAMBER ROOF
SCALE: 3/4" = 1'-0"



2B S5.8 SECTION AT AUDIENCE CHAMBER ROOF
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

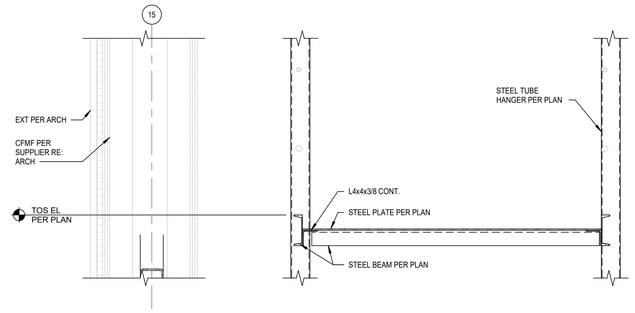
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

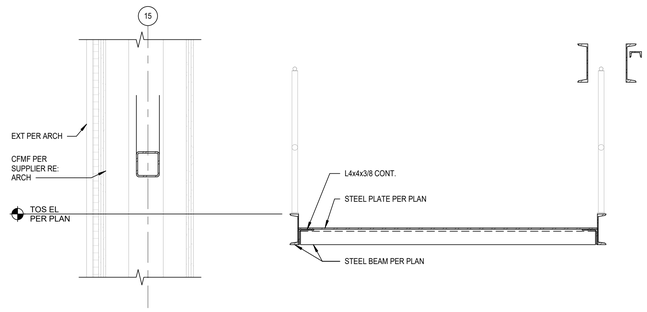
STEEL SECTIONS

S5.8

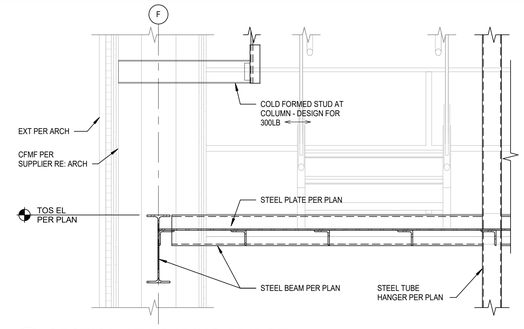
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:51 PM



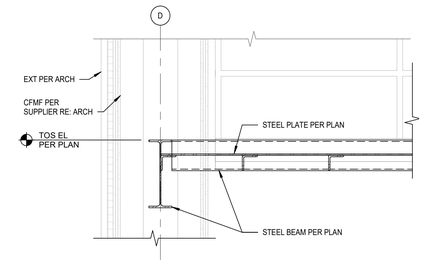
1A S5.9 SECTION AT LOADING BRIDGE
SCALE: 3/4" = 1'-0"



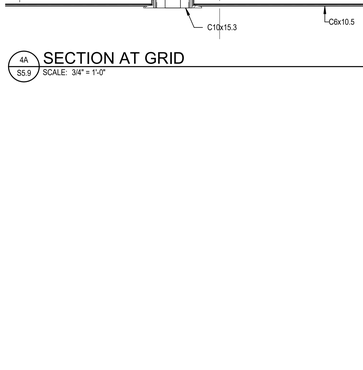
1B S5.9 SECTION AT LOADING BRIDGE
SCALE: 3/4" = 1'-0"



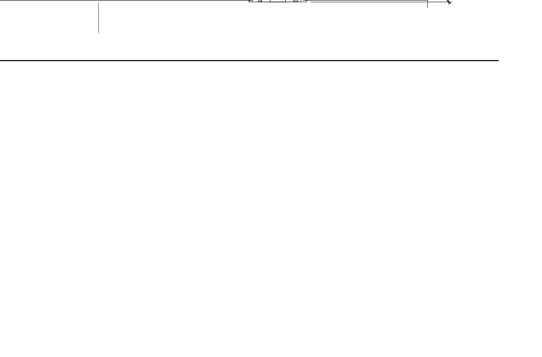
1D S5.9 SECTION AT LOADING BRIDGE
SCALE: 3/4" = 1'-0"



1E S5.9 SECTION AT LOADING BRIDGE
SCALE: 3/4" = 1'-0"



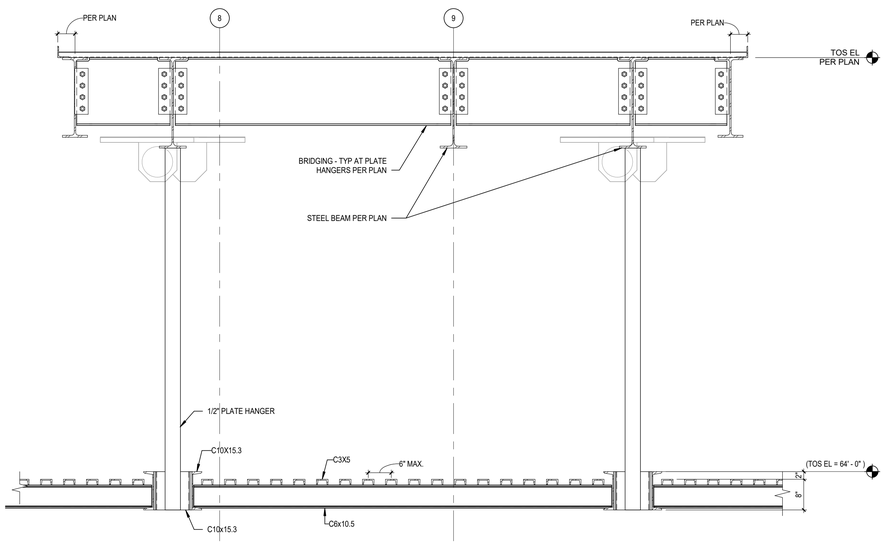
2A S5.9 SECTION AT STAGE HOUSE ROOF
SCALE: 3/4" = 1'-0"



2B S5.9 SECTION AT STAGE HOUSE ROOF CATWALK HANGER
SCALE: 3/4" = 1'-0"

2C S5.9 SECTION AT STAGE HOUSE ROOF
SCALE: 3/4" = 1'-0"

2E S5.9 SECTION AT STAGE HOUSE ROOF CATWALK HANGER
SCALE: 3/4" = 1'-0"



4A S5.9 SECTION AT GRID
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STEEL SECTIONS

S5.9

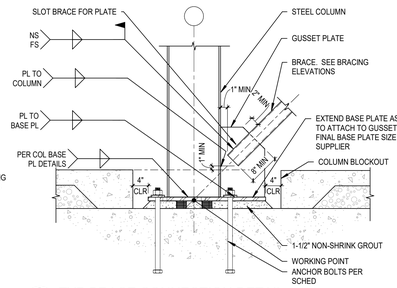
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:53 PM

A B C D E F

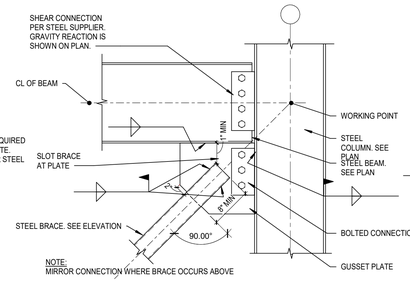
1 2 3 4 5

BRACING CONNECTION NOTES:
1. ALL CONNECTIONS SHOWN ARE SCHEMATIC ONLY. FINAL CONNECTION DESIGN CALCULATIONS AND DETAILING SHALL BE PROVIDED BY THE STEEL FABRICATOR'S ENGINEER.
2. REFER TO PLANS FOR ADDITIONAL SHEAR AND AXIAL REACTIONS NOT SHOWN.
3. ALL CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC LOAD AND RESISTANCE FACTOR DESIGN (LRFD) TO RESIST FACTORED REACTIONS PROVIDED FOR AN R = 3 SYSTEM.
4. THE WORKPOINT SHALL BE DEFINED AS THE INTERSECTION OF ALL MEMBER CENTROIDS FRAMING INTO THE JOINT. STEEL SUPPLIER SHALL DESIGN THE CONNECTIONS TO TRANSFER ALL FORCES TO THE WORKPOINT.
5. REMOVE ERECTION BOLTS AND FILL ALL ERECTION HOLES AFTER BRACE INSTALLATION WITH WELD AND GRIND SMOOTH.
6. USE TENSION CONTROL BOLTS AT ALL BRACE CONNECTIONS.

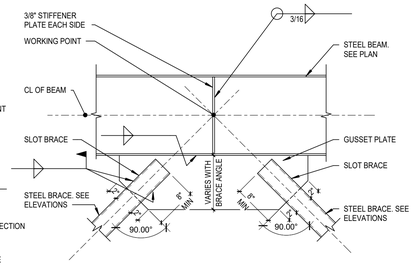
1A S6.1 BRACE CONNECTION DETAIL NOTES
NO SCALE



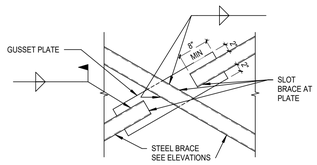
1B S6.1 TYP BRACE CONNECTION DETAIL
NO SCALE



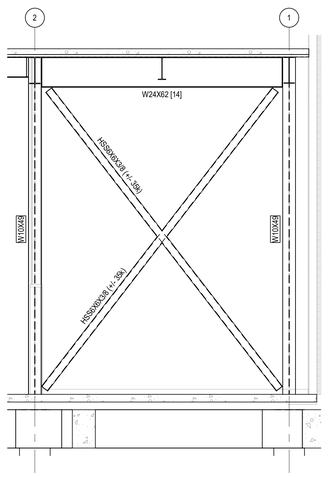
1C S6.1 TYP BRACE CONNECTION DETAIL
NO SCALE



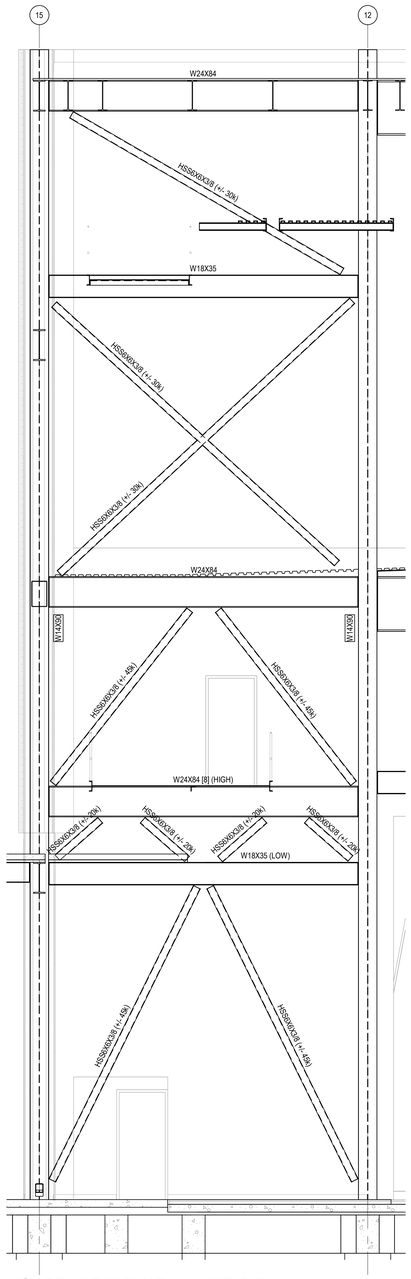
1D S6.1 TYP BRACE CONNECTION DETAIL
NO SCALE



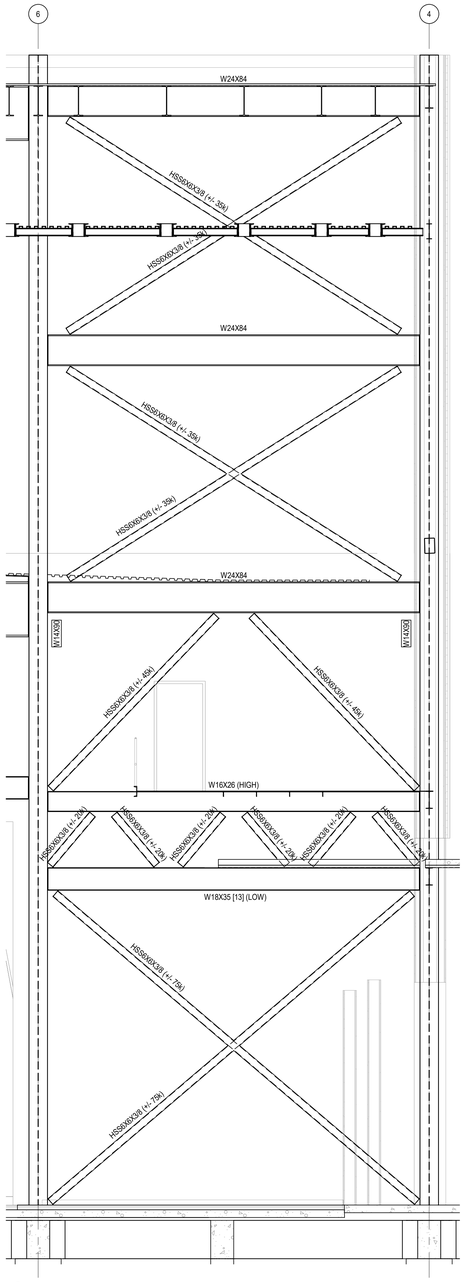
1E S6.1 TYP BRACE CONNECTION DETAIL
NO SCALE



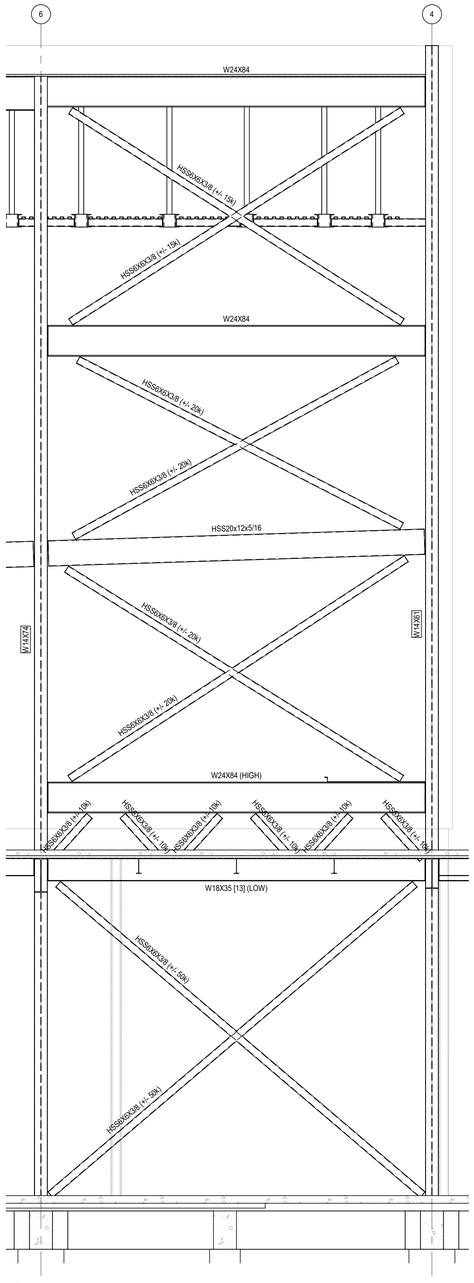
5A S6.1 BRACE ELEVATION - GRID B
SCALE: 1/4" = 1'-0"



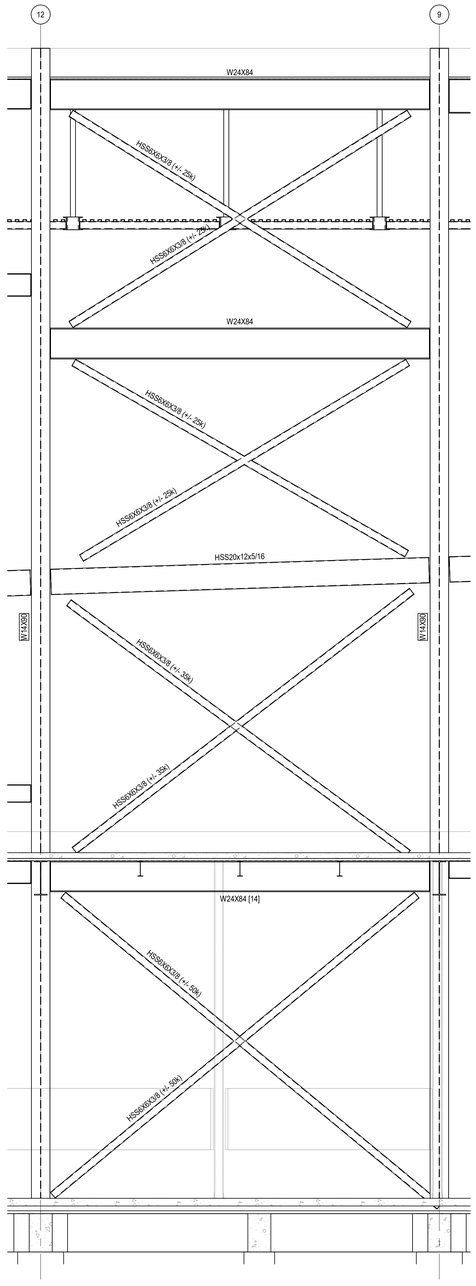
5B S6.1 BRACE ELEVATION - GRID F
SCALE: 1/4" = 1'-0"



5C S6.1 BRACE ELEVATION - GRID F
SCALE: 1/4" = 1'-0"



5D S6.1 BRACE ELEVATION - GRID D
SCALE: 1/4" = 1'-0"



5E S6.1 BRACE ELEVATION - GRID D
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

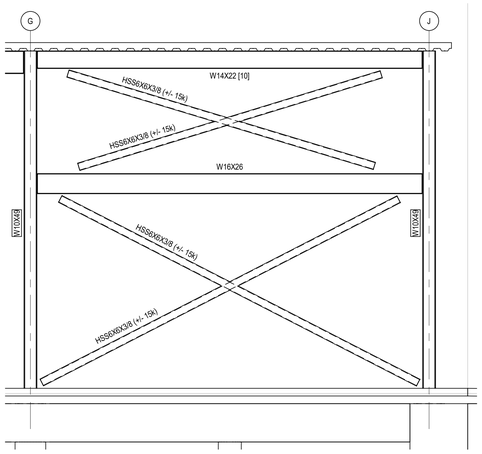
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

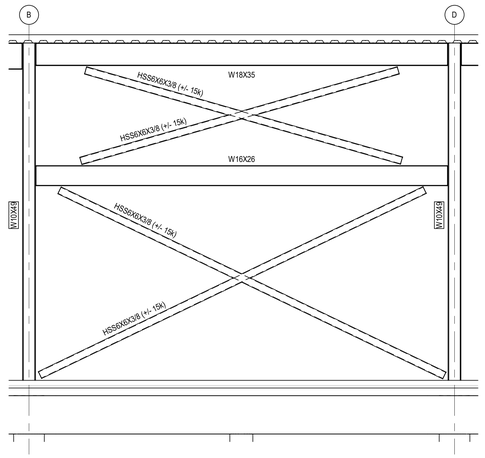
BRACE ELEVATIONS

S6.1

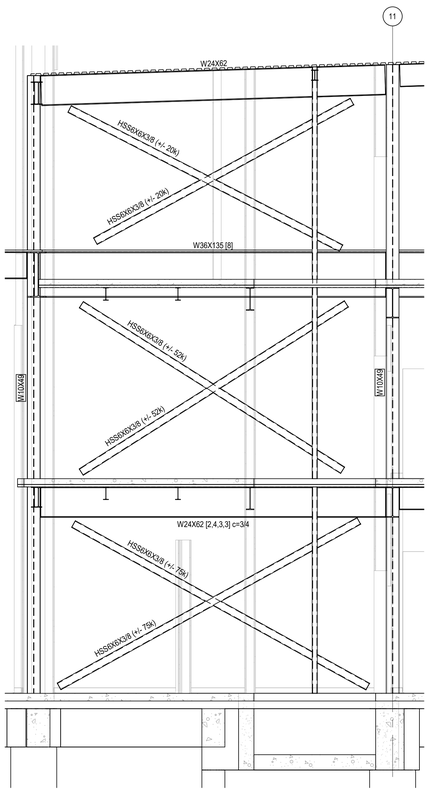
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:55 PM



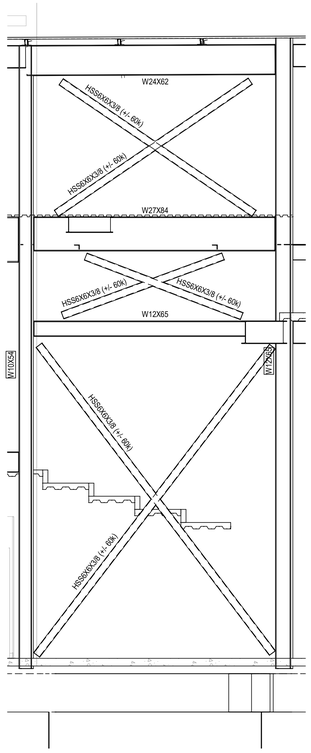
3A S6.2 BRACE ELEVATION - GRID 1
SCALE: 1/4" = 1'-0"



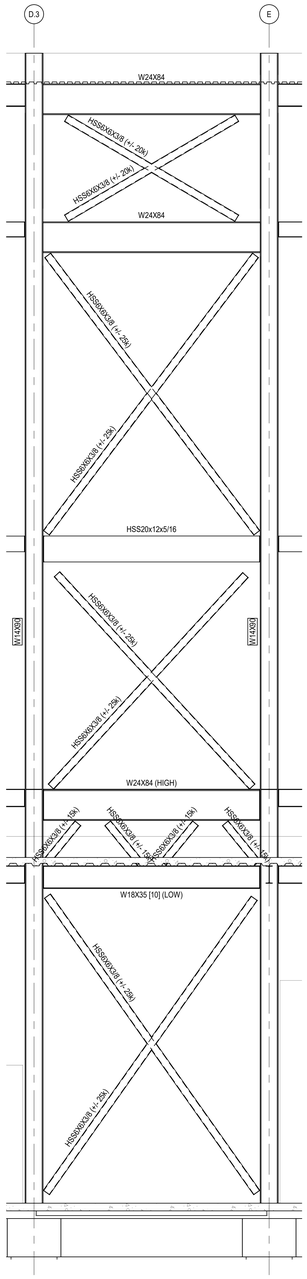
3B S6.2 BRACE ELEVATION - GRID 1
SCALE: 1/4" = 1'-0"



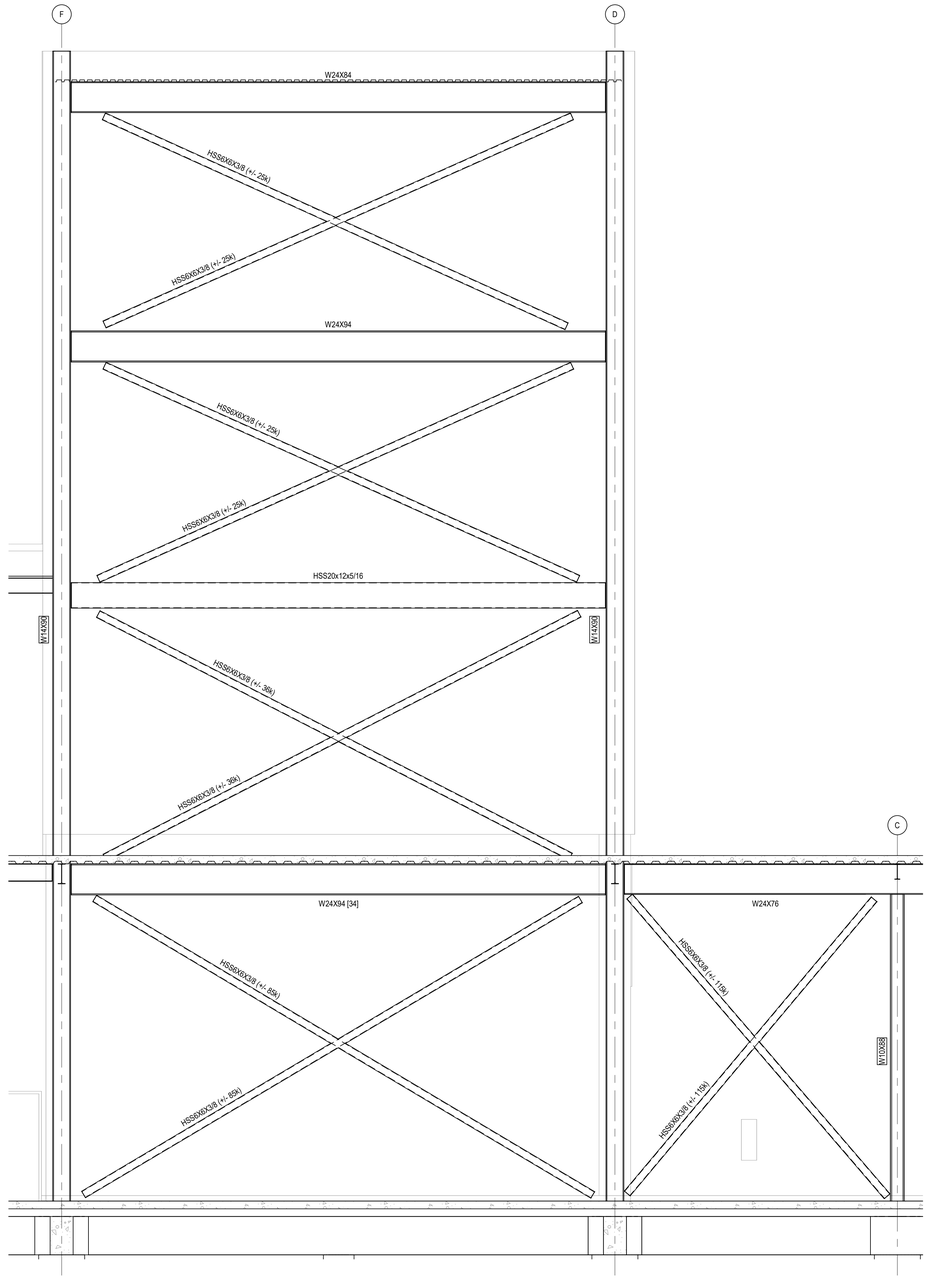
5A S6.2 BRACE ELEVATION - GRID N
SCALE: 1/4" = 1'-0"



5B S6.2 BRACE ELEVATION - GRID 51
SCALE: 1/4" = 1'-0"



5C S6.2 BRACE ELEVATION - GRID 4
SCALE: 1/4" = 1'-0"



5D S6.2 BRACE ELEVATION - GRID 15
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
JAMES H. WHITT
83534
LICENSED
PROFESSIONAL ENGINEER
07/25/2024

TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

BRACE ELEVATIONS

S6.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_Struct_2024.rvt
7/24/2024 1:56:58 PM

GENERAL FIRE PROTECTION NOTES

1.1 GENERAL NOTES

A. ALL FIRE PROTECTION WORK PERFORMED SHALL COMPLY WITH ALL CODES, LAWS AND GOVERNING BODIES. IF THE DRAWINGS AND/OR SPECIFICATIONS ARE MORE RESTRICTIVE OR EXCEED THE GOVERNING CODE REQUIREMENTS, THESE DRAWINGS AND SPECIFICATIONS SHALL GOVERN.

B. THE SPRINKLER DESIGN SHALL BE COORDINATED WITH ALL OTHER ASPECTS OF THE BUILDING. TO THAT END, THE SPRINKLER CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND CIVIL DRAWINGS.
   1. REFER TO THE ARCHITECTURAL DRAWINGS FOR BUILDING ELEVATIONS, CEILING DETAILS, PARTITIONS, AND OCCUPANCIES.
   2. REFER TO STRUCTURAL TO COORDINATE PIPING LAYOUT WITH STRUCTURAL ELEMENTS OF THE BUILDING.
   3. REFER TO THE PLUMBING AND MECHANICAL DRAWINGS TO ASSESS THE CONGESTION ABOVE THE CEILINGS. THE SPRINKLER CONTRACTOR SHALL SPECIFICALLY BE CONSCIOUS OF ANY HORIZONTAL MECHANICAL EQUIPMENT LOCATIONS AS WELL AS THEIR SERVICE REQUIREMENTS:
      a. THE HORIZONTAL MECHANICAL UNITS HAVE BEEN LOCATED IN AREAS THAT ALLOW FOR EASY REMOVAL OF THE FILTER AND EASY ACCESS TO THE EQUIPMENT UNIT ACCESS PANELS. THIS ACCESS SPACE HAS BEEN DESIGNATED BY THE DASHED LINE AREAS ADJACENT TO THE UNITS. LEAVE ENOUGH SPACE FOR SERVICE PERSONNEL TO PERFORM MAINTENANCE OR REPAIR. PROVIDE SUFFICIENT ROOM TO MAKE WATER, ELECTRICAL AND DUCT CONNECTIONS.
      b. IF ANY SPRINKLER PIPING IS RUN WITHIN THE DESIGNATED EQUIPMENT SERVICE / ACCESS AREAS, THE PIPE SHALL BE REMOVED AND RE-ROUTED SO IT IS NOT WITHIN THE SERVICE / ACCESS AREA.
      c. ALLOW ADEQUATE ROOM BELOW THE MECHANICAL UNIT FOR A CONDENSATE TRAP. DO NOT LOCATE ANY PIPING SYSTEMS BELOW ANY SUSPENDED MECHANICAL UNITS.
   4. REFER TO THE ELECTRICAL DRAWINGS FOR THE INTERFACE BETWEEN THE FIRE SPRINKLER AND ALARM SYSTEMS.
   5. PROVIDE PROTECTION ABOVE AND BELOW CEILINGS WHEN/WHERE COMBUSTIBLE MATERIALS ARE LOCATED WITHIN THE CEILING PLENUM.
   6. PROVIDE HEAVY DUTY PROTECTIVE GUARDS FOR SPRINKLER HEADS IN ALL EXPOSED AREAS SUBJECT TO ABUSE.
   7. PER NFPA 13, FIRE SPRINKLER PIPING SHALL BY SUPPORTED BY AN INDEPENDENT PIPE HANGER SYSTEM. FIRE SPRINKLER PIPING NOT BE SUPPORTED FROM OTHER PIPING, CONDUIT, OR DUCTWORK HANGING SYSTEMS.
   8. WHERE CEILINGS ARE TO BE INSTALLED, SPRINKLER PIPING SHALL BE INSTALLED WITHIN THE CEILING PLENUM UNLESS NOTED OTHERWISE ON THE DRAWINGS. WRITTEN AUTHORIZATION SHALL BE OBTAINED FROM THE ARCHITECT PRIOR TO EXPOSING ANY PIPING IN ANY ROOM WHICH HAS A SUSPENDED CEILING.

C. HYDRAULIC INFORMATION:
   1. TEST DATE: DECEMBER 13, 2022
   2. STATIC PRESSURE: 76 PSI
   3. RESIDUAL PRESSURE: 58 PSI
   4. FLOW IN GPM: 1130/45
   5. LOCATION: SUPPLY HYDRANT ON NORTH ACCESS ROAD AROUND SCHOOL. RESIDUAL HYDRANT AT THE BACK OF SCHOOL ON THE CURB NORTHEAST OF HANDICAP PARKING LOT.
   6. THE SUCCESSFUL SPRINKLER CONTRACTOR SHALL CONDUCT A NEW WATER FLOW TEST PRIOR TO THE DESIGN OF THE SPRINKLER SYSTEM.

1.2 FIRE PROTECTION SHEET NOTES

A. THE NEW BUILDING ADDITION(S) SHALL BE PROVIDED WITH A FIRE PROTECTION SYSTEM. THE SYSTEM SHALL BE AN EXTENSION OFF/FROM THE EXISTING WET-PIPE TYPE SYSTEM.

   1. THE ARCHITECT/ENGINEER WILL PROVIDE THE SUCCESSFUL SPRINKLER CONTRACTOR WITH AVAILABLE DRAWINGS OF THE EXISTING (INSTALLED) FIRE SPRINKLER SYSTEM. THE SUCCESSFUL SPRINKLER CONTRACTOR SHALL PERFORM HYDRAULIC CALCULATIONS OF THE EXISTING SYSTEM AND EVALUATE THE EXISTING SPRINKLER SYSTEM PIPE SIZES TO ALLOW FOR THE EXPANSION OF THE EXISTING FIRE SPRINKLER SYSTEM TO SERVE THE NEW BUILDING ADDITIONS.
      a. THE LOCATION OF THE EXISTING SPRINKLER SYSTEM MAIN(S) ARE SHOWN ON THIS PLAN.
      b. THIS EXISTING SPRINKLER PIPING SHOWN IS FROM EXISTING FIRE SPRINKLER "ZONE 3".
      c. FOR ESTIMATION / BID PURPOSES TIE INTO EXISTING FIRE SPRINKLER.
   2. THIS AREA OF THE EXISTING BUILDING IS PRESENTLY SPRINKLERED. THE EXISTING SPRINKLER SYSTEM SHALL BE MODIFIED WITHIN THIS AREA AND THE EXISTING SPRINKLER HEADS SHALL BE RELOCATED TO CONFORM TO THE NEW ROOM & CEILING CONFIGURATIONS. EXISTING SPRINKLER HEADS MAY BE RELOCATED FROM EXISTING SPRINKLER HEAD LOCATIONS. EXISTING SPRINKLER HEADS AND THEIR LOCATIONS SHALL BE FIELD VERIFIED BY THE SPRINKLER CONTRACTOR. THE RELOCATION AND SPACING OF THE RELOCATED SPRINKLER HEADS SHALL BE IN ACCORDANCE WITH NFPA 13, AND THE LOCAL AUTHORITY HAVING JURISDICTION.
   3. THE REMODELED PORTIONS OF THE BUILDING SHALL HAVE THEIR SPRINKLER HEAD LAYOUT MODIFIED TO ACCOUNT FOR AREAS WHERE NEW WALLS OR CEILINGS ARE TO BE INSTALLED OR EXISTING WALL OR CEILING SYSTEMS WERE REMOVED. ADAPT / MODIFY THE EXISTING SPRINKLER HEAD LAYOUT TO THE NEW ROOM LAYOUT.
   4. PROVIDE ALTERATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE NEW FLOOR PLAN AND NEW CEILING TYPES. PROVIDE A COMPLETE WET TYPE SYSTEM INCLUDING NEW MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. REUSE EXISTING SYSTEM EQUIPMENT WHERE APPLICABLE. THE SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND AS PER REQUIREMENTS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.
   5. THE BUILDINGS COMPLETE OPERATIONAL FIRE PROTECTION SYSTEMS SHALL REMAIN IN PLACE. THE SPRINKLER CONTRACTOR SHALL REPAIR ANY DAMAGE TO THIS SYSTEM CREATED BY THE REMOVAL OF ANY OTHER MECHANICAL SYSTEMS OR COMPONENTS.

B. THE SPRINKLER CONTRACTOR SHALL COORDINATE PHASING OF SPRINKLER WORK WITH THE GENERAL CONTRACTOR PRIOR TO STARTING WORK.

1.3 FIRE PROTECTION SHEET NOTES.

A. THIS DRAWING INDICATES A GENERAL PIPING ARRANGEMENT AND SUGGESTED SIZING ONLY. THE SPRINKLER CONTRACTOR SHALL DETERMINE THE ACTUAL PIPE SIZING REQUIRED AND COORDINATE WORK WITH ALL OTHER TRADES TO AVOID CONFLICTS.

B. ROUTE SPRINKLER PIPING SUCH THAT IT DOES NOT RUN ABOVE ELECTRICAL PANELS, SWITCHGEAR, OR SIMILAR EQUIPMENT. SPRINKLER MAINS SHALL NOT RUN THROUGH ELECTRICAL OR COMMUNICATION ROOMS. SPRINKLER HEADS IN THESE ROOMS SHALL BE SERVED BY A DEDICATED BRANCH LINE FOR EACH ROOM.

C. AESTHETICS AND FUNCTIONALITY ARE A PRIMARY CONSIDERATION WHEN INSTALLING SPRINKLERS AND SPRINKLER PIPING IN ALL AREAS.
   1. THE DRAWINGS SHOW THE GENERAL INTENDED ROUTING FOR THE SPRINKLER MAINS FOR THE STANDPIPE SYSTEM. ALL PIPING AND DEVICES SHALL BE INSTALLED AS HIGH AS POSSIBLE. OFFSET UP WITHIN THE BEAM POCKETS SO AS TO MAXIMIZE THE SPACE AVAILABLE. WHILE NOT SHOWN, A SIMILAR CONCEPT FOR PIPE ROUTING SHALL BE APPLIED TO THE WET SPRINKLER SYSTEM.
   2. COOPERATION / COORDINATION WITH OTHER TRADES: PROVIDE 3-D COORDINATION DRAWINGS TO COORDINATE THE SPRINKLER PIPING SYSTEM WORK WITH THE WORK OF THE OTHER TRADES. THE PURPOSE OF THE 3-D COORDINATION DRAWINGS IS TO PROGRESS THE CONSTRUCTION AS RAPIDLY AND AS SMOOTHLY AS POSSIBLE WITH A MINIMUM OF INTERFERENCE BETWEEN TRADES.
   3. APPROVAL PRIOR TO INSTALLATION: NO WORK SHALL COMMENCE PRIOR TO APPROVAL OF SHOP DRAWINGS BY THE APPROVING AUTHORITIES AND OWNER. ANY CHANGE IN WORK THAT HAS BEEN INSTALLED PRIOR TO APPROVAL OF THE SHOP DRAWINGS SHALL BE MADE WITHOUT ADDITIONAL COMPENSATION TO CONTRACTOR.
   4. ANY FACET OF SPRINKLER INSTALLATION THAT DEVIATES FROM THE APPROVED SHOP DRAWINGS AND DOES NOT MEET WITH ENGINEER AND OWNER'S APPROVAL SHALL BE REVISED BY CONTRACTOR TO OWNER'S SATISFACTION AT NO ADDITIONAL COST.

GENERAL SYMBOLS

	POINT OF DISCONNECT - DEMOLITION REMOVED FROM EXISTING
	POINT OF CONNECTION - NEW CONNECTS TO EXISTING
	AREA NOT IN CONTRACT

PIPING ANNOTATIONS

SCHEMATIC	3D	DESCRIPTION
		EXISTING TO REMAIN - (E) or EXIST
		ITEM TO BE DEMOLISHED - (D) or DEMO
18" CHWS	18" CHWS	PIPE SIZE TAG (DIAMETER WITH SYSTEM NAME)
		ABOVE GROUND PIPING
		BELOW GROUND PIPING
1/8" / 12" SLOPE	1/8" / 12" SLOPE	PIPE SLOPE
IE: -9'3" - 1"	IE: -9'3" - 8"	PIPE INVERT ELEVATION
DDC-xx		MECHANICAL EQUIPMENT TAG
		MECHANICAL EQUIPMENT CLEARANCE

PIPING VALVES AND FITTINGS

SCHEMATIC	3D	DESCRIPTION
		PIPE DROP
		PIPE RISE
		PIPE TEE DOWN
		PIPE TEE UP
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		PIPE CAP
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
		FLOW DIRECTION
		EXPANSION JOINT
		FLEXIBLE CONNECTION
		UNION
		DIRECTION OF PIPE PITCH
		AQUASTAT
		EXPANSION LOOP
		BALANCING VALVE
		BALANCING VALVE W/ METERING POINTS
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		STEAM TRAP
		GATE VALVE
		CIRCUIT SETTER
		MANUAL AIR VENT
		AUTOMATIC AIR VENT
		PLUG VALVE
		PRESSURE GAUGE
		SOLENOID VALVE
		ANGLE VALVE
		AUTOMATIC CONTROL VALVE 2-WAY
		AUTOMATIC CONTROL VALVE 3-WAY
		AUTOMATIC FLOW CONTROL VALVE
		STRAINER
		PRESSURE AND TEMPERATURE TEST PORT
		THERMOMETER
		PRESSURE REDUCING VALVE (WATER SYSTEMS) PRESSURE REGULATING VALVE (GAS SYSTEMS)
		RELIEF VALVE
		FLOW MEASURING DEVICE
		BACKFLOW PREVENTER
		UNION

FIRE PROTECTION SYMBOLS

SCHEMATIC	3D	DESCRIPTION
		ALARM VALVE, WET
		ALARM VALVE, DRY
		FIRE DEPARTMENT CONNECTION
		PENDENT SPRINKLER HEAD - WET
	D	PENDENT SPRINKLER HEAD - DRY
		CONCEALED SPRINKLER HEAD - WET
	D	CONCEALED SPRINKLER HEAD - DRY
		RECESSED SPRINKLER HEAD - WET
	D	RECESSED SPRINKLER HEAD - DRY
		UPRIGHT SPRINKLER HEAD - WET
	D	UPRIGHT SPRINKLER HEAD - DRY
		SIDEWALL SPRINKLER HEAD - WET
	D	SIDEWALL SPRINKLER HEAD - DRY
		SIDEWALL SPRINKLER HEAD - EXTENDED COVERAGE - WET
	D	SIDEWALL SPRINKLER HEAD - EXTENDED COVERAGE - DRY
FS		FLOW SWITCH
PS		PRESSURE SWITCH
		OS&Y VALVE
		OS&Y VALVE (INDICATING)

SHEET INDEX

FP0.1 FIRE PROTECTION SYMBOLS & ABBREVIATIONS
FP0.2 FIRE PROTECTION ABBREVIATIONS

FP1.1 LEVEL 01 - FIRE PROTECTION PLAN
FP1.2A LEVEL 02 MEZZANINE - AREA A - FIRE PROTECTION PLAN

DLR GROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

FIRE PROTECTION SYMBOLS & ABBREVIATIONS

FP0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:29 AM

ABBREVIATIONS

#	NUMBER
&	AND
(D)	DEMOLISHED
(E)	EXISTING
(R)	RELOCATED
@	AT
°C	DEGREES CELSIUS
°F	DEGREES FAHRENHEIT
Ø	PHASE
Ø	DIAMETER
A	COMPRESSED AIR
A	AMPERE
A	AMP
A/C	AIR CONDITIONING(ER)
A/E	ARCHITECT/ENGINEER
AABC	ASSOCIATED AIR BALANCE COUNCIL
AAP	ALARM ANNUNCIATOR PANEL
AAP	AREA ALARM PANEL
AAV	AUTOMATIC AIR VENT
AAV	AIR ADMITTANCE VALVE
AB	ANCHOR BOLT
ABS	ACRYLONITRILE-BUTADIENE-STYRENE
AC	ALTERNATING CURRENT
AC	ACOUSTIC CEILING
ACC	AIR COOLED CONDENSER
ACC	ACCESSIBLE
ACCU	AIR COOLED CONDENSING UNIT
ACM	ALUMINUM COMPOSITE MATERIAL
ACST	ACOUSTIC
AD	AREA DRAIN
AD	ACCESS DOOR
ADDN	ADDITION OR ADDITIONAL
ADJ	ADJUSTABLE
ADJT	ADJACENT, ADJOINING
ADMIN	ADMINISTRATION
ADO	AUTOMATIC DOOR OPENER
AF	AIR FILTER
AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGF	AIR GAP FITTING
AHJ	AUTHORITY HAVING JURISDICTION
AHRI	AIR-CONDITIONING HEATING AND REFRIGERATION INSTITUTE
AHU	AIR HANDLING UNIT
AI	AREA INLET
AI	ANALOG INPUT
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
AMBA	AMERICAN BOILER MANUFACTURERS ASSOCIATION
AMP	AMPERE
ANCH	ANCHOR
AP	ACCESS PANEL
APC	ACOUSTIC PANEL CEILING
APPROX	APPROXIMATE
AR	ACID RESISTING
AR	ARGON
ARCH	ARCHITECTURAL
AS	AIR SEPARATOR
ASB	ASBESTOS
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASHRAE	AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPH	ASPHALT
AUTO	AUTOMATIC
AV	AUDIO-VIDEO, AUDIO-VISUAL
AV	ACID VENT
AV	AIR VENT
AVG	AVERAGE
AW	ACID WASTE
AWG	AMERICAN WIRE GAUGE
AWP	ACOUSTIC WALL PANEL
B	BOILER
B to B	BACK TO BACK
BAS	BUILDING AUTOMATION SYSTEM
BAT	BATTERY
BBO	BOILER BLOW OFF
BC	BALANCING COCK
BC	BARE COPPER
BCMU	BURNISHED CONCRETE MASONRY UNIT
BD	BOARD
BDD	BACK DRAFT DAMPER
BET	BETWEEN
BF	BOILER FEED
BFF	BELOW FINISH FLOOR
BFP	BACKFLOW PREVENTER
BFR	BELOW FLOOR
BFV	BUTTERFLY VALVE
BHP	BREAK HORSEPOWER
BI	BACKWARD INCLINED (FAN IMPELLER/WHEEL)
BKR	BREAKER
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLKHD	BULKHEAD
BM	BENCH MARK
BM(S)	BEAM(S)
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOF	BOTTOM OF FOOTING
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BPIP	BOILER PLANT INSTRUMENTATION PANEL
BRDG	BRIDGING
BRG	BEARING
BRKT	BRACKET
BSMT	BASEMENT
BT	BATHTUB
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BUR	BUILT UP ROOFING
BV	BALL VALVE
C	CONDUIT
C	CONDENSER WATER
CA	COMBUSTION AIR
CANT	CANTILEVER
CAP	CAPACITY
CAS	CASING
CBD	COUNTER-BALANCED DAMPER
CBD	CHALKBOARD
CC	COOLING COIL
CCR	CONTROL CONTRACTOR
CCTV	CLOSED CIRCUIT TELEVISION
CD	CONDENSATE DRAIN
CD	CEILING DIFFUSER
CD	CONSTRUCTION DOCUMENTS
CDA	CLEAN DRY AIR (COMPRESSED AIR)
CDF	COMBINATION DRINKING FOUNTAIN & BOTTLE FILLING STATION
CE	COVER ELEVATION
CEM	CEMENT
CENT	CENTRIFUGAL
CER	CERAMIC
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CG	CORNER GUARD
CH	CHILLER
CH	CHANNEL
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CI	CURB INLET
CIP	CAST IN PLACE
CIP	CAST IRON PIPE
CIRC	CIRCULATING
CJ	CONTROL JOINT
CJ	CONSTRUCTION JOINT
CJA	CONTROL JOINT ABOVE
CKT	CIRCUIT
CKT BK	CIRCUIT BREAKER
CL	CENTER LINE
CL	CIRCUIT LINE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CM	CEILING MOUNTED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CO	CARBON MONOXIDE
CO	CONDUIT ONLY
CO2	CARBON DIOXIDE
COL	COLUMN
COMB	COMBINATION
COMM	COMMUNICATIONS
COMP	COMPRESSOR UNIT
COMP	COMPOSITE
COMPR	COMPRESSIBLE
CONC	CONCRETE
COND	CONDENSATE
CONF	CONFERENCE
CONFIG	CONFIGURATION
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CONV	CONVECTOR
COOR	COORDINATE
COORD	COORDINATE
CP	CONDENSATE PUMP
CP	COVER PLATE
CPS	CYCLES PER SECOND
CPT	CARPET
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CORROSION RESISTANT
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CS	COUNTERSINK
CS	COMBINATION SEWER
CS	CARBON STEEL
CSK	COUNTERSUNK
CSMU	CALCIUM SILICATE MASONRY UNIT
CSP	COMBINATION STANDPIPE
CSWK	CASEWORK
CT	COOLING TOWER
CT	CERAMIC TILE
CT	CURRENT TRANSFORMER
CTL	CONTROL
CTR	CENTER
CU	COPPER
CU	CONDENSING UNIT
CU	CUBIC
CU	COMBINATION UNIT
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWV	COMBINATION WASTE AND VENT
CY	CUBIC YARD
CYL	CYLINDER
D	DRAIN
D	DIFFUSER
D	DEPTH
D	DATA
d	PENNY (NAIL 10D)
DB	DECIBEL
DB	DRY BULB
DBA	DECIBELS A
DBL	DOUBLE
DC	DIRECT CURRENT
DC	DUST COLLECTOR
DCJ	DUMMY CONTROL JOINT
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DEPR	DEPRESS(ION)(ED)
DEPT	DEPARTMENT
DET	DETAIL
DET	DETENTION
DF	DRINKING FOUNTAIN
DFR	DIESEL FUEL RETURN
DFS	DIESEL FUEL SUPPLY
DFU	DRAINAGE FIXTURE UNIT
DFV	DIESEL FUEL VENT
DG	DOOR GRILLE
DH	DUCT HEATER
DHU	DEHUMIDIFICATION UNIT
DI	DEIONIZED WATER
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIC	DISCHARGE
DIFF	DIFFUSER
DIM	DIMENSION
DISC	DISCONNECT
DISC SW	DISCONNECT SWITCH
DISCH	DISCHARGE
DISTR	DISTRIBUTION
DIV	SPECIFICATION DIVISION
DL	DRUM LOUVER
DL	DEAD LOAD
DM	DAMPER MOTOR
DMPR	DAMPER
DN	DOWN
DO or "	DITTO
DOAS	DEDICATED OUTDOOR AIR SYSTEM UNIT
DOE	DEPARTMENT OF ENERGY
DP	DIFFERENTIAL PRESSURE
DPFG	DAMPROFFING
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DR	DOOR
DR	DRAIN
DS	DISTILLED WATER
DS	DOWNSPOUT
DSN	DOWNSPOUT NOZZLE
DSP	DRY STANDPIPE
DSPR	DRY SPRINKLER PIPING
DSPR	DRY SPRINKLER PIPE
DSTB	DISTRIBUTED
DTL	DETAIL
DTR	DUCT THRU ROOF
DW	DISHWASHER
DWBP	DOMESTIC WATER BOOSTER PUMP
DWDI	DOUBLE WIDTH DOUBLE INLET
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
DWR	DRAWER
DWRP	DOMESTIC WATER RECIRCULATING PUMP
DX	DIRECT EXPANSION
DXS	DOUBLE EXTRA STRONG
E	EAST
EA	EACH
EA	EXHAUST AIR
EA	EACH FACE
EAT	ENTERING AIR TEMPERATURE
EB	ELECTRIC BASEBOARD RADIATION
EB	EXPANSION BOLT
EBH	ELECTRIC BASIN HEATER
EC	ELECTRICAL CONTRACTOR
ECON	ECONOMIZER
ECS	EMERGENCY COMMUNICATION SYSTEM
EDH	ELECTRIC DUCT HEATER
EE	EACH END
EER	ENERGY EFFICIENCY RATIO
EEW	EMERGENCY EYE WASH
EEWS	EMERGENCY EYE WASH SHOWER
EF	EXHAUST FAN
EF	EACH FACE
EFF	EFFICIENCY
EG	EXHAUST AIR GRILLE
EH	ELECTRICAL HEATER
EIFS	EXTEROR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAS	ELASTOMERIC
ELEC	ELECTRICAL(AL)
ELEV	ELEVATOR
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EMD	ESTIMATED MAXIMUM DEMAND
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EMV	EMERGENCY MIXING VALVE
ENCL	ENCLOSURE
ENT	ENTERING
ENTR	ENTRANCE
EOMD	END OF MAIN DRIP
EP	ELECTRO-PNEUMATIC
EP	EXPLOSION PROOF
EPO	EMERGENCY POWER OFF
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ER	EXISTING (TO BE) RELOCATED
ER	EXHAUST REGISTER
ERA	ENERGY RECOVERY AIR
ERF	EPOXY RESIN FLOORING
ES	EMERGENCY SHOWER
ES	EXTRA STRONG
ESP	EXTERNAL STATIC PRESSURE
EST	ESTIMATE
ET	EXPANSION TANK
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWT	ENTERING WATER TEMPERATURE
EXC	EXCAVATE
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXP	EXPOSED
EXPL	EXPLOSION
EXT	EXTERIOR
F	FAHRENHEIT
F	FIRELINE
F	FURNACE
F	FACE
F	FIRE SERVICE
FA	FIRE ALARM
FA	FACE
FA	FRESH AIR
FAA	FIRE ALARM ANNUNCIATOR
FAB	FABRICATE(D)
FACP	FIRE ALARM CONTROL PANEL
FB	FACE BRICK
FC	FLUID COOLER
FCMU	FLUTED CONCRETE MASONRY UNIT
FCO	FLOOR CLEAN OUT
FCU	FAN COIL UNIT
FCV	FLOW CONTROL VALVE
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN
FD	FIRE DAMPER
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FDNDR	FOUNDATION DRAIN
FDR	FEEDER
FDV	FIRE DEPARTMENT VALVE
FDVC	FIRE DEPARTMENT VALVE CABINET
FE	FIRE EXTINGUISHER
FEA	FUME HOOD EXHAUST AIR
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FH	FIRE HYDRANT
FH	FILTER HOUSING
FHC	FIRE HOSE CABINET
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOOR
FLA	FULL LOAD AMPS
FLASH	FLASHING
FLEX	FLEXIBLE
FLG	FLANGE
FLG	FLOORING
FLM	FULL LENGTH MIRROR
FLUOR	FLUORESCENT
FM	FIRE MAIN
FM	FORCE MAIN
FM	FACTORY MUTUAL
FMCS	FACILITIES MANAGMENT CONTROL SYSTEM
FME	FLOW MEASURING EQUIPMENT
FNPT	FEMALE NPT
FO	FINISH OPENING
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FUEL OIL FILL
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOS	FACE OF STUD
FOV	FUEL OIL VENT
FOW	FACE OF WALL
FP	FIRE PUMP
FP	FIREPROOFING
FPB	FAN POWERED VAV TERMINAL
FPD	FIRE PUMP DISCHARGE
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FR	FIRE RESISTANT
FR	FIRE RESISTIVE
FR	FRAME
FRP	FIBERGLASS REINFORCED PANEL
FS	FLOW SWITCH
FS	FLOOR SINK
FSD	FIRE SMOKE DAMPER
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FT	FEET
FT	FIN TUBE
FT	FLOW TRANSMITTER
FTG	FOOTING
FURN	FURNISH(ED)
FUT	FUTURE
FV	FIELD VERIFY
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FWC	FABRIC WALL COVERING
G	GRILLE
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAD BAR
GC	GENERAL CONTRACTOR
GCMU	GLAZED CONCRETE MASONRY UNIT
GCO	GRADE CLEAN OUT
GD	GARBAGE DISPOSAL
GEA	GREASE EXHAUST AIR
GEN	GENERATOR
GEN	GENERAL
GFA	GROSS FLOOR AREA
GFCMU	GROUND-FACE CONCRETE MASONRY UNIT
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFRC	GLASS FIBER REINFORCED CONCRETE
GHR	GLYCOL-WATER HEATING RETURN
GHS	GLYCOL-WATER HEATING SUPPLY
GI	GALVANIZED IRON
GL	GLUE LAMINATED
GL	GLASS
GMU	GLASS MASONRY UNIT
GND	GROUND
GOVT	GOVERNMENT
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GUARD RAIL
GR	GRADE
GR	GRILLE
GRC	GLASS REINFORCED CONCRETE
GRC	GALVANIZED RIGID CONDUIT
GRC	GLASS REINFORCED CONCRETE
GRD	GRILLES, REGISTERS AND DIFFUSERS
GRGP	GLASS REINFORCED GYPSUM PLASTER
GRS	GALVANIZED RIGID STEEL
GRV	GRAVITY VENTILATOR
GS	GASOLINE
GV	GATE VALVE
GV	GREASE VENT
GVBF	GREASE VENT BELOW FLOOR
GW	GREASE WASTE
GWB	GYPSUM WALL BOARD
GWR	GEOTHERMAL WATER RETURN
GWS	GEOTHERMAL WATER SUPPLY
GYP	GYPSUM
H	HEIGHT
H1E	HOOK ONE END
H2	HYDROGEN
HB	HOSE BIB
HC	HEATING COIL
HC	HOLLOW CORE
HC	HANDICAP
HCB	HANDICAP BENCH
HCR	HOT/CHILLED WATER RETURN
HCS	HOT/CHILLED WATER SUPPLY
HCW	HARD COLD WATER
HD	HAND DRYER
HDBD	HARDBOARD
HDCP	HANDICAP
HDR	HEADER
HDWD	HARDWOOD
HDWR	HARDWARE
HE	HELIUM
HEV	HOSE END VALVE
HGR	HANGER
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSE POWER
HP	HEAT PUMP
HP	HIGH PRESSURE
HPC	HIGH PRESSURE STEAM CONDENSATE
HPNG	HIGH PRESSURE NATURAL GAS
HPR	HIGH PRESSURE STEAM RETURN
HPS	HIGH PRESSURE STEAM SUPPLY
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HRO	HOT REVERSE OSMOSIS
HROC	HOT REVERSE OSMOSIS RECIRCULATION
HRWR	HEAT RECOVERY WATER RETURN
HRWS	HEAT RECOVERY WATER SUPPLY
HS	HEADSTUD
HSPF	HEAT SEASONAL PERFORMANCE FACTOR
HSTR	HIGH STRENGTH
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HTWR	HIGH TEMPERATURE HOT WATER RETURN
HTWS	HIGH TEMPERATURE HOT WATER SUPPLY
HUM	HUMIDIFIER
HV	HEATING VENTILATING UNIT
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HW	DOMESTIC HOT WATER
HWC	DOMESTIC HOT WATER RECIRCULATING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HYD	ROOF HYDRANT
HZ	HERTZ (FREQUENCY)
i.e.	THAT IS
IAQ	INDOOR AIR QUALITY
IAW	IN ACCORDANCE WITH
IB	INFRARED BURNER
IBC	INTERNATIONAL BUILDING CODE
IC	INTERCOM
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IES	ILLUMINATING ENGINEERING SOCIETY
IF	INSIDE FACE
IG	ISOLATED GROUND
IH	INTAKE HOOD
IJ	ISOLATION JOINT
IJS	IN JOIST SPACE
IMC	INTERNATIONAL MECHANICAL CODE
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
IN HG	INCHES OF MERCURY (PRESSURE)
IN WC	INCHES OF WATER COLUMN (PRESSURE)
INC	INCLUDE(ING)
INSUL	INSULATION
INT	INTERIOR
IP	IRON PIPE
IPC	INTERNATIONAL PLUMBING CODE
IPS	IRON PIPE SIZE
IW	INDIRECT WASTE
JAN	JANITOR
JB	JUNCTION BOX
JCT	JUNCTION
JFB	JOINT FILLER BOARD
JST	JOIST
JT	JOINT
KCJ	KEYED CONSTRUCTION JOINT
KCP	KEENE'S CEMENT PLASTER
KD	KNOCKDOWN
KH	KITCHEN HOOD
KHE	KITCHEN HOOD EXHAUST FAN
KHS	KITCHEN HOOD SUPPLY FAN
KIT	KITCHEN
KO	KNOCKOUT
KS	KITCHEN SINK
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
L	ANGLE
LA	LABRATORY COMPRESSED AIR
LAB	LABORATORY
LAM	LAMINATED
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LB(S)	POUND(S)
LBR	LUMBER
LDG	LOADING
LF	LINEAR FOOT
LG	LENGTH (LONG)
LIN	LINEAR
LINO	LINOLEUM
LKR	LOCKER
LL	LIVE LOAD
LLH	LONG LENGTH HORIZONTAL
LLV	LONG LENGTH VERTICAL
LN2	LIQUID NITROGEN
LO2	LIQUID OXYGEN
LOC	LOCATION
LONG	LONGITUDINAL
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
LPR	LOW PRESSURE STEAM RETURN
LPS	LOW PRESSURE STEAM SUPPLY
LR	LIVING ROOM
LS	LAWN SPRINKLER
LSC	LIFE SAFETY CODE
LT	LIGHT
LTD	LINED TRANSFER DUCT
LTG	LIGHTING
LV	LAVATORY
LV	LABORATORY VACUUM
LVG	LEAVING
LW	LONG WAY
LWT	LEAVING WATER TEMPERATURE
M	THOUSAND
MA	MIXED AIR
MA	MAKE-UP AIR
MA	MEDICAL COMPRESSED AIR
MAC	MACHINE
MAG	MAGNETIC
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MATL	MATERIAL
MAU	MAKEUP AIR UNIT
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MB	MACHINE BOLT
MBD	MARKER BOARD
MBH	THOUSAND BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MC	MEDICINE CABINET
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCM	METAL COMPOSITE MATERIAL
MD	MOTORIZED DAMPER
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MFRG	MANUFACTURING
MG	MOTOR GENERATOR
MH	MANHOLE
MH	METAL HALIDE
MH	MOP HOLDER
MIN	MINIMUM
MISC	MISCELLANEOUS
MISC	MISCELLANEOUS
ML	MOTORIZED LOUVER
MLDG	MOLDING
MLO	MAIN LUGS ONLY
MLWK	MILLWORK
MO	MASONRY OPENING
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPG	MEDIUM PRESSURE GAS
MPR	MEDIUM PRESSURE STEAM RETURN
MPS	MEDIUM PRESSURE STEAM SUPPLY
MR	MIRROR
MR/S	MIRROR WITH SHELF
MS	MAGNETIC STARTER
MS	MOP SINK
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTWR	MEDIUM TEMP HOT WATER RETURN
MTWS	MEDIUM TEMP HOT WATER SUPPLY
MUL	MULLION
MV	MEDICAL VACUUM
MV	MERCURY VAPOR
MW	MARKER WALL
N	NITROGEN
N	NORTH
N2	LABORATORY NITROGEN
N2O	NITROUS OXIDE
N20	NITROUS OXIDE
N/A	NOT APPLICABLE
NA	NOT APPLICABLE
NAT	NATURAL
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NC	NURSE CALL
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSN.
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO	NUMBER
NO2	NITROGEN DIOXIDE
NOM	NOMINAL
NRS	NON RISING STEM
NS	NEUTRAL SENSOR
NTS	NOT TO SCALE
NV	NITROGEN VENT
O2	OXYGEN
O to O	OUT TO OUT
O&M	OPERATION AND MAINTENANCE
OA	OUTSIDE AIR
OBSC	OBSCURE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OD	OVERFLOW DRAIN
OF	OUTSIDE FACE
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OWNER FURNISHED OWNER INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OHP	OVERHEAD POWER
OHT	OVERHEAD TELEPHONE
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCREW AND YOKE
OSD	OVERFLOW STORM DRAIN
OTCS	OPEN TO CEILING SPACE
OV	OIL VENT
OVFL	OVERFLOW
OVHD	OVERHEAD
OW	OIL WASTE
P	POLE(S)
P	PUMP
P/T	PRESSURE/TEMPERATURE TEST PORT
PA	PUBLIC ADDRESS
PAN B	PANIC BOLT
PAR	PARALLEL
PB	PULL BOX
PB	PUSH BUTTON
PB	PARTICLE BOARD
PBS	PUSH BUTTON STATION
PC	PRECAST CONCRETE
PC	PUMPED CONDENSATE
PCD	PAPER CUP DISPENSER
PCF	POUNDS PER CUBIC FOOT
PCT	PORCELAIN CERAMIC TILE
PCV	PRESSURE CONTROL VALVE
PCWP	PROCESS COOLING WATER PUMP
PCWR	PROCESS COOLING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PD	PRESSURE DROP
PD	PUMP DISCHARGE
PDI	PLUMBING & DRAINAGE INSTITUTE
PENT	PENTHOUSE
PERF	PERFORATED
PERP	PERPENDICULAR
PF	POWER FACTOR
PG	PRESSURE GAUGE
PG	PROPANE GAS
PH	PHASE
PHC	PRE-HEAT COIL
PI	POINT OF INTERSECTION
PI	PRESSURE INDICATOR
PIC	PORTABLE INSTRUMENT CONNECTION
PIV	POST INDICATOR VALVE
PL	PLATE
PL	PLACE(S)
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLBG	PLUMBING
PLYWD	PLYWOOD
PNEU	PNEUMATIC
PNL	PANEL
POC	POINT OF CONNECTION
PORC	PORCELAIN
PPM	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PROJ	PROJECT(OR) (ION)
PRV	PRESSURE REGULATING VALVE
PS	PIPE SUPPORT
PS	PROJECTION SCREEN
PSF	POUNDS PER SQUARE FOOT
PSFA	POUNDS PER SQUARE FOOT, ABSOLUTE
PSFG	POUNDS PER SQUARE FOOT, GAUGE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSID	POUNDS PER SQUARE INCH, DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH, GAUGE
PSV	PRESSURE SAFETY (RELIEF) VALVE
PT	PLASTER TRAP
PT	POINT
PT	POTENTIAL TRANSFORMER
PTD	PAPER TOWEL DISPENSER
PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PWL	SOUND POWER LEVEL
PWR	POWER
QT	QUARRY TILE
QTR RND	QUARTER ROUND
QTY	QUANTITY
R	RISER
R	RADIUS
R	REGISTER
RA	RETURN AIR
RAD	RADIUS
RAD	RADIATOR
RAD	RADIATED
RAT	RETURN AIR TEMPERATURE
RB	RUBBER BASE
RC	REMOTE CHILLER
RC	REMOTE CONTROL
RCP	REFLECTED CEILING PLAN
RCP	REINFORCED CONCRETE PIPE
RCP	RADIANT CEILING PANEL
RCU	RECIPROCATING CHILLER UNIT
RCW	RECLAIMED WATER
RD	ROOF DRAIN
RD	REFRIGERANT DISCHARGE
RE	REFER TO
RE	REFERENCE
RECIRC	RECIRCULATING
RECP	RECEPTACLE
RECPT	RECEPTACLE
RECT	RECTANGLE(AR)
REF	REFERENCE
REFL	REFLECTED
REFR	REFRIGERANT
REG	REGISTER
REINF	REINFORCEMENT
RELA	RELIEF AIR
REM	REMOVABLE
REQ(D)	REQUIRE(D)
RESIL	RESILIENT
RESP	RESPONSIVE
RET	RETAINING
REV	REVISION(S)
RF	RETURN FAN
RF	RUBBER FLOOR
RFM	RECESSED FLOOR MAT
RH	RELATIVE HUMIDITY
RH	REFLIEF HOOD
RH	ROBE HOOK
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RI&C	ROUGH IN AND CONNECT
RIJS	RISE IN JOIST SPACE
RL	REFRIGERANT LIQUID
RM	ROOM
RND	ROUND
RO	REVERSE OSMOSIS WATER
RO	ROUGH OPENING
ROC	REVERSE OSMOSIS RECIRCULATING
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT
RV	REFRIGERANT VENT
RWL	RAIN WATER LEADER
S	SMOKE DAMPER
S	SOUTH
S	SANITARY SEWER
S	SPRINKLER LINE
S	SINK
S	SOAP DISH
SA	SUPPLY AIR
SA	SHOCK ABSORBER
SAN	SANITARY WASTE
SC	SECURITY
SC	SOLID CORE
SC	SHOWER CURTAIN
SC	SPECIAL COATING
SCCR	SHORT CIRCUIT CURRENT RATING
SCD	SEAT COVER DISPENSER
SCD	SECONDARY CONDENSATE DRAIN
SCH	SHOWER CURTAIN HOOK
SCHED	SCHEDULE
SCR	SILICON CONTROLED RECTIFIER
SCT	STRUCTURAL CLAY TILE
SCUT	SCUTTLE
SCW	SOFT COLD WATER
SD	SMOKE DAMPER
SD	STORM DRAIN
SD	SMOKE DETECTOR
SD	SOAP DISPENSER
SE	STEAM EXHAUST VENT
SEA	SMOKE EXHAUST AIR
SEC	SECONDARY
SEC	SECOND
SECT	SECTION
SECY	SECRETARY
SENS	SENSIBLE
SF	SUPPLY FAN
SF	SQUARE FOOT
SFA	SPRINKLER FLOW ALARM
SFCMU	SPLIT-FACE CONCRETE MASONRY UNIT
SFU	STRUCTURE FACING UNIT
SGL	SINGLE
SH	SHOWER
SHM	SECURITY HOLLOW METAL
SHT	SHEET
SHW	SOFT HOT WATER
SHWC	SOFT HOT WATER RECIRCULATING
SHWR	SOLAR HOT WATER RETURN
SHWS	SOLAR HOT WATER SUPPLY
SIM	SIMILAR
SK	SINK
SL	SHORT LEG
SLNT	SEALANT
SM	SPRINKLER MAIN
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SP	STATIC PRESSURE (H2O)
SP	STAND PIPE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION(S)
SPK	SPRINKLER
SPL	SOUND PRESSURE LEVEL
SPL	SPECIAL
SPL BLK	SPLASH BLOCK
SQ	SQUARE
SQ FT	SQUARE FEET
SQ IN	SQUARE INCHES
SS	STAINLESS STEEL
SS	SERVICE SINK
SS	SOLID SURFACE
SS	SOLID SEPARATOR
SSA	STORM SHELTER AREA
SST	SECONDARY STORM DRAINAGE
ST	STAIR
ST	STORM DRAINAGE
STAG'D	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STE	SINGLE TAPERED END
STGR	STRINGER
STL	STEEL
STOR	STORAGE
STR	STRUCTURE(AL)
STRUCT	STRUCTURAL
SUB	SUBSTATION
SURF	SURFACE
SUSP	SUSPENDED
SV	SOLENOID VALVE
SV	STEAM VENT
SW	SHORT WAY
SW	SWITCH
SWBD	SWITCHBOARD
SWP	STEAM WORKING PRESSURE
SYM	SYMETRICAL
T	TEMPERED
T	THERMOSTAT
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TA	TRANSFER AIR
TAB	TEST(ING) ADJUST(ING) BALANCE(ING)
TAN	TANGENT
TB	TERMINAL BOX
TB	TOWEL BAR
TBD	TACK BOARD
TC	TIME CLOCK
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTOLS CONTRACTOR
TD	TRANSFER DUCT
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TDS	TOTAL DISOLVED SOLIDS
TEL	TELEPHONE
TEMP	TERMPORARY
TEMP	TEMPERATURE
TEMP	TEMPERED
TEMP	TEMPORARY
TERR	TERRAZZO
TEXT	TEXTURED
TGL	TOGGLE
TH	THRESHOLD
TH	TOWEL HOOK
THK	THICK(NESS)
TMR	TILT MIRROR UNIT
TMV	THERMOSTATIC MIXING VALVE
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOIL	TOILET
TOM	TOP OF MASONRY
TOP	TOP OF PAVING
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TRAP PRIMER
TPV	TRAP PRIMER VALVE
TR	TRIP
TRANS	TRANSVERSE
TRD	TREAD
TS	TEMPERATURE SENSOR
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTER
TT	TERRAZZO TILE
TTD	TOILET TISSUE DISPENSER
TV	TELEVISION
TW	TACK WALL
TYP	TYPICAL
UC	UNIT COOLER
UC	UNDERCUT DOOR
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRICAL
UGT	UNDERGROUND TELEPHONE
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
URD	UNDERGROUND RESIDENTIAL DISTRIBUTION
US	UTILITY SHELF
UTIL	UTILITY
UV	UNIT VENTILATOR
V	VOLT
V	SANITARY VENT
V	VACUUM
VA	VOLT-AMPERE
VA	VALVE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VAPOR BARRIER
VB	VINYL BASE
VBF	VENT BELOW FLOOR
VCB	VENTED COVE BASE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE
VD	VOLUME DAMPER
VEL	VELOCITY
VENT	VENTALATOR(TION)
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FLOOR
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VM	VOLTMETER
VOL	VOLUME
VP	VACUUM PUMP
VP	VENEER PLASTER
VSMP	VARIABLE SPEED MOTOR CONTROLLER
VT	VINYL TILE
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WIRE
W	WIDE FLANGE
W	WEST
W	WATER SERVICE
W	WIDE(TH)
W	WASTE (PLUG)
W	WATT
W/	WITH
W/O	WITHOUT
WAGD	WASTE ANESTHETIC GAS DISPOSAL
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WC	WALL COVERING
WCC	WATER COOLED CONDENSER
WCL	WATER CLOSET/LAVATORY COMBINATION
WCO	WALL CLEAN OUT
WD	WOOD
WDW	WINDOW
WF	WASH FOUNTAIN
WFMD	WATER FLOW MEASURING DEVICE
WFU	WASTE FIXTURE UNIT
WG	WIRE GUARD
WG	WATER GAUGE
WH	WALL HYDRANT
WH	WATER HEATER
WHA	WATER HAMMER ARRESTOR
WHM	WATT HOUR METER
WI	WROUGHT IRON
WLR	WATER LOOP RETURN
WLS	WATER LOOP SUPPLY
WMB	WASHING MACHINE OUTLET BOX
WMG	WATER MOTOR GOING
WNSCT	WAINSCOT
WP	WEATHER-PROOF (NEMA 3R)
WP	WEATHERPROOF
WPB	WHIRLPOOL BATH
WPF	WATERPROOF
WPFG	WATERPROOFING
WR	WASTE RECEPTACLE
WR	WATER RESISTANT
WSHP	WATER SOURCE HEAT PUMP
WSP	WET STAND PIPE
WT	WEIGHT
WW	WARM WHITE
XFMR	TRANSFORMER
XMTR	TRANSMITTER
YD	YARD
YH	YARD HYDRANT
Z	IMPEDANCE
ZCB	ZONE CONTROL BOX
ZCV	ZONE CONTROL VALVE
ZVB	ZONE VALVE BOX

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:30 AM

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

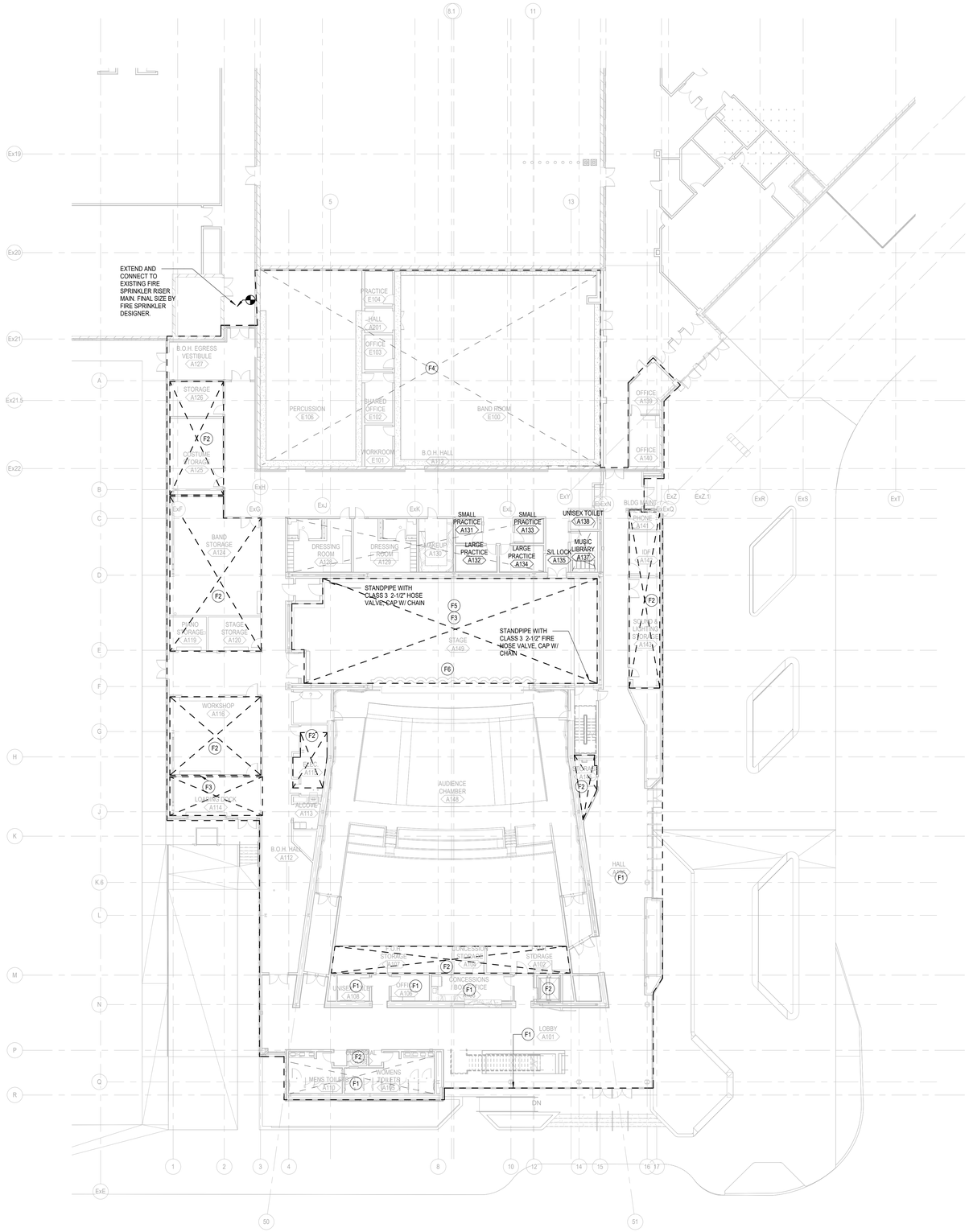
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

FIRE PROTECTION ABBREVIATIONS

FP0.2



LEVEL 01 - FIRE PROTECTION PLAN

SCALE: 1/16" = 1'-0"

GENERAL NOTES

A. PROVIDE ALTERATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE NEW ADDITION AND THE REMODVATED FLOOR PLAN/CEILINGS IN THE EXISTING BUILDING. PROVIDE A COMPLETE WET PIPE SYSTEM INCLUDING NEW MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. RE-USE EXISTING SYSTEM EQUIPMENT WHERE APPLICABLE IN THE EXISTING BUILDING. REFER TO THE ARCHITECTURAL REFLECTIVE CEILING PLAN. THE FIRE PROTECTION SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS, AND PER REQUIREMENTS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.

SHEET NOTES

F1 AREA TO BE PROTECTED AS LIGHT HAZARD OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F2 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 1 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

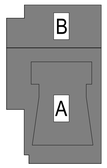
F3 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 2 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F4 MODIFY EXISTING FIRE SPRINKLER PIPING AND SPRINKLER HEAD LOCATIONS FOR NEW WALL LAYOUT.

F5 DUE TO THE LIMITED SPACE AT CEILING LEVEL. THE CONTRACTOR AND HIS FIRE SPRINKLER SUB-CONTRACTOR ARE RESPONSIBLE TO CAREFULLY COORDINATE FIRE SPRINKLER PIPING AND HEAD LOCATION WITH CEILING MOUNTED STAGE RIGGING SYSTEM INSTALLATION. EQUIPMENT IS NOT INDICATED ON THIS SHEET. REFER TO APPROVED VENDOR FOR DETAILS.

F6 STAGE OPENING. PROVIDE NFPA 13 APPROPRIATE FIRE SPRINKLER HEAD SPACING AT STAGE OPENING.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Frn 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

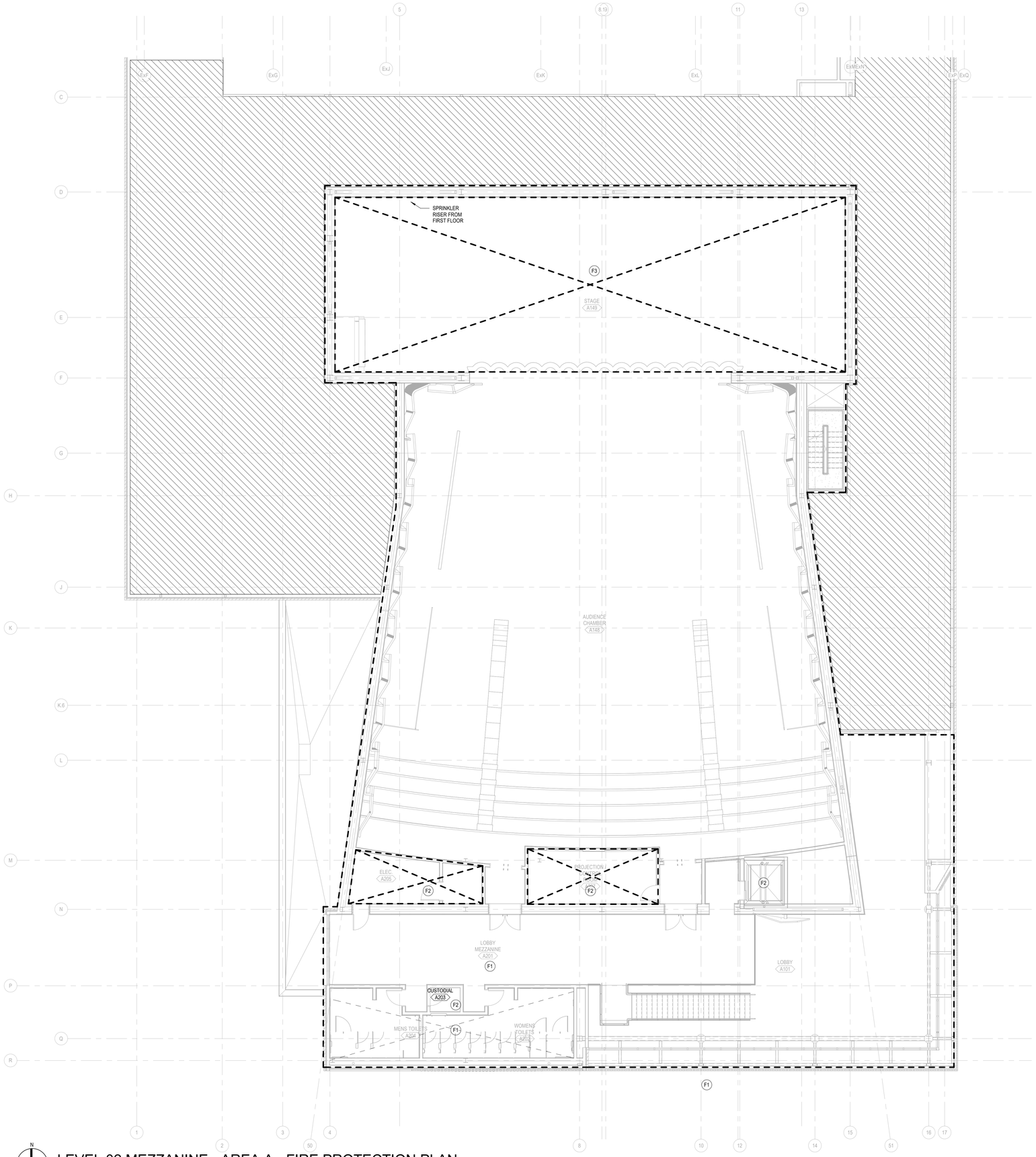
REVISIONS

39-23712-00

LEVEL 01 - FIRE PROTECTION PLAN

FP1.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:35 AM



LEVEL 02 MEZZANINE - AREA A - FIRE PROTECTION PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. PROVIDE ALTERATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE NEW ADDITION AND THE RENOVATED FLOOR PLAN/CEILINGS IN THE EXISTING BUILDING. PROVIDE A COMPLETE WET PIPE SYSTEM INCLUDING NEW MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. RE-USE EXISTING SYSTEM EQUIPMENT WHERE APPLICABLE IN THE EXISTING BUILDING. REFER TO THE ARCHITECTURAL REFLECTIVE CEILING PLAN. THE FIRE PROTECTION SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS, AND PER REQUIREMENTS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.

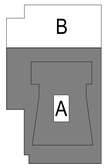
SHEET NOTES

F1 AREA TO BE PROTECTED AS LIGHT HAZARD OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F2 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 1 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F3 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 2 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - FIRE PROTECTION PLAN

FP1.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:37 AM

GENERAL PLUMBING NOTES

1.1 GENERAL PLUMBING NOTES

A. THESE NOTES SHALL BE GENERALLY APPLIED TO ALL PLUMBING DRAWINGS. AS THEY ARE GENERAL IN NATURE, THEY MAY NOT BE SPECIFICALLY CALLED OUT ON THE PLANS. REFERENCE THE INDIVIDUAL DRAWINGS AS WELL AS DIVISION 22 SPECIFICATIONS FOR ADDITIONAL CONTRACTUAL REQUIREMENTS.

B. SHOULD ANY CONFLICT OCCUR BETWEEN ANY PORTIONS OF THE CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS), THE CONTRACTOR IS DEEMED TO HAVE BASED THEIR BID/PRICE ON THE MORE EXPENSIVE MATERIAL, EQUIPMENT, PRODUCT OR WORK, UNLESS THEY HAVE REQUESTED AND OBTAINED A WRITTEN CLARIFICATION OR DECISION IN REGARD TO THE CONFLICT FROM THE ARCHITECT/ENGINEER.

C. DRAWINGS AND MEASUREMENTS:
1. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL SCOPE OF THE WORK I.E., ARRANGEMENT OF SYSTEMS AND EQUIPMENT, EXCEPT WHEN THEY HAVE BEEN SPECIFICALLY DIMENSIONED OR DETAILED.
2. PLUMBING PLANS ARE INTENDED TO SHOW SIZE, CAPACITY, APPROXIMATE LOCATION, DIRECTION, AND GENERAL RELATIONSHIP OF ONE WORK TRADE TO ANOTHER.
3. COORDINATION: THE PLUMBING DESIGN SHALL BE COORDINATED WITH ALL OTHER ASPECTS OF THE BUILDING. TO THAT END, THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND CIVIL DRAWINGS WHERE AVAILABLE, AS WELL AS PHYSICALLY OBSERVING FIELD CONDITIONS BEFORE PERFORMING ANY WORK. EXTRAS WILL NOT BE PAID TO MOVE PIPING DUE TO CONFLICTS ARISING FROM LACK OF COORDINATION.
   a. REFER TO THE ARCHITECTURAL DRAWINGS FOR BUILDING ELEVATIONS, CEILING DETAILS, PARTITIONS, AND OCCUPANCIES.
   b. REFER TO STRUCTURAL DRAWINGS TO COORDINATE PIPING LAYOUT WITH STRUCTURAL ELEMENTS OF THE BUILDING.
   c. REFER TO THE FIRE PROTECTION DRAWINGS AND MECHANICAL DRAWINGS TO ASSESS THE CONGESTION ABOVE CEILINGS. THE PLUMBING CONTRACTOR SHALL SPECIFICALLY BE CONSCIOUS OF ANY HORIZONTAL MECHANICAL EQUIPMENT LOCATIONS AS WELL AS THEIR CLEAR SERVICE SPACE REQUIREMENTS IN ADDITION TO ANY DUCTWORK OR HYDRONIC PIPING.
   d. CONTRACT DRAWINGS SHALL ONLY SERVE TO SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND STRUCTURE. SUCH DRAWINGS SHALL NOT BE CONSIDERED A SUBSTITUTE FOR FIELD VERIFICATION OF CONDITIONS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND/OR INSTALLATION OF ALL WORK. DISCUSS, COORDINATE AND COOPERATE WITH OTHER TRADES AND COORDINATE THE WORK WITH THEIRS. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH OTHER TRADES. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER.
   e. AS THE DRAWINGS ARE OF SMALL SCALE, IT IS NOT POSSIBLE TO SHOW ALL NECESSARY OFFSETS, FITTINGS, AND ACCESSORIES. OBTAIN EXACT LOCATIONS, FIELD MEASUREMENTS, ETC., AT THE SITE PRIOR TO THE FABRICATION OF ANY MATERIAL OR ORDERING OF EQUIPMENT.
4. THE DESIGN (DRAWINGS AND SPECIFICATIONS) ARE BASED ON THE CHARACTERISTICS OF THE EQUIPMENT SCHEDULED / SPECIFIED. ALL CHANGES REQUIRED BY THE USE OF OTHER MANUFACTURERS (INCLUDING MANUFACTURERS THAT ARE LISTED IN THE SPECIFICATIONS) SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
   a. THESE CHANGES SHALL INCLUDE, BUT NOT BE LIMITED TO REVISIONS TO FOUNDATIONS, ELECTRICAL CHANGES, SPACE REQUIRED FOR PLACEMENT OF EQUIPMENT, EQUIPMENT BASES, PIPING, CONTROLS, WIRING, WALL OR BUILDING OPENINGS, SERVICE ACCESS REQUIREMENTS, PIPING AND STRUCTURAL MODIFICATIONS.

D. REFER TO THE CODE PLANS FOR FIRE AND/OR SMOKE CONSTRUCTION RATINGS. MAINTAIN INDICATED FIRE AND/OR SMOKE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PIPE PENETRATIONS. SEAL PIPE PENETRATIONS WITH FIRESTOP MATERIALS. REFER TO DIVISION 07 SECTIONS PENETRATION FIRESTOPPING AND JOINT FIRESTOPPING FOR THROUGH-PENETRATION FIRESTOP ASSEMBLY PRODUCT SPECIFICATIONS. INSTALLATION OF FIRESTOP MATERIALS IS SPECIFIED AS WORK OF DIVISION 22.

E. WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE 2018 INTERNATIONAL PLUMBING CODE, LOCAL AMENDMENTS, LAWS AND GOVERNING BODIES. WHERE THE PLANS AND/OR SPECIFICATIONS EXCEED THE GOVERNING CODE REQUIREMENTS, THE PLANS AND SPECIFICATIONS WILL GOVERN.

F. EXTERIOR EXPOSED GAS PIPING SHALL BE PAINTED IN ACCORDANCE WITH DIVISION 09. PAINT TYPE AND COLOR SHALL BE AS SPECIFIED IN DIVISION 09.

G. PROVIDE COORDINATION DRAWINGS WHERE REQUIRED BY THE SPECIFICATIONS, RFIs RELATED TO COORDINATION ITEMS WILL NOT BE REVIEWED UNLESS COORDINATION DRAWINGS HAVE BEEN SUBMITTED.

H. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR NON-ACCESSIBLE PLUMBING FIXTURE MOUNTING HEIGHTS. COORDINATE WITH THE ARCHITECTURAL PLANS FOR THE MOUNTING HEIGHT OF ACCESSIBLE PLUMBING FIXTURES.

I. COORDINATE ALL UNDERGROUND PIPING (SANITARY, WASTE, VENT & STORM DRAINAGE) WITH STRUCTURAL FOUNDATIONS, SITE UTILITIES SERVICES, AND BUILDING SERVICES PIPING. OFFSET UNDERGROUND PIPING TO AVOID FOUNDATION PENETRATIONS. WHERE IT IS IMPOSSIBLE TO AVOID FOUNDATIONS, SLEEVE PIPE PENETRATIONS AS INDICATED IN STRUCTURAL DRAWINGS AND SPECIFICATIONS WHEN APPLICABLE. CONTACT THE ENGINEER WHEN NO SLEEVE INFORMATION IS PROVIDED OR CONDITIONS DIFFER FROM STRUCTURAL DRAWINGS.

J. ALL MATERIALS EXPOSED WITHIN AN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPMENT INDEX OF NOT MORE THAN 50.

K. WHERE LOCATIONS OF ANY EXISTING UTILITY SERVICES ARE SHOWN, THEY SHALL BE CONSIDERED AS 'APPROXIMATE'. EXACT LOCATIONS OF ANY EXISTING UTILITY SERVICES SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO BEGINNING ANY CONSTRUCTION OR EXCAVATION. COORDINATE UTILITY SERVICE CONNECTION POINTS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION.

L. EQUIPMENT LOCATION AND ACCESS
1. LOCATE EQUIPMENT WHICH MUST BE SERVICED, OPERATED, OR MAINTAINED IN ACCESSIBLE LOCATIONS. EQUIPMENT SHALL INCLUDE BUT NOT BE LIMITED TO WATER HEATERS, WATER CONDITIONING EQUIPMENT, VALVES, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, AND LOW POINT DRAIN LOCATIONS. MINOR DEVIATIONS FROM THE CONTRACT DRAWINGS MAY BE ALLOWED TO PROVIDE BETTER ACCESSIBILITY UNDER THE CONDITION THE CHANGES ARE REVIEWED & APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO MAKING THE CHANGE.
2. INACCESSIBLE INSTALLATION: WHERE THE ENGINEER DETERMINES THAT THE CONTRACTOR HAS INSTALLED EQUIPMENT SUCH THAT IT IS NOT CONVENIENTLY ACCESSIBLE FOR OPERATION AND/OR MAINTENANCE, THE EQUIPMENT WILL BE REMOVED AND REINSTALLED OR REMEDIAL ACTION SHALL BE PERFORMED AS SO AS TO MAKE THE INSTALLATION CONVENIENTLY ACCESSIBLE AT NO ADDITIONAL COST TO THE OWNER. THE TERM "CONVENIENTLY ACCESSIBLE" IS DEFINED AS CAPABLE OF BEING REACHED WITHOUT THE USE OF LADDERS, OR WITHOUT CLIMBING OR CRAWLING UNDER OR OVER OBSTACLES SUCH AS ELECTRICAL CONDUIT, MOTORS, FANS, PUMPS, BELT GUARDS, TRANSFORMERS, HIGH VOLTAGE LINES, PIPING, AND DUCTWORK.
   a. EXCEPTION: ACCESSING VALVES FROM A LADDER IS ACCEPTABLE WHEN INSTALLED AS OUTLINED IN OTHER PARAGRAPHS OF THESE NOTES. ACCESSING POINT-OF-USE WATER HEATER(S) THAT ARE LOCATED ABOVE A CEILING WHERE INDICATED AND DETAILED ON THE DRAWINGS.

M. PIPE RUNS SHALL BE INSTALLED TO AVOID INTERFERENCE WITH OTHER WORKTRADES. INSTALL PIPING AT RIGHT ANGLES TO OR PARALLEL WITH BUILDING WALLS OR COLUMN CENTER LINES. DIAGONAL PIPING RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER. SPACE PIPING INCLUDING ANY INSULATION TO PROVIDE A 1-INCH MINIMUM CLEARANCE BETWEEN ADJACENT PIPING OR OTHER SURFACES. SPACE PIPING TO PERMIT VALVE SERVICING OR REPLACEMENT.

N. IN AREAS WHERE PIPING IS INSTALLED ABOVE A CEILING AND THERE IS CONGESTED CEILING SPACE, INSTALL THE PIPING AS HIGH AS POSSIBLE WHILE GIVING CONSIDERATION OF OTHER TRADES AND THE SERVICEABILITY OF THE SYSTEMS. WHERE VALVES ARE SHOWN, THEY SHALL BE INSTALLED NO MORE THAN 18-INCHES ABOVE THE CEILINGS. IF IT IS NECESSARY TO INSTALL OFFSET(S) IN THE PIPING SO THE VALVES ARE INSTALLED NO MORE THAN 18-INCHES ABOVE THE CEILINGS, INSTALL A DRAIN VALVE WITH HOSE END CONNECTION FOR EACH SYSTEM ADJACENT TO THE ISOLATION VALVE(S). IF THERE IS AN OFFSET UP ON THE OUTLET SIDE OF THE ISOLATION VALVE(S), THEN PROVIDE A SECOND DRAIN VALVE AT THAT LOCATION.

O. IN AREAS WHERE PIPING IS EXPOSED, INSTALL THE PIPING AS HIGH AS POSSIBLE. IF PRACTICABLE, INSTALL PIPING TIGHT TO STRUCTURE AND/OR STACKED ALONG AND TIGHT TO WALLS. IF VALVES ARE SHOWN IN THE EXPOSED PIPING, INSTALL AN OFFSET(S) IN THE PIPING SO THE VALVES ARE INSTALLED NO MORE THAN 10'-00" AFF. INSTALL A DRAIN VALVE WITH HOSE END CONNECTION FOR EACH SYSTEM ADJACENT TO THE ISOLATION VALVE(S). IF THERE IS AN OFFSET UP ON THE OUTLET SIDE OF THE ISOLATION VALVE(S), THEN PROVIDE A SECOND DRAIN VALVE AT THAT LOCATION.

P. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES SHOULD NOT BE LOCATED WITHIN ELECTRICAL EQUIPMENT ROOMS UNLESS INDICATED ON THE DRAWINGS. WHERE PIPING AND EQUIPMENT ARE INDICATED TO BE INSTALLED WITHIN ELECTRICAL EQUIPMENT ROOMS, MAINTAIN THE ELECTRICAL CODE REQUIRED WORKING AND DEDICATED SPACES.

Q. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES NOT USED IN CONNECTION WITH THE OPERATION OF THE ELEVATOR SHALL NOT BE INSTALLED IN ANY HOSTWAY, MACHINERY SPACE, MACHINE ROOM, CONTROL SPACE OR CONTROL ROOM.

R. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES SHALL NOT PASS THRU OR OVER ANY SERVER (COMM / IT) ROOMS.

S. RUN CW, HW AND HWC LINES FULL SIZE THE ENTIRE LENGTH OF THE PLUMBING CHASE. BRANCH OFF TO INDIVIDUAL PLUMBING FIXTURES WITH PIPE SIZES AS SHOWN ON THE PLUMBING FIXTURE CONNECTION SCHEDULE. REFER TO PLUMBING RISER / ISOMETRIC DIAGRAMS FOR PIPING SIZES NOT SHOWN ON THE PLANS OR PLUMBING FIXTURE CONNECTION SCHEDULE.

1. INSTALL HANGERS FOR METALLIC PIPE AND TUBING NOT TO EXCEED THE MAXIMUM HORIZONTAL AND VERTICAL SPACING AND MINIMUM HANGER ROD DIAMETERS TO COMPLY WITH THE INTERNATIONAL PLUMBING CODE (IPC), MSS SP-58 STANDARD PRACTICE FOR PIPE HANGERS AND SUPPORTS, LOCALLY ENFORCED CODES AND AHJ REQUIREMENTS, WHICHEVER ARE MOST STRINGENT. WHERE CONFLICTS ARISE BETWEEN THE PLUMBING CODE REQUIREMENTS, MSS SP-58 AND THE PROJECT SPECIFICATIONS, THE MOST RESTRICTIVE OR THE REQUIREMENT THAT SPECIFIES SUPPORTS WITH HIGHEST LOAD RATING OR SHORTEST HANGER SPACING SHALL APPLY
   WHERE HANGER SPACING DOES NOT CORRESPOND WITH JOIST OR RIB SPACING, USE STRUCTURAL STEEL CHANNELS SECURED DIRECTLY TO JOIST AND RIB STRUCTURE TO MEET THE REQUIRED HANGER SPACING. THEN, SUSPEND THE EQUIPMENT AND PIPING FROM THE CHANNELS. HOLES WILL NOT BE DRILLED OR BURNED IN STRUCTURAL STEEL WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
2. PROVIDE ADDITIONAL SUPPORTS AT VALVES, STRAINERS, INLINE PUMPS AND OTHER HEAVY COMPONENTS. PROVIDE SUPPORT WITHIN ONE FOOT OF EACH PIPE ELBOW.
3. INSTALL HANGERS FOR PLASTIC, FRP OR GLASS PIPING WITH THE MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS, TO COMPLY WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, LOCALLY ENFORCED CODES, AND AUTHORITIES HAVING JURISDICTION REQUIREMENTS, WHICHEVER ARE MOST STRINGENT.
4. SUPPORT VERTICAL RUNS OF PLASTIC, FRP OR GLASS PIPING TO COMPLY WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, LOCALLY ENFORCED CODES, AND AUTHORITIES HAVING JURISDICTION REQUIREMENTS, WHICHEVER ARE MOST STRINGENT.
5. THE USE OF CHAINS, WIRE, CABLE OR STRAP HANGERS ARE NOT ALLOWED FOR PIPE SUPPORTS.
6. REFER TO GENERAL SEISMIC NOTES FOR ADDITIONAL REQUIREMENTS FOR PROJECTS SUBJECTED TO SEISMIC DESIGN REQUIREMENTS.

T. PROVIDE SHUT OFF VALVES FOR ALL BRANCH WATER PIPING WHERE THE BRANCH CONNECTS TO THE MAIN. LOCATE / ORIENT THE VALVES TO PERMIT PROPER OPERATION AND ACCESS FOR MAINTENANCE. GENERALLY, LOCATE VALVE STEMS IN OVERHEAD PIPING IN HORIZONTAL POSITION. PROVIDE A UNION ADJACENT TO ONE END OF ALL THREADED END VALVES. AS A RULE, THE VALVES SHALL BE INSTALLED NO MORE THAN 18-INCHES ABOVE AN ACCESSIBLE CEILING. IF THE CEILING IS NOT ACCESSIBLE, PROVIDE A MINIMUM 18" X 18" SIZE LOCKABLE ACCESS PANEL TO ACCESS TO SERVICE AND/OR REPLACE THE VALVES.
1. ANY BRANCH PIPING FROM MAIN SERVING MORE THAN ONE PLUMBING FIXTURE SHALL HAVE SHUT-OFF VALVES.

U. SANITARY DRAINAGE PIPING SHALL SLOPED IN ACCORDANCE WITH THE TABLE BELOW FROM THE 2018 INTERNATIONAL PLUMBING CODE.

PIPE SIZE (IN)	IPC 2018 MINIMUM SLOPE (INCH PER LF)
< = 2.5	1/4
3 TO 6	1/8
> = 8	1/16

V. GREASE WASTE DRAINAGE PIPING UPSTREAM OF A GREASE INTERCEPTOR SHALL SLOPE AT NOT LESS THAN 1/4 INCH PER FOOT.

W. CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR ONTO GRADE. CONDENSATE DRAINS FROM ALL COOLING COILS AND EVAPORATORS SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO A DRYWELL AS SHOWN ON THE PLANS.

X. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3-FEET ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3-FEET IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED. WHEN INSTALLED ABOVE THE ROOF, THE PLUMBING VENTS SHALL BE LOCATED 18-INCHES ABOVE THE ROOF LEVEL. FOR HOSPITAL APPLICATIONS, PLUMBING VENT PIPING SHALL TERMINATE NOT LESS THAN TWENTY-FIVE (25) FEET FROM ANY AIR INTAKE OR VENT SHAFT.

Y. CLEANOUTS SHALL NOT BE LOCATED ABOVE CEILINGS FOR WASTE SYSTEMS. IN AREAS REQUIRING WASTE DRAIN PIPING UNDER SUPPORTED STRUCTURAL FLOOR SLABS, THE CLEANOUTS SHALL BE ACCESSED AT LEAST 6-INCHES ABOVE THE FLOOD LEVEL OF THE HIGHEST FIXTURE SERVED. CLEANOUT RISER(S) SHALL BE PROPERLY PLUGGED AND PAINTED TO MATCH THE ADJACENT SURFACE.

Z. PROVIDE A BARRIER TYPE FLOOR DRAIN TRAP SEAL PROTECTION DEVICE (AS DEFINED BY THE ASSE 1072 STANDARD) EQUAL TO 'SURESEAL' BRAND.

AA. WATER HAMMER ARRESTORS WILL BE INSTALLED IN WATER PIPING ACCORDING TO PDI-WH 201. WATER HAMMER ARRESTERS SHALL BE INSTALLED WITH INLET ISOLATION VALVES TO ALLOW FOR MAINTENANCE.

BB. THE DETAILS SHOWN ON THE DETAIL SHEETS APPLY TO ALL PLUMBING PLAN SHEETS. THE DETAILS ARE TO BE FOLLOWED FOR THE INSTALLATION OF ALL COMPONENTS AND EQUIPMENT SHOWN.

SHEET INDEX

P0.1 PLUMBING GENERAL NOTES & SYMBOLS
P0.2 PLUMBING ABBREVIATIONS

PD2.1B LEVEL 01 - AREA B - DEMOLITION PLAN

P2.1 OVERALL UNDERGROUND PLUMBING PLAN
P2.1A LEVEL 01 - AREA A - PLUMBING PLAN
P2.1B LEVEL 01 - AREA B - PLUMBING PLAN
P2.2MA LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN
P2.3 OVERALL ROOF PLUMBING PLAN

P3.1 ENLARGED PLUMBING PLANS

P4.1 WASTE & VENT RISER DIAGRAMS
P4.2 DOMESTIC RISER DIAGRAM
P4.3 STORM RISER DIAGRAM

P5.1 PLUMBING DETAILS

P6.1 PLUMBING SCHEDULES

GENERAL SYMBOLS

	POINT OF DISCONNECT - DEMOLITION REMOVED FROM EXISTING
	POINT OF CONNECTION - NEW CONNECTS TO EXISTING
	AREA NOT IN CONTRACT

PIPING ANNOTATIONS

SCHEMATIC	3D	DESCRIPTION
		EXISTING TO REMAIN - (E) or EXIST
		ITEM TO BE DEMOLISHED - (D) or DEMO
18" CHWS	18" CHWS	PIPE SIZE TAG (DIAMETER WITH SYSTEM NAME)
		ABOVE GROUND PIPING
		BELOW GROUND PIPING
1/8" / 12" SLOPE	1/8" / 12" SLOPE	PIPE SLOPE
IE: -93' - 1"	IE: -93' - 8"	PIPE INVERT ELEVATION
DDC-xx		MECHANICAL EQUIPMENT TAG
		MECHANICAL EQUIPMENT CLEARANCE

PLUMBING SYMBOLS

SCHEMATIC	3D	DESCRIPTION
		DOMESTIC COLD WATER (LINETYPE)
		DOMESTIC HOT WATER (LINETYPE)
		DOMESTIC HOT WATER RECIRC (LINETYPE)
NV	NV	LAB NITROGEN VENT
AV	AV	ACID VENT
GV	GV	GREASE VENT
OV	OV	OIL VENT
IW	IW	INDIRECT WASTE
V	V	SANITARY VENT
CO	CO	CLEAN OUT
WCO	WCO	WALL CLEAN OUT
FCO	FCO	FLOOR CLEAN OUT
GCO	GCO	GRADE CLEAN OUT (DOUBLE CLEAN OUT)
		FLOOR DRAIN / FLOOR SINK
		ROOF DRAIN / OVERFLOW DRAIN
		DOWNSPOUT NOZZLE
		WALL HYDRANT
		HOSE BIBB
X		WATER HAMMER ARRESTER
AE	AE	ANESTHESIA EVACUATOR
AX	AX	MEDICAL COMPRESSED AIR OUTLET
DI	DI	DEIONIZED WATER OUTLET
DS	DS	DISTILLED WATER OUTLET
G	G	NATURAL GAS OUTLET
N2	N2	NITROGEN OUTLET
N2O	N2O	NITROUS OXIDE OUTLET
O2	O2	OXYGEN OUTLET
VAC	VAC	VACUUM INLET
XX		RISER TAG
8" RD 1,500 SF		ROOF DRAIN TAG
3" FS-2		PLUMBING FIXTURE TAG

PIPING VALVES AND FITTINGS

SCHEMATIC	3D	DESCRIPTION
		PIPE DROP
		PIPE RISE
		PIPE TEE DOWN
		PIPE TEE UP
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		PIPE CAP
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
		FLOW DIRECTION
		EXPANSION JOINT
		FLEXIBLE CONNECTION
		UNION
		DIRECTION OF PIPE PITCH
		AQUASTAT
		EXPANSION LOOP
		BALANCING VALVE
		BALANCING VALVE W/ METERING POINTS
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		STEAM TRAP
		GATE VALVE
		CIRCUIT SETTER
		MANUAL AIR VENT
		AUTOMATIC AIR VENT
		PLUG VALVE
		PRESSURE GAUGE
		SOLENOID VALVE
		ANGLE VALVE
		AUTOMATIC CONTROL VALVE 2-WAY
		AUTOMATIC CONTROL VALVE 3-WAY
		AUTOMATIC FLOW CONTROL VALVE
		STRAINER
PT		PRESSURE AND TEMPERATURE TEST PORT
		THERMOMETER
		PRESSURE REDUCING VALVE (WATER SYSTEMS) PRESSURE REGULATING VALVE (GAS SYSTEMS)
		RELIEF VALVE
		FLOW MEASURING DEVICE
		BACKFLOW PREVENTER
		UNION

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

PLUMBING GENERAL NOTES & SYMBOLS

P0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:40 AM

ABBREVIATIONS

#	NUMBER
&	AND
(D)	DEMOLISHED
(E)	EXISTING
(R)	RELOCATED
@	AT
°C	DEGREES CELSIUS
°F	DEGREES FAHRENHEIT
Ø	PHASE
Ø	DIAMETER
A	COMPRESSED AIR
A	AMPERE
A	AMP
A/C	AIR CONDITIONING(ER)
A/E	ARCHITECT/ENGINEER
AABC	ASSOCIATED AIR BALANCE COUNCIL
AAP	ALARM ANNUNCIATOR PANEL
AAP	AREA ALARM PANEL
AAV	AUTOMATIC AIR VENT
AAV	AIR ADMITTANCE VALVE
AB	ANCHOR BOLT
ABS	ACRYLONITRILE-BUTADIENE-STYRENE
AC	ALTERNATING CURRENT
AC	ACOUSTIC CEILING
ACC	AIR COOLED CONDENSER
ACC	ACCESSIBLE
ACCU	AIR COOLED CONDENSING UNIT
ACM	ALUMINUM COMPOSITE MATERIAL
ACST	ACOUSTIC
AD	AREA DRAIN
AD	ACCESS DOOR
ADDN	ADDITION OR ADDITIONAL
ADJ	ADJUSTABLE
ADJT	ADJACENT, ADJOINING
ADMIN	ADMINISTRATION
ADO	AUTOMATIC DOOR OPENER
AF	AIR FILTER
AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGF	AIR GAP FITTING
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	AREA INLET
AI	ANALOG INPUT
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
AMBA	AMERICAN BOILER MANUFACTURERS ASSOCIATION
AMP	AMPERE
ANCH	ANCHOR
AP	ACCESS PANEL
APC	ACOUSTIC PANEL CEILING
APPROX	APPROXIMATE
AR	ACID RESISTING
AR	ARGON
ARCH	ARCHITECTURAL
AS	AIR SEPARATOR
ASB	ASBESTOS
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASHRAE	AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPH	ASPHALT
AUTO	AUTOMATIC
AV	AUDIO-VIDEO, AUDIO-VISUAL
AV	ACID VENT
AV	AIR VENT
AVG	AVERAGE
AW	ACID WASTE
AWG	AMERICAN WIRE GAUGE
AWP	ACOUSTIC WALL PANEL
B	BOILER
B to B	BACK TO BACK
BAS	BUILDING AUTOMATION SYSTEM
BAT	BATTERY
BBO	BOILER BLOW OFF
BC	BALANCING COCK
BC	BARE COPPER
BCMU	BURNISHED CONCRETE MASONRY UNIT
BD	BOARD
BDD	BACK DRAFT DAMPER
BET	BETWEEN
BF	BOILER FEED
BFF	BELOW FINISH FLOOR
BFP	BACKFLOW PREVENTER
BFR	BELOW FLOOR
BFV	BUTTERFLY VALVE
BHP	BREAK HORSEPOWER
BI	BACKWARD INCLINED (FAN IMPELLER/WHEEL)
BKR	BREAKER
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLKHD	BULKHEAD
BM	BENCH MARK
BM(S)	BEAM(S)
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOF	BOTTOM OF FOOTING
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BPIP	BOILER PLANT INSTRUMENTATION PANEL
BRDG	BRIDGING
BRG	BEARING
BRKT	BRACKET
BSMT	BASEMENT
BT	BATHTUB
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BUR	BUILT UP ROOFING
BV	BALL VALVE
C	CONDUIT
C	CONDENSER WATER
CA	COMBUSTION AIR
CANT	CANTILEVER
CAP	CAPACITY
CAS	CASING
CBD	COUNTER-BALANCED DAMPER
CBD	CHALKBOARD
CC	COOLING COIL
CCR	CONTROL CONTRACTOR
CCTV	CLOSED CIRCUIT TELEVISION
CD	CONDENSATE DRAIN
CD	CEILING DIFFUSER
CD	CONSTRUCTION DOCUMENTS
CDA	CLEAN DRY AIR (COMPRESSED AIR)
CDF	COMBINATION DRINKING FOUNTAIN & BOTTLE FILLING STATION
CE	COVER ELEVATION
CEM	CEMENT
CENT	CENTRIFUGAL
CER	CERAMIC
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CG	CORNER GUARD
CH	CHILLER
CH	CHANNEL
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CI	CURB INLET
CIP	CAST IN PLACE
CIP	CAST IRON PIPE
CIRC	CIRCULATING
CJ	CONTROL JOINT
CJ	CONSTRUCTION JOINT
CJA	CONTROL JOINT ABOVE
CKT	CIRCUIT
CKT BK	CIRCUIT BREAKER
CL	CENTER LINE
CL	CIRCUIT LINE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CM	CEILING MOUNTED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CO	CARBON MONOXIDE
CO	CONDUIT ONLY
CO2	CARBON DIOXIDE
COL	COLUMN
COMB	COMBINATION
COMM	COMMUNICATIONS
COMP	COMPRESSOR UNIT
COMP	COMPOSITE
COMPR	COMPRESSIBLE
CONC	CONCRETE
COND	CONDENSATE
CONF	CONFERENCE
CONFIG	CONFIGURATION
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CONV	CONVECTOR
COOR	COORDINATE
COORD	COORDINATE
CP	CONDENSATE PUMP
CP	COVER PLATE
CPS	CYCLES PER SECOND
CPT	CARPET
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CORROSION RESISTANT
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CS	COUNTERSINK
CS	COMBINATION SEWER
CS	CARBON STEEL
CSK	COUNTERSUNK
CSMU	CALCIUM SILICATE MASONRY UNIT
CSP	COMBINATION STANDPIPE
CSWK	CASEWORK
CT	COOLING TOWER
CT	CERAMIC TILE
CT	CURRENT TRANSFORMER
CTL	CONTROL
CTR	CENTER
CU	COPPER
CU	CONDENSING UNIT
CU	CUBIC
CU	COMBINATION UNIT
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWV	COMBINATION WASTE AND VENT
CY	CUBIC YARD
CYL	CYLINDER
D	DRAIN
D	DIFFUSER
D	DEPTH
D	DATA
d	PENNY (NAIL 10D)
DB	DECIBEL
DB	DRY BULB
DBA	DECIBELS A
DBL	DOUBLE
DC	DIRECT CURRENT
DC	DUST COLLECTOR
DCJ	DUMMY CONTROL JOINT
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DEPR	DEPRESS(ION)(ED)
DEPT	DEPARTMENT
DET	DETAIL
DET	DETENTION
DF	DRINKING FOUNTAIN
DFR	DIESEL FUEL RETURN
DFS	DIESEL FUEL SUPPLY
DFU	DRAINAGE FIXTURE UNIT
DFV	DIESEL FUEL VENT
DG	DOOR GRILLE
DH	DUCT HEATER
DHU	DEHUMIDIFICATION UNIT
DI	DEIONIZED WATER
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIC	DISCHARGE
DIFF	DIFFUSER
DIM	DIMENSION
DISC	DISCONNECT
DISC SW	DISCONNECT SWITCH
DISCH	DISCHARGE
DISTR	DISTRIBUTION
DIV	SPECIFICATION DIVISION
DL	DRUM LOUVER
DL	DEAD LOAD
DM	DAMPER MOTOR
DMPR	DAMPER
DN	DOWN
DO or "	DITTO
DOAS	DEDICATED OUTDOOR AIR SYSTEM UNIT
DOE	DEPARTMENT OF ENERGY
DP	DIFFERENTIAL PRESSURE
DPFG	DAMPROFFING
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DR	DOOR
DR	DRAIN
DS	DISTILLED WATER
DS	DOWNSPOUT
DSN	DOWNSPOUT NOZZLE
DSP	DRY STANDPIPE
DSPR	DRY SPRINKLER PIPING
DSPR	DRY SPRINKLER PIPE
DSTB	DISTRIBUTED
DTL	DETAIL
DTR	DUCT THRU ROOF
DW	DISHWASHER
DWBP	DOMESTIC WATER BOOSTER PUMP
DWDI	DOUBLE WIDTH DOUBLE INLET
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
DWR	DRAWER
DWRP	DOMESTIC WATER RECIRCULATING PUMP
DX	DIRECT EXPANSION
DXS	DOUBLE EXTRA STRONG
E	EAST
EA	EACH
EA	EXHAUST AIR
EA	EACH FACE
EAT	ENTERING AIR TEMPERATURE
EB	ELECTRIC BASEBOARD RADIATION
EB	EXPANSION BOLT
EBH	ELECTRIC BASIN HEATER
EC	ELECTRICAL CONTRACTOR
ECON	ECONOMIZER
ECS	EMERGENCY COMMUNICATION SYSTEM
EDH	ELECTRIC DUCT HEATER
EE	EACH END
EER	ENERGY EFFICIENCY RATIO
EEW	EMERGENCY EYE WASH
EEWS	EMERGENCY EYE WASH SHOWER
EF	EXHAUST FAN
EF	EACH FACE
EFF	EFFICIENCY
EG	EXHAUST AIR GRILLE
EH	ELECTRICAL HEATER
EIFS	EXTEROR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAS	ELASTOMERIC
ELEC	ELECTRICAL(AL)
ELEV	ELEVATOR
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EMD	ESTIMATED MAXIMUM DEMAND
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EMV	EMERGENCY MIXING VALVE
ENCL	ENCLOSURE
ENT	ENTERING
ENTR	ENTRANCE
EOMD	END OF MAIN DRIP
EP	ELECTRO-PNEUMATIC
EP	EXPLOSION PROOF
EPO	EMERGENCY POWER OFF
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ER	EXISTING (TO BE) RELOCATED
ER	EXHAUST REGISTER
ERA	ENERGY RECOVERY AIR
ERF	EPOXY RESIN FLOORING
ES	EMERGENCY SHOWER
ES	EXTRA STRONG
ESP	EXTERNAL STATIC PRESSURE
EST	ESTIMATE
ET	EXPANSION TANK
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWT	ENTERING WATER TEMPERATURE
EXC	EXCAVATE
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXP	EXPOSED
EXPL	EXPLOSION
EXT	EXTERIOR
F	FAHRENHEIT
F	FIRELINE
F	FURNACE
F	FACE
F	FIRE SERVICE
FA	FIRE ALARM
FA	FACE
FA	FRESH AIR
FAA	FIRE ALARM ANNUNCIATOR
FAB	FABRICATE(D)
FACP	FIRE ALARM CONTROL PANEL
FB	FACE BRICK
FC	FLUID COOLER
FCMU	FLUTED CONCRETE MASONRY UNIT
FCO	FLOOR CLEAN OUT
FCU	FAN COIL UNIT
FCV	FLOW CONTROL VALVE
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN
FD	FIRE DAMPER
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FDNDR	FOUNDATION DRAIN
FDR	FEEDER
FDV	FIRE DEPARTMENT VALVE
FDVC	FIRE DEPARTMENT VALVE CABINET
FE	FIRE EXTINGUISHER
FEA	FUME HOOD EXHAUST AIR
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FH	FIRE HYDRANT
FH	FILTER HOUSING
FHC	FIRE HOSE CABINET
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOOR
FLA	FULL LOAD AMPS
FLASH	FLASHING
FLEX	FLEXIBLE
FLG	FLANGE
FLG	FLOORING
FLM	FULL LENGTH MIRROR
FLUOR	FLUORESCENT
FM	FIRE MAIN
FM	FORCE MAIN
FM	FACTORY MUTUAL
FMCS	FACILITIES MANAGMENT CONTROL SYSTEM
FME	FLOW MEASURING EQUIPMENT
FNPT	FEMALE NPT
FO	FINISH OPENING
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FUEL OIL FILL
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOS	FACE OF STUD
FOV	FUEL OIL VENT
FOW	FACE OF WALL
FP	FIRE PUMP
FP	FIREPROOFING
FPB	FAN POWERED VAV TERMINAL
FPD	FIRE PUMP DISCHARGE
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FR	FIRE RESISTANT
FR	FIRE RESISTIVE
FR	FRAME
FRP	FIBERGLASS REINFORCED PANEL
FS	FLOW SWITCH
FS	FLOOR SINK
FSD	FIRE SMOKE DAMPER
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FT	FEET
FT	FIN TUBE
FT	FLOW TRANSMITTER
FTG	FOOTING
FURN	FURNISH(ED)
FUT	FUTURE
FV	FIELD VERIFY
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FWC	FABRIC WALL COVERING
G	GRILLE
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAD BAR
GC	GENERAL CONTRACTOR
GCMU	GLAZED CONCRETE MASONRY UNIT
GCO	GRADE CLEAN OUT
GD	GARBAGE DISPOSAL
GEA	GREASE EXHAUST AIR
GEN	GENERATOR
GEN	GENERAL
GFA	GROSS FLOOR AREA
GFCMU	GROUND-FACE CONCRETE MASONRY UNIT
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFRC	GLASS FIBER REINFORCED CONCRETE
GHR	GLYCOL-WATER HEATING RETURN
GHS	GLYCOL-WATER HEATING SUPPLY
GI	GALVANIZED IRON
GL	GLUE LAMINATED
GL	GLASS
GMU	GLASS MASONRY UNIT
GND	GROUND
GOVT	GOVERNMENT
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GUARD RAIL
GR	GRADE
GR	GRILLE
GRC	GLASS REINFORCED CONCRETE
GRC	GALVANIZED RIGID CONDUIT
GRC	GLASS REINFORCED CONCRETE
GRD	GRILLES, REGISTERS AND DIFFUSERS
GRGP	GLASS REINFORCED GYPSUM PLASTER
GRS	GALVANIZED RIGID STEEL
GRV	GRAVITY VENTILATOR
GS	GASOLINE
GV	GATE VALVE
GV	GREASE VENT
GVBF	GREASE VENT BELOW FLOOR
GW	GREASE WASTE
GWB	GYPSUM WALL BOARD
GWR	GEOTHERMAL WATER RETURN
GWS	GEOTHERMAL WATER SUPPLY
GYP	GYPSUM
H	HEIGHT
H1E	HOOK ONE END
H2	HYDROGEN
HB	HOSE BIB
HC	HEATING COIL
HC	HOLLOW CORE
HC	HANDICAP
HCB	HANDICAP BENCH
HCR	HOT/CHILLED WATER RETURN
HCS	HOT/CHILLED WATER SUPPLY
HCW	HARD COLD WATER
HD	HAND DRYER
HDBD	HARDBOARD
HDCP	HANDICAP
HDR	HEADER
HDWD	HARDWOOD
HDWR	HARDWARE
HE	HELIUM
HEV	HOSE END VALVE
HGR	HANGER
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSE POWER
HP	HEAT PUMP
HP	HIGH PRESSURE
HPC	HIGH PRESSURE STEAM CONDENSATE
HPNG	HIGH PRESSURE NATURAL GAS
HPR	HIGH PRESSURE STEAM RETURN
HPS	HIGH PRESSURE STEAM SUPPLY
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HRO	HOT REVERSE OSMOSIS
HROC	HOT REVERSE OSMOSIS RECIRCULATION
HRWR	HEAT RECOVERY WATER RETURN
HRWS	HEAT RECOVERY WATER SUPPLY
HS	HEADSTUD
HSPF	HEAT SEASONAL PERFORMANCE FACTOR
HSTR	HIGH STRENGTH
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HTWR	HIGH TEMPERATURE HOT WATER RETURN
HTWS	HIGH TEMPERATURE HOT WATER SUPPLY
HUM	HUMIDIFIER
HV	HEATING VENTILATING UNIT
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HW	DOMESTIC HOT WATER
HWC	DOMESTIC HOT WATER RECIRCULATING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HYD	ROOF HYDRANT
HZ	HERTZ (FREQUENCY)
i.e.	THAT IS
IAQ	INDOOR AIR QUALITY
IAW	IN ACCORDANCE WITH
IB	INFRARED BURNER
IBC	INTERNATIONAL BUILDING CODE
IC	INTERCOM
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IES	ILLUMINATING ENGINEERING SOCIETY
IF	INSIDE FACE
IG	ISOLATED GROUND
IH	INTAKE HOOD
IJ	ISOLATION JOINT
IJS	IN JOIST SPACE
IMC	INTERNATIONAL MECHANICAL CODE
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
IN HG	INCHES OF MERCURY (PRESSURE)
IN WC	INCHES OF WATER COLUMN (PRESSURE)
INC	INCLUDE(ING)
INSUL	INSULATION
INT	INTERIOR
IP	IRON PIPE
IPC	INTERNATIONAL PLUMBING CODE
IPS	IRON PIPE SIZE
IW	INDIRECT WASTE
JAN	JANITOR
JB	JUNCTION BOX
JCT	JUNCTION
JFB	JOINT FILLER BOARD
JST	JOIST
JT	JOINT
KCJ	KEYED CONSTRUCTION JOINT
KCP	KEENE'S CEMENT PLASTER
KD	KNOCKDOWN
KH	KITCHEN HOOD
KHE	KITCHEN HOOD EXHAUST FAN
KHS	KITCHEN HOOD SUPPLY FAN
KIT	KITCHEN
KO	KNOCKOUT
KS	KITCHEN SINK
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
L	ANGLE
LA	LABRATORY COMPRESSED AIR
LAB	LABORATORY
LAM	LAMINATED
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LB(S)	POUND(S)
LBR	LUMBER
LDG	LOADING
LF	LINEAR FOOT
LG	LENGTH (LONG)
LIN	LINEAR
LINO	LINOLEUM
LKR	LOCKER
LL	LIVE LOAD
LLH	LONG LENGTH HORIZONTAL
LLV	LONG LENGTH VERTICAL
LN2	LIQUID NITROGEN
LO2	LIQUID OXYGEN
LOC	LOCATION
LONG	LONGITUDINAL
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
LPR	LOW PRESSURE STEAM RETURN
LPS	LOW PRESSURE STEAM SUPPLY
LR	LIVING ROOM
LS	LAWN SPRINKLER
LSC	LIFE SAFETY CODE
LT	LIGHT
LTD	LINED TRANSFER DUCT
LTG	LIGHTING
LV	LAVATORY
LV	LABORATORY VACUUM
LVG	LEAVING
LW	LONG WAY
LWT	LEAVING WATER TEMPERATURE
M	THOUSAND
MA	MIXED AIR
MA	MAKE-UP AIR
MA	MEDICAL COMPRESSED AIR
MAC	MACHINE
MAG	MAGNETIC
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MATL	MATERIAL
MAU	MAKEUP AIR UNIT
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MB	MACHINE BOLT
MBD	MARKER BOARD
MBH	THOUSAND BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MC	MEDICINE CABINET
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCM	METAL COMPOSITE MATERIAL
MD	MOTORIZED DAMPER
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MFRG	MANUFACTURING
MG	MOTOR GENERATOR
MH	MANHOLE
MH	METAL HALIDE
MH	MOP HOLDER
MIN	MINIMUM
MISC	MISCELLANEOUS
MISC	MISCELLANEOUS
ML	MOTORIZED LOUVER
MLDG	MOLDING
MLO	MAIN LUGS ONLY
MLWK	MILLWORK
MO	MASONRY OPENING
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPG	MEDIUM PRESSURE GAS
MPR	MEDIUM PRESSURE STEAM RETURN
MPS	MEDIUM PRESSURE STEAM SUPPLY
MR	MIRROR
MR/S	MIRROR WITH SHELF
MS	MAGNETIC STARTER
MS	MOP SINK
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTWR	MEDIUM TEMP HOT WATER RETURN
MTWS	MEDIUM TEMP HOT WATER SUPPLY
MUL	MULLION
MV	MEDICAL VACUUM
MV	MERCURY VAPOR
MW	MARKER WALL
N	NITROGEN
N	NORTH
N2	LABORATORY NITROGEN
N2O	NITROUS OXIDE
N20	NITROUS OXIDE
N/A	NOT APPLICABLE
NA	NOT APPLICABLE
NAT	NATURAL
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NC	NURSE CALL
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSN.
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO	NUMBER
NO2	NITROGEN DIOXIDE
NOM	NOMINAL
NRS	NON RISING STEM
NS	NEUTRAL SENSOR
NTS	NOT TO SCALE
NV	NITROGEN VENT
O2	OXYGEN
O to O	OUT TO OUT
O&M	OPERATION AND MAINTENANCE
OA	OUTSIDE AIR
OBSC	OBSCURE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OD	OVERFLOW DRAIN
OF	OUTSIDE FACE
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OWNER FURNISHED OWNER INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OHP	OVERHEAD POWER
OHT	OVERHEAD TELEPHONE
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCREW AND YOKE
OSD	OVERFLOW STORM DRAIN
OTCS	OPEN TO CEILING SPACE
OV	OIL VENT
OVFL	OVERFLOW
OVHD	OVERHEAD
OW	OIL WASTE
P	POLE(S)
P	PUMP
P/T	PRESSURE/TEMPERATURE TEST PORT
PA	PUBLIC ADDRESS
PAN B	PANIC BOLT
PAR	PARALLEL
PB	PULL BOX
PB	PUSH BUTTON
PB	PARTICLE BOARD
PBS	PUSH BUTTON STATION
PC	PUMPED CONDENSATE
PCD	PAPER CUP DISPENSER
PCF	POUNDS PER CUBIC FOOT
PCT	PORCELAIN CERAMIC TILE
PCV	PRESSURE CONTROL VALVE
PCWP	PROCESS COOLING WATER PUMP
PCWR	PROCESS COOLING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PD	PRESSURE DROP
PD	PUMP DISCHARGE
PDI	PLUMBING & DRAINAGE INSTITUTE
PENT	PENTHOUSE
PERF	PERFORATED
PERP	PERPENDICULAR
PF	POWER FACTOR
PG	PRESSURE GAUGE
PG	PROPANE GAS
PH	PHASE
PHC	PRE-HEAT COIL
PI	POINT OF INTERSECTION
PI	PRESSURE INDICATOR
PIC	PORTABLE INSTRUMENT CONNECTION
PIV	POST INDICATOR VALVE
PL	PLACE(S)
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLBG	PLUMBING
PLYWD	PLYWOOD
PNEU	PNEUMATIC
PNL	PANEL
POC	POINT OF CONNECTION
PORC	PORCELAIN
PPM	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PROJ	PROJECT(OR) (ION)
PRV	PRESSURE REGULATING VALVE
PS	PIPE SUPPORT
PS	PROJECTION SCREEN
PSF	POUNDS PER SQUARE FOOT
PSFA	POUNDS PER SQUARE FOOT, ABSOLUTE
PSFG	POUNDS PER SQUARE FOOT, GAUGE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSID	POUNDS PER SQUARE INCH, DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH, GAUGE
PSV	PRESSURE SAFETY (RELIEF) VALVE
PT	PLASTER TRAP
PT	POINT
PT	POTENTIAL TRANSFORMER
PTD	PAPER TOWEL DISPENSER
PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PWL	SOUND POWER LEVEL
PWR	POWER
QT	QUARRY TILE
QTR RND	QUARTER ROUND
QTY	QUANTITY
R	RISER
R	RADIUS
R	REGISTER
RA	RETURN AIR
RAD	RADIUS
RAD	RADIATOR
RAD	RADIATED
RAT	RETURN AIR TEMPERATURE
RB	RUBBER BASE
RC	REMOTE CHILLER
RC	REMOTE CONTROL
RCP	REFLECTED CEILING PLAN
RCP	REINFORCED CONCRETE PIPE
RCP	RADIANT CEILING PANEL
RCU	RECIPROCATING CHILLER UNIT
RCW	RECLAIMED WATER
RD	ROOF DRAIN
RD	REFRIGERANT DISCHARGE
RE	REFER TO
RE	REFERENCE
RECIRC	RECIRCULATING
RECP	RECEPTACLE
RECPT	RECEPTACLE
RECT	RECTANGLE(AR)
REF	REFERENCE
REFL	REFLECTED
REFR	REFRIGERANT
REG	REGISTER
REINF	REINFORCEMENT
RELA	RELIEF AIR
REM	REMOVABLE
REQ(D)	REQUIRE(D)
RESIL	RESILIENT
RESP	RESPONSIVE
RET	RETAINING
REV	REVISION(S)
RF	RETURN FAN
RF	RUBBER FLOOR
RFM	RECESSED FLOOR MAT
RH	RELATIVE HUMIDITY
RH	REFLIEF HOOD
RH	ROBE HOOK
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RI&C	ROUGH IN AND CONNECT
RIJS	RISE IN JOIST SPACE
RL	REFRIGERANT LIQUID
RM	ROOM
RND	ROUND
RO	REVERSE OSMOSIS WATER
RO	ROUGH OPENING
ROC	REVERSE OSMOSIS RECIRCULATING
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT
RV	REFRIGERANT VENT
RWL	RAIN WATER LEADER
S	SMOKE DAMPER
S	SOUTH
S	SANITARY SEWER
S	SPRINKLER LINE
S	SINK
S	SOAP DISH
SA	SUPPLY AIR
SA	SHOCK ABSORBER
SAN	SANITARY WASTE
SC	SECURITY
SC	SOLID CORE
SC	SHOWER CURTAIN
SC	SPECIAL COATING
SCCR	SHORT CIRCUIT CURRENT RATING
SCD	SEAT COVER DISPENSER
SCD	SECONDARY CONDENSATE DRAIN
SCH	SHOWER CURTAIN HOOK
SCHED	SCHEDULE
SCR	SILICON CONTROLED RECTIFIER
SCT	STRUCTURAL CLAY TILE
SCUT	SCUTTLE
SCW	SOFT COLD WATER
SD	SMOKE DAMPER
SD	STORM DRAIN
SD	SMOKE DETECTOR
SD	SOAP DISPENSER
SE	STEAM EXHAUST VENT
SEA	SMOKE EXHAUST AIR
SEC	SECONDARY
SEC	SECOND
SECT	SECTION
SECY	SECRETARY
SENS	SENSIBLE
SF	SUPPLY FAN
SF	SQUARE FOOT
SFA	SPRINKLER FLOW ALARM
SFCMU	SPLIT-FACE CONCRETE MASONRY UNIT
SFU	STRUCTURE FACING UNIT
SGL	SINGLE
SH	SHOWER
SHM	SECURITY HOLLOW METAL
SHT	SHEET
SHW	SOFT HOT WATER
SHWC	SOFT HOT WATER RECIRCULATING
SHWR	SOLAR HOT WATER RETURN
SHWS	SOLAR HOT WATER SUPPLY
SIM	SIMILAR
SK	SINK
SL	SHORT LEG
SLNT	SEALANT
SM	SPRINKLER MAIN
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SP	STATIC PRESSURE (H2O)
SP	STAND PIPE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION(S)
SPK	SPRINKLER
SPL	SOUND PRESSURE LEVEL
SPL	SPECIAL
SPL BLK	SPLASH BLOCK
SQ	SQUARE
SQ FT	SQUARE FEET
SQ IN	SQUARE INCHES
SS	STAINLESS STEEL
SS	SERVICE SINK
SS	SOLID SURFACE
SS	SOLID SEPARATOR
SSA	STORM SHELTER AREA
SST	SECONDARY STORM DRAINAGE
ST	STAIR
ST	STORM DRAINAGE
STAG'D	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STE	SINGLE TAPERED END
STGR	STRINGER
STL	STEEL
STOR	STORAGE
STR	STRUCTURE(AL)
STRUCT	STRUCTURAL
SUB	SUBSTATION
SURF	SURFACE
SUSP	SUSPENDED
SV	SOLENOID VALVE
SV	STEAM VENT
SW	SHORT WAY
SW	SWITCH
SWBD	SWITCHBOARD
SWP	STEAM WORKING PRESSURE
SYM	SYMETRICAL
T	TEMPERED
T	THERMOSTAT
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TA	TRANSFER AIR
TAB	TEST(ING) ADJUST(ING) BALANCE(ING)
TAN	TANGENT
TB	TERMINAL BOX
TB	TOWEL BAR
TBD	TACK BOARD
TC	TIME CLOCK
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTOLS CONTRACTOR
TD	TRANSFER DUCT
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TDS	TOTAL DISOLVED SOLIDS
TEL	TELEPHONE
TEMP	TERMPORARY
TEMP	TEMPERATURE
TEMP	TEMPERED
TEMP	TEMPORARY
TERR	TERRAZZO
TEXT	TEXTURED
TGL	TOGGLE
TH	THRESHOLD
TH	TOWEL HOOK
THK	THICK(NESS)
TMR	TILT MIRROR UNIT
TMV	THERMOSTATIC MIXING VALVE
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOIL	TOILET
TOM	TOP OF MASONRY
TOP	TOP OF PAVING
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TRAP PRIMER
TPV	TRAP PRIMER VALVE
TR	TRIP
TRANS	TRANSVERSE
TRD	TREAD
TS	TEMPERATURE SENSOR
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTER
TT	TERRAZZO TILE
TTD	TOILET TISSUE DISPENSER
TV	TELEVISION
TW	TACK WALL
TYP	TYPICAL
UC	UNIT COOLER
UC	UNDERCUT DOOR
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRICAL
UGT	UNDERGROUND TELEPHONE
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
URD	UNDERGROUND RESIDENTIAL DISTRIBUTION
US	UTILITY SHELF
UTIL	UTILITY
UV	UNIT VENTILATOR
V	VOLT
V	SANITARY VENT
V	VACUUM
VA	VOLT-AMPERE
VA	VALVE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VAPOR BARRIER
VB	VINYL BASE
VBF	VENT BELOW FLOOR
VCB	VENTED COVE BASE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE
VD	VOLUME DAMPER
VEL	VELOCITY
VENT	VENTALATOR(TION)
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FLOOR
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VM	VOLTMETER
VOL	VOLUME
VP	VACUUM PUMP
VP	VENEER PLASTER
VSMP	VARIABLE SPEED MOTOR CONTROLLER
VT	VINYL TILE
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WIRE
W	WIDE FLANGE
W	WEST
W	WATER SERVICE
W	WIDE(TH)
W	WASTE (PLUG)
W	WATT
W/	WITH
W/O	WITHOUT
WAGD	WASTE ANESTHETIC GAS DISPOSAL
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WC	WALL COVERING
WCC	WATER COOLED CONDENSER
WCL	WATER CLOSET/LAVATORY COMBINATION
WCO	WALL CLEAN OUT
WD	WOOD
WDW	WINDOW
WF	WASH FOUNTAIN
WFMD	WATER FLOW MEASURING DEVICE
WFU	WASTE FIXTURE UNIT
WG	WIRE GUARD
WG	WATER GAUGE
WH	WALL HYDRANT
WH	WATER HEATER
WHA	WATER HAMMER ARRESTOR
WHM	WATT HOUR METER
WI	WROUGHT IRON
WLR	WATER LOOP RETURN
WLS	WATER LOOP SUPPLY
WMB	WASHING MACHINE OUTLET BOX
WMG	WATER MOTOR GOING
WNSCT	WAINSCOT
WP	WEATHER-PROOF (NEMA 3R)
WP	WEATHERPROOF
WPB	WHIRLPOOL BATH
WPF	WATERPROOF
WPFG	WATERPROOFING
WR	WASTE RECEPTACLE
WR	WATER RESISTANT
WSHP	WATER SOURCE HEAT PUMP
WSP	WET STAND PIPE
WT	WEIGHT
WW	WARM WHITE
XFMR	TRANSFORMER
XMTR	TRANSMITTER
YD	YARD
YH	YARD HYDRANT
Z	IMPEDANCE
ZCB	ZONE CONTROL BOX
ZCV	ZONE CONTROL VALVE
ZVB	ZONE VALVE BOX

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

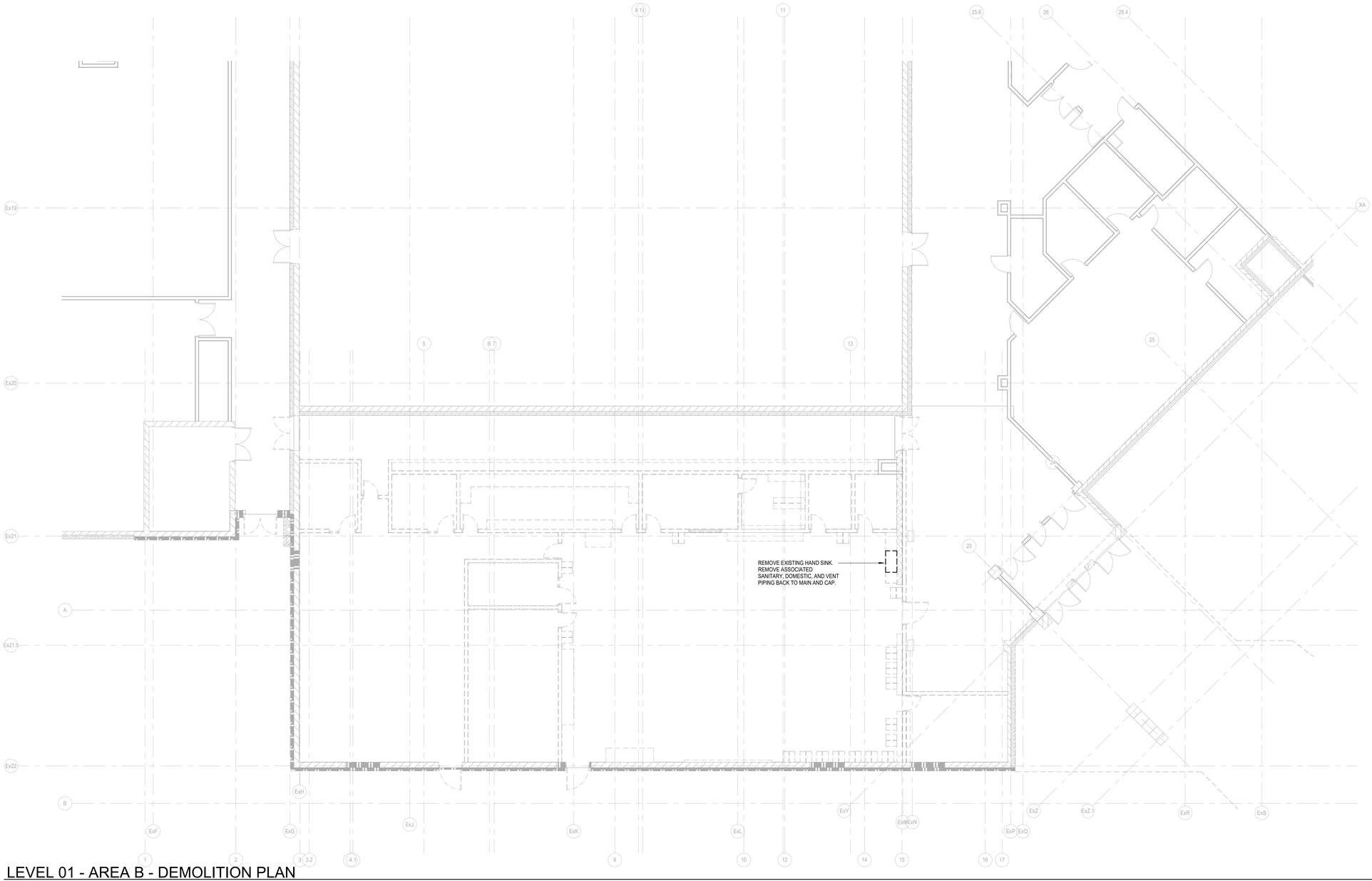
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

PLUMBING ABBREVIATIONS

P0.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:41 AM



LEVEL 01 - AREA B - DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

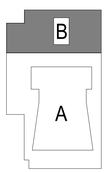
PLUMBING DEMOLITION NOTES

A OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL ITEMS INDICATED TO BE REMOVED. CONTRACTOR SHALL VERIFY ALL SUCH ITEMS WITH OWNER PRIOR TO REMOVAL. ALL ITEMS NOT REFUSED BY OWNER SHALL BE REMOVED INTACT AND FULLY FUNCTIONAL BY CONTRACTOR FOR OWNER'S USE. ALL ITEMS REFUSED BY OWNER SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.

B REMOVE EXISTING FIXTURES AND EQUIPMENT AS INDICATED. HOT WATER, COLD WATER AND VENT PIPING SERVING SUCH ITEMS SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION WITHIN WALL OR ABOVE CEILING AND CAPPED OR PLUGGED UNLESS OTHERWISE NOTED (U.O.N.). WASTE PIPING SERVING SUCH FIXTURES SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION BELOW FINISHED FLOOR OR BEHIND WALL AND CAPPED OR PLUGGED U.O.N. ASSOCIATED EXISTING DEFUNCT PIPING IN CONCEALED LOCATIONS ABOVE CEILING, WITHIN WALLS, BELOW SLAB, OR BELOW GRADE SHALL BE ABANDONED IN PLACE OR REMOVED AS NECESSARY TO AVOID INTERFERENCE WITH NEW WORK. ASSOCIATED EXISTING DEFUNCT PIPING AND COMPONENTS IN EXPOSED LOCATIONS SHALL BE REMOVED U.O.N. (INCLUDING FLOOR DRAINS, WALL AND FLOOR CLEANOUTS, CLEANOUTS TO GRADE, ACCESS PANELS, SHUT-OFF VALVES AND OTHER EXPOSED COMPONENTS). EXISTING DEFUNCT ELECTRICAL COMPONENTS SERVING EXISTING TO BE REMOVED EQUIPMENT SHALL BE DEMOLISHED AND REMOVED TO POINT OF ORIGIN.

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

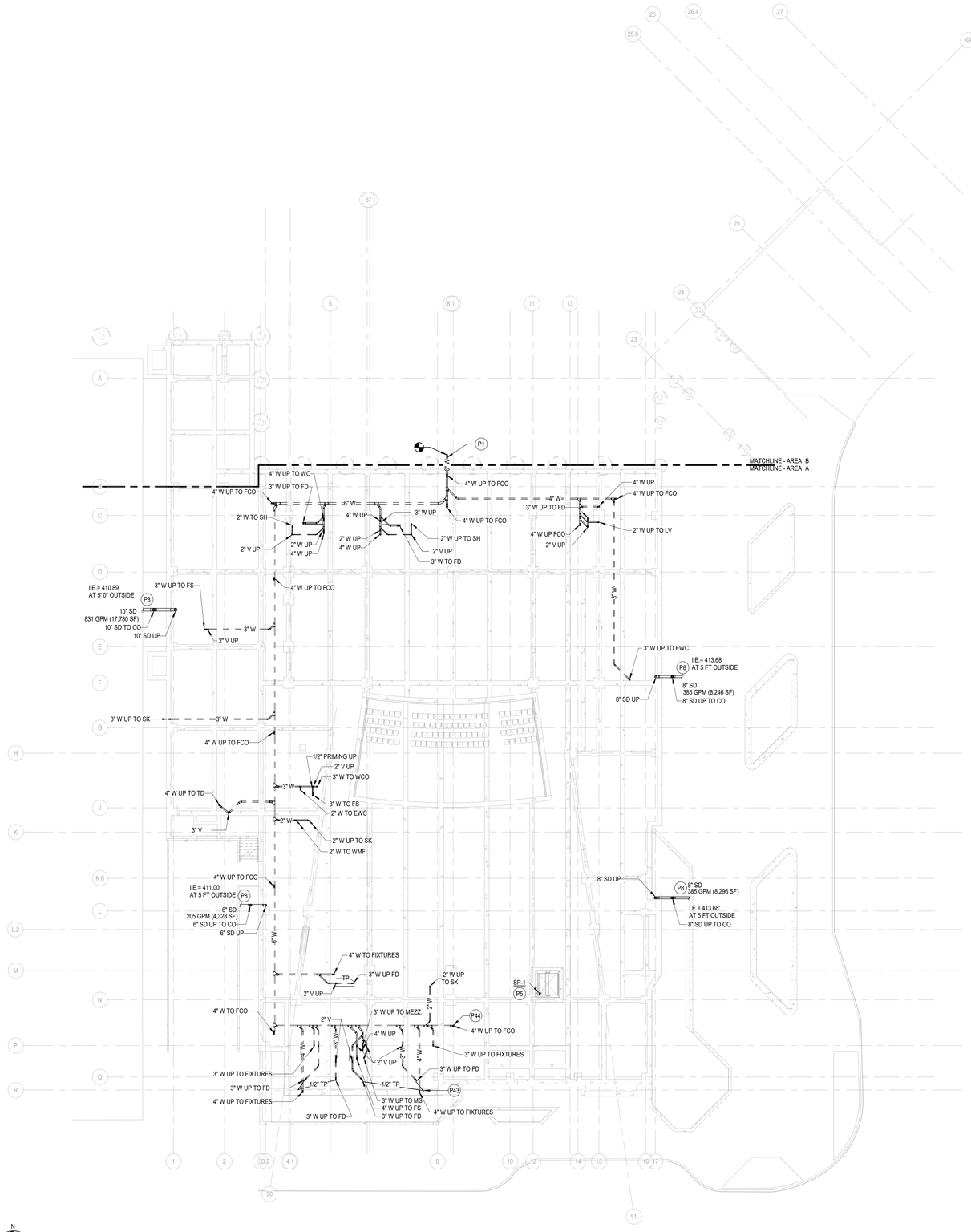
REVISIONS

39-23712-00

LEVEL 01 - AREA B - DEMOLITION PLAN

PD2.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:42 AM



N

OVERALL UNDERGROUND PLUMBING PLAN

SCALE: 1/16" = 1'-0"

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

SHEET NOTES

P1 CONNECT TO EXISTING 6" SANITARY LINE. INVERT AT 410.13'. BASED ON CIVIL FINISHED FLOOR ELEVATION OF 416.18' FIELD VERIFY.

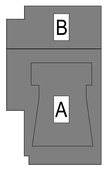
P5 PROVIDE SUMP PUMP FOR ELEVATOR SHAFT PIT AND DISCHARGE INTO FLOOR SINK.

P8 SEE CIVIL SHEETS FOR CONTINUATION.

P43 TWO (2) 1/2" PRIMING TUBING UP TO DEVICE.

P44 START INVERT ELEVATION OF 6" SANITARY LINE. INVERT AT 413.27'. BASED ON CIVIL FINISHED FLOOR ELEVATION OF 416.18'. FIELD VERIFY ALL INVERT PRIOR TO PERFORM ANY WORK.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

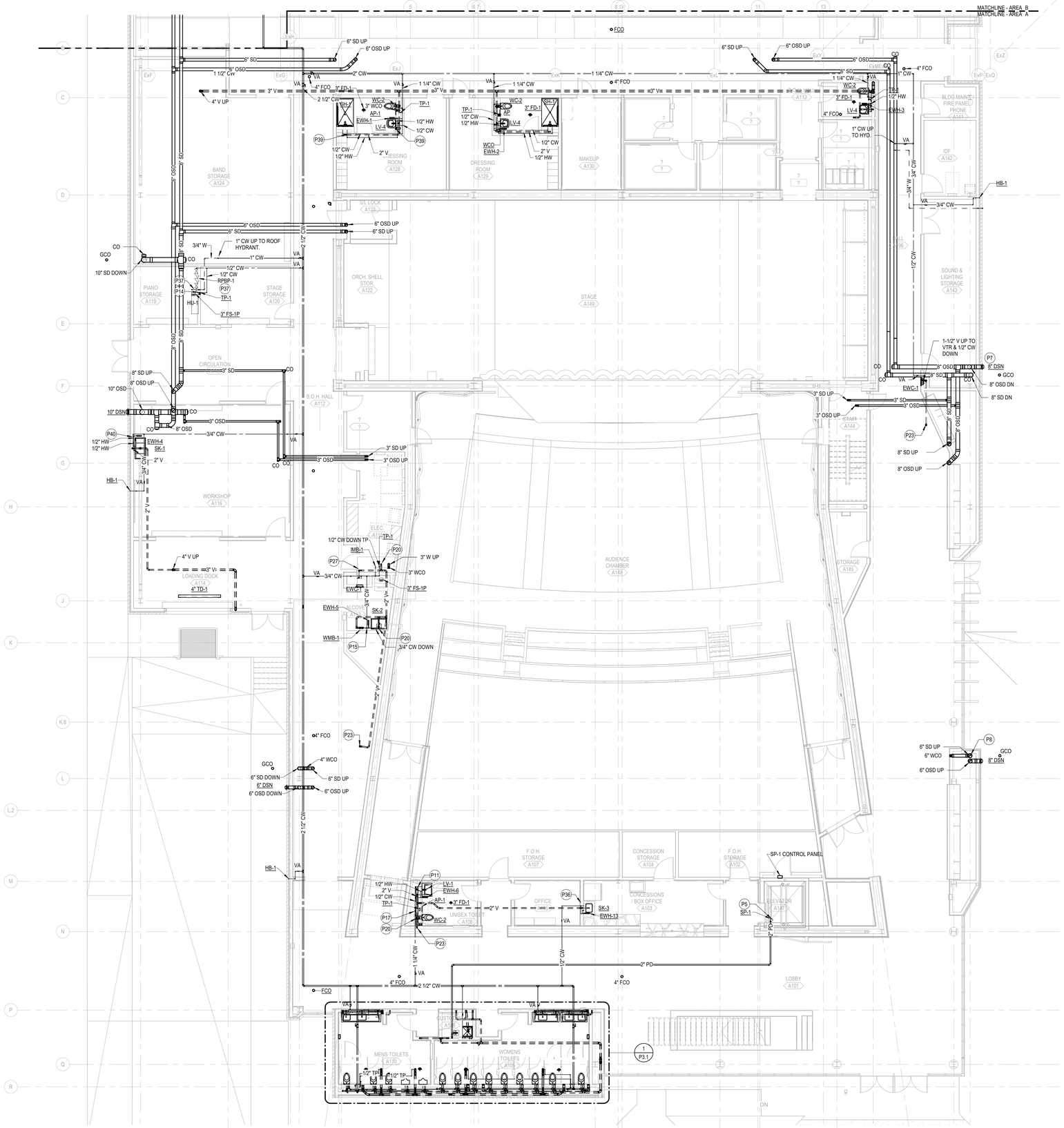
REVISIONS

39-23712-00

OVERALL UNDERGROUND PLUMBING PLAN

P2.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:45 AM



LEVEL 01 - AREA A - PLUMBING PLAN

SCALE: 1/8" = 1'-0"

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

SHEET NOTES

P5 PROVIDE SUMP PUMP FOR ELEVATOR SHAFT PIT AND DISCHARGE INTO FLOOR SINK.

P7 TERMINATE OVERFLOW STORM DRAIN OUTSIDE BUILDING WITH A LAMB'S TONGUE 12" ABOVE FINISHED FLOOR.

P8 SEE CIVIL SHEETS FOR CONTINUATION.

P11 4" W UP.

P14 1/2" CW DOWN.

P15 3/4" CW DOWN.

P17 1-1/4" CW DOWN TO SHUTOFF VALVE BEHIND ACCESS PANEL.

P20 2" VENT DOWN. TYPICAL.

P23 2" VENT UP.

P27 1-1/2" VENT DOWN. TYPICAL.

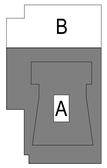
P36 2" V AND 1/2" CW DOWN.

P37 1/2" REDUCED PRESSURE ZONE BACKFLOW PREVENTER ON HUMIDIFIER SUPPLY. 48" AFF. SECURE TO WALL. RELIEF DISCHARGE TO FLOOR SINK.

P39 1/2" HW DOWN.

P40 LOCATE WATER PIPING TO THE INTERIOR SIDE (WARMSIDE) OF THE WALL INSULATION TO PROTECT FROM FREEZING TEMPERATURE.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

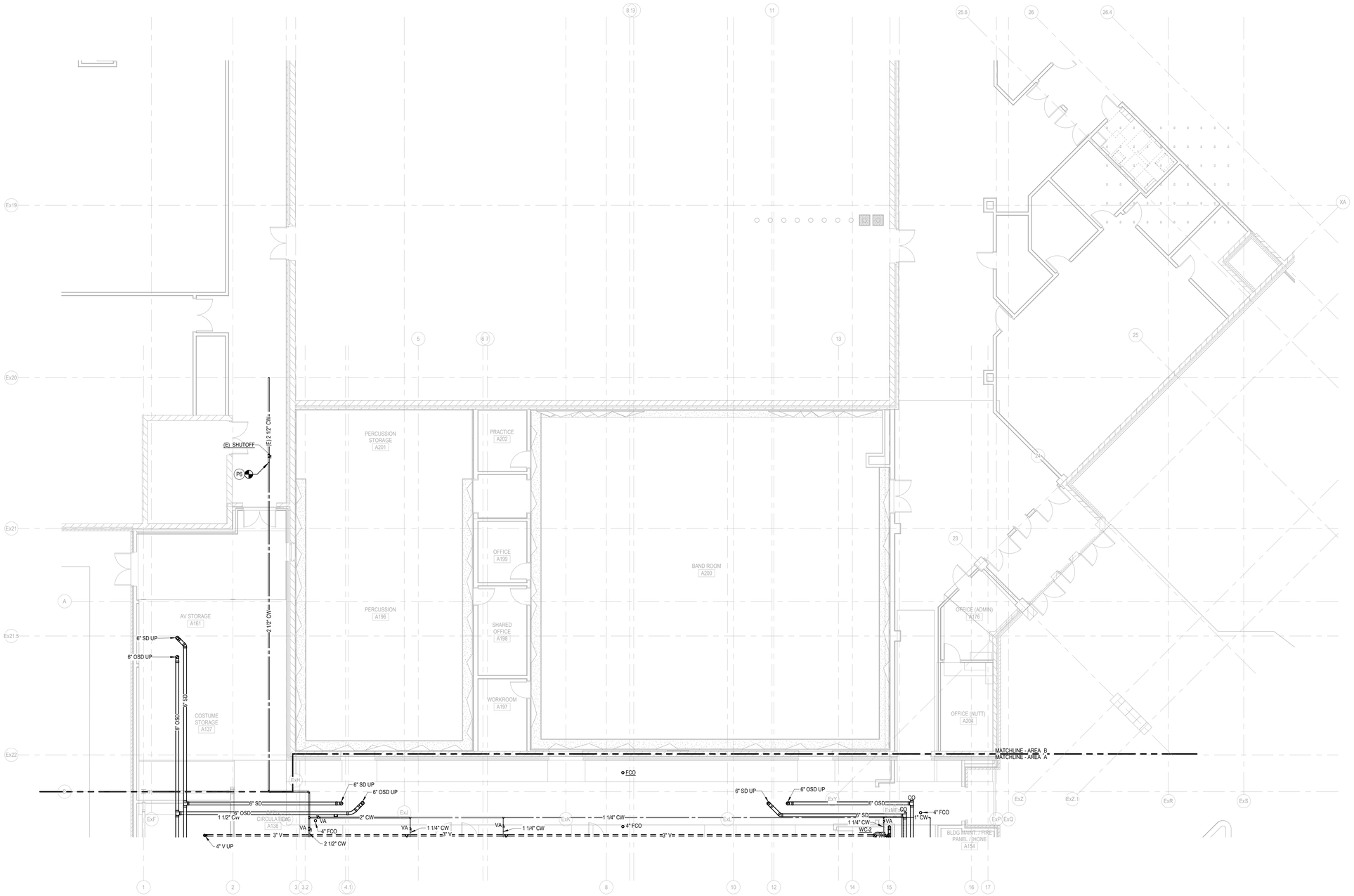
REVISIONS

39-23712-00

LEVEL 01 - AREA A - PLUMBING PLAN

P2.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:54 AM



N

LEVEL 01 - AREA B - PLUMBING PLAN

SCALE: 1/8" = 1'-0"

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

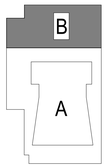
B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

SHEET NOTES

P6 EXTEND AND CONNECT TO EXISTING 2-1/2" DOMESTIC COLD WATER LINE. REMOVE AND REPLACE EXISTING VALVE WITH NEW. FIELD VERIFY EXACT LOCATION.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

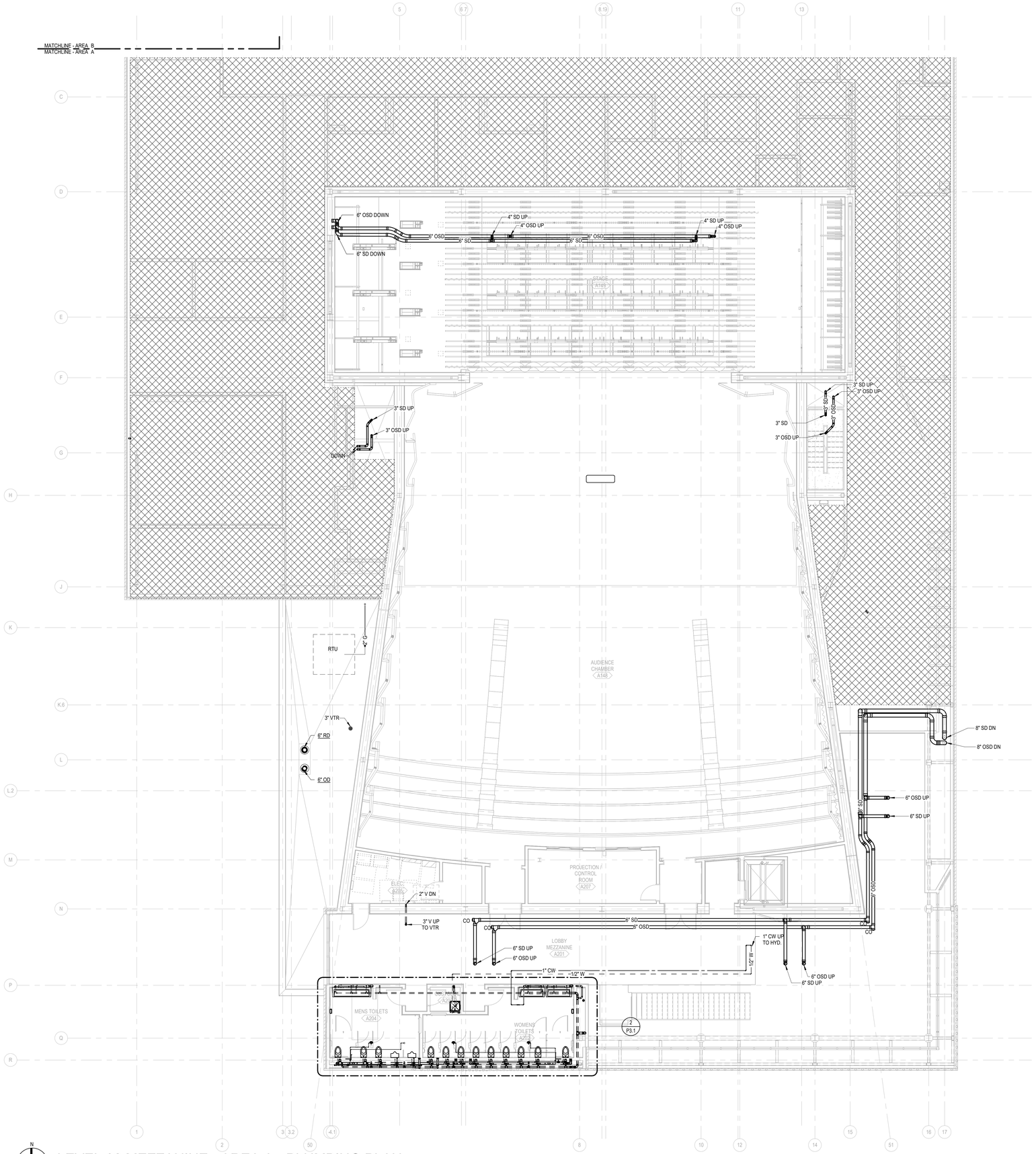
REVISIONS

39-23712-00

LEVEL 01 - AREA B - PLUMBING PLAN

P2.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:23:56 AM



LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN

SCALE: 1/8" = 1'-0"

PLUMBING GENERAL NOTES

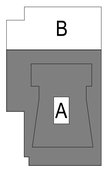
A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

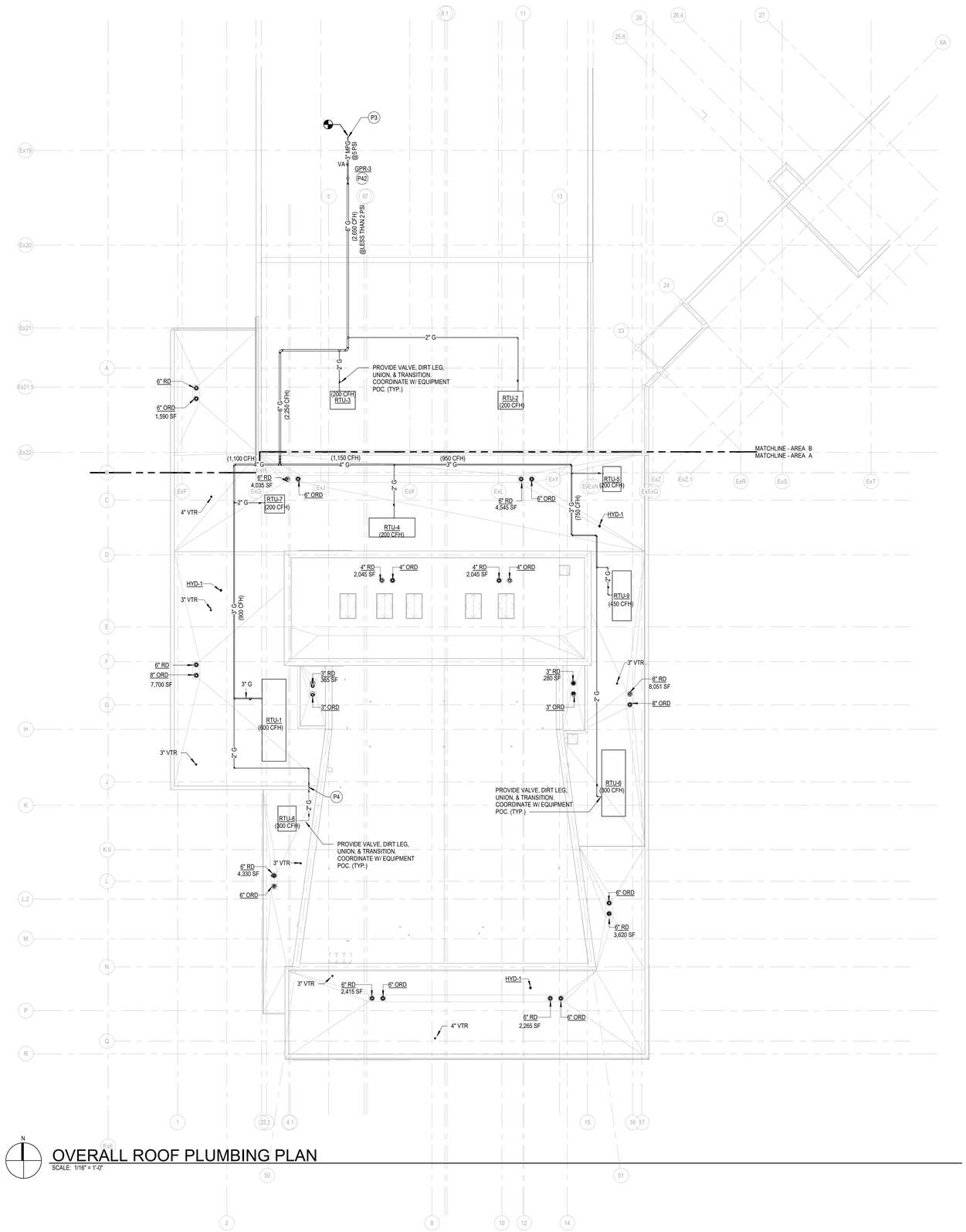
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN

P2.2MA

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:07 AM



OVERALL ROOF PLUMBING PLAN

SCALE: 1/16" = 1'-0"

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

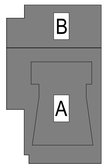
SHEET NOTES

P3 P.O.C. NEW 6" G LINE WITH SHUT-OFF VALVE AND GAS PRESSURE REGULATOR TO EXISTING MPG LINE ON EXISTING ROOF. VERIFY DOWNSTREAM EQUIPMENT PRESSURE REQUIREMENT WITH MANUFACTURER PRIOR SETTING REGULATOR MAXIMUM PRESSURE. FIELD VERIFY POINTS OF CONNECTION PRIOR TO INSTALLATION OF ANY PIPING.

P4 GAS PIPING UP AND OVER PARAPET. TYPICAL.

P42 SET OUTLET PSI TO EQUIPMENTS MANUFACTURER'S RECOMMENDED PSI

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

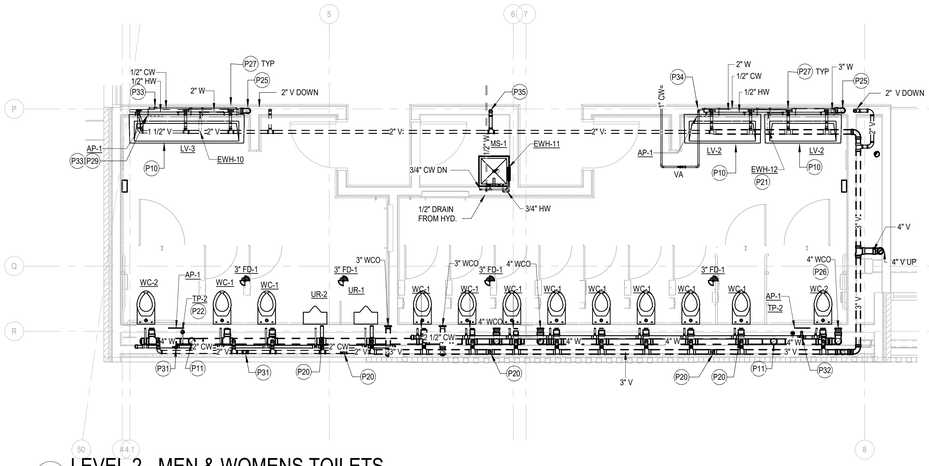
REVISIONS

39-23712-00

OVERALL ROOF PLUMBING PLAN

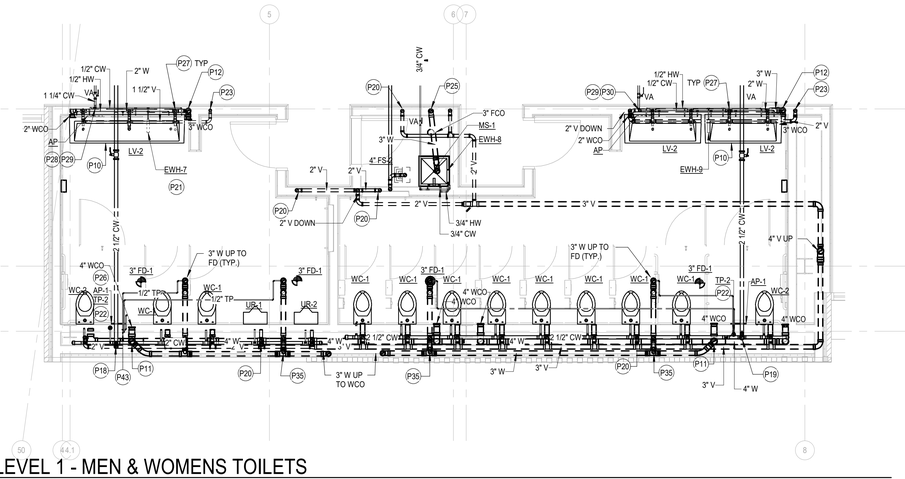
P2.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:12 AM



2 P3.1 LEVEL 2 - MEN & WOMENS TOILETS

SCALE: 1/4" = 1'-0"



1 P3.1 LEVEL 1 - MEN & WOMENS TOILETS

SCALE: 1/4" = 1'-0"

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

SHEET NOTES

P10	1/2" CW, 1/2" HW, 2" V EACH DRAIN AND FAUCET LOCATION.
P11	4" W UP.
P12	3" W UP.
P18	2" CW DOWN TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE FULL-SIZED HORIZONTAL IN WALL.
P19	2-1/2" CW DOWN TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE FULL-SIZED HORIZONTALLY IN WALL.
P20	2" VENT DOWN. TYPICAL.
P21	ELECTRIC WATER HEATER. INSTALL CONCEALED BEHIND LAVATORY APRON. ROUTE HW PIPING IN THE WALL. TYPICAL.
P22	TRAP PRIMER DEVICE ACCESSIBLE BEHIND ACCESS PANEL. CONTINUE 1/2" SUPPLY TUBING BELOW FLOOR DRAIN PRIMING CONNECTION. VALVED 3/4" CW
P23	2" VENT UP.
P25	3" W DOWN.
P26	4" WCO ABOVE WATER CLOSET RIM. TYPICAL.
P27	1-1/2" VENT DOWN. TYPICAL.
P28	3/4" UP AND DOWN.
P29	3/4" VALVE BEHIND ACCESS PANEL BELOW FIXTURE. TYPICAL.
P30	3/4" DOWN AND 1" UP.
P31	2" CW UP TO TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P32	2-1/2" CW UP TO TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P33	3/4" UP TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P34	1" CW UP. BRANCH 3/4" TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE 1" CW UP TO ROOF HYDRANT.
P35	2" VENT DOWN.
P43	TWO (2) 1/2" PRIMING TUBING UP TO DEVICE.

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 303b, Crandall, TX 75114

ISSUE FOR BID
AND PERMIT

2024.07.25

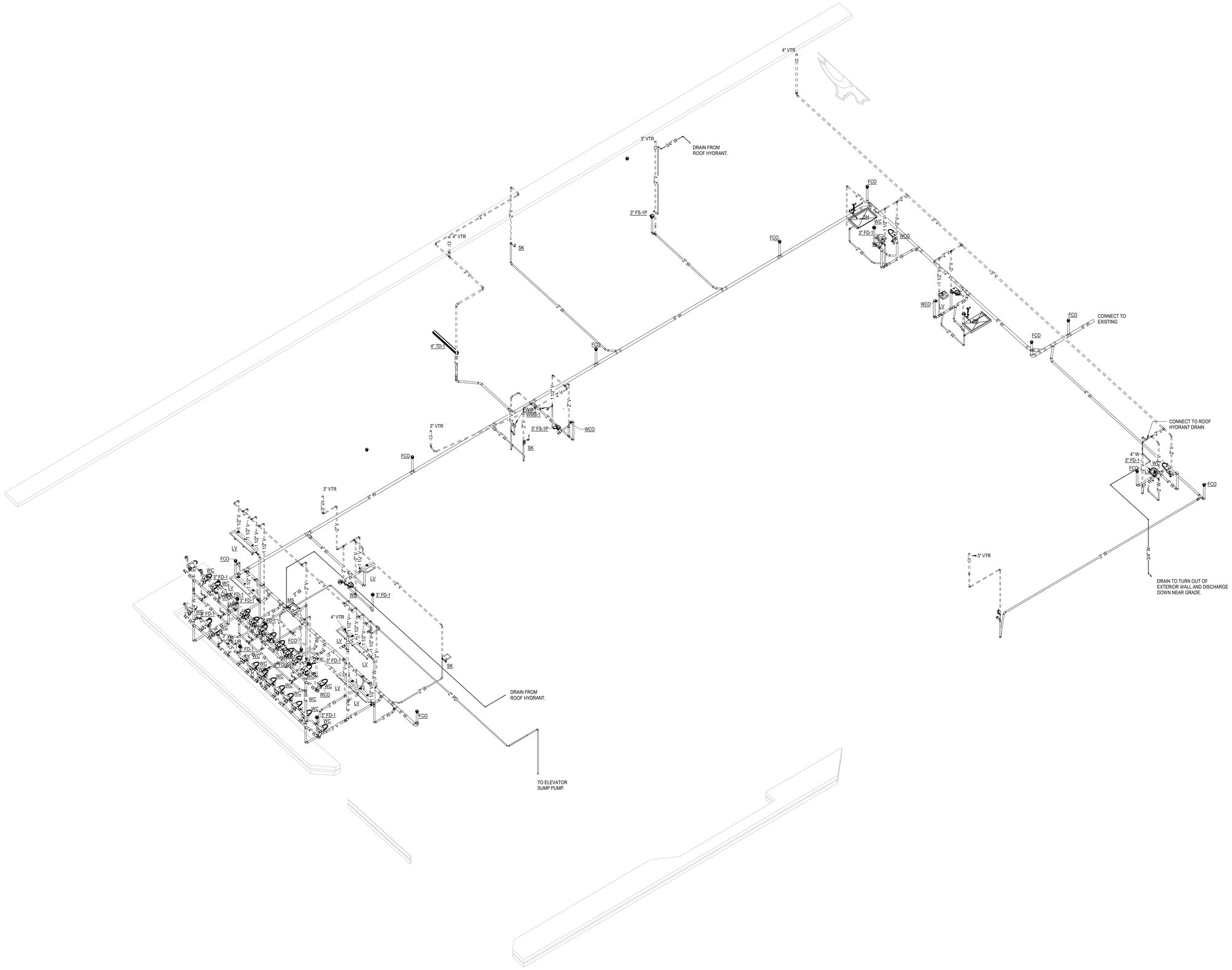
REVISIONS

39-23712-00

ENLARGED
PLUMBING PLANS

P3.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:19 AM



WASTE & VENT RISER DIAGRAM

SCALE:

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

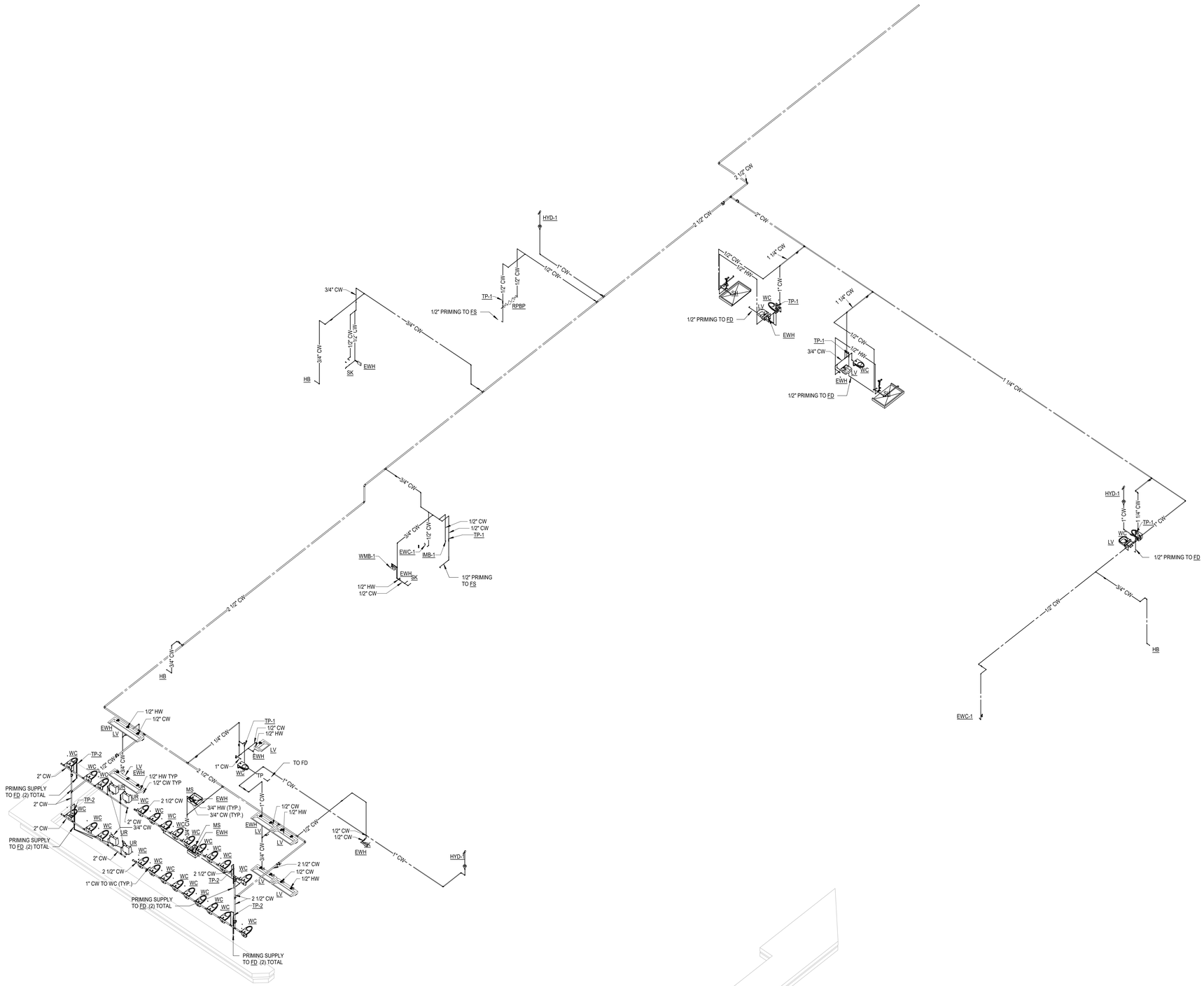
REVISIONS

39-23712-00

WASTE & VENT RISER DIAGRAMS

P4.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:23 AM



DOMESTIC WATER RISER DIAGRAM

SCALE:

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

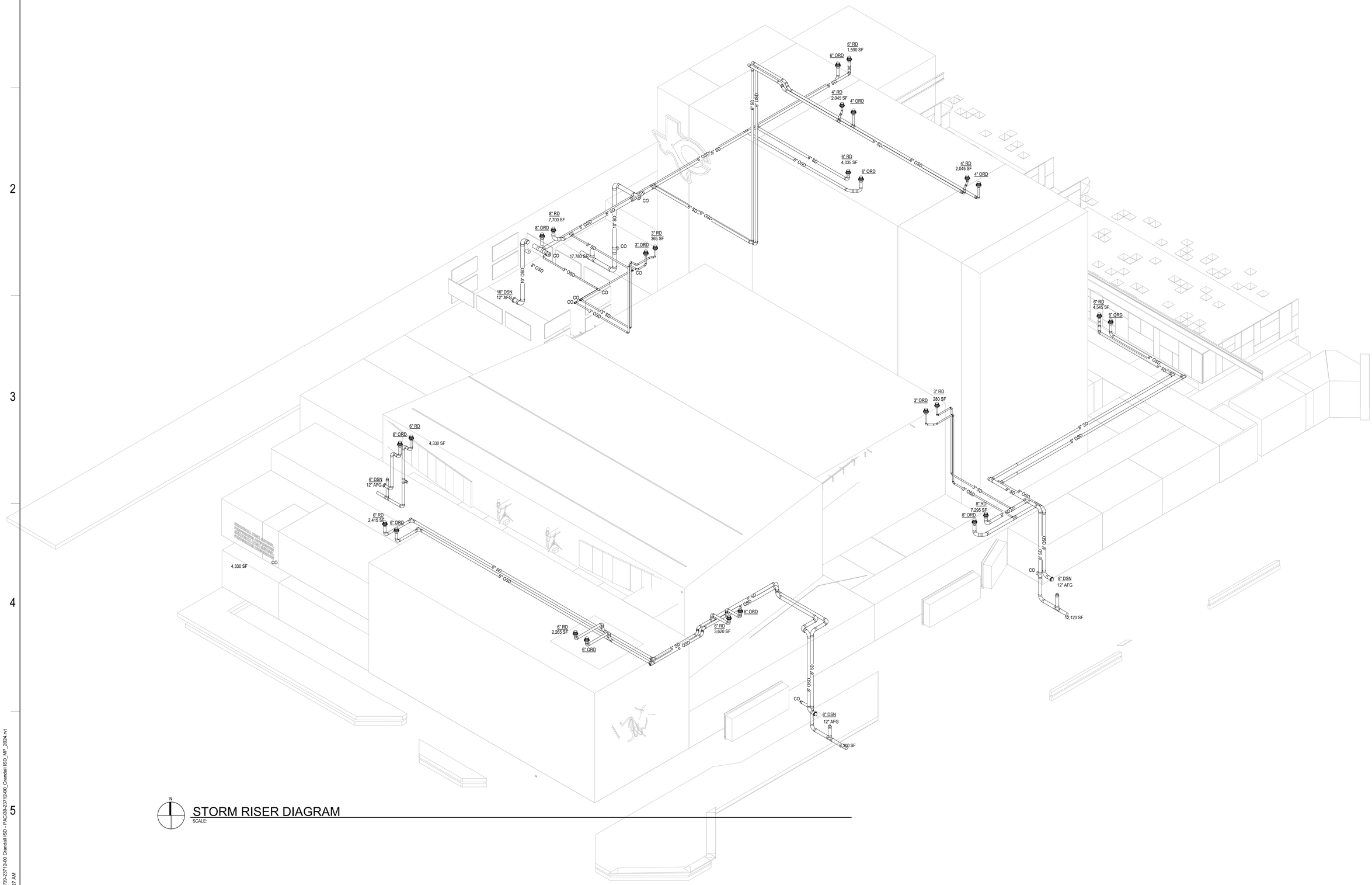
REVISIONS

39-23712-00

DOMESTIC RISER DIAGRAM

P4.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:25 AM



N

STORM RISER DIAGRAM

SCALE:

DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

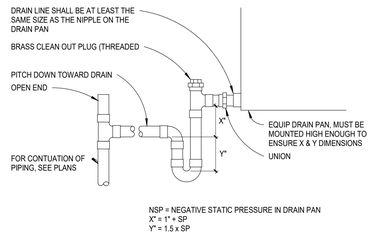
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

STORM RISER DIAGRAM

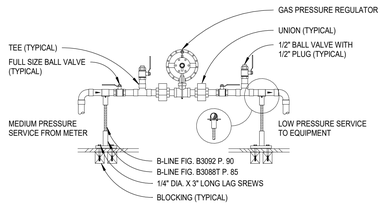
P4.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:27 AM

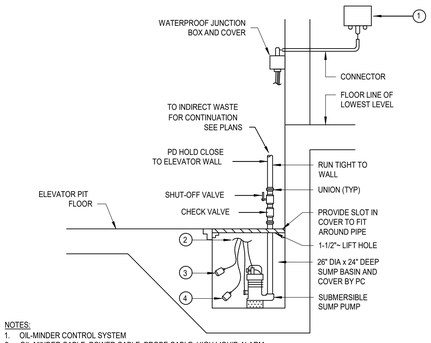


1 P5.1 CONDENSATE DRAIN P-TRAP DETAIL
NO SCALE

NOTE:
1. COORDINATE WITH ROOFING CONTRACTOR / MANUFACTURER TO ENSURE PROPER INSTALLATION IN ACCORDANCE WITH ALL ROOFING WARRANTEES, EXISITING OR NEW, AND SO AS NOT TO VOID SUCH WARRANTEES.
2. OVERALL LENGTH OF REGULATORY ASSEMBLY IS NOT TO EXCEED 48"

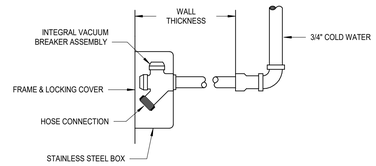


2 P5.1 GAS PRESSURE REGULATOR DETAIL
NO SCALE

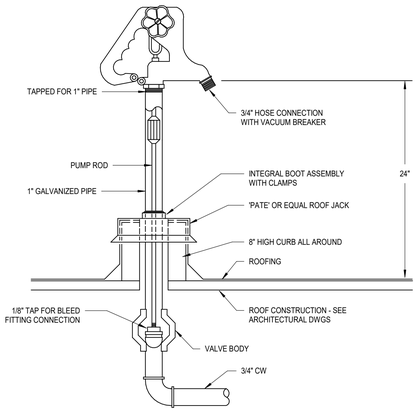


NOTES:
1. OIL-MINDER CONTROL SYSTEM
2. OIL-MINDER CABLE. POWER CABLE, PROBE CABLE, HIGH LIQUID ALARM CABLE, AND PUMP 'ON' CABLE.
3. HIGH LIQUID ALARM FLOAT.
4. PUMP 'ON' FLOAT.

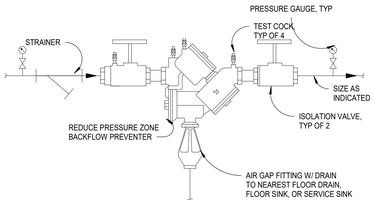
3 P5.1 Elevator Pit Sump Pump Detail
NO SCALE



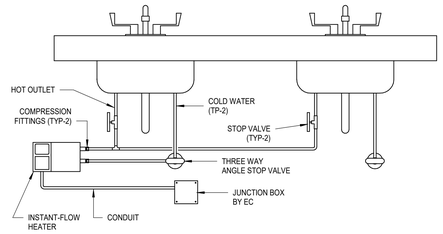
4 P5.1 Freeze-Proof Hose Bibb Detail
NO SCALE



5 P5.1 Roof Mounted Freeze Proof Hydrant
NO SCALE

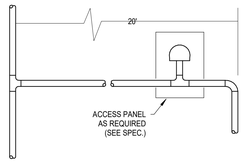


REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY
6 P5.1 NO SCALE



NOTES :
1. REFER TO PLANS FOR LOCATION, PIPE SIZES AND SCHEDULE.

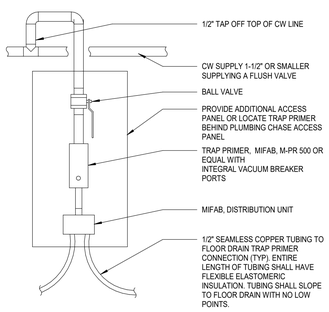
7 P5.1 Tankless Electric Water Heater (Multiple Fixtures)
SCALE: 1/8" = 1'-0"



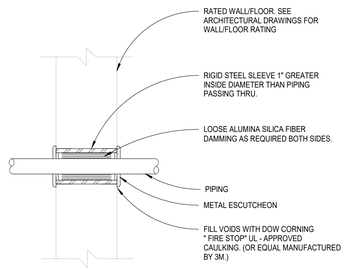
NOTE!
FOR BRANCH LINES 20' OR LESS INSTALL WATER HAMMER ARRESTORS BETWEEN LAST TWO FIXTURES.

FOR BRANCH LINES OVER 20' PROVIDE TWO WATER HAMMER ARRESTOR UNIT'S. THE SECOND ONE PLACED AT THE MIDPOINT OF THE LINE.

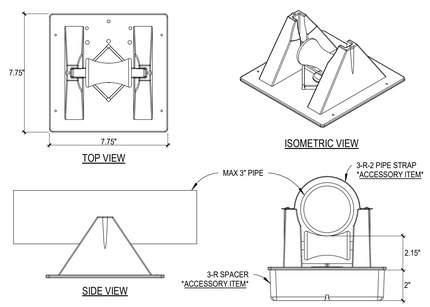
8 P5.1 Water Hammer Arrestor
SCALE: 1/8" = 1'-0"



9 P5.1 FLOOR DRAIN TRAP PRIMER DETAIL
SCALE: 12" = 1'-0"



10 P5.1 PIPE THRU RATED WALL DETAIL
SCALE: 1/8" = 1'-0"

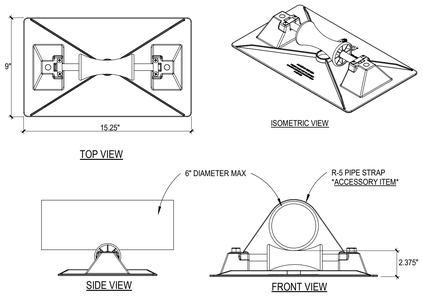


PRODUCT DESCRIPTION
A "roller-bearing" pipe support used to support roof-mounted pipes. Absorbs thermal expansion and contraction of pipes and prevents damage to the roof membrane. Pipes rest on a polycarbonate resin roller and a rod situated in a polycarbonate resin seat.

KEY INFORMATION
- MIRO Industries Model 1.5
- 3" ID maximum pipe capacity 3-3/4" OD maximum.
- Pipe clearance is 2-1/8", even load required, maximum load is 79 lbs.
- Recommended spacing is not to exceed 7 feet centers or code required spacing. Make certain each pipestand is properly elevated to even load weight at all pipestands.
- Base Material: MIRON TPC
- Axle and Roller Material: Polycarbonate

ACCESSORIES TO PROVIDE
- 3-R-2 pipe strap
- 3-R spacer
- Support pad or deck plate
- Eternabond: 2-sided tape

11 P5.1 ROOF PIPING SUPPORT DETAIL 3" DIAMETER PIPE OR LESS
SCALE: 1/8" = 1'-0"



PRODUCT DESCRIPTION
A "roller-bearing" pipe support used to support roof-mounted
piping. Design absorbs thermal expansion and contraction of
pipes preventing damage to the roof membrane. Pipes rest
on a self-lubricating polycarbonate resin roller and a stainless
steel axle.

KEY INFORMATION
- MIRO Industries Model 5-R
- 5" ID maximum pipe capacity 6" OD maximum
- Pipe clearance is 2-3/8", even load required, maximum load is 223 lbs.
- 8 per case, 19 lbs. per case
- Recommended spacing is not to exceed 10 feet centers or code allowable spacing. Make certain each pipestand is properly elevated to even load weight at all pipestands.
- Base Material: MIRON TPC
- Roller Material: Polycarbonate
- All metal parts are stainless steel or hot-dip galvanized

ACCESSORIES TO PROVIDE
- 5-R Pipe Strap - Order to Pipe O.D.
- Support pad or deck plate
- Eternabond: 2-sided tape

12 P5.1 ROOF PIPING SUPPORT DETAIL 4"-6" DIAMETER
SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

PLUMBING DETAILS

P5.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:28 AM

DOMESTIC FIXTURE SCHEDULE

NOTES:
1. PROVIDE KEYED ACCESS PANELS FOR VALVES AND TRAP PRIMER DEVICES IN TOILET ROOMS. ACCESS PANELS (AP-1) SHALL BE EQUAL TO WILLIAMS BROTHERS M# WB DWAL 414 SERIES FOR TILE WALLS. DRYWALL ACCESS PANELS TO BE EQUAL TO WILLIAMS BROTHERS M# WB DWAL 415 SERIES.
2. PROVIDE TRAP PRIMER DEVICE WITH SUPPLY DISTRIBUTION ON ALL FLOOR DRAINS, FLOOR SINKS, AND TRENCH DRAIN S. TRAP PRIMER TO BE EQUAL TO WATTS LFTP300-DU-DR. INSTALL DISTRIBUTION UNIT AS REQUIRED. CAP OFF ALL UN-USED SUPPLY CONNECTIONS.
4. ALL PUBLIC LAVATORY SINK AND HANDWASH SINK TO BE PROVIDE WITH TEMPER VALVE EQUAL TO LEONARD MODEL # LF-170 SERIES FOR SINGLE LAVATORY AND MODEL # LF-270 SERIES FOR MULTIPLE LAVATORIES.
5.

ID	DESCRIPTION	MATERIAL DESCRIPTION	FINISH	TRIM			MOTION SENSOR CONTROL	FLOW FIXTURE			PIPE CONNECTION SIZE (IN)					SPECIFICATION	BASIS OF DESIGN		NOTES
				MANUFACTURER	MODEL	TYPE		WATER FLOW (GPM)	WATER TEMP (°F)		WASTE			MINIMUM VENT	WATER		MANUFACTURER	MODEL	
									COLD	HOT	PRIMARY	AUX	INDIRECT		COLD	HOT			
EWC-1	WATER COOLER	GALVANIZED STEEL	STAINLESS STEEL CABINET				No	0.13	60		2"			1-1/2"	1/2"		BOTTLE FILLING STATION. THE UNIT SHALL BE COMPLETE WITH CABINET, MOUNTING FRAME, ELECTRONIC BOTTLE FILLER SENSOR CONTROLS, REFRIGERATING SYSTEM, AIR COOLED, 120 VOLT, 60 CYCLE, SINGLE PHASE POWER CONNECTION, FULLY AUTOMATIC, COMPLETE AND READY TO OPERATE.	ELKAY	LZWSM8K	
HB-1	HOSE BIBB	BRASS	CHROME PLATED	WOODFORD	B65	MANUAL	No	2.5	60						3/4"		EXTERIOR BOX & DOOR, CHROME PLATED, HOSE BIBB WITH VACUUM BREAKER, AUTOMATIC DRAININNG, 3/4" HOSE THREAD OUTLET, AND REMOVABLE "TEE" HANDLE. PROVIDE SHUTOFF VALVE IN COLD WATER SUPPLY AHEAD OF HOSE BIBB.	CHICAGO FAUCET CO	952-CP	
HYD-1	ROOF HYDRANT	CAST IRON	PAINTED	WOODFORD	RHY2-1-MS	MANUAL		2.5	60		1/2"				1"		NON-FREEZE TYPE ROOF HYDRANT, WITH ASSE 1052 DOUBLE CHECK BACKFLOW PREVENTER, VALVE ON THE INSIDE OF THE ROOF, HOSE CONNECTION WITH BACKFLOW PREVENTER, AND CLOCKING HANDLE ON THE OUTSIDE OF THE ROOF. ALL EXPOSED PARTS SHALL BE PAINTED. MAKE ARRANGEMENTS WITH THE GENERAL CONTRACTOR TO PROVIDE THE NECESSARY SUPPORT OF ROOF. PROVIDE SHUTOFF VALVE IN ACCESSIBLE LOCATION AND ROUTE DRAIN PIPE TO NEAREST FLOOR DRAIN.	WOODFORD	RHY2-MS	
IMB-1	ICE MAKER OUTLET BOX	ABS PLASTIC	WHITE				No	0.5	60						1/2"		FULLY RECESSED FIRE RATED ICE MAKER SUPPLY BOX WITH COVER. PROVIDE 1/4 TURN BALL VALVES AND WATER HAMMER ARRESTORS IN BOX.	SIOUX CHIEF	696-RG1010MF	
LV-1	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE STATION LAVATORY, DECK-MOUNTED FAUCET WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD1	FAUCET M# S53-3500
LV-2	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	TWO STATION LAVATORY, DECK-MOUNTED FAUCETS WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD2	FAUCET M# S53-3500
LV-3	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	THREE STATION LAVATORY. DECK-MOUNTED FAUCETS WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD3	FAUCET M# S53-3500
LV-4	LAVATORY - WALL HUNG - ADA	VITREOUS CHINA	EVERCLEAN	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	WALL HUNG LAVATORY, DECK-MOUNTED FAUCET WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	MURRO	FAUCET M# S53-3500
MS-1	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	CHICAGO FAUCET CO	897-CP	MANUAL	No	1	60	120	3"			1-1/2"	1/2"	1/2"	MOPSINK, FLOOR MOUNT, MOLDED STONE, STRAINER, 2" LEVER FAUCET. VACUUM BREAKER, INTERGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK, 3/4" HOSE THREAD, HOSE. HOSE BRACKET 832-AA MOP HANGER 889-CC. STAINLESS STEEL BUMPERGUARD, AND WALL GUARD.	FIAT	MSB-2424	
SH-1	SHOWER STALL - ADA			BRADLEY	HN300-EF-ST-A36-RSS-RSD-GB-CRH	MANUAL	No	2	60	115	2"			1-1/2"	1/2"	1/2"	THE INDIVIDUAL SHOWER STALL IS SPECIFIED IN ANOTHER DIVISION. PROVIDE A SHOWER DRAIN AS SPECIFIED IN "SOIL, WASTE AND VENT PIPING SYSTEMS." SHOWER SYSTEM WITH ASSE 1016 COMPLIANT TYPE "TIP" THERMOSTATIC/PRESSURE BALANCING COMBINATION VALVE WITH ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN. CONCEALED 3-PORT DIVERTER VALVE WITH LEVER HANDLE WITH ARM AND FLANGE, INTEGRAL STOPS, AND IN-LINE VACUUM BREAKER. HAND SHOWER SYSTEM WITH STANDARD HAND SHOWER, 60" FLEXIBLE METAL HOSE, AND 48" SLIDE BAR FOR HAND SHOWER MOUNTING. PROVIDE MANUFACTURER'S FLOW RATE RESTRICTOR ON SHOWERHEAD.	BY OTHERS	BY OTHERS	
SK-1	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK940AT08L2H	MANUAL	No	1	60	120	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, ADA COMPLIANT, FREE STANDING , 18 GAUGE. 2" LEVER SWIVEL FAUCET. ONE ELKAY MODEL NO. LK35 BASKET STRAINER, P-TRAP, TAILPIECES. SUPPLIES AND STOPS. INSULATE WATER AND WASTE TO MEET ADA REQUIREMENTS.	ELKAY	14-1C16X20-2-18X	
SK-2	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK940AT08L2H	MANUAL	No	1	60	120	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, ADA COMPLIANT, FREE STANDING, 18 GAUGE. 2" LEVER SWIVEL FAUCET. ONE ELKAY MODEL NO. LK35 BASKET STRAINER, P-TRAP, TAILPIECES. SUPPLIES AND STOPS. INSULATE WATER AND WASTE TO MEET ADA REQUIREMENTS.	ELKAY	B1C24X24X	
SK-3	HAND SINK	VITREOUS CHINA	WHITE	KOHLER	K-14408-4-CP	MANUAL	No	1.2	60	110	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, UNDERMOUNT, 18 GAUGE, WITH STRAINER AND FAUCET INCLUDED, P-TRAP, TAILPIECES, SUPPLIES AND STOPS. PROVIDE WITH HAWS MODEL NO. 7620 FAUCET MOUNTED EYEWASH AXION EYEPOD.	ELKAY	EHS-18X	
UR-1	URINAL	VITREOUS CHINA	WHITE	SLOAN	186 ESS 0.125 TMO LT	ELECTRONIC	Yes		60		2"			1-1/2"	3/4"		WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. SOLAR POWERED SENSOR ACTIVATED FLUSHOMETER.	AMERICAN STANDARD	WASHBROOK	
UR-2	URINAL - ADA	VITREOUS CHINA	WHITE	SLOAN	186 ESS 0.125 TMO LT	ELECTRONIC	Yes		40		2"			1-1/2"	3/4"		WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. SOLAR POWERED SENSOR ACTIVATED FLUSHOMETER. INSTALL AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	WASHBROOK	
WC-1	WATER CLOSET - WALL HUNG	VITREOUS CHINA	WHITE	SLOAN	111 ESS-1.28 TMO-LT	ELECTRONIC	Yes		60		3"			2"	1"		ELONGATED WALL HUNG WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. HARDWIRED, 24V, SENSOR ACTIVATED FLUSHOMETER, TRUE MECHANICAL OVERRIDE.	AMERICAN STANDARD	AFWALL	
WC-2	WATER CLOSET - WALL HUNG - ADA	VITREOUS CHINA	WHITE	SLOAN	111 ESS-1.28 TMO-LT	ELECTRONIC	Yes		60		4"			2"	1"		ELONGATED WALL HUNG WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. HARDWIRED, 24V, SENSOR ACTIVATED FLUSHOMETER, TRUE MECHANICAL OVERRIDE. INSTALL AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	AFWALL	
WMB-1	WASHING MACHINE OUTLET BOX	ABS PLASTIC	WHITE				No	0.5	60	120	2"			2"	1/2"	1/2"	FULLY RECESSED FIRE RATED WASHING MACHINE SUPPLY BOX WITH COVER. PROVIDE 1/4 TURN BALL VALVES AND WATER HAMMER ARRESTORS IN BOX. PROVIDE A 2" TRAPPED STANDPIPE IN CONCEALED WALL SPACE.	SIOUX CHIEF	696-R2313MF	
TP-1	TRAP PRIMER	BRASS	BRASS					2.5	60						1/2"		MIFAB NO. MR-500 TRAP PRIMER VALVE, BRASS BODY, ADJUSTABLE. COMPLETE WITH 1/2" COPPER TYPE "L" PIPE TO RECEPTOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, COMPLETE BEHIND ACCESS PANEL WITH SHUT-OFF VALVE.	MIFAB	MR-500	
TP-2	TRAP PRIMER (MULTI)	BRASS	BRASS					2.5	60						3/4"		MIFAB NO. MR-500 TRAP PRIMER VALVE, BRASS BODY, ADJUSTABLE, COMPLETE WITH MI-DU DISTRIBUTION UNIT, 1/2" COPPER TYPE "L" PIPE TO EACH RECEPTOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, COMPLETE BEHIND ACCESS PANEL WITH SHUT-OFF VALVE.	MIFAB	MR-500	
GPR-3	GAS PRESSURE REGULATOR	STEEL	STEEL														3" SIZE CONNECTION, 1/4" ORIFICE, 3/4" VENT WITH 5" TO 10" WATER COLUMN @ 5.0 PSI INLET PRESSURE AND A FLOW UP TO 4500 CFH. CAST IRON CONSTRUCTION.	MAXITROL	325-11L210G	

ELECTRIC WATER HEATER SCHEDULE

NOTES:
1. EWH-1 AND EWH-2 REQUIRES TWO (2) 40 AMP CONNECTIONS FOR THE MODEL SELECTED. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. WATER HEATER TO FACTORY SET TO 109 DEGREE F MAXIMUM.
3. WATER HEATER TO FACTORY SET TO 115 DEGREE F MAXIMUM.
4. WATER HEATER TO FACTORY SET TO 120 DEGREE F MAXIMUM.
5. PROVIDE TEMPERATURE LIMITING DEVICE ON HOT WATER SUPPLY TO LAVATORY(IES) SINKS. COMPLY WITH ASSE 1017 AND ASSE 1070....

ID	LOCATION		TYPE	HEATING CAPACITY (KW)	WATER SIDE DATA							HEATING ELEMENT DATA			ENERGY FACTOR (EF)	ELECTRICAL DATA					WEIGHT (LBS)	BASIS OF DESIGN		NOTES
					FLOW (GPM)		STORAGE		TEMPERATURE (°F)															
	NO.	NAME			DESIGN	MIN	RECOVERY (GAL/H)	VOL (GAL)	ENT	LVG	MAX TEMP RISE	QTY	KW	SCR		FLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH		MANUFACTURER	MODEL	
EWH-1			TANKLESS	16.6	2.2	0.3			0	0	47	0	17	Yes	0	40	40	45	208	1	0	EEMAX	EX1608TC-ML	1, 2, 5
EWH-2			TANKLESS	16.6	2.2	0.3			0	0	47	0	17	Yes	0	40	40	45	208	1	0	EEMAX	EX1608TC-ML	1, 2, 5
EWH-3			TANKLESS	3.6	0.5	0.3			0	0	33	0	4	Yes	0	17	17	20	208	1	0	EEMAX	AM005240T	2,5
EWH-4			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5
EWH-5			TANKLESS	24	3	0.7			0	0	53	0	24	Yes	0	68	68	70	208	3	0	EEMAX	EX2407ZT-FS	2,5
EWH-6			TANKLESS	3.6	0.5	0.3			0	0	33	0	4	Yes	0	17	17	20	208	1	0	EEMAX	AM005240T	2,5
EWH-7			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5
EWH-8			TANKLESS	24	3	0.7			0	0	53	0	24	Yes	0	68	68	70	208	3	0	EEMAX	EX2407ZT-FS	2,5
EWH-9			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5
EWH-10			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5
EWH-11			TANKLESS	24	3	0.7			0	0	53	0	24	Yes	0	68	68	70	208	3	0	EEMAX	EX2407ZT-FS	2,5
EWH-12			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5
EWH-13			TANKLESS	8.7	1.5	0.2			0	0	33	0	9	Yes	0	48	48	50	208	1	0	EEMAX	SPEX012240T-ML	2,5

FLOOR DRAIN SCHEDULE

NOTES:
1. FLOOR DRAINS AND FLOOR SINKS, AND TRENCH DRAINS TO BE PROVIDE WITH TRAP PRIMER CONNNECTION OR TRAP PRIMER ADAPTER. TRAP PRIMER DEVICE WITH DISTRIBUTION EQUAL TO WATTS MODEL # LF TP300-DR.
2. TRAP BARRIER SEAL DEVICE TO BE EQUAL TO ZURN MODEL # Z1072.

ID	DESCRIPTION	MATERIAL DESCRIPTION		PRIMER CONNECTION	WASTE PIPE SIZE	VENT PIPE SIZE	PRIMER PIPE SIZE	SPECIFICATION	BASIS OF DESIGN		NOTES
		DRAIN BODY	STRAINER						MANUFACTURER	MODEL	
FD-1	FLOOR DRAIN	EPOXY COATED CAST IRON	NICKEL BRONZE	No	3"	2"		EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES, ADJUSTABLE HEAVY DUTY ROUND HEEL PROOF NICKEL BRONZE STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FD-100-A	
FS-1	FLOOR SINK	EPOXY COATED CAST IRON	ALUMINUM		3"	2"	1/2 in	8" SQUARE X 6" DEEP SANITARY FLOOR SINK WITH WHITE ACID RESISTANT PORCELAIN ENAMEL COATED INTERIOR, LOOSE SET PORCELAIN ENAMEL COATED CAST IRON GRATE, ALUMINUM DOME BOTTOM STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FS-710	
FS-2	FLOOR SINK	EPOXY COATED CAST IRON	ALUMINUM		4"	2"	---	12" SQUARE X 10" DEEP SANITARY FLOOR SINK WITH WHITE ACID RESISTANT PORCELAIN ENAMEL COATED INTERIOR, LOOSE SET PORCELAIN ENAMEL COATED CAST IRON GRATE, ALUMINUM DOME BOTTOM STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FS-750	
TD-1	TRENCH DRAIN	PREAST CONCRETE			4"	---		PRE-SLOPED TRENCH DRAIN SYSTEM WITH 6IN WIDE X 144 IN LONG DUCTILE IRON FRAME, UV STABILIZED TALC-FILLED POLYPROPYLENE CHANNELS WITH 4IN NO HUB BOTTOM OR END OUTLETS. SYSTEM SHALL BE FRAME ANCHORED, WITH REINFORCED GALVANIZED SLOTTED GRATING TO SUIT DIN CLASS LOAD RATING. SYSTEM TO INCLUDE FRAME CONNECTORS, GRATE LOCKDOWNS, AND CONSTRUCTION COVERS. PROVIDE WITH MANUFACTURER'S CATCH BASIN WITH DUCTILE IRON GRATE. INSTALLATION TO BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND LOCAL BUILDING CODE. PROVIDE TRAP BARRIER SEAL.	WATTS	DEAD LEVEL D	

SUMP PUMP SCHEDULE

NOTES:
1. INCLUDES CONTROL PANEL A3SEE16010 WITH OIL SMART SWITCH, LIQUID SMART SENSOR AND ALARMS .
2. FURNISH ALL WIRING, CONDUITS, SUPPORTS, AND ASSOCIATED APPURTENANCES FOR COMPLETE INSTALLATION.
3. POWER CORD TYPE. COORDINATE ELECTRICAL OUTLETS WITH ELECTRICAL CONTRACTOR.
4.

ID	LOCATION		SYSTEM NAME	TYPE	PUMP DATA						BASIN DIMENSIONS		ELECTRICAL DATA					WEIGHT (LBS)	BASIS OF DESIGN		NOTES
	NO.	NAME			FLOW (GPM)	HEAD (FT)	MOTOR				DEPTH (FT-IN)	DIA ("ø)	FLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH		MANUFACTURER	MODEL	
							QTY	HP	RPM	ECM											
SP-1			PD 1	SUBMERSIBLE	55	40	0	0.75	3450	No	0' - 0"	20"	3.7	4.6	5	200	3	70	B&G	ELKT2EC1038	1, 2, 3

STORM DRAIN SCHEDULE

NOTES:
1.
2.
3.
4.
5.

DESCRIPTION	MATERIAL DESCRIPTION		SPECIFICATION	BASIS OF DESIGN		NOTES
	BODY	STRAINER		MANUFACTURER	MODEL	
ORD	LACQUERED CAST IRON	ALUMINUM	DEEP SUMP ROOF DRAIN WITH 15" DIAMETER ANCHOR FLANGE, 2" HIGH CAST IRON EXTERNAL COMBINED WATER DAM AND WATERPROOFING MEMBRANE CLAMP RING, AND STANDARD SELF-LOCKING DOME STRAINER WITH A FREE AREA OF 125 SQUARE INCHES.	MIFAB	R1200-R	
RD	LACQUERED CAST IRON	ALUMINUM	DEEP SUMP ROOF DRAIN WITH 15" DIAMETER ANCHOR FLANGE, LARGE CAST IRON WATERPROOFING MEMBRANE CLAMP RING WITH INTEGRAL GRAVEL STOP, AND STANDARD SELF-LOCKING DOME STRAINER WITH A FREE AREA OF 125 SQUARE INCHES.	MIFAB	R1200	
6" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLAGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-940	
8" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLAGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-948	
10" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLAGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-9410	

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 1:24:29 AM

DLR GROUP
© DLR Group
STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

PLUMBING SCHEDULES

P6.1

GENERAL NOTES

1. REMOVE ALL UNUSED PIPING, DUCTWORK AND ACCESSORIES.
2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING, PRIOR TO FINAL BID, ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS WITHIN TENANT SPACE AND WITHIN CLOSE PROXIMITY OF TENANT SPACE.
3. THE MECHANICAL CONTRACTOR SHALL PERFORM SERVICE AND REPAIR ON THE EXISTING EQUIPMENT AND ITS ACCESSORIES AS FOLLOWS: CLEAN ALL COILS, REPLACE THE FILTERS AND BELTS, INSPECT, REPAIR, OR REPLACE THE ECONOMIZERS, DRIVES AND FAN BEARINGS, MOTORS, CONTROL COMPONENTS, VALVES AND ANY OTHER ITEM NECESSARY FOR A COMPLETE AND PROPER OPERATING SYSTEM. THIS CONTRACTOR SHALL ALSO VISIT THE SITE, PRIOR TO FINAL BIDDING, AND VERIFY ALL EXISTING SITE CONDITIONS. PROVIDE ALL MATERIAL AND COMPONENTS AS NEEDED TO BRING THE UNITS TO FULL COMPLIANCE OF THE LANDLORD'S CRITERIA AND LOCAL AUTHORITY HAVING JURISDICTION.
4. WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.
5. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, AND EQUIPMENT TO PREVENT CONFLICTS.
6. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL THE CONDITIONS BOTH EXISTING AND THOSE ILLUSTRATED BY THESE DOCUMENTS AS WELL AS THOSE WHICH CAN BE REASONABLY ANTICIPATED INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, ELECTRICAL, VENTILATION, PLUMBING, AND OTHER SYSTEMS INVOLVED ON THIS PROJECT.
7. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.
8. LOCATE EQUIPMENT REQUIRING ACCESS 2'-0" MAXIMUM ABOVE CEILING.
9. ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.
10. LOCATE DUCTWORK, PIPING AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS. TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.
11. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS. REFER TO SPECIFICATION.
12. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
13. ADJUST PIPING AND DUCTWORK SIZES TO PROPERLY CONNECT TO MECHANICAL EQUIPMENT.
14. REFER TO PLUMBING SERIES DRAWINGS FOR GAS AND A.C. CONDENSATE DRAIN PIPING.
15. PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
16. FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.
17. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF QUALITY AND WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.
18. LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID INTERFERENCE IN THE FIELD.
19. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.

GENERAL HVAC NOTES

1. CONTRACTOR SHALL LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 48" AFF MAX, A MINIMUM OF 8" FROM LIGHT SWITCH.
2. CONDENSATE DRAINS SHALL BE SUPPLIED FOR ALL COOLING EQUIPMENT. CONTRACTOR SHALL ENSURE PROPER INSTALLATION AND DRAINAGE AS REQUIRED BY FEDERAL, STATE, AND LOCAL CODES. CONDENSATE PIPING SHALL BE TYPE "L" COPPER.
3. PROVIDE A 4" HOUSEKEEPING PAD FOR EACH PIECE OF MECHANICAL EQUIPMENT. COORDINATE SIZES WITH MECHANICAL EQUIPMENT SELECTED.
4. ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE RATED FOR PRESSURE CLASS OF 2" W.G. UNLESS NOTED OTHERWISE.
5. THIS CONTRACTOR SHALL BE REQUIRED TO REPLACE FILTERS ON HVAC EQUIPMENT AFTER ALL DUST PRODUCING CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO THE FINAL PUNCH.

SHEET INDEX

M0.1	MECHANICAL SYMBOLS, ABBREVIATIONS & NOTES
MD1.1B	LEVEL 01 - AREA B - HVAC DEMOLITION PLAN
M1.1A	LEVEL 01 - AREA A - HVAC PLAN
M1.1B	LEVEL 01 - AREA B - HVAC PLAN
M1.2MA	LEVEL 02 MEZZANINE - AREA A - HVAC PLAN
M1.3A	LEVEL 03 - AREA A - ROOF MECHANICAL PLAN
M1.3B	LEVEL 03 - AREA B - MECHANICAL PLAN
M1.4B	LEVEL 04 - AREA B - ROOF MECHANICAL PLAN
M5.1	CONTROLS DIAGRAMS
M5.2	CONTROLS DIAGRAMS
M5.3	CONTROLS DIAGRAMS
M7.1	MECHANICAL DETAILS
M7.2	MECHANICAL DETAILS
M8.1	MECHANICAL SCHEDULES

GENERAL SYMBOLS

	POINT OF DISCONNECT - DEMOLITION REMOVED FROM EXISTING
	POINT OF CONNECTION - NEW CONNECTS TO EXISTING
	AREA NOT IN CONTRACT

PIPING ANNOTATIONS

SCHEMATIC	3D	DESCRIPTION
		EXISTING TO REMAIN - (E) or EXIST
		ITEM TO BE DEMOLISHED - (D) or DEMO
18" CHWS	18" CHWS	PIPE SIZE TAG (DIAMETER WITH SYSTEM NAME)
		ABOVE GROUND PIPING
		BELOW GROUND PIPING
1/8" / 12" SLOPE	1/8" / 12" SLOPE	PIPE SLOPE
IE: -93' - 1"	IE: -93' - 8"	PIPE INVERT ELEVATION
DDC-xx		MECHANICAL EQUIPMENT TAG
		MECHANICAL EQUIPMENT CLEARANCE

PIPING VALVES AND FITTINGS

SCHEMATIC	3D	DESCRIPTION
		PIPE DROP
		PIPE RISE
		PIPE TEE DOWN
		PIPE TEE UP
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		PIPE CAP
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
		FLOW DIRECTION
		EXPANSION JOINT
		FLEXIBLE CONNECTION
		UNION
		DIRECTION OF PIPE PITCH
		AQUASTAT
		EXPANSION LOOP
		BALANCING VALVE
		BALANCING VALVE W/ METERING POINTS
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		STEAM TRAP
		GATE VALVE
		CIRCUIT SETTER
		MANUAL AIR VENT
		AUTOMATIC AIR VENT
		PLUG VALVE
		PRESSURE GAUGE
		SOLENOID VALVE
		ANGLE VALVE
		AUTOMATIC CONTROL VALVE 2-WAY
		AUTOMATIC CONTROL VALVE 3-WAY
		AUTOMATIC FLOW CONTROL VALVE
		STRAINER
		PRESSURE AND TEMPERATURE TEST PORT
		THERMOMETER
		PRESSURE REDUCING VALVE (WATER SYSTEMS) PRESSURE REGULATING VALVE (GAS SYSTEMS)
		RELIEF VALVE
		FLOW MEASURING DEVICE
		BACKFLOW PREVENTER
		UNION

HVAC SYMBOLS

SCHEMATIC	3D	DESCRIPTION
		DIFFUSER (SUPPLY)
		GRILLE (RETURN)
		GRILLE (EXHAUST)
		WALL REGISTER
		LINEAR DIFFUSER (SLOT)
AFMS	AFMS	AIR FLOW MEASURING STATION
BDD	BDD	BACKDRAFT DAMPER
RD	RD	BAROMETRIC RELIEF DAMPER
DP	DP	DIFFERENTIAL PRESSURE SENSOR
DD	DD	DUCT DETECTOR
GD	GD	GRAVITY DAMPER
M	M	MOTORIZED DAMPER
PR	PR	PRESSURE REDUCING DAMPER
SB	SB	SECURITY BARS
SP	SP	STATIC PRESSURE SENSOR
VD	VD	VOLUME DAMPER
RVD	RVD	REMOTE VOLUME DAMPER
F	F	FIRE DAMPER
FS	FS	COMBINATION FIRE / SMOKE DAMPER
S	S	SMOKE DAMPER
		ROUND DUCT UP
		RECTANGULAR DUCT UP
		OVAL DUCT UP
		ROUND DUCT DOWN
		RECTANGULAR DUCT DOWN
		OVAL DUCT DOWN
		MITERED ELBOW WITH VANES
		MITERED ELBOW WITHOUT VANES
		RADIUSED ELBOW
		TEE WITH VANES
		RADIUSED TEE
		DUCT WITH INSULATION
		DUCT WITH LINING
		DUCT IS FABRIC
		FLEXIBLE DUCT
		TRANSFER DUCT
		DUCT SMOKE DETECTOR
		SUPPLY ARROW
		RETURN ARROW
		EXHAUST ARROW
UC 100		DOOR UNDERCUT ARROW WITH CFM
D-1 12"x12" 200 CFM		DIFFUSER, REGISTER OR GRILLE TAG NECK SIZE (00"x00" - SQ / RECT) (0"ø ROUND) AIR FLOW (CUBIC FEET PER MINUTE)
24"x12"		TYPICAL DUCT - SIZE AS INDICATED (WIDTH x DEPTH) SIZE INDICATED FREE AREA
DDC-xx		MECHANICAL EQUIPMENT TAG
		MECHANICAL EQUIPMENT CLEARANCE
CO2		CARBON DIOXIDE SENSOR - WALL MOUNTED
CO2		CARBON DIOXIDE SENSOR - CEILING MOUNTED
CO		CARBON MONOXIDE SENSOR - WALL MOUNTED
CO		CARBON MONOXIDE SENSOR - CEILING MOUNTED
H		HUMIDISTAT - WALL MOUNTED
H		HUMIDISTAT - CEILING MOUNTED
NO2		NITROGEN DIOXIDE SENSOR - WALL MOUNTED
NO2		NITROGEN DIOXIDE SENSOR - CEILING MOUNTED
P		PRESSURE SENSOR - WALL MOUNTED
P		PRESSURE SENSOR - CEILING MOUNTED
T		TEMPERATURE SENSOR - WALL MOUNTED
T		TEMPERATURE SENSOR - CEILING MOUNTED
T		THERMOSTAT - WALL MOUNTED
T		THERMOSTAT - CEILING MOUNTED

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

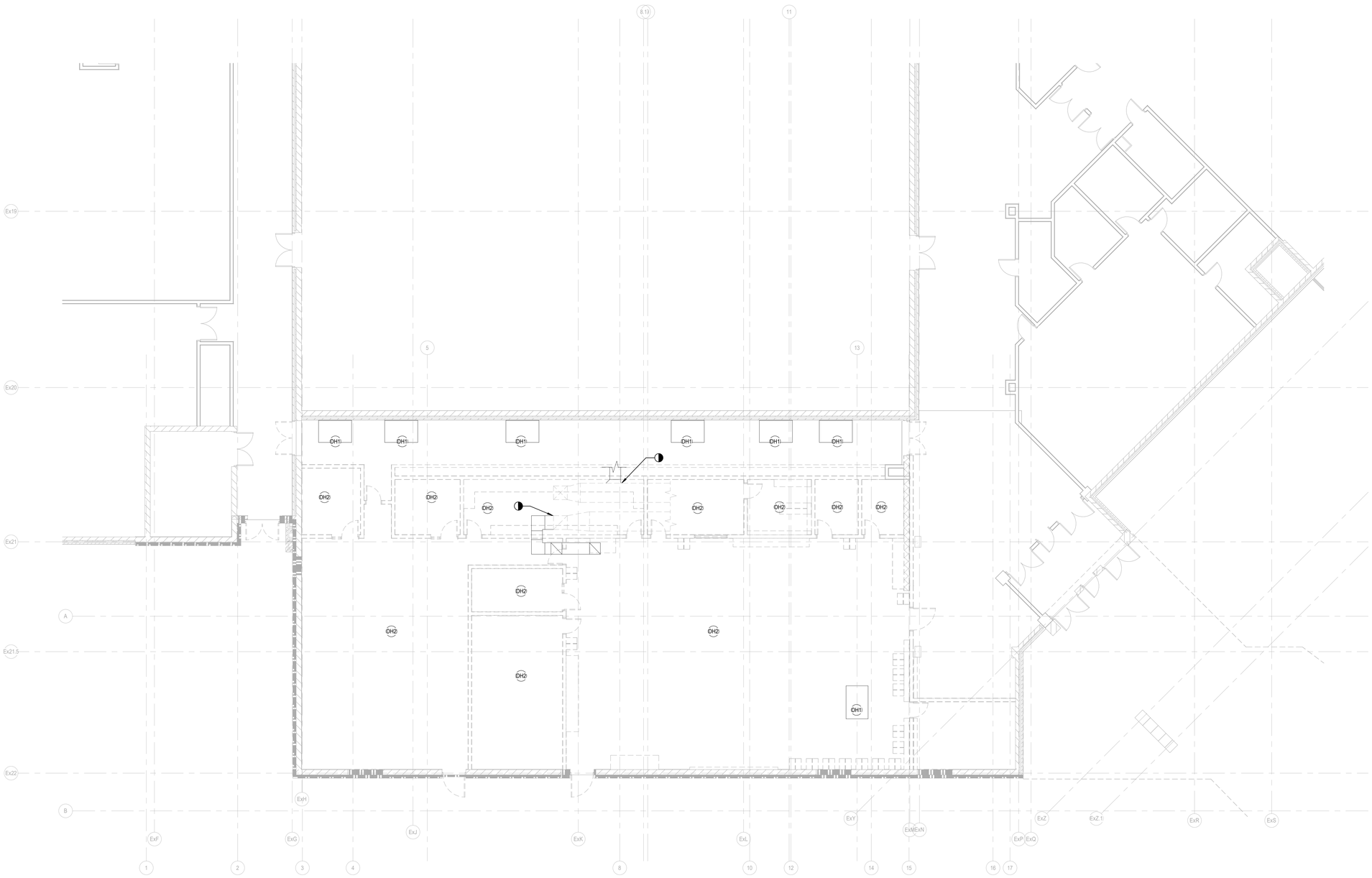
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

MECHANICAL SYMBOLS, ABBREVIATIONS & NOTES

M0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:22 AM



N

LEVEL 01 - AREA B - HVAC DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FULL-TONED EQUIPMENT AND/OR PIPING AND DUCTWORK SHALL BE REMOVED. ALL EQUIPMENT AND/OR PIPING AND DUCTWORK DRAWN HALF TONED IS EXISTING TO REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.

B. LEAVE ALL SPACES, INCLUDING ALL STRUCTURAL SYSTEMS, ROOM FINISHED, FIXTURES, AND EQUIPMENT (WHETHER BUILT IN OR MOVEABLE) IN THE SAME GENERAL CONDITION AS IT IS FOUND AT THE START OF THE WORK. ALL FIXTURES AND EQUIPMENT MOVED OR DISTURBED IN CONNECTION WITH THE WORK SHALL BE PROPERLY INSTALLED IN THE MANNER CORRESPONDING TO THE ORIGINAL METHOD, AND ALL DAMAGE TO EXISTING FIXTURES, INSULATING MATERIALS, AND EQUIPMENT SHALL BE FULLY REPAIRED.

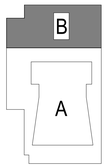
C. LOCATION OF EXISTING MECHANICAL SYSTEMS TAKEN FROM COMBINATION OF A FIELD SURVEY AND ORIGINAL DRAWINGS. THE ACTUAL LOCATIONS OF THE DUCTWORK OR PIPING MAY VARY SLIGHTLY DUE TO AS-BUILT CONDITIONS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS IN THE FIELD PRIOR TO ORDERING ANY MATERIALS FOR CONSTRUCTION. ANY DUCTWORK OR PIPING TO BE REMOVED SHALL BE REMOVED IN ITS ENTIRETY. NO DUCTWORK OR PIPING SHALL BE ABANDONED IN PLACE UNLESS IT HAS BEEN SPECIFICALLY CALLED OUT TO BE ABANDONED IN PLACE. IF UNEXPECTED CONDITIONS ARE ENCOUNTERED, NOTIFY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL BEAR THE COSTS OF DAMAGE RESULTING FROM FAILURE TO EXERCISE REASONABLE CARE FOR CONTINUING OPERATIONS WITHOUT NOTIFYING THE OWNER.

SHEET NOTES

DH1 REMOVE AND DISPOSE OF EXISTING HEAT PUMP UNIT INCLUDING ALL ASSOCIATED PIPING AND CONTROLS.

DH2 REMOVE AND DISPOSE OF ALL EXISTING DUCTWORK AND ASSOCIATED AIR DEVICES IN THIS AREA.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

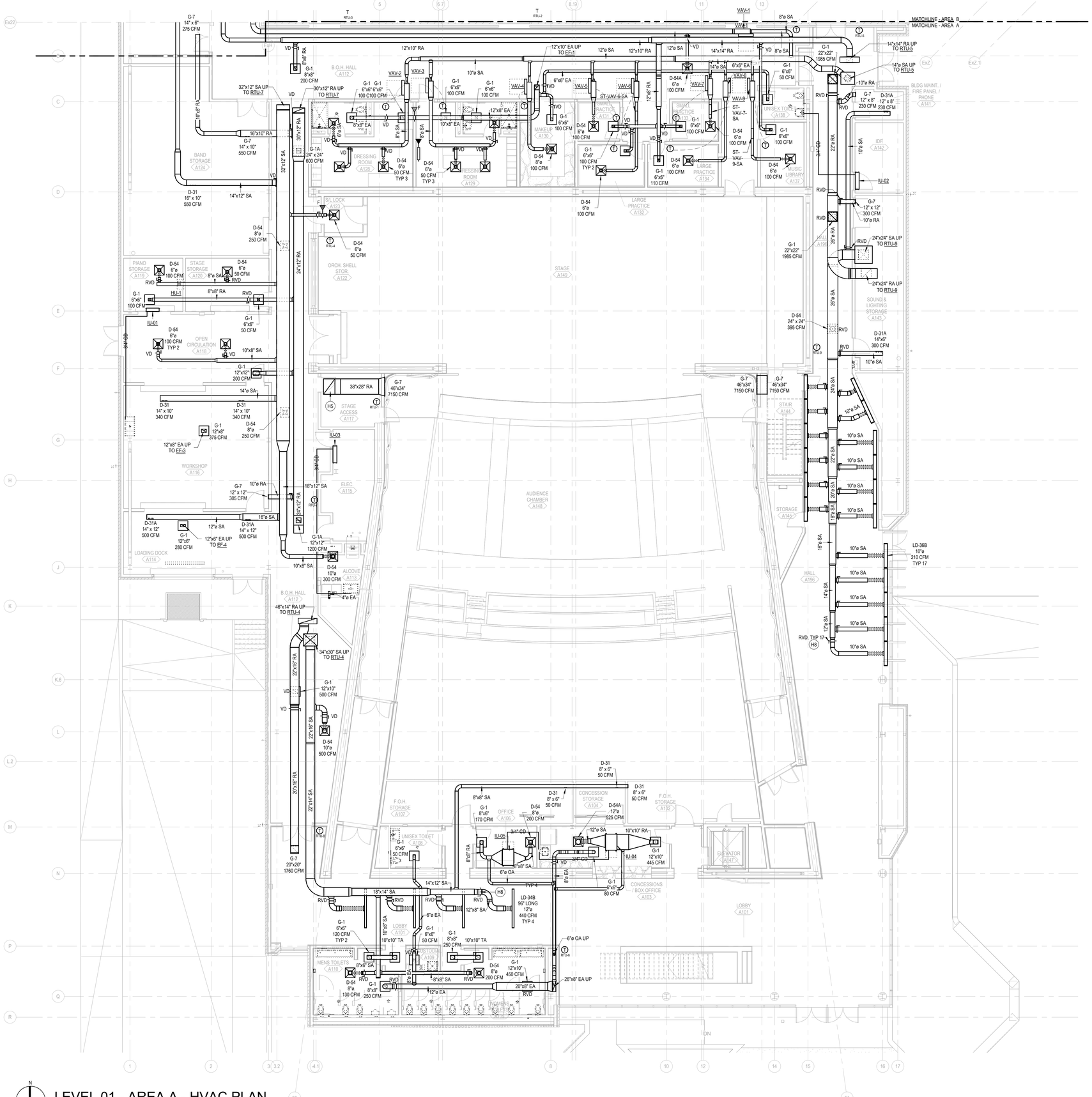
REVISIONS

39-23712-00

LEVEL 01 - AREA B - HVAC DEMOLITION PLAN

MD1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:25 AM



LEVEL 01 - AREA A - HVAC PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

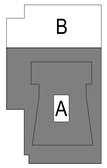
K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H5 38"X28" RA UP, CONNECTING TO 46"X38" RA. SEE M1.2A FOR CONTINUATION.

H8 REMOTE ACTUATED VOLUME DAMPER. PROVIDE YOUNG REGULATOR 270-275 OR APPROVED EQUIVALENT. MOUNT ACTUATOR IN PLENUM OF CORRESPONDING LINEAR DIFFUSER.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

LEVEL 01 - AREA A - HVAC PLAN

M1.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:29 AM

LEVEL 01 - AREA B - HVAC PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

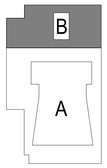
J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H7 DUCT UP TO MAIN BRANCH IN HIGH CEILING. SEE M1.3B. TYPICAL ALL DIFFUSERS AND GRILLES IN THIS SPACE.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

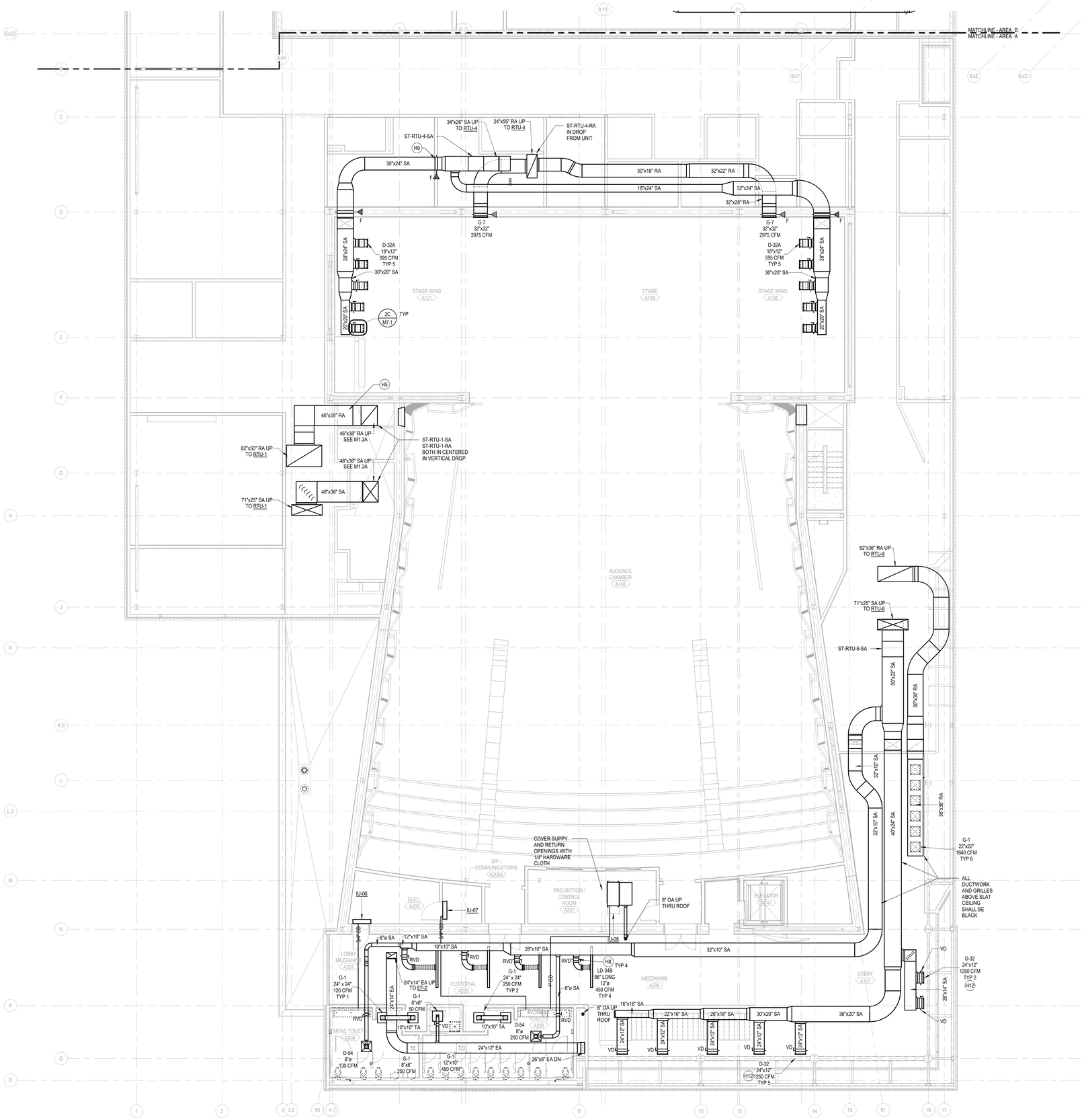
REVISIONS

39-23712-00

LEVEL 01 - AREA B - HVAC PLAN

M1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:30 AM



LEVEL 02 MEZZANINE - AREA A - HVAC PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABLITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

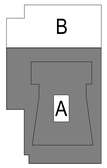
H5 38"X28" RA UP, CONNECTING TO 46"X38" RA. SEE M1.2A FOR CONTINUATION.

H8 REMOTE ACTUATED VOLUME DAMPER. PROVIDE YOUNG REGULATOR 270-275 OR APPROVED EQUIVALENT. MOUNT ACTUATOR IN PLENUM OF CORRESPONDING LINEAR DIFFUSER.

H9 PROVIDE FIRE DAMPER FOR BOTH SUPPLY AND RETURN PENETRATION THROUGH WALL.

H12 ADJUST GRILLE TO THROW DOWN AT 30 DEGREES.

KEY PLAN



DLR GROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

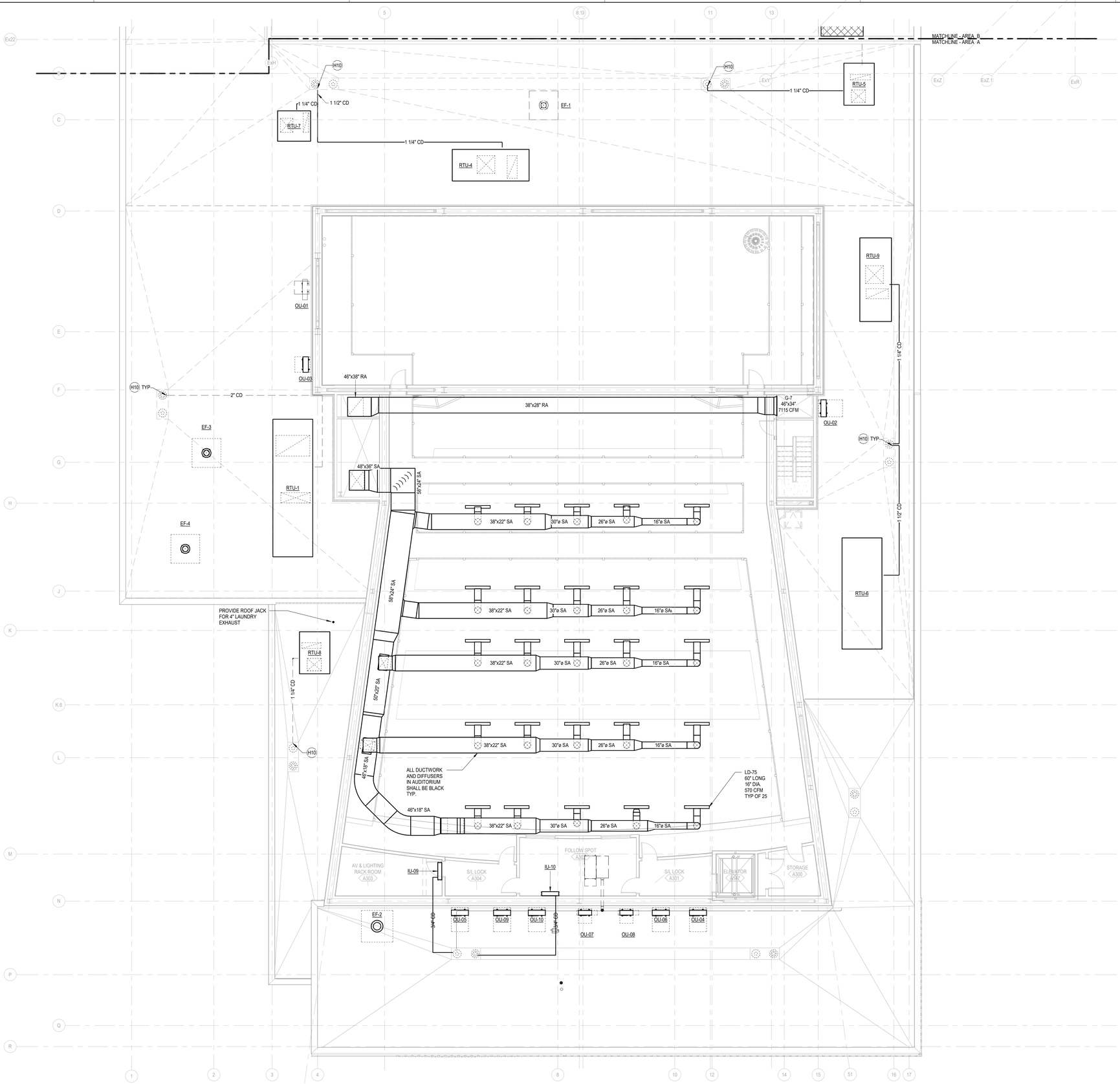
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - HVAC PLAN

M1.2MA

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:33 AM



LEVEL 03 - AREA A - ROOF MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

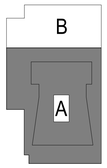
J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H10 ROUTE CONDENSATE LINE TO NEAREST ROOF DRAIN AND TERMINATE WITH 1" AIR GAP.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

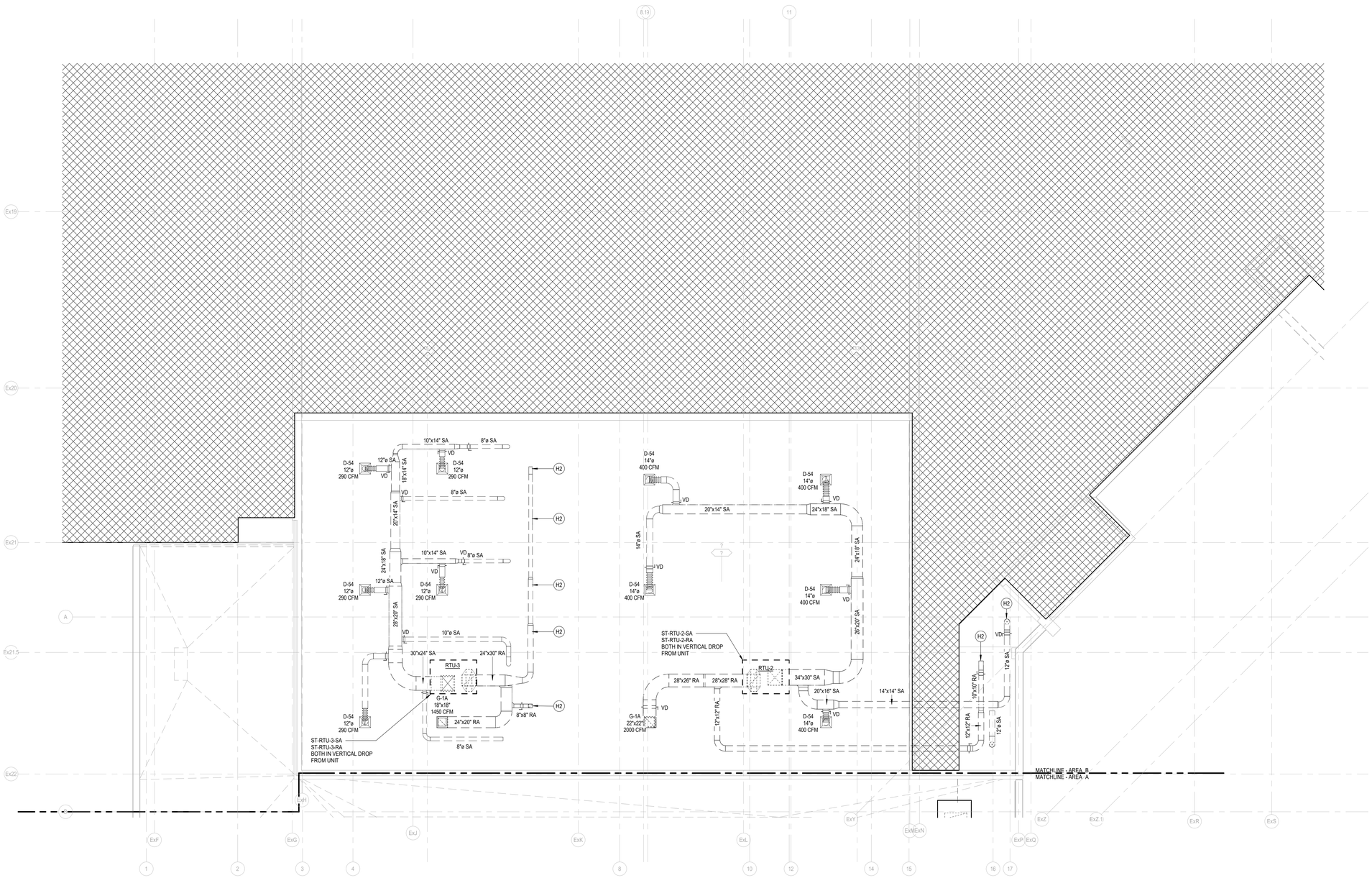
REVISIONS

39-23712-00

LEVEL 03 - AREA A - ROOF MECHANICAL PLAN

M1.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:37 AM



LEVEL 03 - AREA B - ROOF MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

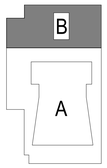
J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H2 DUCTWORK DOWN THROUGH TO NEXT LEVEL.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

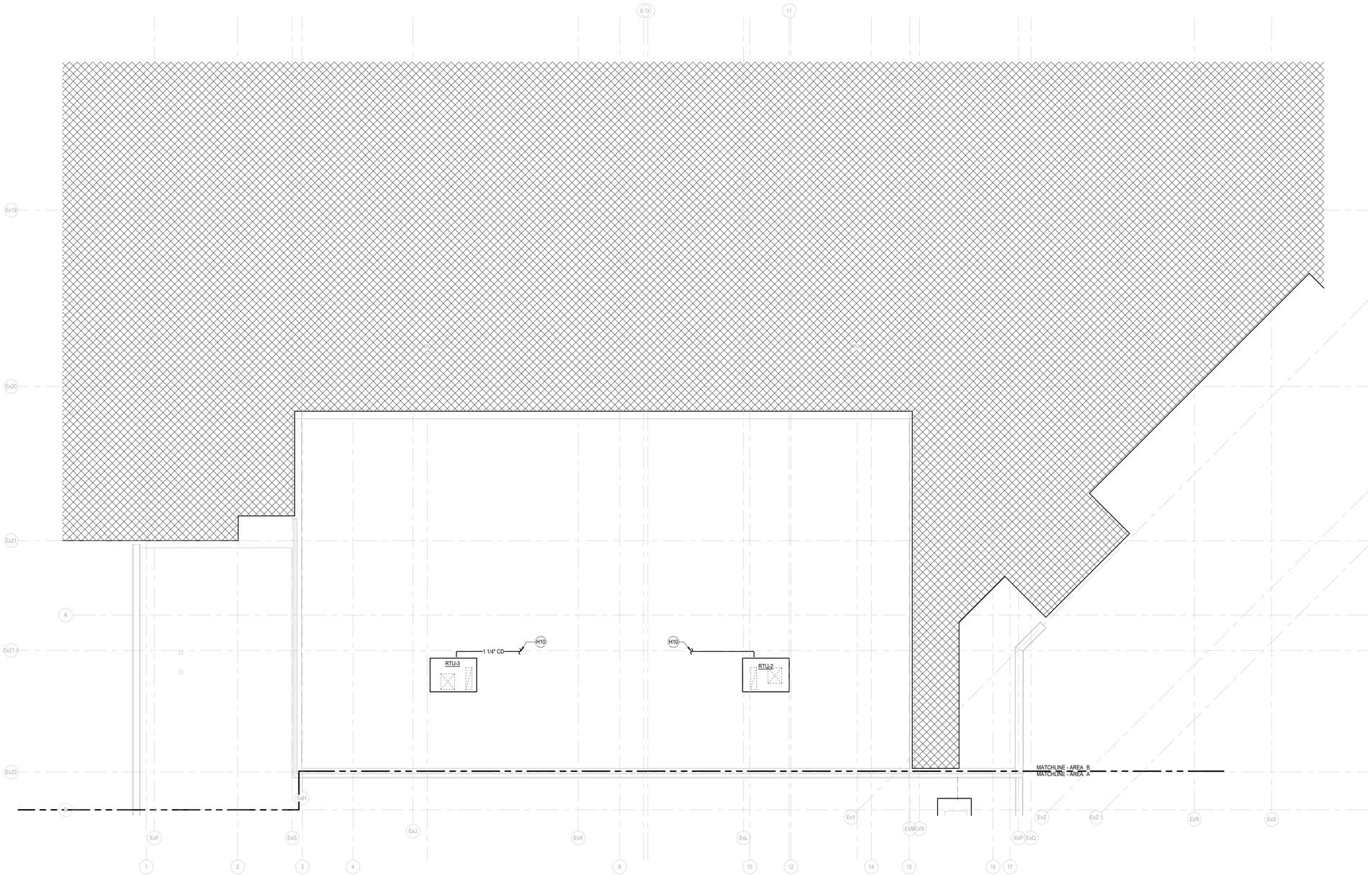
REVISIONS

39-23712-00

LEVEL 03 - AREA B - MECHANICAL PLAN

M1.3B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:38 AM



LEVEL 04 - AREA B - ROOF MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

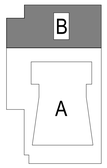
J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H10 ROUTE CONDENSATE LINE TO NEAREST ROOF DRAIN AND TERMINATE WITH 1" AIR GAP.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER

07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

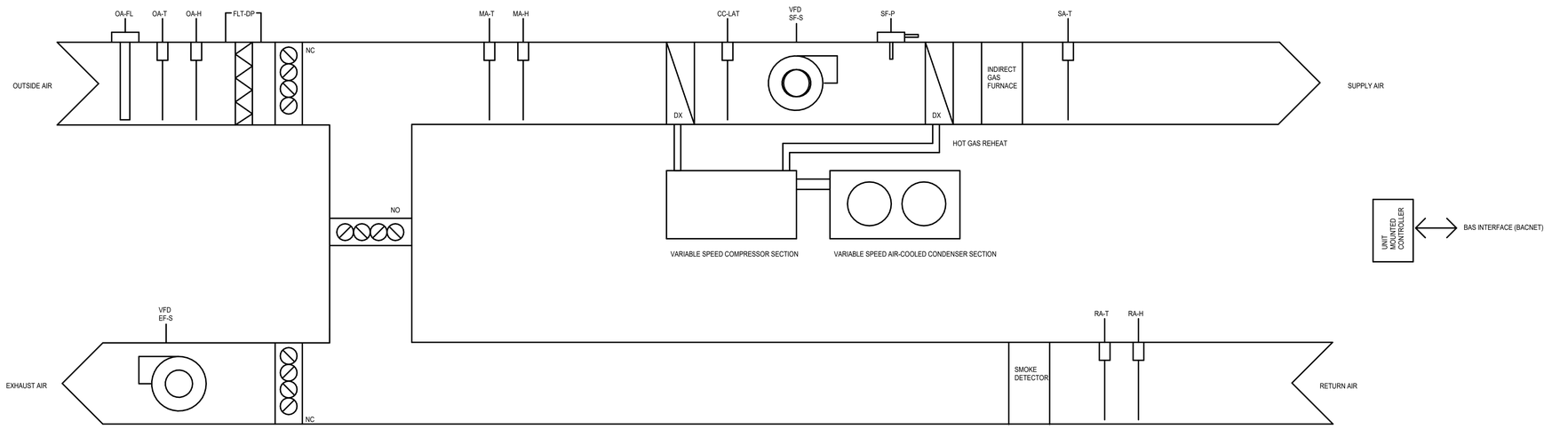
39-23712-00

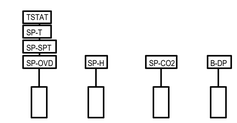
LEVEL 04 - AREA B - ROOF MECHANICAL PLAN

M1.4B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:38 AM

RTU-1,
RTU-2,
RTU-3,
RTU-4,
RTU-6,
RTU-7,
RTU-8,
RTU-9





SEQUENCE OF OPERATIONS

GENERAL

1. THIS CONTROL SEQUENCE APPLIES TO THE FOLLOWING UNITS:
RTU-1, RTU-2, RTU-3, RTU-4, RTU-6, RTU-7, RTU-8, RTU-9
1.2. DURING OPTIMAL START THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL REMAIN CLOSED WITH THE RETURN AIR DAMPER OPEN.

2. ALL CONTROLS DESCRIBED HEREIN SHALL BE PERFORMED BY THE UNIT MOUNTED CONTROLLER. PROVIDE BAS BACNET INTERFACE, REMOTE SENSORS, AND REQUIRED PROGRAMMING FOR COMPLETE INTEGRATION INTO THE BAS.
3. ALL CONTROLS DESCRIBED HEREIN ARE SUBJECT TO THE SAFETIES INTEGRAL TO THE UNIT MOUNTED CONTROLLER AND SHALL NOT OVERRIDE THOSE SAFETIES.
4. PROVIDE WIRING, RELAYS, CONTROLS, PROGRAMMING AND STARTUP AS REQUIRED TO PROVIDE DESCRIBED INTERLOCKS TO OTHER MECHANICAL EQUIPMENT (FANS, COILS, ETC.)
5. WHEN THE UNIT IS OFF-LINE VIA THE START/STOP COMMAND OR VIA THE SERVICE DISCONNECT(S) OR ANY OF THE SAFETIES, COMPONENTS SHALL GO TO THEIR FAIL-SAFE POSITIONS. THE ASSOCIATED EXHAUST FANS SHALL BE DISABLED.
6. FILTER STATUS SHALL BE MONITORED BY FILTER DIFFERENTIAL PRESSURE SWITCH (FLT-DP) ACROSS THE FILTERS.
7. FAN STATUS SHALL BE MONITORED BY THE UNIT CONTROLLER.
8. ALL SET POINTS SHALL BE ADJUSTABLE THROUGH THE BAS WITHOUT SOFTWARE OR HARDWARE REVISIONS.

OCCUPIED MODE OF OPERATION

1. OPTIMAL START:

1.1. THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF THE SCHEDULED OCCUPIED PERIOD.

2. BASIC OPERATION:

2.1. THE UNIT CONTROLLER SHALL MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE ADJUSTABLE SPACE TEMPERATURE SET POINT. THE FAN SPEED SHALL INCREASE AS THE ZONE TEMPERATURE RISES ABOVE COOLING SET POINT, OR AS THE ZONE TEMPERATURE DROPS BELOW HEATING SET POINT. THE SUPPLY FAN SPEED SHALL NOT DROP BELOW 25% (ADJ.).
2.1.1. OCCUPIED COOLING SET POINT: 75°F (ADJ.)
2.1.2. OCCUPIED HEATING SET POINT: 70°F (ADJ.)

3. COOLING MODE:

3.1. COOLING SHALL BE ENABLED WHENEVER:
3.1.1. OUTSIDE AIR TEMPERATURE IS GREATER THAN 50°F (ADJ.).
3.1.2. AND THE ECONOMIZER IS DISABLED OR FULLY OPEN.
3.1.3. AND HEATING IS NOT ACTIVE.
3.1.4. AND THE SUPPLY FAN STATUS IS ON.
3.2. THE UNIT CONTROLLER SHALL MODULATE THE COOLING SYSTEM TO MAINTAIN THE COOLING COIL DISCHARGE AIR TEMPERATURE SET POINT OF 52°F (ADJ.).
3.3. IF THE SUPPLY FAN IS AT MINIMUM SPEED AND THE SPACE TEMPERATURE FALLS BELOW THE COOLING SET POINT, MODULATE THE HOT GAS REHEAT COIL TO MAINTAIN SPACE TEMPERATURE AT 1°F (ADJ.) LESS THAN COOLING SET POINT.
3.4 WHENEVER THE SUPPLY FAN STATUS IS ON THE CONTROLLER SHALL MEASURE THE RETURN AIR HUMIDITY. WHEN THE RETURN AIR HUMIDITY LEVEL RISES ABOVE 60% RH (ADJ.) AND THE ZONE TEMPERATURE IS SATISFIED (NOT IN COOLING MODE) DEHUMIDIFICATION MODE SHALL BE ENABLED. WHEN IN DEHUMIDIFICATION MODE:
3.4.1 THE SUPPLY FAN SHALL OPERATE AT MINIMUM SPEED.
3.4.2 MODULATE COOLING TO MAINTAIN A 55 DEGF (ADJ) COOLING COIL LEAVING TEMPERATURE.
3.4.3 MODULATE THE HOT GAS REHEAT TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT THE ZONE SETPOINT 70°-76° F.
3.4.4 ALARMS SHALL BE PROVIDED AS FOLLOWS:
3.4.4.1 HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70%(ADJ.).

4. HEATING MODE:

4.1. HEATING SHALL BE ENABLED WHENEVER:
4.1.1. OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
4.1.2. AND THE SPACE TEMPERATURE IS BELOW HEATING SET POINT.
4.1.3. AND COOLING IS NOT ACTIVE.
4.1.4. AND THE SUPPLY FAN STATUS IS ON.
4.2. THE UNIT CONTROLLER SHALL MODULATE THE INDIRECT GAS FURNACE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT OF 85°F (ADJ.).
4.3. FOR UNITS WITH RADIATORS WITHIN THE ZONE SERVED, INTERLOCK RTU OPERATION WITH RADIATORS AND ENABLE RADIATORS DURING HEATING MODE.

5. OUTSIDE AIR CONTROL:

5.1. WHEN IN THE OCCUPIED MODE, MODULATE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE OUTSIDE AIR FLOW SET POINT (ADJ.). SEE SCHEDULE FOR AIRFLOW VALUES.
5.2 DEMAND CONTROL VENTILATION:
5.2.1 WHEN THE SPACE IS BELOW 600 PPM (ADJ) CO2 THE MINIMUM OUTSIDE AIRFLOW SETPOINT SHALL BE REDUCED BY 10% (ADJ) EVERY 5 MINUTES (ADJ) UNTIL THE SPACE CO2 LEVEL RISES TO 850 PPM (ADJ). THE OUTSIDE AIRFLOW SHALL HOLD AT THIS VALUE UNTIL THE SPACE CO2 LEVEL RISES TO 950 PPM (ADJ), WHICH SHALL RESET THE MINIMUM OUTSIDE AIRFLOW SETPOINT UP BY 10% (ADJ) EVERY 5 MINUTES (ADJ) UNTIL THE INITIAL SETPOINT AS INDICATED IN THE EQUIPMENT SCHEDULE IS REACHED.

6. DEMAND CONTROL VENTILATION:

6.1. THE BAS SHALL MONITOR SPACE CO2 CONCENTRATION.
6.2. IF SPACE CO2 CONCENTRATION IS LESS THAN 1000 PPM (ADJ.), THEN RESET OUTSIDE AIR FLOW SET POINT INCREMENTALLY TO THE SCHEDULED MINIMUM. UPON A RISE IN RETURN AIR CO2 ABOVE 1000 PPM (ADJ.), THE RESET SHALL BE DISABLED.

7. EXHAUST FAN

7.1 THE EXHAUST FAN SHALL RUN IN THE OCCUPIED MODE WHENEVER THE SUPPLY FAN RUNS AND THE BUILDING PRESSURE IS LESS THAN 0.5 IN.WG (ADJ.) TO THE OUTSIDE. THE EXHAUST FAN SHALL MODULATE SPEED TO MAINTAIN 0.5 IN.WG (ADJ.) POSITIVE BUILDING PRESSURE.
7.2 ALARMS SHALL BE PROVIDED AS FOLLOWS:
7.2.1 EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
7.2.2 EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
7.2.3 EXHAUST FAN FAULT.

8. AIR-SIDE ECONOMIZER:

8.1. WHEN THE OUTSIDE AIR ENTHALPY IS LESS THAN 28 BTU/LB (ADJ.), THE AIR-SIDE ECONOMIZER SHALL BE ENGAGED.
8.2. THE RETURN AIR DAMPER SHALL MODULATE CLOSED AND THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MAINTAIN DISCHARGE SET POINTS.

UNOCCUPIED MODE OF OPERATION

1. DURING THE UNOCCUPIED PERIOD (ADJUSTABLE PER SCHEDULE), THE UNIT CONTROLLER SHALL OPERATE THE UNIT IN A RECIRCULATION MODE TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SET POINTS. THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL REMAIN CLOSED AND THE FANS SHALL CYCLE WITH A CALL FOR HEATING OR COOLING.
1.1. UNOCCUPIED COOLING SET POINT: 85°F (ADJ.)
1.2. UNOCCUPIED HEATING SET POINT: 55°F (ADJ.)
2. A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

SAFETIES AND ALARMS

1. THE FOLLOWING SAFETIES SHALL SHUT DOWN ITS RESPECTIVE UNIT, AND INITIATE AN ALARM THROUGH THE BAS AFTER APPROPRIATE TIME DELAYS WHERE SPECIFIED:
1.1. UNIT CONTROLLER OR INTERNAL SAFETIES INDICATE A "FAULT." -DELAY: NONE.
1.2. DUCT SMOKE DETECTORS (SEE FIRE ALARM) INDICATE SMOKE -DELAY: NONE. CONTACTS FROM FIRE ALARM SYSTEM INITIATES THE SHUTDOWN OF THE RTU.
1.3. SUPPLY AIR HIGH LIMIT: SUPPLY AIR DIFFERENTIAL PRESSURE EXCEEDS 4 IN. W.C. (ADJ.) -DELAY: NONE.
2. ALARMS SHALL BE PROVIDED AS FOLLOWS:
2.1. SUPPLY OR EXHAUST FAN FAILURE: COMMANDED ON, BUT STATUS IS OFF.
2.2. AIRFLOW MEASURING STATION INDICATES OUTSIDE AIR OFF SET POINT BY MORE THAN 10% FLOW - DELAY: 15 MIN.

SINGLE-ZONE VARIABLE VOLUME RTU POINTS SCHEDULE		
POINT	DESCRIPTION	ANALOG INPUT
SA-T	SUPPLY AIR TEMP	DIGITAL INPUT
SF-S	SUPPLY FAN STATUS	ANALOG INPUT
CC-LAT	COOLING COIL LEAVING AIR TEMP	DIGITAL INPUT
FLT-DP	FILTER DIFFERENTIAL PRESSURE	ANALOG INPUT
OA-T	OUTSIDE AIR TEMPERATURE	ANALOG INPUT
OA-H	OUTSIDE AIR HUMIDITY	ANALOG INPUT
OA-FL	OUTSIDE AIR FLOW RATE	ANALOG INPUT
RA-T	RETURN AIR TEMP	ANALOG INPUT
RA-H	RETURN AIR HUMIDITY	ANALOG INPUT
EF-S	EXHAUST FAN STATUS	DIGITAL INPUT
SP-T	SPACE TEMP	ANALOG INPUT
SP-SPT	SPACE TEMP SET POINT	ANALOG INPUT
SP-OVD	SPACE TEMP UNOCCUPIED OVERRIDE	DIGITAL INPUT
SP-H	SPACE HUMIDITY	ANALOG INPUT
SP-CO2	SPACE CO2 CONCENTRATION	ANALOG INPUT
B-DP	BUILDING STATIC PRESSURE	ANALOG INPUT
MA-T	MIXED AIR TEMP	ANALOG INPUT
MA-H	MIXED AIR HUMIDITY	ANALOG INPUT
SF-P	SUPPLY FAN DISCHARGE PRESSURE	ANALOG INPUT

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

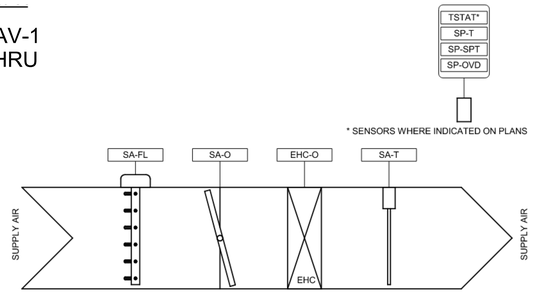
39-23712-00

CONTROLS DIAGRAMS

M5.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:39 AM

VAV-1 THRU 9



SEQUENCE OF OPERATIONS

GENERAL

1. THIS CONTROL SEQUENCE APPLIES TO ALL SINGLE-DUCT VARIABLE VOLUME AIR TERMINAL UNITS (VAV BOXES) WITH ELECTRIC REHEAT.
2. AIR FLOW CONTROL DEVICE SHALL MAINTAIN REQUIRED AIR FLOW REGARDLESS OF UPSTREAM STATIC PRESSURE (PRESSURE INDEPENDENT).
3. SEQUENCE OF OPERATION SHALL BE CONTROLLED BY LOCAL TERMINAL UNIT CONTROLLERS MOUNTED ON EACH VAV BOX AND COMMUNICATING OVER THE BAS NETWORK.
4. OCCUPIED / UNOCCUPIED, AIRFLOW & TEMPERATURE SET POINTS, AND OCCUPANCY SCHEDULING SHALL BE ADJUSTABLE FROM THE BAS WITHOUT HARDWARE OR SOFTWARE REVISIONS. SET POINTS AND STATUS SHALL BE ADJUSTABLE THROUGH THE BAS GLOBALLY AS WELL AS ON AN INDIVIDUAL BOX BASIS.

OCCUPIED MODE

1. THE UNIT SHALL MAINTAIN:
a. A 75 DEG F (ADJ.) COOLING SET POINT.
b. A 70 DEG F (ADJ.) HEATING SET POINT.
c. PROVIDE THE FOLLOWING LIMITS TO OCCUPANT SPACE TEMPERATURE SET POINT ADJUSTMENT:
68 DEG F - 75 DEG F
d. PROVIDE A 2 DEG F DEADBAND DURING OCCUPIED MODE.
2. WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SET POINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED. IF THE SPACE IS STILL CALLING FOR HEAT AFTER 10 MINUTES (ADJ.) AT MAXIMUM AIRFLOW, THE CONTROLLER SHALL ENABLE THE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SET POINT.

UNOCCUPIED MODE:

1. THE UNIT SHALL MAINTAIN:
a. A 85 DEG F (ADJ.) COOLING SET POINT.
b. A 55 DEG F (ADJ.) HEATING SET POINT.
2. WHEN ZONE IS UNOCCUPIED, THE ZONE DAMPER SHALL CONTROL ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.)
3. WHEN THE ZONE TEMPERATURE IS GREATER THAN ITS COOLING SET POINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.
4. WHEN ZONE TEMPERATURE IS LESS THAN ITS UNOCCUPIED HEATING SET POINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT THE SET POINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE RTU (RTU SUPPLY AIR MEASURED ABOVE 70 DEG F (ADJ.)) THE ZONE DAMPER SHALL MODULATE BETWEEN MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE AUXILIARY HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED. IF THE SPACE IS STILL CALLING FOR HEAT AFTER 10 MINUTES (ADJ.) AT MAXIMUM AIRFLOW, THE CONTROLLER SHALL ENABLE THE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SET POINT.

ZONE OPTIMAL START
1. THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

ZONE UNOCCUPIED OVERRIDE
1. A TIMED LOCAL OVERRIDE CONTROL, VIA A THERMOSTAT MOUNTED OVERRIDE BUTTON, SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

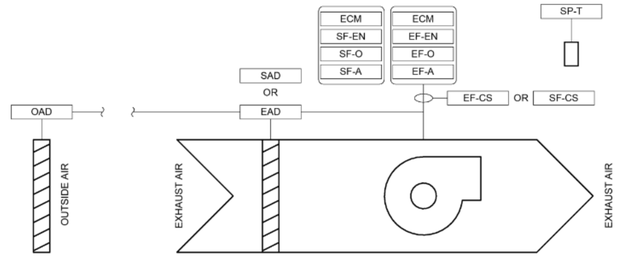
ALARMS AND SAFETIES

1. THE BUILDING CONTROLS SYSTEM SHALL ISSUE AN ALARM FOR ANY OF THE FOLLOWING:
a. HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SET POINT BY A USER DEFINABLE AMOUNT (ADJ.) FOR A USE RDEFINABLE PERIOD OF TIME (ADJ.)
b. LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SET POINT BY A USER DEFINABLE AMOUNT (ADJ.) FOR A USE RDEFINABLE PERIOD OF TIME (ADJ.)
c. HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 100 DEG F (ADJ.)
d. LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 50 DEG F (ADJ.)
e. SIMULTANEOUS HEATING AND COOLING: IF MULTIPLE VAVS WITHIN A LARGER COMMON ZONE ARE IN OPPOSITE MODE.

VARIABLE VOLUME AIR TERMINAL UNIT POINTS SCHEDULE

POINT	DESCRIPTION	TYPE
SP-T	SPACE TEMPERATURE	ANALOG INPUT
SP-SPT	SPACE TEMPERATURE SET POINT	ANALOG INPUT
SP-OVD	SPACE UNOCCUPIED OVERRIDE	DIGITAL INPUT
SA-FL	SUPPLY AIR FLOW RATE	ANALOG INPUT
SA-O	SUPPLY AIR DAMPER POSITION	ANALOG OUTPUT
EHC-O	ELECTRIC REHEAT COIL OUTPUT (SCR)	ANALOG OUTPUT
SA-T	SUPPLY AIR TEMPERATURE	ANALOG INPUT

EF-4



EXHAUST FAN POINTS SCHEDULE

POINT	DESCRIPTION	TYPE
SP-T	SPACE TEMPERATURE	ANALOG INPUT
EF-EN	EXHAUST FAN ENABLE	DIGITAL OUTPUT
EF-CS	EXHAUST FAN STATUS	DIGITAL INPUT
EF-O	EXHAUST FAN SPEED	ANALOG OUTPUT
EF-A	EXHAUST FAN FAULT	DIGITAL INPUT
EAD	EXHAUST AIR DAMPER	INTERLOCK WITH FAN
OAD	OUTSIDE AIR DAMPER	INTERLOCK WITH FAN

SEQUENCE OF OPERATIONS

FAN IS INTENTED TO RELIEVE EXCESS HEAT IN THE SPACE. WHEN THE SPACE TEMPERATURE IS ABOVE 85 DEGF (ADJ) AT THE SPACE SENSOR, THE INLET AND EXHAUST DAMPERS SHALL OPEN AND THE FAN SHALL RUN. WHEN THE SPACE DROPS BELOW 75 DEGF (ADJ) AT THE SPACE SENSOR, THE DAMPERS SHALL CLOSE AND THE FAN SHALL STOP.

HU-1

SEQUENCE OF OPERATIONS SHALL BE CONTROLLED BY MANUFACTURER PROVIDED CONTROLLER WHICH SHALL COMMUNICATE VIA BACNET OVER THE BAS NETWORK.

HUMIDITY SET POINTS SHALL BE ADJUSTABLE FROM THE BAS WITHOUT HARDWARE OR SOFTWARE REVISIONS.

THE EMCS SHALL MONITOR THE SPACE HUMIDITY.

THE HUMIDIFIER SHALL MODULATE THE OUTPUT TO MAINTAIN THE SPACE HUMIDITY BETWEEN 50% RH (ADJ) AND 60% RH (ADJ).

ALARMING

1. IF THE SPACE HUMIDITY IS MORE THAN 10% (ADJ) ABOVE MAXIMUM SPACE SETPOINT AN ALARM SHALL BE SET AT THE EMCS AND THE HUMIDIFIER SHALL STOP.

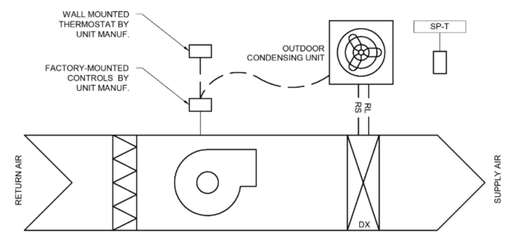
2. IF THE SPACE HUMIDITY IS MORE THAN 5% RH (ADJ) BELOW THE MINIMUM SPACE SETPOINT AN ALARM SHALL BE SET AT THE ECMS.

3. THE ALARMS SHALL AUTOMATICALLY RESET ONCE THE HUMIDITY IS WITHIN RANGE OF THE HIGH AND LOW SPACE SETPOINTS AT WHICH POINT THE HUMIDIFIER SHALL AGAIN CONTROL TO MAINTAIN SPACE HUMIDITY.

HUMIDIFIER POINTS SCHEDULE

POINT	DESCRIPTION	TYPE
SP-H	SPACE RELATIVE HUMIDITY	ANALOG INPUT
HUM-EN	HUMIDIFIER ENABLE	DIGITAL OUTPUT
HUM-%	RELATIVE HUMIDITY SET POINT	ANALOG OUTPUT
HUM-A	HUMIDIFIER ALARM	DIGITAL INPUT

IU-1 THRU 10
OU-1 THRU 10



SEQUENCE OF OPERATIONS:

GENERAL
1. THIS CONTROL SEQUENCE APPLIES TO ALL SPLIT SYSTEM AIR CONDITIONING UNITS, INCLUDING INDOOR UNITS (AC) AND OUTDOOR UNITS (CU).
2. THE SPLIT SYSTEM AIR CONDITIONING UNITS SHALL BE CONTROLLED BY A FACTORY PROVIDED THERMOSTAT.
3. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL MONITOR SPACE TEMPERATURE AND OPERATION OF THE UNIT.

CONTROL SEQUENCE
1. THE UNIT FAN SHALL CYCLE UPON A CALL FOR COOLING.
2. THE DX COOLING SYSTEM SHALL CYCLE TO MAINTAIN SPACE COOLING SET POINT AT THE LOCALLY ADJUSTED THERMOSTAT.

ALARMS
1. THE CONTROL SYSTEM SHALL ANNUNCIATE AN ALARM TO THE BAS IF ANY OF THE FOLLOWING CONDITIONS ARE MET:
   a. SPACE TEMPERATURE IS ABOVE SET POINT (>5°F), DELAY: 15 MINUTES.

SPLIT AIR CONDITIONING UNIT HEATER POINTS SCHEDULE

POINT	DESCRIPTION	TYPE
SP-T	SPACE TEMPERATURE	ANALOG INPUT

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

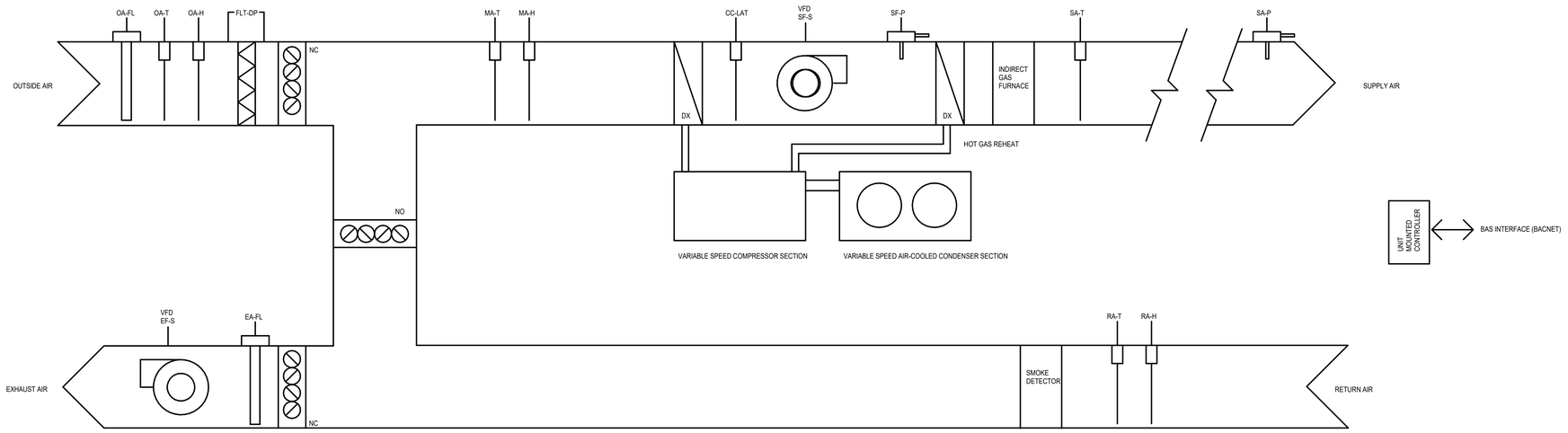
39-23712-00

CONTROLS DIAGRAMS

M5.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:39 AM

RTU-5



SEQUENCE OF OPERATIONS

GENERAL

1. THIS CONTROL SEQUENCE APPLIES TO THE FOLLOWING UNITS:
RTU-5.

2. ALL CONTROLS DESCRIBED HEREIN SHALL BE PERFORMED BY THE UNIT MOUNTED CONTROLLER. PROVIDE BAS BACNET INTERFACE, REMOTE SENSORS, AND REQUIRED PROGRAMMING FOR COMPLETE INTEGRATION INTO THE BAS.
3. ALL CONTROLS DESCRIBED HEREIN ARE SUBJECT TO THE SAFETIES INTEGRAL TO THE UNIT MOUNTED CONTROLLER AND SHALL NOT OVERRIDE THOSE SAFETIES.
4. PROVIDE WIRING, RELAYS, CONTROLS, PROGRAMMING AND STARTUP AS REQUIRED TO PROVIDE DESCRIBED INTERLOCKS TO OTHER MECHANICAL EQUIPMENT (FANS, COILS, ETC.)
5. WHEN THE UNIT IS OFF-LINE VIA THE START/STOP COMMAND OR VIA THE SERVICE DISCONNECT(S) OR ANY OF THE SAFETIES, COMPONENTS SHALL GO TO THEIR FAIL-SAFE POSITIONS. THE ASSOCIATED EXHAUST FANS SHALL BE DISABLED.
6. FILTER STATUS SHALL BE MONITORED BY FILTER DIFFERENTIAL PRESSURE SWITCH (FLT-DP) ACROSS THE FILTERS.
7. FAN STATUS SHALL BE MONITORED BY THE UNIT CONTROLLER.
8. ALL SET POINTS SHALL BE ADJUSTABLE THROUGH THE BAS WITHOUT SOFTWARE OR HARDWARE REVISIONS.

OCCUPIED MODE OF OPERATION

1. OPTIMAL START:

1.1. THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF THE SCHEDULED OCCUPIED PERIOD.

1.2. DURING OPTIMAL START THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL REMAIN CLOSED WITH THE RETURN AIR DAMPER OPEN.

2. BASIC OPERATION:

2.1 THE UNIT SHALL OPERATE AS A VARIABLE AIR VOLUME UNIT TO PROVIDE A VARIABLE VOLUME OF SUPPLY AIR AT A FIXED SYSTEM STATIC PRESSURE AND A CONSTANT TEMPERATURE. THE FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS AND SHALL CYCLE ON A CALL FOR HEATING OR COOLING DURING UNOCCUPIED HOURS.

2.2 WHENEVER THE UNIT IS IN UNOCCUPIED MODE, THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL BE CLOSED AND THE MIXED AIR DAMPER SHALL BE OPEN. WHENEVER THE UNIT IS IN OCCUPIED MODE AND THE ECONOMIZER IS OFF, THE OUTSIDE AIR, EXHAUST AIR AND MIXED AIR DAMPER SHALL MODULATE TO MAINTAIN THE SCHEDULED MINIMUM OUTSIDE AIRFLOW LISTED IN THE AIR HANDLING UNIT SCHEDULE.

3. SUPPLY FAN:

3.1 THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS IN THE OCCUPIED MODE, UNLESS SHUTDOWN ON SAFETIES. IN THE UNOCCUPIED MODE THE SUPPLY FAN SHALL RUN ONLY ON A CALL FOR HEATING OR COOLING AT THE ZONES SERVED AND THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL REMAIN CLOSED.

3.2 THE DEFAULT FAN SPEED SHALL BE THE MINIMUM FAN SPEED OF 30% (ADJ). THE FAN SPEED SHALL MODULATE TO MAINTAIN THE SYSTEM STATIC PRESSURE WITH INITIAL SETPOINT OF 1.0 IN.WG (ADJ).

3.3 AFTER THE DISCHARGE AIR TEMPERATURE HAS RESET TO THE MAXIMUM LIMIT, THE SYSTEM STATIC PRESSURE SETPOINT SHALL RESET BASED ON THE POSITION OF ALL OF THE VAV DAMPERS THAT ARE PART OF THE SYSTEM. IF ALL DAMPERS ARE BELOW 75% (ADJ) OPEN, THE SYSTEM STATIC PRESSURE SETPOINT SHALL RESET DOWN BY 0.1 IN.WG (ADJ) EVERY 5 MINUTES (ADJ). IF MORE THAN TWO (ADJ) DAMPERS ARE MORE THAN 95% (ADJ) OPEN, THE SYSTEM STATIC PRESSURE SEPTOINT SHALL RESET UP BY 0.1 IN.WG (ADJ) EVERY 5 MINUTES (ADJ). THE BAS SHALL ALLOW FOR IDENTIFICATION OF CRITICAL ZONES WHICH WILL BE ASSIGNED A HIGHER PRIORITY BY HAVING THE DAMPER USE A MULTIPLIER TO AFFECT THE SYSTEM SOONER.

3.4 ALARMS SHALL BE PROVIDED AS FOLLOWS:

3.4.1 SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

3.4.2 SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

3.4.3 SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ) (FOR FILTER CHANGE NOTIFICATION).

4. DISCHARGE TEMPERATURE:

4.1 COOLING:
4.1.1 THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS SUPPLY AIR SETPOINT AT 55 DEGF (ADJ).
4.1.2 THE COOLING SHALL BE ENABLED WHENEVER:
4.1.2.1 OUTSIDE AIR TEMPERATURE IS GREATER THAN 60 DEGF (ADJ).
4.1.2.2 AND THE ECONOMIZER (IF PRESENT) IS DISABLED OR FULLY OPEN.
4.1.2.3 AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
4.1.2.4 AND THE SUPPLY FAN STATUS IS ON.
4.2 GAS HEAT:

4.2.1 THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS SUPPLY SETPOINT AT 55 DEGF (ADJ). TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ) MINIMUM RUNTIME.

4.2.2 THE GAS HEAT SHALL BE ENABLED WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW 50 DEGF (ADJ).

4.2.3 THE SUPPLY AIR TEMPERATURE SHALL RESET BASED ON THE POSITION OF ALL OF THE VAV DAMPERS THAT ARE PART OF THE SYSTEM. IF ALL DAMPERS ARE BELOW 75% (ADJ) OPEN, THE DISCHARGE AIR TEMPERATURE SHALL RESET UP 5 DEGF (ADJ) EVERY 5 MINUTES (ADJ) WITH A MAXIMUM DISCHARGE TEMPERATURE OF 65 DEGF (ADJ). IF MORE THAN TWO (ADJ) DAMPERS ARE MORE THAN 95% (ADJ) OPEN, THE DISCHARGE AIR TEMPERATURE SHALL RESET DOWN 5 DEGF (ADJ) EVERY 5 MINUTES (ADJ) WITH A MINIMUM DISCHARGE TEMPERATURE OF 55 DEGF (ADJ). THE BAS SHALL ALL FOR IDENTIFICATION OF CRITICAL ZONES WHICH WILL BE ASSIGNED A HIGHER PRIORITY BY HAVING THE DAMPER USE A MULTIPLIER TO AFFECT THE SYSTEM SOONER.

4.2.4 ALARMS SHALL BE PROVIDED AS FOLLOWS:

4.2.4.1 HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 80 DEGF (ADJ).

4.2.4.2 LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 50 DEGF (ADJ).

5. OUTSIDE AIR CONTROL:

5.1. WHEN IN THE OCCUPIED MODE, MODULATE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE OUTSIDE AIR FLOW SET POINT (ADJ.). SEE SCHEDULE FOR AIRFLOW VALUES.
SHALL BE DISABLED.

6. AIR-SIDE ECONOMIZER:

6.1. WHEN THE OUTSIDE AIR ENTHALPY IS LESS THAN 28 BTU/LB (ADJ.), THE AIR-SIDE ECONOMIZER SHALL BE ENGAGED.
6.2. THE RETURN AIR DAMPER SHALL MODULATE CLOSED AND THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MAINTAIN DISCHARGE SET POINTS.

7. EXHAUST FAN

7.1 THE EXHAUST FAN SHALL RUN IN THE OCCUPIED MODE WHENEVER THE SUPPLY FAN RUNS AND THE OUTSIDE AIR AND EXHAUST DAMPERS ARE OPEN. THE EXHAUST FAN SHALL TRACK THE OUTSIDE AIRFLOW AND MAINTAIN AN EXHAUST AIRFLOW THAT IS THE OUTSIDE AIRFLOW MINUS A USER DEFINED VARIABLE. THE INTITIAL SETPOINT SHALL BE THE DIFFERENCE BETWEEN THE OUTSIDE AIRFLOW INDICATED IN THE UNIT SCHEDULE AND THE EXHAUST FAN AIRFLOW INDICATED IN THE UNIT SCHEDULE.
7.2 ALARMS SHALL BE PROVIDED AS FOLLOWS:
7.2.1 EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
7.2.2 EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
7.2.3 EXHAUST FAN FAULT.

SAFETIES AND ALARMS

1. THE FOLLOWING SAFETIES SHALL SHUT DOWN ITS RESPECTIVE UNIT, AND INITIATE AN ALARM THROUGH THE BAS AFTER APPROPRIATE TIME DELAYS WHERE SPECIFIED:
1.1. UNIT CONTROLLER OR INTERNAL SAFETIES INDICATE A "FAULT." -DELAY: NONE.
1.2. DUCT SMOKE DETECTORS (SEE FIRE ALARM) INDICATE SMOKE -DELAY: NONE. CONTACTS FROM FIRE ALARM SYSTEM INITIATES THE SHUTDOWN OF THE RTU.
1.3. SUPPLY AIR HIGH LIMIT: SUPPLY AIR DIFFERENTIAL PRESSURE EXCEEDS 4 IN. W.C. (ADJ.) -DELAY: NONE.
2. ALARMS SHALL BE PROVIDED AS FOLLOWS:
2.1. SUPPLY OR EXHAUST FAN FAILURE: COMMANDED ON, BUT STATUS IS OFF.
2.2. AIRFLOW MEASURING STATION INDICATES OUTSIDE AIR OFF SET POINT BY MORE THAN 10% FLOW - DELAY: 15 MIN.

SINGLE-ZONE VARIABLE VOLUME RTU POINTS SCHEDULE

POINT	DESCRIPTION	ANALOG INPUT
SA-T	SUPPLY AIR TEMP	DIGITAL INPUT
SF-S	SUPPLY FAN STATUS	ANALOG INPUT
CC-LAT	COOLING COIL LEAVING AIR TEMP	DIGITAL INPUT
FLT-DP	FILTER DIFFERENTIAL PRESSURE	ANALOG INPUT
OA-T	OUTSIDE AIR TEMPERATURE	ANALOG INPUT
OA-H	OUTSIDE AIR HUMIDITY	ANALOG INPUT
OA-FL	OUTSIDE AIR FLOW RATE	ANALOG INPUT
RA-T	RETURN AIR TEMP	ANALOG INPUT
RA-H	RETURN AIR HUMIDITY	ANALOG INPUT
EF-S	EXHAUST FAN STATUS	DIGITAL INPUT
EA-FL	EXHAUST AIRFLOW RATE	ANALOG INPUT
MA-T	MIXED AIR TEMP	ANALOG INPUT
MA-H	MIXED AIR HUMIDITY	ANALOG INPUT
SF-P	SUPPLY FAN DISCHARGE PRESSURE	ANALOG INPUT

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

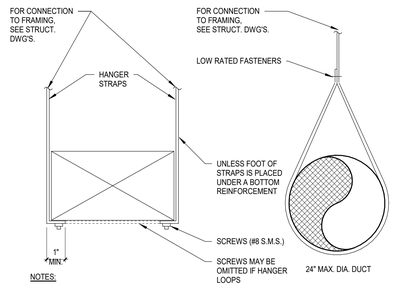
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

CONTROLS DIAGRAMS

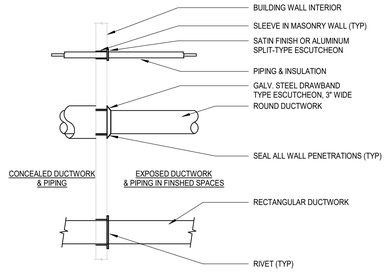
M5.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/26/2024 4:52:40 AM

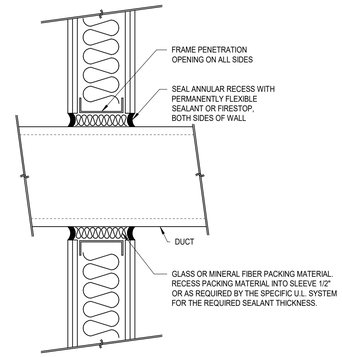


NOTES:
1. DUCT SUPPORTS SHALL COMPLY WITH 2013 CMC SMACNA STANDARDS.

1A / M7.1 DUCT HANGER DETAIL
NO SCALE

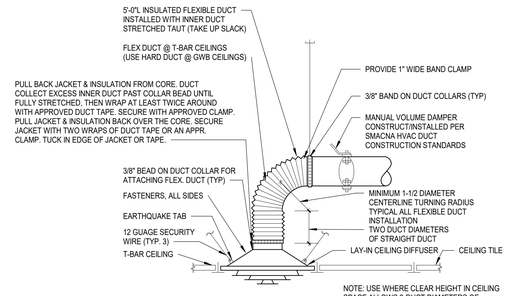


1B / M7.1 DUCT/PIPE WALL PENETRATION DETAIL
NO SCALE



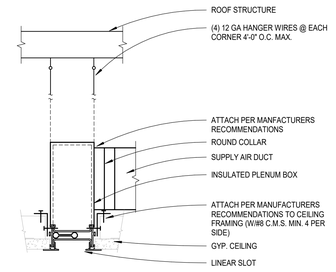
NOTES:
1. DUCT SHALL PENETRATE PERPENDICULARLY AT ACOUSTICALLY SENSITIVE ROOMS AND NOISE PRODUCING ROOMS.

1C / M7.1 DUCT PENETRATION THROUGH FRAMED WALL
NO SCALE

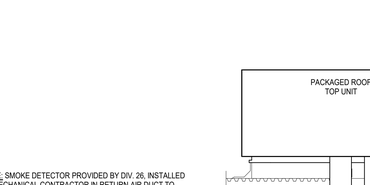


NOTE: USE WHERE CLEAR HEIGHT IN CEILING SPACE ALLOWS 2-DUCT DIAMETERS OF STRAIGHT VERTICAL DUCT.

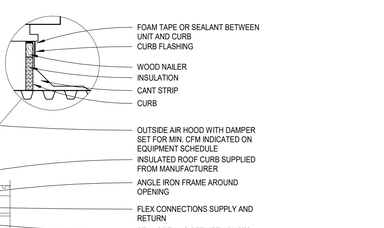
1D / M7.1 CEILING SUPPLY DIFFUSER CONNECTION DETAIL
NO SCALE



1E / M7.1 LINEAR SLOT IN GYP CEILNG DETAIL
NO SCALE

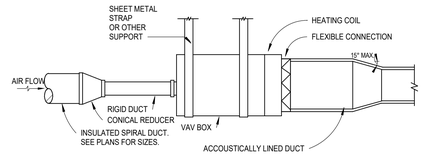


2A / M7.1 TYPICAL DUCT MOUNTED REGISTER
NO SCALE



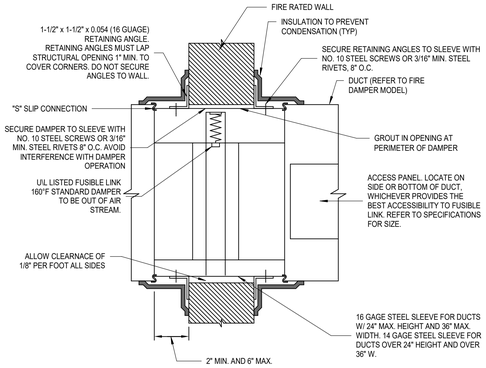
2B / M7.1 TYPICAL BRANCH TAKEOFF FITTING DETAIL
NO SCALE

2C / M7.1 STAGE SUPPLY GRILLE DETAIL
NO SCALE



DETAIL NOTES:
1. CLOSEST TAP TO VAV BOX SHALL BE LOCATED MINIMUM 5' DOWNSTREAM FROM VAV BOX.
2. PROVIDE SECTION OF STRAIGHT DUCT AT TERMINAL UNIT INLET WITH LENGTH AS RECOMMENDED BY UNIT MANUFACTURER, BUT IN NO CASE LESS THAN FOUR TIMES THE DIAMETER OF THE UNIT INLET CONNECTION.
3. PROVIDE SERVICE CLEARANCE PER MANUFACTURER'S RECOMMENDED INSTRUCTIONS.

2D / M7.1 VAV BOX DETAIL
NO SCALE

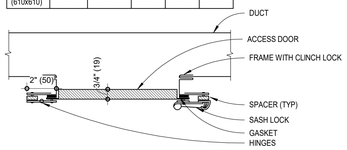


NOTE:
SEE SPECIFICATIONS FOR FIRE DAMPER MODELS.

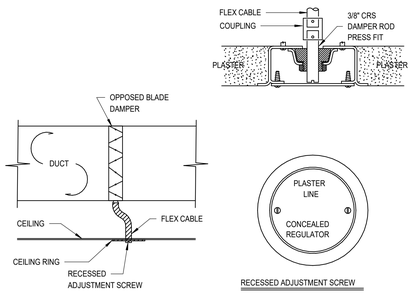
AT EXISTING MASONRY WALLS MOUNT DAMPER FLUSH TO WALL PER MFR'S INSTRUCTIONS.

3A / M7.1 FIRE DAMPER DETAIL
NO SCALE

MAX DOOR SIZE	NUMBER OF HINGES	NUMBER OF HANDLES	SHEET METAL GAUGE THICKNESS		
			DOOR	BACK	FRAME
12"x12" (305x305)	2	1	26	26	24
16"x16" (405x405)	2	2	24	26	22
24"x24" (610x610)	3	2	22	26	22

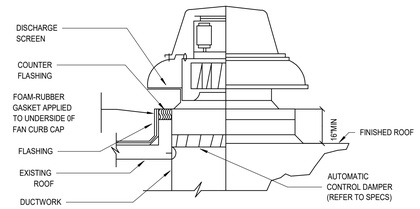


3B / M7.1 DUCT ACCESS DOOR DETAIL
NO SCALE

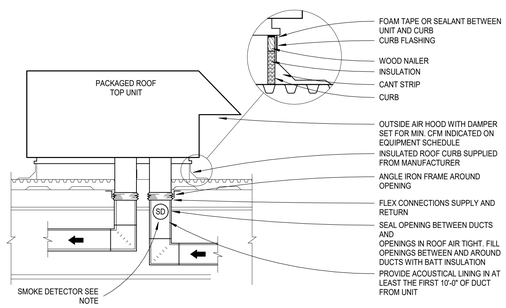


NOTE:
THIS DETAIL APPLIES TO ALL BRANCH RUNOUTS ABOVE HARD CEILINGS, (SEE ARCH. A3- SERIES.)

3C / M7.1 REMOTE VOLUME DAMPER DETAIL
NO SCALE

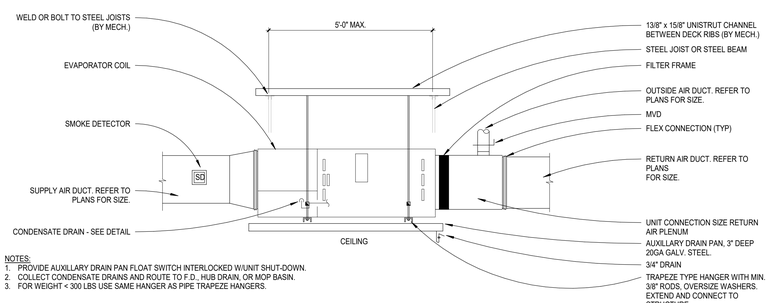


3D / M7.1 ROOF MOUNTED EXHAUST FAN DETAIL
NO SCALE



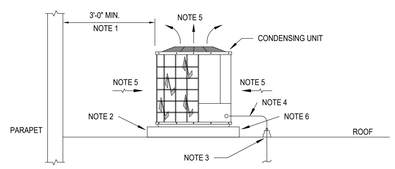
NOTE: SMOKE DETECTOR PROVIDED BY DIV. 26, INSTALLED BY MECHANICAL CONTRACTOR IN RETURN AIR DUCT TO SHUT DOWN UNIT UPON DETECTION. CONNECT TO BUILDING FIRE ALARM PANEL IF PRESENT. IF NO BUILDING FIRE ALARM PANEL IS PRESENT, PROVIDE A SURFACE MOUNT COMBINATION REMOTE ALARM, TEST, AUDIBLE AND VISUAL ALARM IN A NORMALLY OCCUPIED AREA, IDENTIFY AS AIR DUCT DETECTOR TROUBLE AND CONNECT TO DUCT SMOKE DETECTOR. LABEL WITH THE NUMBER OF THE ASSOCIATED AIR HANDLING UNIT.

4A / M7.1 ROOFTOP UNIT MOUNTING
NO SCALE



NOTES:
1. PROVIDE AUXILLARY DRAIN PAN FLOAT SWITCH INTERLOCKED W/UNIT SHUT-DOWN.
2. COLLECT CONDENSATE DRAINS AND ROUTE TO F.D., HUB DRAIN, OR MOP BASIN.
3. FOR WEIGHT < 300 LBS USE SAME HANGER AS PIPE TRAPEZE HANGERS.

4B / M7.1 HORIZONTAL MECHANICAL UNIT DETAIL
NO SCALE



DETAIL NOTES:
1. MAINTAIN SERVICE CLEARANCES PER MANUFACTURES RECOMMENDATIONS
2. MOUNT LEVEL ON PREFABRICATED EQUIPMENT CURB.
3. ROUTE REFRIGERANT LINES THRU ROOF MOUNTED WATERTIGHT PIPE CURB, PER DETAIL. GROUP LINE SETS TOGETHER WHERE MULTIPLE CONDENSING UNITS.
4. ALL EXPOSED CONTROL WIRING TO BE INSTALLED IN CONDUIT.
5. MAINTAIN MINIMUM 3'-0" CLEARANCE PER MANUFACTURES RECOMMENDATIONS FOR AIRFLOW AROUND CONDENSING UNIT. MAINTAIN MINIMUM CLEARANCES WHEN MULTIPLE CONDENSING UNITS MOUNTED ADJACENT TO EACH OTHER.
6. MOUNT UNIT ON SPRING-TYPE ISOLATION CURBS.

4C / M7.1 CONDENSING UNIT DETAIL
NO SCALE

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
TBPE FIRM REGISTRATION NUMBER F-1101

CONSTRUCTION

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

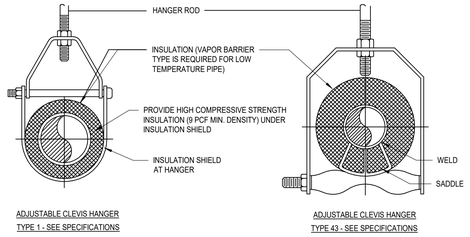
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

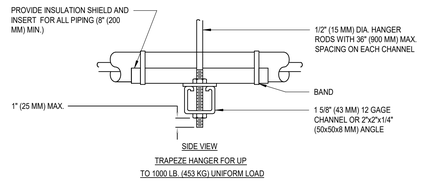
39-23712-00

MECHANICAL DETAILS

M7.1

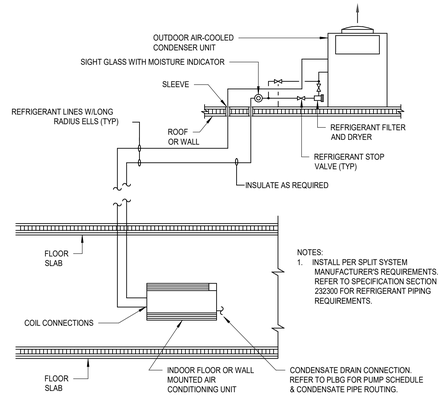
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:41 AM





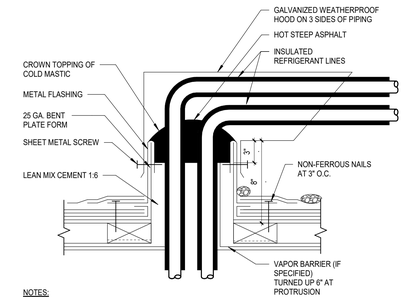
MAXIMUM PIPE/TUBING SUPPORT SPACING																				
NOM. SIZE	IN. (MM)	THRU 3/4 THRU (20)	1 (25)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)
PIPE	FT. (M)	7 (2.1)	7 (2.1)	7 (2.1)	9 (2.7)	10 (3.0)	11 (3.4)	12 (3.7)	14 (4.1)	16 (4.9)	17 (5.2)	19 (5.8)	22 (6.7)	23 (7.0)	25 (7.6)	27 (8.2)	28 (8.5)	30 (9.1)	32 (9.6)
TUBING	FT. (M)	5 FT. 5 FT.	6 (1.8)	7 (2.1)	8 (2.4)	8 (2.4)	9 (2.7)	10 (3.0)	12 (3.7)	13 (4.0)	14 (4.1)	16 (4.9)	- -	- -	- -	- -	- -	- -	- -
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

1A / M7.2 TYPICAL PIPE HANGERS DETAIL
NO SCALE



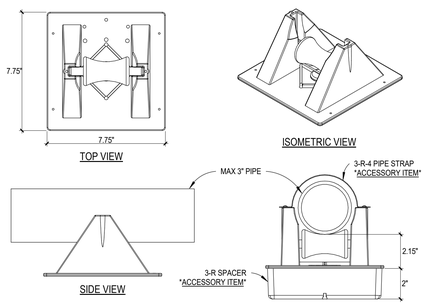
NOTES:
1. INSTALL PER SPLIT SYSTEM MANUFACTURER'S REQUIREMENTS. REFER TO SPECIFICATION SECTION 232300 FOR REFRIGERANT PIPING REQUIREMENTS.

1B / M7.2 SPLIT SYSTEM REFRIGERANT PIPING DETAIL
NO SCALE



NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ALL ROOF CONSTRUCTION AND FLASHING DETAILS.
2. COORDINATE ALL ROOF PENETRATIONS WITH STRUCTURAL ENGINEER AND WITH APPROVED ROOFING CONTRACTOR.

1C / M7.2 REFRIGERANT LINE LINE ROOF PENETRATION
NO SCALE

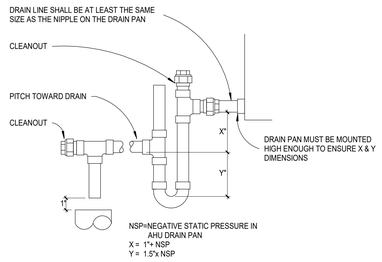


PRODUCT DESCRIPTION
A "roller-bearing" pipe support used to support roof-mounted pipes. Absorbs thermal expansion and contraction of pipes and prevents damage to the roof membrane. Pipes rest on a polycarbonate resin roller and a rod situated in a polycarbonate resin seat.

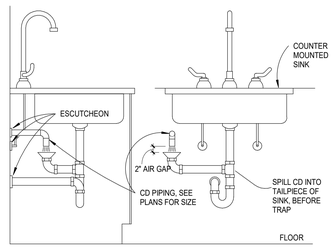
KEY INFORMATION
- MIRO Industries Model 3-R-4
- 3" ID maximum pipe capacity 3-3/4" OD maximum.
- Pipe clearance is 2-1/8", even load required, maximum load is 79 lbs.
- Recommended spacing is not to exceed 7 feet centers or code required spacing. Make certain each pipestand is properly elevated to even load weight at all pipestands.
- Base Material: MIRON TPC
- Axle and Roller Material: Polycarbonate

ACCESSORIES TO PROVIDE
- 3-R-4 pipe strap
- 3-R spacer
- Support pad or deck plate
- Eternabond: 2-sided tape or secure support to roof with Vulkem 116 or Mapeflex P1 polyurethane or other suitable adhesive.

2A / M7.2 ROOF PIPING SUPPORT DETAIL
NO SCALE



2B / M7.2 CONDENSATE DRAIN DETAIL
NO SCALE



2C / M7.2 CONDENSATE DRAIN TO SINK DETAIL
NO SCALE

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
TBPE FIRM REGISTRATION NUMBER F-1101

CONSTRUCTION

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

MECHANICAL DETAILS

M7.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:42 AM

LINEAR SLOT DIFFUSERS SCHEDULE

NOTES:
1. SEE PLANS FOR NECK SIZES.
2. ALL SLOT DIFFUSERS AND PLENUMS SHALL BE INSULATED.
3. FLEX AND HARD DUCT RUNOUT TO DIFFUSER SHALL MATCH NECK SIZE UNLESS NOTED OTHERWISE.
4. CUSTOM FIELD BUILT INSULATED PLENUM WITH 16" INLET.

ID	SLOT WIDTH (IN)	SLOT QTY	LINEAR FACE DIMS (IN)	PLENUM DATA INCLUDED (Y / N)	PLENUM DATA LENGTH (IN)	PLENUM DATA MODEL	FRAME TYPE	MATERIAL	FINISH	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	NOTES
LD-34B	1	2	96 x 4	Y	96	MP-39	SURFACE	ALUMINUM	WHITE ENAMEL	TITUS	ML-39	1-3
LD-36B	1	4	60 x 8	Y	60	MP-39	SURFACE	ALUMINUM	WHITE ENAMEL	TITUS	ML-39	1-3
LD-75	2.5	1	60 x 6	N	60	---	SURFACE	ALUMINUM	BLACK	TITUS	FL-25-JT	1-4

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

NOTES:
1. SEE PLANS FOR NECK SIZE.
2. FLEX AND HARD DUCT RUNOUT TO RGD UNIT SHALL MATCH NECK SIZE UNLESS NOTED OTHERWISE.

ID	DESCRIPTION	DAMPER INCLUDED (Y / N)	DAMPER DESCRIPTION	FRAME TYPE	PANEL SIZE	FACE (W" x H")	MATERIAL	FINISH	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	NOTES
D-31	LOUVERED DOUBLE DEFLECTION GRILLE	N	---	SURFACE	---	SEE PLANS	ALUMINUM	WHITE ENAMEL	TITUS	300FL	1, 2
D-32	LOUVERED DOUBLE DEFLECTION GRILLE	N	---	DUCT MOUNTED	---	SEE PLANS	ALUMINUM	WHITE (BLACK IN LOBBY)	TITUS	300FL	1, 2
D-54	3-CONE DIFFUSER	N	---	LAY-IN	24 x 24	24 x 24	ALUMINUM	WHITE ENAMEL	TITUS	TMS-AA	1, 2
G-1	EGGCRATE RETURN GRILLE	N	---	LAY-IN	24 x 24	SEE PLANS	ALUMINUM	WHITE (BLACK IN LOBBY)	TITUS	50F	1, 2
G-7	LOUVERED GRILLE	N	---	SURFACE	---	SEE PLANS	ALUMINUM	WHITE ENAMEL	TITUS	350FL	1, 2

ROOFTOP UNIT SCHEDULE

MARK			RTU-1	RTU-2	RTU-3	RTU-4	RTU-5	RTU-6	RTU-7	RTU-8	RTU-9
SERVICE			AUDITORIUM	BAND ROOM	PERCUSSION RMS	STAGE	DRESSING RMS	MAIN LOBBY	WORKSHOP	CONCESSIONS	EAST CORRIDOR
EER / IEER			11.0 / 17.5	11.0 / 18.0	12.0 / 20.0	11.0 / 20.0	12.1 / 18.8	11.0 / 17.5	12.0 / 20.0	13.0 / 20.0	11.0 / 20.0
CONFIGURATION			SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	MULTI ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV
DISCHARGE			VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL
NOMINAL CAPACITY (TONS)			60	12	10	25	6	35	10	13.5	16
SUPPLY FAN SECTION	AIRFLOW	*CFM*	14,230	2,530	2,085	5,930	1490	11425	2750	2590	5000
	OUTSIDE AIR	*CFM*	5,640	1,190	1,190	1,890	615	2400	700	1000	900
	FAN TYPE		SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)
	QUANTITY OF FANS		4	1	1	1	1	1	1	1	1
	MOTOR BHP	*TOTAL*	12.59	0.86	0.73	2.43	0.54	12.59	0.97	0.95	2.53
	MOTOR HP	*EACH*	5.50	2.40	2.4	5	4	5.50	7	2.40	5.00
	E.S.P.	*IN. W.C.*	2.00	1.00	1.00	1.00	1.00	1.50	1.00	1.00	1.00
	T.S.P.	*IN. W.C.*	3.2	1.39	1.37	1.71	1.39	2.2	1.44	1.49	1.67
EXHAUST FAN SECTION	AIRFLOW	*CFM*	14,230	2,530	2,085	5,930	1490	11425	2750	2590	5000
	FAN TYPE		SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)
	QUANTITY OF FANS		2	1	1	1	1	1	1	1	1
	MOTOR BHP	*TOTAL*	2.68	0.46	0.32	1.51	0.22	2.68	0.64	0.46	1.02
	MOTOR HP	*EACH*	5.5	1.7	1.7	4.3	4	5.5	4	1.7	2.4
	E.S.P.	*IN. W.C.*	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
COOLING	TOTAL CAPACITY	*MBH*	695.0	139.2	123	278.7	76	417	119.5	93.3	183.6
	SENSIBLE CAPACITY	*MBH*	381.5	74.2	61.6	128.5	40	232	75.8	63.4	135
	MAX FACE VELOCITY	*FPM*	500	500	500	500	500	500	500	500	500
	EAT (MIXED AIR)	*DB / WB °F*	80 / 67	81 / 71	81 / 72	76 / 69	80 / 67	80 / 67	77 / 66	80 / 67	80 / 67
	LAT	*DB / WB °F*	53.2 / 53.2	52.6 / 53.0	52.4 / 52.8	53.2 / 53.6	53.2 / 53.2	53.2 / 53.2	50.6 / 50.8	53.2 / 53.2	53.2 / 53.2
	REFRIGERANT		R-32	R-32	R-32	R-32	R-32	R-32	R-32	R-32	R-32
HOT GAS REHEAT COIL	TOTAL CAPACITY	*MBH*	255.0	47.8	39.9	108	28.3	200	57.8	40.5	90.4
	CONTROL	*STAGES*	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING
	MAX FACE VELOCITY	*FPM*	500	500	500	500	500	500	500	500	500
	LAT	*DB / WB °F*	70 / 59.5	70 / 59.2	70 / 59.1	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5
HEATING	TYPE		NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS
	STAGES		MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING
	CAPACITY INPUT / OUTPUT	*MBH*	600 / 486	200 / 160	200 / 160	300 / 240	200 / 160	300 / 240	200 / 160	300 / 240	450 / 360
	MAX FACE VELOCITY	*FPM*	500	500	500	500	500	500	500	500	500
	EAT / LAT	*°F*	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120
FILTERS	PRE-FILTERS	*MERV*	8	8	8	8	8	8	8	8	8
	FINAL FILTERS	*MERV*	13	13	13	13	13	13	13	13	13
ELECTRICAL	VOLTAGE		460	460	460	460	460	460	460	460	460
	PHASE		3	3	3	3	3	3	3	3	3
	MCA	*A*	152.3	39.9	32.4	68.0	21.7	152.3	36.5	24.9	49.0
	MOCP	*A*	175.0	60	50	90	25	175.0	50	35	70
MAXIMUM DIMENSIONS (LXWXH)		*IN.*	297 x 96.5 x 77.6	101.6 x 85.9 x 73.4	101.6 x 85.9 x 73.4	202.5 x 72.1 x 76.5	91 x 56.8 x 96.5	269 x 96.5 x 77.6	101.6 x 85.9 x 73.4	101.6 x 85.9 x 73.4	202.5 x 72.1 x 76.5
WEIGHT		*LB*	8540	2675	2260	4100	2260	7440	2675	2675	2450
BASIS OF DESIGN	MANUFACTURER		DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN
	MODEL		DPSA060	DPSC12B	DPSC10B	DPSC25B	DPSC06B	DPSA035	DPSC10B	DPSC07B	DPSC16B
REMARKS			1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4

REMARKS:
1. PROVIDE 0-100% MODULATING AIRSIDE ECONOMIZER WITH RETURN FAN.
2. PROVIDE GAS FURNACE WITH STAINLESS STEEL HEAT EXCHANGER.
3. PROVIDE DISCONNECT.
4. PROVIDE 14" ROOF CURB.

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

NOTES:
1. PROVIDE WITH WIND BAFFLES FOR LOW AMBIENT COOLING.
2. PROVIDE 14" CONDENSING UNIT STAND.

ID	LOCATION NAME	COOLING CAPACITY (TONS)	COOLING REFRIGERANT	HEATING CAPACITY (BTUH)	AMBIENT TEMP DB (F) SUMMER	SEER	EER	ELECTRICAL DATA RLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH	INDOOR UNIT ID	WEIGHT	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
OU-1	ROOF	1	R-32	13,600	100	25.2	13.2	12	12.3	15	208	1	IU-01	132	DAIKIN	RXM
OU-2	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-02	132	DAIKIN	RXM
OU-3	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-03	132	DAIKIN	RXM
OU-4	ROOF	2	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-04	132	DAIKIN	RXM
OU-5	ROOF	1	R-32	10800	100	14.3	8.5	7.5	8	15	208	1	IU-05	132	DAIKIN	RXM
OU-6	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-06	132	DAIKIN	RXM
OU-7	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-07	132	DAIKIN	RXM
OU-8	ROOF	4	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-08	132	DAIKIN	RXM
OU-9	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-09	132	DAIKIN	RXM
OU-10	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-10	132	DAIKIN	RXM

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

NOTES:
1. PROVIDE WITH WIND BAFFLES FOR LOW AMBIENT COOLING.
2. PROVIDE 14" CONDENSING UNIT STAND.

ID	LOCATION NAME	COOLING CAPACITY (TONS)	COOLING REFRIGERANT	HEATING CAPACITY (BTUH)	AMBIENT TEMP DB (F) SUMMER	SEER	EER	ELECTRICAL DATA RLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH	INDOOR UNIT ID	WEIGHT	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
OU-1	ROOF	1	R-32	13,600	100	25.2	13.2	12	12.3	15	208	1	IU-01	132	DAIKIN	RXM
OU-2	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-02	132	DAIKIN	RXM
OU-3	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-03	132	DAIKIN	RXM
OU-4	ROOF	2	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-04	132	DAIKIN	RXM
OU-5	ROOF	1	R-32	10800	100	14.3	8.5	7.5	8	15	208	1	IU-05	132	DAIKIN	RXM
OU-6	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-06	132	DAIKIN	RXM
OU-7	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-07	132	DAIKIN	RXM
OU-8	ROOF	4	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-08	132	DAIKIN	RXM
OU-9	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-09	132	DAIKIN	RXM
OU-10	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-10	132	DAIKIN	RXM

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

NOTES:

1. ALL PERFORMANCE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ASHRAE 130-2008 AND AHRI 880-2011.
2. ALL AIRFLOW, PRESSURE LOSSES AND HEATING PERFORMANCE VALUES HAVE BEEN CORRECTED FOR THE PROJECT SITE ALTITUDE.
3. COIL AIR PRESSURE DROP SHOWN IS FOR COOLING CFM.
4. ALL NC LEVELS DETERMINED USING AHRI 885-2008 APPENDIX E.
5. IN THE "STEPS" COLUMN, CODE "S" DENOTES A MODULATING SCR HEATER.
6. ELECTRIC HEATING COILS SHALL BE HOUSED IN AN ATTENUATOR SECTION THAT IS INTEGRAL TO THE TERMINAL UNIT.
7. THE MINIMUM SUPPLY CIRCUIT AMPACITY (MCA) AND MAXIMUM OVERCURRENT PROTECTION (MOP) RATINGS WERE CALCULATED IN ACCORDANCE WITH UL STANDARDS BASED ON MOTOR AND ELECTRIC COIL FULL LOAD CURRENT RATINGS.

ID	LOCATION NO.	LOCATION NAME	TYPE	AIRFLOW (CFM) MAX	AIRFLOW (CFM) MIN	STATIC PRESS (IN WG) MIN	ELECTRIC HEATING COIL DATA CAPACITY (BTUH)	AIR SIDE HEATING AIRFLOW (CFM)	AIR SIDE TEMP DB (°F) ENT	AIR SIDE TEMP DB (°F) LVG	HTG ELEMENT KW	HTG ELEMENT STEPS	MAX NOISE CRITERIA (NC) RAD	MAX NOISE CRITERIA (NC) DISCH	ELECTRICAL DATA MCA (A)	MOCP (A)	VOLT (V)	PH	SOUND ATTENUATOR INCLUDED	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	NOTES
VAV-1	A112	BOH HALL	SINGLE DUCT	560	170	0.5	9,490	220	55	95	3	S	19	25	13.5	15	277	1	Yes	TITUS	DESV	1-7
VAV-2	A128	DRESSING ROOM	SINGLE DUCT	150	45	0.5	3,451	80	55	95	1.5	S	10	14	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-3	A129	DRESSING ROOM	SINGLE DUCT	150	45	0.5	3,451	80	55	95	1.5	S	10	14	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-4	A130	MAKEUP	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	17	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-5	A131	MUSIC LIBRARY	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-6	A132	LARGE PRACTICE	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-7	A133	SMALL PRACTICE	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-8	A134	UNISEX TOILET	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-9	A137	SMALL PRACTICE	SINGLE DUCT	130	40	0.5	3,451	80	55	95	1.5	S	10	11	6.8	15	277	1	Yes	TITUS	DESV	1-7

FAN SCHEDULE

NOTES:
1. PROVIDE UNIT MOUNTED SOLID STATE SPEED CONTROLLER AND/OR EC MOTOR WITH SPEED CONTROL OPTIONS
2. 12" INSULATED ROOF CURB
3. PROVIDE MOTORIZED DAMPER
4. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH
5. CONSTANT VOLUME
6. INTERLOCK WITH RTU-7

ID	LOCATION NAME	SERVES	FAN DATA AIRFLOW (CFM)	FAN DATA ESP (IN WG)	FAN DATA FAN TYPE	FAN DATA DRIVE	HP WATTS	ELECTRICAL DATA FLA (A)	MCA (A)	MOCP (A)	V	PH	HZ	DAMPER TYPE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	NOTES
EF-1	ROOF	DRESSING ROOMS	550	0.38	CENTRIFUGAL UPLAST	DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-5
EF-2	ROOF	LOBBY RESTROOMS	1,630	0.5	CENTRIFUGAL UPLAST	DIRECT	0.5	9.8	12.3	15	120	1	60	MOTORIZED	GREENHECK	G-133-C	1-5
EF-3	ROOF	WORKSHOP	375	0.1	CENTRIFUGAL UPLAST	DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-6
EF-4	ROOF	LOADING DOCK	280	0.1	CENTRIFUGAL UPLAST	DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-6

SILENCER SCHEDULE (VIBRO-ACOUSTICS)

TAG	SYSTEM	TYPE (NOTE 1)	DIMENSIONS DUCT WIDTH, IN.	DIMENSIONS DUCT HEIGHT, IN.	DIMENSIONS DUCT INLET DIA., IN.	DIMENSIONS DUCT OUTLET DIA., IN.	DIMENSIONS OUTER DIAMETER, IN.	DIMENSIONS LENGTH IN.	AIRFLOW, CFM	VELOCITY, FPM (NOTE 2)	IDEAL DP IN.W.G. (NOTE 3)	MAX.DP W/SYS EFF IN.W.G. (NOTE 4)	MINIMUM DYNAMIC INSERTION LOSS, dB (NOTE 5) OCTAVE BAND CENTER FREQUENCY, HZ 63	125	250	500	1000	2000	4000	8000	BASIS OF DESIGN VIBRO-ACOUSTICS MODEL NUMBER	NOTES
ST-RTU-1 RA	RTU-1 RETURN AIR	RD	46	38				36	14230	-1172	0.09	0.09	4	6	11	17	16	12	9	7	RD-MHV-F4	
ST-RTU-1-SA	RTU-1 SUPPLY AIR	RD	48	36				36	14230	+1186	0.09	0.09	3	5	10	16	16	12	9	7	RD-MHV-F4	
ST-RTU-2-RA	RTU-2 RETURN AIR	RD	28	28				36	2500	-459	0.1	0.11	7	14	20	20	27	21	16	13	RD-ULV-F2	6
ST-RTU-2-SA	RTU-2 SUPPLY AIR	RD	34	30				36	2500	+353	0.07	0.08	6	9	20	28	34	30	21	15	RD-ULV-F7	6
ST-RTU-3-RA	RTU-3 RETURN AIR	RD	30	24				36	2805	-561	0.08	0.09	6	11	17	18	21	15	15	13	RD-LV-F1	6
ST-RTU-3-SA	RTU-3 SUPPLY AIR	RD	30	24				36	2805	+561	0.08	0.09	5	10	16	17	20	18	16	13	RD-LV-F1	6
ST-RTU-4-RA	RTU-4 RETURN AIR	RD	55	24				48	5930	-647	0.13	0.23	8	13	21	26	29	21	16	13	RD-LV-F2	
ST-RTU-4-SA	RTU-4-SUPPLY AIR	RD	34	26				36	5930	+966	0.1	0.12	3	5	13	21	24	19	13	9	RD-MV-F7	
ST-RTU-6-SA	RTU-6 SUPPLY AIR	RD	50	22				36	11425	+1496	0.09	0.09	3	4	9	16	19	15	10	7	RD-HV-F7	
ST-RTU-9-RA	RTU-9 RETURN AIR	CD			26	26	42	36	5000	-1356	0.14	0.16	5	9	20	27	41	41	31	15	CD-LV-F1	
ST-RTU-9-SA	RTU-9 SUPPLY AIR	CD			36	36	52	36	5000	+707	0.04	0.05	5	8	17	23	32	28	18	8	CD-LV-F1	
ST-VAV-6-SA	VAV-6 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	
ST-VAV-7-SA	VAV-7 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	
ST-VAV-9-SA	VAV-9 SUPPLY AIR	CD			12	12	28	24	130	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	

Notes:
1. TYPE R - RECTANGULAR D - DISSIPATIVE
C - CIRCULAR
2. VELOCITY SHOWN IS + (FORWARD FLOW) OR - (REVERSE FLOW) AS DEFINED BY ASTM E477-20.
3. IDEAL PRESSURE DROP AS DETERMINED PER ASTM E477-20 IN A NVLAP-ACCREDITED ACOUSTICAL LABORATORY.
4. PRESSURE DROP PER ASTM E477-20 PLUS SYSTEM EFFECTS FOR NEARBY DUCT ELEMENTS.
5. MINIMUM DYNAMIC INSERTION LOSS DETERMINED PER ASTM E477-20 IN A NVLAP-ACCREDITED ACOUSTICAL LABORATORY.
6. HIGH TRANSMISSION LOSS (HTL) 18 GA. SILENCER CASING

HUMIDIFIER STEAM GENERATOR SCHEDULE

MARK			HU-1
SERVICE			PIANO STO. 145
DISPERSION UNIT	OUTPUT	*LB/HR*	2
	DESIGN TEMPERATURE	*°F*	72
	DESIRED RH	*%*	50-60
	AIRFLOW	*CFM*	100
	DISPERSION DISTANCE	*INCH*	9
	UNIT DIMENSIONS	*LxWxH*	27x17x15
ELECTRICAL DATA	MCA	*AMPS*	16.8
	VOLTS / PHASE		120 / 1
BASIS OF DESIGN	WEIGHT	*LBS*	55
	MANUFACTURER		NORTEC
	MODEL		EL 005 RMBP
REMARKS			1-4

REMARKS:

1. PROVIDE WITH INTEGRAL DRAIN TEMPERING VALVE TO TEMPER CONDENSATE TO 140 DEG. F MAX. AND PROVIDE 1 INCH INTERNAL AIR GAP.

2. PROVIDE WITH BLOWER PACK FOR STAND ALONE OPERATION.

3. PROVIDE WITH BAS INTERFACE.

4. INSTALL WITH MANUFACTURER RECOMMENDED CLEARANCES. BOD CLEARANCES: 36" FRONT, 12" CEILING, 24" FLOOR, 12" SIDES.

DLRGROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

MECHANICAL SCHEDULES

M8.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_MP_2024.rvt
7/25/2024 4:52:43 AM

(R)	RELOCATED
Ø	PHASE
A	AMPERE
AC	ABOVE COUNTER
AF	AMP FRAME (CIRCUIT BREAKER)
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AP	WIRELESS ACCESS POINT
AT	AMP TRIP (CIRCUIT BREAKER OR FUSE)
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO-VIDEO, AUDIO-VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BJ	BONDING JUMPER
BKR	BREAKER
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAS	CASING
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CE	COVER ELEVATION
CEM	CEMENT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CG	CORNER GUARD
CH	CHANNEL
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CKT BK	CIRCUIT BREAKER
CL	CIRCUIT LINE
CM	CEILING MOUNTED
CMP	CORRUGATED METAL PIPE
CO	CONDUIT ONLY
COMP	COMPOSITE
COOR	COORDINATE
COORD	COORDINATE
CSK	COUNTERSUNK
CT	CURRENT TRANSFORMER
CTL	CONTROL
CU	COPPER
CWV	COMBINATION WASTE AND VENT
DB	DECIBEL
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANELBOARD
DW	DISHWASHER
ECS	EMERGENCY COMMUNICATION SYSTEM
EGB	ELECTRICAL GROUNDING BUSBAR
EMD	ESTIMATED MAXIMUM DEMAND
EMGB	ELECTRICAL MAIN GROUNDING BUSBAR
EP	EXPLOSION PROOF
ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FLA	FULL LOAD AMPS
FS	FLOW SWITCH
FSD	FIRE SMOKE DAMPER
G	EQUIPMENT GROUNDING CONDUCTOR
GEN	GENERATOR
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION OF EQUIPMENT
GND	EQUIPMENT GROUNDING CONDUCTOR
HH	HANDHOLE
HOA	HAND-OFF-AUTOMATIC
HP	HORSE POWER
IC	INTERCOM
IG	ISOLATED GROUND
JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CIRCUIT
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LT	LIGHT
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MRTS	MOTOR RATED TOGGLE SWITCH
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTS	MAIN TRANSFER SWITCH
N	NEUTRAL
NC	NORMALLY CLOSED
NF	NON-FUSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OS&Y	OUTSIDE SCREW AND YOKE
P	POLE(S)
PA	PUBLIC ADDRESS
PB	PULL BOX
PH	PHASE
PIV	POST INDICATOR VALVE
PNL	PANEL
PWR	POWER
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REF	REFERENCE
RESP	RESPONSIVE
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
SEC	SECONDARY
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TC	TIME CLOCK
TGB	TELECOMMUNICATIONS GRONDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GRONDING BUSBAR
TO	TELECOMMUNICATIONS OUTLET
TR	TELECOMMUNICATIONS ROOM
TS	TAMPER SWITCH
TV	TELEVISION
UG	UNDERGROUND
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WA	TELECOMMUNICATIONS WORK AREA
WG	WIRE GUARD
WP	WEATHER-PROOF (NEMA 3R)
XFMR	TRANSFORMER

* NOTE *

ALL NOTES ON THIS SHEET ARE APPLICABLE TO ALL OTHER SHEETS IN THIS SET.

THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE APPLICABLE IN THIS SET OF DRAWINGS.

NOTES

GENERAL NOTES

1 MODIFICATIONS TO EXISTING POWER DISTRIBUTION EQUIPMENT: MATCH EXISTING MANUFACTURER, SWITCH TYPE, FUSE TYPE, BREAKER TYPE AND KAIC RATING FOR ALL INSTALLED DEVICES.
2 EXISTING PANEL DIRECTORIES AT PANELS AFFECTED BY WORK: PROVIDE UPDATED TYPED PANEL DIRECTORY. CONSULT OWNER FOR INPUT ON LABELING OF ALL EXISTING CIRCUITS.
3 DEVICES AND LIGHT FIXTURES DENOTED 'ER' ARE EXISTING TO BE RELOCATED. NOTIFY A/E IF DEVICES OR FIXTURES ARE DAMAGED.

GENERAL DEMOLITION NOTES

1 ITEMS INDICATED ON DEMOLITION PLANS ARE BASED ON AS-BUILT DRAWINGS AND FIELD OBSERVATIONS AND ARE INTENDED TO GIVE THE BIDDER A GENERAL REPRESENTATION OF EXISTING CONDITIONS.
2 REMOVE ALL ITEMS SHOWN FULL-TONE OR NOTED ELSEWHERE IN THE DOCUMENTS TO BE REMOVED OR DEMOLISHED. DEMOLISH ADDITIONAL ITEMS NOT SHOWN ON DRAWINGS, BUT WHICH MUST BE REMOVED TO COMPLETE THE PROJECT.
3 ITEMS SHOWN HALF-TONE ARE EXISTING TO REMAIN.
4 RELOCATE ITEMS DENOTED 'ER'. SEE LIGHTING, POWER AND/OR SPECIAL SYSTEM SHEETS FOR NEW LOCATIONS. 'ER' IS DEFINED AS EXISTING (TO BE) RELOCATED.
5 EXISTING CONDUIT MAY REMAIN IF ALL THE FOLLOWING ARE TRUE:
A. IT CAN BE REUSED TO FEED DEVICES INSTALLED UNDER THIS CONTRACT.
B. IT DOES NOT INTERFERE WITH OTHER TRADES.
C. IT WAS ORIGINALLY INSTALLED MEETING SPECIFICATIONS RELATED TO THIS PROJECT.
D. IT WILL NOT BE EXPOSED IN A FINISHED AREA (UNLESS NOTED OTHERWISE).
6 PROVIDE ELECTRICAL DEMOLITION ASSOCIATED WITH MECHANICAL EQUIPMENT TO BE REMOVED. IN ADDITION TO DEVICES SHOWN, REFER TO MECHANICAL AND ARCHITECTURAL DEMOLITION SHEETS TO DETERMINE EQUIPMENT TO BE REMOVED.
7 MAINTAIN FUNCTIONALITY OF ALL EXISTING LOW VOLTAGE SYSTEMS INCLUDING, BUT NOT LIMITED TO, TELECOM CABLING NETWORKS, INTERCOM, CLOCKS, FIRE ALARM, SAFETY AND SECURITY DURING ALL PHASES OF CONSTRUCTION. PROVIDE TEMPORARY INTERCONNECTIONS AS REQUIRED TO ACCOMMODATE CONSTRUCTION SCHEDULE.

GENERAL SITE PLAN NOTES

1 ALL LIGHTING AND POWER CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISHED GRADE.
2 ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.
3 ALL CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.
4 POLE BASE HEIGHTS:
A. PEDESTRAIN POLES IN SIDEWALKS OR PLAZAS - CONCRETE BASE WITH RUBBED FINISH, TOP OF FOOTING FLUSH WITH PAVING.
B. PEDESTRAIN POLES IN LAWN - CONCRETE BASE WITH ROUNDED EDGES AND RUBBED FINISH, BASE EXTENDS 4" ABOVE FINISHED GRADE.
C. PARKING LOT POLES BEHIND CURBS - CONCRETE BASE WITH ROUNDED EDGES AND RUBBED FINISH, BASE 2'-6" ABOVE FINISHED GRADE.

GENERAL POWER NOTES

1 VERIFY ANY NEUTRAL WIRES REQUIRED ON 1Ø OR 3Ø MECHANICAL UNITS FURNISHED UNDER DIVISION 23. IF REQUIRED, PROVIDE NEUTRAL.
2 PROVIDE DEDICATED 120-VOLT CIRCUITS TO ALL HVAC BAS CONTROL DEVICES AND PANELS. COORDINATE QUANTITY WITH DIVISION 23. UTILIZE NEAREST SPARE 120-VOLT, 20/1 BREAKER. LABEL TYPED PANEL DIRECTORY ACCORDING TO LOAD BEING SERVED.
3 IN ADDITION TO DEVICES SHOWN, SEE SCHEDULE SHEETS FOR CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
4 LOCATE SWITCHES FOR CONTROL OF FANS IN TWO-GANG BOX WITH LIGHT SWITCH WHERE APPLICABLE.
5 PROVIDE #10AWG CONDUCTORS FOR ALL WARM AIR DRYER CIRCUITS. PROVIDE LOCKOUT DEVICE AT ALL BREAKERS SERVING WARM AIR DRYERS.

GENERAL LIGHTING NOTES

1 SEE LIGHT FIXTURE SCHEDULE AND SYMBOLS LEGEND FOR MOUNTING HEIGHTS, UNLESS NOTED OTHERWISE.
2 PROVIDE #10AWG MINIMUM CONDUCTORS FOR ALL EXTERIOR LIGHTING CIRCUITS.
3 SEE ARCHITECTURAL BUILDING ELEVATIONS FOR LOCATION OF BUILDING MOUNTED EXTERIOR LIGHT FIXTURES.
4 PROVIDE BEAD OF SILICONE SEALANT AROUND RECESSED BACK BOX PERIMETER AT ALL BUILDING MOUNTED EXTERIOR LIGHT FIXTURE LOCATIONS.
5 FIXTURES DENOTED WITH 'NL' ARE PROGRAMMED AS NIGHT LIGHTS. DO NOT CIRCUIT THESE AS UN-SWITCHED. SEE LIGHTING CONTROL SCHEDULES FOR MORE INFORMATION
6 FIXTURES DENOTED WITH LOWER CASE LETTERS SHALL BE CONTROLLED BY SWITCHES DENOTED WITH THE SAME LOWER CASE LETTER IN EACH ROOM.

GENERAL DEVICE BOX NOTES

1 SEE SYMBOLS LEGEND THIS SHEET FOR MOUNTING HEIGHTS UNLESS NOTED OTHERWISE ON DRAWINGS.
2 ALL MOUNTING HEIGHTS ARE TO CENTERLINE OF BOXES UNLESS NOTES OTHERWISE.
3 PROVIDE BOX EXTENDER FOR FLUSH INSTALLATION OF DEVICES LOCATED IN ARCHITECTURAL CASEWORK THAT IS FLUSH WITH ADJACENT WALL (SUCH AS RECEPTACLES FOR GARBAGE DISPOSERS).
4 FLOOR BOXES: OBTAIN OWNER APPROVAL OF ALL BOX LOCATIONS PRIOR TO ROUGH IN. PROVIDE DEVICE PLATES AT DEVICES AND BLANK PLATES AT ALL UNUSED COMPARTMENTS.
5 COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH MARKERBOARDS. ADJUST BOX LOCATIONS TO AVOID MARKERBOARDS.
6 COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH TACKBOARDS. ADJUST BOX LOCATIONS TO AVOID TACKBOARDS. PROVIDE BOX EXTENDER FOR A FLUSH INSTALLATION WHERE DEVICES MUST BE MOUNTED AT TACKBOARD/TACKWALL.
7 CEILING MOUNTED RECEPTACLES: AT SUSPENDED CEILINGS, ROUTE POWER TO RECEPTACLE VIA FLEXIBLE METALLIC CONDUIT WITH 6-FOOT SERVICE LOOP. FEED FMC FROM A J-BOX RIGIDLY SUPPORTED A MAXIMUM OF 24-INCHES ABOVE SUSPENDED CEILING OR AT BOTTOM OF STRUCTURE ABOVE, WHICHEVER IS LOWER. LOCATE J-BOX DIRECTLY ABOVE RECEPTACLE AND SUPPORT VIA STRUCTURE, OR VIA THREAD ROD AND UNISTRUT HUNG FROM STRUCTURE ABOVE IN HIGH STRUCTURE APPLICATIONS.
8 DEVICES RECESSED IN MULLIONS: BACK BOXES TO BE RECESSED FOR FLUSH INSTALLATION OF DEVICE AND WALLPLATE. EXTEND CONCEALED CONDUIT IN MULLION UP TO WALL ABOVE AND STUB OUT ABOVE ACCESSIBLE CEILING. IN AREAS WITH NO CEILING, EXTEND CONDUIT TOWARDS CABLING SOURCE TO ABOVE NEAREST ACCESSIBLE CEILING.

GENERAL LIGHTNING PROTECTION AND GROUNDING NOTES

1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS.
2 ALL UNDERGROUND CONNECTIONS OF GROUNDING CONDUCTORS AND LIGHTNING PROTECTION SHALL BE BY EXOTHERMIC WELD, ALL BUILDING CONNECTIONS TO STRUCTURAL STEEL SHALL BE BY EXOTHERMIC WELD.
3 PROVIDE GROUND RING ELECTRODE AROUND ENTIRE BUILDING: 17 GAUGE 32 STRAND COPPER. BURIAL DEPTH SHALL BE 30". LOCATE BETWEEN 3'-0" AND 8'-0" FROM BUILDING FOUNDATION, CONNECT TO GROUND RODS AT EACH CORNER OF BUILDING.
4 UNDER SLAB STATIC GROUND CONDUCTORS SHALL BE BARE 17 GAUGE 32 STRAND COPPER.
5 ALL DOWN CONDUCTORS AND MAIN CONDUCTORS OF LIGHTNING PROTECTION SYSTEM SHALL BE 17 GAUGE 32 STRAND COPPER.
6 FURNISH AND INSTALL 1" PVC SLEEVE THRU FOUNDATION WALLS FOR ALL FOUNDATION PENETRATIONS.
7 NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90°, NOR SHALL IT HAVE A RADIUS OF BEND LESS THAN 8".
8 ALL MAIN CONDUCTORS SHALL BE COPPER, EXCEPT WHERE ALUMINUM IS REQUIRED AT MECHANICAL EQUIPMENT. PROVIDE BIMETAL PARALLEL SPLICER AT TRANSITION TO ALUMINUM.
9 PROVIDE TYPE "P" AIR TERMINALS ON PARAPET, SPACED AT NO GREATER THAN 20'-0" APART, AND LOCATED WITHIN 2'-0" OF CORNERS OF STRUCTURE.

GENERAL SYSTEMS NOTES

DIVISION 26

1 TELECOMMUNICATIONS OUTLETS: PROVIDE TWO-GANG BOX (2.25-INCH DEEP MINIMUM) WITH SINGLE-GANG STRAP MOUNT PLASTER RING AND 1-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING (EXCEPTION: VOICE-ONLY OR VIDEO-ONLY OUTLETS PER NOTE BELOW).
2 TELECOMMUNICATIONS OUTLET INDICATED AS ROUGH IN ONLY (NO SUBSCRIPTS): INSTALL PER NOTE ABOVE, WITH BLANK 302SS SINGLE-GANG WALLPLATE.
3 VOICE-ONLY OR VIDEO-ONLY TELECOMMUNICATIONS OUTLET: PROVIDE SINGLE-GANG BOX WITH 1-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING.
4 MISCELLANEOUS LOW VOLTAGE OUTLETS (CALL STATIONS, HANDSETS, VOLUME CONTROL, MICROPHONE OUTLETS, SURFACE-MOUNT WALL SPEAKERS AND FIRE ALARM DEVICES): PROVIDE SINGLE-GANG BOX WITH 3/4-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING.
5 INSULATED BUSHINGS: PROVIDE BUSHINGS ON ALL CONDUIT STUB UPS, INCLUDING BUT NOT LIMITED TO, OUTLETS FOR TELECOMMUNICATIONS, FIRE ALARM, SECURITY, ACCESS CONTROL, MASS NOTIFICATION, PUBLIC ADDRESS, ALL OTHER LOW VOLTAGE INTERCOMMUNICATIONS AND UNUSED STUB-UPS OR STUB-UPS INDICATED FOR FUTURE USE.
6 FLOOR BOXES CONTAINING TELECOMMUNICATIONS OUTLETS: FOR EACH LOW-VOLTAGE COMPARTMENT, ROUTE 1-INCH CONDUIT WITH PULL STRING UNDERFLOOR, UP NEAREST WALL, AND STUB INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING. LABEL CONDUIT END 'FLOOR BOX'
7 SLEEVES FOR LOW VOLTAGE CABLES: PROVIDE 2-INCH SLEEVES UNLESS NOTED OTHERWISE. COORDINATE WITH PATH OF DUCTWORK AND GWB CEILING TO ENSURE ACCESSIBILITY, EXTEND SLEEVES AS REQUIRED. INSTALL ALL SLEEVES 4-INCHES ABOVE HIGHER CEILING OF TWO ADJACENT SPACES. REFER TO ROOM FINISH SCHEDULES AND REFLECTED CEILING PLANS FOR CEILING HEIGHTS. STUB SLEEVES INTO JOIST SPACE OF FINISHED ROOMS WITH EXPOSED STRUCTURE. PROVIDE INSULATED BUSHINGS ON BOTH ENDS OF ALL SLEEVES, INCLUDING UNUSED SLEEVES. PROVIDE GROUT OR ESCUTCHEONS TO SECURE SLEEVES TO WALL. PROVIDE FIRE-RATED SLEEVES AT ALL FIRE-RATED WALLS.
8 PROVIDE ADDITIONAL CONDUIT, BOXES, CONDUCTORS AND OVERCURRENT PROTECTION FOR 120-VOLT BRANCH CIRCUITS NOT SPECIFICALLY COVERED UNDER DIVISION 26 WORK, BUT REQUIRED TO COMPLETE DIVISION 08 AND 28 WORK. DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, POWER SUPPLIES FOR DOOR HARDWARE, ACCESS CONTROL, FIRE ALARM AND VIDEO SURVEILLANCE.
9 CARD READERS: PROVIDE RECESSED SINGLE-GANG BOX WITH GASKETED BLANK COVERPLATE AND EMPTY 1-INCH CONDUIT STUBBED INTO NEAREST ACCESSIBLE SPACE ABOVE FINISHED CEILING OR JOIST SPACE OF ADJACENT EXPOSED STRUCTURE. LABEL CONDUIT END 'CARD READER'. COORDINATE FINAL CARD READER LOCATIONS WITH OWNERS ACCESS CONTROL CONTRACTOR.
10 PROVIDE WATERFALL DROPOUTS AT ALL CABLE TRAY LOCATIONS ABOVE RUNWAYS, WALL/FLOOR MOUNTED RACKS, AND EQUIPMENT ENCLOSURES.
11 AUDIO VISUAL (AV) SYSTEMS: PROVIDE RECESSED BOXES, CONDUIT AND PULL STRINGS FOR ALL SYSTEM COMPONENTS. SEE TA SERIES SHEETS

DIVISION 27

1 ALL SPEAKERS AND HORN-TYPE SPEAKERS ARE PART OF THE INTERCOM SYSTEM, UNLESS NOTED OTHERWISE.
2 PROVIDE SURFACE MOUNT ENCLOSURE AND BAFFLE FOR ALL SPEAKERS IN FINISHED SPACES WITH NO CEILINGS (EXPOSED STRUCTURE).
3 WIRELESS ACCESS POINTS: INSTALL ONE HORIZONTAL DATA CABLE, PER SPECIFICATIONS, TO EACH WAP SHOWN ON E3 SERIES SHEETS. TERMINATE EACH CABLE IN SURFACE BOX AND COIL A 6' SLACK LOOP.
4 UTILIZE SLEEVES AND FIRE RATED SLEEVES AT RATED WALLS PROVIDED UNDER DIVISION 26 FOR INSTALLATION OF ALL LOW VOLTAGE CABLING. FOLLOW INDUSTRY STANDARDS TO MAINTAIN 40% FILL REQUIREMENTS IN ALL SLEEVES (SUPERSEDES NEC - DO NOT FILL SLEEVES TO CAPACITY). PROVIDE ADDITIONAL SLEEVES MEETING DIVISION 26 REQUIREMENTS AS REQUIRED.
5 SYSTEM PANEL LOCATIONS: AUXILIARY SYSTEM PANELS, POWER SUPPLIES OR OTHER EQUIPMENT ENCLOSURES SHALL NOT BE LOCATED IN TELECOM ROOMS UNLESS NOTED OTHERWISE. IF DRAWINGS DO NOT DEPICT LOCATIONS FOR AUXILIARY COMPONENTS, CONSULT OWNER OR A/E FOR APPROVED LOCATIONS PRIOR TO EQUIPMENT INSTALL.

DIVISION 28

1 PROVIDE MINIMUM CANDELA RATINGS FOR ROOMS WITH WALL MOUNTED VISUAL NOTIFICATION APPLIANCES AS FOLLOWS:
- <20'x20' = 15cd
- <28'x28' = 30cd
- <40'x40' = 60cd
- >40'x40' = 110cd

2 PROVIDE MINIMUM CANDELA RATINGS FOR ROOMS WITH CEILING MOUNTED VISUAL NOTIFICATION APPLIANCES ON MAXIMUM 10' HIGH CEILING AS FOLLOWS:
- <20'x20' = 15cd
- <30'x30' = 30cd
- <40'x40' = 60cd
- >40'x40' = 110cd

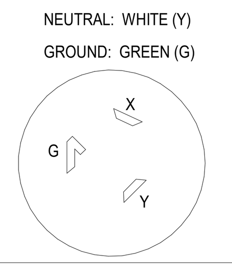
3 INCREASE DEVICE RATINGS/SETTINGS WHEN LOCATED OFF-CENTER IN ROOMS TO MAINTAIN NFPA COVERAGE.
4 VISUAL DEVICES IN CORRIDORS SHALL BE 15cd. VISUAL DEVICES LOCATED IN OTHER AREAS SHALL BE 110cd UNLESS NOTED OTHERWISE.
5 IN ADDITION TO DEVICES SHOWN, SEE SCHEDULE SHEETS FOR FIRE ALARM SYSTEM DEVICES CONNECTIONS TO MECHANICAL EQUIPMENT.
6 PROVIDE FIRE ALARM MONITORING OF ALL FLOW AND TAMPER SWITCHES. CONFIRM QUANTITIES AND LOCATION WITH DIVISION 21.
7 UTILIZE SLEEVES AND FIRE RATED SLEEVES AT RATED WALLS PROVIDED UNDER DIVISION 26 FOR INSTALLATION OF ALL LOW VOLTAGE CABLING. FOLLOW INDUSTRY STANDARDS TO MAINTAIN 40% FILL REQUIREMENTS IN ALL SLEEVES (SUPERSEDES NEC - DO NOT FILL SLEEVES TO CAPACITY). PROVIDE ADDITIONAL SLEEVES MEETING DIVISION 26 REQUIREMENTS AS REQUIRED.
8 SYSTEM PANEL LOCATIONS: AUXILIARY SYSTEM PANELS, POWER SUPPLIES OR OTHER EQUIPMENT ENCLOSURES SHALL NOT BE LOCATED IN TELECOM ROOMS UNLESS NOTED OTHERWISE. IF DRAWINGS DO NOT DEPICT LOCATIONS FOR AUXILIARY COMPONENTS, CONSULT OWNER OR A/E PRIOR TO EQUIPMENT INSTALLATION.
9 DUCT SMOKE DETECTION: DETERMINE QUANTITY AND PLACEMENT OF DETECTORS REQUIRED FOR COVERAGE OF DUCTWORK BASED ON NFPA REQUIREMENTS. PROVIDE MECHANICAL EQUIPMENT FAN SHUTDOWN RELAY AT ALL DUCT DETECTORS. SEE HVAC PLANS FOR EQUIPMENT LOCATIONS. COORDINATE SHUTDOWN CONTROL WITH DIVISION 23.
10 SMOKE DAMPERS AND FIRE-SMOKE DAMPERS: PROVIDE FIRE ALARM CONNECTION AND 120-VOLT POWER TO EACH FIRE/SMOKE DAMPER SHOWN ON HVAC PLANS. PROVIDE DEDICATED CIRCUIT TO DAMPERS, ROUTED THROUGH NORMALLY CLOSED FIRE ALARM RELAY, MOUNTED ON WALL IN NEAREST ELECTRICAL ROOM. COORDINATE WITH DAMPER MANUFACTURER FOR SPECIFIC DAMPER LOAD REQUIREMENTS. RELAY SHALL BE CONTROLLED BY FACP, SUCH THAT, ON GENERAL ALARM DAMPERS CLOSE. FIRE ALARM CONNECTION TO DAMPER SHALL BE A SUPERVISORY CIRCUIT MONITORING STATUS OF INTEGRAL SMOKE DETECTOR, AND SHALL PROVIDE REMOTE FIRE/SMOKE DAMPER RESET. FACP SHALL INITIATE A SUPERVISORY SIGNAL WHEN INTEGRAL DETECTOR GOES INTO ALARM. FIRE/SMOKE DAMPERS MAY BE GROUPED TOGETHER ON SUPERVISORY CIRCUITS TO SIMPLIFY WIRING. COORDINATE REQUIREMENTS WITH FIRE/SMOKE DAMPER MANUFACTURER. UTILIZE SPARE 20/1 BREAKERS. LABEL TYPED PANEL DIRECTORY 'FIRE/SMOKE DAMPERS - (INDICATE AREA SERVED)'.
11 PROVIDE ONE HORIZONTAL DATA CABLE, PER SPECIFICATIONS, TO EACH CCTV CAMERA SHOWN ON E3 SERIES SHEETS. TERMINATE EACH INTERIOR AND BUILDING MOUNT CABLE IN SURFACE BOX AND COIL A 6' SLACK LOOP. DO NOT MAKE PENETRATIONS ON EXTERIOR OF BUILDING.

L6-20 WIRE MATRIX

208V, 2 POLE / 3WIRE

CABLE COLOR CODE

LINE: BLACK (X)
NEUTRAL: WHITE (Y)
GROUND: GREEN (G)



ELECTRICAL SYMBOLS

LIGHTING

LIGHTING FIXTURE TAG

XXX — FIXTURE TYPE
XXX-X — CKT DESIGNATION (PNL - CKT NO.)
XXX-X — RELAY PANEL - RELAY NO. OR LOCAL SWITCH DESIGNATION

LIGHTING FIXTURES

- LIGHTING FIXTURE
- LIGHTING FIXTURE ON EMERGENCY SYSTEM
- CEILING FIXTURE, SURFACE, RECESSED OR PENDANT
- LIGHTING FIXTURE ON EMERGENCY SYSTEM
- LIGHTING TRACK, TRACK MOUNTED LIGHT FIXTURES
- LIGHTING FIXTURE
- WALL MOUNTED LIGHTING FIXTURE
- WALL WASHER
- HIGH BAY LIGHTING FIXTURE
- WALL MOUNTED LIGHTING FIXTURE
- SELF CONTAINED EMERGENCY LIGHTING UNIT MOUNT 94-INCHES AFF, UNO
- EXIT SIGN, CEILING MOUNTED, DIRECTIONAL ARROW(S) AS INDICATED
- EXIT SIGN, WALL MOUNTED, DIRECTIONAL ARROW(S) AS INDICATED. MOUNT 94-INCHES AFF, UNO

AREA LIGHTING

- SITE LIGHTING - POLE
- POLE MOUNTED AREA LIGHTING FIXTURE
- POLE WITH POLE MOUNTED AREA LIGHTING FIXTURE
- WALL MOUNTED AREA LIGHTING FIXTURE
- IN GRADE LIGHT FIXTURE
- POST TOP LIGHT FIXTURE
- SPOT LIGHT

LIGHTING CONTROL DEVICES

LCP	LIGHTING CONTROL PANEL
INV	CENTRAL BATTERY INVERTER
R	LOW VOLTAGE RELAY
PC	PHOTOELECTRIC CELL

SWITCHES AND WALL-BOX CONTROLS

SWITCHES: MOUNT 48-INCHES AFF UNO

- SUPERSCRIPT , SWITCH SHALL CONTROL FIXTURE DENOTED WITH SAME LOWER CASE LETTER
- SWITCH SYMBOL
- SUBSCRIPT, SWITCH TYPE - SEE BELOW
- LINE THRU SWITCH INDICATES A KEY OPERATED SWITCH

S	SWITCH, SINGLE POLE
S_2	SWITCH, DOUBLE POLE
S_3	SWITCH, 3-WAY
S_4	SWITCH, 4-WAY
S_D	SWITCH, DIMMER
$S_{L\#}$	SWITCH, LOW VOLTAGE. SEE LOW VOLTAGE SWITCH SCHEDULE
S_O	SWITCH, WALL-BOX OCCUPANCY SENSOR
S_P	SWITCH WITH PILOT LIGHT
S_{OD}	WALL OCC, DIMMING

CEILING MOUNTED LIGHTING CONTROL DEVICES
MAXIMUM MOUNTING HEIGHT OF 10-FEET AFF

OS — OCCUPANCY/ VACANCY SENSOR

WALL MOUNTED LIGHTING CONTROL DEVICES:
MOUNT 94-INCHES AFF, UNO

OS — OCCUPANCY/VACANCY SENSOR

POWER

- CIRCUIT HOME RUN
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT STUB-UP
- CONDUIT SLEEVE
- CONDUIT SEAL
- CONDUIT CONCEALED IN CEILING OR WALLS, POWER
- CONDUIT CONCEALED IN CEILING OR WALLS, OTHER (* = SEE ABBREVIATIONS)
- CONDUIT CONCEALED IN FLOOR OR UNDERGROUND, POWER
- CONDUIT CONCEALED IN FLOOR OR UNDERGROUND, OTHER (* = SEE ABBREVIATIONS)
- EXPOSED CONDUIT, POWER
- EXPOSED CONDUIT, OTHER (* = SEE ABBREVIATIONS)
- FRS — FIRE RATED SLEEVE
- T — TRANSFORMER
- XXX — BRANCH CIRCUIT PANELBOARD MOUNT 72-INCHES TO TOP
- XXX — DISTRIBUTION PANELBOARD MOUNT 72-INCHES TO TOP
- EQUIPMENT CABINET, AS NOTED
- XXX — SWITCHBOARD
- MOTOR STARTER OR DRIVE
- DISCONNECT SWITCH
- COMBINATION STARTER / DISCONNECT SWITCH
- CT — CURRENT TRANSFORMER ENCLOSURE
- M — METER
- GEN — GENERATOR
- ATS — AUTOMATIC TRANSFER SWITCH
- SYSTEM GROUND ELECTRODE
- T — THERMOSTAT
- MUSHROOM SWITCH, 48" AFF
- MH — ELECTRICAL MANHOLE
- HH — ELECTRICAL HAND HOLE
- MECHANICAL CONNECTION
- S_F — FUSE AND SWITCH ASSEMBLY
- S_T — MANUAL CONTROLLER WITH THERMAL OVERLOAD
- S_M — MANUAL CONTROLLER W/O THERMAL OVERLOAD
- B — ENCLOSED CIRCUIT BREAKER
- PB — PULL BOX
- EQUIPMENT CONNECTION
- CABLE TRAY, LADDER TYPE OR RUNWAY
- CABLE TRAY
- MULTI-OUTLET ASSEMBLIES MOUNT 18-INCHES AFF, UNO WHERE DENOTED 'AC', MOUNT ABOVE COUNTER
- DIVIDED SURFACE RACEWAY MOUNT 18-INCHES AFF, UNO WHERE DENOTED 'AC', MOUNT ABOVE COUNTER

PUSHBUTTON STATION: MOUNT 48-INCHES AFF UNO

- SWITCH, PUSH BUTTON, SINGLE
- SWITCH, PUSH BUTTON, DOUBLE
- SWITCH, PUSH BUTTON, TRIPLE

RECEPTACLES: MOUNT 18-INCHES AFF, UNO

DIAGONAL LINE THROUGH SYMBOL OR DENOTED 'AC' INDICATES MOUNT DEVICE ABOVE COUNTER. WHERE INDICATED AS 'MOUNT ABOVE COUNTER' MOUNT BOTTOM OF BOX 2-INCHES ABOVE TOP OF BACKSPLASH OR 6-INCHES ABOVE COUNTERTOP IF NO BACKSPLASH EXISTS.

LABELS SHALL BE MACHINE PRINTED, UNO

- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, GFI TYPE
- DUPLEX RECEPTACLE, MOUNT ABOVE COUNTER
- DUPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER
- FOURPLEX RECEPTACLE
- FOURPLEX RECEPTACLE, GFI TYPE
- FOURPLEX RECEPTACLE, MOUNT ABOVE COUNTER
- FOURPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER
- DUPLEX RECEPTACLE, FLUSH IN CEILING
- FOURPLEX RECEPTACLE, FLUSH IN CEILING
- DUPLEX RECEPTACLE, HORIZONTALLY MOUNTED
- DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE
- DUPLEX RECEPTACLE, HORIZ. MTD, ABOVE COUNTER
- DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE, MOUNT ABOVE COUNTER
- R — WEATHER RESISTANT GFI DUPLEX RECEPTACLE, ROOF MOUNT 18-INCHES ABOVE ADJACENT STRUCTURE WITH A WEATHERPROOF, IN-USE COVER
- WP — WEATHER RESISTANT GFI DUPLEX RECEPTACLE, MOUNT 18-INCHES AFF WITH A WEATHERPROOF, IN-USE COVER
- EWC — STD DUPLEX RECEPTACLE TO SERVE ELECTRIC WATER COOLER, MOUNT AT HEIGHT PER EQUIPMENT MANUFACTURER'S INSTALLATION GUIDELINES. WIRE TO GFCI BKR IN PANELBOARD.
- TV — DUPLEX RECEPTACLE TO SERVE TELEVISION, MOUNT AT SAME HEIGHT AND WITHIN 8-INCHES OF ADJACENT TV OUTLET
- AV — RECEPTACLE TO SERVE AUDIOVISUAL EQUIPMENT, MOUNT AT SAME HEIGHT AND WITHIN 8-INCHES OF ADJACENT AV OUTLET. SEE TA SERIES SHEETS. ISOLATED GROUND CONNECTED PER DETAIL XX/E6.1.
- IG — ISOLATED GROUND RECEPTACLE TO SERVE EQUIPMENT UNDER AV SCOPE SHOWN ON TA SERIES SHEETS, MOUNT AT HEIGHT / LOCATION INDICATED ON TA SHEETS. CONNECTED PER DETAIL 5A/E6.1
- AV — RECESSED BACK BOX FOR WALL MOUNTED DISPLAY. BACK BOX PROVIDED BY DIV 27, INSTALLED BY DIV 26. COORDONATE HEIGHT AND LOCATION WITH DRAWINGS
- DUPLEX RECEPTACLE, EMERGENCY
- FOURPLEX RECEPTACLE, EMERGENCY
- FOURPLEX RECEPTACLE, ONE DUPLEX SWITCHED, ONE DUPLEX UNSWITCHED
- DUPLEX RECEPTACLE, SPLIT CONTROLLED, LOWER SWITCH
- DUPLEX RECEPTACLE, SWITCHED
- RANGE RECEPTACLE, MOUNT 8-INCHES AFF
- SPECIAL RECEPTACLE, DEEP WELL BOX
- MULTI-DEVICE FLOOR BOX WITH RECEPTACLE, TELECOMMUNICATIONS, AND AV OUTLETS. SEE FLOOR BOX SCHEDULE.
- USB ONLY RECEPTACLE
- RECEPTACLE WITH USB PORTS
- FLUSH JUNCTION BOX
- FLUSH JUNCTION BOX, WALL MOUNTED
- HAND DRYER, INSTALL HAND DRYER SPECIFIED IN DIV. 11
- RECEPTACLE ON CORD REEL, CEILING MOUNTED

COMMUNICATIONS

TELECOMMUNICATIONS OUTLETS: MOUNT 18-INCHES AFF, UNO, AND WITHIN 8-INCHES OF ADJACENT RECEPTACLE WHERE DENOTED 'AC', MOUNT ABOVE COUNTER WHERE DENOTED 'C', MOUNT FLUSH IN CEILING

- X,Y,Z — TELECOMMUNICATIONS OUTLET PROVIDE JACKS UNDER A COMMON FACEPLATE:
  X = QTY OF VOICE JACKS
  Y = QTY OF DATA JACKS
  Z = QTY OF VIDEO JACKS
- DISP — TELECOMMUNICATIONS OUTLET IN AV BACKBOX. SEE TA SERIES SHEETS.
- WAP — WIRELESS ACCESS POINT
- VIDEO ONLY TELECOM OUTLET (TELEVISION OUTLET) MOUNT 94-INCHES AFF, UNO. EQUIVALENT TO 0,0,1
- TELEVISION OUTLET, FLUSH IN CEILING
- AV OUTLET.
- FLOOR MOUNTED TELECOMMUNICATIONS RACK

BELLS, BUZZERS, CHIMES AND WALL SPEAKERS:
MOUNT 94-INCHES AFF, UNO

- CLASS PROGRAM BELL
- BUZZER
- CHIME
- INTERCOM SPEAKER, WALL
- INTERCOM SPEAKER, FLUSH IN CEILING, ENCLOSED IN BACKBOX WHERE EXPOSED
- SPEAKER/HORN, WALL
- INTERCOM CALLBACK STATION MOUNT 42-INCHES AFF
- TWO-WAY INTERCOM/CALL STATION COMBINATION UNIT MOUNT 42-INCHES AFF
- INTERCOM MASTER STATION OUTLET MOUNT 18-INCHES AFF
- INTERCOM HANDSET MOUNT 50-INCHES AFF
- VOLUME CONTROL, WALL MOUNT 48-INCHES AFF

SAFETY

FACP	FIRE ALARM CONTROL PANEL MOUNT CENTER OF DISPLAY 54-INCHES AFF
FAA	FIRE ALARM ANNUNCIATOR PANEL MOUNT CENTER OF DISPLAY 54-INCHES AFF
LOC	LOCAL OPERATOR'S CONSOLE MOUNT CENTER OF DISPLAY 54-INCHES AFF
NAC	NOTIFICATION APPLIANCE CIRCUIT CABINET MOUNT CENTER OF DISPLAY 54-INCHES AFF
F	MANUAL FIRE ALARM PULL STATION MOUNT 48-INCHES AFF

FIRE ALARM A/V DEVICES: MOUNT 94-INCHES AFF, OR 6-INCHES BELOW CEILING, WHICHEVER IS LOWER UNO

- FIRE ALARM BELL
- FIRE ALARM HORN
- FIRE ALARM VISUAL WARNING SIGNAL
- FIRE ALARM BELL WITH VISUAL WARNING SIGNAL
- FIRE ALARM HORN WITH VISUAL WARNING SIGNAL
- MINI FIRE ALARM HORN WITH VISUAL WARNING SIGNAL
- FIRE ALARM SPEAKER WITH VISUAL WARNING SIGNAL
- FIRE ALARM SPEAKER, FLUSH IN CEILING
- FIRE ALARM SPEAKER WITH VISUAL WARNING SIGNAL, CEILING
- FIRE ALARM VISUAL WARNING SIGNAL, CEILING
- EC — EMERGENCY RADIO CALL STATION, 48" AFF.

- S — SPRINKLER SYSTEMS ELECTRIC BELL ALARM
- D — FIRE ALARM MAGNETIC DOOR HOLDER MOUNT 74-INCHES AFF
- L — REMOTE INDICATOR LAMP
- OSY — OS&Y VALVE
- FS — WATER FLOW ALARM SWITCH
- TS — TAMPER SWITCH
- T — BEAM TRANSMITTER
- R — BEAM RECEIVER
- FF — FIRE FIGHTERS TELEPHONE MOUNT 54-INCHES AFF
- DAS ANTENNA
- SMOKE DETECTOR - IONIZATION TYPE (D = DUCT)
- SMOKE DETECTOR - PHOTOELECTRIC TYPE (D = DUCT)
- SMOKE DETECTOR - IONIZATION TYPE
- SMOKE DETECTOR - PHOTOELECTRIC TYPE
- HEAT DETECTOR RATE-OF-RISE AND FIXED TEMPERATURE, 135 F
- HEAT DETECTOR, RATE-OF-RISE AND FIXED TEMPERATURE, 200 F
- HEAT DETECTOR, FIXED TEMPERATURE ONLY, 135 F
- HEAT DETECTOR, FIXED TEMPERATURE ONLY, 200 F

SECURITY

CR	CARD READER
SS	SECURITY SYSTEM CALL BUTTON
IC	FACILITY INTERCOM
IC	HANDS FREE INTERCOM
ID	INTRUSION DETECTOR, CEILING
ID	INTRUSION DETECTOR, WALL
R	INTRUSION DETECTOR RECEIVER
R	INTRUSION DETECTOR TRANSMITTER
MD	MOTION DETECTOR
L	INDICATOR LIGHT, CEILING
L	INDICATOR LIGHT, WALL
K	SECURITY KEYPAD
C	MAGNETIC CONTACT (DOOR POSTION SENSOR)
ES	ELECTRIC STRIKE ON SECURITY ACCESS DOOR
X	REQUEST-TO-EXIT MOTION SENSOR
X	REQUEST-TO-EXIT BUTTON

ONE-LINE DIAGRAM

XX — ENCLOSED CONTROLLER (ACROSS-THE-LINE UNO) MOUNT 60-INCHES AFF TO TOP
XX = STARTER NEMA SIZE

XX/X, XXAF, XX — ENCLOSED SWITCH; MOUNT 60-INCHES AFF TO TOP
XX/X = AMP RATING / NO. OF POLES
XXAF = FUSE SIZE; AF=AMP FUSE; NF=NO FUSE
XX = STARTER NEMA SIZE

XX/X, XXAF, XX — COMBINATION CONTROLLER \ DISCONNECT; MOUNT 60-INCHES AFF TO TOP
XX/X = AMP RATING / NO. OF POLES
XXAF = FUSE SIZE; AF=AMP FUSE; NF=NO FUSE
XX = ENCLOSURE NEMA RATING; BLANK=NEMA 1; WP=NEMA 3R

M — METER SOCKET/METER

SPD — SURGE PROTECTION DEVICE

T, XX — TRANSFORMER
T = TRANSFORMER ID
XX = SIZE

XXX/X LSIG — BREAKER
XXX/X = AMP RATING / POLES
LSIG = ADJUSTABLE SETTINGS (WHERE NOTED)
L = LONG TIME
S = SHORT TIME
I = INSTANTANEOUS
G = GROUND FAULT PROTECTION OF EQUIPMENT
GFPE = GROUND FAULT PROTECTION OF EQUIPMENT
ERMS = ENERGY REDUCTION MAINTENANCE SWITCH
ST = SHUNT TRIP

XXX/X, XXX — FUSIBLE SWITCH
XXX/X = SWITCH AMP RATING / POLES
XXX = FUSE SIZE

GROUNDING ELECTRODE SYSTEM

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES

E0.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:30:56 AM

LEVEL 01 - AREA B - ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

DE1	DEMOLISH ALL ELECTRICAL SYSTEMS IN THE ROOM INCLUDING LIGHTING, CONTROLS, FIRE ALARM, AND RECEPTACLES.
DE2	DEMOLISH INTERCOM SPEAKERS AND RETURN TO OWNER.
DE3	DEMOLISH A/V EQUIPMENT IN THIS ROOM INCLUDING PROJECTOR AND SOUND REINFORCEMENT SPEAKERS AND RETURN TO OWNER.
DE4	DEMOLISH SECURITY CAMERAS AND RETURN TO OWNER
DE5	DEMOLISH EXTERIOR WALL PACKS
DE6	DEMOLISH EXISTING CONDUITS LOCATED IN CHASE. CUT CONDUITS DOWN TO SLAB AND ABANDON.

DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

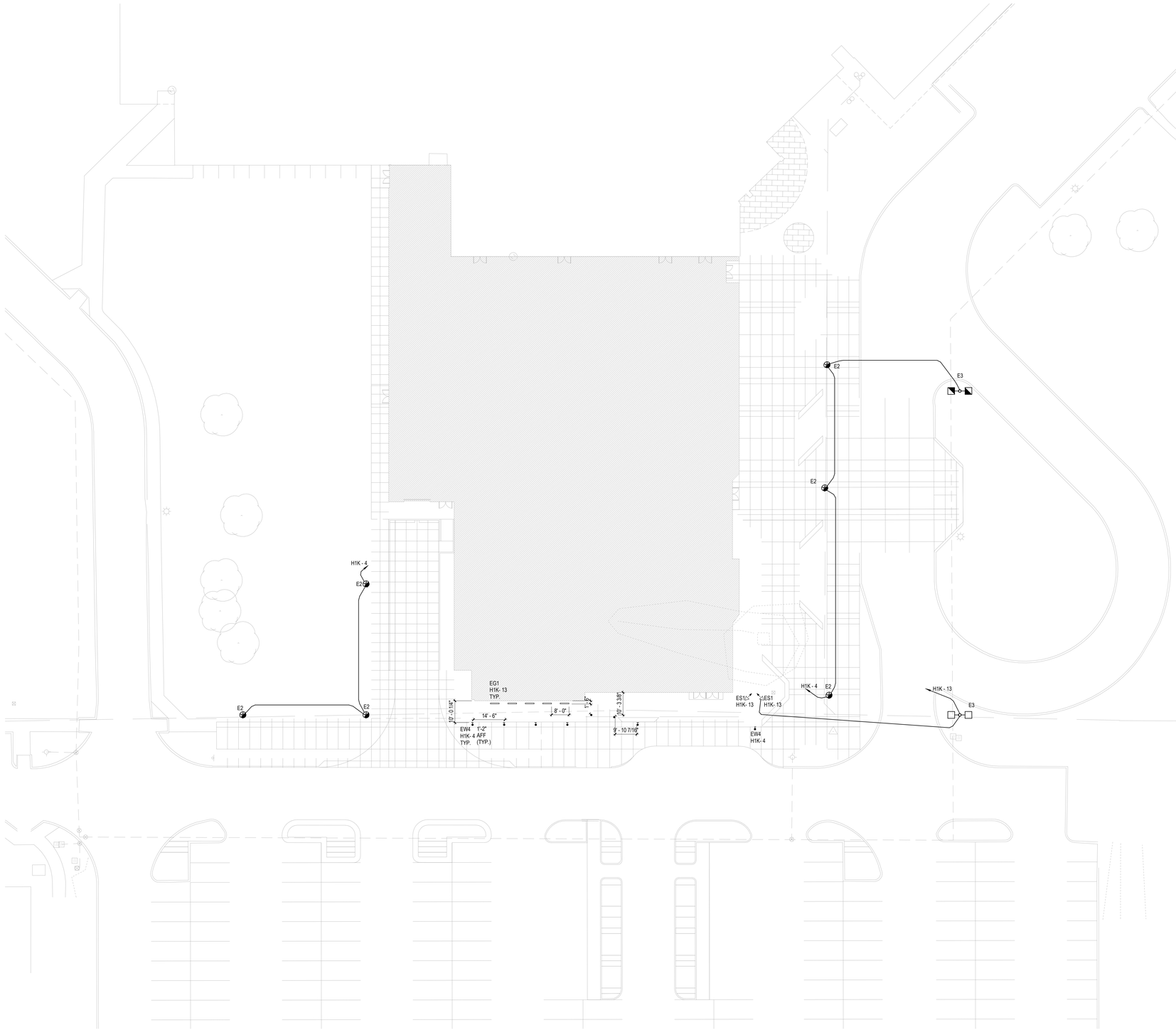
REVISIONS

39-23712-00

LEVEL 01 - AREA B - ELECTRICAL DEMOLITION PLAN

ED1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:30:58 AM



ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

SHEET NOTES

DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

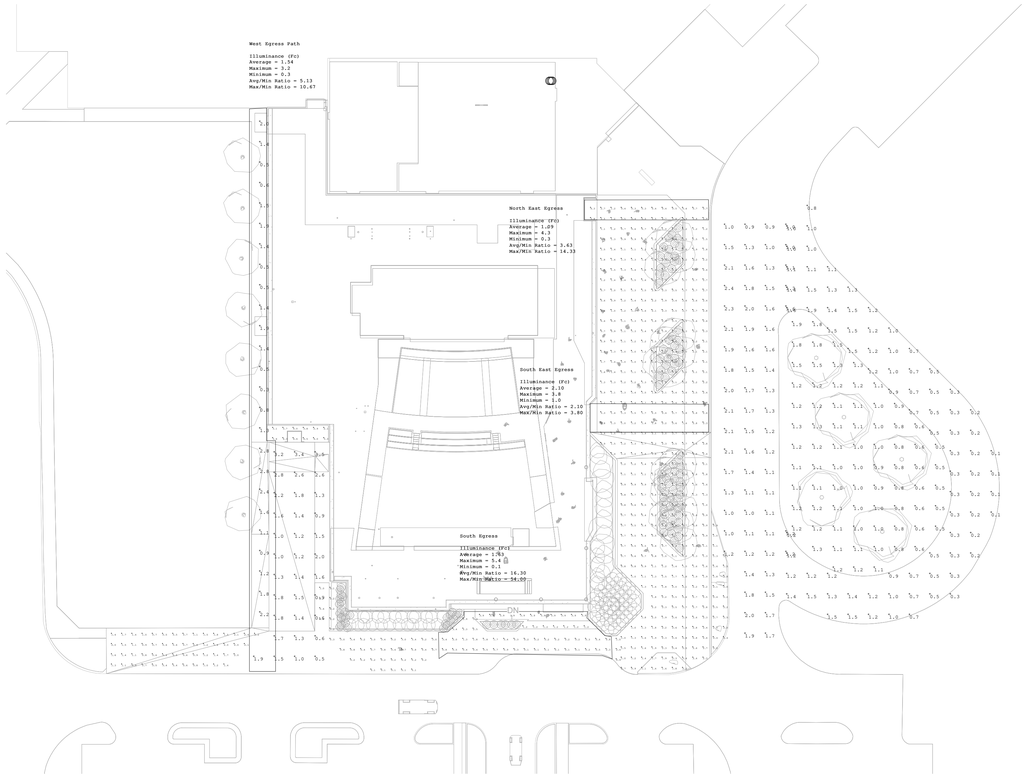
REVISIONS

39-23712-00

ELECTRICAL SITE PLAN

ES1.1

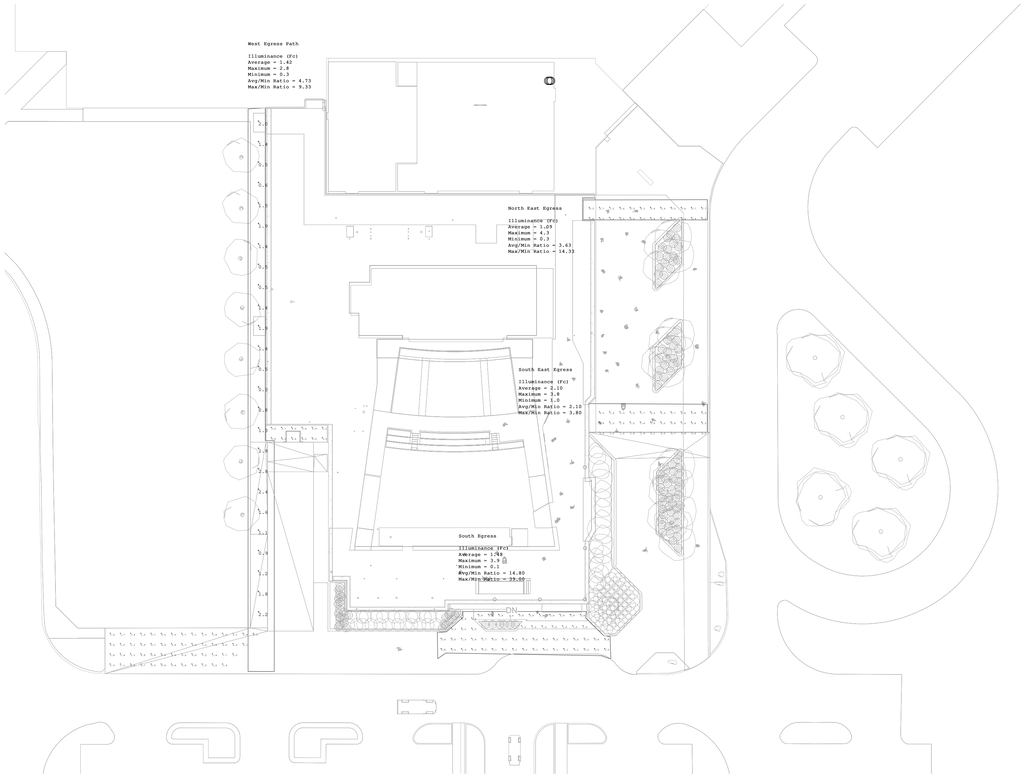
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:30:59 AM



N

SITE LIGHTING EGRESS CALCULATIONS

SCALE: 1" = 30'-0"



N

SITE LIGHTING EMERGENCY CALCULATIONS

SCALE: 1" = 30'-0"

DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NECHWATOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

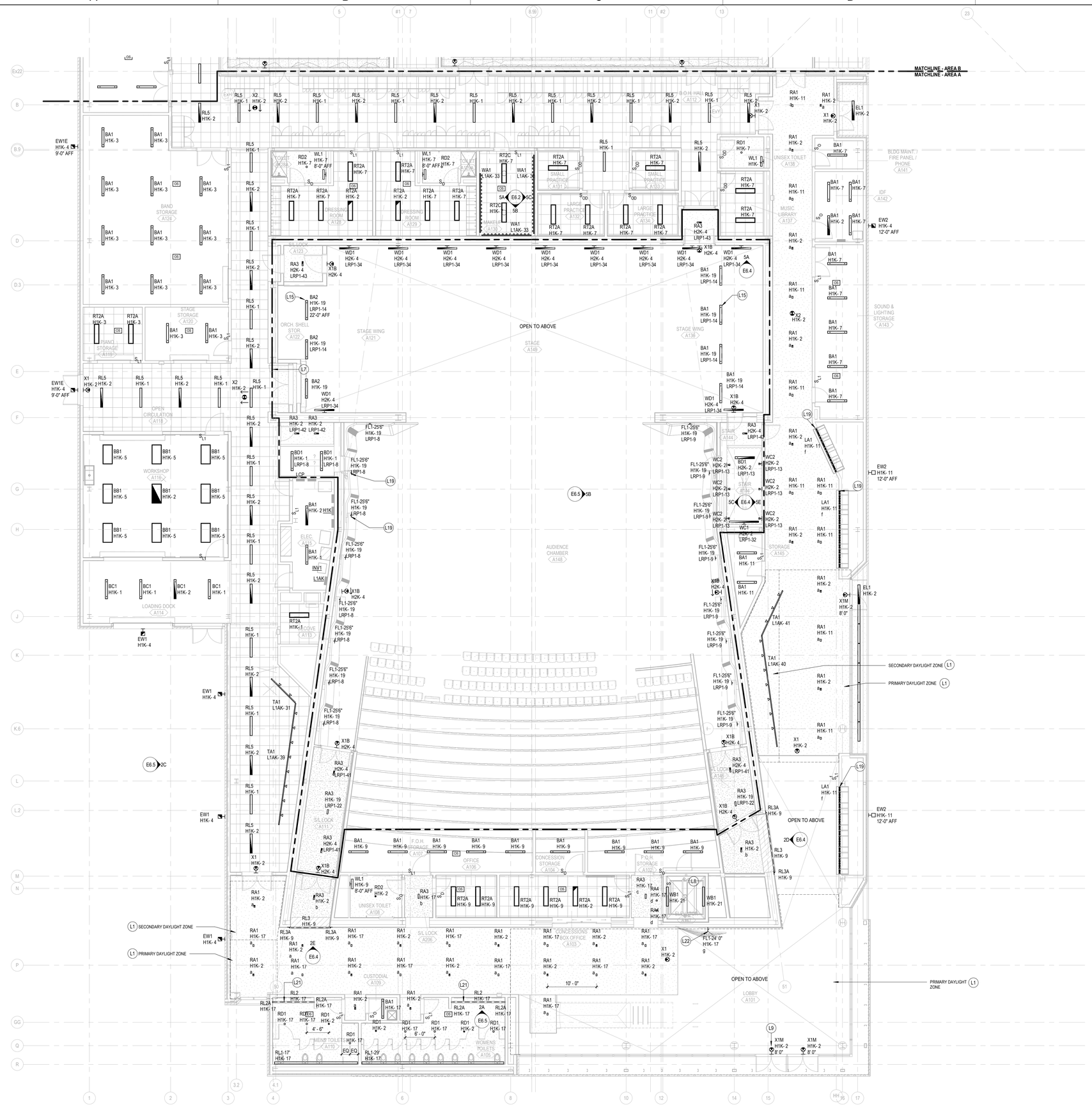
REVISIONS

39-23712-00

SITE LIGHTING PHOTOMETRICS

ES1.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:00 AM



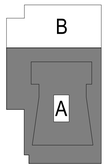
LEVEL 01 - AREA A - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

L1	GENERAL LIGHTING IN DAYLIGHT ZONES IS LESS THAN 150 WATTS. DAYLIGHT RESPONSIVE CONTROLS NOT REQUIRED PER 2021 IECC C408.
L7	LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.
L8	MOUNT SWITCH IN SHAFT AT 42" ABOVE LEVEL 1 FINISHED FLOOR. SWITCH CONTROLS LIGHTS IN ELEVATOR PIT. MOUNT LIGHT FIXTURES 6" ABOVE LEVEL 1 FINISHED FLOOR.
L9	MOUNTED ABOVE MULLION, TYPICAL
L15	TYP. MOUNT TO UNDERSIDE OF CATWALK.
L19	SEE MOUNTING DETAIL IN ARCHITECTURAL DRAWINGS. MOUNT FIXTURE SO THAT ASYMMETRIC OPTICS POINT AWAY FROM THE WALL.
L21	TYPICAL FOR RL2 & RL2A. PROVIDE A CONTINUOUS PORTAL. BOTTOM OF VERTICAL SECTION SHOULD ALIGHT WITH TOP OF SINK COUNTER.
L22	LOCATE REMOTE DRIVER BEHIND AN ACCESS PANEL IN ADJACENT HARD LID CEILING.

KEY PLAN



DLRGROUP
© DLR Group

NOT FOR CONSTRUCTION

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

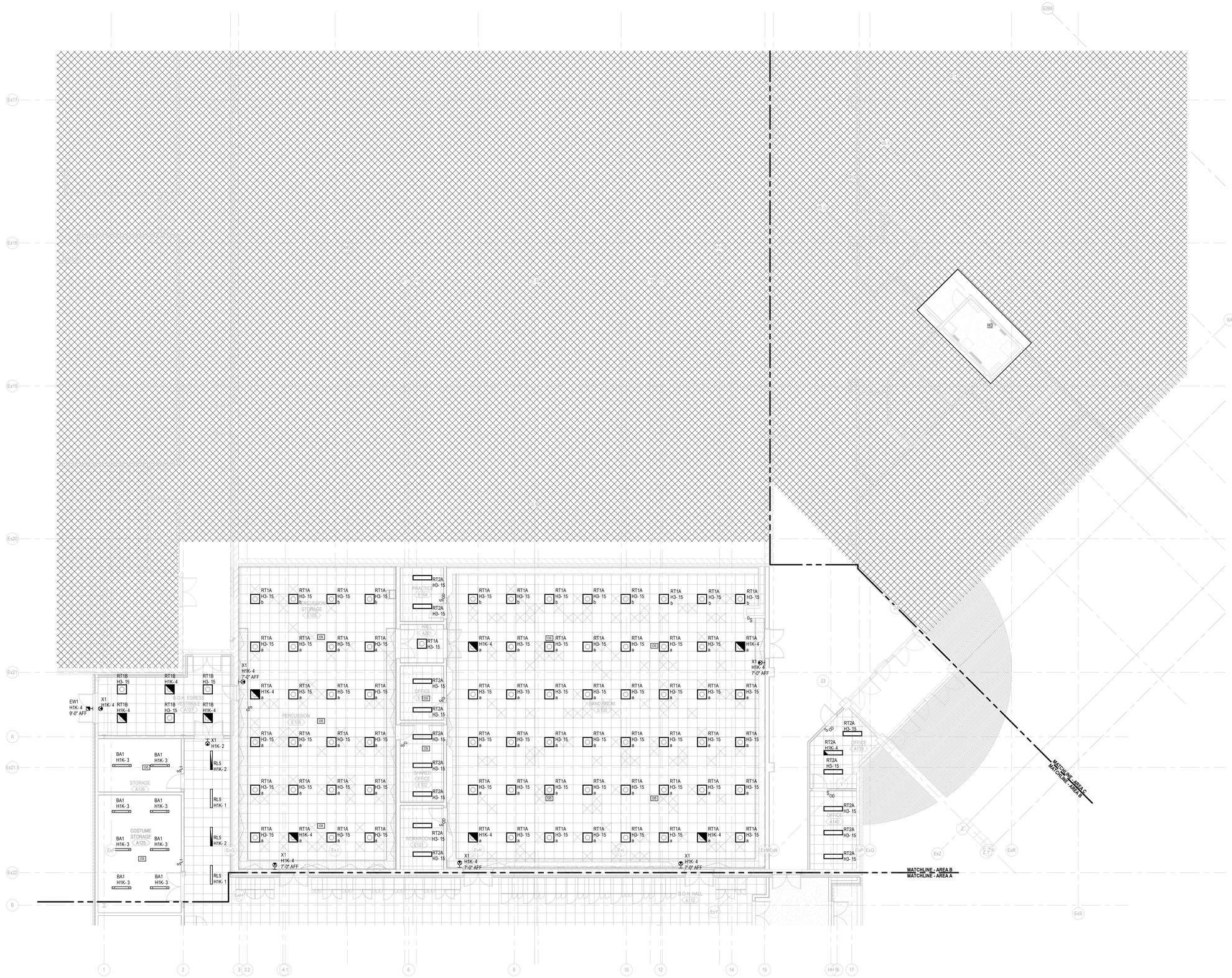
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA A - LIGHTING PLAN

EL1.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:10 AM

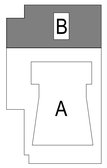


LEVEL 01 - AREA B - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

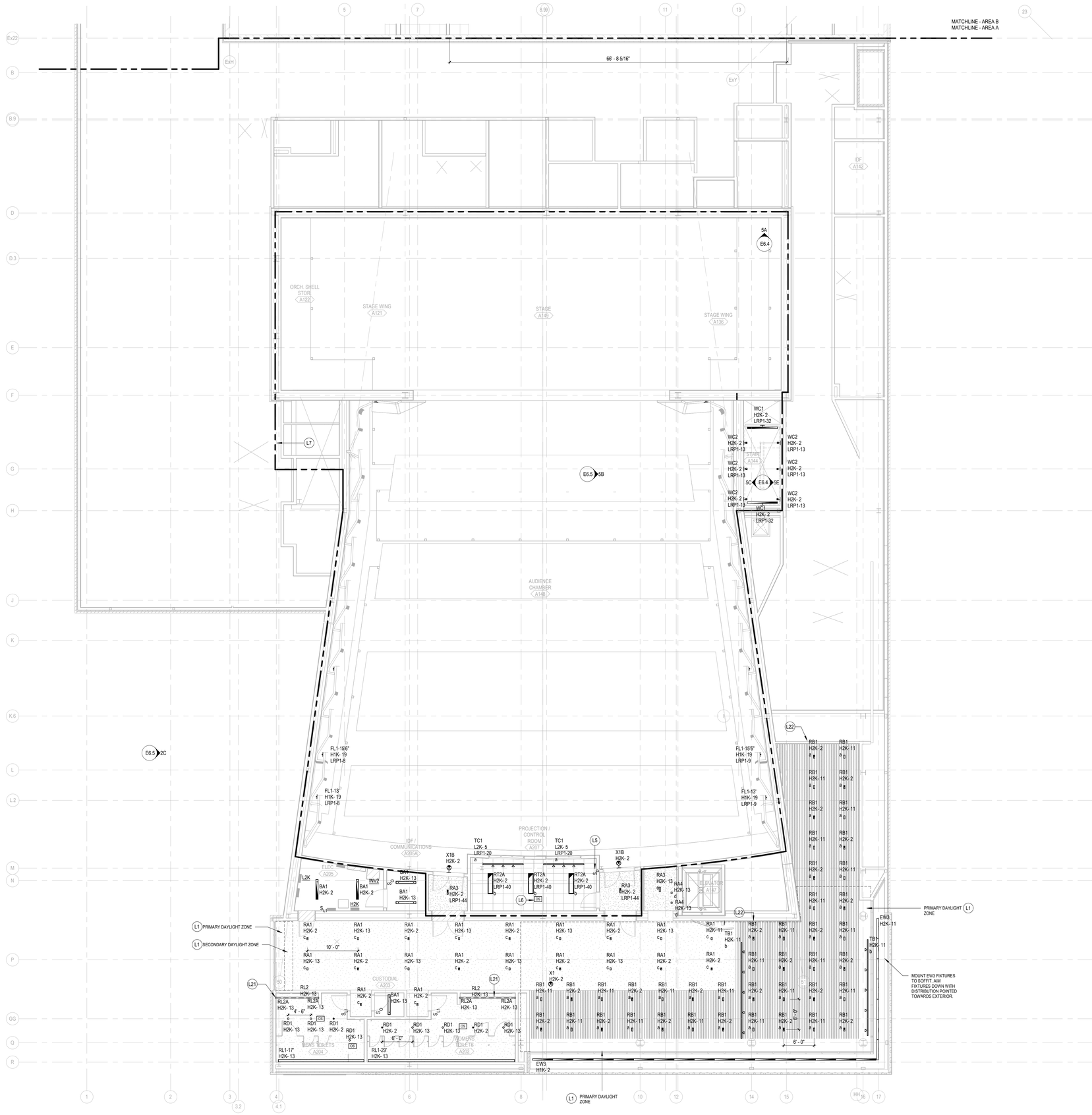
REVISIONS

39-23712-00

LEVEL 01 - AREA B - LIGHTING PLAN

EL1.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:15 AM



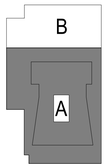
LEVEL 02 MEZZANINE - AREA A - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

L1	GENERAL LIGHTING IN DAYLIGHT ZONES IS LESS THAN 150 WATTS. DAYLIGHT RESPONSIVE CONTROLS NOT REQUIRED PER 2021 IECC C408.
L5	0-10V DIMMER WITH ELV RELAY FOR LOCAL CONTROL OF TC1 TRACK FIXTURE. PROVIDE BLACK DEVICE AND FACEPLATE.
L6	PROVIDE BLACK VACANCY SENSOR COVER. COORDINATE WITH THEATRICAL LIGHTING CONTROL SYSTEM IN THIS SPACE.
L7	LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.
L21	TYPICAL FOR RL2 & RL2A. PROVIDE A CONTINUOUS PORTAL. BOTTOM OF VERTICAL SECTION SHOULD ALIGHT WITH TOP OF SINK COUNTER.
L22	LOCATE REMOTE DRIVER BEHIND AN ACCESS PANEL IN ADJACENT HARD LID CEILING.

KEY PLAN



DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

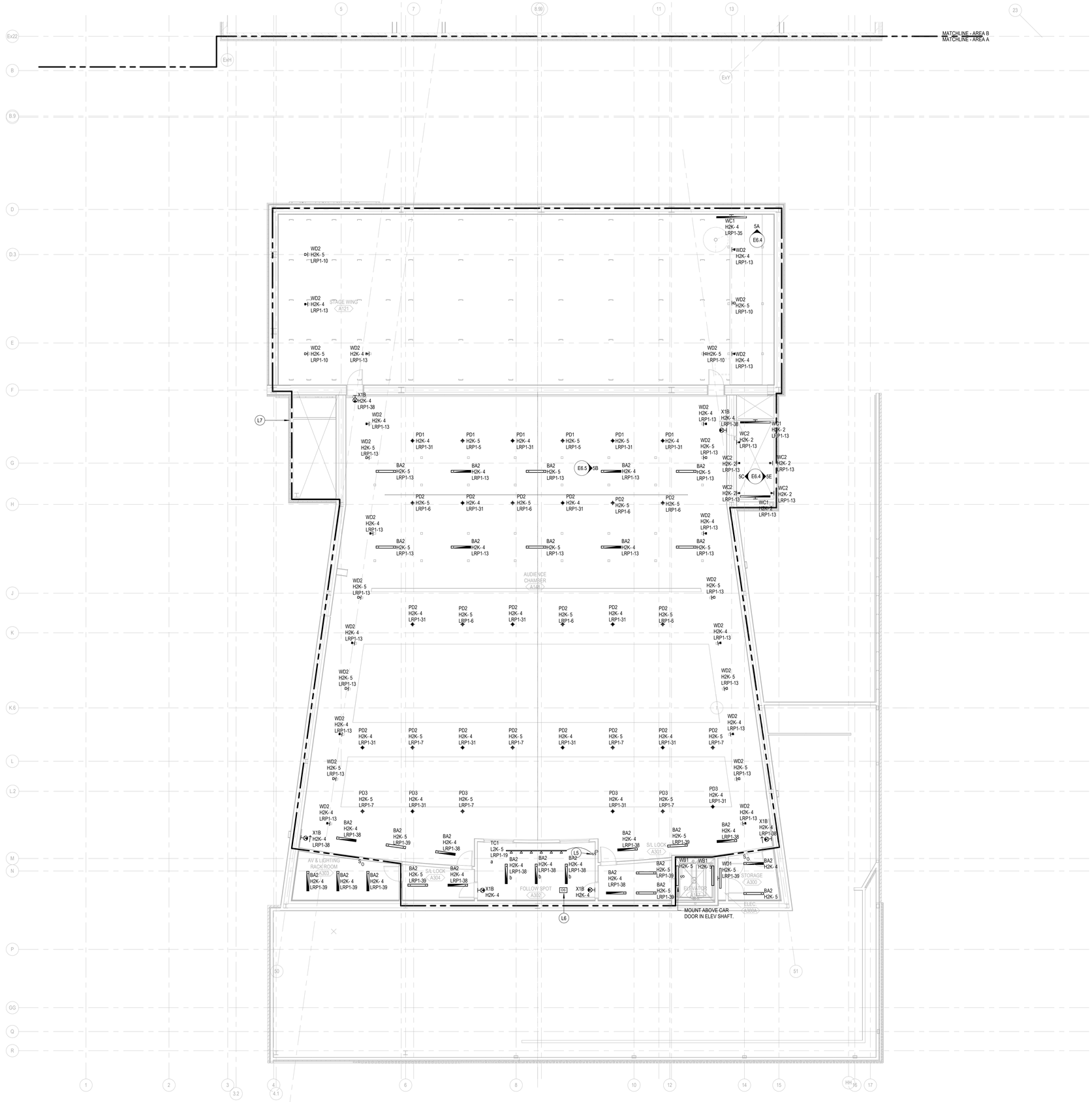
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - LIGHTING PLAN

EL1.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:24 AM



LEVEL 03 CATWALK- AREA A - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

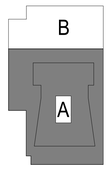
SHEET NOTES

L5 0-10V DIMMER WITH ELV RELAY FOR LOCAL CONTROL OF TC1 TRACK FIXTURE. PROVIDE BLACK DEVICE AND FACEPLATE.

L6 PROVIDE BLACK VACANCY SENSOR COVER. COORDINATE WITH THEATRICAL LIGHTING CONTROL SYSTEM IN THIS SPACE.

L7 LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

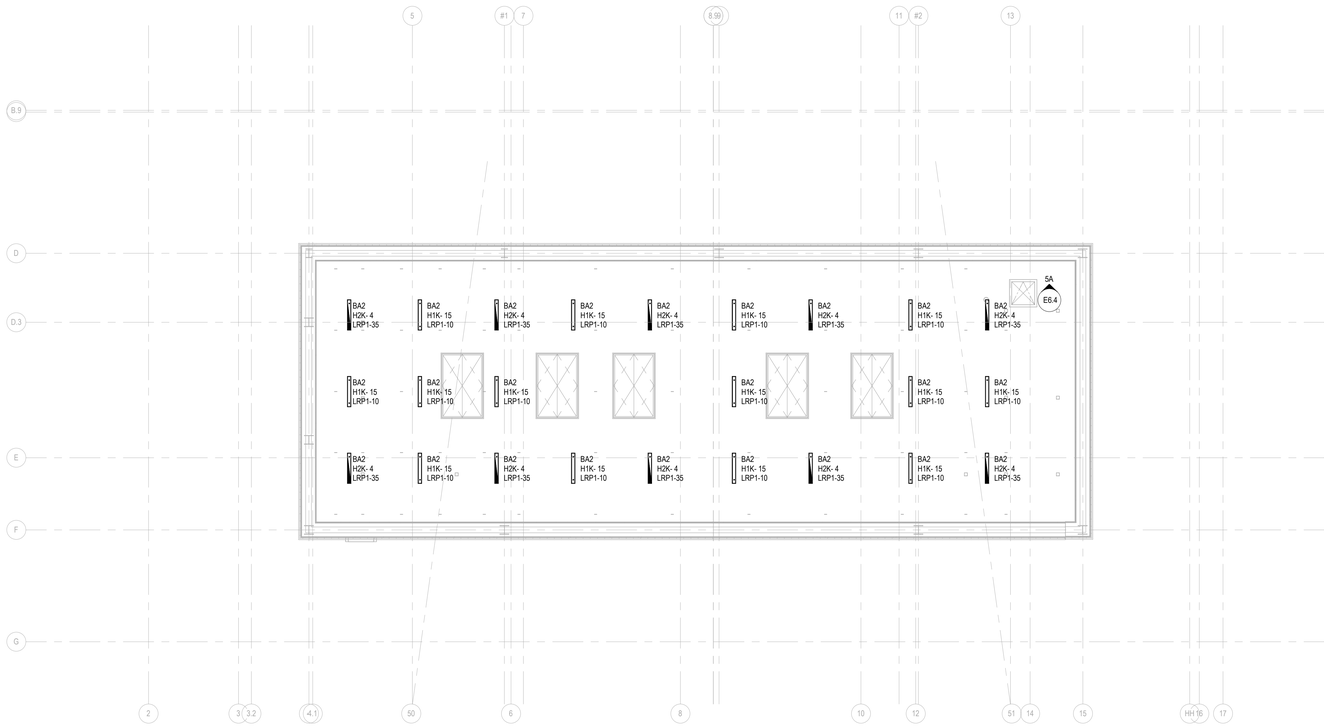
REVISIONS

39-23712-00

LEVEL 03 CATWALK - AREA A - LIGHTING PLAN

EL1.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:27 AM



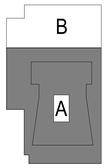
N

LEVEL 04 GRID - AREA A - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

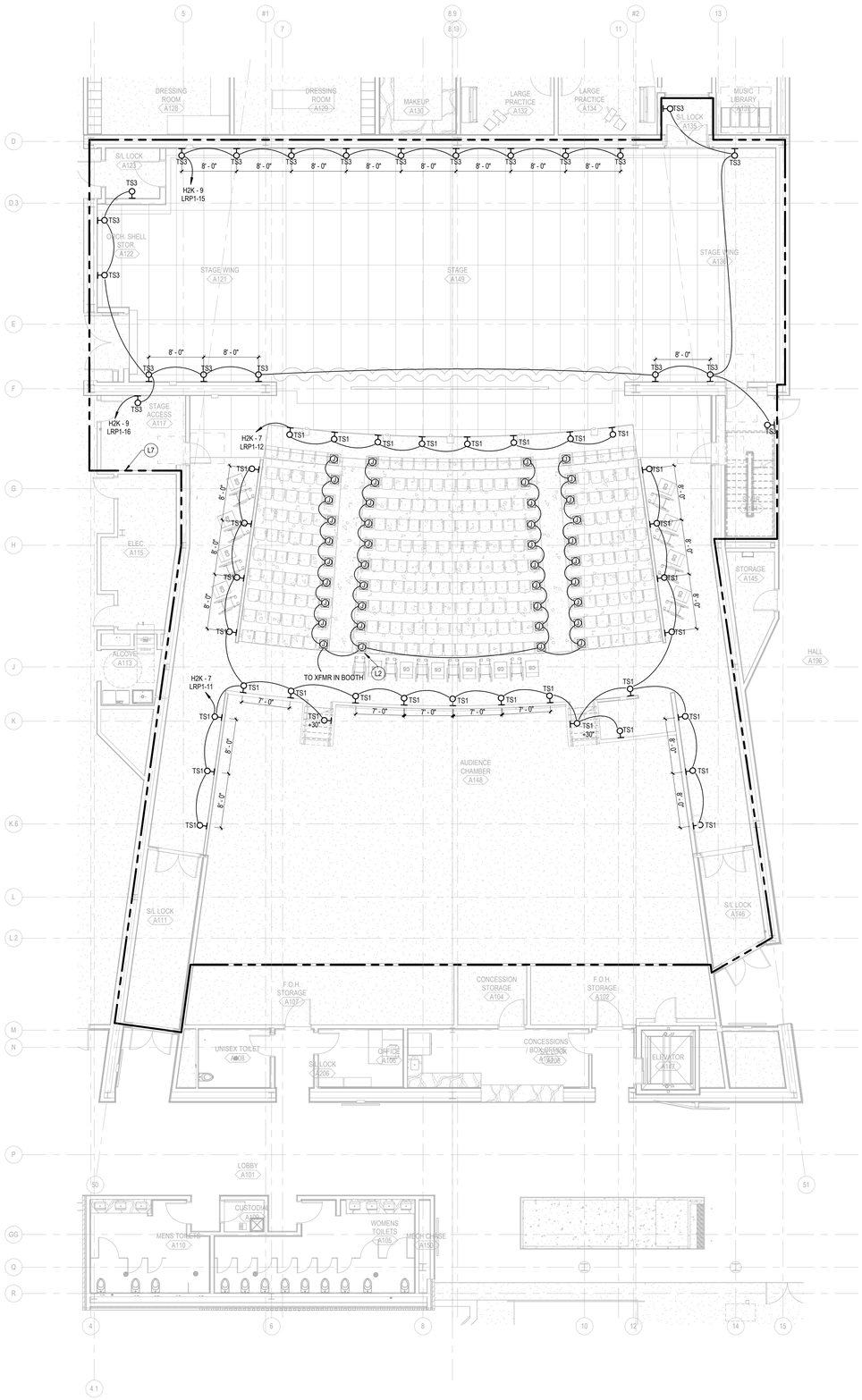
REVISIONS

39-23712-00

LEVEL 04 GRID - AREA A - LIGHTING PLAN

EL1.4A

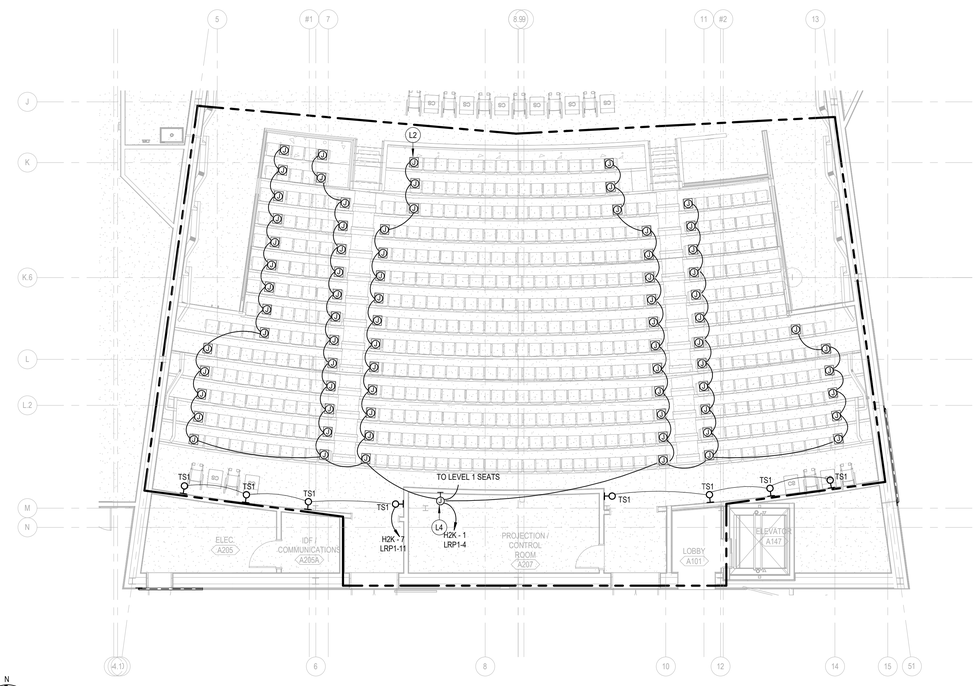
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:28 AM



N

LEVEL 01 - AREA A - LIGHTING FLOOR PLAN

SCALE: 1/8" = 1'-0"



N

LEVEL 02 MEZZANINE - LIGHTING FLOOR PLAN

SCALE: 1/8" = 1'-0"

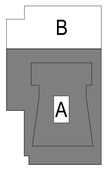
SHEET NOTES

L2 MOUNT RECESSED FLOOR BOX FLUSH WITH FLOOR SURFACE UNDER AUDITORIUM SEATING. PROVIDE 3/4" UGC BETWEEN FLOOR BOXES FOR EACH AISLE LIGHT AND HOMERUN TO TRANSFORMER(S) IN ROOM A115. PROVIDE FMC CONNECTION FROM FLOOR BOX TO AISLE LIGHT IN AUDITORIUM SEAT. AISLE LIGHT FURNISHED WITH SEAT. COORDINATE EXACT LOCATION, CONDUIT SIZE, AND MOUNTING REQUIREMENTS WITH REVIEWED AUDITORIUM SEATING SHOP DRAWINGS.

L4 TRANSFORMER(S) MOUNTED IN JUNCTION BOX AT 18" AFF FOR SEAT MOUNTED AISLE LIGHTS. SIZE JUNCTION BOX TO ACCOMMODATE ALL AISLE LIGHTING TRANSFORMERS.

L7 LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

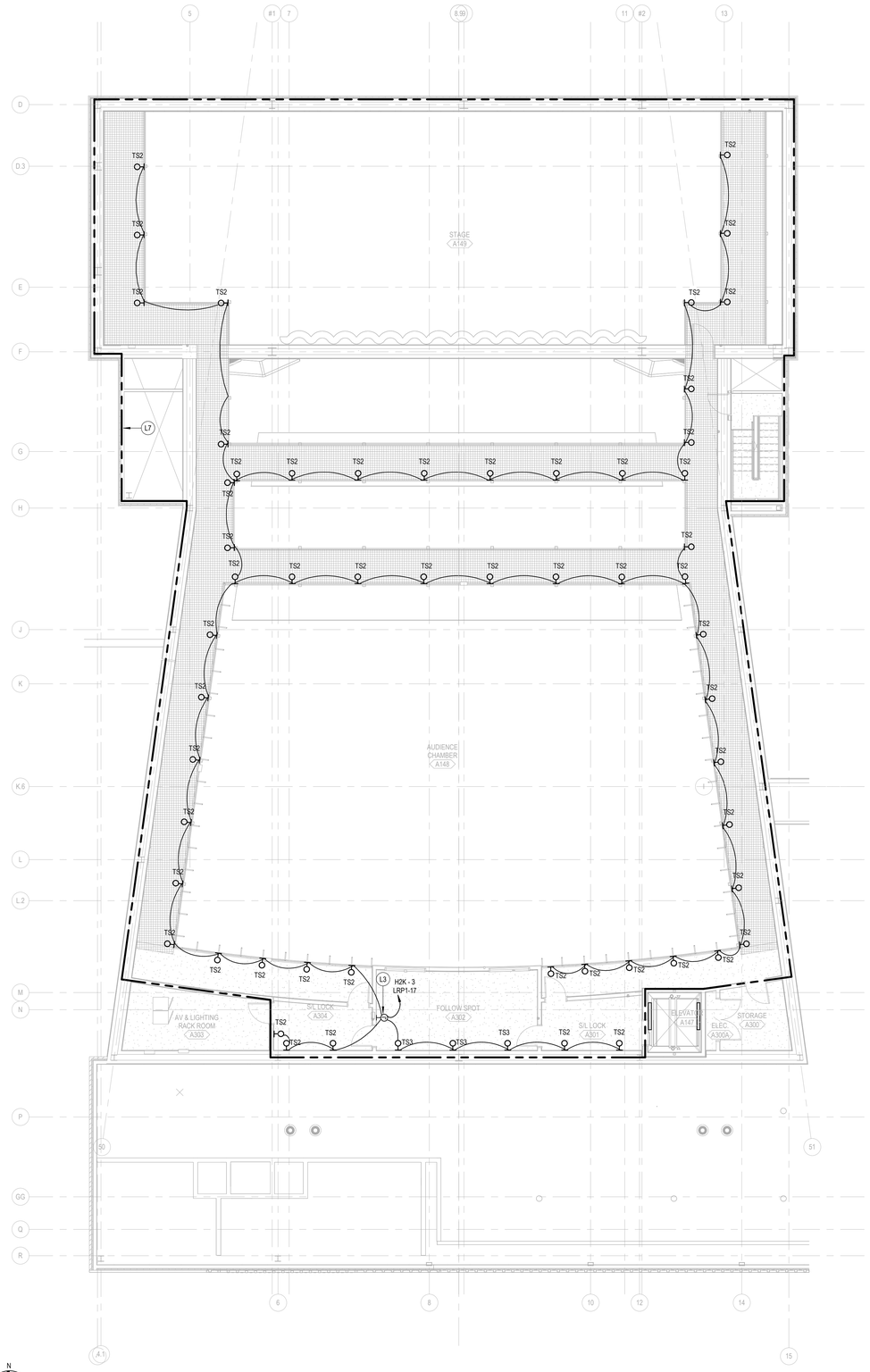
REVISIONS

39-23712-00

LEVEL 01 - AREA A - LIGHTING FLOOR PLAN

ELF1.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:34 AM



N

LEVEL 03 CATWALK - AREA A - LIGHTING FLOOR PLAN

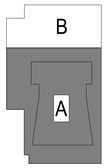
SCALE: 1/8" = 1'-0"

SHEET NOTES

L3 POWER SUPPLIES MOUNTED IN JUNCTION BOX AT 18" ABOVE CATWALK FOR "TS2" LIGHTS. SIZE JUNCTION BOX TO ACCOMMODATE ALL CATWALK LIGHTING POWER SUPPLIES.

L7 LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

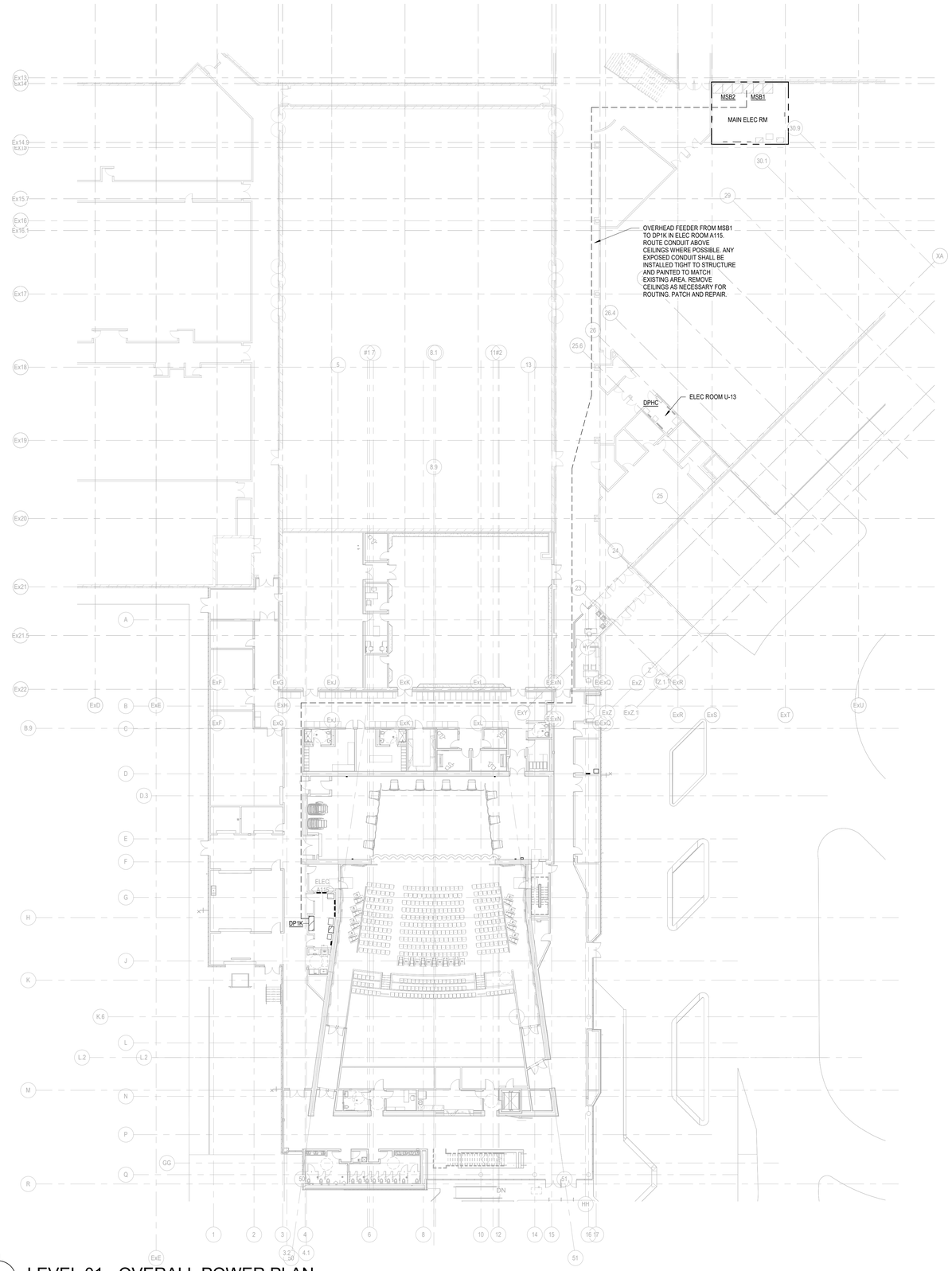
REVISIONS

39-23712-00

LEVEL 03 - AREA A - LIGHTING FLOOR PLAN

ELF1.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:40 AM



LEVEL 01 - OVERALL POWER PLAN

SCALE: 1" = 20'-0"

DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NECHWATOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

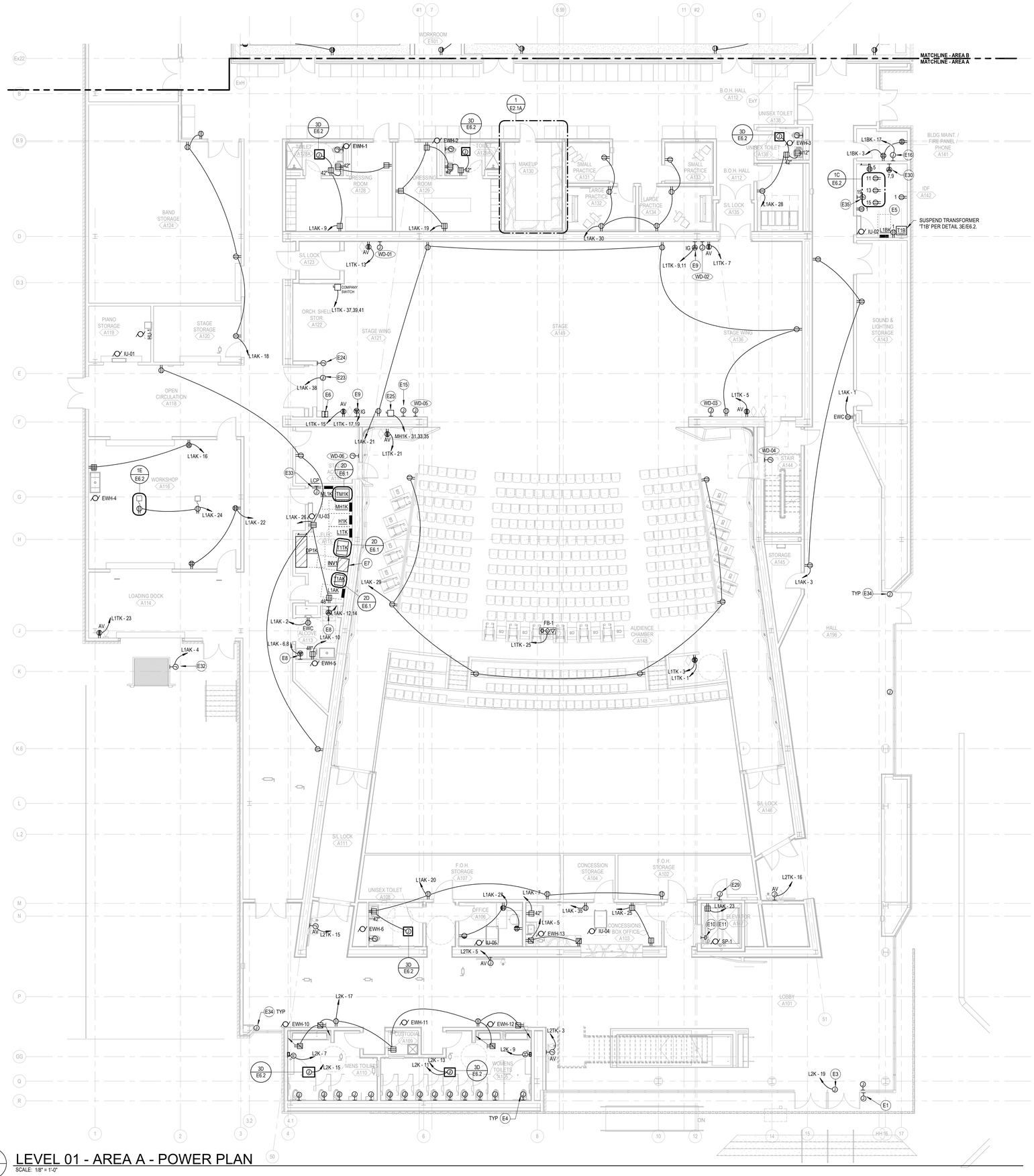
REVISIONS

39-23712-00

LEVEL 01 - POWER PLAN

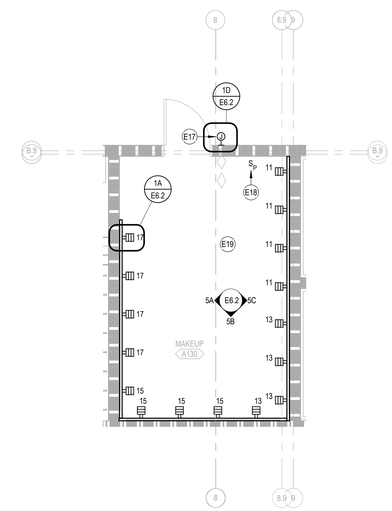
E2.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:45 AM



LEVEL 01 - AREA A - POWER PLAN

SCALE: 1/8" = 1'-0"



1 E2.1A ENLARGED POWER PLAN MAKEUP A130

SCALE: 1/4" = 1'-0"

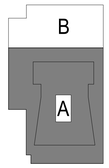
GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

E1	PUSHBAD FOR ADA OPERATOR MOUNTED ON BOLLARD. PROVIDE 1"C TO AUTO DOOR OPERATOR. ACTUATOR FURNISHED BY DIV 8. INSTALL AND CONNECT DOOR ACTUATOR. SEE DETAIL 3A/E6.2 FOR CONDUIT ROUTING.
E3	CONNECT POWER DOOR OPERATOR TO CIRCUIT SHOWN. PROVIDE 18/2 WIRE TO EACH DOOR ACTUATOR.
E4	PROVIDE 4" SQUARE FLUSH JUNCTION BOX WITH PLASTER RING. INSTALL MECHANICAL FURNISHED SOLENOID, SENSOR AND COVER PLATE. LOW VOLTAGE WIRING DAISY CHAINED BETWEEN UNITS TO TRANSFORMER PROVIDED BY MECHANICAL CONTRACTOR.
E5	ALL CIRCUITS IN THIS ROOM CONNECTED TO PANEL L1B.
E6	PUSHBUTTON CONTROL FOR MOTORIZED DOOR FURNISHED BY DIVISION 8. PUSHBUTTON CONTROL AND SAFETY SYSTEM INSTALLED AND CONNECTED BY DIV 26.
E7	FLOOR MOUNTED CENTRAL BATTERY INVERTER. HOMERUN 30-2W TO PANEL H1. SEE INVERTER SCHEDULE ON E6.2 FOR ADDITIONAL INFORMATION.
E8	NEMA 6-20R WITH 20-2W. VERIFY WITH OWNER FURNISHED EQUIPMENT PRIOR TO INSTALLATION.
E9	NEMA L21-30R WITH 30-2W.
E10	CONNECT EMERGENCY STOP PUSHBUTTON TO CONTROL PANEL IN ELEVATOR CONTROL ROOM.
E11	INSTALL DEVICES IN ELEVATOR PIT 12 INCHES ABOVE FIRST LEVEL FINISH FLOOR LINE.
E15	WALL MOUNTED RIGGING CONTROLLER, 120V 5A.
E16	PROVIDE CONNECTION TO FIRE ALARM CONTROL PANEL. COORDINATE WITH REVIEWED FIRE ALARM SHOP DRAWINGS.
E17	PROVIDE REMOTE PILOT FACEPLATE AND CONNECT TO LIGHTS AND RECEPTACLES IN DRESSING ROOM PER NEC 520.74.
E18	SWITCH CONNECTED TO CONTACTOR TO CONTROL POWER IN DRESSING ROOM.
E19	CONNECT EACH RECEPTACLE IN THIS DRESSING ROOM TO CIRCUIT INDICATED IN PANEL L1A VIA MECHANICALLY HELD CONTACTOR. CONNECT THE CONTACTOR TO SWITCH AND REMOTE PILOT INDICATOR. PROVIDE ENGRAVED STAINLESS STEEL FACEPLATE LABELED "RECEPTACLE POWER".
E23	PROVIDE POWER FOR OVERHEAD MOTORIZED DOOR. PROVIDE RECEPTACLE OR MOTOR RATED TOGGLE SWITCH AND CONNECT TO OPERATOR AND CIRCUIT SHOWN. CONFIRM CONNECTION REQUIREMENTS WITH REVIEWED SHOP DRAWINGS.
E24	PROVIDE SINGLE GANG OUTLET BOX AT 12" AFF WITH 1/2"C TO OPERATOR FOR SAFETY SENSOR WIRING. PROVIDE ON BOTH SIDES IF REQUIRED. COORDINATE WITH REVIEWED SHOP DRAWINGS.
E25	PROVIDE POWER FOR FIRE HOIST MOTOR. 20-3W. 30A/3P NF DISCONNECT.
E29	ALARM PANEL LOCATION FOR ELEVATOR SUMP PUMP. PROVIDE POWER PER MECHANICAL CONNECTION SCHEDULE AND 1-INCH CONDUIT FOR OIL SENSOR CABLE TO SUMP PIT. NO JUNCTION BOXES IN HOISTWAY FOR SENSOR CABLE.
E30	NEMA L5-30R WITH 30-2W.
E32	CONNECTION TO DOCK LEVELER. CONNECT TO CIRCUIT INDICATED.
E33	CONNECTION TO LIGHTING CONTROL PANEL. COORDINATE WITH REVIEWED SHOP DRAWINGS.
E34	(2) 1/2"C FROM OF CURTAIN WALL SYSTEM TO STRUCTURE FOR CONNECTION OF FUTURE MOTORIZED SHADING SYSTEM.
E35	PROVIDE CONNECTION FOR FUTURE DOOR CONTROL PANEL PROVIDED UNDER SEPARATE CONTRACT.

KEY PLAN



DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH MECHWACOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

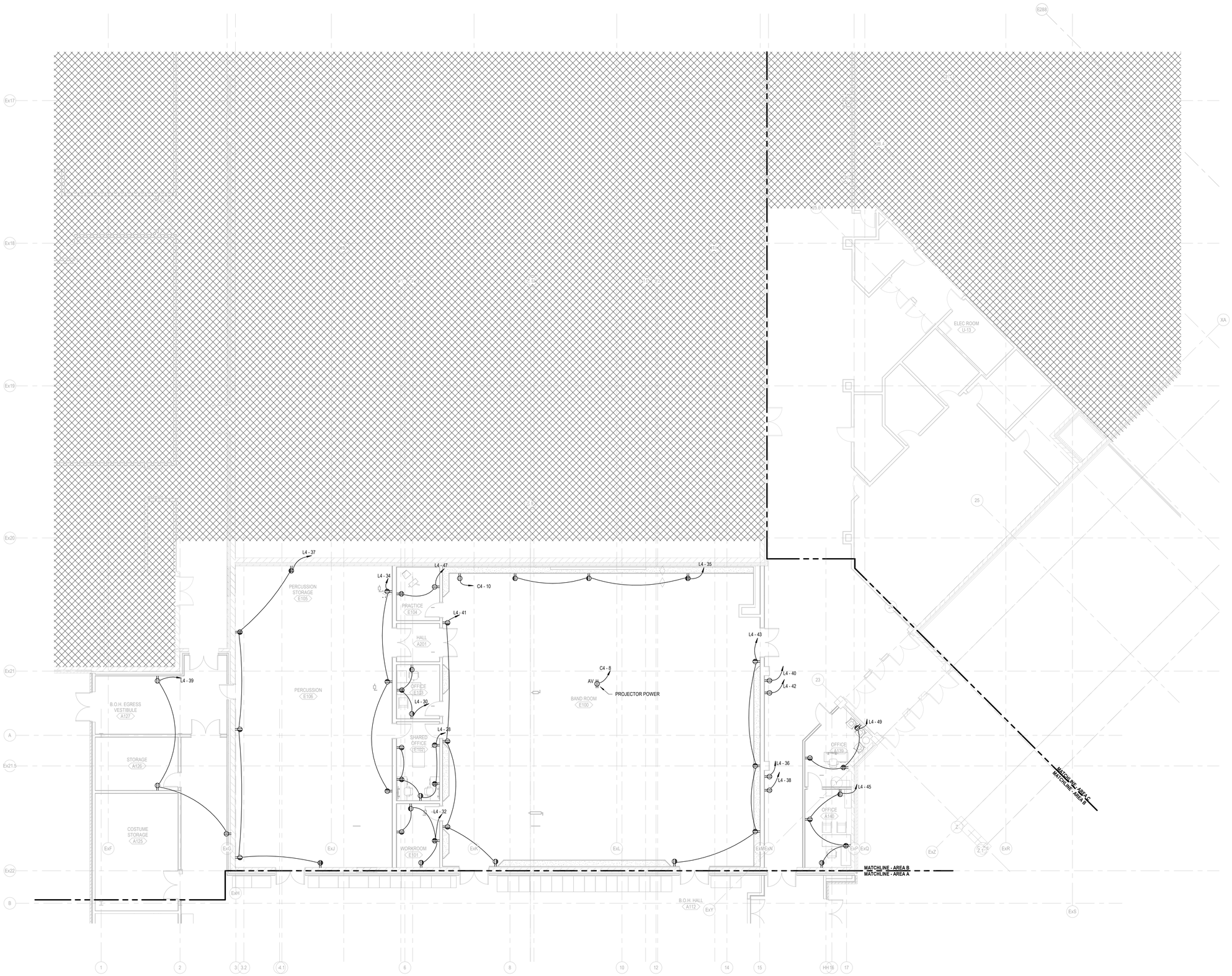
REVISIONS

39-23712-00

LEVEL 01 - AREA A - POWER PLAN

E2.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:51 AM



N

LEVEL 01 - AREA B - POWER PLAN

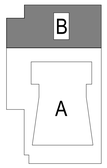
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

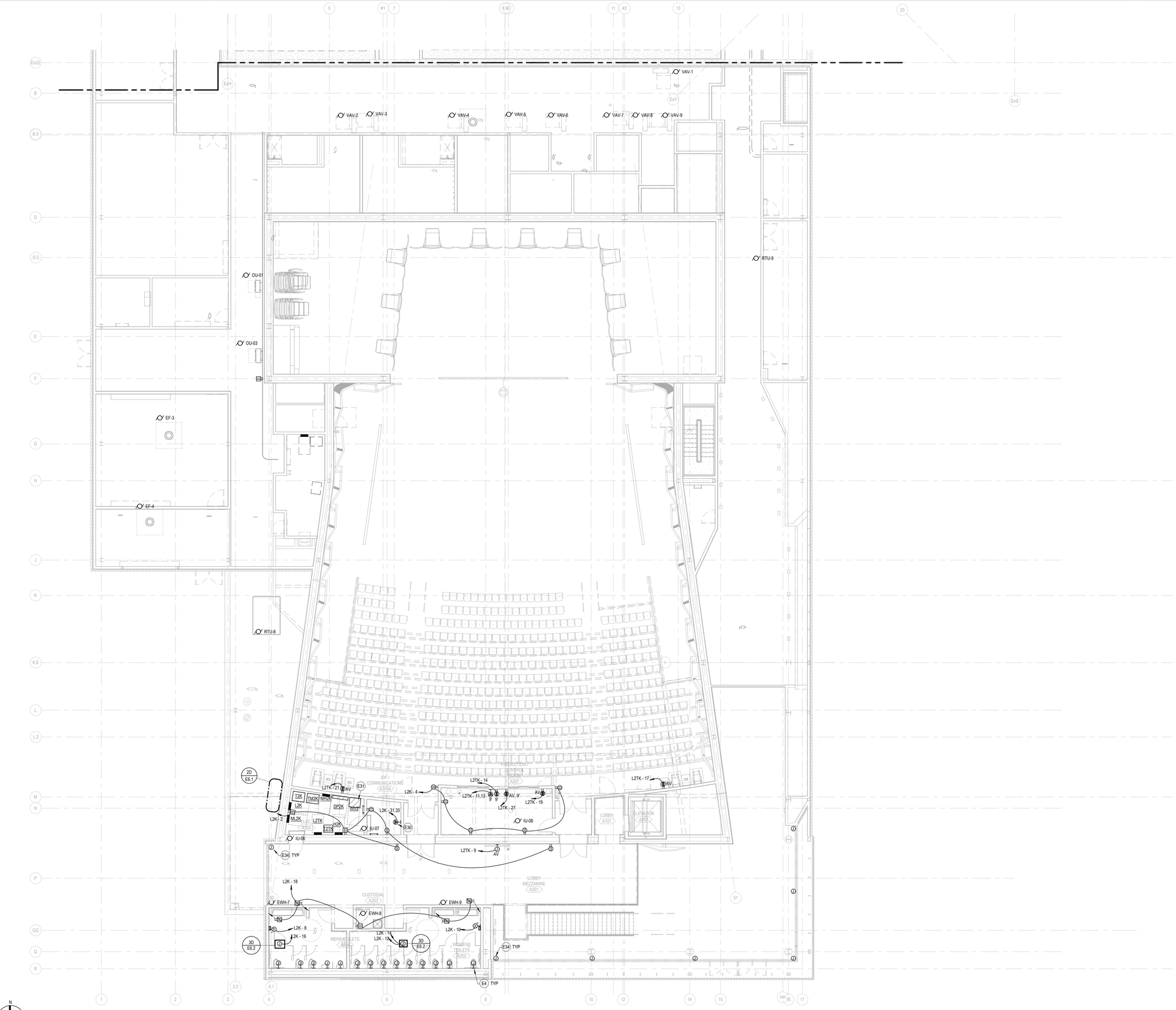
REVISIONS

39-23712-00

LEVEL 01 - AREA B - POWER PLAN

E2.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:54 AM



LEVEL 02 MEZZANINE - AREA A - POWER PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

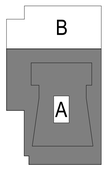
E4 PROVIDE 4" SQUARE FLUSH JUNCTION BOX WITH PLASTER RING. INSTALL MECHANICAL FURNISHED SOLENOID, SENSOR AND COVER PLATE. LOW VOLTAGE WIRING DAISY CHAINED BETWEEN UNITS TO TRANSFORMER PROVIDED BY MECHANICAL CONTRACTOR.

E30 NEMA L5-30R WITH 30-2W

E31 FLOOR MOUNTED CENTRAL BATTERY INVERTER. HOMERUN 30-2W TO PANEL H2. SEE INVERTER SCHEDULE ON E6.2 FOR ADDITIONAL INFORMATION.

E34 (2) 1/2"C FROM OF CURTAIN WALL SYSTEM TO STRUCTURE FOR CONNECTION OF FUTURE MOTORIZED SHADING SYSTEM.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH MECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

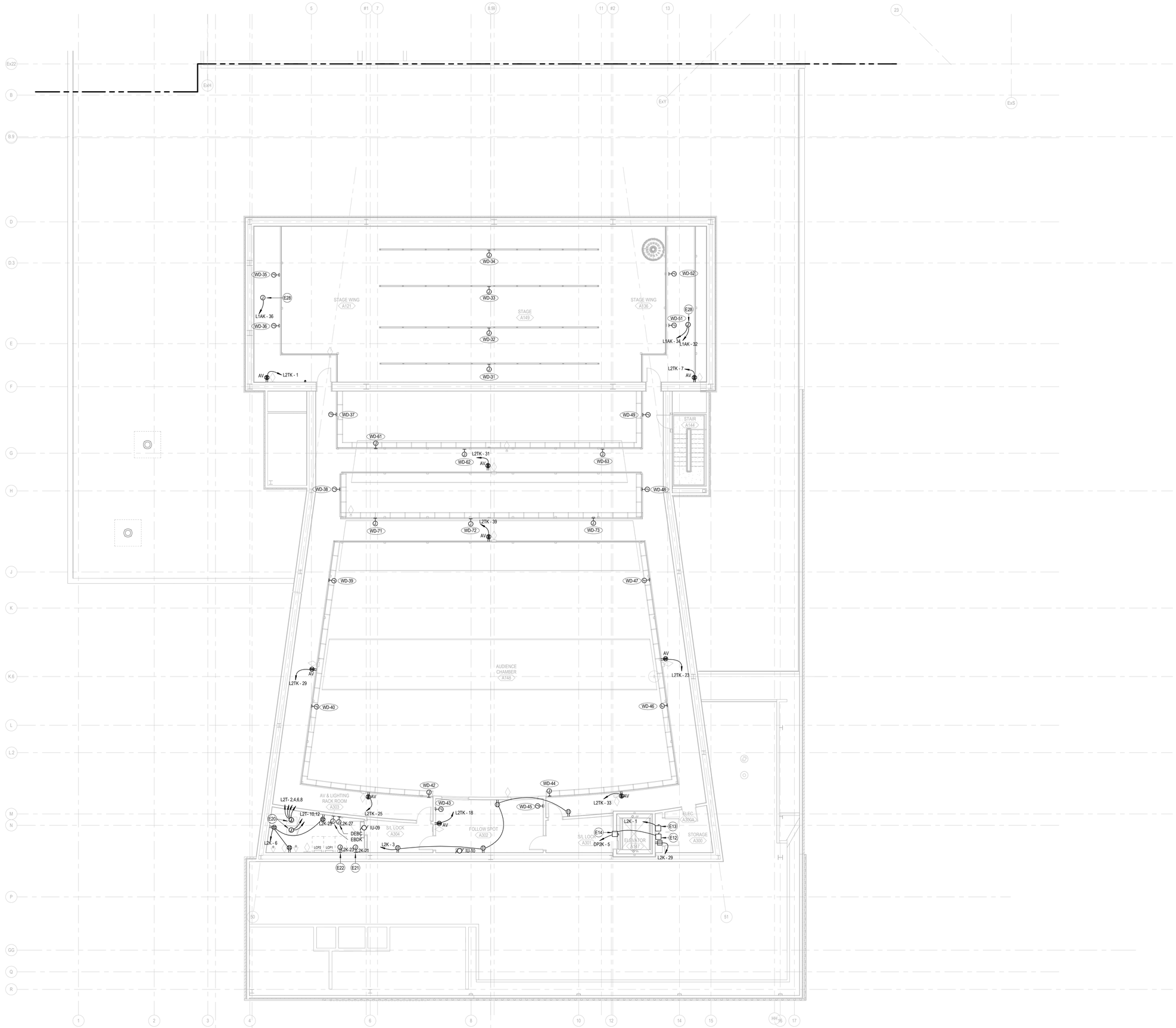
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - POWER PLAN

E2.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:31:59 AM



LEVEL 03 CATWALK - AREA A - POWER PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

E12 PROVIDE BUSSMAN QUIK SPEC ELEVATOR DISCONNECT. PROVIDE RELAYS FOR ELEVATOR LOWERING INTERFACE.

E13 POWER FOR ELEVATOR CAB LIGHTS AND FAN. PROVIDE 30A/2P DISCONNECT SWITCH. COORDINATE WITH REVIEWED ELEVATOR SHOP DRAWINGS.

E14 POWER FOR ELEVATOR. ELEVATOR CONTROLLER IS RECESSED IN WALL. PROVIDE XX-4W TO PANEL INDICATED. DISCONNECT FURNISHED WITH CONTROLLER. COORDINATE WITH REVIEWED ELEVATOR SHOP DRAWINGS.

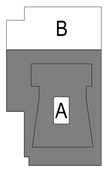
E20 PROVIDE 25' WHIP FOR EACH CIRCUIT DROPPED INTO A/V RACK

E21 CONNECTION TO THEATRICAL LIGHTING CONTROL PANEL. REFERENCE QT SERIES SHEETS.

E22 CIRCUIT FOR RELAY PANEL ELECTRONICS. REFERENCE QT SERIES SHEETS.

E28 CONNECTION FOR INDEX STRIP LIGHTING AT CATWALK LEVEL PROVIDED BY RIGGING CONTRACTOR.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

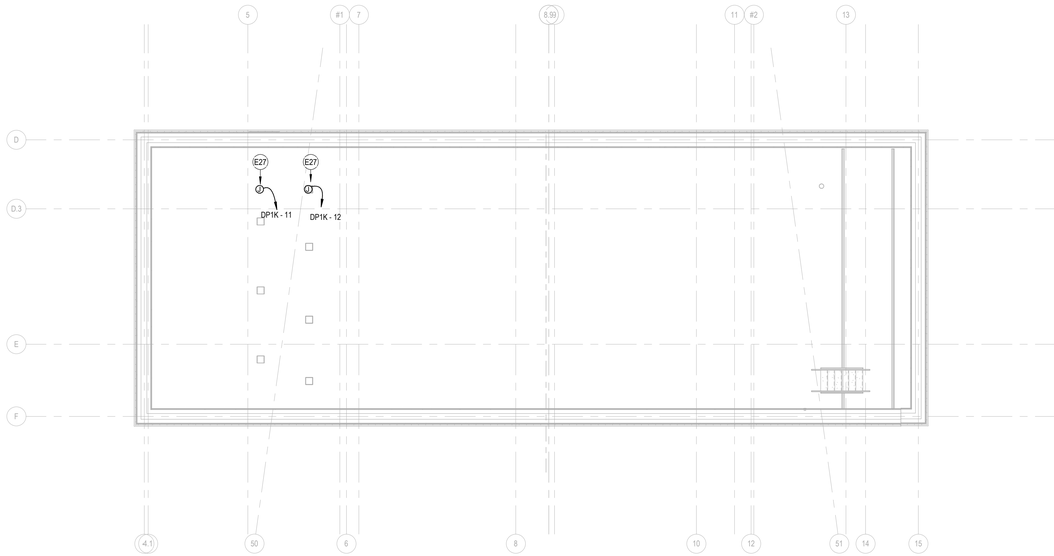
REVISIONS

39-23712-00

LEVEL 03 CATWALK - AREA A - POWER PLAN

E2.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:06 AM



N

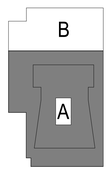
LEVEL 04 GRID - AREA A - POWER PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

E27 CONNECTION FOR PACKAGE HOIST MOTOR RACEWAY. SEE RIGGING DIAGRAM ON QT5.37. SEE ONE-LINE DIAGRAM.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

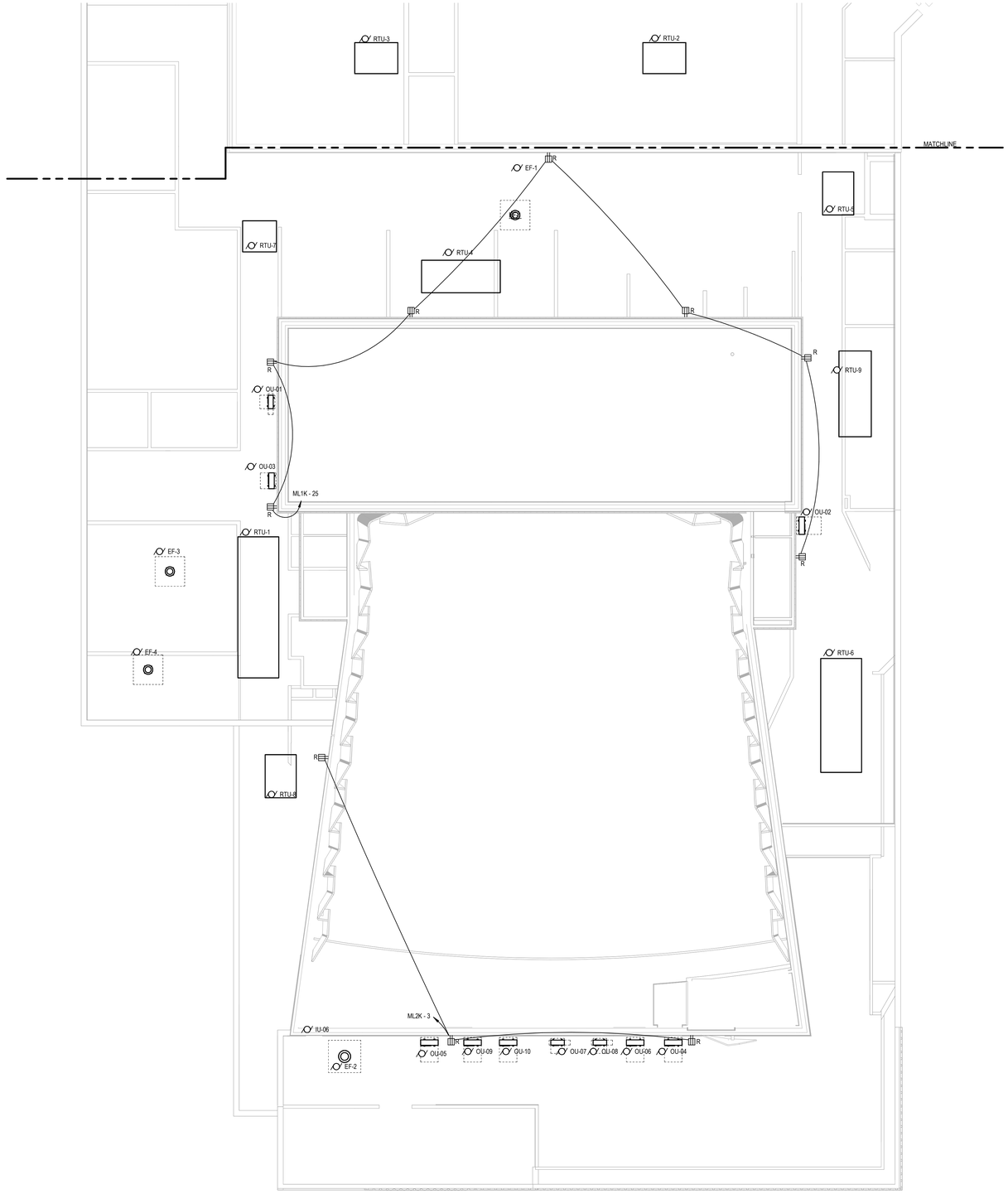
REVISIONS

39-23712-00

LEVEL 04 GRID - AREA A - POWER PLAN

E2.4A

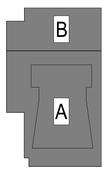
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:07 AM



LEVEL ROOF - AREA A - POWER PLAN

SCALE: 1" = 10'-0"

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

ROOF LEVEL - POWER PLAN

E2.5A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:12 AM

GENERAL INSTALLATION NOTES

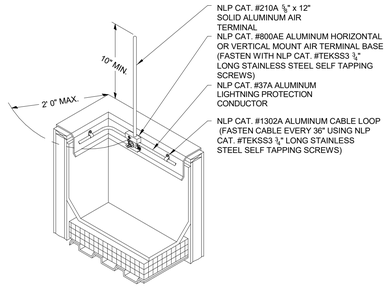
1. THE FINAL INSTALLATION SHALL MEET THE UL 96A REQUIREMENTS FOR LIGHTNING PROTECTION SYSTEMS.
2. THIS DRAWING IS PROVIDED AS A REFERENCE TO SHOW INTENT FOR SUBMITTAL PURPOSES. IT IS THE INSTALLING CONTRACTOR'S RESPONSIBILITY TO KNOW AND UNDERSTAND THE APPLICABLE INSTALLATION STANDARDS AND REQUIREMENTS IN ORDER TO PROVIDE A FULLY COMPLIANT SYSTEM.
3. FIELD VERIFY PROTECTION REQUIREMENTS AND COMMUNICATE ANY DISCREPANCIES AND/OR DEFICIENCIES WITH THE SYSTEM DESIGNER PRIOR TO INSTALLATION.
4. ACTUAL JOB SITE CONDITIONS MAY NECESSITATE SLIGHT ALTERATIONS OF AIR TERMINAL AND GROUND LOCATIONS. ANY ALTERATIONS SHALL BE APPROVED BY THE SYSTEM DESIGNER PRIOR TO THEIR EXECUTION.
5. AIR TERMINALS SHALL BE PLACED AROUND THE ROOF PERIMETER OR RIDGE AT 20'-0" MAXIMUM INTERVALS FOR 10" TO 23" AIR TERMINALS & AT 25'-0" MAXIMUM INTERVALS FOR 24" AIR TERMINALS.
6. AIR TERMINALS SHALL BE PLACED WITHIN 24" FROM THE OUTSIDE EDGES OF THE OBJECT TO BE PROTECTED.
7. MID-ROOF AIR TERMINALS ON FLAT OR GENTLY SLOPING ROOFS SHALL BE INSTALLED AT MAXIMUM 50'-0" INTERVALS.
8. ALL ROOF PROJECTIONS AND/OR OBJECTS THAT ARE SUBJECT TO A DIRECT LIGHTNING STRIKE SHALL BE PROVIDED WITH AIR TERMINALS UNLESS THEY ARE LOCATED WITHIN A ZONE OF PROTECTION.
9. FIELD VERIFY ALL ZONES OF PROTECTION.
10. METAL BODIES SITUATED WITHIN 6'-0" OF A LIGHTNING PROTECTION CONDUCTOR SHALL BE BONDED TO THE LIGHTNING PROTECTION SYSTEM.
11. NO BEND OF CONDUCTOR SHALL FORM A FINAL INCLUDED ANGLE OF LESS THAN 90 DEGREES NOR SHALL HAVE A RADIUS OF BEND LESS THAN 8". CONDUIT SHALL ROUTE THE LIGHTNING PROTECTION CONDUCTOR IN A MANNER CONSISTENT WITH THESE BEND REQUIREMENTS.
12. CONDUCTORS SHALL INTERCONNECT ALL AIR TERMINALS TO FORM A TWO WAY HORIZONTAL OR DOWNWARD PATH TO THE GROUND SYSTEM.
13. ALL LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED AT MAXIMUM INTERVALS OF 3'-0" ON CENTER.
14. CONNECTIONS TO GROUND RODS OR GROUND LOOP CABLE SHALL BE MADE AT A POINT NOT LESS THAN 12" BELOW GRADE AND 24" AWAY FROM FOUNDATION WALL.
15. ALL POTENTIAL GROUND SOURCES THAT ENTER A STRUCTURE FROM BELOW GRADE (EARTH) MUST BE INTERCONNECTED TO THE LIGHTNING PROTECTION SYSTEM.
16. ALL ADHESIVE TYPE FITTINGS SHALL BE SET IN PLACE WITH COMPATIBLE ROOF CEMENT.
17. BARE COPPER LIGHTNING PROTECTION MATERIAL SHALL NOT BE INSTALLED ON ALUMINUM AND ALUMINUM LIGHTNING PROTECTION MATERIALS SHALL NOT BE INSTALLED ON COPPER.
18. ALL INCOMING ELECTRICAL, TELEPHONE, DATA, RADIO, AND TELEVISION SERVICES SHALL BE EQUIPPED WITH SURGE SUPPRESSION DEVICES. UNLESS SPECIFIED OTHERWISE THE REQUIRED SURGE SUPPRESSION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE RESPECTIVE SYSTEM VENDOR, NOT NLP.
19. ALL REQUIRED 1 " SCH 40 PVC CONDUIT SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AT LOCATIONS DESIGNATED BY NLP. CONDUIT SHALL MAINTAIN A CONTINUOUS AND DIRECT ROUTE TO GROUND WITH NO MORE THAN 360 DEGREES OF CUMULATIVE BEND IN ANY SINGLE RUN.
20. ALL REQUIRED SEALING AND/OR FLASHING OF ROOF PENETRATION SHALL BE FURNISHED AND INSTALLED BY THE ROOFING CONTRACTOR.
21. ANY ROOF PADS, PAVERS, SLIP SHEETS, BATTEN STRIPS, OR SPECIAL REQUIREMENTS OF THE ROOF SYSTEM MANUFACTURER FOR ROOF MOUNTED LIGHTNING PROTECTION EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE ROOFING CONTRACTOR.

16. IT IS THE RESPONSIBILITY OF THE LIGHTNING PROTECTION CONTRACTOR TO REVIEW THE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS TO ENSURE ALL NECESSARY MATERIALS ARE INCLUDED IN THEIR SCOPE OF WORK TO PROVIDE A COMPLETE ESTIMATE.

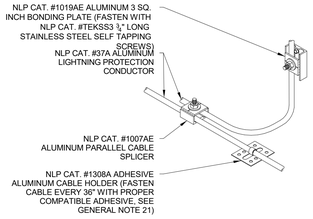
17. PART NUMBERS SHOWN ARE THOSE OF:
National Lightning Protection Corp.
13550 Smith Road, Suite 150
Aurora, Colorado 80011
(303) 295-1695 office
estimates@nlpcorp.com
www.theprotectionsource.com

LEGEND

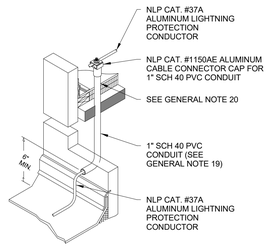
- LIGHTNING PROTECTION SYSTEM AIR TERMINAL
- LIGHTNING PROTECTION SYSTEM GROUND ROD
- LIGHTNING PROTECTION SYSTEM CONDUCTOR



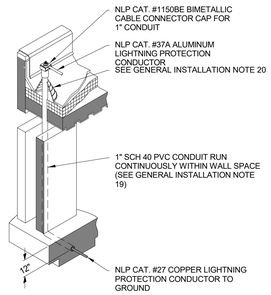
A NOT TO SCALE
PARAPET AIR TERMINAL



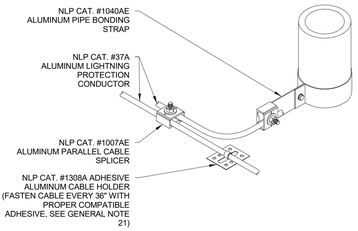
B NOT TO SCALE
TYPICAL BONDING



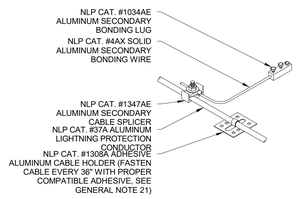
E NOT TO SCALE
DOWNLEAD: ROOF TO ROOF



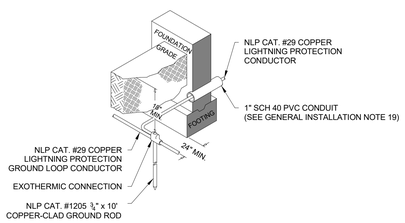
F NOT TO SCALE
DOWNLEAD: ROOF TO GROUND



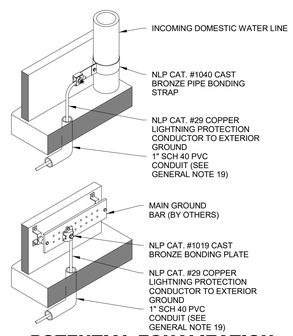
C NOT TO SCALE
PIPE BONDING



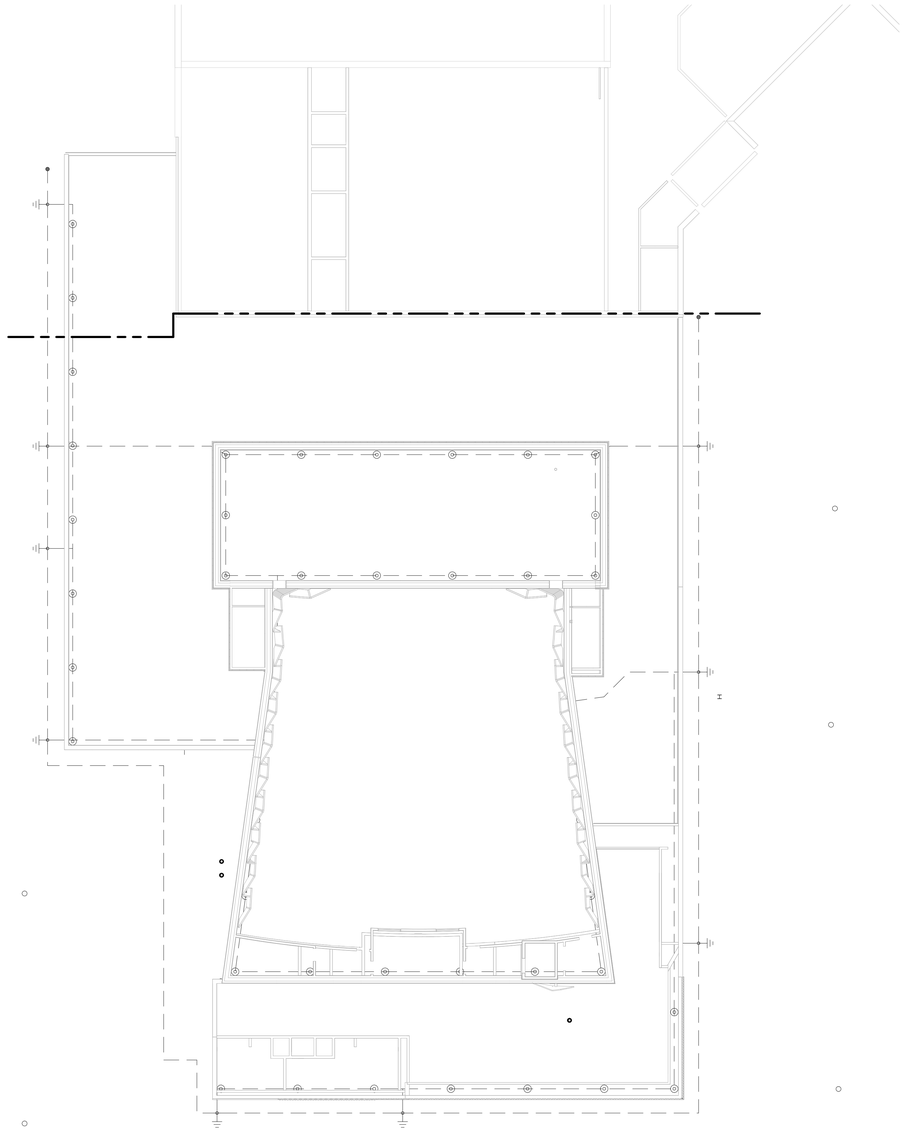
D NOT TO SCALE
SECONDARY BONDING



G NOT TO SCALE
TYPICAL GROUNDING



H NOT TO SCALE
POTENTIAL EQUALIZATION

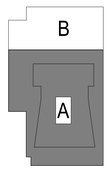


N

LEVEL ROOF - AREA A - LIGHTNING PROTECTION PLAN

SCALE: 1/16" = 1'-0"

KEY PLAN



DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH NECHWATOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

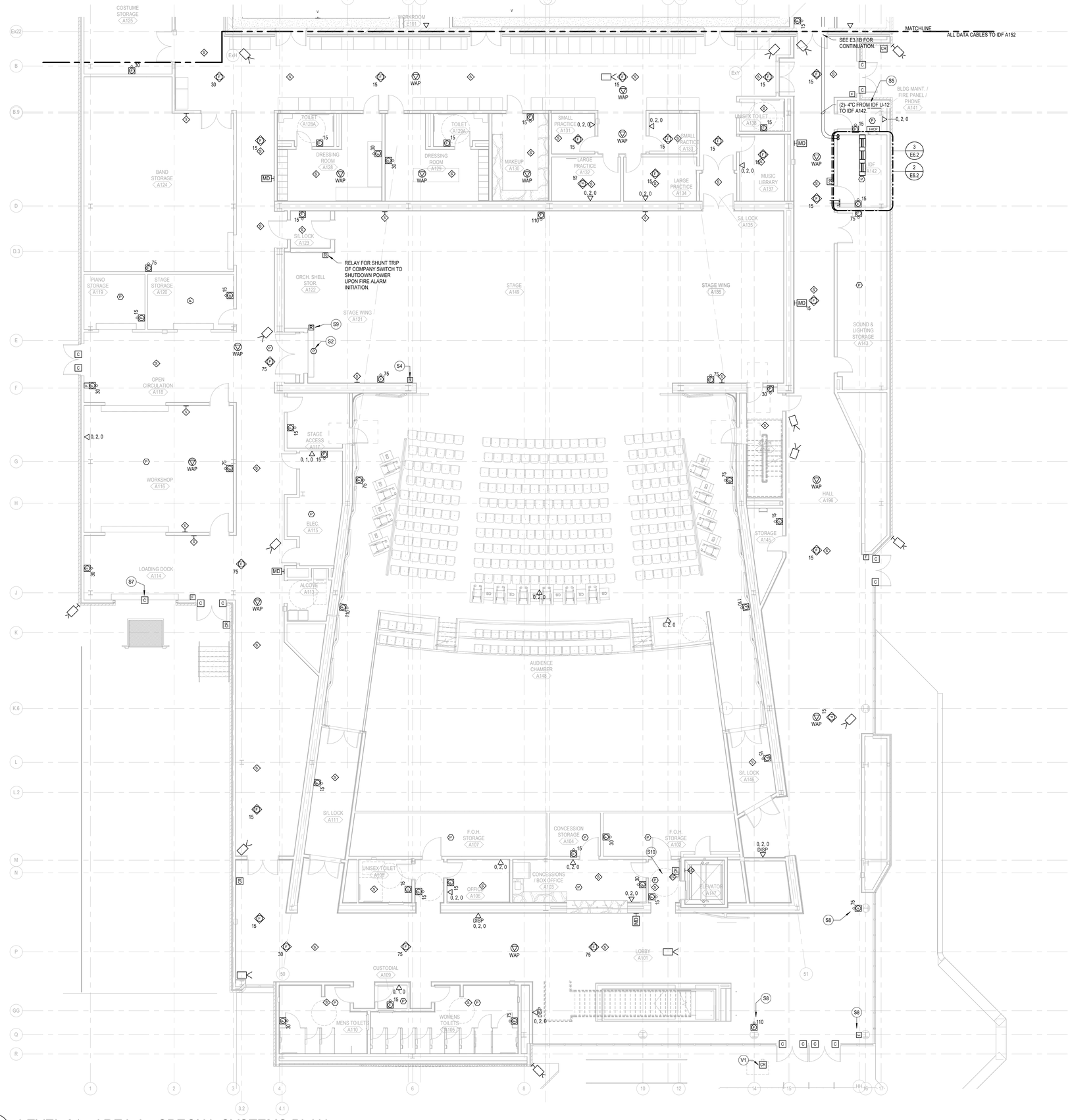
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ROOF LIGHTNING PROTECTION PLAN

E2.6A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:15 AM



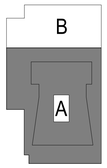
LEVEL 01 - AREA A - SPECIAL SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

S2	PROVIDE 3/4"C TO OVERHEAD DOOR FOR DOOR POSITION SWITCH. COORDINATE LOCATION WITH SECURITY CONTRACTOR.
S4	PROVIDE FIRE ALARM CONTROL MODULE FOR RELEASE OF FIRE CURTAIN.
S5	PROVIDE TAMPER AND FLOW SWITCHES FOR FIRE SUPPRESSION SYSTEMS. COORDINATE WITH FIRE SUPPRESSION DRAWINGS.
S7	PROVIDE 3/4"C TO OVERHEAD DOOR FOR DOOR POSITION SWITCH. COORDINATE LOCATION WITH SECURITY CONTRACTOR.
S8	MOUNT FIRE ALARM DEVICE ON WRAPPED COLUMN. INSTALL RECESSED BACK BOX FOR FLUSH MOUNTING OF DEVICE.
S9	FIRE ALARM RELAY ABOVE DOOR FOR RELEASE OF COILING DOOR UPON AREA DETECTION ON EITHER SIDE OF DOOR.
S10	CO-LOCATE CARD READER WITH ELEVATOR CALL BUTTONS
V1	CARD READER MOUNTED ON BOLLARD. SEE DETAIL 3C/E6.2.

KEY PLAN



DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

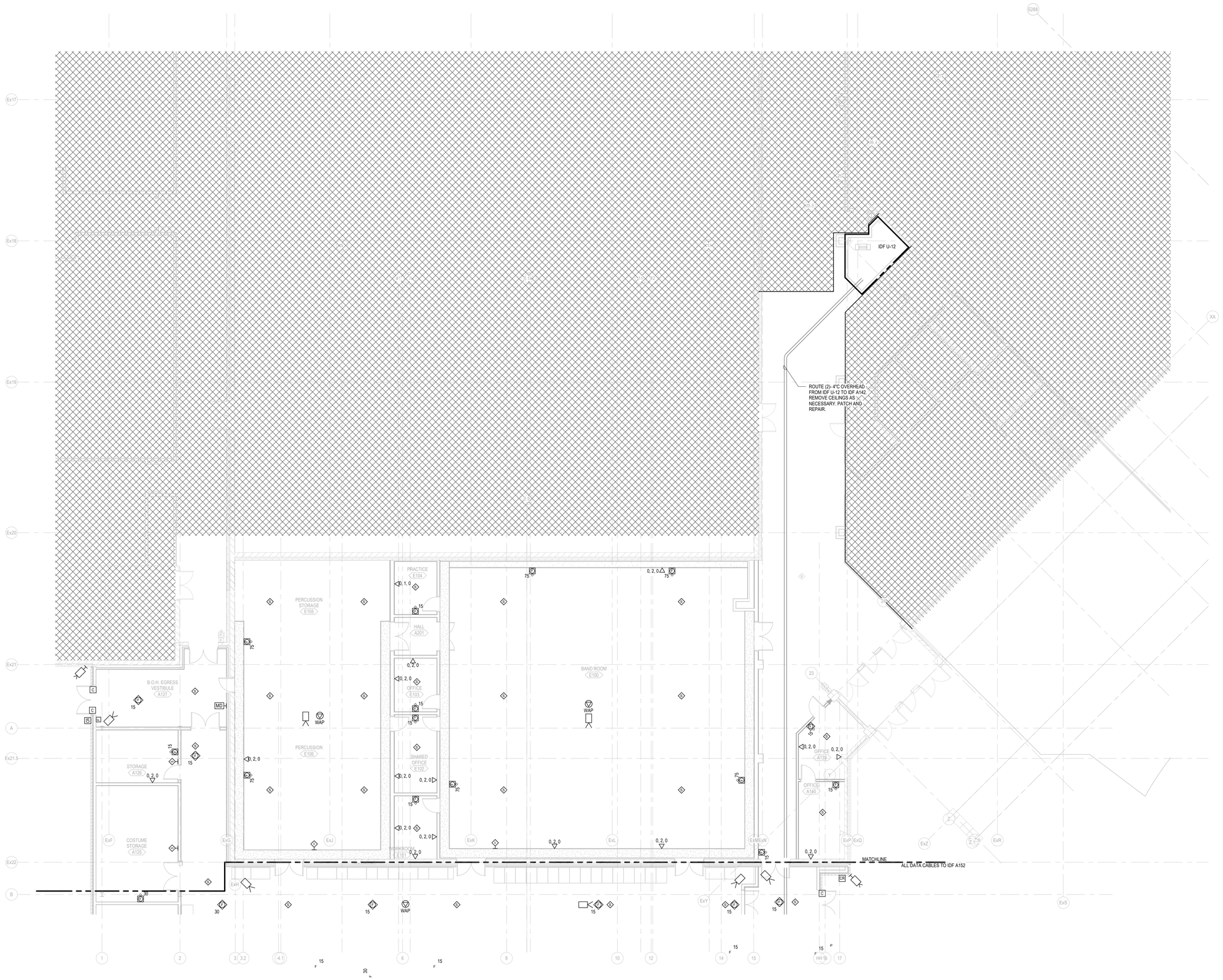
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 01 - AREA A - SPECIAL SYSTEMS PLAN

E3.1A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:19 AM

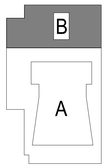


LEVEL 01 - AREA B - SPECIAL SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

SHEET NOTES

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

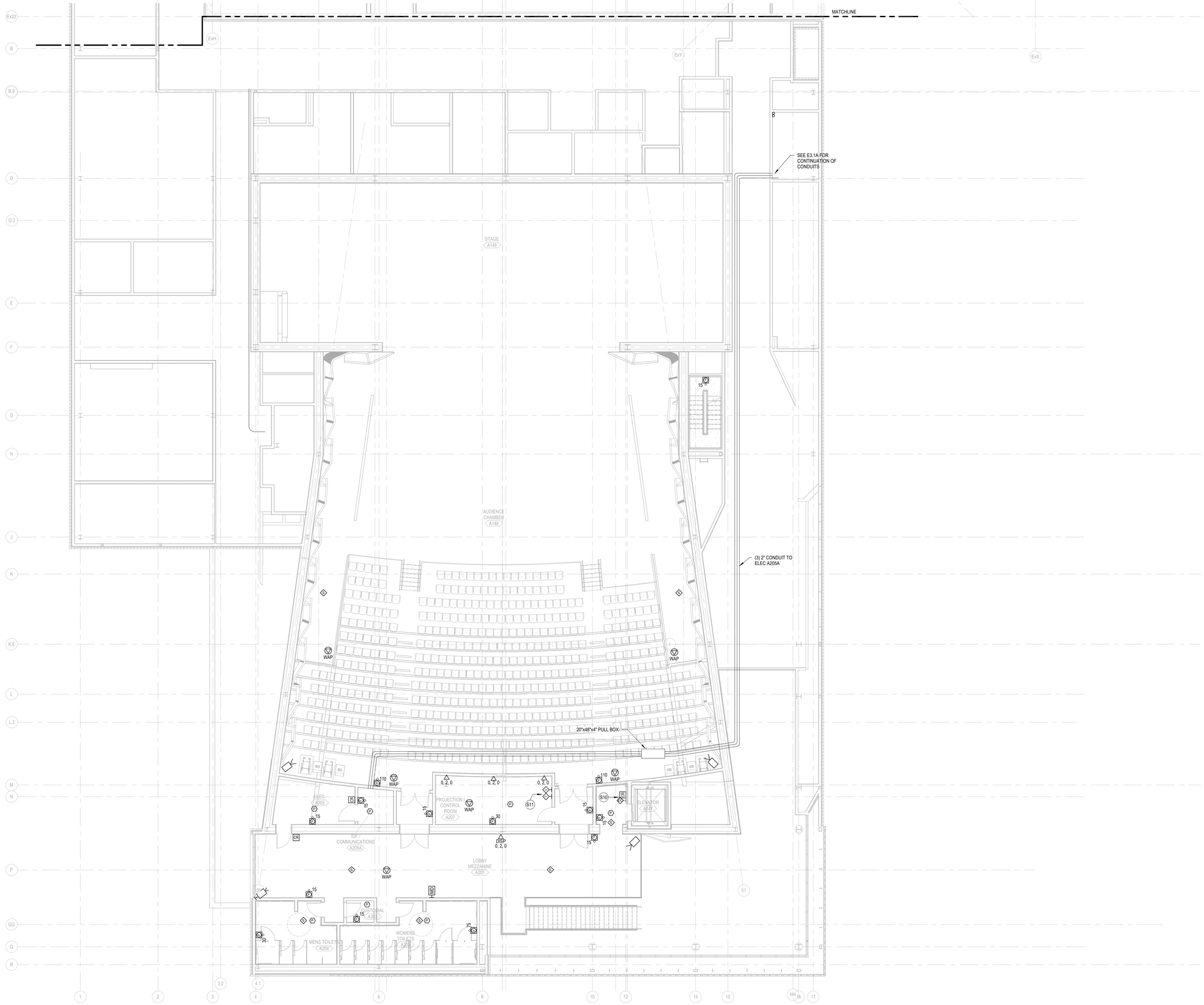
39-23712-00

LEVEL 01 - AREA B - SPECIAL SYSTEMS PLAN

E3.1B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt

7/25/2024 9:32:21 AM



LEVEL 02 MEZZANINE - AREA A - SPECIAL SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

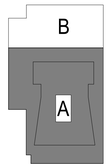
A ALL DATA CABLES THIS SHEET TO COMM ROOM A205A

SHEET NOTES

S10 CO-LOCATE CARD READER WITH ELEVATOR CALL BUTTONS

S11 PROVIDE TIMER AND RELAY CONNECTED TO TURN OFF ALL INTERCOM SPEAKERS ASSOCIATED WITH THE AUDITORIUM AND STAGE AREA. WHEN TIMER IS OFF, SPEAKERS TURN ON.

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

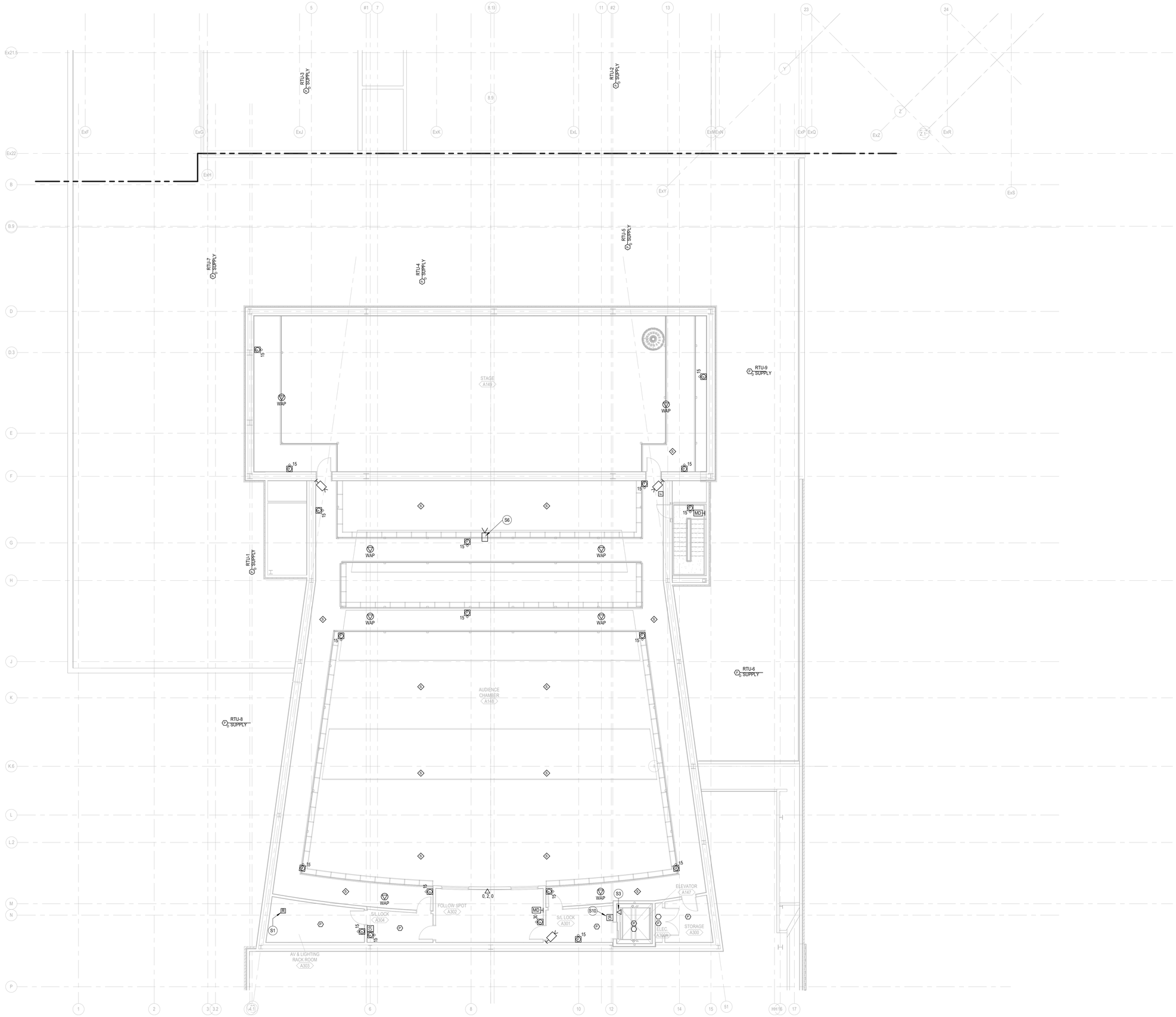
REVISIONS

39-23712-00

LEVEL 02 MEZZANINE - AREA A - SPECIAL SYSTEMS PLAN

E3.2A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:27 AM



LEVEL 03 CATWALK - AREA A - SPECIAL SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A ALL DATA CABLES THIS SHEET TO COMM ROOM A205A

SHEET NOTES

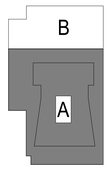
S1 PROVIDE FIRE ALARM RELAY TO MUTE SOUND SYSTEM. UPON ACTIVATION OF FIRE ALARM SYSTEM.

S3 CONNECT TELEPHONE LINE TO ELEVATOR CONTROLLER. PROVIDE CAT 5E CABLE IN 3/4"C TO ELEC ROOM A205. SEE DETAIL 5D/E6.3 FOR ADDITIONAL INFORMATION AND CONNECTIONS IN ELEVATOR.

S6 FISHEYE SURVEILLANCE-CAMERA, SECURITY DEVICE. MOUNTED UNDERNEATH CATWALK

S10 CO-LOCATE CARD READER WITH ELEVATOR CALL BUTTONS

KEY PLAN



DLRGROUP

© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

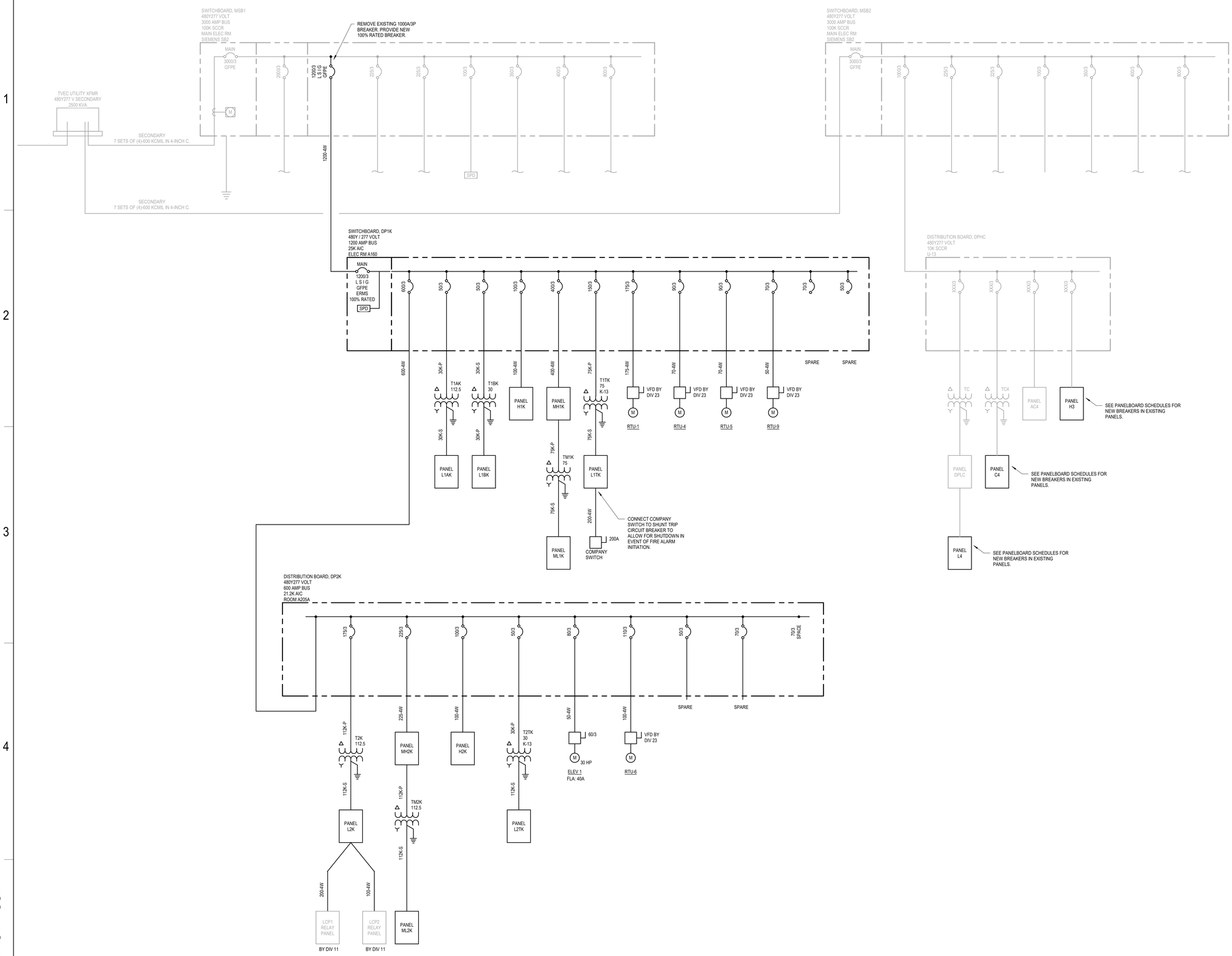
REVISIONS

39-23712-00

LEVEL 03 CATWALK - AREA A - SPECIAL SYSTEMS PLAN

E3.3A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:30 AM



1 ELECTRICAL ONE-LINE DIAGRAM
E5.1 NO SCALE

GENERAL SINGLE LINE NOTES

1. OVERCURRENT DEVICES OF ENTIRE DISTRIBUTION SYSTEM SHALL MEET STATED FAULT CURRENT VALUES WITH FULLY RATED EQUIPMENT.
2. CONDUCTOR LENGTHS INDICATED ON THE SINGLE LINE DIAGRAM ARE FOR FAULT CURRENT CALCULATIONS ONLY. ACTUAL LENGTH SHALL BE DETERMINED BY FIELD CONDITIONS AND ACTUAL ROUTES OF FEEDERS.
3. REFER TO SWITCHBOARD SCHEDULES AND DISTRIBUTION PANEL SCHEDULES FOR ADDITIONAL REQUIREMENTS. WHERE A DISCREPANCY EXISTS BETWEEN EQUIPMENT ON THE SINGLE LINE DIAGRAM AND THE DETAILED SCHEDULES, THE ITEM OR ARRANGEMENT WITH BETTER QUALITY, GREATER QUANTITY, OR HIGHER COST SHALL BE USED.
4. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
5. REFER TO THE MOTOR AND SPECIAL CONNECTION SCHEDULE FOR ALL FEEDERS DESIGNATED "EQ".
6. GROUNDING ELECTRODE CONDUCTORS SIZES ARE NOT INDICATED ON THE SINGLE LINE DIAGRAM ARE. REFER TO THE GROUNDING RISER DIAGRAM FOR CONNECTIONS AND CONDUCTOR SIZES.

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385.Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELECTRICAL DIAGRAMS

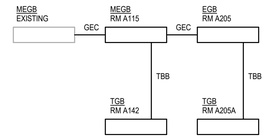
E5.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:30 AM

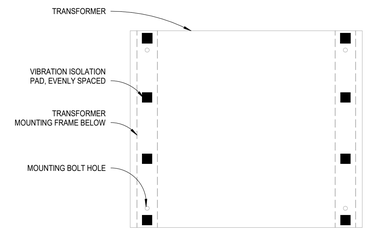
THEATRICAL EQUIPMENT CONNECTION SCHEDULE

NOTES:
1. SEE QT SERIES SHEETS FOR MOUNTING AND ROUGH-IN INFORMATION
2. AMPACITY ADJUSTMENT FACTORS UTILIZED FOR CONDUITS WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS PER NEC TABLE 520.44(C)(2)(2).

ID	CONDUIT & WIRE SIZE	CIRCUIT QUANTITY	FED FROM	NOTES
WD-01	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-02	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-03	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-04	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-05	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-05	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-06	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-31	(12) #12's, #12G in 1"C	(6) 20 A	LCP2	1,2
WD-32	(12) #12's, #12G in 1"C	(6) 20 A	LCP2	1,2
WD-33	(12) #12's, #12G in 1"C	(6) 20 A	LCP2	1,2
WD-34	(12) #12's, #12G in 1"C	(6) 20 A	LCP2	1,2
WD-35	(8) #12's, #12G in 3/4"C	(4) 20 A	LCP2	1,2
WD-36	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP2	1,2
WD-37	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-38	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-39	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-40	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-42	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-43	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-44	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-45	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-46	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-47	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-48	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-49	(2) #12'S, #12G in 3/4"C	(1) 20 A	LCP1	1
WD-51	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-52	(8) #12's, #12G in 3/4"C	(4) 20 A	LCP1	1,2
WD-61	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-62	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-63	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-71	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-72	(4) #12's, #12G in 3/4"C	(2) 20 A	LCP1	1,2
WD-73	(4) #10's, #10G in 3/4"C	(2) 20 A	LCP1	1,2

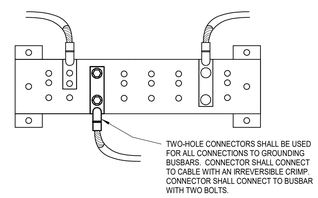


1D / E6.1 OVERALL GROUNDING RISER
NO SCALE

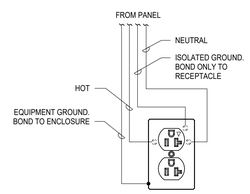


NOTE:
A. PAD MODEL VARIES WITH TRANSFORMER WEIGHT:
   1. TRANSFORMER T1AK, T2K & TM2K WEIGHT: ~1260 LBS, [8] 2X2X3/4" 50 DUROMETER.
   2. TRANSFORMER TM1K & T1TK WEIGHT: ~950 LBS, [8] 2X2X3/4" 50 DUROMETER.
   3. TRANSFORMER T1BK & T2TK WEIGHT: ~415 LBS, [6] 2"X2"X3/4" 30 DUROMETER.
B. PROVIDE VIBRATION ISOLATION PAD, MASON INDUSTRIES MODEL SUPER W WAFFLE PAD, DUROMETER AS NOTED IN QUANTITY SHOWN.
C. PROVIDE MASON INDUSTRIES MODEL HG BOLT ISOLATION WASHER-BUSHING FOR DIAMETER REQUIRED.
D. REFERENCE DETAIL 5D/E6.1

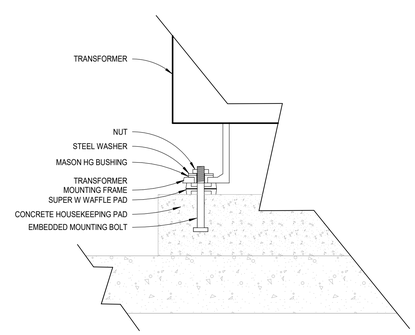
2D / E6.1 TRANSFORMER VIBRATION ISOLATION MOUNTING
NO SCALE



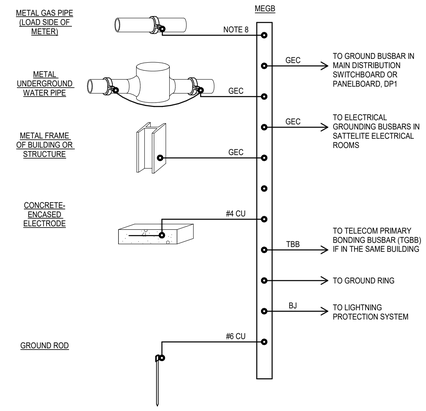
3D / E6.1 GROUNDING BUSBAR CONNECTIONS
NO SCALE



4D / E6.1 ISOLATED GROUND RECEPTACLE
NO SCALE



5D / E6.1 ISOLATION MOUNTING DETAIL
NO SCALE



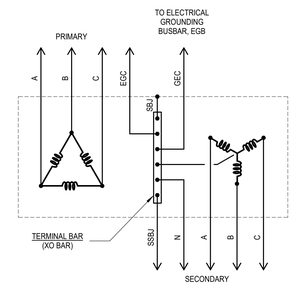
BUILDING / STRUCTURE GROUNDING NOTES:

1. PROVIDE A GROUNDING ELECTRODE SYSTEM FOR EACH BUILDING. REFER TO ARCHITECTURAL CODE PLAN FOR DEFINITION OF BUILDINGS.
2. BOND ALL GROUNDING ELECTRODES AS DEFINED IN NEC 250.52 THAT ARE PRESENT IN EACH BUILDING TO THE MAIN ELECTRICAL GROUNDING BUSBAR, MEGB, SERVING EACH BUILDING. COMMON ELECTRODES ARE INDICATED ON THIS RISER, OTHERS MAY BE PRESENT. PROVIDE ELECTRODES AS NOTED BELOW.
3. METAL UNDERGROUND WATER PIPE.
   REF NEC 250.52(A)(1). IF PRESENT IN BUILDING, BOND TO MEGB. SEE TABLE FOR GROUNDING ELECTRODE CONDUCTOR SIZE. PROVIDE BONDING JUMPER ACROSS WATER METER.
4. METAL FRAME OF BUILDING OR STRUCTURE.
   REF NEC 250.52(A)(2) OR REF NEC 250.104(C) IF METAL FRAME DOES NOT QUALIFY AS AN ELECTRODE. IF PRESENT IN BUILDING, BOND TO MEGB. SEE TABLE FOR GROUNDING ELECTRODE CONDUCTOR (OR BONDING CONDUCTOR) SIZE.
5. CONCRETE ENCASED ELECTRODE
   REF NEC 250.52(A)(3) PROVIDE 20-FT OF BARE #4 CU AT BOTTOM OF CONCRETE BLDG FOOTING. BOND TO MEGB. GROUNDING ELECTRODE CONDUCTOR SIZE SHALL BE #4 CU.
6. GROUND ROD
   REF NEC 250.52(A)(5) PROVIDE GROUND ROD. BOND TO MEGB. GROUNDING ELECTRODE CONDUCTOR SIZE SHALL BE #6 CU.
7. METAL GAS PIPE
   REF NEC 250.104(B) IF PRESENT IN BUILDING, BOND TO MEGB. SIZE PER TABLE 250.122
8. GROUND RING
   REF NEC 250.52(A)(5) PROVIDE #2 BARE CU 30-INCHES DEEP MIN. IN DIRECT CONTACT WITH THE EARTH AND ENCIRCLING THE BUILDING. BOND TO MEGB. GROUNDING ELECTRODE CONDUCTOR SIZE SHALL BE #2 CU.

GROUNDING ELECTRODE CONDUCTOR SIZING (NEC 250.66)

SIZE OF LARGEST UNGROUNDED SERVICE CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS (AWG/KCMIL)		GROUNDING ELECTRODE SIZE (GEC)
COPPER	ALUMINUM	
#2 OR SMALLER	#1/0 OR SMALLER	#8 CU IN 3/4" C.
#1 OR #1/0	#2/0 OR #3/0	#6 CU IN 3/4" C.
#2/0 OR #3/0	#4/0 OR 250	#4 CU IN 3/4" C.
OVER #3/0 THROUGH 350	OVER 250 THROUGH 500	#2 CU IN 3/4" C.
OVER 350 THROUGH 600	OVER 500 THROUGH 900	#1/0 CU IN 3/4" C.
OVER 600 THROUGH 1100	OVER 900 THROUGH 1750	#2/0 CU IN 3/4" C.
OVER 1100	OVER 1750	#3/0 CU IN 1" C.

2E / E6.1 BUILDING OR STRUCTURE GROUNDING
NO SCALE



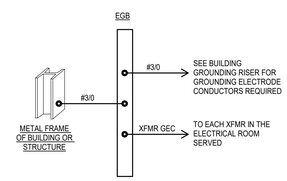
ABBREVIATIONS

A	PHASE A
B	PHASE B
C	PHASE C
N	NEUTRAL
EGC	EQUIPMENT GROUNDING CONDUCTOR
SSBJ	SUPPLY SIDE BONDING JUMPER
SBJ	SYSTEM BONDING JUMPER

NOTES

1. PROVIDE SYSTEM BONDING JUMPER AT TRANSFORMER AS INDICATED ON THIS DETAIL. DO NOT BOND NEUTRAL-GROUND AT LOAD SIDE PANELBOARD OR DISCONNECT.
2. SEE ONE-LINE DIAGRAM AND FEEDER SCHEDULES FOR SIZING OF FEEDER CONDUCTORS INCLUDING BJ.
3. BJ AND SBJ SHALL BE SIZED PER NEC TABLE 250.102(C)(1)
4. EGC SHALL BE SIZED PER NEC TABLE 250.122.

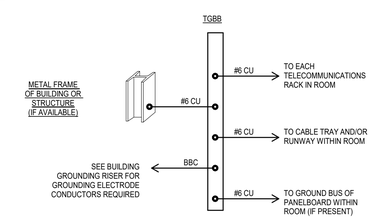
3E / E6.1 TRANSFORMER GROUNDING
NO SCALE



BUILDING / STRUCTURE GROUNDING NOTES:

1. PROVIDE AN ELECTRICAL GROUNDING BUSBAR IN EACH ELECTRICAL ROOM CONTAINING TRANSFORMER(S).
2. METAL FRAME OF BUILDING OR STRUCTURE.
   REF NEC 250.104(C) I IF PRESENT IN BUILDING, BOND TO EGB. SEE TABLE FOR GROUNDING ELECTRODE CONDUCTOR (OR BONDING CONDUCTOR) SIZE.

4E / E6.1 SATELLITE ELECTRICAL ROOM GROUNDING
NO SCALE



TELECOM ROOM GROUNDING NOTES:

1. PROVIDE A TELECOMMUNICATIONS GROUNDING BUSBAR (TGBB) IN EACH TELECOMMUNICATIONS ROOM.
2. SEE OVERALL BUILDING GROUNDING RISER FOR TELECOMMUNICATIONS BONDING BACKBONE INFORMATION.

TELECOMMUNICATION BONDING BACKBONE SIZING (EIA 607C)

MAX TMGBB TO TGBB LENGTH (FT)	TBB SIZE
13	#6
21	#4
26.5	#3
33	#2
42	#1
53	#1/0
66.5	#2/0
84	#3/0
106	#4/0
125	250 KCMIL
150	300 KCMIL
175	350 KCMIL
250	500 KCMIL
300	600 KCMIL
375	750 KCMIL

5E / E6.1 TELECOMMUNICATIONS ROOM GROUNDING
NO SCALE

EQUIPMENT LABELING DETAIL GENERAL NOTES:

A. LABEL SHALL BE BLACK OR WHITE LAMINATED ACRYLIC OR MELAMINE WITH ENGRAVED LETTERING AND SELF-ADHESIVE BACK.
B. LETTERING SHALL BE WHITE ON BLACK OR BLACK ON WHITE BACKGROUND AND 3/8-INCH HIGH MINIMUM.
C. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD LABELS:
   SWITCHBOARD TAG
   SYSTEM VOLTAGE, PHASE, WIRE
   SHORT CIRCUIT RATING, DATE
   CONDUCTOR COLORS
D. PROVIDE THE FOLLOWING INFORMATION ON DISTRIBUTION PANELBOARD AND PANELBOARD LABELS:
   DISTRIBUTION PANELBOARD OR PANELBOARD TAG
   SYSTEM VOLTAGE, PHASE, WIRE
   FED FROM
   SHORT CIRCUIT RATING, DATE
   CONDUCTOR COLORS
E. PROVIDE THE FOLLOWING INFORMATION ON TRANSFORMER LABELS:
   TRANSFORMER TAG
   SYSTEM PRIMARY AND SECONDARY VOLTAGE, WYE, DELTA, OR SINGLE PHASE FED FROM
F. PROVIDE THE FOLLOWING INFORMATION ON SAFETY SWITCH OR CIRCUIT BREAKER ENCLOSURE LABELS:
   SYSTEM VOLTAGE, PHASE, WIRE
   FED FROM
   FEEDS (LOAD BEING SERVED)
G. PROVIDE THE FOLLOWING INFORMATION AT INDIVIDUAL SWITCHBOARD AND DISTRIBUTION PANELBOARD BRANCH SWITCHES:
   BRANCH SWITCH TAG (LOAD BEING SERVED)
H. PROVIDE THE FOLLOWING INFORMATION AT INDIVIDUAL SUB-FEED BREAKERS LOCATED IN BRANCH PANELS:
   BRANCH SWITCH TAG (LOAD BEING SERVED)
I. CONDUCTOR COLORS SHALL ALSO FOLLOW REQUIREMENTS LISTED IN SPECIFICATIONS SECTION 260553.

5B / E6.1 EQUIPMENT LABELING
NO SCALE

DLR GROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

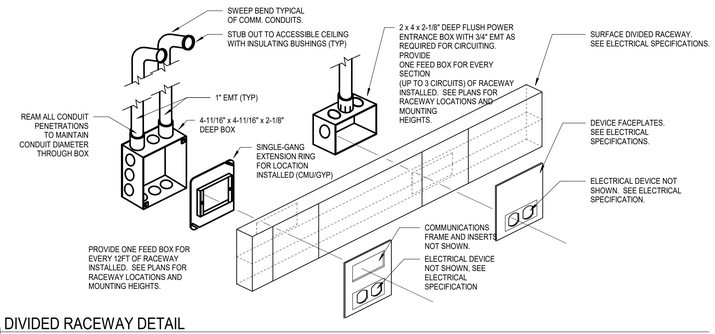
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

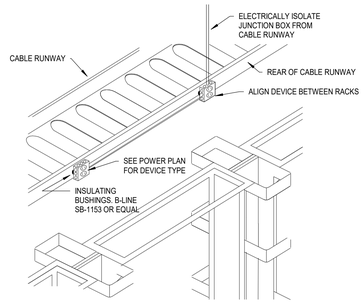
ELECTRICAL DETAILS

E6.1

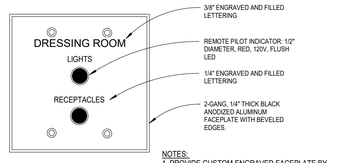
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:31 AM



1A E6.2 DIVIDED RACEWAY DETAIL
NO SCALE

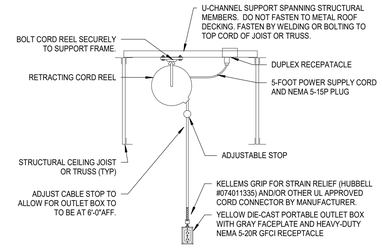


1C E6.2 CABLE RUNWAY RECEPTACLES
NO SCALE



NOTES:
1. PROVIDE CUSTOM ENGRAVED FACEPLATE BY RCI CUSTOM, PANELCRAFTERS OR APPROVED EQUAL.
2. SUBMIT CUSTOM PUNCHED PANEL LAYOUT AND COVERPLATES WITH ENGRAVING FOR APPROVAL.

1D E6.2 REMOTE PILOT FACEPLATE
NO SCALE



1E E6.2 CORD REEL - EXPOSED CEILING
NO SCALE

FLOOR BOX SCHEDULE

GENERAL NOTES:

A. BASIS OF DESIGN IS LEGRAND. PROVIDE EQUAL FROM HUBBELL.

B. PROVIDE UL LISTED DIVIDERS BETWEEN POWER AND LOW VOLTAGE DEVICES.

C. COMMUNICATIONS (COMM) OUTLETS PER DETAIL.

D. SOUND OUTLET PER NOTES AND DETAILS.

E. VIDEO OUTLET PER NOTES AND DETAILS.

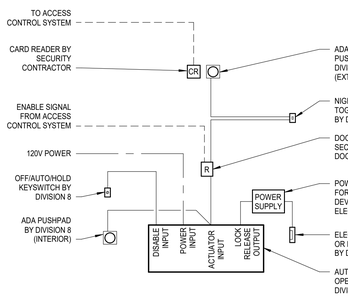
F. THEATRICAL LIGHTING OUTLET PER NOTES AND DETAILS

NOTES:

1. PROVIDE BRACKET FOR MOUNTING COMMUNICATION JACKS WITH TIA-606 IDENTIFICATION LABELS, COORDINATE BEZEL WITH COMMUNICATIONS CABLING CONTRACTOR.

2. SEE PLANS FOR RECEPTACLE TYPE.

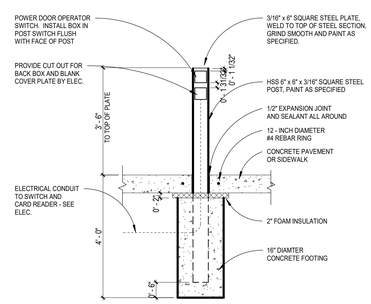
ID	APPLICATION	FLOORING TYPE	COVER		POSITIONS / DEVICES				BASIS OF DESIGN		NOTES
			TYPE	COLOR / MATERIAL	1	2	3	4	MANUFACTURER	MODEL	
FB-1	ON GRADE	CARPET	FLANGED, CARPET INSERT	BLACK	DUPLEX 5-20R	AV	AV	THEATRICAL	WIREMOLD	EFB-8S	1



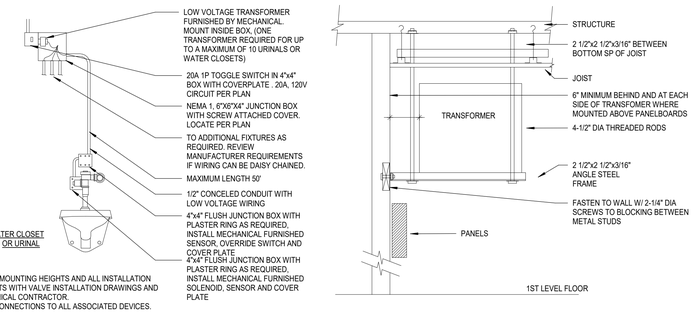
NOTES:

A. WHEN DOOR IS LOCKED BY KEY, NIGHT DISABLE TOGGLE SWITCH IS TURNED OFF TO PREVENT ACCESS USING THE EXTERIOR ADA PUSHPAD. INTERIOR ADA PUSHPAD IS ALWAYS ACTIVE.
B. MANUAL OPERATION - WHEN DOOR IS CLOSED BUT UNLOCKED, LEVER RETRACTS LATCHBOLT. WHEN DOOR IS LOCKED, LEVER DOES NOT RETRACT LATCHBOLT.
C. ADA OPERATION - WHEN DOOR IS CLOSED BUT UNLOCKED, PRESSING EITHER PUSHPAD ACTIVATES ELECTRIC STRIKE AND AFTER DELAY ACTIVATES ADA OPERATOR TO OPEN DOOR. WHEN DOOR IS LOCKED, PRESSING EXTERIOR PUSHPAD DOES NOT OPEN DOOR. AFTER VALID CARD READ IS RECEIVED, SECURITY SYSTEM ENABLES RELAY TO ENABLE PUSHPAD TO ACTIVATE OPERATOR WHICH ACTIVATES ELECTRIC STRIKE AND AFTER DELAY ACTIVATES ADA OPERATOR TO OPEN DOOR.
D. CONNECT REMOTE OFF/AUTO/HOLD KEYSWITCH IF SPECIFIED.
E. INTERIOR DOORS WITHOUT SECURITY SHOULD HAVE THE NIGHT DISABLE SWITCH WIRED DIRECTLY TO THE ACTUATOR INPUT OF THE ADA OPERATOR WITHOUT A DOOR CONTROL RELAY.

3A E6.2 ADA OPERATOR CONNECTION
NO SCALE



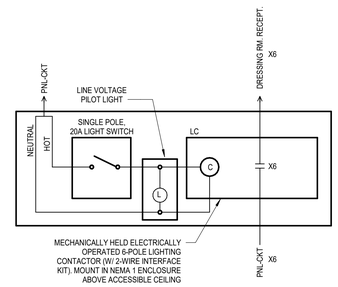
3C E6.2 DOOR OPERATOR POST
NO SCALE



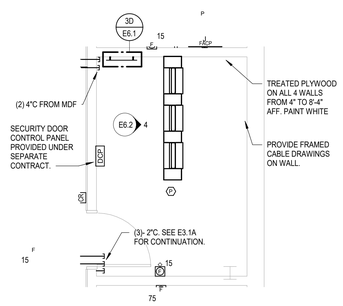
NOTES:
1. COORDINATE MOUNTING HEIGHTS AND ALL INSTALLATION REQUIREMENTS WITH VALVE INSTALLATION DRAWINGS AND WITH MECHANICAL CONTRACTOR.
2. MAKE FINAL CONNECTIONS TO ALL ASSOCIATED DEVICES.

3D E6.2 AUTO. FLUSHING CONTROL DIAGRAM
NO SCALE

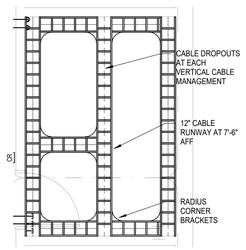
3E E6.2 DRY-TYPE TRANSFORMER CEILING HUNG
NO SCALE



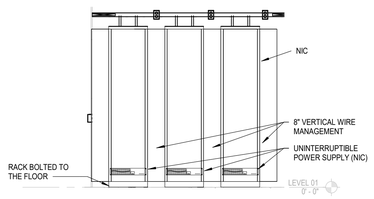
3F E6.2 DRESSING ROOM CONTACTOR DIAGRAM
NO SCALE



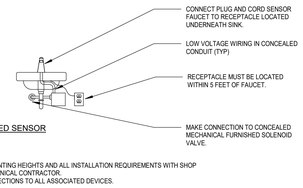
2 E6.2 ENLARGED EQUIPMENT PLAN IDF A158
SCALE: 1/4" = 1'-0"



3 E6.2 ENLARGED CABLE RUNWAY PLAN IDF A158
SCALE: 1/4" = 1'-0"

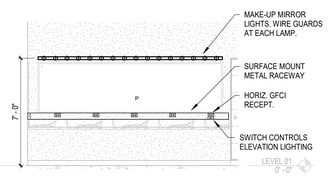


4 E6.2 IDF A158 RACK ELEVATION
SCALE: 3/8" = 1'-0"

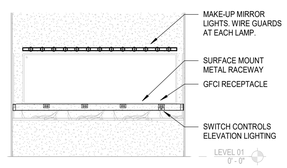


NOTES:
1. COORDINATE MOUNTING HEIGHTS AND ALL INSTALLATION REQUIREMENTS WITH SHOP DRAWINGS AND MECHANICAL CONTRACTOR.
1. MAKE FINAL CONNECTIONS TO ALL ASSOCIATED DEVICES.

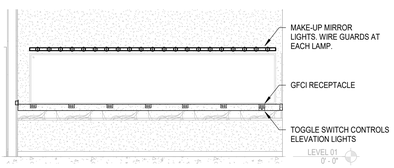
5 E6.2 AUTO. LAV/WASH FOUNTAIN DIAGRAM
NO SCALE



5A E6.2 MAKEUP ELEVATION WEST
SCALE: 1/4" = 1'-0"



5B E6.2 MAKEUP ELEVATION SOUTH
SCALE: 1/4" = 1'-0"



5C E6.2 MAKEUP ELEVATION EAST
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH MECHKOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

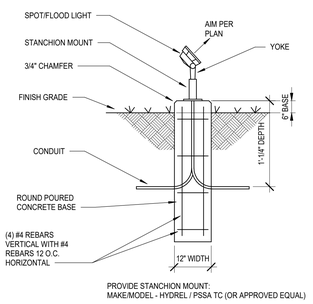
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

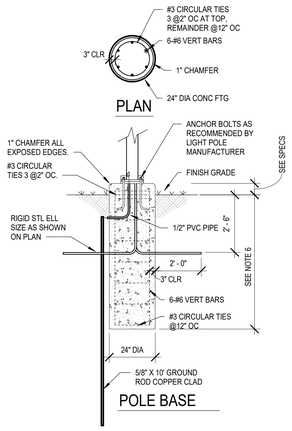
ELECTRICAL DETAILS

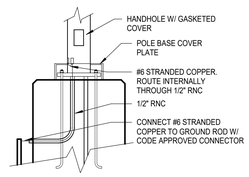
E6.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:35 AM



5A E6.3 SPOT LIGHT DETAIL
NO SCALE





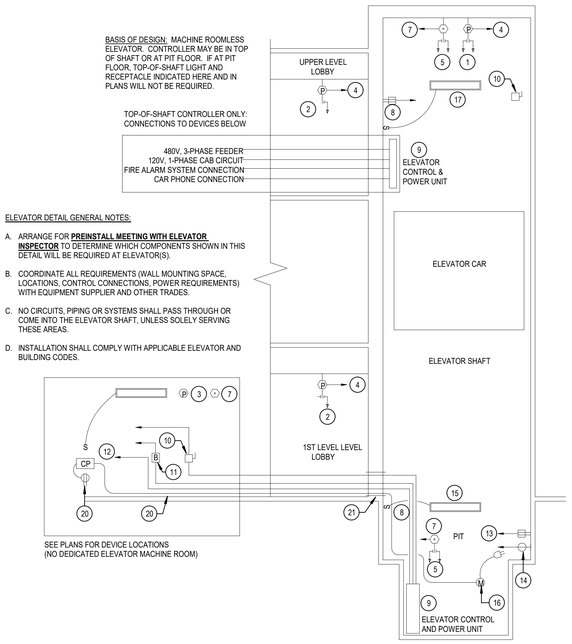
POLE BASE TOP

5B E6.3 LIGHT POLE BASE
NO SCALE

NOTES:

1. CONCRETE BASE SHALL BE SMOOTH AND LEVEL
2. MAINTAIN 3" CLR BETWEEN GROUND ROD AND STL REINF.
3. FEEDER CONDUITS SHALL BE CENTERED IN BOLT CIRCLE. EXTEND 2" ABOVE CONC BASE TOP.
4. LOCATE GROUND ROD ADJACENT TO FOOTING.
5. EXPOSED THREADS OF ANCHOR BOLTS AND END OF CONDUITS SHALL BE CLEAN AND FREE OF CONCRETE.
6. FOUNDATION DEPTHS:
   16' POLES: 6' - 0"
   35' POLES: 8' - 6"

BASIS OF DESIGN: MACHINE ROOMLESS ELEVATOR. CONTROLLER MAY BE IN TOP OF SHAFT OR AT PIT FLOOR. IF AT PIT FLOOR, TOP-OF-SHAFT LIGHT AND RECEPTACLE INDICATED HERE AND IN PLANS WILL NOT BE REQUIRED.



ELEVATOR DETAIL GENERAL NOTES:

A. ARRANGE FOR **PREINSTALL MEETING WITH ELEVATOR INSPECTOR** TO DETERMINE WHICH COMPONENTS SHOWN IN THIS DETAIL WILL BE REQUIRED AT ELEVATOR(S).

B. COORDINATE ALL REQUIREMENTS (WALL MOUNTING SPACE, LOCATIONS, CONTROL CONNECTIONS, POWER REQUIREMENTS) WITH EQUIPMENT SUPPLIER AND OTHER TRADES.

C. NO CIRCUITS, PIPING OR SYSTEMS SHALL PASS THROUGH OR COME INTO THE ELEVATOR SHAFT, UNLESS SOLELY SERVING THESE AREAS.

D. INSTALLATION SHALL COMPLY WITH APPLICABLE ELEVATOR AND BUILDING CODES.

ELEVATOR DETAIL KEYED NOTES:

1. HOISTWAY SMOKE DETECTOR: ACTIVATION OF SMOKE DETECTOR SHALL SEND A RECALL SIGNAL TO THE POWER MODULE SWITCH. PROVIDE AUXILIARY CONTACTS AS REQUIRED. PROVIDE ADDITIONAL CONTACTS TO ACTIVATE SMOKE RELIEF EQUIPMENT (WHEN PRESENT).
2. LOBBY SMOKE DETECTOR: LOCATE AT A MAXIMUM OF 60" FROM ELEVATOR OPENING. ACTIVATION OF SMOKE DETECTOR SHALL SEND A RECALL SIGNAL TO THE POWER MODULE SWITCH. PROVIDE AUXILIARY CONTACTS AS REQUIRED.
3. EQUIPMENT ROOM SMOKE DETECTOR (IF REQUIRED): ACTIVATION OF SMOKE DETECTOR SHALL SEND A RECALL SIGNAL TO THE POWER MODULE SWITCH. PROVIDE AUXILIARY CONTACTS AS REQUIRED.
4. CONNECTION TO FIRE ALARM SYSTEM: ACTIVATION OF SMOKE DETECTORS IN LOBBY, HOISTWAY OR EQUIPMENT ROOM SHALL INITIATE AN ALARM CONDITION. ACTIVATION OF SMOKE DETECTORS IN HOISTWAY OR MACHINE ROOM SHALL ACTIVATE A SEPARATE AND DISTINCT VISIBLE ANNUNCIATION (AT CONTROL PANEL AND ANNUNCIATORS) TO ALERT FIREFIGHTERS THAT ELEVATORS ARE NO LONGER SAFE TO USE.
5. HOISTWAY HEAT DETECTOR (135 DEG FIXED TEMPERATURE): LOCATE A MINIMUM OF 24" FROM EACH SPRINKLER HEAD IN HOISTWAY. HEAT DETECTOR SHALL BE REQUIRED IN PIT IF HEAD EXISTS AND IS MORE THAN 24" ABOVE PIT FLOOR. DETECTOR SHALL HAVE A LOWER TEMPERATURE RATING AND HIGHER SENSITIVITY RATING THAN ADJACENT SPRINKLER HEAD. ACTIVATION OF HEAT DETECTOR SHALL SEND A SHUNT TRIP SIGNAL TO THE POWER MODULE SWITCH (SIGNAL SHALL BE DELAYED TO ALLOW RECALL). PROVIDE AUXILIARY CONTACTS AS REQUIRED.
6. EQUIPMENT ROOM HEAT DETECTOR (135 DEG FIXED TEMPERATURE, IF REQUIRED): LOCATED A MINIMUM OF 24" FROM SPRINKLER HEAD. ACTIVATION OF HEAT DETECTOR SHALL SEND A SHUNT TRIP SIGNAL TO THE POWER MODULE SWITCH (SIGNAL SHALL BE DELAYED TO ALLOW RECALL). PROVIDE AUXILIARY CONTACTS AS REQUIRED.
7. CONNECTION TO FIRE ALARM SYSTEM: ACTIVATION OF HEAT DETECTORS IN HOISTWAY OR MACHINE ROOM SHALL INITIATE A SUPERVISORY SIGNAL (DEVICES MUST BE CONNECTED TO FIRE ALARM SYSTEM). PROVIDE HEAT DETECTORS PER NFPA 72 .4.2.
8. PROVIDE 20A TOGGLE SWITCH FOR CONTROL OF ELEVATOR HOISTWAY LIGHTING.
9. ELEVATOR CONTROL AND POWER UNIT PROVIDED BY DIVISION 14. PROVIDE ALL FEEDER AND CONTROL CONNECTIONS.
10. POWER MODULE SWITCH: REFER TO SPECIFICATIONS FOR REQUIREMENTS. IN TOP OF ELEVATOR SHAFT, PROVIDE EQUAL-SIZED NON-FUSED DISCONNECT WITH AUXILIARY CONTACTS IF MANUFACTURER REQUIRES IT.
11. CAR POWER SUPPLY: PROVIDE AN EXTERNALLY OPERABLE, ENCLOSED 1P/20A CIRCUIT BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVIDE AN ENGRAVED LABEL ON ENCLOSURE INDICATING PANEL AND CIRCUIT SERVING CAB. SEE POWER PLANS FOR CIRCUIT DESIGNATIONS.
12. DEDICATED PHONE LINE - CAR PHONE: PROVIDE DEDICATED UTP CABLE FROM ELEVATOR CONTROLLER NETWORK PATCH PANEL. COORDINATE WITH OWNER TO PROVIDE IP-TO-ANALOG CONVERSION. IF FACILITY UTILIZES AND MAINTAINS ANALOG PHONES IN LIEU OF VoIP, EXTEND TO LINE TO DEMARCATION AND COORDINATE SERVICE ACTIVATION WITH LOCAL UTILITY.
13. PIT RECEPTACLE: INSTALL GFCI DEVICE APPROXIMATELY 52-INCHES ABOVE PIT FLOOR. COORDINATE EXACT LOCATION WITH DIVISION 14 PRIOR TO ROUGH IN. CIRCUIT DOWNSTREAM OF PIT LIGHT.
14. SIMPLEX GFCI SUMP PUMP RECEPTACLE: LOCATE DEVICE 52" ABOVE PIT FLOOR TO SERVE THE SUMP PUMP. COORDINATE EXACT LOCATION WITH DIVISION 14 PRIOR TO ROUGH IN.
15. PIT LIGHTS AND SWITCH: LOCATE SUCH THAT TOE GUARD, CAR AND CAR SUPPORTS WILL NOT INTERFERE WITH SWITCH OR FIXTURE LOCATION AND DRIVER REPLACEMENT. COORDINATE EXACT LOCATION WITH OTHER TRADES PRIOR TO ROUGH IN. CIRCUIT UPSTREAM OF PIT RECEPTACLE. LIGHT FIXTURE SHALL BE IP65 OR IP66 LISTED.
16. SUMP PUMP PROVIDED BY DIVISION 22.
17. ELEVATOR HOISTWAY LIGHT AND SWITCH
18. EQUIPMENT ROOM RECEPTACLE: INSTALL GFCI DEVICE 18-INCHES A.F.F.
19. RECEPTACLE FOR OIL MINDER SYSTEM CONTROL PANEL (WHERE APPLICABLE). CONNECT RECEPTACLE TO SUMP PUMP CIRCUIT. COORDINATE CONNECTION REQUIREMENTS OF CONTROL PANEL WITH MANUFACTURER (HARD WIRE WHERE REQUIRED).
20. CONTROL CABLE (PROVIDED WITH SUMP PUMP) TO BE RUN FROM CONTROL PANEL TO SUMP PUMP. ROUTE CABLE THROUGH SLEEVE IN PIT WALL.
21. PROVIDE CONDUIT SLEEVE (COORDINATE WITH MANUFACTURER FOR SIZE AND ROUTING) FOR ALL CONTROL CABLING. INSTALL INTUMESCENT CAULKING AS REQUIRED TO MAINTAIN FIRE RATING OF WALL AFTER INSTALLATION OF CABLE.

5D E6.3 ELEVATOR ELECTRICAL REQUIREMENTS MACHINE ROOMLESS
NO SCALE

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

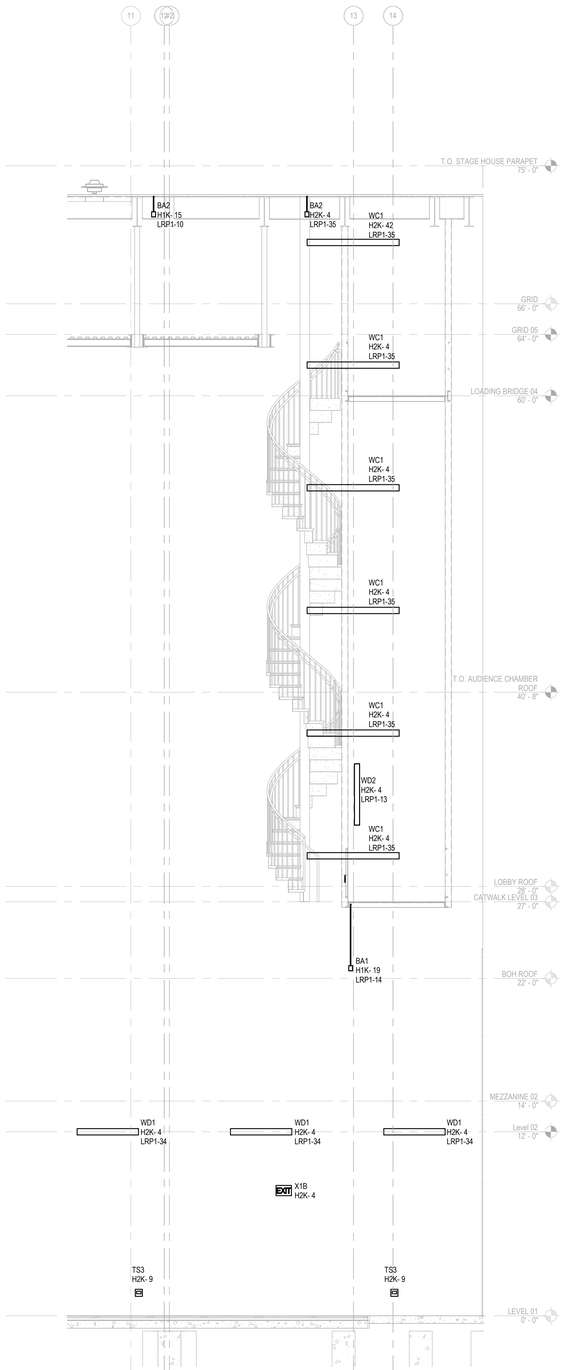
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

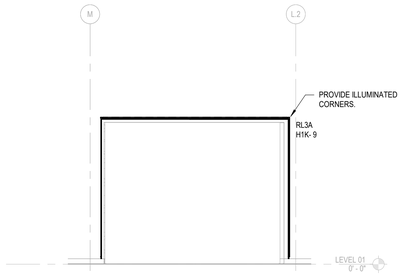
ELECTRICAL DETAILS

E6.3

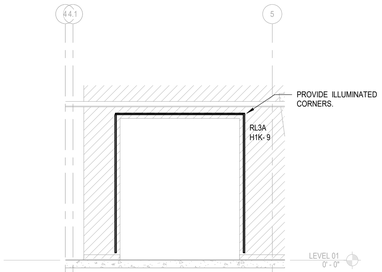
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:36 AM



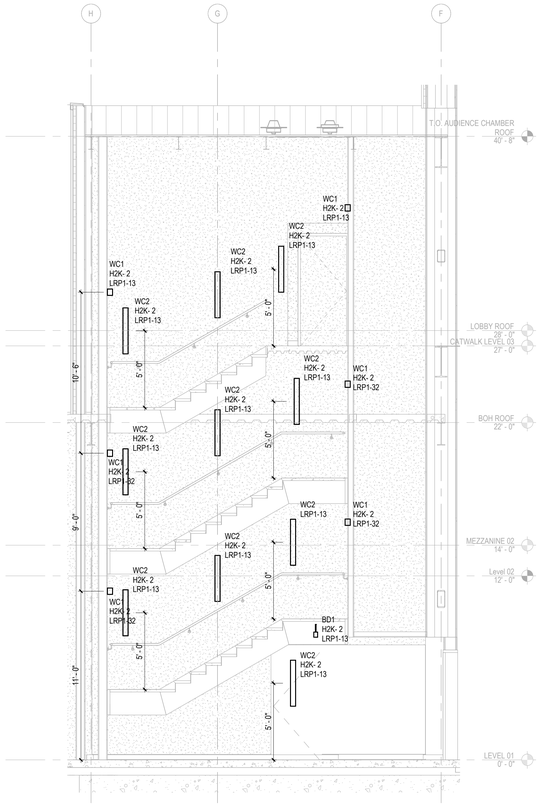
5A E6.4 AUDITORIUM SPIRAL STAIR LIGHTING ELEVATION
SCALE: 1/4" = 1'-0"



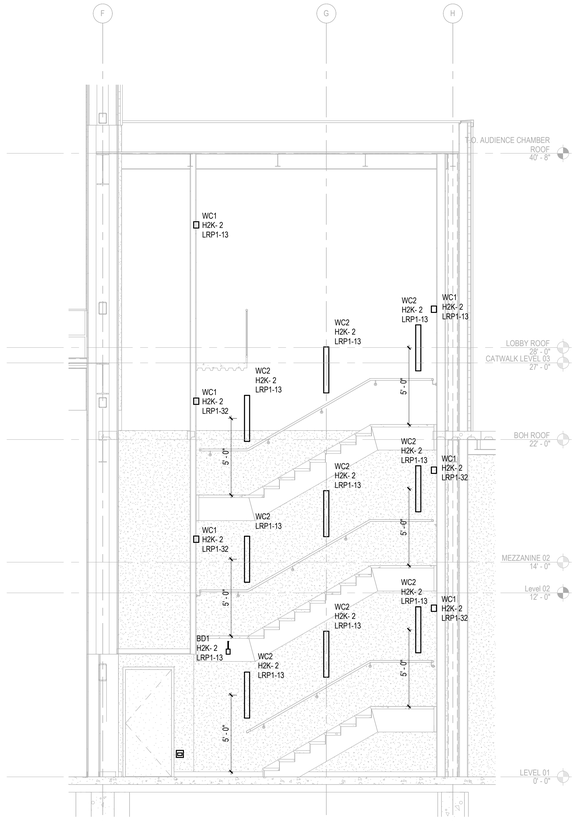
2D E6.4 SOUSD/LIGHT LOCK EAST ENTRANCE
SCALE: 1/4" = 1'-0"



2E E6.4 SOUSD/LIGHT LOCK SOUTH ENTRANCE
SCALE: 1/4" = 1'-0"



5C E6.4 BOH STAIR A144 WEST ELEVATION
SCALE: 1/4" = 1'-0"



5E E6.4 BOH STAIR A144 EAST ELEVATION
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

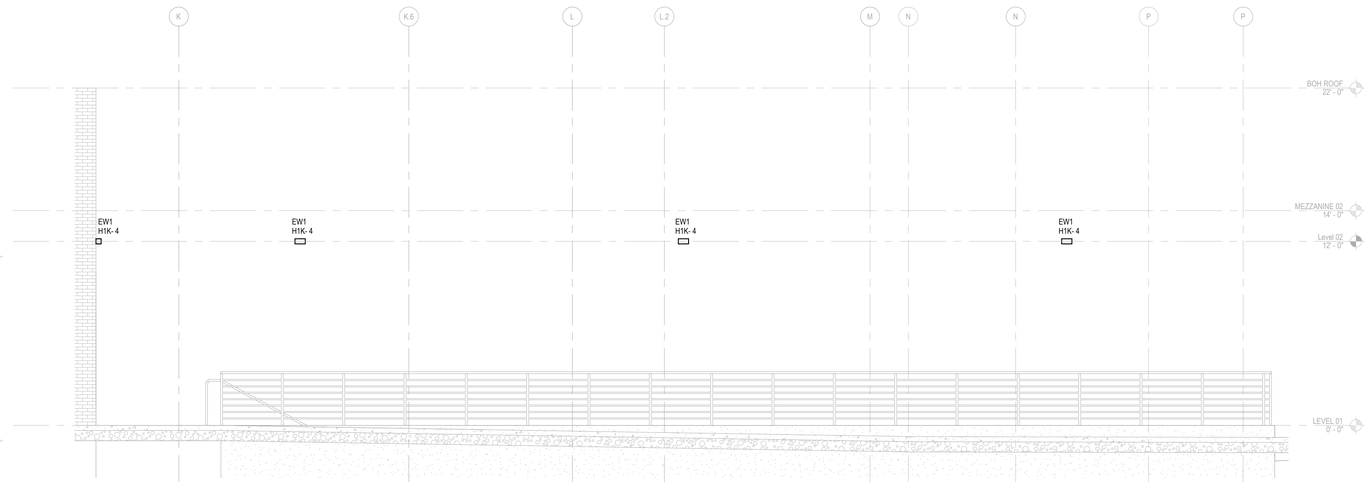
39-23712-00

LIGHTING ELEVATIONS

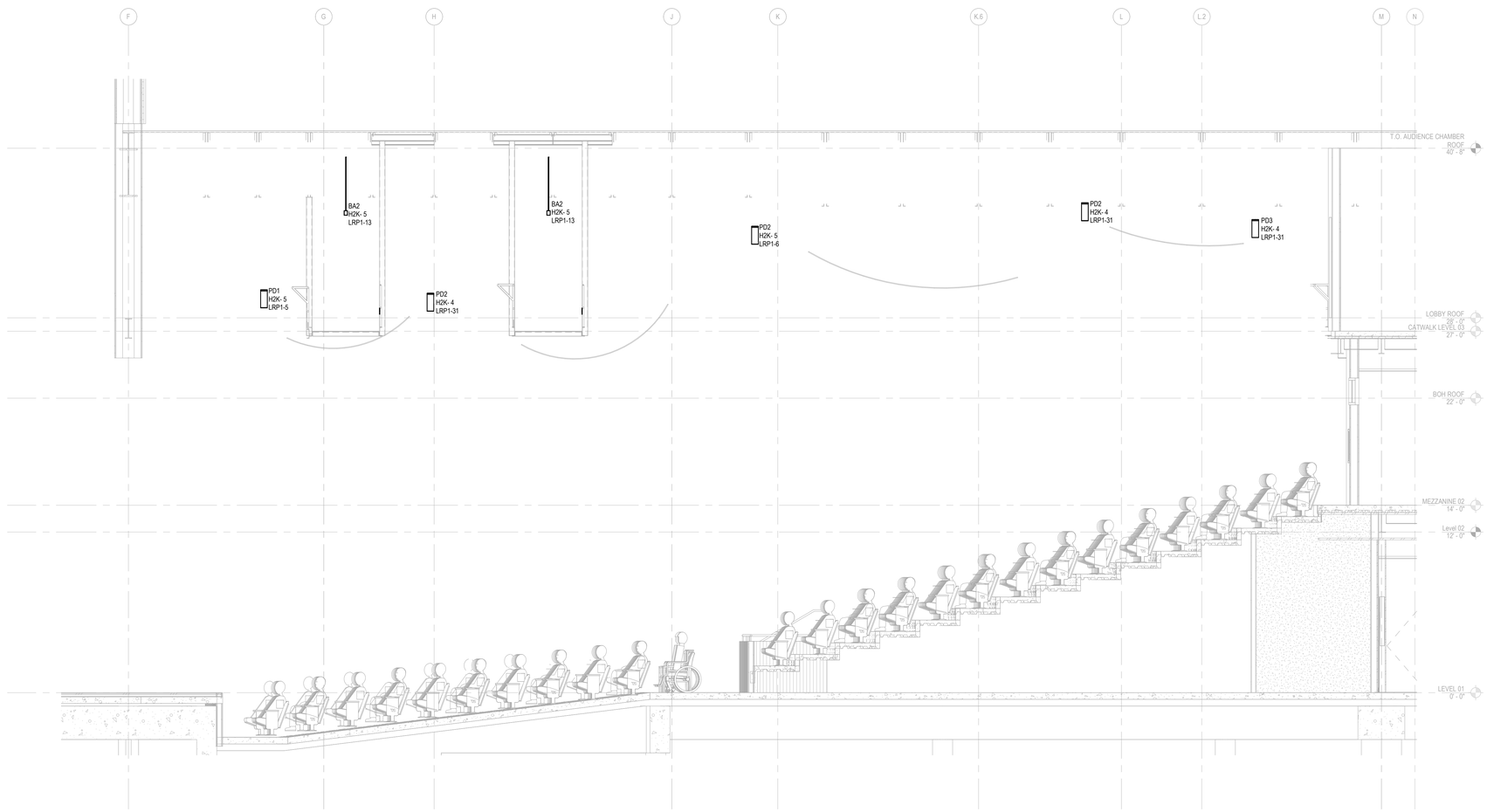
E6.4

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:39 AM

2A / E6.5 TYPICAL RESTROOM VANITY LIGHTING ELEVATION
SCALE: 1/4" = 1'-0"



2C / E6.5 LOADING DOCK LIGHTING ELEVATION
SCALE: 1/4" = 1'-0"



5B / E6.5 AUDITORIUM LIGHTING SECTION
SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LIGHTING ELEVATIONS

E6.5

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:44 AM

INTERIOR LUMINAIRE SCHEDULE

GENERAL NOTES:
1. FURNISH ALL LIGHTING FIXTURES COMPLETE WITH MOUNTING ACCESSORIES TO MEET JOB REQUIREMENTS. VERIFY FIXTURE MOUNTING, LOCATION, AND FIXED OPTICAL ORIENTATION AGAINST ARCHITECT'S PLANS, ELEVATIONS, AND DETAIL DRAWINGS. EXACT LOCATION OF ALL FIXTURES SHALL BE CONFIRMED WITH THE ARCHITECT PRIOR TO ROUGHING IN.
2. FIXTURES SHOWN IN CONTINUOUS RUNS TO SATISFY NOMINAL LENGTHS AS SHOWN ON DRAWINGS. FIXTURE TAGS SHOWN ONCE ON A CONTINUOUS ROW OF FIXTURES SHALL BE TYPICAL FOR THAT ROW UNLESS OTHERWISE NOTED.
3. ALL FIXTURES WILL BE SUPPORTED FROM THE BUILDING STRUCTURE, INDEPENDENT OF HUNG CEILING WITH ROD OR JACK CHAIN SUPPORT. AIRCRAFT CABLE LENGTHS, STEM LENGTHS, STEM FINISHES, AND STEM LOCATIONS OF ALL PENDANT FIXTURES TO BE VERIFIED AND CONFIRMED BY OWNER, ARCHITECT, AND CONSULTANT PRIOR TO ORDERING STEMS. AIRCRAFT CABLE HUNG FIXTURES TO BE PROVIDED WITH 18" OF EXTRA LENGTH WITH EXCESS TO BE LOCATED ABOVE THE CEILING ALONG WITH 18" OF EXTRA POWER CORD LENGTH.
4. LED FIXTURES WILL USE INTEGRAL DRIVERS UNLESS OTHERWISE NOTED. DIMMABLE DRIVERS SHALL BE COMPATIBLE WITH LAMPS AND DIMMERS/CONTROL SYSTEM.
5. ALL LIGHT FIXTURES ARE TO BE PROVIDED BY SPECIFIED MANUFACTURER OR APPROVED EQUAL. "ALTERNATE MANUFACTURER" AND "OR APPROVED" MEAN EQUIVALENT OR SUPERIOR IN PERFORMANCE, MATERIALS, WORKMANSHIP, AND APPEARANCE TO THE SPECIFIED EQUIPMENT.
6. CONTRACTOR TO PROVIDE AND INSTALL ALL TRANSFORMERS, DRIVERS, BATTERY PACKS, AND/OR BALLASTS REQUIRED TO OPERATE LAMPS SPECIFIED, INCLUDING REMOTE POWER SUPPLIES AND THE ENCLOSURES FOR SAME. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF COMPATIBILITY BETWEEN SPECIFIED LAMPS, SPECIFIED POWER SUPPLIES, DIMMING, AND OTHER CONTROL DEVICES SPECIFIED. NOTIFY ARCHITECT AND CONSULTANT OF AN INCOMPATIBILITY PRIOR TO ORDERING EQUIPMENT.
7.CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE COORDINATION OF ALL LIGHTING EQUIPMENT AND CONTROL DEVICES WITH CEILING, WALL, AND GROUND TYPES SPECIFIED PRIOR TO ORDERING LIGHTING EQUIPMENT. NOTIFY ARCHITECT AND CONSULTANT OF ANY INCOMPATIBILITY PRIOR TO ORDERING EQUIPMENT.
8. ALL LED LUMINAIRES TO HAVE A LIFE RATING OF 50,000 HOURS OR HIGHER AT L70 OR BETTER AND A FIVE-YEAR WARRANTY.
9. PRELIMINARY AIMING OF ALL ADJUSTABLE LIGHTING EQUIPMENT WILL BE DONE DURING INSTALLATION BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THE LIGHTING PLANS / AIMING DIAGRAM, WHERE SUCH A DIAGRAM IS INCLUDED IN CONTRACT.
10. SCHEDULED LUMEN OUTPUT REPRESENTS DELIVERED LUMENS.
11. NO PENDANTS ABOVE FURNITURE TO BE MOUNTED BELOW 7'-0" AFF UNLESS OTHERWISE SPECIFIED.
12. LUMINAIRE CATALOG/MODEL NUMBERS ARE PROVIDED FOR CONVENIENCE ONLY AND ARE SUBJECT TO CHANGE. CONTRACTOR TO GENERATE EXACT CATALOG NUMBERS AT TIME OR ORDER. DEFER TO PERFORMANCE SPECIFICATIONS LISTED IN THIS SCHEDULE IN EVENT OF CONFLICT OR CHANGE.

TYPE	CONSTRUCTION				LIGHT SOURCE				ELECTRICAL				PRODUCT		
	DESCRIPTION	MOUNTING	FINISH	LUMENS PER FOOT	LUMENS DOWN	LUMENS UP	CCT	CRI	DRIVER	VOLT	WATTS (W)	WATTS PER FOOT (W / LF)	MFR	MODEL	EQUIVALENT MFR
BA1	4-FT STRIP LIGHT WITH ROUND LENS	PENDANT	WHITE		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	41 W		LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVO LT-35K	METALUX
BA2	4-FT STRIP LIGHT WITH ROUND LENS	PENDANT	BLACK		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	41 W		LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVO LT-35K	METALUX
BB1	2X4 HIGH BAY FIXTURE	PENDANT	WHITE		24000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	265 W		LITHONIA	XIB-L48-24000-AVCL-MVOLT-GZ1 0-35K	
BC1	4-FT SEALED STRIP LIGHT	PENDANT	WHITE		6000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	49 W		LITHONIA	CSVT-L48-6000LM-MVOLT-35K-8 0CRI	METALUX
BD1	6-FT LINEAR PENDANT WITH 3-SIDED LENS - RGBW	PENDANT	BLACK		7200 lm	0 lm	RGBW	80	DMX	277 V	60 W		LUMENWERX	QUAD WIDE	
FL1-1'-13'	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	3822 lm	0 lm	3000K	90	DMX	277 V	39 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-15'6"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	4557 lm	0 lm	3000K	90	DMX	277 V	45 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-24' 0"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	7056 lm	0 lm	3000K	90	DMX	277 V	72 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-25'6"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	7497 lm	0 lm	3000K	90	DMX	277 V	77 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
LA1	CASEWORK MOUNTED LINEAR WITH 85-DEGREE ASYMMETRIC OPTIC	SURFACE	BLACK	209 lm	0 lm	0 lm	3000K	90	0-10V DIMMING	277 V		4 W	VODE	ZIPTWO MICRO 3508 SERIES	
PD1	9X16 INCH CYLINDER WITH MEDIUM FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		2500 lm	0 lm	3000K	80	REMOTE DMX	277 V	35 W		KIRLIN	SSR-09620-2500-30K-MFL-38-AS B	
PD2	9X16 INCH CYLINDER WITH WIDE FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		5000 lm	0 lm	3000K	80	REMOTE DMX	277 V	55 W		KIRLIN	SSR-09620-5000-30K-WFL-38-AS B	
PD3	9X16 INCH CYLINDER WITH WIDE FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		2500 lm	0 lm	3000K	80	REMOTE DMX	277 V	35 W		KIRLIN	SSR-09620-2500-30K-WFL-38-AS B	
RA1	MULTI-CELL RECESSED DOWNLIGHT - WHITE GYP CEILING	RECESSED	WHITE		1475 lm	0 lm	3500K	80	0-10V DIMMING, 1%	277 V	13 W		USAI	MDF-04-13H1-35KS-50-WH-WH-N C-UNV-DIE	
RA3	MULTI-CELL RECESSED DOWNLIGHT - DARK GYP CEILING	RECESSED	BLACK		4675 lm	0 lm	3500K	80	0-10V DIMMING, 1%	277 V	41 W		USAI	MDF-12-41H1-35KS-50-BL-BL-NC-UNV	
RA4	MULTI-CELL RECESSED DOWNLIGHT - DARK GYP CEILING	RECESSED	BLACK		750 lm	0 lm	3500K	80	REMOTE 0-10V DIMMING, 1%	277 V	8 W		USAI	MDF-02-08-35KS-50-BL-BL-RM	
RB1	MULTI-CELL RECESSED DOWNLIGHT - WOOD CEILING	RECESSED	BLACK		2900 lm	0 lm	3500K	80	REMOTE 0-10V DIMMING, 1%	277 V	27 W		USAI	MDG-08-27H1-35KS-35-BL-BL-RM VS-UB76	
RD1	4-INCH NOMINAL RECESSED DOWNLIGHT - MEDIUM WIDE OPTIC	RECESSED	SEMI-SPECULAR		750 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W		GOTHAM	EVO 4 SERIES	
RD2	4-INCH NOMINAL RECESSED DOWNLIGHT - MEDIUM WIDE OPTIC	RECESSED	SEMI-SPECULAR		1000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	9 W		GOTHAM	EVO 4 SERIES	
RL1-17'	2-INCH NOMINAL RECESSED LINEAR WITH LAMBERTIAN OPTICS	RECESSED	WHITE		350 lm	0 lm	3500K	80	0-10V DIMMING	277 V	54 W		LUMENWERX	VIA2R D HLO FH SW 90CRI 500LM 35K	
RL1-29'	2-INCH NOMINAL RECESSED LINEAR WITH LAMBERTIAN OPTICS	RECESSED	WHITE		350 lm	0 lm	3500K	80	0-10V DIMMING	277 V	93 W		LUMENWERX	VIA2R D HLO FH SW 90CRI 500LMF 35K	
RL2	1-INCH NOMINAL RECESSED MUD-IN LINEAR CAPABLE OF 90-DEGREE CORNERS ONTO WALL; LUMENS IS PER FOOT	RECESSED	N/A	0 lm	369 lm	0 lm	3500K	90	0-10V DIMMING	277 V		4 W	PUREEDGE	TL1A 5WDC-X-ST35K	
RL2A	SAME AS RL2, EXCEPT VERTICAL PORTION	RECESSED	N/A	0 lm	369 lm	0 lm	3500K	90	0-10V DIMMING	277 V		3 W	PUREEDGE	TL1A 5WDC-X-ST35K	
RL3	1-INCH NOMINAL RECESSED LINEAR CAPABLE OF 90-DEGREE CORNERS; LUMENS IS PER FOOT PROVIDE FLANGE TRIM	RECESSED	CUTSOM WOOD FINISH	0 lm	216 lm	0 lm	3500K	90	0-10V DIMMING	277 V		4 W	CORONET	RUSH RECESSED SERIES	
RL3A	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION, VERTICAL POSITION, PROVIDE FLANGE TRIM.	RECESSED	CUTSOM WOOD FINISH	0 lm	216 lm	0 lm	3500K	90	0-10V DIMMING	277 V	0 W	4 W	CORONET	RUSH RECESSED SERIES	
RL5	4-FOOT RECESSED LINEAR	RECESSED	WHITE		4000 lm	0 lm	3500K	90	0-10V DIMMING	277 V	36 W		LUMENWERX	VIA 5 RECESSED SERIES	
RT1A	2-FOOT BY 2-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	N/A	0 lm	4050 lm	0 lm	3500K	80	0-10V DIMMING	277 V	38 W	0 W	FLUXWERX	TRANSOM SERIES	
RT1B	2-FOOT BY 2-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	N/A	0 lm	2650 lm	0 lm	3500K	80	0-10V DIMMING	277 V	23 W	0 W	FLUXWERX	TRANSOM SERIES	
RT2A	1-FOOT BY 4-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	NA	0 lm	4700 lm	0 lm	3500K	80	0-10V DIMMING	277 V	47 W	0 W	FLUXWERX	TRANSOM SERIES	
RT2C	1-FOOT BY 4-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	NA	0 lm	4050 lm	0 lm	3500K	80	0-10V DIMMING	277 V	38 W	0 W	FLUXWERX	TRANSOM SERIES	
TA1	TRACK HEAD & SURFACE MOUNTED TRACK SYSTEM - PROVIDE A HEXCELL LOUVER , LINEAR SPREAD LENS, 22-DEGREEE, 31-DEGREE, 40-DEGREE LENS FOR EACH SPOT LIGHT	SURFACE	WHITE		847 lm	0 lm	3500K	90	ELV DIMMING	120 V	<varies>		AMERLUX	SPEQ-S / GES SERIES	
TB1	MINI-TRACK HEAD WITH 28-DEGREE OPTICS & PENDANT MOUNTED TRACK SYSTEM	PENDANT	BLACK		1120 lm	0 lm	3500K	90	0-10V DIMMING	277 V	12 W		JOKER LIGHT	FIT 48V SERIES	
TC1	TRACK HEAD & SURFACE MOUNTED TRACK SYSTEM - BLACK FINISH- PROVIDE A HEXCELL LOUVER , LINEAR SPREAD LENS, 22-DEGREEE, 31-DEGREE, 40-DEGREE LENS FOR EACH SPOT LIGHT	SURFACE	BLACK		847 lm	0 lm	3500K	90	ELV DIMMING	120 V	9 W		AMERLUX	SPEQ-S / GES SERIES	
TS1	6-INCH STEP LIGHT	WALL	SEMI GLOSS BLACK	0 lm	194 lm	0 lm	3000K	0	0-10V DIMMING	277 V	5 W	0 W	HYDREL	HSL13 SERIES	
TS2	BLUE NODE STEP LIGHT	WALL	BLACK	0 lm	2 lm	0 lm	BLUE	0	DMX	120 V	3 W	0 W	ETC	BLUE DOME SERIES	
TS3	6-INCH STEP LIGHT - BLUE	WALL	SEMI GLOSS BLACK	0 lm	194 lm	0 lm	BLUE	0	0-10V DIMMING	277 V	5 W	0 W	HYDREL	HSL13 SERIES - BLUE	
WA1	MAKEUP VANITY LIGHT WITH LED FROSTED LAMPS EVERY 9-INCHES AND SQUARE GUARDS ON EACH LAMP	WALL	WHITE	0 lm	350 lm	0 lm	2700K	0	FORWARD PHASE DIMMING	120 V		4 W	CALIFORNIA ACCENT LIGHTING	ALS300P-SG-9"-27K-GSFW-DM-D RY	
WB1	WALL MOUNTED SEALED FIXTURE	WALL	N/A		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	<varies>		LITHONIA	CSVT	
WC1	6-FOOT WALL MOUNTED LINEAR FIXTURE - RGBW	WALL	BLACK	0 lm	7200 lm	0 lm	RGBW	80	DMX	277 V	60 W	0 W	LUMENWERX	QUAWW-HLO-LED-QUADRO-10 WF-6'-277-DMX-1-DRM	
WC2	3-FOOT WALL MOUNTED LINEAR FIXTURE - RGBW - VERTICAL MOUNT	WALL	BLACK	0 lm	7200 lm	0 lm	RGBW	80	DMX	277 V	60 W	0 W	LUMENWERX	QUAWW-HLO-LED-QUADRO-10 WF-3'-277-DMX-1-DRM	
WD1	4-FOOT HORIZONTAL WALL MOUNTED LINEAR FIXTURE	WALL	BLACK	0 lm	5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	40 W	0 W	LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVO LT-35K	
WD2	4-FOOT VERTICAL WALL MOUNTED LINEAR FIXTURE	WALL	BLACK	0 lm	5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	40 W	0 W	LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVO LT-35K	
WL1	2-FOOT WALL-MOUNTED VANITY	WALL	BLACK	0 lm	1258 lm	0 lm	3500K	90	0-10V DIMMING	277 V	14 W	0 W	OXYGEN	ADELPHI SERIES	
X1	EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BRUSHED ALUMINUM	UNIVERSAL	BRUSHED ALUMINUM		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X1B	EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BLACK FINISH	UNIVERSAL	BLACK		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X1M	EDGE LIT EXIT SIGN - MULLION MOUNT	MULLION	BLACK		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X2	DOUBLE SIDED EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BRUSHED ALUMINUM	UNIVERSAL	BRUSHED ALUMINUM		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	

EXTERIOR LUMINAIRE SCHEDULE

TYPE	CONSTRUCTION			LIGHT SOURCE				ELECTRICAL			PRODUCT		NOTE
	DESCRIPTION	MOUNTING	FINISH	LUMENS DOWN	LUMENS UP	CCT	CRI	DRIVER	VOLT	WATTS (W)	MFR	MODEL	
E2	16-FOOT PEDESTRIAN POLE WITH TYPE V OPTICS. PROVIDE ROUND STRAIGHT ALUMINUM POLE	POLE	BLACK	6843 lm	0 lm	3500K	80	0-10V DIMMING	277 V	61 W	SELUX	MISTELLA SERIES	7-PIN TWIST LOCK RECEPTACLE. VANDAL RESISTANT POLE BASE COVER
E3	35-FOOT POLE WITH TWO HEADS AT 180-DEGREE ORIENTATION - TYPE 2M OPTICS. PROVIDE ROUND STRAIGHT ALUMINUM POLE	POLE	BLACK	16723 lm	0 lm	3500K	80	0-10V DIMMING	277 V	138 W	LITHONIA	DSX1 LED SERIES	LUMENS AND WATTS PER HEAD. WIRELESS NLIGHT AIR
EG1	4-FT INGRADE WALL GRAZER WITH 10X30 OPTICS AND 2.5 TILT	INGRADE	BLACK	1400 lm	0 lm	3500K	80	0-10V DIMMING	277 V	20 W	LUMENPULSE	INGROUND LOI SERIES	
EL1	4-FOOT RECESSED LINEAR - WET RATED	RECESSED	BLACK	1000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	11 W	LUMENWERX	VIA WET RECESSED SERIES	
ES1	SPOT LIGHT WITH GROUND STAKE MOUNT - 40-DEGREE OPTIC, HALF SNOOT, HONEYCOMB LOUVER, FULL SET OF BEAM ANGLE LENS DEGREE, BLUE COLOR FILTER	GROUND STAKE	BLACK	761 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W	ECOSENSE	RISE SERIES	
EW1	SCONCE WITH TYPE IV OPTICS	SURFACE WALL	BLACK	2422 lm	0 lm	3500K	80	0-10V DIMMING	277 V	20 W	LIGMAN	ULEE-30021 SERIES	
EW2	DIRECT/INDIRECT SCONCE - 30-DEGREE UP OPTIC AND TYPE III DOWN OPTIC	SURFACE WALL	BLACK	982 lm	982 lm	3500K	80	0-10V DIMMING	277 V	20 W	LIGMAN	UGI-31651 SERIES	
EW3	4-FT SURFACE MOUNTED LINEAR WITH ASYMMETRIC OPTICS	SURFACE	BLACK	708 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W	LUMENPULSE	LUMENFACADE SERIES	ADJUSTABLE MOUNTING BRACKET WITH 90 DEG ROTATION
EW4	RECESSED STEP LIGHT WITH EXTENDED THROW OPTICS	RECESSED WALL	BLACK	301 lm	0 lm	3500K	80	0-10V DIMMING	277 V	7 W	BEGA	B24063	PROVIDE SPECIAL BACKBOX FOR RECESSED MOUNTING

CRANDALL PENDANT MOUNTING SCHEDULE

ROOM	TYPE	MOUNTING HEIGHT BOTTOM OF LUMINAIRE	NOTES
LEVEL 1			
F.O.H. STORAGE A102	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
CONCESSION STORAGE A104	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
F.O.H. STORAGE A107	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
CUSTODIAL A109	BA1	8'-0"	MOUNT BELOW MECHANICAL EQUIPMENT
LOADING DOCK A114	BC1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
WORKSHOP A116	BB1	18'-0"	
ELEC. A115	BA1	10'-0"	
STAGE ACCESS A117	BD1	10'-0"	
STAGE STORAGE A120	BA1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
BAND STORAGE A124	BA1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
COSTUME STORAGE A125	BA1	14'-6"	
STORAGE A126	BA1	14'-6"	
ORCH. SHELL STOR. A122 /STAGE	BA2	22'-6"	
BLDG MAINT. FIRE PANEL/PHONE A141	BA1	8'-0"	
IDF A142	BA1	9'-6"	
SOUND & LIGHTING STORAGE A143	BA1	9'-6"	
STAIR A144	DB1	8'-0"	
STORAGE A145	BA1	9'-6"	
LEVEL 2			
CUSTODIAL A203	BA1	8'-6"	
ELEC. A205	BA1	8'-6"	
LEVEL 3			
STORAGE A300	BA2	8'-0"	
S/L A301	BA2	8'-0"	
FOLLOW SPOT A302	BA2	8'-0"	
S/L A304	BA2	8'-0"	
AV & LIGHTING RACK ROOM A303	BA2	8'-0"	
LEVEL 4			
GRID LEVEL	BA2	7' - 6"	

DLR GROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
01/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Frn 303b, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LIGHTING SCHEDULES

E7.1

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:46 AM

FAN SCHEDULE

NOTES:
1. FAN PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCH
2. PROVIDE CONNECTION TO MOTORIZED DAMPER
3. INTERCONNECT WITH RTU-7
4.
5.

ID	SERVES	ECM	LOAD					VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
			HP	FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
EF-1	DRESSING ROOMS	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	NEMA 00	ML1K	27	15-2W	1,2
EF-2	LOBBY RESTROOMS	Yes	0.5	6.6	8.2	15	792	120	1	BY DIV 23	NEMA 00	ML2K	1	15-2W	1,2
EF-3	WORKSHOP	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	NEMA 00	ML1K	27	15-2W	1,2,3
EF-4	WORKSHOP	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	BY DIV 23	ML1K	27	15-2W	1,2,3

HUMIDIFIER SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION		LOAD					VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
	NO.	NAME	HP	FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
HU-1	A143	PIANO STORAGE	0	16.8	21	25	2,016	120	1	BY DIV 23		ML1K	29	25-2W	

PUMP SCHEDULE

NOTES:
1. SEE PLANS FOR ALARM PANEL LOCATION. ROUTE CIRCUIT SHOWN TO ALARM PANEL. CONNECT OUTPUT OF ALARM PANEL TO SIMPLEX RECEPTACLE IN ELEVATOR PIT.
2. PROVIDE PATHWAY FOR OIL MINDER SENSOR CABLE FROM ALARM PANEL TO SUMP PIT SENSOR.
3.
4.
5.

ID	LOCATION		SERVES	ECM	LOAD					VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
	NO.	NAME			HP	FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
SP-1			ELEVATOR	No	0.75	12	15	20	1,440	120	1	CORD AND PLUG	FLOAT SWITCH AND ALARM PANEL	L1AK	37	20-2W	1,2

ROOF-TOP UNIT SCHEDULE

NOTES:
1. PROVIDE DUCT SMOKE DETECTOR IN SUPPLY AND RETURN DUCTS PER IFC REQUIREMENTS.
2.
3.
4.
5.

ID	LOCATION	CFM	LOAD				VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
			FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
RTU-1	ROOF	14230 CFM	149	150	175	123,876	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	7	SEE ONE-LINE	1
RTU-2	ROOF	2530 CFM	33.7	39.9	60	28,018	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	2,4,6	40-4W	1
RTU-3	ROOF	2085 CFM	27.7	32.4	50	23,029	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	8,10,12	35-4W	1
RTU-4	ROOF	5930 CFM	61.8	68	90	51,380	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	8	SEE ONE-LINE	1
RTU-5	ROOF	5390 CFM	61.8	68.1	90	51,380	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	9	SEE ONE-LINE	1
RTU-6	ROOF	11425 CFM	75.4	94.2	110	62,653	480	3	VFD BY DIV 23	VFD BY DIV 23	DP2K	6	SEE ONE-LINE	1
RTU-7	ROOF	2750 CFM	31.8	36.5	50	26,438	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	14,16,18	40-4W	1
RTU-8	ROOF	2550 CFM	21.7	24.9	35	18,041	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	20,22,24	30-4W	1
RTU-9	ROOF	5000 CFM	42.7	49	70	35,500	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	10	SEE ONE-LINE	1

SPLIT SYSTEM INDOOR UNIT ELEC. CONNECTION SCHEDULE

NOTES:
1. POWER FOR INDOOR UNITS ARE PROVIDED BY OUTDOOR UNIT.
2. PROVIDE 3/4"C BETWEEN INDOOR AND OUTDOOR UNIT FOR CONTROL WIRING.
3.
4.
5.

ID	LOCATION	LOAD				VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
		FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
IU-01	PIANO STORAGE	0.3	0.4	15	62	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	21,23	15-2W	1,2
IU-02	IDF	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	25,27	20-2W	1,2
IU-03	ELEC. ROOM	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	29,31	20-2W	1,2
IU-04	BOX OFFICE & CONCESSIONS	1.1	1.4	20	229	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	33,35	20-2W	1,2
IU-05	MGR / FIRST AID	0.5	0.6	15	104	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	37,39	15-2W	1,2
IU-06	ELEC. ROOM	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	2,4	20-2W	1,2
IU-07	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	6,8	20-2W	1,2
IU-08	ELEC. ROOM	1.1	1.4	20	229	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	10,12	20-2W	1,2
IU-09	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	38,40	20-2W	1,2
IU-10	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	18,20	20-2W	1,2

SPLIT SYSTEM CONDENSING UNIT ELEC. CONNECTION SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	LOAD				VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
		FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
OU-01	ROOF	12	12.3	15	2,496	208	1	NEMA 3R NF 30A/2P		ML2K	21,23	15-2W	
OU-02	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P		ML2K	25,27	20-2W	
OU-03	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P		ML2K	29,31	20-2W	
OU-04	ROOF	12	13.3	20	2,496	208	1	NEMA 3R NF 30A/2P		ML2K	33,35	20-2W	
OU-05	ROOF	7.5	8	15	1,560	208	1	NEMA 3R NF 30A/2P		ML2K	37,39	15-2W	
OU-06	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P		ML2K	2,4	20-2W	
OU-07	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P		ML2K	6,8	20-2W	
OU-08	ROOF	12	13.1	20	2,496	208	1	NEMA 3R NF 30A/2P		ML2K	10,12	20-2W	
OU-09	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P		ML2K	38,40	20-2W	
OU-10	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P		ML2K	18,20	20-2W	

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	LOAD				VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
		FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
VAV-1	ROOF	14.5	18.1	20	4,011	277	1	BY DIV 23	BY DIV 23	MH1K	1	20-3W	
VAV-2	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	3	15-3W	
VAV-3	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	5	15-3W	
VAV-4	ROOF	9	11.3	15	2,504	277	1	BY DIV 23	BY DIV 23	MH1K	7	15-3W	
VAV-5	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	9	15-3W	
VAV-6	ROOF	5.4	6.8	15	1,507	277	1	BY DIV 23	BY DIV 23	MH1K	11	15-3W	
VAV-7	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	13	15-3W	
VAV-8	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	15	15-3W	
VAV-9	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	BY DIV 23	MH1K	17	15-3W	

ELECTRIC WATER HEATER SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	KW	SCR	LOAD				VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
				FLA (A)	MCA (A)	MOCP (A)	TOTAL LOAD (VA)								
EWH-1	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	1,3	40-2W	
EWH-1	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	5,7	40-2W	
EWH-2	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	9,11	40-2W	
EWH-2	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	13,15	40-2W	
EWH-3	UNISEX TOILET	3.6	YES	17	20	20	3,600	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	17,19	20-2W	
EWH-4	UNISEX TOILET	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML1K	21,23	40-2W	
EWH-5	CUSTODIAL	24	YES	29	30	30	24,000	480	3	MOTOR RATED TOGGLE SWITCH		MH1K	37,39,41	30-3W	
EWH-6	CUSTODIAL	3.6	YES	17	20	20	3,600	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	9,11	20-2W	
EWH-7	LOBBY RESTROOMS	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	28,30	40-2W	
EWH-8	LOBBY RESTROOMS	24	YES	29	30	70	24,000	480	3	MOTOR RATED TOGGLE SWITCH		MH2K	1,3,5	30-3W	
EWH-9	MEZZANINE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	13,15	40-2W	
EWH-10	MEZZANINE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	17,19	40-2W	
EWH-11	WORKSHOP	24	YES	29	30	70	24,000	480	3	MOTOR RATED TOGGLE SWITCH		MH2K	7,9,11	30-3W	
EWH-12	ALCOVE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	5,7	40-2W	
EWH-13	BOX OFFICE & CONS.	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH		ML2K	32,34	40-2W	

DLRGROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH WECHWADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELECTRICAL SCHEDULES

E7.2

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:48 AM

SWITCHBOARD: DP1K

LOCATION ELEC. A160 | BUS RATING 1200.0 A | MAIN BREAKER 1200/3

VOLTAGE: 480Y/277 | PHASES: 3 | WIRES: 4 | SCCR: 25 kA

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	LOAD (kVA)	NOTES
1	DP2K	600.0 A	3		S; L; R; O; M	312	
2	L1AK VIA XFMR T1AK	50.0 A	3		S; L; R; O; M	37	
3	L1BK VIA XFMR T1BK	50.0 A	3		S; R; O	7	
4	H1K	100.0 A	3		S; L	11	
5	MH1K	400.0 A	3		S; R; M	184	
6	L1TK VIA XFMR T1TK	150.0 A	3		S; R; O; NC	69	
7	RTU-1	175.0 A	3		M	124	
8	RTU-4	90.0 A	3		M	51	
9	RTU-5	90.0 A	3		M	51	
10	RTU-9	70.0 A	3		M	36	
11	ACOUSTIC CEILING HOIST	100.0 A	3		M	58	
12	STAGE LIGHTING HOIST	100.0 A	3		NC	58	
13							
14							
15							
16							
					TOTAL LOAD:	999 kVA	
					TOTAL AMPS:	1201 A	

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	25232 VA	100.00%	25232 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	61420 VA	58.14%	35710 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD: 999 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN EQUIPMENT, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 857 kVA
M	MOTOR	727633 VA	100.00%	727633 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 1201 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 1030.9 A
H	HEATING	0 VA	0.00%	0 VA			
NC	NONCOINCIDENT	115797 VA	0.01%	12 VA	NON-COINCIDENT LOADS, NEC ART. 220		
O	OTHER	67992 VA	100.00%	67992 VA			
Spare	SPARE	500 VA	100.00%	500 VA			

NOTES:

PANEL: H1K

LOCATION: ELEC. A160 | BUS RATING: 100 A | MAIN BREAKER: 100 A

VOLTS: 480Y/277 | PHASES: 3 | WIRES: 4 | SCCR: 22.2 KA

MOUNTING: SURFACE | FED FROM: DP1K | INTEGRAL SPD: NO | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	L-OPEN CIRCULATION A138 & BOH HALL A112	20	1		L	1,111	1,857					L		1	20	L-CIRCULATION, LOBBY (VIA INVERTER)*	2
3	L-BAND STORAGE A124, A125, A119, A120	20	1		L			996	1,245			L		1	20	L-BANDROOM, EXTERIOR (VIA INVERTER)*	4
5	L-WORKSHOP A116	20	1		L					2,123							6
7	L-DRESSING ROOM, A130-A138,A141-A143	20	1		L	1,151											8
9	L-F.O.H. STORAGE A106, CONCESSIONS A103	20	1		L			605	0			Spare		1	20	SPARE	10
11	L-HALL A196, EXTERIOR	20	1		L					316	0	Spare		1	20	SPARE	12
13	L-SITE POST LIGHTING	20	1		L	255	0					Spare		1	20	SPARE	14
15	L-GRID LEVEL	20	1		L			574	0			Spare		1	20	SPARE	16
17	L-LOBBY A101, A105, A110	20	1		L					464	0	Spare		1	20	SPARE	18
19	L-ORCH. STORAGE, AUDENCE CHAMBER	20	1		L	374	0					Spare		1	20	SPARE	20
21	L-ELEVATOR PIT	20	1		L			84	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	38
39	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	4747 VA		3504 VA		2903 VA							
					TOTAL AMPS	17.5 A		13.0 A		10.5 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	11154 VA	100.00%	11154 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 11 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 11 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 13.4 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 13.4 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
A. CIRCUITS NOTED WITH " * " ARE FED THROUGH INVERTER, SEE INVERTER SCHEDULE ON E6.2

PANEL: L1TK

LOCATION: ELEC. A160 | BUS RATING: 300 A | MAIN BREAKER: 300 A

VOLTS: 208Y/120 | PHASES: 3 | WIRES: 4 | SCCR: 6.4 KA

MOUNTING: SURFACE | FED FROM: T1TK | INTEGRAL SPD: YES | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-AUD CHAMBER SOUND POSITION	20	1		R	360	0					Spare		1	20	SPARE	2
3	R-AUD CHAMBER SOUND POSITION	20	1		R			360	0			Spare		1	20	SPARE	4
5	R-STAGE WING A185	20	1		R					180	0	Spare		1	20	SPARE	6
7	R-STAGE WING A185	20	1		R	180	0					Spare		1	20	SPARE	8
9 11	R-STAGE WING A185	30	2		R			2,080	0			Spare		1	20	SPARE	10
										2,080	0	Spare		1	20	SPARE	12
13	R-STAGE WING A186	20	1		R	180	0					Spare		1	20	SPARE	14
15	R-STAGE WING A186	20	1		R			180	0			Spare		1	20	SPARE	16
17 19	R-STAGE WING A186	30	2		R					2,080	0	Spare		1	20	SPARE	18
						2,080	0					Spare		1	20	SPARE	20
21	R-AUDIENCE CHAMBER A148	20	1		R			180	0			Spare		1	20	SPARE	22
23	R-LOADING DOCK A114	20	1		R					180	0	Spare		1	20	SPARE	24
25	R-AUD CHAMBER FLOOR BOX	20	1		R	360	0					Spare		1	20	SPARE	26
27	PROJECTION SCREEN-AUDITORIUM	20	1		O			1,000	0			Spare		1	20	SPARE	28
29											0	Spare		1	20	SPARE	30
31							0					Spare		1	20	SPARE	32
33									0			Spare		1	20	SPARE	34
35											0	Spare		1	20	SPARE	36
37 39 41	COMPANY SWITCH	200	3	ST	NC	19,200	0					Spare		1	20	SPARE	38
								19,200	0			Spare		1	20	SPARE	40
										19,200	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	22360 VA		23000 VA		23720 VA							
					TOTAL AMPS	186.3 A		192.5 A		198.5 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	10480 VA	97.71%	10240 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 69 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 11 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 191.7 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 31.2 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	1000 VA	100.00%	1000 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

PANEL: L1AK

LOCATION: ELEC. A160 | BUS RATING: 100 A | MAIN BREAKER: 100 A

VOLTS: 208Y/120 | PHASES: 3 | WIRES: 4 | SCCR: 8 KA

MOUNTING: SURFACE | FED FROM: T1AK | INTEGRAL SPD: YES | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EWC-HALL A196	20	1	G	R	500	500					R	G	1	20	EWC-ALCOVE A113	2
3	R-HALL A196, A143	20	1		R			540	1,560			M		1	20	DOCK LEVELER	4
5	R BOX OFFICE & CONCESSIONS A165	20	1		R					360	1,500	R	G	2	20	R-ALCOVE A113 DRYER	6 8
7	R-BOX OFFICE & CONCESSIONS A165 FRIDGE	20	1		R	180	1,500										
9	R-DRESSING ROOM A128,A128A VALVES	20	1		R; O			900	1,000			R		1	20	R-ALCOVE A113 WASHER	10
11	R-MAKEUP A187 COUNTER	20	1		R					720	1,500	O	G	2	30	R-ALCOVE A113 ICE MACHINE	12 14
13	R-MAKEUP A187 COUNTER	20	1		R	720	1,500										
15	R-MAKEUP A187 COUNTER	20	1		R			720	720			R		1	20	R-WORKSHOP A116 W,N	16
17	R-MAKEUP A187 COUNTER	20	1		R					720	720	R		1	20	R-STORAGE A120,A124	18
19	R-DRESSING ROOM A129,A129A VALVES	20	1		R; O	1,080	900					R		1	20	R-STORAGE, TOILET A102,A104,A107-A108	20
21	R STAGE WING A186	20	1		R			900	720			R		1	20	R-WORKSHOP A116 E,S	22
23	R-ELEVATOR A147	20	1		R					180	360	R		1	20	R-WORKSHOP A116 CORD REEL	24
25	R-CONSESSIONS A103	20	1		R	360	900					R		1	20	R-ELEC, OPEN CIRC. A115, A117-A120	26
27	R-OFFICE A106	20	1		R			900	720			R		1	20	R-TOILET, LIBRARY A137,A138 VALVES	28
29	R-AUDIENCE CHAMBER A148	20	1		R					1,080	1,080	R		1	20	R-PRACTICE A131-A134	30
31	L TRACK, OPEN CIRCULATION A138	20	1		L	525	1,200					R		1	20	INDEX STRIP LIGHT RIGHT	32
33	L-MAKEUP A187	20	1		L			120	1,200			R		1	20	INDEX STRIP LIGHT RIGHT	34
35	R-CONCESSIONS EQUIPMENT	20	1	G	R					1,600	1,200	R		1	20	INDEX STRIP LIGHT LEFT	36
37	SP-1	20	1		M	1,440	250					O		1	20	OVERHEAD DOOR-STAGE A149	38
39	L - TRACK OPEN CIRCULATION A138	20	1		L			1,875	1,725			L		1	20	L - TRACK A196	40
41	L - TRACK A196	20	1		L					750	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	11555 VA		13600 VA		11770 VA							
					TOTAL AMPS	96.3 A		113.6 A		98.4 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	4995 VA	100.00%	4995 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	25320 VA	69.75%	17660 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 37 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 29 kVA
M	MOTOR	3000 VA	100.00%	3000 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 102.5 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 81.2 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	3610 VA	100.00%	3610 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: L1BK

LOCATION: IDF A158 | BUS RATING: 50 A | MAIN BREAKER: 50 A

VOLTS: 208Y/120 | PHASES: 3 | WIRES: 4 | SCCR: 1.3 KA

MOUNTING: SURFACE | FED FROM: T1B | INTEGRAL SPD: YES | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-IDF WEST AND EAST WALL A158	20	1		R	1,080	0					Spare		1	20	SPARE	2
3	R-BLDG MAINT A141	20	1		R			720	0			Spare		1	20	SPARE	4
5	R IDF NORTH WALL A158	20	1		R					360	0	Spare		1	20	SPARE	6
7 9	UPS-IDF A142	30	2		R	1,500	0					Spare		1	20	SPARE	8
								1,500	0			Spare		1	20	SPARE	10
11	R-IDF A158	20	1		R					180	0	Spare		1	20	SPARE	12
13	R-IDF A158	20	1		R	180	0					Spare		1	20	SPARE	14
15	R-IDF A158	20	1		R			180	0			Spare		1	20	SPARE	16
17	FIRE ALARM CONTROL PANEL	20	1		O					500	0	Spare		1	20	SPARE	18
19	DOOR CONTROL PANEL	20	1		O	500	0					Spare		1	20	SPARE	20
21	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPACE	--	1					--	--					1	--	SPACE	34
35	SPACE	--	1							--	--			1	--	SPACE	36
37	SPACE	--	1			--	--							1	--	SPACE	38
39	SPACE	--	1					--	--					1	--	SPACE	40
41	SPACE	--	1							--	--			1	--	SPACE	42
					TOTAL LOAD:	3260 VA		2400 VA		1040 VA							
					TOTAL AMPS	28.9 A		21.7 A		8.7 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	5700 VA	100.00%	5700 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 7 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 7 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 18.6 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 18.6 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	1000 VA	100.00%	1000 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

EXISTING PANEL: H3

LOCATION: ELEC ROOM U-13 | BUS RATING: 250 A | MAIN BREAKER: MLO

VOLTS: 480Y/277 | PHASES: 3 | WIRES: 4 | SCCR:

MOUNTING: SURFACE | FED FROM: DPHC | INTEGRAL SPD: NONE | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING - LTG-F110,MRS	--	1	20		--	--						20	1	--	EXISTING - LTG-G114,F107	2
3	EXISTING - LTG-G101,G104-G108	--	1	20				--	--				20	1	--	EXISTING - CORRIDOR LTG	4
5	EXISTING - LTG-G111,G112,G113	--	1	20						--	--		20	1	--	EXISTING - LTG-G102,G103,GG110	6
7	EXISTING - LTG-113	--	1	20		--	--						20	1	--	EXISTING - LTG-CAFETORIUM	8
9	EXISTING - LTG-CAFETORIUM	--	1	20				--	--				20	1	--	EXISTING - LTG-CAFETORIUM	10
11	EXISTING - LTG-F116,F118,F120,F121, SNAC...	--	1	20						--	--		20	1	--	EXISTING - LTG-CAFETORIUM	12
13	EXISTING - LTG-KITCHEN	--	1	20		--	--						20	1	--	EXISTING - LTG-STAGE	14
15	L-BANDROOM,PERCUSSION (1)	20	1		L			3,351	--				20	1	--	EXISTING - CRAC-1	16
17	SPARE	20	1		Spare					0	--		20	1	--	EXISTING - CAFETERIA	18
19	SPARE	20	1		Spare	0	--						20	1	--	EXISTING - CAFETERIA	20
21	SPARE	25	1		Spare			0	--					1	--	SPACE	22
23	SPACE	--	1							--	--			1	--	SPACE	24
25	SPACE	--	1			--	--							1	--	SPACE	26
27	SPACE	--	1					--	--					1	--	SPACE	28
29	SPACE	--	1							--	--			1	--	SPACE	30
31	SPACE	--	1			--	--							1	--	SPACE	32
33	SPACE	--	1					--	--					1	--	SPACE	34
35	SPACE	--	1							--	--			1	--	SPACE	36
37	SPACE	--	1			--	--							1	--	SPACE	38
39	SPACE	--	1					--	--					1	--	SPACE	40
41	SPACE	--	1							--	--			1	--	SPACE	42
					TOTAL LOAD:	0 VA		3351 VA		0 VA							
					TOTAL AMPS	0.0 A		12.1 A		0.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAN D...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	3351 VA	100.00%	3351 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD: 3 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 3 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 4.0 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 4.0 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
SIEMENS P1 PANELBOARD
(1) CIRCUIT TO EXISTING 20A/1P BREAKER

PANEL: MH1K

LOCATION: ELEC. A160 | BUS RATING: 400 A | MAIN BREAKER: 400 A

VOLTS: 480Y/277 | PHASES: 3 | WIRES: 4 | SCCR: 23.9 KA

MOUNTING: SURFACE | FED FROM: DP1K | INTEGRAL SPD: NO | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	VAV-1	20	1		M	4,011	9,339					M		3	60	RTU-2	2 4 6
3	VAV-2	15	1		M			997	9,339								
5	VAV-3	15	1		M					997	9,339						
7	VAV-4	15	1		M	2,504	7,676					M		3	50	RTU-3	8 10 12
9	VAV-5	15	1		M			997	7,676								
11	VAV-6	15	1		M					1,507	7,676						
13	VAV-7	15	1		M	997	8,813					M		3	50	RTU-7	14 16 18
15	VAV-8	15	1		M			997	8,813								
17	VAV-9	15	1		M					997	8,813						
19	SPARE	20	1		Spare	0	6,014					M		3	35	RTU-8	20 22 24
21	SPARE	15	1		Spare			0	6,014								
23	SPARE	15	1		Spare					0	6,014						
25	SPARE	20	1		Spare	0	0					Spare		3	20	SPARE	26 28 30
27	SPARE	20	1		Spare			0	0								
29	SPARE	20	1		Spare					0	0						
31 33 35	FIRE CURTAIN MOTOR	15	3		M	582	0					Spare		3	30	SPARE	32 34 36
								582	0								
										582	0						
37 39 41	EWH-5	30	3		M	8,000	15,510					Spare; R; M		3	150	ML1K VA XFMR TM1K	38 40 42
								8,000	17,140								
										8,000	16,266						
					TOTAL LOAD:	63446 VA		60556 VA		60191 VA							
					TOTAL AMPS	229.3 A		218.8 A		217.3 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	1260 VA	100.00%	1260 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 184 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 184 kVA
M	MOTOR	182933 VA	100.00%	182933 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 221.5 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 221.5 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: ML1K

LOCATION: ELEC. A160 | BUS RATING: 225 A | MAIN BREAKER: 225 A

VOLTS: 208Y/120 | PHASES: 3 | WIRES: 4 | SCCR: 6.4 KA

MOUNTING: SURFACE | FED FROM: TM1K | INTEGRAL SPD: NO | LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1 3	EWH-1a	40	2		M	4,150	0					Spare		1	20	SPARE	2
								4,150	0			Spare		1	20	SPARE	4
5 7	EWH-1b	40	2		M					4,150	0	Spare		1	20	SPARE	6
						4,150	0					Spare		1	20	SPARE	8
9 11	EWH-2a	40	2		M			4,150	0			Spare		1	20	SPARE	10
										4,150	0	Spare		1	20	SPARE	12
13 15	EWH-2b	40	2		M	4,150	0					Spare		1	20	SPARE	14
								4,150	0			Spare		1	20	SPARE	16
17 19	EWH-3	20	2		M					1,800	0	Spare		1	20	SPARE	18
						1,800	0					Spare		1	20	SPARE	20
21 23	EWH-4	40	2		M			4,150	0			Spare		1	15	SPARE	22
										4,150	0	Spare		2	20	SPARE	24 26
25	R-ROOF NORTH	20	1		R	1,260	0										
27	EF-1, EF-3, EF-4	15	1		M			540	--					1	--	SPACE	28
29	HU-01	25	1		M					2,016	--			1	--	SPACE	30
31	SPARE	20	1		Spare	0	--							1	--	SPACE	32
33	SPACE	--	1					--	--					1	--	SPACE	34
35	SPACE	--	1							--	--			1	--	SPACE	36
37	SPACE	--	1			--	--							1	--	SPACE	38
39	SPACE	--	1					--	--					1	--	SPACE	40
41	SPACE	--	1							--	--			1	--	SPACE	42
					TOTAL LOAD:	15510 VA		17140 VA		16266 VA							
					TOTAL AMPS	129.3 A		143.8 A		136.5 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	1260 VA	100.00%	1260 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 49 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 49 kVA
M	MOTOR	47656 VA	100.00%	47656 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 135.8 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 135.8 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

DP1K	L1AK	MH1K
H1K	L1BK	ML1K
L1TK	H3	

DLR GROUP
© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELECTRICAL SCHEDULES

E7.3

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:53 AM

SWITCHBOARD: DP2K

LOCATION: ELEC. A179
BUS RATING: 600.0 A
MAIN BREAKER: MLO

VOLTAGE: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 21.2 KA

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	LOAD (kVA)	NOTES
1	L2K VIA XFMR T2K	175.0 A	3		S; L; R; O; M	65	
2	MH2K	225.0 A	3		S; R; M	125	
3	H2K	100.0 A	3		S; L; M	9	
4	L2TK VIA XFMR T2TK	50.0 A	3		S; R; O	17	
5	ELEV 1	80.0 A	3		M	33	
6	RTU-6	110.0 A	3		M	63	
7							
8							
9							
10							
11							
12							
					TOTAL LOAD:	312 kVA	
					TOTAL AMPS:	375 A	

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	9083 VA	100.00%	9083 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	18660 VA	76.80%	14330 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD: 312 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN EQUIPMENT, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 308 kVA
M	MOTOR	221367 VA	100.00%	221367 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 375 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 370.1 A
H	HEATING	0 VA	0.00%	0 VA			
NC	NONCOINCIDENT	0 VA	0.00%	0 VA	NON-COINCIDENT LOADS, NEC ART. 220		
O	OTHER	62382 VA	100.00%	62382 VA			
Spare	SPARE	500 VA	100.00%	500 VA			

NOTES:

PANEL: H2K

LOCATION: ELEC. A179
BUS RATING: 100 A
MAIN BREAKER: 100 A

VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 19.1 KA

MOUNTING: SURFACE
FED FROM: DP2K
INTEGRAL SPD:
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	L-AUD CHAMPER-SEATS	20	1		L	1,200	1,108					L		1	20	L-LEVEL 2 MEZZANINE A206 (VIA INVERTER)*	2
3	L-CATWALK STEP LIGHTS	20	1		L; M			1,080	2,088			L		1	20	L-CHAMBER, CATWALK LEVEL & GRID LEVEL*	4
5	L-AV, RACK ROOM, AUDENCE CHAMBER	20	1		L					1,328							6
7	L-AUD CHAMPER-STEP	20	1		L	738											8
9	L-STAGE BACK WALL-STEP	20	1		L			378									10
11	L-MEZZANINE, EXTERIOR	20	1		L					658							12
13	L-A205, A202, A204, A207	20	1		L	478											14
15	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	16
17	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	18
19	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	20
21	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	38
39	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	L		1	20	SPARE	42
					TOTAL LOAD:	3524 VA		3546 VA		1986 VA							
					TOTAL AMPS	13.6 A		13.7 A		7.2 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	9056 VA	100.00%	9056 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 9 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 9 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 10.9 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 10.9 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
A. CIRCUITS NOTED WITH " * " FED THROUGH INVERTER, SEE CENTRAL BATTERY INVERTER SCHEDULE ON E6.2

EXISTING PANEL: L4

LOCATION: ELEC ROOM U-13
BUS RATING: 250 A
MAIN BREAKER: MLO

VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR:

MOUNTING: SURFACE
FED FROM: DPLC
INTEGRAL SPD:
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING - LR GOORIPOON REC	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	2
3	EXISTING - PROJECTOR REC	--	1	R				--	--					1	--	EXISTING - 502 ROLL UP DOOR	4
5	EXISTING - 501 - OUTLETS - NORTH WALL	--	1	R						--	--			1	--	EXISTING - 502 OUTLETS	6
7	EXISTING - 501 - SEATING OUTLETS - N	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	8
9	EXISTING - 501 - SEATING OUTLETS - S	--	1	R				--	--					1	--	EXISTING - 502 DISPOSAL	10
11	EXISTING - OVERHEAD VIDEO PROJECTOR	--	1	R						--	--			1	--	EXISTING - 502 MICROWAVE	12
13	EXISTING - PROJECTION SCREEN ON STAGE	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	14
15	EXISTING - OUTLETS - FRONT OF STAGE	--	1	R				--	--					2	--	EXISTING - 502 COOKTOP	16
17	EXISTING - 501 - STAGE CURTAIN	--	1	R						--	--						18
19	EXISTING - 501 - TV OUTLETS S WALL	--	1	R		--	--							2	--	EXISTING - 502 RANGE	20
21	EXISTING - 501 - TV OUTLETS S WALL	--	1	R				--	--								22
23	EXISTING - 503 - OUTLETS	--	1	R						--	--			1	--	EXISTING - 502 REFRIGERATOR	24
25	EXISTING - 503 - OUTLETS	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	26
27	EXISTING - 503.1 - GFI OUTLET	--	1	R				--	1,260			R		1	20	R - OFFICE E102 & WORKROOM E101	28
29	EXISTING - 503.1-&2 - *CONT	--	1	R						--	720	R		1	20	R - OFFICE A199 (1)	30
31	EXISTING - 503.1-&2 - GFI OUTLET	--	1	R		--	900					R		1	20	R - OFFICE E102 & OFFICE E103 (1)	32
33	EXISTING - 503.1-&2 - CONT	--	1	R				--	540			R		1	0	R - PERCUSSION E106 (1)	34
35	R-BAND ROOM NORTH WALL E100 (1)	20	1		R					720	900	R	G	1	20	R - VENDING MACHINE- G114 (2)	36
37	R-PERCUSSION E106 (1)	20	1		R	1,440	900					R	G	1	20	R - VENDING MACHINE- G114 (2)	38
39	R-B.O.H. / VESTIBULE A127 (1)	20	1		R			540	900			R	G	1	20	R - VENDING MACHINE- G114 (2)	40
41	R-BAND ROOM WEST WALL E100 (1)	20	1		R					720	900	R	G	1	20	R - VENDING MACHINE- G114 (2)	42
43	R-BAND ROOM EAST WALL E200 (1)	20	1		R	900											44
45	R-OFFICE A140 (1)	20	1		R			720									46
47	R PRACTICE A202 (1)	20	1		R					540							48
49	R -OFFICE A176 (1)	20	1		R	720											50
51																	52
53																	54
55	EXISTING	20	2		Spare	0											56
57								0									58
59	EXISTING	20	1		Spare					0							60
61	EXISTING	20	1		Spare	0	0					Spare		2	60	EXISTING	62
63	SPARE	20	1		Spare			0	0								64
65	SPARE	20	1		Spare					0	0	Spare		1	20	EXISTING	66
67	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	68
69	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	70
71	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	72
73	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	74
75	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	76
77	EXISTING	20	1		Spare					0	--			1	--	SPACE	78
79	EXISTING	20	1		Spare	0	--							1	--	SPACE	80
81	EXISTING	20	1		Spare			0	--					1	--	SPACE	82
83	EXISTING	20	1		Spare					0	--			1	--	SPACE	84
					TOTAL LOAD:	4860 VA		3960 VA		4500 VA							
					TOTAL AMPS	41.2 A		33.0 A		38.2 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND D...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	13320 VA	87.54%	11660 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD: 13 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 12 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 37.0 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 32.4 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
SIEMENS P1 PANELBOARD
(1) CIRCUIT TO SPARE 20A/1P BREAKER IN PANEL.
(2) PROVIDE NEW 20A/1P GFCI BREAKER IN PANEL.

PANEL: L2TK

LOCATION: ELEC. A179
BUS RATING: 100 A
MAIN BREAKER: 100 a

VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 2.1 KA

MOUNTING: SURFACE
FED FROM: T2TK
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-CATWALK BOH LEFT	20	1		R	360	1,000					O		1	20	AV RACK-AV RACK ROOM A303	2
3	AV DISPLAY-LOBBY A101	20	1		R			500	1,000			O		1	20	AV RACK-AV RACK ROOM A303	4
5	R - AV DISPLAY-LOBBY A101	20	1		R					500	1,000	O		1	20	AV RACK-AV RACK ROOM A303	6
7	R-CATWALK BOH RIGHT	20	1		R	360	1,000					O		1	20	AV RACK-AV RACK ROOM A303	8
9	AV DISPLAY-LOBBY A201	20	1		O			500	1,500			O		1	30	AV RACK-AV RACK ROOM A303	10
11	PROJECTOR-CONTROL ROOM A150	20	2		R					1,500	1,500	O		1	30	AV RACK-AV RACK ROOM A303	12
13						1,500	180					R		1	20	PROJECTOR-CONTROL ROOM A150	14
15	AV DISPLAY-S/L A111	20	1		R			500	500			O		1	20	AV DISPLAY-S/L A146	16
17	R-AUDIENCE CHAMBER A148 BACK	20	1		R					180	360	R		1	20	R-FOLLOW SPOT A302	18
19	R-CONTROL ROOM A207	20	1		R	360	0					Spare		1	20	SPARE	20
21	R-AUDIENCE CHAMBER A148 BACK	20	1		R			180	0			Spare		1	20	SPARE	22
23	R-CATWALK WEST CENTER	20	1		R					360	0	Spare		1	20	SPARE	24
25	R-CATWALK SOUTH EAST	20	1		R	360	0					Spare		1	20	SPARE	26
27	R-CONTROL ROOM A207	20	1		R			360	0			Spare		1	20	SPARE	28
29	R-CATWALK EAST CENTER	20	1		R					360	0	Spare		1	20	SPARE	30
31	R-CATWALK CENTER	20	1		R	360	0					Spare		1	20	SPARE	32
33	R-CATWALK SOUTH WEST	20	1		R			360	0			Spare		1	20	SPARE	34
35											0	Spare		1	20	SPARE	36
37							0					Spare		1	20	SPARE	38
39	R-CATWALK CENTER	20	1		R			360	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	5480 VA		5760 VA		5760 VA							
					TOTAL AMPS	45.7 A		48.4 A		48.4 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	9000 VA	100.00%	9000 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 17 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 17 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 47.2 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 47.2 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	8000 VA	100.00%	8000 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

PANEL: L2K

LOCATION: ELEC. A179
BUS RATING: 400 A
MAIN BREAKER: 400 A

VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 6.7 KA

MOUNTING: SURFACE
FED FROM: T2K
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	ELEV CAB LIGHTS/FAN	20	1		M	1,440	1,080					R		1	20	R - LOBBY A201,ELEC A205	2
3	R - FOLLOW SPOT A153	20	1		R			720	900			R		1	20	R - PROJECTOR RM A207	4
5	L-CONTROL ROOM A150 TRACK	20	1		L					27	1,080	R		1	20	R - AV LIGHTING AND RACK ROOM	6
7	HAND DRYER-MENS A110	20	1		O	1,000	1,000					O		1	20	HAND DRYER-MENS A204	8
9	HAND DRYER-WOMENS A171	20	1		O			1,000	1,000			O		1	20	HAND DRYER-WOMENS A202	10
11	FLUSH VALVES-WOMENS A175	20	1		O					500	500	O		1	20	FLUSH VALVES-WOMENS A202	12
13	FLUSH VALVES-WOMENS A175	20	1		O	500	500					O		1	20	FLUSH VALVES-WOMENS A202	14
15	FLUSH VALVES-MENS A175	20	1		O			500	500			O		1	20	FLUSH VALVES-MENS A204	16
17	R - MENS / WOMEN TOILETS A175	20	1		R					1,260	900	R		1	20	R-TOILETS A202-A204	18
19	AUTO DOOR OPERATOR - LOBBY A101	20	1		O	150	0					Spare		1	20	SPARE	20
21	ALP	20	1		O			1,500	0			Spare		1	20	SPARE	22
23	RELAY PANEL ELECTRONICS	20	1		O					500	0	Spare		1	20	SPARE	24
25	EMERGENCY BYPASS DETECTION KIT	20	1		O	1,000	0					Spare		1	20	SPARE	26
27	DMX EMERG BYPASS	20	1		O			1,000	0			Spare		1	20	SPARE	28
29	R-ELEC A300A	20	1		R					180	0	Spare		1	20	SPARE	30
31	UPS-ELEC. A205	30	2		R	1,500	9,607					O		3	200	LCP-01	32
33								1,500	9,607								34
35											9,607						36
37							4,804					O		3	100	LCP-02	38
39									4,804								40
41											4,804						42
					TOTAL LOAD:	22581 VA		23031 VA		19358 VA							
					TOTAL AMPS	192.3 A		196.1 A		161.3 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	27 VA	100.00%	27 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	9120 VA	100.00%	9120 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 65 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 65 kVA
M	MOTOR	1440 VA	100.00%	1440 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 180.3 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 180.3 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	54382 VA	100.00%	54382 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

EXISTING PANEL: C4

LOCATION: ELEC ROOM U-13
BUS RATING: 125 A
MAIN BREAKER: 125 A

VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 10 kA

MOUNTING: SURFACE
FED FROM: DPLC
INTEGRAL SPD:
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING	20	1		Spare	0	0					Spare		3	60	SPARE	2
3	EXISTING	20	1		Spare			0	0								4
5	EXISTING	20	1		Spare					0	0						6
7	EXISTING	20	1		Spare	0	180					R		1	20	R-BAND ROOM A200 PROJECTOR (1)	8
9	EXISTING	20	1		Spare			0	180			R		1	20	R-BAND ROOM A200 (1)	10
11	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	12
13	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	14
15	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	16
17	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	18
19	SPARE	20	1		Spare	0	0					Spare		1	20	EXISTING	20
21	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	22
23	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	24
25	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	26
27	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	28
29	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	30
31	EXISTING	30	1		Spare	0	0					Spare		1	20	SPARE	32
33	EXISTING	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37						0	0					Spare		1	20	SPARE	38
39	SPARE	30	3		Spare			0	--					1	--	SPACE	40
41										0	--			1	--	SPACE	42
					TOTAL LOAD:	180 VA		180 VA		0 VA							
					TOTAL AMPS	1.7 A		1.7 A		0.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAN D...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	360 VA	100.00%	360 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD: 0 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 0 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 1.0 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 1.0 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
SIEMENS P1 PANELBOARD. PANEL IS EQUIPED WITH ISOLATED GROUND BUS AND 200% NEUTRAL
(1) CIRCUIT TO SPARE 20A/1P BREAKER IN PANEL.

PANEL: MH2K

LOCATION: ELEC. A179
BUS RATING: 225 A
MAIN BREAKER: 225 A

VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 20.7 KA

MOUNTING: SURFACE
FED FROM: DP2K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1						8,000	0					Spare		1	20	SPARE	2
3	EWH-8	30	3		M			8,000	0			Spare		1	20	SPARE	4
5										8,000	0	Spare		1	20	SPARE	6
7						8,000	0					Spare		1	20	SPARE	8
9	EWH-11	30	3		M			8,000	0			Spare		1	20	SPARE	10
11										8,000	0	Spare		1	20	SPARE	12
13	SPACE	--	1			--	0										14
15	SPACE	--	1					--	0			Spare		3	30	SPARE	16
17	SPACE	--	1							--	0						18
19	SPACE	--	1			--	0										20
21	SPACE	--	1					--	0			Spare		3	20	SPARE	22
23	SPACE	--	1							--	0						24
25	SPACE	--	1			--	0					Spare		1	20	SPARE	26
27	SPACE	--	1					--	0			Spare		1	20	SPARE	28
29	SPACE	--	1							--	0	Spare		1	20	SPARE	30
31	SPACE	--	1			--	0					Spare		1	20	SPARE	32
33	SPACE	--	1					--	0			Spare		1	20	SPARE	34
35	SPACE	--	1							--	500	Spare		1	20	2ND LVL- FIRE/SMOKE DAMPERS	36
37	SPACE	--	1			--	28,451										38
39	SPACE	--	1					--	25,001			Spare; R; M		3	175	ML2K VIA XFMR TM2K	40
41	SPACE	--	1							--	23,107						42
					TOTAL LOAD:	44451 VA		41001 VA		39607 VA							
					TOTAL AMPS	161.3 A		148.8 A		143.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	540 VA	100.00%	540 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 125 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 125 kVA
M	MOTOR	124019 VA	100.00%	124019 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 150.4 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 150.4 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	500 VA	100.00%	500 VA			

NOTES:

PANEL: ML2K

LOCATION: ELEC. A179
BUS RATING: 400 A
MAIN BREAKER: 400 A

VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 8.2 KA

MOUNTING: SURFACE
FED FROM: TM2K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EF-2	15	1		M	792	1,966					M		2	15	OU-06, IU-06	2
3	R-ROOF SOUTH	20	1		R			540	1,966								4
5	EWH-12	40	2		M					4,150	1,444	M		2	15	OU-07, IU-07	6
7						4,150	1,444										8
9	EWH-6	20	2		M			1,800	1,362			M		2	30	OU-08, IU-08	10
11										1,800	1,362						12
13	EWH-9	40	2		M	4,150											14
15								4,150									16
17	EWH-10	40	2		M					4,150	1,444	M		2	20	OU-10, IU-10	18
19						4,150	1,444										20
21	OU-01, IU-01	15	2		M			1,279									22
23										1,279							24
25	OU-02, IU-02	30	2		M	1,966											26
27								1,966	4,150			M		2	40	EWH-7	28
29	OU-03, IU-03	30	2		M					1,966	4,150						30
31						1,966	4,150					M		2	40	EWH-13	32
33	OU-04, IU-04	30	2		M			1,362	4,150								34
35										1,362							36
37	OU-05, IU-05	30	2		M	832	1,444					M		2	20	OU-09, IU-09	38
39								832	1,444								40
41	SPARE	20	1		Spare					0							42
					TOTAL LOAD:	28451 VA		25001 VA		23107 VA							
					TOTAL AMPS	239.5 A		210.8 A		192.6 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	540 VA	100.00%	540 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD: 77 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND: 77 kVA
M	MOTOR	76019 VA	100.00%	76019 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT: 212.5 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT: 212.5 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

© DLR Group

STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
07/25/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELECTRICAL SCHEDULES

DP2K	H2K	L4
L2TK	L2K	C4
MH2K	ML2K	

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
7/25/2024 9:32:57 AM

APPLICABLE SPECIFICATION SECTIONS

DIVISION 11 - EQUIPMENT

- 11 61 13 THEATRICAL NETWORKED LIGHTING CONTROL SYSTEM
- 11 61 16 THEATRICAL WIRING DEVICES
- 11 61 19 THEATRICAL LIGHTING FIXTURES & ACCESSORIES
- 11 61 23 THEATRICAL DRAPERY & TRACK
- 11 61 26 ACOUSTIC DRAPERY
- 11 61 33 MOTORIZED RIGGING
- 11 61 36 COUNTERWEIGHT RIGGING & PIN RAILS
- 11 61 39 FIRE SAFETY CURTAIN
- 11 61 53 ACOUSTIC ORCHESTRA SHELL

DIVISION 12 - FURNISHING

- 12 61 00 UPHOLSTERED FIXED AUDIENCE SEATING

DIVISION 26 - ELECTRICAL

- 26 01 00 BASIC ELECTRICAL REQUIREMENTS
- 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
- 26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS
- 26 05 33 RACEWAY & BOXES FOR ELECTRICAL SYSTEMS
- 26 51 00 INTERIOR LIGHTING
- 26 56 00 EXTERIOR LIGHTING
- 26 27 26 WIRING DEVICES
- 26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

DIVISION 28 - SECURITY AND FIRE ALARM

- 28 05 13 CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY
- 28 31 00 FIRE DETECTION AND ALARM

THEATRICAL LIGHTING SYMBOLS

THEATRICAL WIRING DEVICE, AS LABELED AND SCHEDULED.

THEATRICAL CONTROL DEVICE, AS LABELED AND SCHEDULED.

OCCUPANCY/VACANCY SENSOR, CEILING-MOUNTED.

DAYLIGHT SENSOR, CEILING-MOUNTED.

ADDITIONAL THEATRICAL EQUIPMENT AS LABELED AND SCHEDULED.

FOR ADDITIONAL INFORMATION, REFER TO:

- WIRING AND CONTROL DEVICE SCHEDULES
- WIRING AND CONTROL DEVICE DETAILS
- SPECIFICATIONS

THEATRICAL LIGHTING TAGS

WD / #	**WIRING DEVICE** QTY AND TYPE(S) OF RECEPTS AS NOTED. QTY OF BRANCH CKTS AS NOTED. TERMINATING IN SCHEDULED DIMMER RACK(S) AND/OR PANEL(S).
ET / #	**ETHERNET TAP** QTY OF RJ45 PORTS AS NOTED, INDIVIDUALLY HOME RUN TO SCHEDULED PATCH BAY OR NETWORK SWITCH.
EG / #	**ETHERNET-TO-DMX GATEWAY NODE** (1) RJ45 HOME RUN TO SCHEDULED PATCH BAY OR NETWORK SWITCH. QTY AND CONFIGURATION OF DMX PORTS AS SCHEDULED.
DMX / #	**DMX DEVICE** QTY AND TYPE OF 5-PIN XLR PORTS AS NOTED, INDIVIDUALLY HOME RUN TO SCHEDULED DMX SPLITTER OR GATEWAY.
HL / #	**"HOUSE LIGHTING" CONTROL STATION.** FACEPLATE CONFIGURATION AS SCHEDULED. WIRING TYPE AND TOPOLOGY AS NOTED.
DS / #	**DAYLIGHT SENSOR** CONFIGURATION AND COVERAGE AS SCHEDULED. WIRING TYPE AND TOPOLOGY AS NOTED.
VS / #	**OCCUPANCY/VACANCY SENSOR** CONFIGURATION AND COVERAGE AS SCHEDULED. WIRING TYPE AND TYPOLOGY AS NOTED.
WAP / #	**WIRELESS ACCESS POINT** (1) RJ45 HOME RUN TO SCHEDULED PATCH BAY OR NETWORK SWITCH.
ALP / #	**LIGHTING NETWORK CONTROL RACK** WITH ARCHITECTURAL LIGHTING PROCESSOR, NETWORK SWITCHES AND PATCH BAYS, DMX SPLITTERS AND GATEWAYS, AND RELATED EQUIPMENT.
DIN / #	**LIGHTING NETWORK DIN RAIL ENCLOSURE** WITH NETWORK SWITCHES AND PATCH BAYS, DMX SPLITTERS AND GATEWAYS, AND RELATED EQUIPMENT.
DR / #	**HIGH-DENSITY DIMMER RACK** REFER THEATRICAL DIMMER RACK SCHEDULE(S).
LCP / #	**LIGHTING CONTROL PANELBOARD** MAINS-FED RELAY PANEL OR MOTORIZED BREAKER PANEL. REFER THEATRICAL PANEL SCHEDULE(S).
LRP / #	**LIGHTING CONTROL RELAY PANEL** FEEDTHROUGH RELAY PANEL OR MOTORIZED BREAKER PANEL. REFER THEATRICAL PANEL SCHEDULE(S).
EBDK / #	**EMERGENCY BYPASS DETECTION KIT** WITH POWER SENSE FEED AND FIRE ALARM CONTROL PANEL CONNECTION. REFER ELECTRICAL FOR LIGHTING POWER TRANSFER.
DEBC / #	**DMX EMERGENCY BYPASS CONTROLLER** SIGNALS SELECT DMX-CONTROLLED LIGHTING FIXTURES TO PANIC PRESET UPON LOSS OF POWER OR FIRE ALARM SIGNAL.
LCC / #	**LIGHTING CONTROL CONSOLE** REFER SPECIFICATIONS FOR MFR, MODEL NUMBER, AND ACCESSORIES.

THEATRICAL NOTES

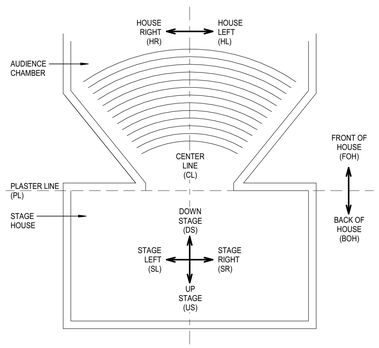
1. THE LAYOUT OF DRAPERY SHOWN IN THESE DRAWING IS FOR COMMISSIONING PURPOSES ONLY AND DOES NOT REPRESENT ANY SUGGESTED REPERTORY PLOT.
2. THE ARRANGEMENT(S) OF FLEXIBLE SEATING SHOWN IN THESE DRAWING IS FOR COMMISSIONING PURPOSES ONLY. FINAL LAYOUT AT DIRECTION OF OWNER DURING INSTALLATION OR AT CONCLUSION OF TRAINING.
3. LIGHTING CONTROL DEVICE PROGRAMMING SHOWN IN THESE DRAWINGS IS FOR INITIAL PROGRAMMING ONLY. FINAL PROGRAMMING TO BE REFINED AT COMMISSIONING BY OWNER, AND AT SUBSEQUENT TRAINING SESSIONS. REFER SPECIFICATIONS.
4. REFER G-SERIES SHEETS FOR APPLICABLE BUILDING CODES.

APPLICABLE STANDARDS

REFER STAGE LEGEND BELOW FOR ADDITIONAL ABBREVIATIONS AND THEATRICAL TERMS.

STANDARD NUMBER	DESCRIPTION
ANSI E1.3 - 2001 (R2016)	LIGHTING CONTROL SYSTEMS - 0 TO 10 V ANALOG CONTROL SPECIFICATION
ANSI E1.4-1 - 2016	MANUAL COUNTERWEIGHT RIGGING SYSTEMS
ANSI E1.6-1 - 2019	POWERED HOIST SYSTEMS
ANSI E1.6-2 - 2018	DESIGN, INSPECTION, AND MAINTENANCE OF ELECTRIC CHAIN HOISTS FOR THE ENTERTAINMENT INDUSTRY
ANSI E1.6-3 - 2019	SELECTION AND USE OF SERIALLY MANUFACTURED CHAIN HOISTS IN THE ENTERTAINMENT INDUSTRY
ANSI E1.6-4 - 2013	PORTABLE CONTROL OF FIXED-SPEED ELECTRIC CHAIN HOISTS IN THE ENTERTAINMENT INDUSTRY
ANSI E1.9 - 2007 (R2017)	REPORTING PHOTOMETRIC PERFORMANCE DATA FOR LUMINAIRES USED IN THE LIVE ENTERTAINMENT AND PERFORMANCE INDUSTRIES
ANSI E1.11 - 2008 (R2018)	USITT DMX512-A, ASYNCHRONOUS SERIAL DIGITAL DATA TRANSMISSION STANDARD FOR CONTROLLING LIGHTING EQUIPMENT AND ACCESSORIES
ANSI E1.15 - 2006 (R2016)	RECOMMENDED PRACTICES AND GUIDELINES FOR THE ASSEMBLY AND USE OF THEATRICAL BOOM & BASE ASSEMBLIES
ANSI E1.17 - 2015	ARCHITECTURE FOR CONTROL NETWORKS (ACN)
ANSI E1.22 - 2016	FIRE SAFETY CURTAIN SYSTEMS
ANSI E1.24 - 2012 (R2017)	DIMENSIONAL REQUIREMENTS FOR STAGE PIN CONNECTORS
ANSI E1.25 - 2012 (R2017)	RECOMMENDED BASIC CONDITIONS FOR MEASURING THE PHOTOMETRIC OUTPUT OF STAGE AND STUDIO LUMINAIRES BY MEASURING ILLUMINATION LEVELS PRODUCED ON A PLANAR SURFACE
ANSI E1.26 - 2006 (R2017)	RECOMMENDED TESTING METHODS AND VALUES FOR SHOCK ABSORPTION OF FLOORS USED IN LIVE PERFORMANCE VENUES
ANSI E1.27-1 - 2006 (R2016)	STANDARD FOR PORTABLE CONTROL CABLES FOR USE WITH USITT DMX512/1990 AND E1.11 (DMX512-A) PRODUCTS
ANSI E1.27-2 - 2009 (R2019)	RECOMMENDED PRACTICE FOR PERMANENTLY INSTALLED CONTROL CABLES FOR USE WITH ANSI E1.11 (DMX512-A) AND USITT DMX512/1990 PRODUCTS
ANSI E1.28 - 2011 (R2016)	GUIDANCE ON PLANNING FOLLOWSPOT POSITIONS IN PLACES OF PUBLIC ASSEMBLY
ANSI E1.30-1 - 2010 (R2016)	EPI 23, DEVICE IDENTIFICATION SUBDEVICE
ANSI E1.30-3 - 2009 (R2019)	EPI 25 TIME REFERENCE IN ACN SYSTEMS USING SNTP AND NTP
ANSI E1.30-4 - 2010 (R2015)	EPI 26, DEVICE DESCRIPTION LANGUAGE (DDL) EXTENSIONS FOR DMX512 AND E1.31 DEVICES
ANSI E1.30-10 - 2009 (R2019)	EPI 32 IDENTIFICATION OF DRAFT DEVICE DESCRIPTION LANGUAGE MODULES
ANSI E1.30-11 - 2019	EPI 33 ACN ROOT LAYER PROTOCOL OPERATION ON TCP
ANSI E1.31 - 2018	LIGHTWEIGHT STREAMING PROTOCOL FOR TRANSPORT OF DMX512 USING ACN
ANSI E1.33 - 2019	(RDMNET) - MESSAGE TRANSPORT AND DEVICE MANAGEMENT OF ANSI E1.20 (RDM) COMPATIBLE AND SIMILAR DEVICES OVER IP NETWORKS
ANSI E1.34 - 2009 (R2019)	MEASURING AND SPECIFYING THE SLIPPERINESS OF FLOORS USED IN LIVE PERFORMANCE VENUES
ANSI E1.35 - 2013 (R2018)	STANDARD FOR LENS QUALITY MEASUREMENTS FOR PATTERN PROJECTING LUMINAIRES INTENDED FOR ENTERTAINMENT USE
ANSI E1.36 - 2007 (R2017)	MODEL PROCEDURE FOR PERMITTING THE USE OF TUNGSTEN-HALOGEN INCANDESCENT LAMPS AND STAGE AND STUDIO LUMINAIRES IN VENDOR EXHIBIT BOOTHS IN CONVENTION AND TRADE SHOW EXHIBITION HALLS
ANSI E1.37-1 - 2012 (R2017)	ADDITIONAL MESSAGE SETS FOR ANSI E1.20 (RDM) - PART 1
ANSI E1.37-2 - 2015	ADDITIONAL MESSAGE SETS FOR ANSI E1.20 (RDM) - PART 2, IPV4 & DNS CONFIGURATION MESSAGES
ANSI E1.37-7 - 2019	ADDITIONAL MESSAGE SETS FOR ANSI E1.20 (RDM) - GATEWAY & SPLITTER CONFIGURATION MESSAGES
ANSI E1.39 - 2015	SELECTION AND USE OF PERSONAL FALL ARREST SYSTEMS ON PORTABLE STRUCTURES USED IN THE ENTERTAINMENT INDUSTRY
ANSI E1.40 - 2016	RECOMMENDATIONS FOR THE PLANNING OF THEATRICAL DUST EFFECTS
ANSI E1.41 - 2016	RECOMMENDATIONS FOR MEASURING AND REPORTING PHOTOMETRIC PERFORMANCE DATA FOR ENTERTAINMENT LUMINAIRES UTILIZING SOLID STATE LIGHT SOURCES
ANSI E1.42 - 2018	DESIGN, INSTALLATION, AND USE OF ORCHESTRA PIT LIFTS
ANSI E1.43 - 2016	PERFORMER FLYING SYSTEMS
ANSI E1.44 - 2014 (R2019)	COMMON SHOW FILE EXCHANGE FORMAT FOR ENTERTAINMENT INDUSTRY AUTOMATION CONTROL SYSTEMS - STAGE MACHINERY
ANSI E1.46 - 2018	STANDARD FOR THE PREVENTION OF FALLS FROM THEATRICAL STAGES AND RAISED PERFORMANCE PLATFORMS
ANSI E1.47 - 2017	RECOMMENDED GUIDELINES FOR ENTERTAINMENT RIGGING SYSTEM INSPECTIONS
ANSI E1.48 - 2014 (R2019)	A RECOMMENDED LUMINOUS EFFICIENCY FUNCTION FOR STAGE AND STUDIO LUMINAIRE PHOTOMETRY
ANSI E1.50-1 - 2017	REQUIREMENTS FOR THE STRUCTURAL SUPPORT OF TEMPORARY LED, VIDEO & DISPLAY SYSTEMS
ANSI E1.51 - 2018	THE SELECTION, INSTALLATION, AND USE OF SINGLE-CONDUCTOR PORTABLE POWER FEEDER CABLE SYSTEMS FOR USE AT 600 VOLTS NOMINAL OR LESS FOR THE DISTRIBUTION OF ELECTRICAL ENERGY IN THE TELEVISION, FILM, LIVE PERFORMANCE AND EVENT INDUSTRIES IN CANADA
ANSI E1.53 - 2019	OVERHEAD MOUNTING OF LUMINAIRES, LIGHTING ACCESSORIES, AND OTHER PORTABLE DEVICES SPECIFICATION AND PRACTICE
ANSI E1.54 2015	PLASA STANDARD FOR COLOR COMMUNICATION IN ENTERTAINMENT LIGHTING
ANSI E1.55 - 2016	STANDARD FOR THEATRICAL MAKEUP MIRROR LIGHTING
ANSI E1.56 - 2018	RIGGING SUPPORT POINTS
ANSI E1.57 - 2016	RECOMMENDATIONS TO PREVENT FALLS ON OR OFF MOVABLE PARADE FLOATS, MOVABLE STAGES, AND SIMILAR MOVING PLATFORMS
ANSI E1.58 - 2017	ELECTRICAL SAFETY STANDARD FOR PORTABLE STAGE AND STUDIO EQUIPMENT USED OUTDOORS
ANSI E1.60 - 2018	GUIDELINES FOR THE USE OF RAKED STAGES IN LIVE PERFORMANCE ENVIRONMENTS
ANSI ES1.19 - 2018	SAFETY REQUIREMENTS FOR SPECIAL EVENT STRUCTURES

STAGE LEGEND



THEATRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION
##, XX	NUMBER
&	AND
2P&G	TWO-PIN & GROUND "STAGE PIN" CONNECTOR
@	AT
A, AMP	AMPERE
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECTURAL
AV	AUDIOVISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BO	BOTTOM OF
CCT	CORRELATED COLOR TEMPERATURE
CM	CONSTRUCTION MANAGER
CTO	CORRECT-TO-ORANGE
CTR	CENTER
D	DEPTH
DC	DIRECT CURRENT
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DEPT	DEPARTMENT
DIA	DIAMETER
DIV	SPECIFICATION DIVISION
DMX	DIGITAL MULTIPLEX (DMX-512 CONTROL PROTOCOL)
EA	EACH
EC	ELECTRICAL CONTRACTOR
EDLT	ENHANCED-DEFINITION LENS TUBE
ELEC	ELECTRICAL
EM	EMERGENCY
EQ	EQUAL
ESTA	ENTERTAINMENT SERVICES AND TECHNOLOGY ASSOCIATION
ETR	EXISTING TO REMAIN
EXIST, EXSTG	EXISTING
FC	FOOT CANDLE
FFE	FURNITURE FIXTURES & EQUIPMENT
FR	FLAME RETARDANT
FT	FEET
FV	FIELD VERIFY
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
H	HEIGHT
HID	HIGH INTENSITY DISCHARGE (LAMP)
HMI	HYDRARGYRUM MEDIUM-ARC IODIDE (STAGE LAMP)
HP	HORSEPOWER
HSS	HOLLOW STRUCTURAL SHAPE
HV	HIGH VOLTAGE
HZ	HERTZ (FREQUENCY)
IBC	INTERNATIONAL BUILDING CODE
ID	INNER DIAMETER
IES	ILLUMINATING ENGINEERING SOCIETY
IFR	INHERENTLY FLAME RETARDANT
IN	INCH
INT	INTERIOR
K	DEGREES KELVIN
LB(S)	POUND(S)
LED	LIGHT EMITTING DIODE
LM	LUMEN
LX	"ELECTRICS" A.K.A. THEATRICAL LIGHTING
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MSR	MEDIUM-SOURCE RARE-EARTH HOT-RESTRIKE (TYPE OF HMI STAGE LAMP)
N	NEWTONS
N/A	NOT APPLICABLE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSN.
NIC	NOT IN CONTRACT
NPS	NOMINAL PIPE SIZE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTER DIAMETER
PAR	PARABOLIC ALUMINIZED REFLECTOR
PLF	POUNDS PER LINEAR FOOT
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
REQ(D)	REQUIRE(D)
REV	REVISION(S)
RGBAW	(OR COMBINATIONS THEREOF) RED / GREEN / BLUE / AMBER / WHITE
RM	ROOM
SCHED	SCHEDULE
SJ, SO, ETC	CORD TYPE DESIGNATIONS PER NEC ARTICLE 400
SPEC	SPECIFICATION(S)
SQ FT	SQUARE FEET
SQ IN	SQUARE INCHES
STL	STEEL
STRUCT	STRUCTURAL
TYP	TYPICAL
UHMW	ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTABLE POWER SUPPLY
USITT	UNITED STATES INSTITUTE FOR THEATRE TECHNOLOGY
VIF	VERIFY IN FIELD
W/, W/O	WITH, WITHOUT
XLR	CONNECTOR TYPE FOR STAGE LIGHTING AND AUDIO
Ø	PHASE

THEATRICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
QT0.01	THEATRICAL GENERAL INFORMATION
QT1.01	LEVEL 1 - THEATRICAL LIGHTING PLAN
QT1.02	LEVEL2 - THEATRICAL LIGHTING PLAN, CONTROL BOOTH AND ELECTRICS
QT1.03	LEVEL 3 - THEATRICAL LIGHTING PLAN, CATWALK AND FOLLOWSPOT
QT1.04	LEVEL 4 - THEATRICAL LIGHTING PLAN, GRID
QT1.21	LEVEL 1 - THEATRICAL DRAPERY PLAN - THEATER
QT1.22	LEVEL 1 - THEATRICAL DRAPERY PLAN AND SECTION - PERCUSSION ROOM
QT1.23	LEVEL 2 - THEATRICAL AND ACOUSTIC DRAPERY PLAN, CATWALK
QT1.31	LEVEL 1 - THEATRICAL RIGGING PLAN
QT1.32	LEVEL 2 - THEATRICAL RIGGING PLAN
QT1.33	LEVEL 3 - THEATRICAL RIGGING PLAN - LOADING BRIDGE
QT1.34	LEVEL 4 - THEATRICAL RIGGING PLAN - GRID
QT1.71	LEVEL 1 - ORCHESTRA SHELL PLAN
QT3.21	THEATRICAL DRAPERY, LONGITUDINAL SECTION
QT3.22	THEATRICAL & ACOUSTIC DRAPERY SECTIONS
QT3.23	THEATRICAL RIGGING - TRANSVERSE SECTION - TYPICAL COUNTERWEIGHT LINESET
QT3.24	THEATRICAL RIGGING TRANSVERSE SECTION - MOTORIZED LIGHTING LINESET
QT3.25	THEATRICAL RIGGING - TRANSVERSE SECTION - MOTORIZED ACOUSTIC CEILING LINESET
QT3.26	THEATRICAL RIGGING - TRANSVERSE SECTION - FIRE CURTAIN
QT3.31	THEATRICAL RIGGING - LONGITUDINAL SECTION
QT3.61	ORECHESTRA SHELL SECTION
QT5.11	THEATRICAL WIRING DEVICE DETAILS & SCHEDULE
QT5.12	THEATRICAL CONTROL DEVICE DETAILS & SCHEDULE
QT5.14	THEATRICAL HOUSE LIGHT CONTROL DEVICE DETAILS & SCHEDULE
QT5.15	THEATRICAL RACK & PANEL PHYSICAL PROPERTIES
QT5.21	THEATRICAL & ACOUSTIC DRAPERY DETAILS
QT5.31	THEATRICAL RIGGING DETAILS
QT5.33	THEATRICAL RIGGING DETAILS, FIRE CURTAIN
QT5.36	THEATRICAL RIGGING DETAILS, SIGNAGE
QT5.37	THEATRICAL RIGGING POWER & CONTROL DIAGRAM
QT6.11	THEATRICAL LIGHTING CONTROL DIAGRAM
QT6.12	THEATRICAL LIGHTING MAINS FED PANEL SCHEDULES
QT6.13	THEATRICAL LIGHTING FEED-THRU PANEL SCHEDULES
QT6.14	THEATRICAL LIGHTING FIXTURES & ACCESSORIES SCHEDULE
QT6.15	THEATRICAL LIGHTING REPERTORY PLOT

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

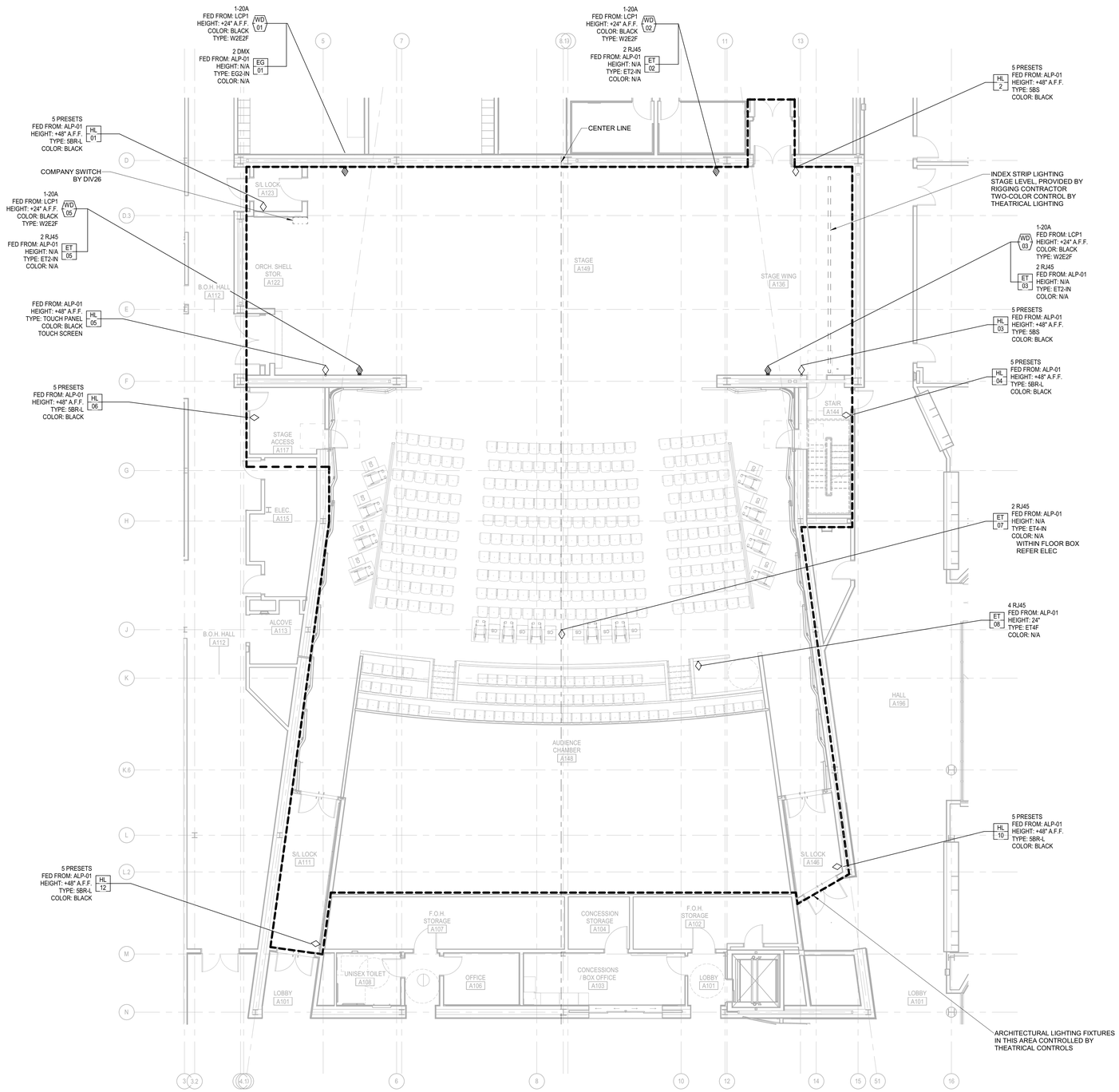
REVISIONS

39-23712-00

THEATRICAL GENERAL INFORMATION

QT0.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:10 AM



THEATRICAL LIGHTING PLAN - LEVEL 01

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

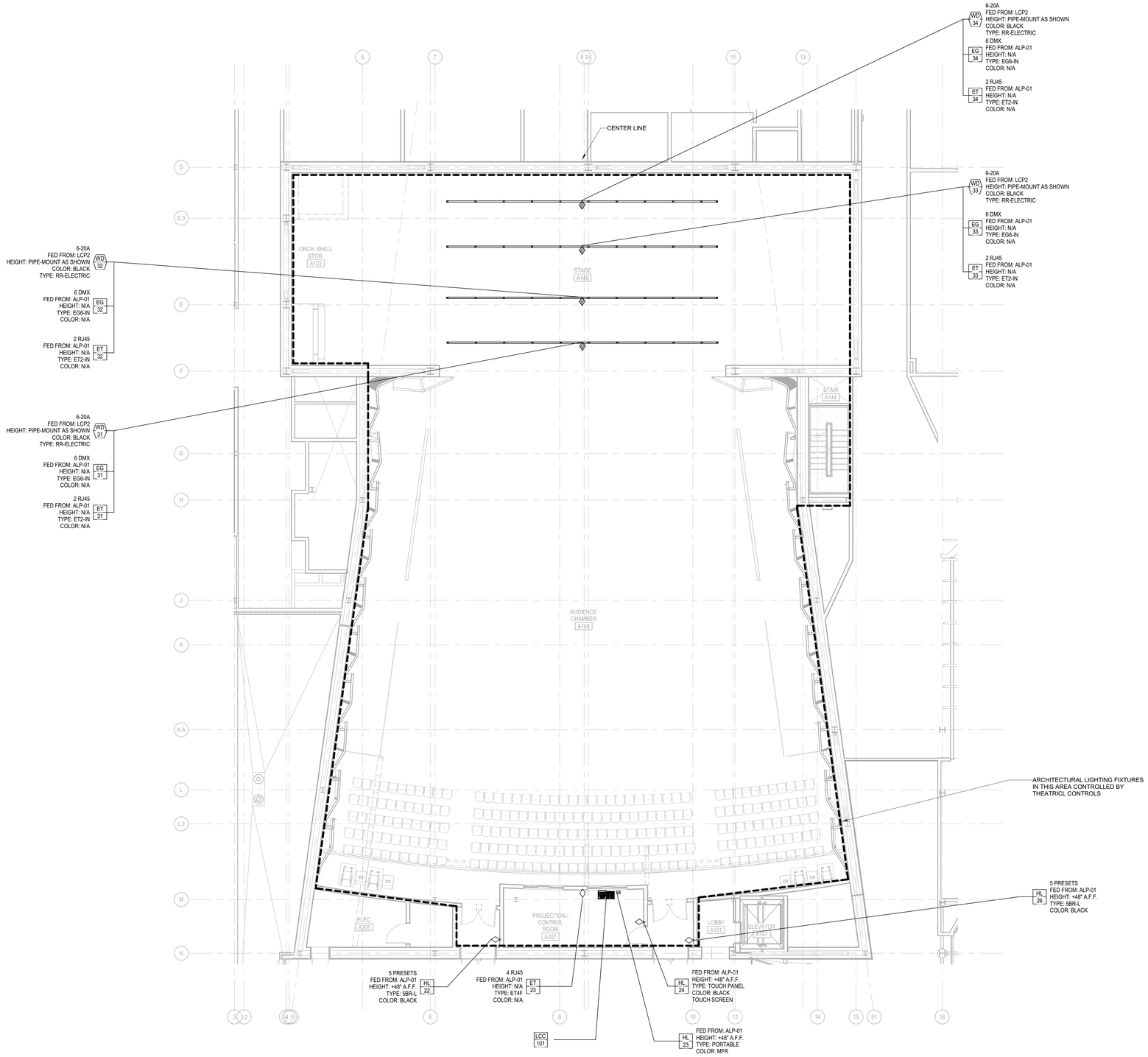
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 1 -
THEATRICAL
LIGHTING PLAN

QT1.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:17 AM



THEATRICAL LIGHTING PLAN - MEZZANINE LEVEL. CONTROL BOOTH AND ELECTRICS

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

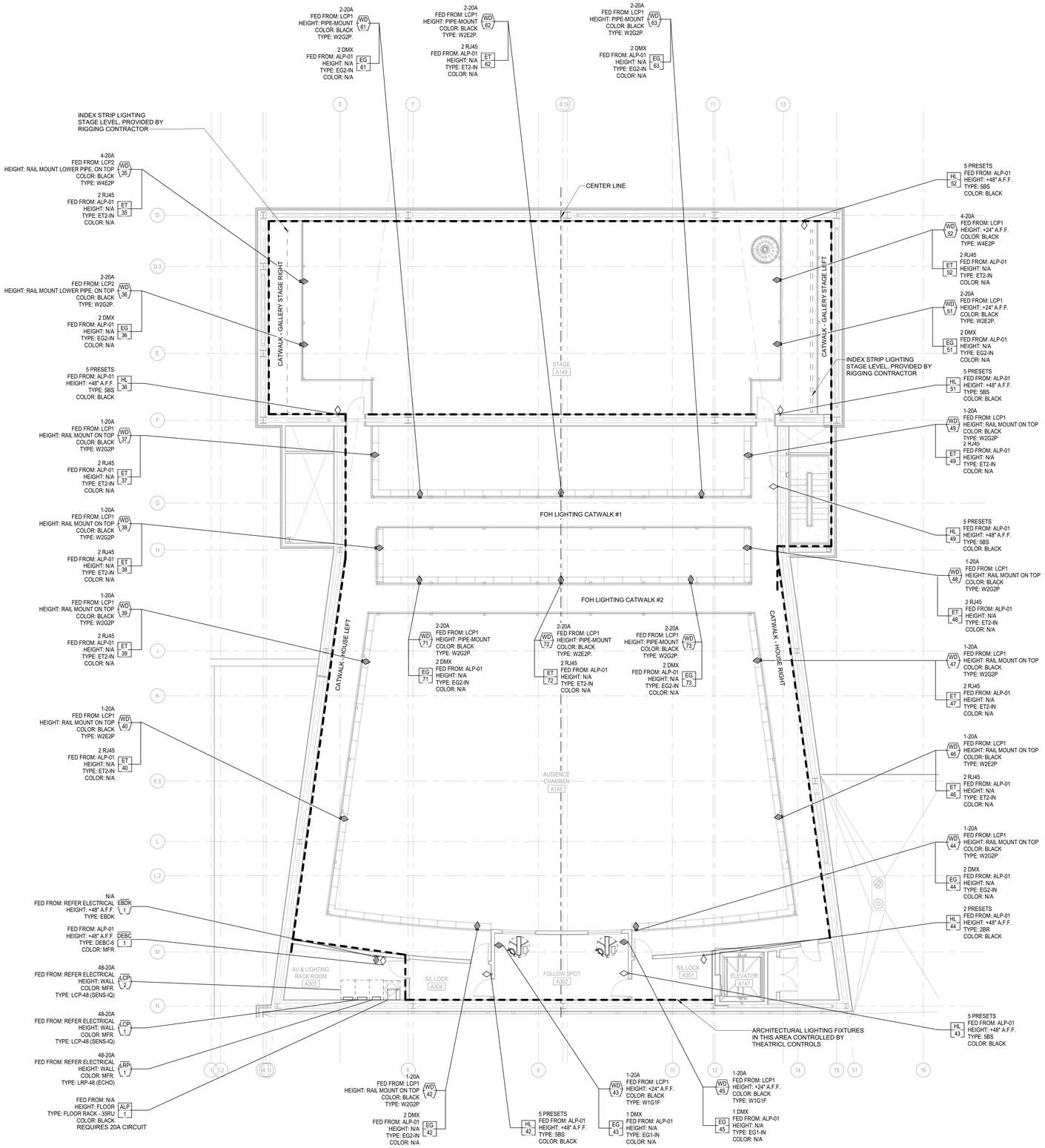
REVISIONS

39-23712-00

LEVEL2 - THEATRICAL LIGHTING PLAN, CONTROL BOOTH AND ELECTRICS

QT1.02

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:24 AM



THEATRICAL LIGHTING PLAN - CATWALK LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

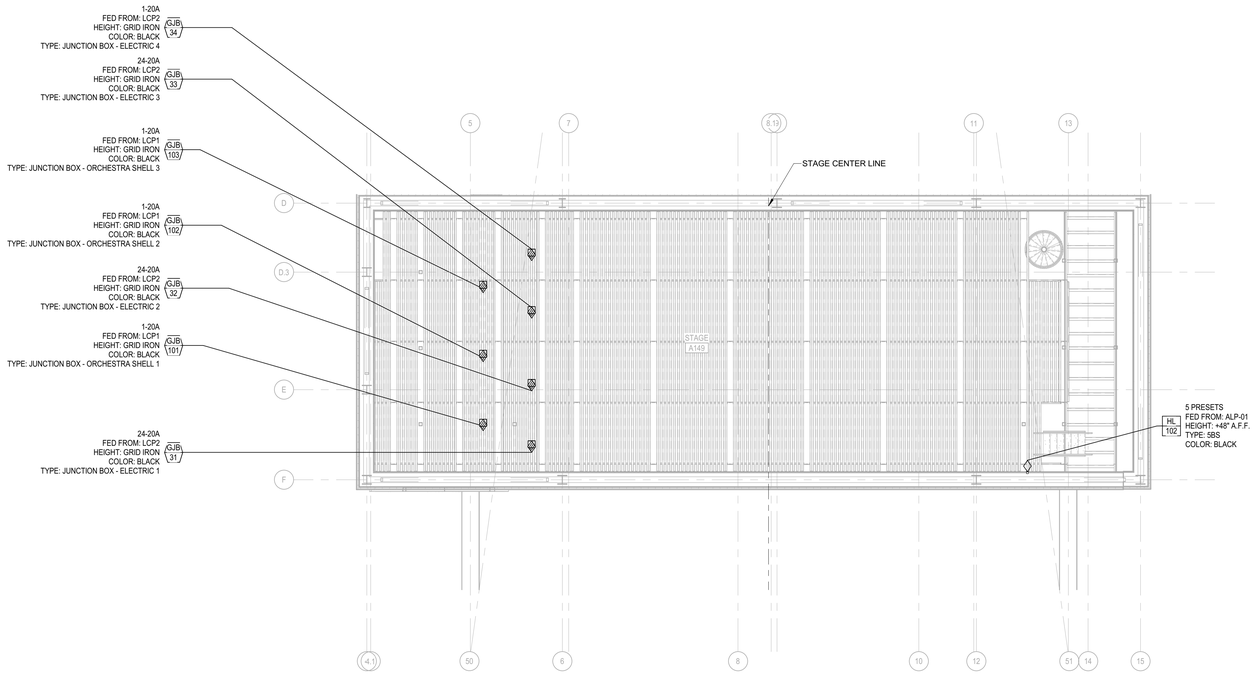
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

LEVEL 3 - THEATRICAL LIGHTING PLAN, CATWALK AND FOLLOWSPOT

QT1.03

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:30 AM



THEATRICAL LIGHTING PLAN - GRID LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

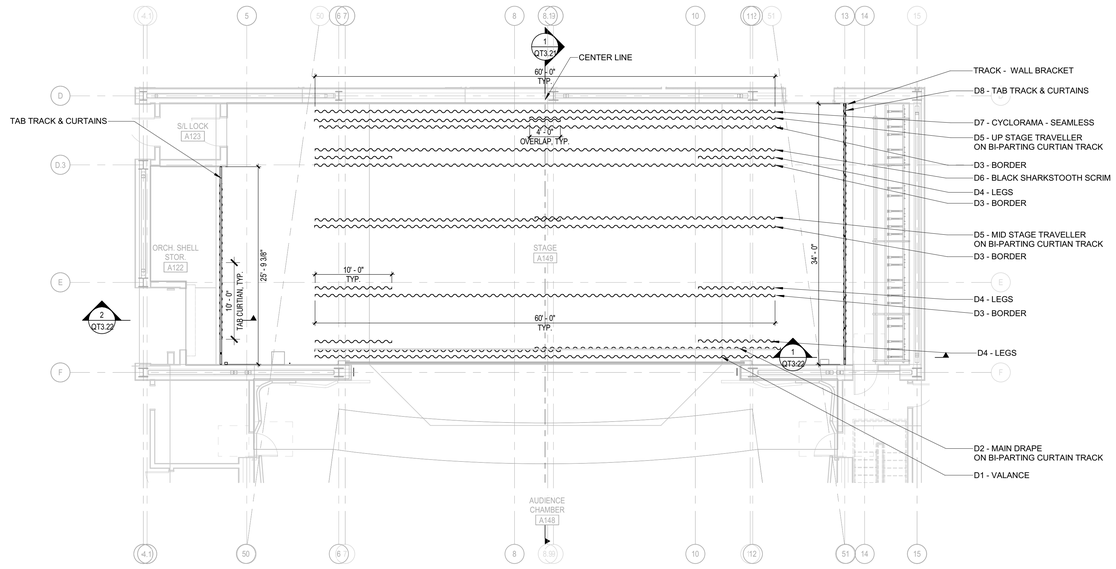
REVISIONS

39-23712-00

LEVEL 4 - THEATRICAL LIGHTING PLAN, GRID

QT1.04

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:35 AM



THEATRICAL DRAPERY PLAN - LEVEL 01, THEATER

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

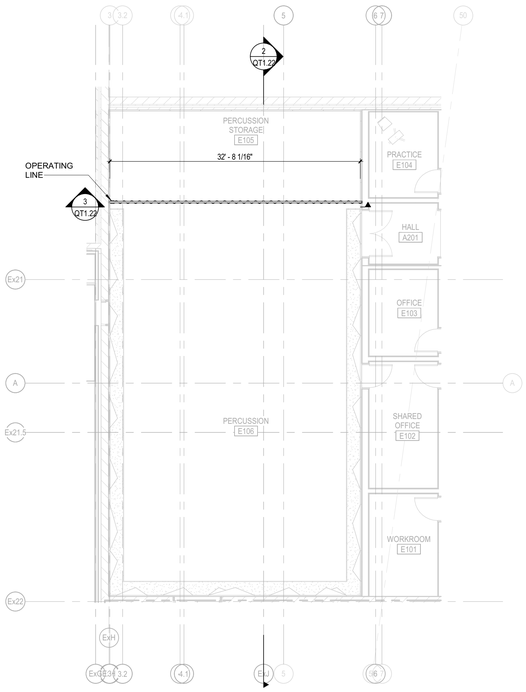
REVISIONS

39-23712-00

LEVEL 1 - THEATRICAL DRAPERY PLAN - THEATER

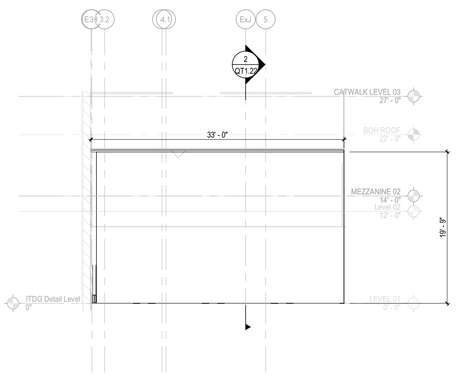
QT1.21

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:40 AM



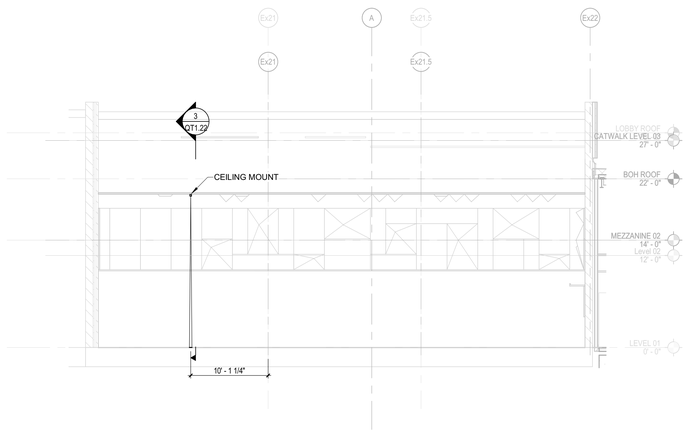
THEATRICAL DRAPERY PLAN - LEVEL 01, PERCUSSION ROOM

SCALE: 1/8" = 1'-0"



THEATRICAL DRAPERY SECTION PERCUSSION ROOM ELEVATION

SCALE: 1/8" = 1'-0"



THEATRICAL DRAPERY SECTION - PERCUSSION ROOM

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

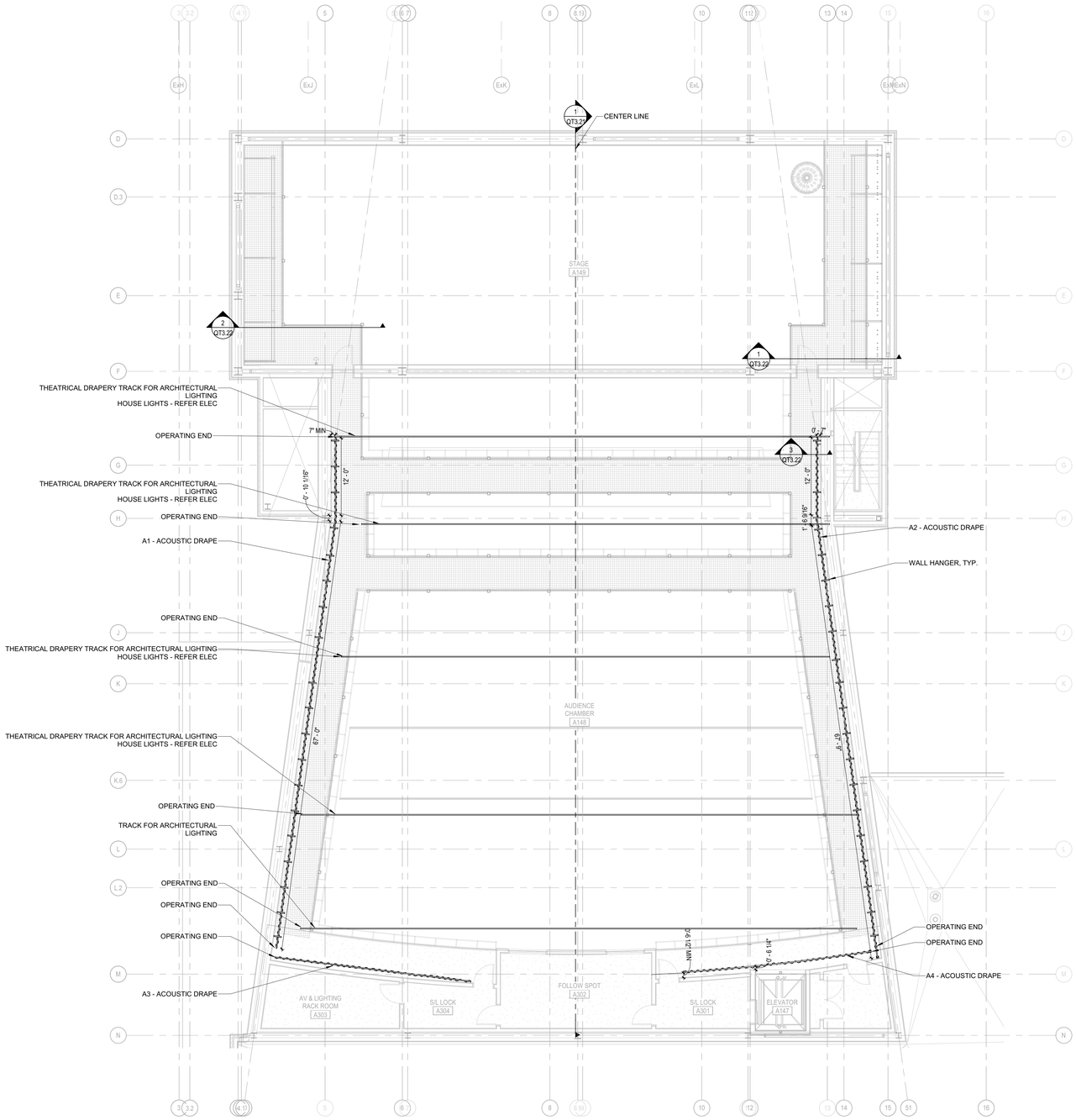
REVISIONS

39-23712-00

LEVEL 1 - THEATRICAL DRAPERY PLAN AND SECTION - PERCUSSION ROOM

QT1.22

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:46 AM



THEATRICAL AND ACOUSTIC DRAPERY PLAN - CATWALK LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

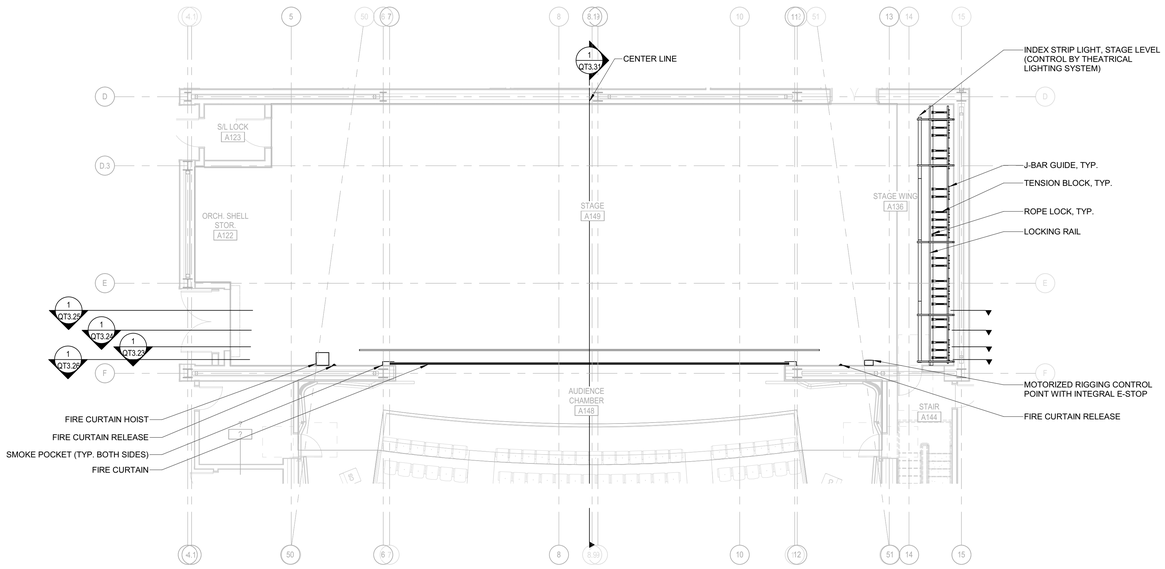
REVISIONS

39-23712-00

LEVEL 2 - THEATRICAL AND ACOUSTIC DRAPERY PLAN, CATWALK

QT1.23

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:51:51 AM



THEATRICAL RIGGING PLAN - STAGE LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

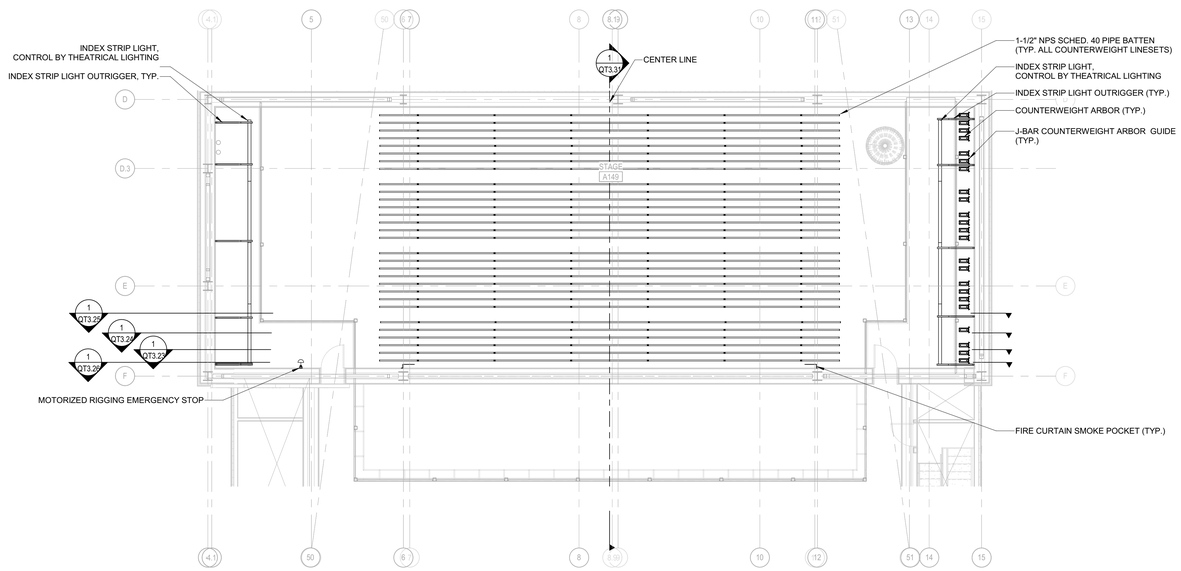
39-23712-00

LEVEL 1 - THEATRICAL RIGGING PLAN

QT1.31

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt

7/25/2024 8:51:56 AM



THEATRICAL RIGGING PLAN - CATWALK LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

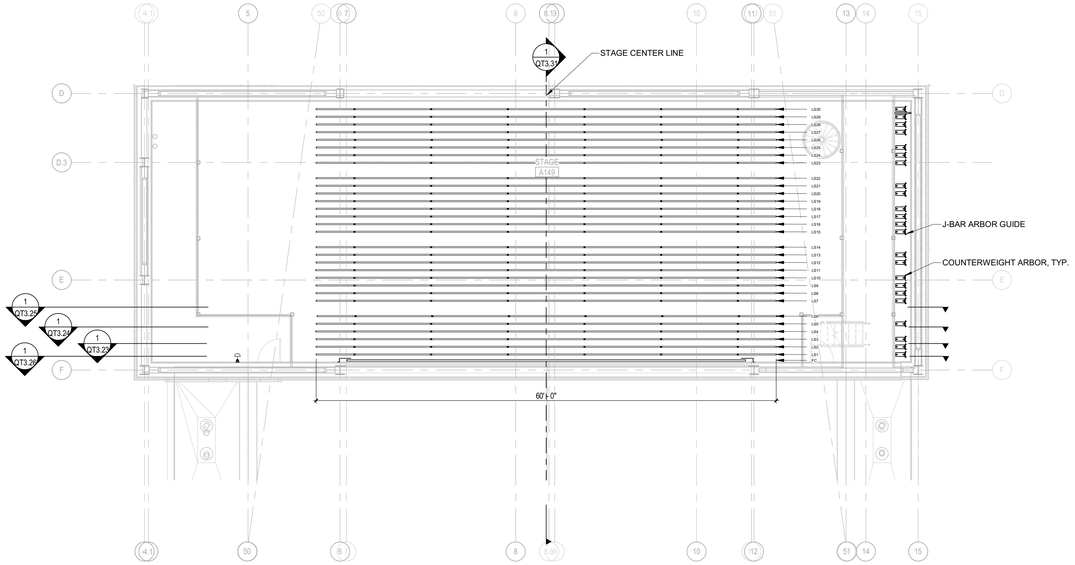
REVISIONS

39-23712-00

LEVEL 2 - THEATRICAL RIGGING PLAN

QT1.32

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:01 AM



THEATRICAL RIGGING PLAN - LOADING BRIDGE

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

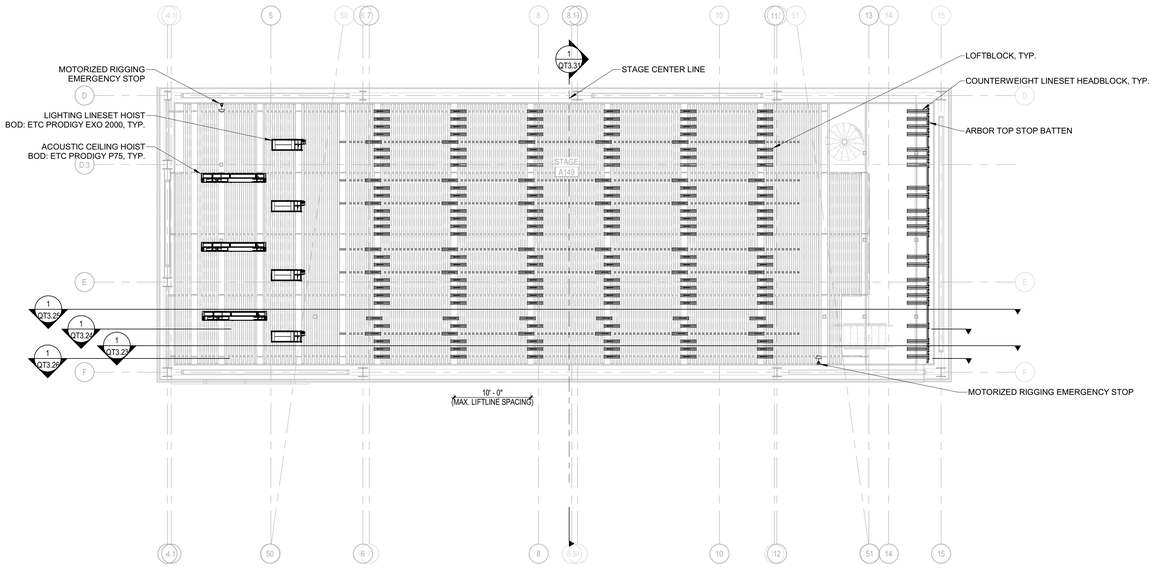
REVISIONS

39-23712-00

LEVEL 3 - THEATRICAL RIGGING PLAN - LOADING BRIDGE

QT1.33

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:06 AM



THEATRICAL RIGGING PLAN - GRID LEVEL

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

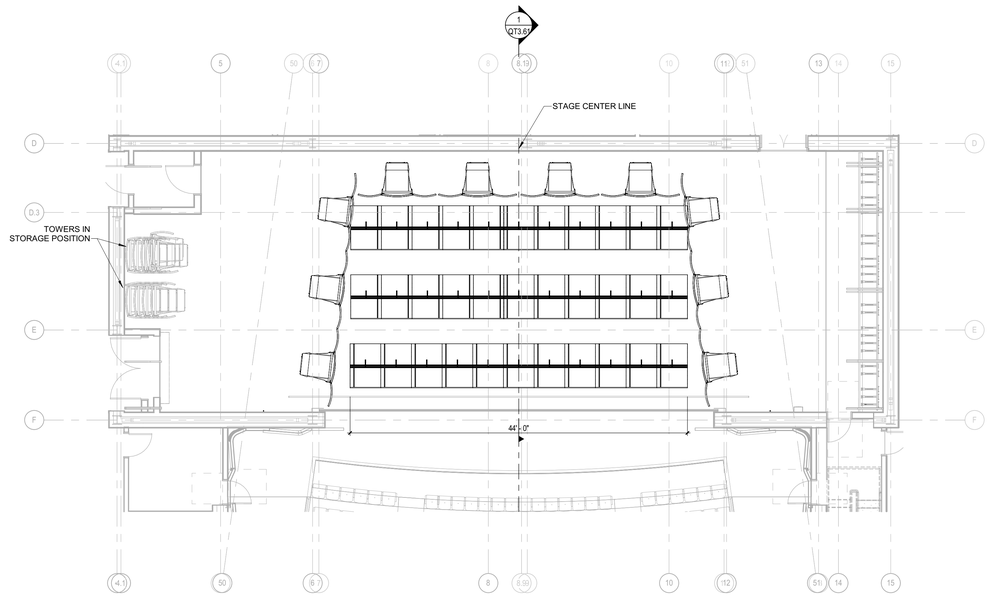
REVISIONS

39-23712-00

LEVEL 4 - THEATRICAL RIGGING PLAN - GRID

QT1.34

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:11 AM



ORCHESTRA SHELL PLAN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID
AND PERMIT

2024.07.25

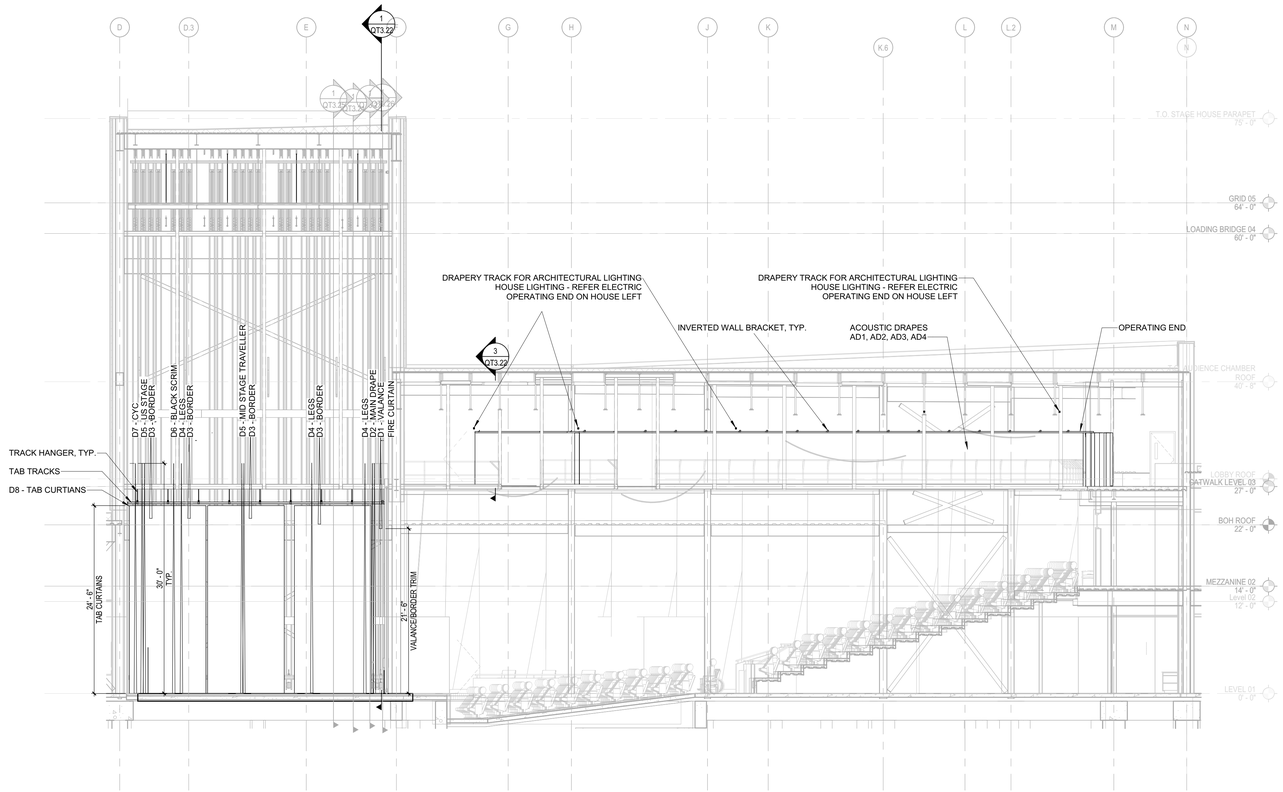
REVISIONS

39-23712-00

LEVEL 1 -
ORCHESTRA
SHELL PLAN

QT1.71

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:17 AM



THEATRICAL DRAPERY LONGITUDINAL SECTION

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

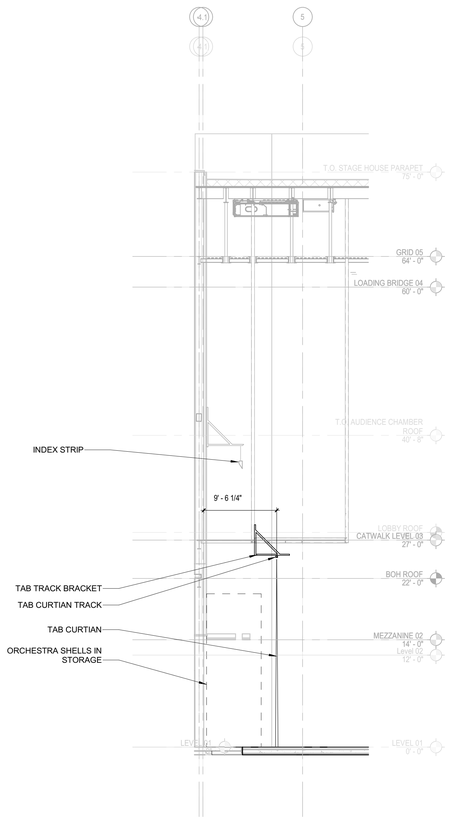
REVISIONS

39-23712-00

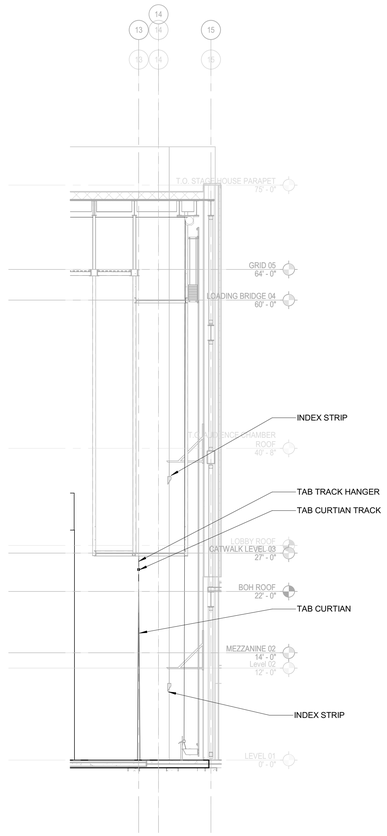
THEATRICAL DRAPERY, LONGITUDINAL SECTION

QT3.21

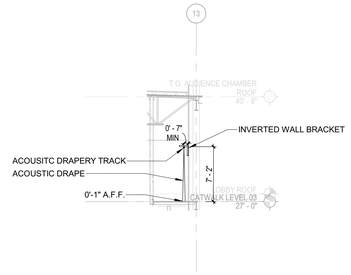
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TDG_2024.rvt
7/25/2024 8:52:28 AM



TAB TRACK HANGER - STAGE RIGHT
SCALE: 1/8" = 1'-0"



TAB TRACK HANGER - STAGE LEFT
SCALE: 1/8" = 1'-0"



CATWALK ACOUSTIC DRAPERY TRACK WALL BRACKET
SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

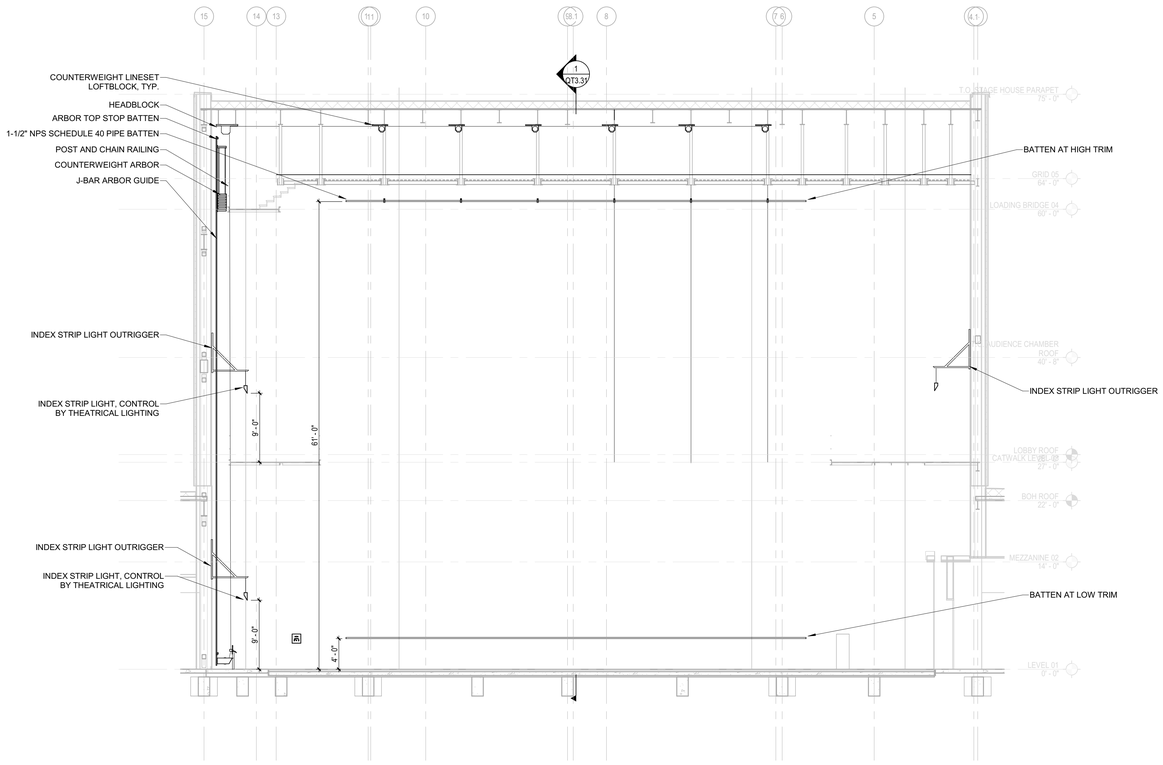
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL & ACOUSTIC DRAPERY SECTIONS

QT3.22

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TDG_2024.rvt
7/25/2024 8:52:34 AM



THEATRICAL RIGGING TRANSVERSE SECTION - COUNTERWEIGHT LINESET

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

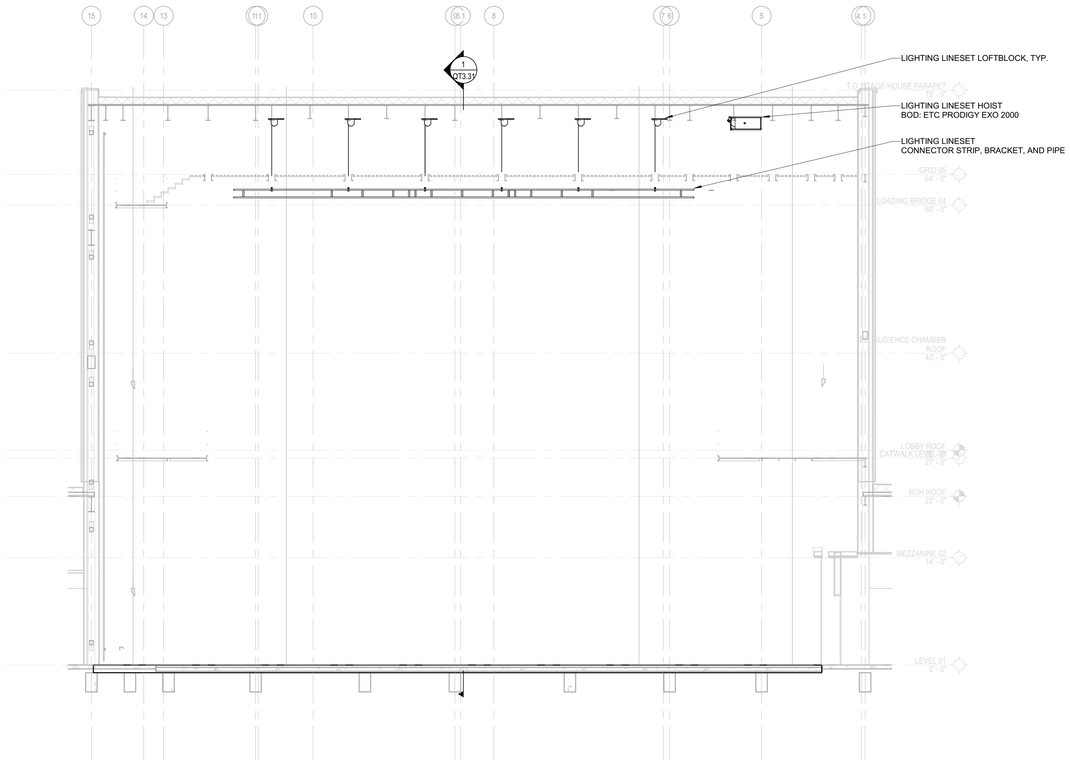
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL RIGGING - TRANSVERSE SECTION - TYPICAL COUNTERWEIGHT LINESET

QT3.23

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:39 AM



THEATRICAL RIGGING TRANSVERSE SECTION - MOTORIZED LIGHTING BATTEN

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

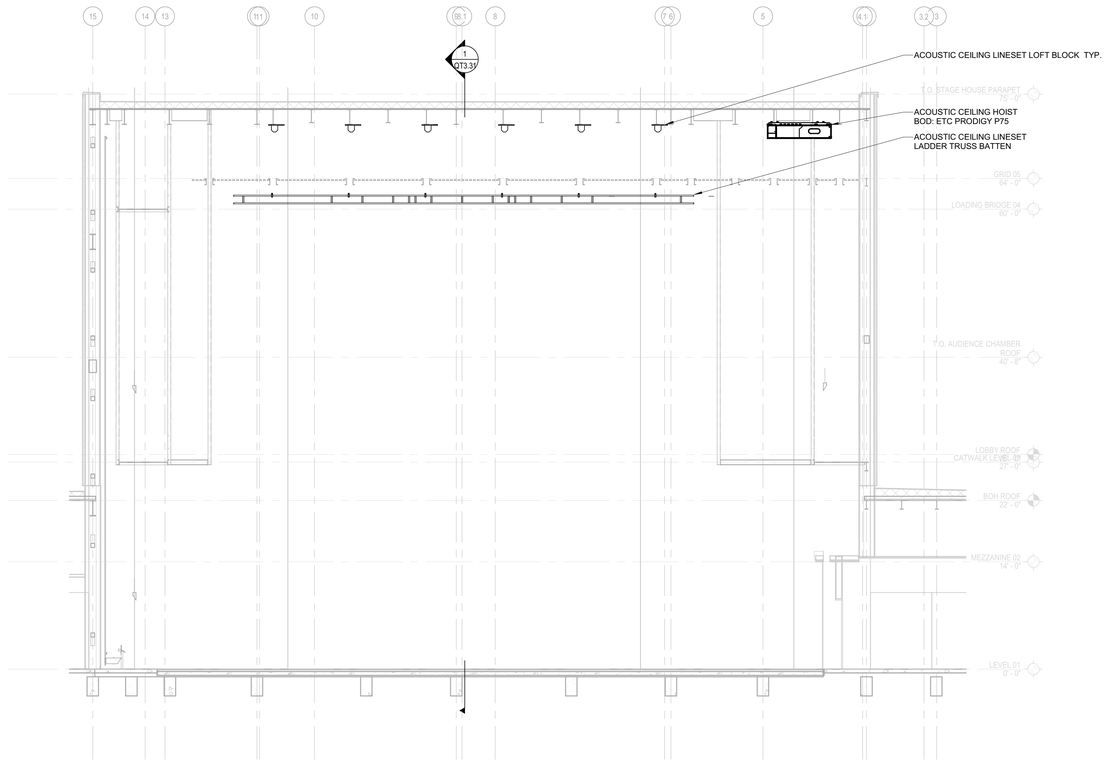
REVISIONS

39-23712-00

THEATRICAL RIGGING TRANSVERSE SECTION - MOTORIZED LIGHTING LINESET

QT3.24

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:43 AM



THEATRICAL RIGGING TRANSVERSE SECTION - ACOUSTIC CEILING MOTORIZED LINESET

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

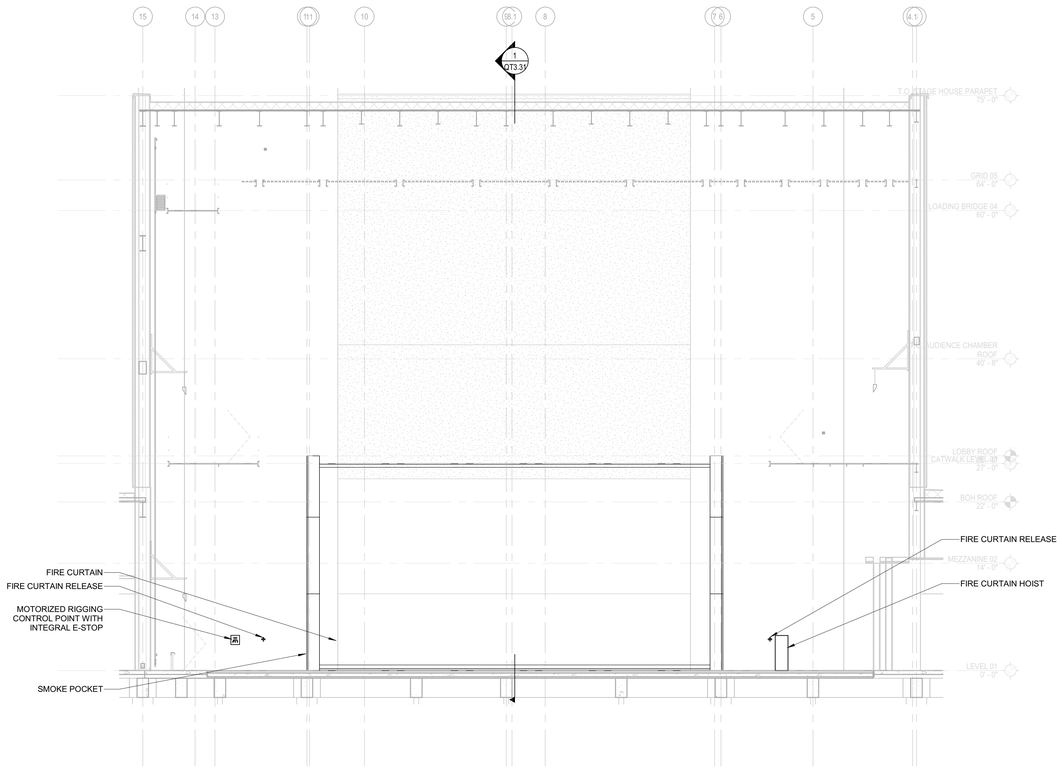
REVISIONS

39-23712-00

THEATRICAL RIGGING - TRANSVERSE SECTION - MOTORIZED ACOUSTIC CEILING LINESET

QT3.25

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:48 AM



THEATRICAL RIGGING TRANSVERSE SECTION - FIRE CURTAIN

SCALE: 1/8" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

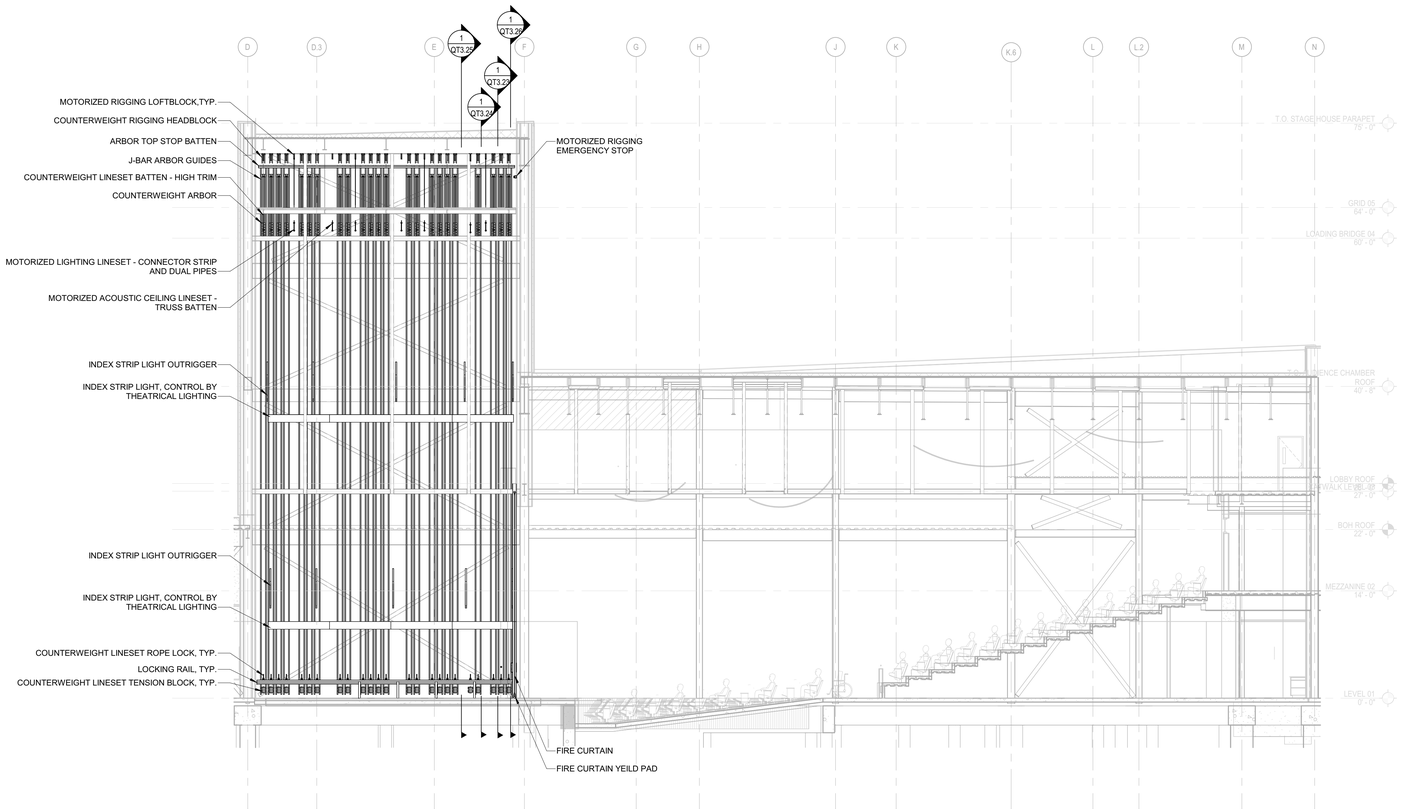
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL RIGGING - TRANSVERSE SECTION - FIRE CURTAIN

QT3.26

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:52:52 AM



THEATRICAL RIGGING LONGITUDINAL SECTION

SCALE: 1/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

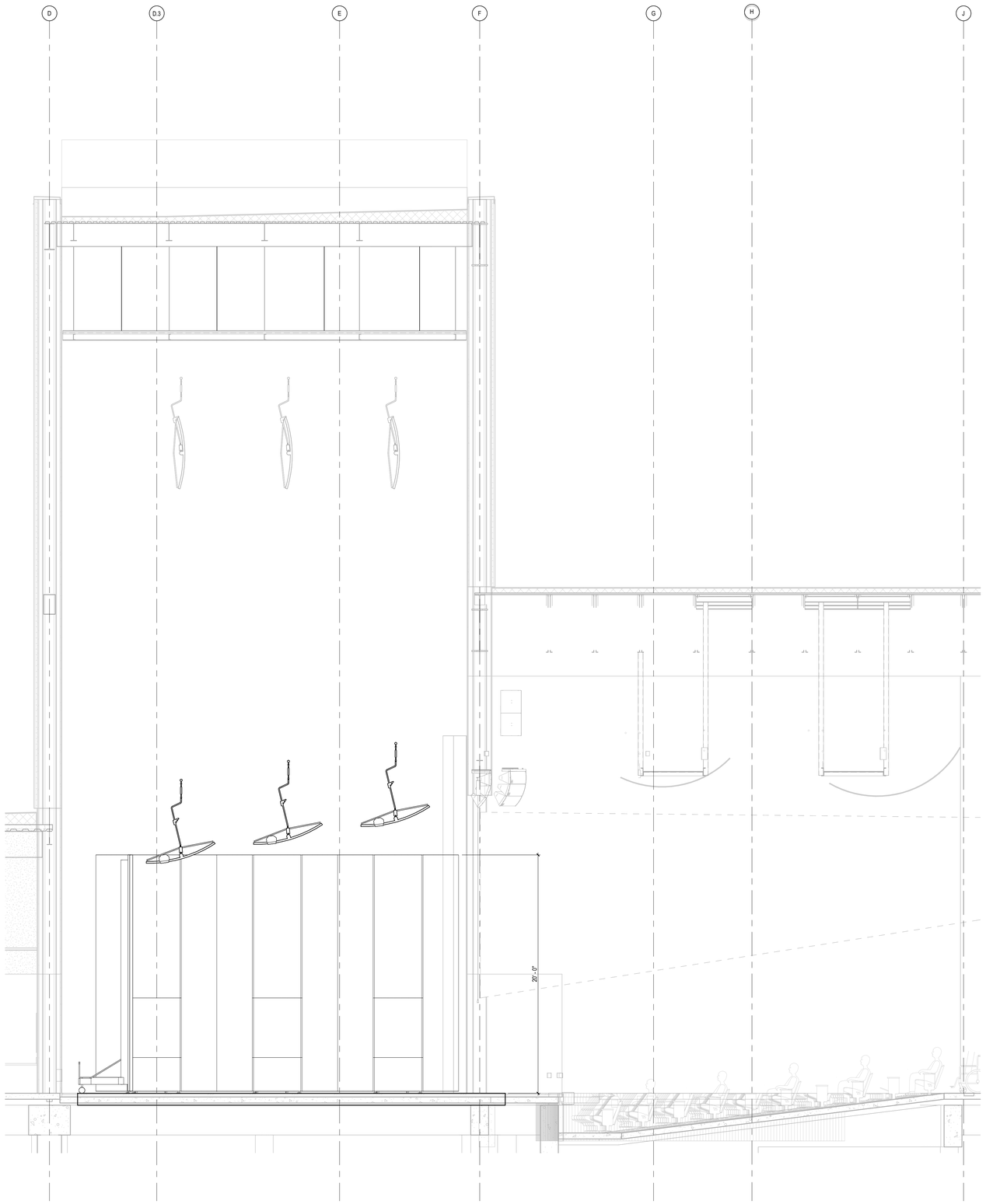
REVISIONS

39-23712-00

THEATRICAL RIGGING - LONGITUDINAL SECTION

QT3.31

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:02 AM



ORCHESTRA SHELL LONGITUDINAL SECTION

SCALE: 1/4" = 1'-0"

DLRGR

© DLR Group

- NOT FOR CONSTRUCTION -

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

ORECHESTRA SHELL SECTION

QT3.61

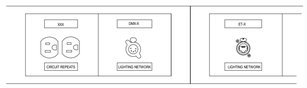
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt

7/26/2024 8:53:08 AM

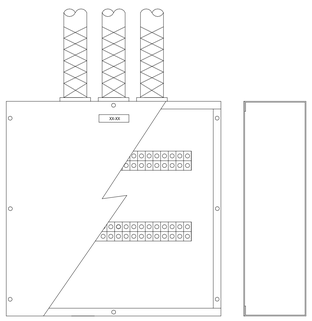
THEATRICAL WIRING DEVICE SCHEDULE

GENERAL NOTES
1. "VERIFY" = FINAL COLOR SELECTION BY ARCHITECT AND SPECIFIER AT SUBMITTAL PHASE. FOR BIDDING PURPOSES, ASSUME CUSTOM COLOR WITH SAMPLE VERIFICATION.
2. "MFR" = MANUFACTURER'S DEFAULT COLOR.

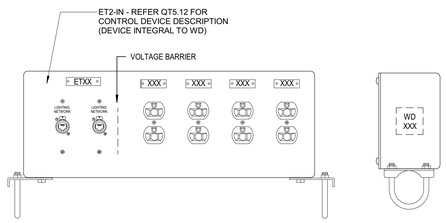
DEVICE NO.	DEVICE TYPE	DESCRIPTION AND MOUNTING	MOUNTING HEIGHT	COLOR	LOCATION	CIRCUIT QTY	FED FROM	CONDUIT & FEEDER SIZE
WD-01	W2E2F	FLUSH-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX PANEL-MOUNT RECEPTACLES, (2) ETHERNET TAPS	+24" A.F.F.	BLACK	A127 STAGE	1-20A	LCP1	REFER ELECTRICAL
WD-02	W2E2F	FLUSH-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX PANEL-MOUNT RECEPTACLES, (2) ETHERNET TAPS	+24" A.F.F.	BLACK	A127 STAGE	1-20A	LCP1	REFER ELECTRICAL
WD-03	W2E2F	FLUSH-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX PANEL-MOUNT RECEPTACLES, (2) ETHERNET TAPS	+24" A.F.F.	BLACK	A127 STAGE	1-20A	LCP1	REFER ELECTRICAL
WD-05	W2E2F	FLUSH-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX PANEL-MOUNT RECEPTACLES, (2) ETHERNET TAPS	+24" A.F.F.	BLACK	A127 STAGE	1-20A	LCP1	REFER ELECTRICAL
WD-31	RR-ELECTRIC	BATTEN MOUNT, HORIZONTAL CONNECTOR STRIP, WITH (32) NEMA 5-20R 'EDISON' DUPLEX RECEPTACLES, (2) ETHERNET TAPS, (1) 1-DMX GATEWAY	PIPE-MOUNT AS SHOWN	BLACK	ELECTRIC #2	6-20A	LCP2	REFER ELECTRICAL
WD-32	RR-ELECTRIC	BATTEN MOUNT, HORIZONTAL CONNECTOR STRIP, WITH (32) NEMA 5-20R 'EDISON' DUPLEX RECEPTACLES, (2) ETHERNET TAPS, (1) 1-DMX GATEWAY	PIPE-MOUNT AS SHOWN	BLACK	ELECTRIC #2	6-20A	LCP2	REFER ELECTRICAL
WD-33	RR-ELECTRIC	BATTEN MOUNT, HORIZONTAL CONNECTOR STRIP, WITH (32) NEMA 5-20R 'EDISON' DUPLEX RECEPTACLES, (2) ETHERNET TAPS, (1) 1-DMX GATEWAY	PIPE-MOUNT AS SHOWN	BLACK	ELECTRIC #3	6-20A	LCP2	REFER ELECTRICAL
WD-34	RR-ELECTRIC	BATTEN MOUNT, HORIZONTAL CONNECTOR STRIP, WITH (32) NEMA 5-20R 'EDISON' DUPLEX RECEPTACLES, (2) ETHERNET TAPS, (1) 1-DMX GATEWAY	PIPE-MOUNT AS SHOWN	BLACK	ELECTRIC #4	6-20A	LCP2	REFER ELECTRICAL
WD-35	W4E2P	PIPE-MOUNT, HORIZONTAL, WITH (4) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	RAIL MOUNT LOWER PIPE, ON TOP	BLACK	GALLERY STAGE RIGHT US	4-20A	LCP2	REFER ELECTRICAL
WD-36	W2G2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT LOWER PIPE, ON TOP	BLACK	GALLERY STAGE RIGHT DS	2-20A	LCP2	REFER ELECTRICAL
WD-37	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE LEFT	1-20A	LCP1	REFER ELECTRICAL
WD-38	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE LEFT	1-20A	LCP1	REFER ELECTRICAL
WD-39	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE LEFT	1-20A	LCP1	REFER ELECTRICAL
WD-40	W2E2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE LEFT	1-20A	LCP1	REFER ELECTRICAL
WD-42	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK REAR	1-20A	LCP1	REFER ELECTRICAL
WD-43	W1G1F	FLUSH-MOUNT, HORIZONTAL, WITH (1) NEMA 5-20R 'EDISON' DUPLEX AND (1) 1-DMX GATEWAY	+24" A.F.F.	BLACK	A194 FOLLWSPOT BOOTH	1-20A	LCP1	REFER ELECTRICAL
WD-44	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK REAR	1-20A	LCP1	REFER ELECTRICAL
WD-45	W1G1F	FLUSH-MOUNT, HORIZONTAL, WITH (1) NEMA 5-20R 'EDISON' DUPLEX AND (1) 1-DMX GATEWAY	+24" A.F.F.	BLACK	A194 FOLLWSPOT BOOTH	1-20A	LCP1	REFER ELECTRICAL
WD-46	W2E2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE RIGHT	1-20A	LCP1	REFER ELECTRICAL
WD-47	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE RIGHT	1-20A	LCP1	REFER ELECTRICAL
WD-48	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE RIGHT	1-20A	LCP1	REFER ELECTRICAL
WD-49	W2G2P	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	RAIL MOUNT ON TOP	BLACK	CATWALK HOUSE RIGHT	1-20A	LCP1	REFER ELECTRICAL
WD-51	W2E2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	+24" A.F.F.	BLACK	GALLERY STAGE LEFT DS	2-20A	LCP1	REFER ELECTRICAL
WD-52	W4E2P	PIPE-MOUNT, HORIZONTAL, WITH (4) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	+24" A.F.F.	BLACK	GALLERY STAGE LEFT US	4-20A	LCP1	REFER ELECTRICAL
WD-61	W2G2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	PIPE-MOUNT	BLACK	CATWALK BRIDGE #1	2-20A	LCP1	REFER ELECTRICAL
WD-62	W2E2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	PIPE-MOUNT	BLACK	CATWALK BRIDGE #1	2-20A	LCP1	REFER ELECTRICAL
WD-63	W2G2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	PIPE-MOUNT	BLACK	CATWALK BRIDGE #1	2-20A	LCP1	REFER ELECTRICAL
WD-71	W2G2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	PIPE-MOUNT	BLACK	CATWALK BRIDGE #2	2-20A	LCP1	REFER ELECTRICAL
WD-72	W2E2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) ETHERNET TAPS	PIPE-MOUNT	BLACK	CATWALK BRIDGE #2	2-20A	LCP1	REFER ELECTRICAL
WD-73	W2G2P.	PIPE-MOUNT, HORIZONTAL, WITH (2) NEMA 5-20R 'EDISON' DUPLEX AND (2) 2-DMX GATEWAY	PIPE-MOUNT	BLACK	CATWALK BRIDGE #2	2-20A	LCP1	REFER ELECTRICAL



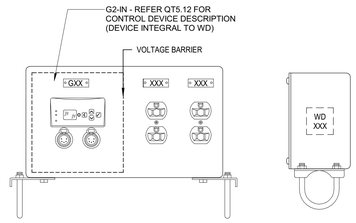
7 QT5.11 LABEL DETAIL
SCALE: 3" = 1'-0"



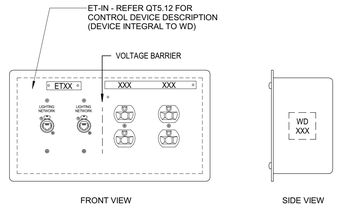
8 QT5.11 GRID IRON JUNCTION BOX
SCALE: 3" = 1'-0"



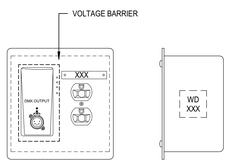
WIRING DEVICE TYPE W4E2P
SCALE: 3" = 1'-0"



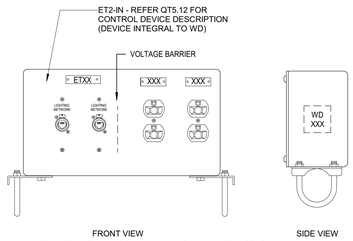
6 QT5.11 WIRING DEVICE TYPE W2G2P
SCALE: 3" = 1'-0"



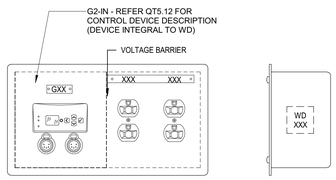
5 QT5.11 WIRING DEVICE TYPE W2E2F
SCALE: 3" = 1'-0"



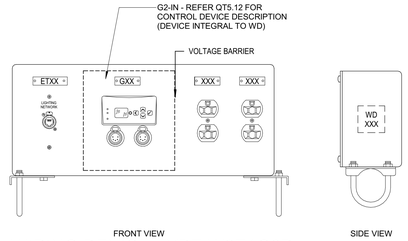
WIRING DEVICE TYPE W1G1F
SCALE: 3" = 1'-0"



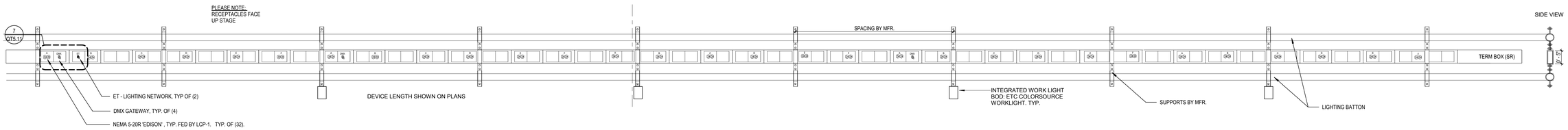
4 QT5.11 WIRING DEVICE TYPE W2E2P
SCALE: 3" = 1'-0"



3 QT5.11 WIRING DEVICE TYPE W2G2F
SCALE: 3" = 1'-0"



2 QT5.11 WIRING DEVICE TYPE W2E1G2P
SCALE: 3" = 1'-0"



1 QT5.11 WD TYPE RR-ELECTRIC
SCALE: 3/4" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL WIRING DEVICE DETAILS & SCHEDULE

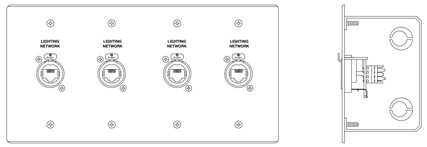
QT5.11

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:16 AM

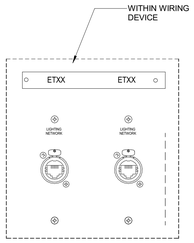
THEATRICAL CONTROL DEVICE SCHEDULE

GENERAL NOTES
1. "VERIFY" = FINAL COLOR SELECTION BY ARCHITECT AND SPECIFIER AT SUBMITTAL PHASE. FOR BIDDING PURPOSES, ASSUME CUSTOM COLOR WITH SAMPLE VERIFICATION.
2. "MFR" = MANUFACTURER'S DEFAULT COLOR.

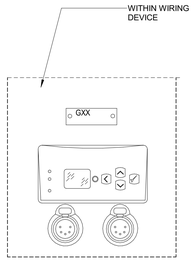
DEVICE NO.	DEVICE TYPE	DESCRIPTION AND MOUNTING	COLOR	MOUNTING HEIGHT	LOCATION	PORTS		FED FROM
						DMX	RJ45	
EG-01	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-01	2		ALP-01
EG-31	EG6-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (6) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-34	6		ALP-01
EG-32	EG6-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (6) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-33	6		ALP-01
EG-33	EG6-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (6) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-32	6		ALP-01
EG-34	EG6-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (6) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-31	6		ALP-01
EG-36	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-36	2		ALP-01
EG-42	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-42	2		ALP-01
EG-43	EG1-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (1) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-43	1		ALP-01
EG-44	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-44	2		ALP-01
EG-45	EG1-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (1) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-43	1		ALP-01
EG-51	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-51	2		ALP-01
EG-61	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, REFER WD DETAILS	2		ALP-01
EG-63	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, REFER WD DETAILS	2		ALP-01
EG-71	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-62	2		ALP-01
EG-73	EG2-IN	ETHERNET-TO-DMX GATEWA DEVICE, WITHIN WIRING DEVICE, WITH (2) 5-PIN DMX-OUT PORT	N/A	N/A	WITHIN WIRING DEVICE, WD-62	2		ALP-01
EG-101	EG2G (PORTABLE GATEWAY)	PORTABLE GATEWAY WITH (2) 5-PIN DMX-OUT PORTS	BLACK	N/A	DELIVER TO LIGHT BOOTH	2		ALP-01
EG-102	EG2G (PORTABLE GATEWAY)	PORTABLE GATEWAY WITH (2) 5-PIN DMX-OUT PORTS	BLACK	N/A	DELIVER TO LIGHT BOOTH	2		ALP-01
EG-103	EG2G (PORTABLE GATEWAY)	PORTABLE GATEWAY WITH (2) 5-PIN DMX-OUT PORTS	BLACK	N/A	DELIVER TO LIGHT BOOTH	2		ALP-01
EG-104	EG2G (PORTABLE GATEWAY)	PORTABLE GATEWAY WITH (2) 5-PIN DMX-OUT PORTS	BLACK	N/A	DELIVER TO LIGHT BOOTH	2		ALP-01
ET-02	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE WD-02		2	ALP-01
ET-03	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-05		2	ALP-01
ET-05	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-07		2	ALP-01
ET-07	ET4-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	A126 AUDIENCE CHAMBER		2	ALP-01
ET-08	ET4F	FLUSH MOUNT ETHERNET TAP WITH (4) RJ45 JACKS	N/A	24"	A126 AUDIENCE CHAMBER		4	ALP-01
ET-23	ET4F	FLUSH MOUNT ETHERNET TAP WITH (4) RJ45 JACKS	N/A	N/A	A174 PROJECTION/CONTROL ROOM		4	ALP-01
ET-31	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-34		2	ALP-01
ET-32	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-33		2	ALP-01
ET-33	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-32		2	ALP-01
ET-34	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-31		2	ALP-01
ET-35	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-35		2	ALP-01
ET-35	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-35		2	ALP-01
ET-37	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-37		2	ALP-01
ET-38	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-38		2	ALP-01
ET-39	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-39		2	ALP-01
ET-40	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-36		2	ALP-01
ET-46	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-46		2	ALP-01
ET-47	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-47		2	ALP-01
ET-48	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-48		2	ALP-01
ET-49	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-49		2	ALP-01
ET-52	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-52		2	ALP-01
ET-62	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-38		2	ALP-01
ET-72	ET2-IN	ETHERNET TAP, WITHIN WIRING DEVICE, WITH (2) RJ45 JACKS	N/A	N/A	WITHIN WIRING DEVICE, WD-38		2	ALP-01



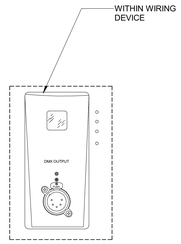
CONTROL DEVICE TYPE ET4F
SCALE: 6" = 1'-0"



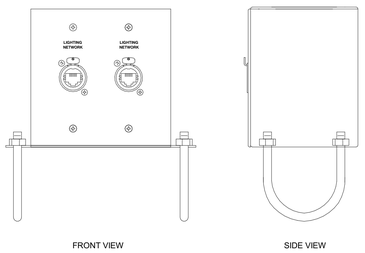
CONTROL DEVICE TYPE ET-2IN
SCALE: 6" = 1'-0"



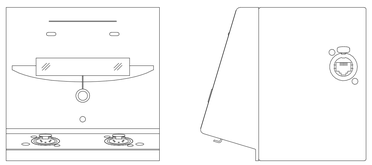
CONTROL DEVICE TYPE G2-IN
SCALE: 6" = 1'-0"



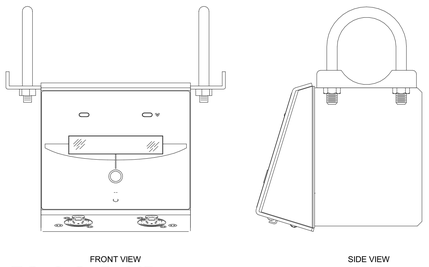
CONTROL DEVICE TYPE G1-IN
SCALE: 6" = 1'-0"



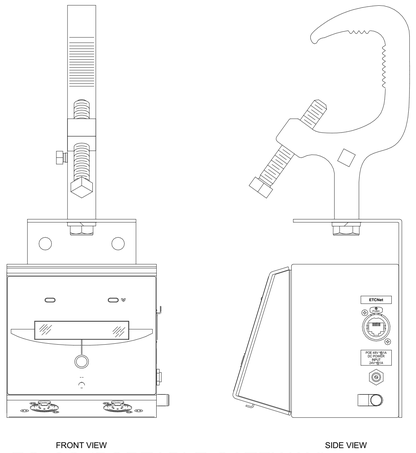
CONTROL DEVICE TYPE G2P
SCALE: 6" = 1'-0"



EG_2-G_S_HZ
SCALE: 6" = 1'-0"



EG_2-G_P_MB
SCALE: 6" = 1'-0"



EG_2G (PORTABLE GATEWAY)
SCALE: 6" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL CONTROL DEVICE DETAILS & SCHEDULE

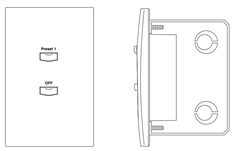
QT5.12

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:23 AM

THEATRICAL HOUSE LIGHT CONTROL STATION SCHEDULE

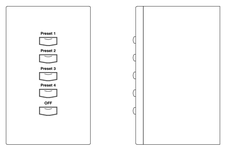
GENERAL NOTES
1. "VERIFY" = FINAL COLOR SELECTION BY ARCHITECT AND SPECIFIER AT SUBMITTAL PHASE. FOR BIDDING PURPOSES, ASSUME CUSTOM COLOR WITH SAMPLE VERIFICATION.
2. "MFR" = MANUFACTURER'S DEFAULT COLOR.

Control Device Type	Number	DEVICE NO.	DEVICE TYPE	DESCRIPTION AND MOUNTING	COLOR	MOUNTING HEIGHT	LOCATION	INPUTS		
								PRESETS	FADERS	FED FROM
HL	01	HL-01	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A127 STAGE	5		ALP-01
HL	2	HL-2	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A127 STAGE	5		ALP-01
HL	03	HL-03	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A127 STAGE	5		ALP-01
HL	04	HL-04	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A159 STAIR	5		ALP-01
HL	05	HL-05	TOUCH PANEL	HOUSE LIGHT STATION, 7" FLUSH-MOUNT COLOR TOUCHSCREEN STATION	BLACK	+48" A.F.F.	A127 STAGE			ALP-01
HL	06	HL-06	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A199 STAGE STORAGE	5		ALP-01
HL	10	HL-10	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A157 S/L LOCK	5		ALP-01
HL	12	HL-12	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	132 SCENE SHOP	5		ALP-01
HL	22	HL-22	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A126 AUDIENCE CHAMBER LEVEL 2	5		ALP-01
HL	23	HL-23	PORTABLE	HOUSE LIGHT STATION, PORTABLE	MFR	+48" A.F.F.	LOOSE EQUIPMENT; DELIVER TO CONTROL BOOTH			ALP-01
HL	24	HL-24	TOUCH PANEL	HOUSE LIGHT STATION, 7" FLUSH-MOUNT COLOR TOUCHSCREEN STATION	BLACK	+48" A.F.F.	A174 PROJECTION/CONTROL ROOM			ALP-01
HL	26	HL-26	2BR	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (2) PRESET BUTTONS	BLACK	+48" A.F.F.	A127 STAGE	2		ALP-01
HL	26	HL-26	5BR-L	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A126 AUDIENCE CHAMBER LEVEL 2	5		ALP-01
HL	36	HL-36	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	132 SCENE SHOP	5		ALP-01
HL	42	HL-42	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A194 FOLLOW SPOT	5		ALP-01
HL	43	HL-43	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A194 FOLLOW SPOT	5		ALP-01
HL	44	HL-44	2BR	HOUSE LIGHT STATION, FLUSH-MOUNT, WITH (2) PRESET BUTTONS	BLACK	+48" A.F.F.	A195 S/L LOCK	2		ALP-01
HL	49	HL-49	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	132 SCENE SHOP	5		ALP-01
HL	51	HL-51	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	132 SCENE SHOP	5		ALP-01
HL	52	HL-52	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	132 SCENE SHOP	5		ALP-01
HL	102	HL-102	5BS	HOUSE LIGHT STATION, SURFACE-MOUNT, WITH (5) PRESET BUTTONS	BLACK	+48" A.F.F.	A127 STAGE	5		ALP-01



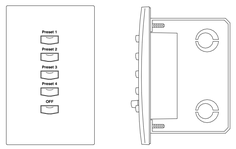
FRONT VIEW SIDE VIEW

HL TYPE 2BR
SCALE: 6" = 1'-0"



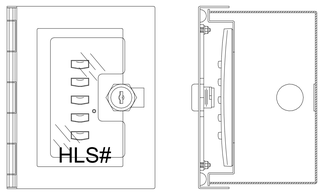
FRONT VIEW SIDE VIEW

HL TYPE 5BS
SCALE: 6" = 1'-0"



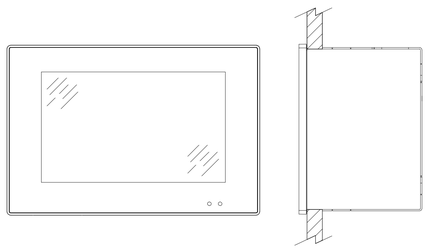
FRONT VIEW SIDE VIEW

HL TYPE 5BR
SCALE: 6" = 1'-0"



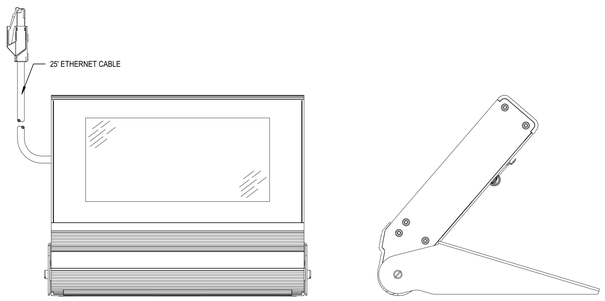
FRONT VIEW SIDE VIEW

HL TYPE 5BR-L (LOCKING COVER)
SCALE: 6" = 1'-0"



FRONT VIEW SIDE VIEW

HL_TYPE TR -TOUCHSCREEN 7in RECESSED
SCALE: 6" = 1'-0"



HLTYPE P - PORTABLE TOUCHSCREEN ETHERNET
SCALE: 6" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL HOUSE LIGHT CONTROL DEVICE DETAILS & SCHEDULE

QT5.14

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:30 AM

THEATRICAL ELECTRICAL EQUIPMENT SCHEDULE

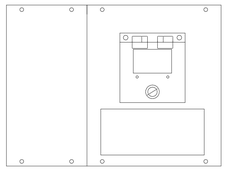
GENERAL NOTES
1. "VERIFY" = FINAL COLOR SELECTION BY ARCHITECT AND SPECIFIER AT SUBMITTAL PHASE. FOR BIDDING PURPOSES, ASSUME CUSTOM COLOR WITH SAMPLE VERIFICATION.
2. "MFR" = MANUFACTURER'S DEFAULT COLOR.

Device Type	Number	DEVICE TYPE	DESCRIPTION AND MOUNTING	MOUNTING HEIGHT	LOCATION	CIRCUIT QTY	FED FROM	CONDUIT AND FEEDER SIZE
		WD						
EBDK	1	EBDK	EMERGENCY BYPASS DETECTION KIT	+48" A.F.F.	A193 AV&LIGHTING RACK ROOM	N/A	REFER ELECTRICAL	REFER ELECTRICAL
GJB	31	JUNCTION BOX - ELECTRIC 1	GRID IRON JUNCTION BOX, SERVING ELECTRICS LINESET	GRID IRON	GRID IRON	24-20A	LCP2	REFER ELECTRICAL
GJB	32	JUNCTION BOX - ELECTRIC 2	GRID IRON JUNCTION BOX, SERVING ELECTRICS LINESET	GRID IRON	GRID IRON	24-20A	LCP2	REFER ELECTRICAL
GJB	33	JUNCTION BOX - ELECTRIC 3	GRID IRON JUNCTION BOX, SERVING ELECTRICS LINESET	GRID IRON	GRID IRON	24-20A	LCP2	REFER ELECTRICAL
GJB	34	JUNCTION BOX - ELECTRIC 4	GRID IRON JUNCTION BOX, SERVING ELECTRICS LINESET	GRID IRON	GRID IRON	1-20A	LCP2	REFER ELECTRICAL
GJB	101	JUNCTION BOX - ORCHESTRA SHELL 1	GRID IRON JUNCTION BOX, SERVING LIGHTING ON ORCHESTRA SHELL CEILING LINESET	GRID IRON	GRID IRON	1-20A	LCP1	REFER ELECTRICAL
GJB	102	JUNCTION BOX - ORCHESTRA SHELL 2	GRID IRON JUNCTION BOX, SERVING LIGHTING ON ORCHESTRA SHELL CEILING LINESET	GRID IRON	GRID IRON	1-20A	LCP1	REFER ELECTRICAL
GJB	103	JUNCTION BOX - ORCHESTRA SHELL 3	GRID IRON JUNCTION BOX, SERVING LIGHTING ON ORCHESTRA SHELL CEILING LINESET	GRID IRON	GRID IRON	1-20A	LCP1	REFER ELECTRICAL
LCP	1	LCP-48 (SENS-IQ)	MAINS-FED MOTORIZED BREAKER PANEL WITH (24) BREAKERS	WALL	A193 AV&LIGHTING RACK ROOM	48-20A	REFER ELECTRICAL	REFER ELECTRICAL
LCP	2	LCP-48 (SENS-IQ)	MAINS-FED MOTORIZED BREAKER PANEL WITH (24) BREAKERS	WALL	A193 AV&LIGHTING RACK ROOM	48-20A	REFER ELECTRICAL	REFER ELECTRICAL
LRP	1	LRP-48 (ECHO)	FEEDTHROUGH RELAY PANEL WITH (48) RELAYS	WALL	A193 AV&LIGHTING RACK ROOM	48-20A	REFER ELECTRICAL	REFER ELECTRICAL

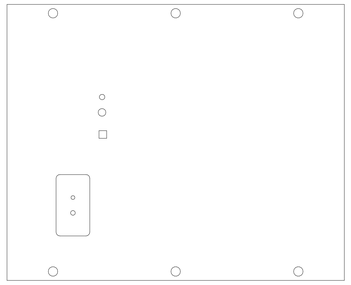
THEATRICAL CONTROL PANEL SCHEDULE

GENERAL NOTES
1. "VERIFY" = FINAL COLOR SELECTION BY ARCHITECT AND SPECIFIER AT SUBMITTAL PHASE. FOR BIDDING PURPOSES, ASSUME CUSTOM COLOR WITH SAMPLE VERIFICATION.
2. "MFR" = MANUFACTURER'S DEFAULT COLOR.

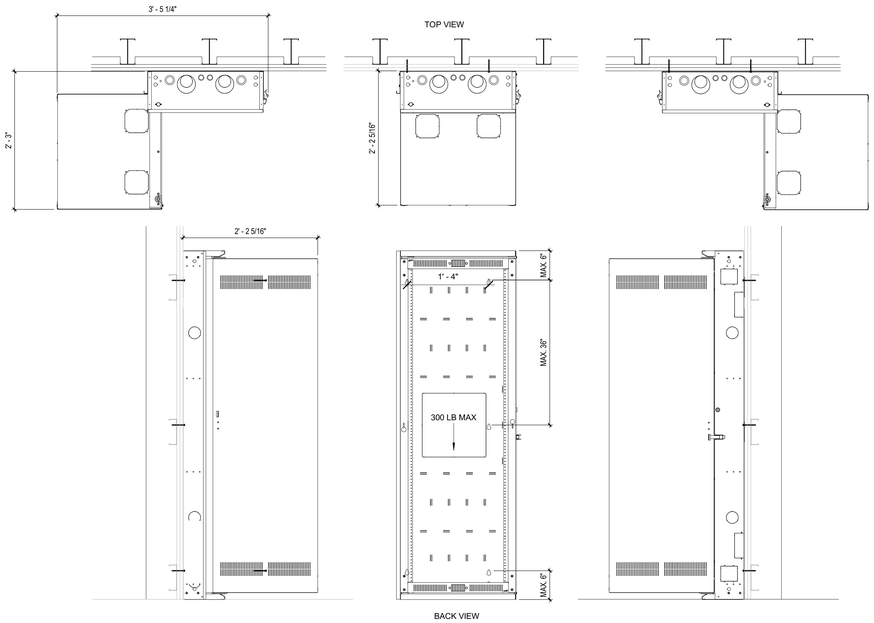
Control Device Type	Control Device #	DEVICE TYPE	DESCRIPTION AND MOUNTING	COLOR	MOUNTING HEIGHT	LOCATION	FED FROM	Comments
ALP	1	FLOOR RACK - 35RU	LIGHTING NETWORK RACK WITH ARCH. LIGHTING CONTROL PROCESSOR. REFER SPECIFICATIONS.	BLACK	FLOOR	A193 AV&LIGHTING RACK ROOM	N/A	REQUIRES (1)20A
DEBC	1	DEBC-6	DMX EMERGENCY BYPASS CONTROLLER 6-PORT	MFR	+48" A.F.F.	A193 AV&LIGHTING RACK ROOM	ALP-01	



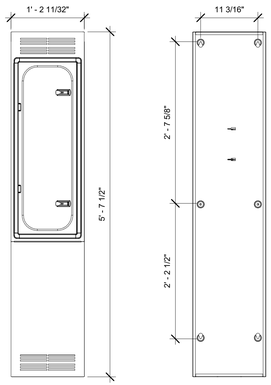
EBDK (EMERGENCY BYPASS DETECTION KIT)
SCALE: 3" = 1'-0"



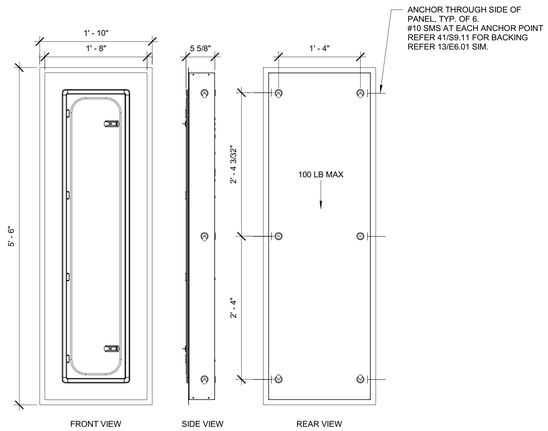
DMX EMERGENCY BYPASS CONTROLLER WITH (1) OUTPUTS
DEBC-1 (DMX EMER. BYPASS CONT.)
SCALE: 6" = 1'-0"



ALP1
SCALE: 1" = 1'-0"



FEED-THRU RELAY PANEL (LRP-1)
SCALE: 1" = 1'-0"



MAINS FED RELAY PANEL (LCP-1)
SCALE: 1" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

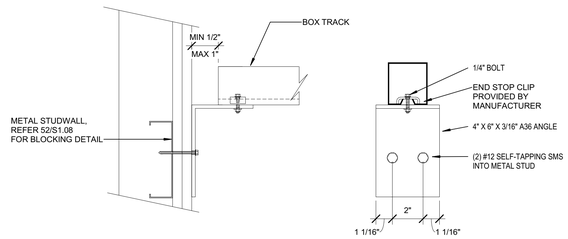
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL RACK & PANEL PHYSICAL PROPERTIES

QT5.15

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:40 AM



BOX TRACK CONNECTION

9 / QT5.21 DRAPERY TRACK END BRACKETS

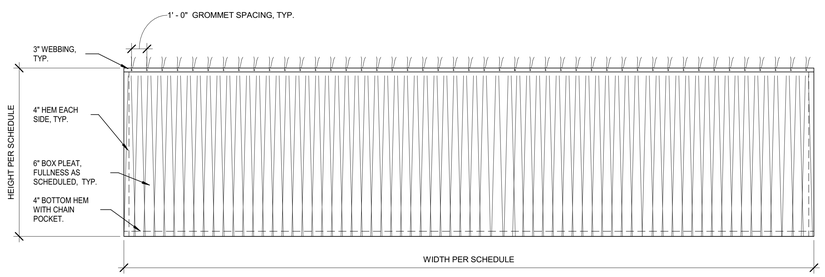
SCALE: 3" = 1'-0"

STAGE AND ACOUSTIC DRAPERY SCHEDULE

QTY. TO FURNISH	DRAPERY TYPE	COLOR	FINISHED DIMENSIONS (PER PANEL) ADDED FULLNESS	WIDTH	HEIGHT	SIDE HEM RETURN ONSTAGE	OFFSTAGE	BOTTOM HEM	LOCATION	KEY NOTES
1	FIRE CURTAIN		100%	65'-0"	30'-0"					
1	D1 - VALANCE	ARCH	100%	60'-0"	12'-0"	4"	4"	2" + CHAIN POCKET		1
2	D2- MAIN DRAPE	ARCH	100%	35.'-0"	30'-0"	6"	6"	8" + CHAIN POCKET AND FLAP		1, 2
4	D3 - BORDER	BLACK	FLAT	60'-0"	12'-0"	4"	4"	4" CHAIN POCKET		3
4	D4 - LEG	BLACK	FLAT	10'-0"	30'-0"	8"	8"	4" CHAIN POCKET		3
4	D5 - TRAVELER PANEL	BLACK	FLAT	32'-0"	30'-0"	4"	4"	6" + CHAIN POCKET		2
1	D6 - BLACK SCRIM	BLACK	FLAT	60-0"	30'-0"	4"	4"	5" FLAT + PIPE POCKET		3
1	D7 - IFR CYCLORAMA	WHITE	FLAT	60'-0"	30'-0"	4"	4"	5" FLAT + PIPE POCKET WITH FLAP		3
8	D8 - MASKING TAB PANEL	BLACK	FLAT	10'-0"	24'-6"	4"	4"	4" CHAIN POCKET	STAGE LEFT & STAGE RIGHT	2
1	AD1 - ACOUSTIC DRAPE	BLACK	100%	80'-0"	7'-9 1/2"	4"	4"	4" CHAIN POCKET	CATWALK	2
1	AD2 - ACOUSTIC DRAPE	BLACK	100%	80'-0"	7'-9 1/2"	4"	4"	4" CHAIN POCKET	CATWALK	2
1	AD3 - ACOUSTIC DRAPE	BLACK	100%	30'-0"	7'-9 1/2"	4"	4"	4" CHAIN POCKET	CATWALK	2
1	AD4 - ACOUSTIC DRAPES	BLACK	100%	30'-0"	7'-9 1/2"	4"	4"	4" CHAIN POCKET	CATWALK	2

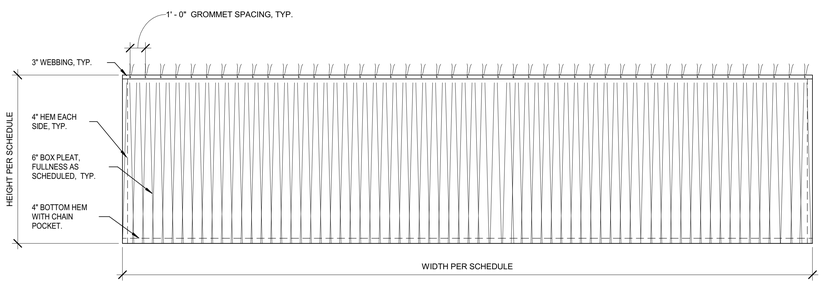
NOTES:
1) REFER TO DRAWINGS FOR INSTALLATION LOCATIONS OF DRAPERY.
2) ALL DRAPERY DIMENSIONS SHALL BE FIELD-VERIFIED AGAINST INSTALLED BATTEN AND TRACK ELEVATIONS PRIOR TO COMMENCEMENT OF SEWING.
3) REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4) PROVIDE 1 HAMPER FOR THE DRAPERY STORAGE.

KEY NOTES:
1) REFER TO ARCHITECTURAL FINISH SCHEDULE FOR DRAPERY COLOR SELECTION.
2) CLIP TO TRAVELER TRACK CARRIERS USING SNAP CLIPS (TO BE FURNISHED BY DRAPERY MANUFACTURER).
3) TIE DIRECTLY TO PIPE BATTEN OR RAILING WHERE SHOWN USING TIE LINE (TO BE FURNISHED BY DRAPERY MANUFACTURER).



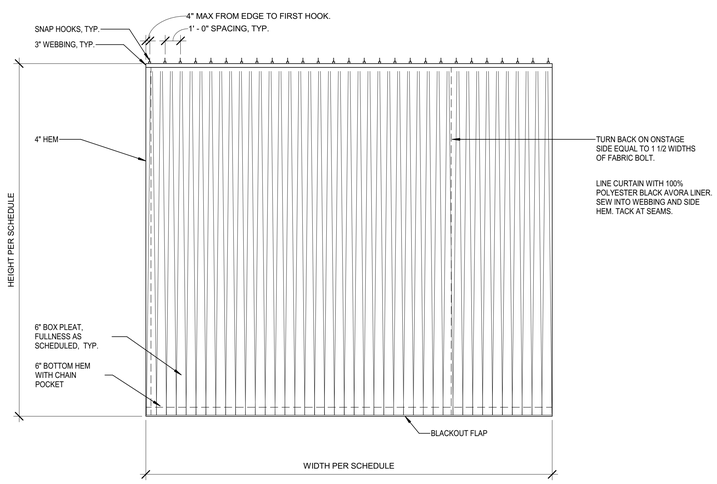
6 / QT5.21 HOUSE VALANCE DETAIL

SCALE: 1/4" = 1'-0"



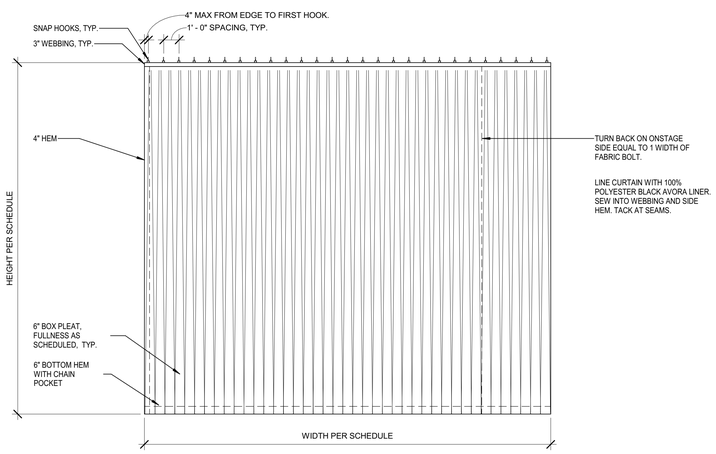
5 / QT5.21 MASKING BORDER DETAIL

SCALE: 1/4" = 1'-0"



4 / QT5.21 HOUSE CURTAIN DETAIL

SCALE: 1/4" = 1'-0"



3 / QT5.21 VELOUR TRAVELER W/ FULLNESS DETAIL

SCALE: 1/4" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

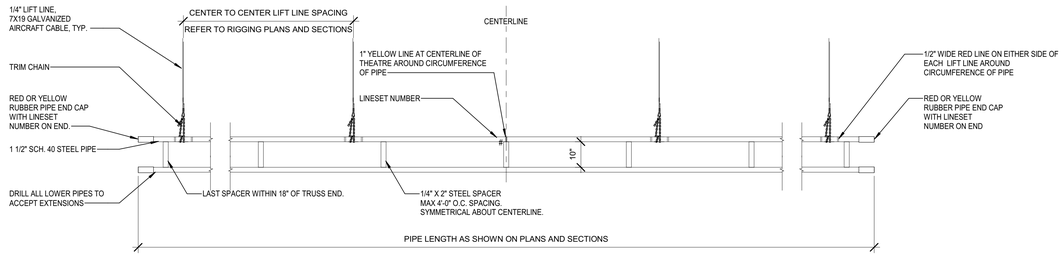
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL & ACOUSTIC DRAPERY DETAILS

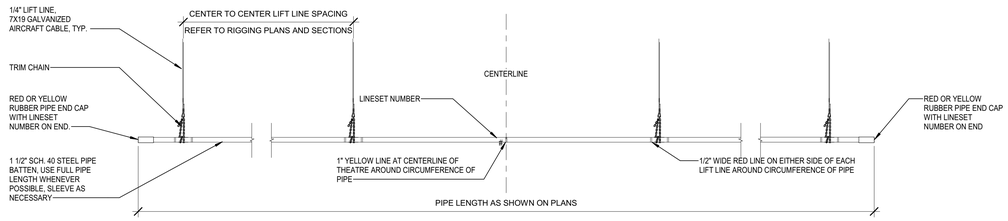
QT5.21

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:47 AM



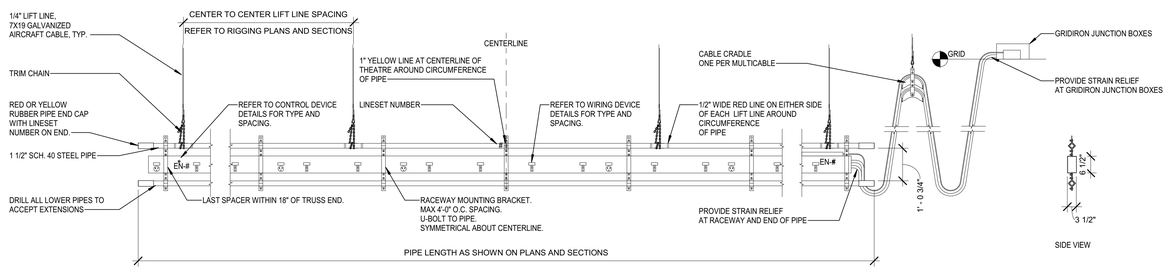
NOTE:
- SPLICE AS NECESSARY, PER DETAIL ON THIS SHEET, TO ACHEIVE LENGTH.
- DRILL ALL TRUSS SUCH THAT COMPONENTS ARE INTERCHANGEABLE.

8 / QT5.31 TYPICAL TRUSS BATTEN DETAIL
SCALE: 1/2" = 1'-0"



NOTE:
- SPLICE AS NECESSARY, PER DETAIL ON THIS SHEET, TO ACHEIVE LENGTH.
- DRILL ALL PIPES TO ACCEPT EXTENSION PIPES.
- DRILL ALL PIPES SUCH THAT COMPONENTS ARE INTERCHANGEABLE.

7 / QT5.31 TYPICAL PIPE BATTEN DETAIL
SCALE: 1/2" = 1'-0"



NOTE:
- SPLICE AS NECESSARY, PER DETAIL ON THIS SHEET, TO ACHEIVE LENGTH.
- DRILL ALL TRUSS SUCH THAT COMPONENTS ARE INTERCHANGEABLE.

6 / QT5.31 TYPICAL ELECTRIC BATTEN DETAIL1
SCALE: 1/2" = 1'-0"

RIGGING LINESET SCHEDULE

REFER TO SPECIFICATION SECTIONS 11 61 33, 11 61 36, AND 11 61 39

LINESET...	TYPE	BATTEN DIST. TO PLASTER...	CAPACI...	ARBOR...	BATTEN TRI... IN	OUT	BATTEN...	BATTEN...	BATTEN TYPE	RIGGING NOTES
FC	FIRE CURTAIN	3"	NA	NA	0'-0"	27'-0"	FIRE CURTAIN	32'-0"	PIPE	
LS1	COUNTERWEI...	1'-0"	1800 LB	8 FT	4'-0"	61'-0"	VALANCE	60'-0"	PIPE	PROSCENIUM VALANCE
LS2	COUNTERWEI...	2'-0"	1800 LB	8 FT	4'-0"	61'-0"	MAIN	60'-0"	PIPE	MAIN CURTAIN
LS3	COUNTERWEI...	3'-0"	1800 LB	8 FT	4'-0"	61'-0"	LEGS	60'-0"	PIPE	1st LEGS
LS4	COUNTERWEI...	4'-0"	2000 LB	NA	4'-0"	61'-0"	1st ELEC.	60'-0"	TWO PIPES	w/ BRACKETS AND CONN....
LS5	COUNTERWEI...	5'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS6	PACKAGE HOIST	6'-0"	3000 LB	NA	4'-0"	61'-0"	CEILING	60'-0"	LADDER...	ACOUSTIC CEILING #1
LS7	COUNTERWEI...	8'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS8	COUNTERWEI...	9'-0"	1800 LB	8 FT	4'-0"	61'-0"	BORDER	60'-0"	PIPE	1st BORDER
LS9	COUNTERWEI...	10'-0"	1800 LB	8 FT	4'-0"	61'-0"	LEGS	60'-0"	PIPE	2nd LEGS
LS10	COUNTERWEI...	11'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS11	PACKAGE HOIST	12'-0"	2000 LB	NA	4'-0"	61'-0"	2nd ELEC.	60'-0"	TWO PIPES	w/ BRACKETS AND CONN....
LS12	COUNTERWEI...	13'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS13	COUNTERWEI...	14'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS14	PACKAGE HOIST	15'-0"	3000 LB	NA	4'-0"	61'-0"	CEILING	60'-0"	LADDER...	ACOUSTIC CEILING #2
LS15	COUNTERWEI...	17'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS16	COUNTERWEI...	18'-0"	1800 LB	8 FT	4'-0"	61'-0"	BORDER	60'-0"	PIPE	2nd BORDER
LS17	COUNTERWEI...	19'-0"	1800 LB	NA	4'-0"	61'-0"	TRAVELER	60'-0"	PIPE	MID-STAGE TRAVELER
LS18	COUNTERWEI...	20'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS19	PACKAGE HOIST	21'-0"	2000 lb	NA	4'-0"	61'-0"	3rd ELEC.	60'-0"	TWO PIPES	w/ BRACKETS AND CONN....
LS20	COUNTERWEI...	22'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS21	COUNTERWEI...	23'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS22	PACKAGE HOIST	24'-0"	3000 LB	NA	4'-0"	61'-0"	CEILING	60'-0"	LADDER...	ACOUSTIC CEILING #3
LS23	COUNTERWEI...	26'-0"	1800 LB	8 FT	4'-0"	61'-0"	BORDER	60'-0"	PIPE	3rd BORDER
LS24	COUNTERWEI...	27'-0"	1800 LB	8 FT	4'-0"	61'-0"	LEGS	60'-0"	PIPE	3rd LEGS
LS25	COUNTERWEI...	28'-0"	1800 LB	8 FT	4'-0"	61'-0"	SCRIM	60'-0"	PIPE	BLACK SCRIM
LS26	PACKAGE HOIST	29'-0"	2000 LB	NA	4'-0"	61'-0"	4TH ELEC.	60'-0"	TWO PIPES	w/ BRACKETS AND CONN....
LS27	COUNTERWEI...	30'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS28	COUNTERWEI...	31'-0"	1800 LB	8 FT	4'-0"	61'-0"	UTILITY	60'-0"	PIPE	
LS29	COUNTERWEI...	32'-0"	1800 LB	8 FT	4'-0"	61'-0"	TRAVELER	60'-0"	PIPE	UPSTAGE TRAVELER
LS30	COUNTERWEI...	33'-0"	1800 LB	8 FT	4'-0"	61'-0"	CYCLORAMA	60'-0"	PIPE	CYCLORAMA

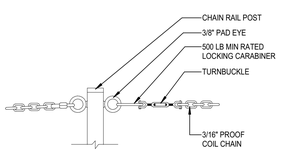
NOTES:

1) REFER TO SPECIFICATION FOR LOOSE EQUIPMENT TO BE FURNISHED FOR SUPPLEMENTAL RIGGING

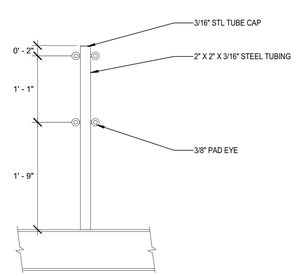
KEYNOTES:

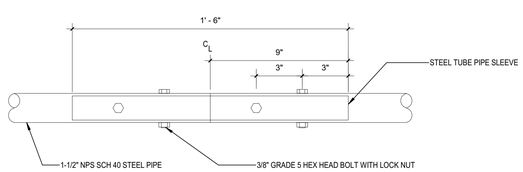
1) DISTANCE MEASURED HORIZONTALLY FROM CENTER OF BATTEN OR ARBOR TO PLASTER LINE REFERENCED ON DRAWINGS.

2) ALL TRIMS MEASURED TO BOTTOM OF PIPE

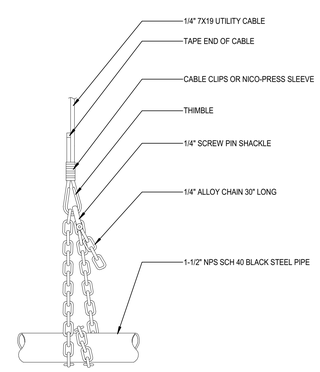


5 / QT5.31 TYPICAL POST AND CHAIN RAILING
SCALE: 1" = 1'-0"

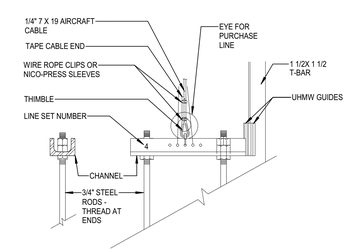




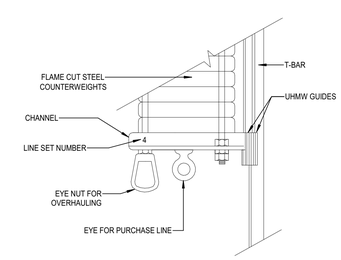
4 / QT5.31 TYP. PIPE SLEEVE DETAIL
SCALE: 3" = 1'-0"



3 / QT5.31 TYP. TRIM CHAIN DETAIL
SCALE: 3" = 1'-0"



2 / QT5.31 TYP. COUNTERWEIGHT ARBOR - TOP DETAIL
SCALE: 1 1/2" = 1'-0"



1 / QT5.31 TYP. COUNTERWEIGHT ARBOR - BOTTOM DETAIL
SCALE: 1 1/2" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

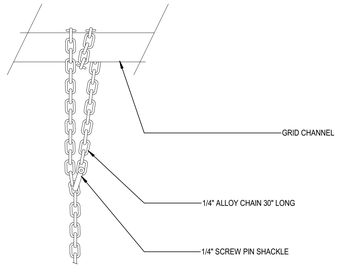
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

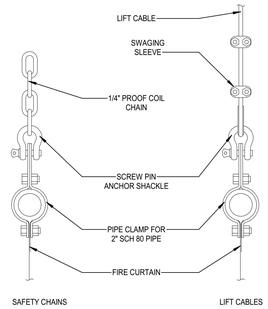
THEATRICAL RIGGING DETAILS

QT5.31

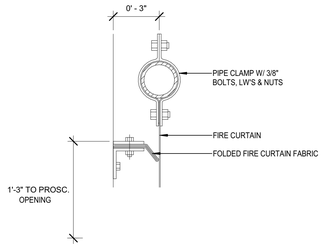
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:54 AM



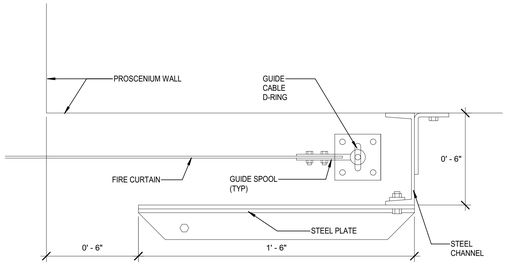
5 QT5.33 TYP. GRID CHANNEL STAY CHAIN DETAIL
SCALE: 3" = 1'-0"



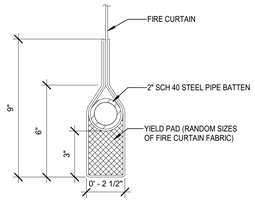
4 QT5.33 TYP. PIPE CLAMP DETAILS - FIRE CURTAIN
SCALE: 3" = 1'-0"



3 QT5.33 TYP. SMOKE SEAL
SCALE: 3" = 1'-0"



2 QT5.33 TYP. SMOKE POCKET PLAN DETAIL
SCALE: 3" = 1'-0"



1 QT5.33 TYP. YIELD PAD
SCALE: 3" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL RIGGING DETAILS, FIRE CURTAIN

QT5.33

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:53:58 AM

GENERAL NOTES:
1. SIGNAGE SHOWN IN FULL SIZE
2. CUT FROM TWO LAYER PLASTIC, WHITE WITH BLACK LETTERING.
3. MIN 1/8" TEXT HEIGHT.
4. INSTALL IN THE FOLLOWING LOCATIONS
4.1 MAIN
(1) AT OPERATING RAIL ON STAGE LEVEL
4.2 OPERATING THE COUNTERWEIGHT SYSTEM
(1) AT THE OPERATING RAIL ON STAGE LEVEL
(1) AT THE OPERATING RAIL AT GALLERY LEVEL
4.3 OPERATING THE MOTORIZED RIGGING SYSTEM
(1) AT THE MOTORIZED RIGGING CONSOLE
4.4 LOADING WEIGHT
(1) AT THE LOADING GALLERY
4.5 LOADING GALLERY CAPACITIES
(1) ONE ON EACH END OF THE LOADING GALLERY, (2) TOTAL.
4.6 GRID CAPACITIES
(1) AT EVERY ACCESS POINT TO THE GRID

LOADING GALLERY CAPACITIES

TOTAL CAPACITY

36000 POUNDS

STORAGE CAPACITY

300 PSF

NOMINAL WEIGHTS OF 6" COUNTERWEIGHTS:

1/2" THICKNESS	11 POUNDS
1" THICKNESS	22 POUNDS
2" THICKNESS	45 POUNDS

WARNING! DO NOT STACK BRICKS ABOVE THE KICK RAILS.

GRID CAPACITIES

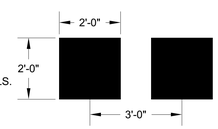
WALKING SURFACE CAPACITY*

60 PSF

CONCENTRATED LOADS*

2000 LBS OVER 4 SQUARE FOOT AREA OR 500 PSF OVER 4 SQUARE FOOT AREA. CONCENTRATED LOADS CANNOT OCCUR CLOSER THAN 3FT APART, OVER NO MORE THAN 40% OF THE GRID AREA.

DO NOT LOAD INDIVIDUAL 4" GRID CHANNELS.



USE A HOIST STAND, PLATE OR PIPE TO DISTRIBUTE THE LOAD OVER SEVERAL CHANNELS.

* NOT INCLUDING STAGE RIGGING SYSTEM LOAD.

4 QT5.36 RIGGING CAPACITY SIGNAGE - GALLERIES
SCALE: 12" = 1'-0"

OPERATING THE MOTORIZED RIGGING SYSTEM

WARNING! IMPROPER OPERATION OF RIGGING SYSTEMS MAY RESULT IN SERIOUS INJURY OR DEATH.

ONLY TRAINED PERSONNEL MAY OPERATE THE RIGGING SYSTEM.

THESE INSTRUCTIONS ARE INTENDED TO SUPPLEMENT PROPER TRAINING.

1. TURN ON THE CONTROLLER AND ENTER THE PASS CODE.

1. IDENTIFY AND INSPECT THE LINESET TO BE MOVED.
   CHECK THE BATTEN PATH FOR OBSTRUCTIONS. CLEAR OBSTRUCTIONS AND ASSIGN SPOTTERS AS NECESSARY.

   LOAD THE APPROPRIATE LINESET(S) INTO THE CONTROLLER.

   FOR VARIABLE SPEED HOISTS, SET APPROPRIATE SPEEDS FOR EACH HOIST.

2. ANNOUNCE THE MOVE:
   SPEAKING LOUDLY AND CLEARLY ANNOUNCE: WHAT IT IS, WHERE IT IS, WHAT IT'S DOING. (EX: ATTENTION ON DECK, LINESET 2, DOWNSTAGE, COMING IN TO THE DECK).

   WAIT FOR A RESPONSE. IF YOU DO NOT HEAR A RESPONSE, CALL OUT THE ANNOUNCEMENT AGAIN.

3. MOVE THE LINESET.
   WATCH THE STAGE. WHILE WATCHING THE PATH OF THE BATTEN (NOT THE CONTROLLER SCREEN), PUSH AND HOLD THE APPROPRIATE BUTTON TO MOVE THE SCENERY "IN" TOWARD THE FLOOR OR "OUT" TOWARD THE GRID.

   STAY ALERT. WHEN IN DOUBT, STOP THE LINESET(S) BY LETTING GO OF THE BUTTON.

   LISTEN. IF THE MOTOR IS WHINING LOUDLY, THERE ARE GRINDING NOISES, OR ANYTHING SOUNDS OUT OF THE ORDINARY, STOP THE HOIST AND INSPECT THE LINESET MORE CLOSELY FOR PROBLEMS. IF YOU CANNOT FIND OR RESOLVE THE PROBLEM, CONTACT A QUALIFIED RIGGER FOR ASSISTANCE. DO NOT OPERATE A LINESET THAT IS MAKING STRANGE NOISES.

4. LOCK THE CONTROLLER
   WHEN THE MOVE IS COMPLETE, RELOCK THE CONTROLLER.

3 QT5.36 RIGGING CAPACITY SIGNAGE - OPERATION MOTORIZED
SCALE: 12" = 1'-0"

OPERATING THE COUNTERWEIGHT SYSTEM

WARNING! IMPROPER OPERATION OF RIGGING SYSTEMS MAY RESULT IN SERIOUS INJURY OR DEATH.

ONLY TRAINED PERSONNEL MAY OPERATE THE RIGGING SYSTEM.

THESE INSTRUCTIONS ARE INTENDED TO SUPPLEMENT PROPER TRAINING WHEN THE SYSTEM IS BEING OPERATED "IN WEIGHT" OR PROPERLY BALANCED. OPERATION OF A SYSTEM THAT IS OUT OF WEIGHT OR WHEN LINESETS ARE BEING LOADED OR UNLOADED SHOULD NOT BE ATTEMPTED WITHOUT SIGNIFICANT FURTHER TRAINING.

1. IDENTIFY AND INSPECT THE LINESET TO BE MOVED.
   CHECK THE BATTEN PATH FOR OBSTRUCTIONS. CLEAR OBSTRUCTIONS AND ASSIGN SPOTTERS AS NECESSARY.

   IS THERE SLACK IN THE OPERATING LINE? IF ONE SIDE OF THE LINE IS SLACK, THEN THE LINESET IS OUT OF BALANCE. DO NOT OPERATE A LINESET THAT IS OUT OF BALANCE.

2. PREPARE TO MOVE THE LINESET.
   PUT A HALF TWIST IN THE OPERATING LINE.
   UNLOCK THE LINESET.
   ANNOUNCE LOUDLY: WHERE IT IS, WHAT IT IS, WHAT IT'S DOING. (EX: DOWNSTAGE, LINESET 2, COMING IN).

3. MOVE THE LINESET.
   UNTWIST. IF THE LINESET MOVES AS YOU ARE UNTWISTING THE LINE, IT MAY BE OUT OF WEIGHT. STOP AND LOCK THE SET AGAIN. SEEK HELP FROM A QUALIFIED RIGGER.

   WATCH THE STAGE. WHILE WATCHING THE PATH OF THE BATTEN (NOT THE OPERATING LINE), PULL ON THE FRONT LINE TO BRING THE BATTEN IN OR THE BACK LINE TO TAKE THE BATTEN OUT.

   NEVER MOVE A LINESET FASTER THAN YOU CAN STOP IT. THE OPERATOR IS RESPONSIBLE FOR THE MOVEMENT OF THE LINESET AND THE SCENERY ATTACHED TO IT. THE OPERATOR MUST REMAIN IN CONTROL THROUGHOUT THE MOVEMENT.

   STAY ALERT. WHEN IN DOUBT, STOP.
   NEVER FORCE A LINESET TO MOVE . IF THE LINESET APPEARS TO BE STUCK, OR BECOMES DIFFICULT TO MOVE, STOP. DETERMINE THE CAUSE BEFORE CONTINUING. IF THE CAUSE CANNOT BE DETERMINED, LOCK THE LINESET AND SEEK HELP FROM A QUALIFIED RIGGER.

4. LOCK THE LINESET.
   WHEN THE MOVE IS COMPLETE, RELOCK THE LINESET. NEVER LEAVE AN UNLOCKED LINESET UNATTENDED.

2 QT5.36 RIGGING CAPACITY SIGNAGE - OPERATION CW
SCALE: 12" = 1'-0"

LOADING WEIGHT

WARNING! IMPROPER OPERATION OF RIGGING SYSTEMS MAY RESULT IN SERIOUS INJURY OR DEATH.

ONLY TRAINED PERSONNEL MAY OPERATE THE RIGGING SYSTEM.

THESE INSTRUCTIONS ARE INTENDED TO SUPPLEMENT PROPER TRAINING. CHANGING WEIGHT ON THE COUNTERWEIGHT SYSTEM MUST BE CAREFULLY COORDINATED BY A QUALIFIED RIGGER. DO NOT ADD OR REMOVE WEIGHTS FROM A LINESET UNLESS INSTRUCTED TO DO SO.

1. FIND A PARTNER
   LOADING WEIGHT REQUIRES AT LEAST TWO PEOPLE.
2. IS THE LINESET LOCKED, TWISTED OR TIED OFF?
   COMMUNICATE. BEFORE CHANGING ANY WEIGHT, ASK THE OPERATOR IF THE LINESET HAS BEEN SECURED SO THAT IT DOES NOT MOVE AS WEIGHTS ARE LOADED OR REMOVED.
3. IS THE WEIGHT DOWN?
   GOOD PRACTICE IS TO ENSURE THAT THE WEIGHT IS ALWAYS DOWN. EX. LOAD THE LIGHTING INSTRUMENTS ON THE PIPE NEAR THE FLOOR BEFORE LOADING WEIGHT ON THE ARBOR. CONVERSELY, ALWAYS TAKE THE WEIGHT OFF THE ARBOR BEFORE REMOVING THE WEIGHT FROM THE BATTEN.
4. COMMUNICATE AND CONFIRM
   THE RIGGING SUPERVISOR SHOULD CALL OUT HOW MUCH WEIGHT NEEDS TO BE ON WHAT LINESET (EX. LOAD LINESET 12 TO 10 BRICKS ABOVE PIPE WEIGHT). REPEAT THOSE INSTRUCTIONS BACK TO THE RIGGING SUPERVISOR BEFORE ADDING OR REMOVING WEIGHTS.
5. CLEAR THE RAIL
   NO ONE SHOULD BE WORKING UNDER YOU AS YOU ADD OR REMOVE WEIGHT FROM THE ARBOR.
6. LIFT THE SPREADER PLATES
   LIFT THE SPREADER PLATES AND CLIP THEM OUT OF THE WAY.
7. ADD OR REMOVE WEIGHT.
   ONE PERSON LOADS WEIGHT, WHILE THE OTHER PERSON BRINGS THE WEIGHTS TO THEM.
8. INSERT SPREADER PLATES WHERE INDICATED.
9. SECURE THE WEIGHT.
   ONCE ALL OF THE WEIGHT HAS BEEN ADDED OR REMOVED, SLIDE THE UNUSED SPREADER PLATES DOWN ONTO THE WEIGHT STACK. HAND-TIGHTEN THE THUMBSCREW. SECURE THE WEIGHT BEFORE THE LINESET IS MOVED.
10. COMMUNICATE THAT THE WEIGHT SHIFT IS COMPLETE.
    CALL OUT THE WEIGHT AGAIN. PAUSE FOR FURTHER INSTRUCTIONS.

5 QT5.36 RIGGING CAPACITY SIGNAGE - LOADING WEIGHT
SCALE: 12" = 1'-0"

RIGGING SYSTEM INFORMATION

WARNING: IMPROPER OPERATION OF RIGGING SYSTEMS MAY RESULT IN SERIOUS INJURY
OR DEATH. ONLY TRAINED PERSONNEL MAY OPERATE THE RIGGING SYSTEM.

COUNTERWEIGHT SYSTEM

GENERAL PURPOSE COUNTERWEIGHT SETS:

X' ARBOR CAPACITY	XXXX POUNDS

NOMINAL WEIGHTS OF 6" COUNTERWEIGHTS:

1/2" THICKNESS	11 POUNDS
1 INCH THICKNESS	22 POUNDS
2 INCH THICKNESS	45 POUNDS

COUNTERWEIGHT BATTEN CAPACITIES:

UNIFORMLY DISTRIBUTED LOAD	35 PLF
POINT LOAD AT LIFT LINE	700 POUNDS
POINT LOAD AT CENTER OF SPAN	175 POUNDS

LOADING BRIDGE CAPACITY:

TOTAL CAPACITY	XXXXX POUNDS
STORAGE CAPACITY	XXX PSF

WARNING! DO NOT STACK BRICKS ABOVE THE KICK RAILS.

REMOVE OR TETHER ALL LOOSE ITEMS (PHONES, WALLETS, PENCILS) BEFORE CLIMBING UP TO LEVELS ABOVE THE STAGE, INCLUDING THE OPERATING OR LOADING GALLERIES.

INSTALLED BY:

COMPANY, INC.
STREET ADDRESS
CITY, ST 00000
XXX-XXX-XXXX
www.company.com

MANUFACTURED BY:

COMPANY, INC.
STREET ADDRESS
CITY, ST 00000
XXX-XXX-XXXX
www.company.com

COMPANY, INC.
STREET ADDRESS
CITY, ST 00000
XXX-XXX-XXXX
www.company.com

COMMISSIONED: AUGUST 2018

SPACE PROVIDED FOR INSTALLER OR MANUFACTURER LOGO.

MOTORIZED SYSTEMS

MOTORIZED LINESET CAPACITIES:

FIRE CURTAIN	XXXX POUNDS
FIXED SPEED SETS (LS#, #, #)	XXXX POUNDS
VARIABLE SPEED SETS (LS#, #, #)	XXXX POUNDS
TAB SETS	XXXX POUNDS

MOTORIZED BATTEN CAPACITIES:

UNIFORMLY DISTRIBUTED LOAD	35 PLF
POINT LOAD AT LIFT LINE	400 POUNDS
POINT LOAD AT CENTER OF SPAN	175 POUNDS

GRID CAPACITY:

WALKING SURFACE CAPACITY*	60 PSF

CONCENTRATED LOADS*
2000 LBS OVER 4 SQUARE FOOT AREA OR 500 PSF OVER 4 SQUARE FOOT AREA. CONCENTRATED LOADS CANNOT OCCUR CLOSER THAN 3FT APART, OVER NO MORE THAN 40% OF THE GRID AREA.

* NOT INCLUDING STAGE RIGGING SYSTEM LOAD.

TERMINATIONS MADE WITH:

3/4" NTS NICOPRESS, GO-NO-GO GAUGE OVAL F-6

ANNUAL INSPECTION REQUIRED FOR PROPER MAINTENANCE OF THIS EQUIPMENT.

LAST INSPECTION PERFORMED BY: _____ ON: _____
COMPANY MONTH/DAY/YEAR

1 QT5.36 RIGGING CAPACITY SIGNAGE - MAIN
SCALE: 12" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

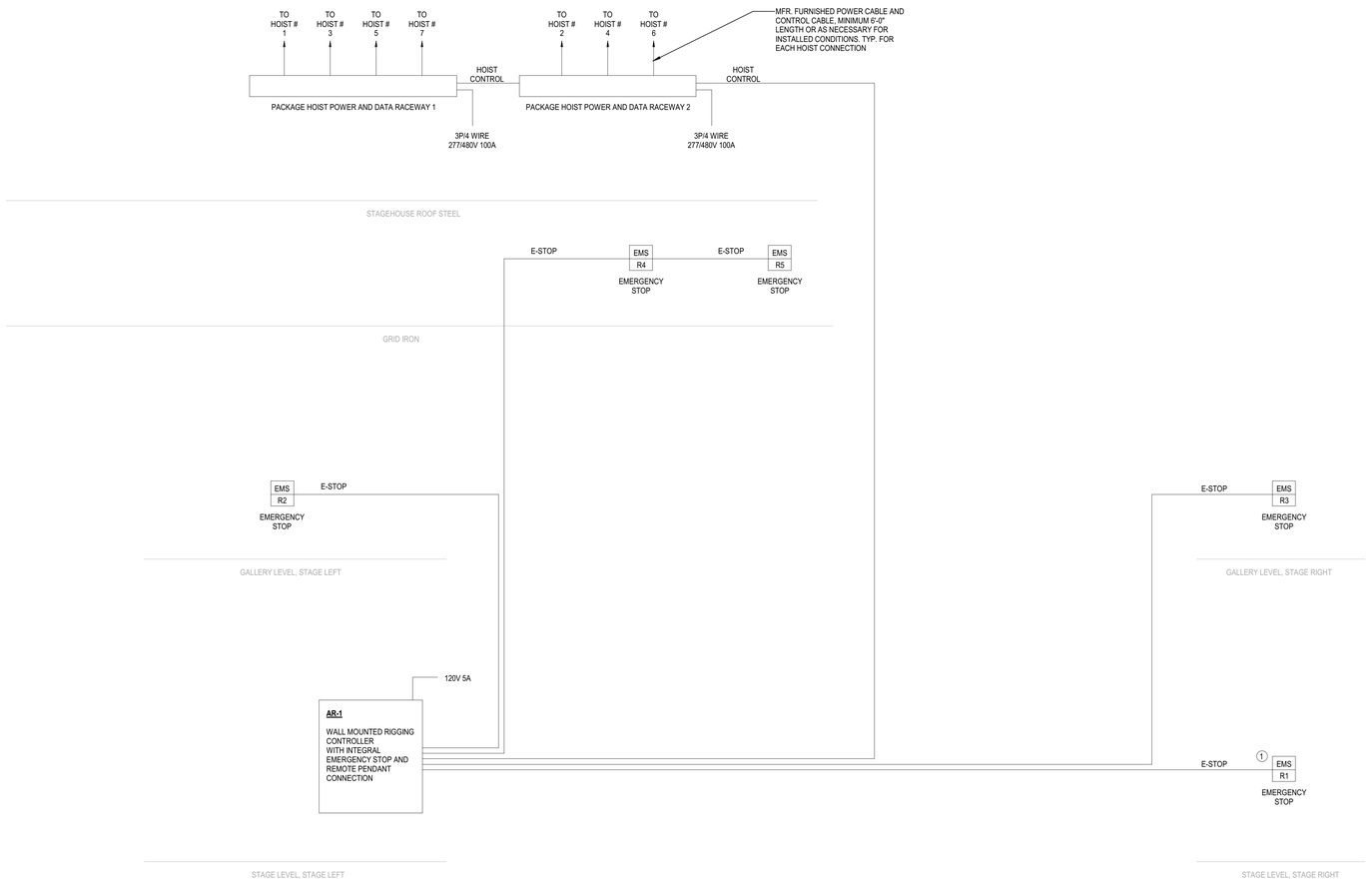
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL RIGGING DETAILS, SIGNAGE

QT5.36

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:02 AM



3 QT5.37 MOTORIZED RIGGING POWER & CONTROL DIAGRAM

SCALE: 12" = 1'-0"

WIRE TYPE LEGEND

'E-STOP' (1) BELDEN #1583A OR EQUIVALENT

'HOIST CONTROL' (1) BELDEN #1583A OR EQUIVALENT

GENERAL NOTES

1. THEATRICAL CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL COMPONENTS NECESSARY FOR A FULLY FUNCTIONAL SYSTEM SATISFYING DESIGN INTENT CONVEYED HEREIN AND IN SPECIFICATIONS.

2. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONTROL WIRE TYPES AND PATHS ON RIGGING SHOP DRAWINGS.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONTROL WIRE AND CONDUIT.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

THEATRICAL RIGGING POWER & CONTROL DIAGRAM

QT5.37

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:06 AM

WIRE TYPE LEGEND

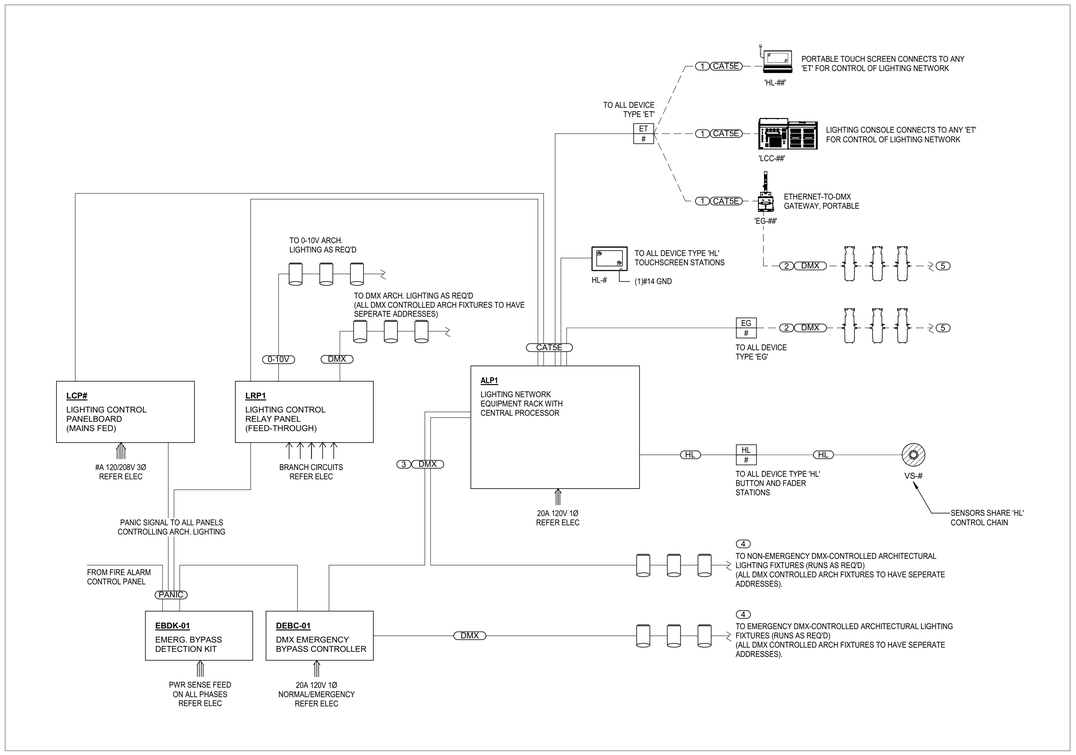
HL (1) BELDEN #8471 OR EQUIVALENT (1) #14 ESD DRAIN WIRE	LOW-VOLTAGE WIRING FOR LIGHTING CONTROL STATIONS. MAY BE DAISY-CHAIN OR STAR TOPOLOGY WITHIN LIMITS SPECIFIED BY MANUFACTURER. OBSERVE MFR'S DISTANCE LIMIT.
CAT5E (1) BELDEN #1538A (OR EQUIV.) PER HOME RUN	SACN SIGNAL ON CAT-5E CABLE TO NETWORKED DEVICES. HOME RUN ONE CABLE PER PORT ON DEVICE. MAX RUN LENGTH 100 METERS WITHOUT SIGNAL REINFORCEMENT.
DMX (1) BELDEN #1538A (OR EQUIV.) PER HOME RUN	DMX-512 SIGNAL ON CAT-5E CABLE TO DMX PORTS OR DMX LIGHTING FIXTURES. HOME RUN ONE CABLE PER PORT ON DEVICE. MAX RUN LENGTH 1,000' WITHOUT SIGNAL REINFORCEMENT. MAX (32) DEVICES (NODES) PER RUN. FOLLOW MANUFACTURER'S GUIDELINES FOR DMX OVER CATEGORY CABLE.
0-10V (2) #16	CLASS 2 WIRING FOR 0-10V ANALOG LIGHTING CONTROL. MAX RUN 400'. KEEP ALL CONTROL WIRING SEPARATE FROM LINE VOLTAGE WIRING TO MAINTAIN INTEGRITY OF CONTROL SIGNAL PER NEC 725.
PANIC (2) #16	WIRING FOR PANIC SIGNAL. PANIC SIGNAL ORIGINATES AT FIRE ALARM CONTROL PANEL. REFER ELECTRICAL.
MFR CABLE TYPE PER MANUFACTURER	REFER MFR'S SHOP DRAWINGS.

GENERAL NOTES

1. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONTROL WIRE TYPES AND PATHS ON MANUFACTURER SHOP DRAWINGS.
2. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL WIRE AND CONDUIT.
3. WHERE CODE REQUIREMENTS APPLY, USE RISER OR PLENUM RATED CABLE TYPES EQUIVALENT TO CABLE TYPE LISTED HERE.
4. THEATRICAL LIGHTING CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL COMPONENTS NECESSARY FOR A FULLY FUNCTIONAL SYSTEM SATISFYING DESIGN INTENT CONVEYED HEREIN AND IN SPECIFICATIONS.

SHEET KEY NOTES

1. CAT-5E PATCH CABLE. LOOSE EQUIPMENT PROVIDED AS PART OF THE STAGE LIGHTING FIXTURES AND ACCESSORIES PACKAGE. REFER SCHEDULES.
2. DMX-512 5-PIN XLR PATCH CABLE. LOOSE EQUIPMENT PROVIDED AS PART OF THE STAGE LIGHTING FIXTURES AND ACCESSORIES PACKAGE. REFER SCHEDULES.
3. TERMINATES AT ETHERNET-TO-DMX GATEWAY IN DESIGNATED 'ALP' CONTROL RACK. FURNISH GATEWAYS IN QUANTITIES REQUIRED. DESIGN INTENT IS THAT USER MAY ASSIGN ANY DMX UNIVERSE AND ADDRESS TO ANY DMX PORT OR LIGHTING CONTROL RUN.
4. DMX-CONTROLLED FIXTURES SHALL BE ADDRESSED BY THEATRICAL LIGHTING CONTRACTOR OR MANUFACTURER'S FACTORY-AUTHORIZED TECHNICIAN PRIOR TO TO FOCUS AND PROGRAMMING.
5. REPRESENTS MEANS OF CONTROL FOR DMX-512 ENABLED STAGE LIGHTING FIXTURES. INSTALL OF STAGE LIGHTING FIXTURES IS N.I.C. UNLESS NOTED ELSEWHERE.



1 QT6.11 LIGHTING CONTROL DIAGRAM - TYPICAL
NO SCALE

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL LIGHTING CONTROL DIAGRAM

QT6.11

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:10 AM

'LCP1' LIGHTING CONTROL PANELBOARD SCHEDULE

FED FROM: REFER ELECTRICAL — 100A

MAIN FEED: 120/208V - MCB — **LOCATION:** — WALL

CIRCUIT BREAKER		DMX-512 CONTROL									
NO.	RATING	UNIV.	ADDR.	LOAD LOCATION	DEVICE / FIXTURE	NOTES	LIGHTING CONSOLE	HL STATIONS	TIME CLOCK	FIRE ALARM	LOSS OF POWER
1	20A	65	1	STAGE LIGHTING WIRING DEVICE	WD-01		1	1	2	6	
2	20A	65	2	STAGE LIGHTING WIRING DEVICE	WD-02		1	1	2	6	
3	20A	65	3	STAGE LIGHTING WIRING DEVICE	WD-03		1	1	2	6	
4	20A	65	4	STAGE LIGHTING WIRING DEVICE	WD-04		1	1	2	6	
5	20A	65	5	STAGE LIGHTING WIRING DEVICE	WD-05		1	1	2	6	
6	20A	65	6	STAGE LIGHTING WIRING DEVICE	WD-06		1	1	2	6	
7	20A	65	7	STAGE LIGHTING WIRING DEVICE	WD-51A		1	1	2	6	
8	20A	65	8	STAGE LIGHTING WIRING DEVICE	WD-51B		1	1	2	6	
9	20A	65	9	STAGE LIGHTING WIRING DEVICE	WD-51C		1	1	2	6	
10	20A	65	10	STAGE LIGHTING WIRING DEVICE	WD-51D		1	1	2	6	
11	20A	65	11	STAGE LIGHTING WIRING DEVICE	WD-52A		1	1	2	6	
12	20A	65	12	STAGE LIGHTING WIRING DEVICE	WD-52B		1	1	2	6	
13	20A	65	13	STAGE LIGHTING WIRING DEVICE	WD-37		1	1	2	6	
14	20A	65	14	STAGE LIGHTING WIRING DEVICE	WD-38		1	1	2	6	
15	20A	65	15	STAGE LIGHTING WIRING DEVICE	WD-39		1	1	2	6	
16	20A	65	16	STAGE LIGHTING WIRING DEVICE	WD-40		1	1	2	6	
17	20A	65	17	STAGE LIGHTING WIRING DEVICE	WD-41		1	1	2	6	
18	20A	65	18	STAGE LIGHTING WIRING DEVICE	WD-42		1	1	2	6	
19	20A	65	19	STAGE LIGHTING WIRING DEVICE	WD-43		1	1	2	6	
20	20A	65	20	STAGE LIGHTING WIRING DEVICE	WD-44		1	1	2	6	
21	20A	65	21	STAGE LIGHTING WIRING DEVICE	WD-45		1	1	2	6	
22	20A	65	22	STAGE LIGHTING WIRING DEVICE	WD-46		1	1	2	6	
23	20A	65	23	STAGE LIGHTING WIRING DEVICE	WD-47		1	1	2	6	
24	20A	65	24	STAGE LIGHTING WIRING DEVICE	WD-48		1	1	2	6	
25	20A	65	25	STAGE LIGHTING WIRING DEVICE	WD-49		1	1	2	6	
26	20A	65	26	STAGE LIGHTING WIRING DEVICE	WD-50		1	1	2	6	
27	20A	65	27	STAGE LIGHTING WIRING DEVICE	WD-51A		1	1	2	6	
28	20A	65	28	STAGE LIGHTING WIRING DEVICE	WD-51B		1	1	2	6	
29	20A	65	29	STAGE LIGHTING WIRING DEVICE	WD-52A		1	1	2	6	
30	20A	65	30	STAGE LIGHTING WIRING DEVICE	WD-52B		1	1	2	6	
31	20A	65	31	STAGE LIGHTING WIRING DEVICE	WD-61A		1	1	2	6	
32	20A	65	32	STAGE LIGHTING WIRING DEVICE	WD-61B		1	1	2	6	
33	20A	65	33	STAGE LIGHTING WIRING DEVICE	WD-62A		1	1	2	6	
34	20A	65	34	STAGE LIGHTING WIRING DEVICE	WD-62B		1	1	2	6	
35	20A	65	35	STAGE LIGHTING WIRING DEVICE	WD-63A		1	1	2	6	
36	20A	65	36	STAGE LIGHTING WIRING DEVICE	WD-63B		1	1	2	6	
37	20A	65	37	STAGE LIGHTING WIRING DEVICE	WD-71A		1	1	2	6	
38	20A	65	38	STAGE LIGHTING WIRING DEVICE	WD-71B		1	1	2	6	
39	20A	65	39	STAGE LIGHTING WIRING DEVICE	WD-72A		1	1	2	6	
40	20A	65	40	STAGE LIGHTING WIRING DEVICE	WD-72B		1	1	2	6	
41	20A	65	41	STAGE LIGHTING WIRING DEVICE	WD-73A		1	1	2	6	
42	20A	65	42	STAGE LIGHTING WIRING DEVICE	WD-73B		1	1	2	6	
43	20A	65	43	ORCHESTRA SHELL CEILING	ORCHESTRA SHELL CEILING LIGHTS	DMX	1	1	2	6	
44	20A	65	44	ORCHESTRA SHELL CEILING	ORCHESTRA SHELL CEILING LIGHTS	DMX	1	1	2	6	
45	20A	65	45	ORCHESTRA SHELL CEILING	ORCHESTRA SHELL CEILING LIGHTS	DMX	1	1	2	6	
46	20A	65	46		SPARE		1	1	2	6	
47	20A	65	47		SPARE		1	1	2	6	
48	20A	65	48		PANEL CONTROL CIRCUIT		1	1	2		
TOTAL											

NOTES:
1) THIS DEVICE IS A MAINS-FED PANEL, WITH EACH CIRCUIT DISCRETELY CONTROLLED FROM A DMX-512 NETWORK. REFER TO ELECTRICAL DRAWINGS FOR BRANCH FEEDS AND LOAD WIRING INFORMATION.
2) FINAL PROGRAMMING OF STATION CONTROLS, TIME SCHEDULES, AND OTHER PARAMETERS OF THIS NETWORK SHALL BE PERFORMED DURING COMMISSIONING, AT DIRECTION OF OWNER AND SPECIFIER.

KEYNOTES:
1) THIS CIRCUIT TOGGLED ON/OFF BY STATION PRESET OR LIGHTING CONTROL CONSOLE.
2) THIS CIRCUIT SWEEPS 'OFF' AT 12:59 AM DAILY, WITH 3 MINUTE BLINK WARNING.
3) THIS CIRCUIT CONTROLLED BY DAYLIGHT SENSORS.
4) THIS CIRCUIT CONTROLLED BY VACANCY SENSORS.
5) THIS CIRCUIT TOGGLED 'ON' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
6) THIS CIRCUIT TOGGLED 'OFF' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
7) THIS CIRCUIT TOGGLED 'ON' DURING LOSS-OF-POWER EVENT. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER. POWER TRANSFER BY ELECTRICAL.

'LCP2' LIGHTING CONTROL PANELBOARD SCHEDULE

FED FROM: REFER ELECTRICAL — 100A

MAIN FEED: 120/208V - MCB — **LOCATION:** — WALL

CIRCUIT BREAKER		DMX-512 CONTROL									
NO.	RATING	UNIV.	ADDR.	LOAD LOCATION	DEVICE / FIXTURE	NOTES	CONTROL INPUT DEVICE	LIGHTING CONSOLE	HL STATIONS	TIME CLOCK	FIRE ALARM	LOSS OF POWER
1	20A	66	1	STAGE LIGHTING WIRING DEVICE	WD-31A			1	1	2	6	
2	20A	66	2	STAGE LIGHTING WIRING DEVICE	WD-31B			1	1	2	6	
3	20A	66	3	STAGE LIGHTING WIRING DEVICE	WD-31C			1	1	2	6	
4	20A	66	4	STAGE LIGHTING WIRING DEVICE	WD-31D			1	1	2	6	
5	20A	66	5	STAGE LIGHTING WIRING DEVICE	WD-31E			1	1	2	6	
6	20A	66	6	STAGE LIGHTING WIRING DEVICE	WD-31F			1	1	2	6	
7	20A	66	7	STAGE LIGHTING WIRING DEVICE	WD-32A			1	1	2	6	
8	20A	66	8	STAGE LIGHTING WIRING DEVICE	WD-32B			1	1	2	6	
9	20A	66	9	STAGE LIGHTING WIRING DEVICE	WD-32C			1	1	2	6	
10	20A	66	10	STAGE LIGHTING WIRING DEVICE	WD-32D			1	1	2	6	
11	20A	66	11	STAGE LIGHTING WIRING DEVICE	WD-32E			1	1	2	6	
12	20A	66	12	STAGE LIGHTING WIRING DEVICE	WD-32F			1	1	2	6	
13	20A	66	13	STAGE LIGHTING WIRING DEVICE	WD-33A			1	1	2	6	
14	20A	66	14	STAGE LIGHTING WIRING DEVICE	WD-33B			1	1	2	6	
15	20A	66	15	STAGE LIGHTING WIRING DEVICE	WD-33C			1	1	2	6	
16	20A	66	16	STAGE LIGHTING WIRING DEVICE	WD-33D			1	1	2	6	
17	20A	66	17	STAGE LIGHTING WIRING DEVICE	WD-33E			1	1	2	6	
18	20A	66	18	STAGE LIGHTING WIRING DEVICE	WD-33F			1	1	2	6	
19	20A	66	19	STAGE LIGHTING WIRING DEVICE	WD-34A			1	1	2	6	
20	20A	66	20	STAGE LIGHTING WIRING DEVICE	WD-34B			1	1	2	6	
21	20A	66	21	STAGE LIGHTING WIRING DEVICE	WD-34C			1	1	2	6	
22	20A	66	22	STAGE LIGHTING WIRING DEVICE	WD-34D			1	1	2	6	
23	20A	66	23	STAGE LIGHTING WIRING DEVICE	WD-34E			1	1	2	6	
24	20A	66	24	STAGE LIGHTING WIRING DEVICE	WD-34F			1	1	2	6	
25	20A	66	25	STAGE LIGHTING WIRING DEVICE	WD-035A			1	1	2	6	
26	20A	66	26	STAGE LIGHTING WIRING DEVICE	WD-035B			1	1	2	6	
27	20A	66	27	STAGE LIGHTING WIRING DEVICE	WD-035C			1	1	2	6	
28	20A	66	28	STAGE LIGHTING WIRING DEVICE	WD-035D			1	1	2	6	
29	20A	66	29	STAGE LIGHTING WIRING DEVICE	WD-036A			1	1	2	6	
30	20A	66	30	STAGE LIGHTING WIRING DEVICE	WD-036B			1	1	2	6	
31	20A	66	31	ELECTRIC 1	WORK LIGHT			1	1	2	6	
32	20A	66	32	ELECTRIC 2	WORK LIGHT			1	1	2	6	
33	20A	66	33	ELECTRIC 3	WORK LIGHT			1	1	2	6	
34	20A	66	34	ELECTIRC 4	WORK LIGHT			1	1	2	6	
35	20A	66	35		SPARE			1	1	2	6	
36	20A	66	36		SPARE			1	1	2	6	
37	20A	66	37		SPARE			1	1	2	6	
38	20A	66	38		SPARE			1	1	2	6	
39	20A	66	39		SPARE			1	1	2	6	
40	20A	66	40		SPARE			1	1	2	6	
41	20A	66	41		SPARE			1	1	2	6	
42	20A	66	42		SPARE			1	1	2	6	
43	20A	66	43		SPARE			1	1	2	6	
44	20A	66	44		SPARE			1	1	2	6	
45	20A	66	45		SPARE			1	1	2	6	
46	20A	66	46		SPARE			1	1	2	6	
47	20A	66	47		SPARE			1	1	2	6	
48	20A	66	48		PANEL CONTROL CIRCUIT			1	1	2		
TOTAL												

NOTES:
1) THIS DEVICE IS A MAINS-FED PANEL, WITH EACH CIRCUIT DISCRETELY CONTROLLED FROM A DMX-512 NETWORK. REFER TO ELECTRICAL DRAWINGS FOR BRANCH FEEDS AND LOAD WIRING INFORMATION.
2) FINAL PROGRAMMING OF STATION CONTROLS, TIME SCHEDULES, AND OTHER PARAMETERS OF THIS NETWORK SHALL BE PERFORMED DURING COMMISSIONING, AT DIRECTION OF OWNER AND SPECIFIER.

KEYNOTES:
1) THIS CIRCUIT TOGGLED ON/OFF BY STATION PRESET OR LIGHTING CONTROL CONSOLE.
2) THIS CIRCUIT SWEEPS 'OFF' AT 12:59 AM DAILY, WITH 3 MINUTE BLINK WARNING.
3) THIS CIRCUIT CONTROLLED BY DAYLIGHT SENSORS.
4) THIS CIRCUIT CONTROLLED BY VACANCY SENSORS.
5) THIS CIRCUIT TOGGLED 'ON' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
6) THIS CIRCUIT TOGGLED 'OFF' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
7) THIS CIRCUIT TOGGLED 'ON' DURING LOSS-OF-POWER EVENT. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER. POWER TRANSFER BY ELECTRICAL.

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL LIGHTING MAINS FED PANEL SCHEDULES

QT6.12

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:18 AM

'LRP1' LIGHTING CONTROL RELAY PANEL SCHEDULE

FED FROM: VARIES
MAIN FEED: NONE
LOCATION:
MAIN BREAKER: NONE
MOUNTING: WALL

FED FROM PANEL	FED FROM BREAKER	RELAY	DMX-512 UNIV.	DMX-512 ADDR.	LOAD LOCATION	DEVICE/FIXTURE	LOCATION	NOTES	CONTROL INPUT DEVICE	LIGHTING CONSOLE	HL STATIONS	TIME CLOCK	VACANCY SENSORS	FIRE ALARM	LOSS OF POWER
						277V CIRCUITS									
REFER ELEC	REFER ELEC	1	64	1	ARCH LIGHTING LOADS			SPARE		1	1	2		5	
REFER ELEC	REFER ELEC	2	64	2	ARCH LIGHTING LOADS			SEATING AISLE LIGHTS	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	3	64	3	ARCH LIGHTING LOADS			SEATING AISLE LIGHTS	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	4	64	4	ARCH LIGHTING LOADS			SEATING AISLE LIGHTS	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	5	64	5	ARCH LIGHTING LOADS	PD1		HOUSE LIGHTS 1ST ROW	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	6	64	6	ARCH LIGHTING LOADS	PD1		HOUSE LIGHTS	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	7	64	7	ARCH LIGHTING LOADS	PD1		HOUSE LIGHTS	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	8	64	8	ARCH LIGHTING LOADS	FL1		HOUSE LIGHT TAPE LIGHT - LEFT	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	9	64	9	ARCH LIGHTING LOADS	FL1		HOUSE LIGHT TAPE LIGHT - RIGHT	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	10	64	10	ARCH LIGHTING LOADS	BA1		STAGE WORKS GRID 0-10	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	11	64	11	ARCH LIGHTING LOADS	TS1		HOUSE LIGHT - STEP 0-10V FRONT ROW	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	12	64	12	ARCH LIGHTING LOADS	TS1		HOUSE LIGHT - STEP 0-10V FRONT ROW	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	13	64	13	ARCH LIGHTING LOADS	WC1, BA1		CATWALK WORKS 0-10V	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	14	64	14	ARCH LIGHTING LOADS	BA1		STAGE RIGHT WORK LIGHTS (UNDER GALLERY)	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	15	64	15	ARCH LIGHTING LOADS	TS3		STAGE BLUE STEP LIGHTS - UP STAGE WALL	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	16	64	16	ARCH LIGHTING LOADS	TS3		STAGE BLUE STEP LIGHTS - SL AND SR	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	17	64	17	ARCH LIGHTING LOADS	TS2		CATWALK BLUE DOTS	DMX	1	1	2		5	
REFER ELEC	REFER ELEC	17	64	18	ARCH LIGHTING LOADS	TC1	A302	FOLLOWSPOT TRACK	ELV	1	1	2	4	5	
REFER ELEC	REFER ELEC	19	64	19	ARCH LIGHTING LOADS	TC1	A207	LIGHT BOOTH TRACK	ELV	1	1	2	4	5	
REFER ELEC	REFER ELEC	20	64	20	ARCH LIGHTING LOADS	TS3		FOLLOWSPOT BLUES	0-10V	1	1	2	4	5	
REFER ELEC	REFER ELEC	21	64	21	ARCH LIGHTING LOADS	RA3	A146, A111	SLL FOH	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	22	64	22	ARCH LIGHTING LOADS	RA3	A135, A123	SLL BACK STAGE	0-10V	1	1	2		5	
REFER ELEC	REFER ELEC	23	64	23	ARCH LIGHTING LOADS			SPARE		1	1	2		5	
						110V CIRCUITS									
REFER ELEC	REFER ELEC	24	64	24	ARCH LIGHTING LOADS			INDEX STRIP - WHITE STAGE LEFT FLOOR		1	1	2		5	
REFER ELEC	REFER ELEC	25	64	25	ARCH LIGHTING LOADS			INDEX STRIP - BLUE STAGE LEFT FLOOR		1	1	2		5	
REFER ELEC	REFER ELEC	26	64	26	ARCH LIGHTING LOADS			INDEX STRIP - WHITE STAGE LEFT GALLERY		1	1	2		5	
REFER ELEC	REFER ELEC	27	64	27	ARCH LIGHTING LOADS			INDEX STRIP - BLUE STAGE LEFT GALLERY		1	1	2		5	
REFER ELEC	REFER ELEC	28	64	28	ARCH LIGHTING LOADS			INDEX STRIP - WHITE STAGE RIGHT GALLERY		1	1	2		5	
REFER ELEC	REFER ELEC	29	64	29	ARCH LIGHTING LOADS			INDEX STRIP - BLUE STAGE RIGHT GALLERY		1	1	2		5	
REFER ELEC	REFER ELEC	30	64	30	ARCH LIGHTING LOADS			CIRCUIT FOR PANEL CONTROL POWER		1	1	2		5	
REFER ELEC	REFER ELEC	31	64	31	ARCH LIGHTING LOADS			SPARE		1	1	2		5	
REFER ELEC	REFER ELEC	32	64	32	ARCH LIGHTING LOADS			SPARE		1	1	2			
						277V EMERGENCY CIRCUITS									
REFER ELEC	REFER ELEC	33	64	33	ARCH LIGHTING LOADS - EMERGENCY	PD1		HOUSE LIGHTS	DMX	1	1	2		5	7
REFER ELEC	REFER ELEC	34	64	34	ARCH LIGHTING LOADS - EMERGENCY	WC1	A144	STAIR WORKS - DMX (WHITE AND BLUE)	DMX	1	1	2		5	7
REFER ELEC	REFER ELEC	35	64	35	ARCH LIGHTING LOADS - EMERGENCY	WC1		SPIRAL STAIR WORKS + BACK WALL WORKS	DMX	1	1	2		5	7
REFER ELEC	REFER ELEC	36	64	36	ARCH LIGHTING LOADS - EMERGENCY	WD1		STAGE WORKS BACK WALL	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	37	64	37	ARCH LIGHTING LOADS - EMERGENCY	BA1		STAGE WORKS GRID	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	38	64	38	ARCH LIGHTING LOADS - EMERGENCY	WD1, BA1		CATWALK WORKS	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	39	64	39	ARCH LIGHTING LOADS - EMERGENCY	BA1	A302	FOLLOWSPOT WORKS 0-10V	0-10V	1	1	2	4	5	7
REFER ELEC	REFER ELEC	40	64	40	ARCH LIGHTING LOADS - EMERGENCY	BD1	A301	SLL WORKS 0-10	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	41	64	41	ARCH LIGHTING LOADS - EMERGENCY	RT2A	A207	BOOTH WORKS 0-10V	0-10V	1	1	2	4	5	7
REFER ELEC	REFER ELEC	42	64	42	ARCH LIGHTING LOADS - EMERGENCY	RA3	A146, A111	SLL DWNS 0-10V	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	43	64	43	ARCH LIGHTING LOADS - EMERGENCY	RA3	A117, A144,	SLL DWNS 0-10V	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	44	64	44	ARCH LIGHTING LOADS - EMERGENCY	RA3	A135, A123	SLL DWNS 0-10V	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	45	64	45	ARCH LIGHTING LOADS - EMERGENCY	RA3	BOOTH SLL	SLL DWNS 0-10V	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	46	64	46	ARCH LIGHTING LOADS - EMERGENCY			SPARE		1	1	2		5	7
REFER ELEC	REFER ELEC	47	64	47	ARCH LIGHTING LOADS - EMERGENCY			SPARE	0-10V	1	1	2		5	7
REFER ELEC	REFER ELEC	48	64	48	ARCH LIGHTING LOADS - EMERGENCY			SPARE		1	1	2		5	7
TOTAL															

NOTES:

1) THIS DEVICE IS A FEED-THROUGH RELAY PANEL. LINE FEEDS TO THESE RELAYS COME FROM A SEPARATE PANELBOARD WITH OVERCURRENT PROTECTION. EACH RELAY DISCRETELY CONTROLLED FROM A DMX-512 NETWORK. REFER TO ELECTRICAL DRAWINGS FOR BRANCH FEEDS AND LOAD WIRING INFORMATION.
2) FINAL...
3) ALL...

KEYNOTES:

1) THIS RELAY TOGGLED ON/OFF BY STATION PRESET OR LIGHTING CONTROL CONSOLE.
2) THIS RELAY SWEEPS 'ON' AT 6 A.M. DAILY AND 'OFF' AT 12:59 A.M. DAILY, WITH 3 MINUTE BLINK WARNING.
3) THIS RELAY CONTROLLED BY DAYLIGHT SENSORS.
4) THIS RELAY CONTROLLED BY VACANCY SENSORS.
5) THIS RELAY TOGGLED 'ON' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
6) THIS RELAY TOGGLED 'OFF' DURING FIRE ALARM OR EVACUATION ALARM. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER.
7) THIS RELAY TOGGLED 'ON' DURING LOSS OF POWER EVENT. FURNISH ALL 'PANIC' WIRING AND INTERFACE HARDWARE NECESSARY FOR THIS TRIGGER. POWER TRANSFER BY ELECTRICAL.

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13365 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

THEATRICAL LIGHTING FEED-THRU PANEL SCHEDULES

QT6.13

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:24 AM

STAGE LIGHTING FIXTURES AND ACCESSORIES SCHEDULE

ITEM	QTY	BASIS OF DESIGN DESCRIPTION	EQUAL MANUFACTURER	CONNECTOR	ACCESSORIES/NOTES
LX-1-50	8	ETC COLORSOURCE V WITH 50 DEG LENS		NEMA 5-15P 'EDISON'	GEL SLOT DIFFUSER IRIS SLOT DIFFUSER
LX-1-36	40	ETC COLORSOURCE V WITH 36 DEG LENS		NEMA 5-15P 'EDISON'	GEL SLOT DIFFUSER IRIS SLOT DIFFUSER
LX-1-26	40	ETC COLORSOURCE V WITH 26 DEG LENS		NEMA 5-15P 'EDISON'	GEL SLOT DIFFUSER IRIS SLOT DIFFUSER
LX-1-19	22	ETC COLORSOURCE V WITH 19 DEG LENS		NEMA 5-15P 'EDISON'	GEL SLOT DIFFUSER IRIS SLOT DIFFUSER
LX-2	20	ETC COLORSOURCE V FRESNEL		NEMA 5-15P 'EDISON'	
LX-5	15	ALTMAN SPECTRA CYC 200		NEMA 5-15P 'EDISON'	
LX-11	16	ETC COLORSOURCE WORKLIGHT LED INTEGRATED INTO ELECTRIC BATTON	ALTMAN, SSRC	NEMA 5-15P 'EDISON'	
LX-12	2	CANTO ASTRO 600 FOLLOWSPOT	JULIAT, LYCIAN	NEMA 5-15P 'EDISON'	A-SIZE GOBO HOLDER B-SIZE GOBO HOLDER TRIPOD STAND TRUSS MOUNT ADAPTOR OVER-HUNG YOKE TELRAD SIGHT
ACCS-5	20	4-LEAF BARN DOOR FOR LX-2			
ACCS-6	5	IRIS UNITS FOR LX-1			
PWR-5	25	5'-0" STAGE POWER CABLE JUMPER, NEMA 5-20 'EDISON' CONNECTORS, BLACK, 12/3 SOOW	LEX, TMB, SSRC		12/3 SOOW
PWR-10	25	10'-0" STAGE POWER CABLE JUMPER, NEMA 5-20 'EDISON' CONNECTORS, BLACK, 12/3 SOOW	LEX, TMB, SSRC		12/3 SOOW
PWR-15	25	15'-0" STAGE POWER CABLE JUMPER, NEMA 5-20 'EDISON' CONNECTORS, BLACK, 12/3 SOOW	LEX, TMB, SSRC		12/3 SOOW
PWR-25	25	25'-0" STAGE POWER CABLE JUMPER, NEMA 5-20 'EDISON' CONNECTORS, BLACK, 12/3 SOOW	LEX, TMB, SSRC		12/3 SOOW
PWR-50	25	50'-0" STAGE POWER CABLE JUMPER, NEMA 5-20 'EDISON' CONNECTORS, BLACK, 12/3 SOOW	LEX, TMB, SSRC		12/3 SOOW
PCON-5	25	POWERCON-TO-POWERCON JUMPER, 5'-0", BLACK	LEX, TMB, SSRC		
PCON-10	25	POWERCON-TO-POWERCON JUMPER, 10'-0", BLACK	LEX, TMB, SSRC		
PCON-15	20	POWERCON-TO-POWERCON JUMPER, 15'-0", BLACK	LEX, TMB, SSRC		
PCON-25	10	POWERCON-TO-POWERCON JUMPER, 25'-0", BLACK	LEX, TMB, SSRC		
DMX-5	40	5-PIN XLR DMX JUMPER, 5'-0", BLACK	LEX, TMB, SSRC		
DMX-10	50	5-PIN XLR DMX JUMPER, 10'-0", BLACK	LEX, TMB, SSRC		
DMX-15	25	5-PIN XLR DMX JUMPER, 15'-0", BLACK	LEX, TMB, SSRC		
DMX-25	15	5-PIN XLR DMX JUMPER, 25'-0", BLACK	LEX, TMB, SSRC		
DMX-50	10	5-PIN XLR DMX JUMPER, 50'-0", BLACK	LEX, TMB, SSRC		
DMX-T	5	5-PIN DMX TERMINATOR	LEX, TMB, SSRC		
ECON-5	15	CATEGORY CABLE JUMPER, 5'-0", WITH ETHERCON CONNECTORS, BLACK	LEX, TMB, SSRC		
ECON-10	6	CATEGORY CABLE JUMPER, 10'-0", WITH ETHERCON CONNECTORS, BLACK	LEX, TMB, SSRC		
ECON-25	4	CATEGORY CABLE JUMPER, 15'-0", WITH ETHERCON CONNECTORS, BLACK	LEX, TMB, SSRC		
ECON-50	2	CATEGORY CABLE JUMPER, 50'-0", WITH ETHERCON CONNECTORS, BLACK	LEX, TMB, SSRC		
CTRL	2	TOUCH SCREEN EXTERNAL MONITORS			
CTRL	1	EOS ION XE 20			
IRON	8	50LB BOOM BASES			
IRON	8	8' - 1 1/2" SCHEDULE 40 PIPE WITH THREADED ENDS			
IRON	16	2'-0" SIDE ARMS WITH "TEES"			
SAND	16	25LB SAND BAGS			

GENERAL NOTES

1) ALL FIXTURES SHALL BE PROVIDED WITH C-CLAMP(S), GEL FRAME AND SAFETY CABLE WHERE APPLICABLE, UNLESS OTHERWISE NOTED

2) ALL FIXTURES SHALL BE PROVIDED WITH MIN. 36" POWER INPUT CABLE OR ATTACHED LEADS, WITH CONNECTOR AS SCHEDULED.

3) ALL LENS TUBES FURNISHED AS PART OF THIS PACKAGE, INCLUDING THOSE PACKAGED AS PART OF A COMPLETE LIGHTING INSTRUMENT, SHALL BE COMPATIBLE WITH ALL ELLIPSOIDALS FURNISHED AS PART OF THIS PACKAGE.

4) ALL C-CLAMPS SHALL BE EXTRUDED ALUMINUM WITH SPRING WASHER, BLACK ANODIZED FINISH; BASIS OF DESIGN: 'MEGA-CLAMP' BY THE LIGHT SOURCE, PART NUMBER 'MAB', UNLESS OTHERWISE NOTED

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

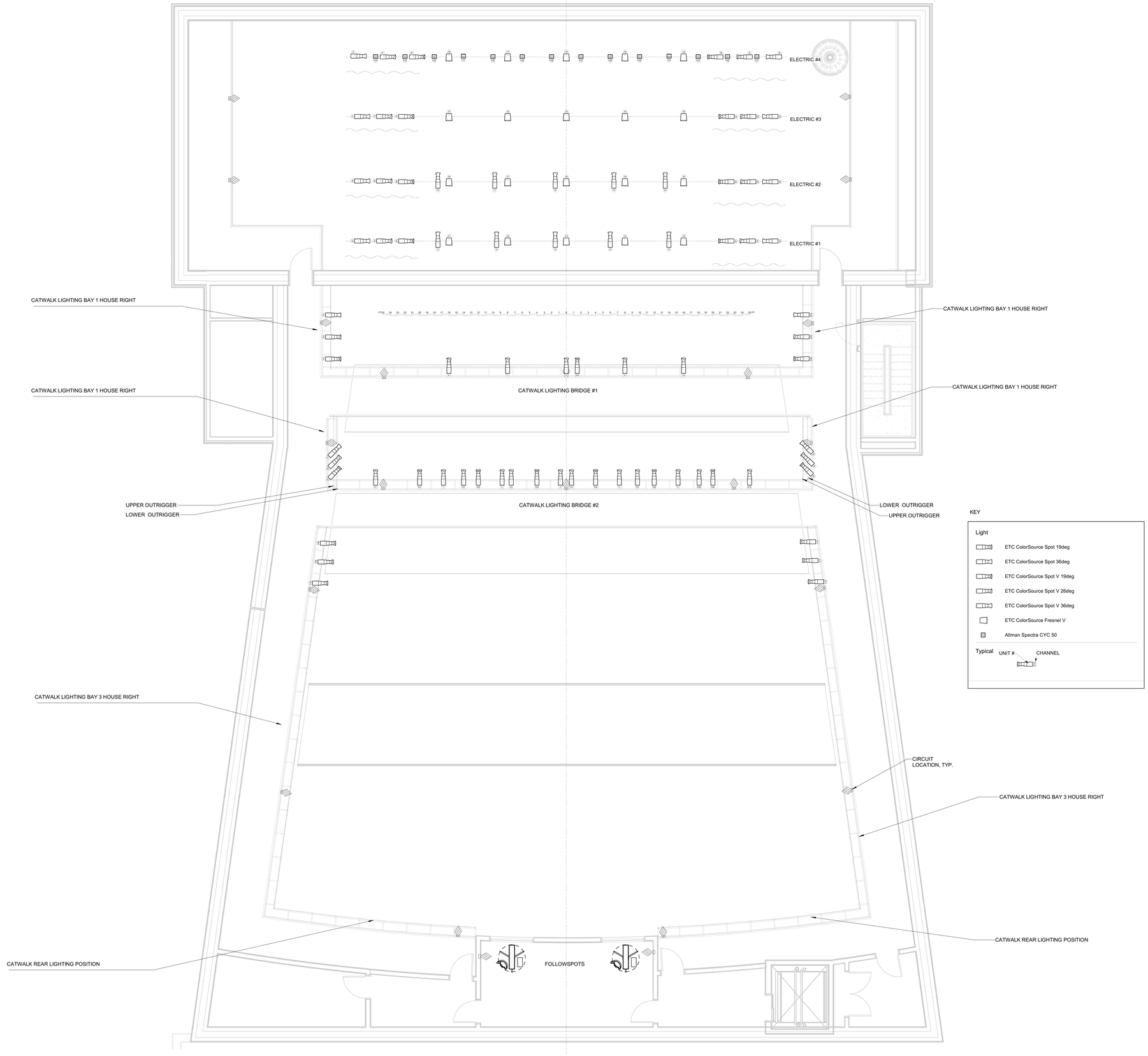
REVISIONS

39-23712-00

THEATRICAL LIGHTING FIXTURES & ACCESSORIES SCHEDULE

QT6.14

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:30 AM



KEY

Light

- ETC ColorSource Spot 19deg
- ETC ColorSource Spot 36deg
- ETC ColorSource Spot V 19deg
- ETC ColorSource Spot V 26deg
- ETC ColorSource Spot V 36deg
- ETC ColorSource Fresnel V
- Altman Spectra CYC 50

Typical UNIT # CHANNEL

REP LIGHT PLOT

SCALE: 3/16" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

REVISIONS

39-23712-00

THEATRICAL LIGHTING REPERTORY PLOT

QT6.15

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_ITDG_2024.rvt
7/25/2024 8:54:49 AM

AUDIOVISUAL DRAWING INDEX

TA0.01	AUDIOVISUAL GENERAL NOTES
TA0.02	AUDIOVISUAL GENERAL DETAILS
TA1.01A	LEVEL 01 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.01B	LEVEL 01 - AREA B - AUDIOVISUAL WIRING DEVICE PLAN
TA1.02A	LEVEL 02 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.03A	CATWALK - AREA A - AUDIOVISUAL WIRING DEVICE PLAN
TA1.11A	LEVEL 01 - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA1.11B	LEVEL 01 - AREA B - AUDIOVISUAL EQUIPMENT PLAN
TA1.12A	LEVEL 02 - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA1.13A	CATWALK - AREA A - AUDIOVISUAL EQUIPMENT PLAN
TA2.01A	LEVEL 01 - AREA A - REFLECTED CEILING PLAN
TA2.01B	LEVEL 01 - AREA B - REFLECTED CEILING PLAN
TA2.02A	LEVEL 02 - AREA A - REFLECTED CEILING PLAN
TA4.01	ELEVATIONS, SECTIONS AND 3D VIEWS
TA4.02	ELEVATIONS, SECTIONS AND 3D VIEWS
TA5.01	AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.02	AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.03	AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA5.04	AUDIOVISUAL SYSTEM BLOCK DIAGRAM
TA6.01	AUDIOVISUAL DETAILS
TA6.02	AUDIOVISUAL DETAILS
TA6.51	AUDIOVISUAL WIRING DEVICE DETAILS
TA6.52	AUDIOVISUAL WIRING DEVICE DETAILS
TA7.01	AUDIOVISUAL SCHEDULES
TA7.02	AUDIOVISUAL SCHEDULES

AUDIOVISUAL ABBREVIATIONS

#	NUMBER
&	AND
@	AT
ABV	ABOVE
AC	ABOVE COUNTER
ACT	ACOUSTIC CEILING TILE
ADA	AMERICANS WITH DISABILITY ACT
ADDN	ADDITION OR ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AUTO	AUTOMATIC
AV	AUDIOVISUAL
AVIG	AUDIOVISUAL ISOLATED GROUND
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BLDG	BUILDING
BRI	BASIC RATE INTERFACE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CONDUIT
CATV	CABLE / COMMUNITY ANTENNA TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CL	CENTER LINE
CLG	CEILING
CM	CONSTRUCTION MANAGER
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CTR	CENTER
D	DEPTH
DB	DECIBEL
DC	DIRECT CURRENT
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	SPECIFICATION DIVISION
DN	DOWN
DWG(S)	DRAWING(S)
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EXIST	EXISTING
EXT	EXTERIOR
F.V.	FIELD VERIFY
FB	FLOOR BOX
FBO	FURNISHED BY OTHERS
FFE	FURNITURE FIXTURES & EQUIPMENT
FIB	FIBER
FIN	FINISHED
FL	FLOOR
FT	FEET
FUT	FUTURE
GC	GENERAL CONTRACTOR
GOVT	GOVERNMENT
H	HEIGHT
HD	HIGH DEFINITION
HL	TO THE LEFT FROM AUDIENCE PERSPECTIVE
HORIZ	HORIZONTAL
HR	TO THE RIGHT FROM AUDIENCE PERSPECTIVE
HV	HIGH VOLTAGE
HZ	HERTZ (FREQUENCY)
i.e.	THAT IS
IBC	INTERNATIONAL BUILDING CODE
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
INT	INTERIOR
IR	INFRARED
ISDN	INTEGRATED SERVICES DIGITAL NETWORK
JB	JUNCTION BOX
LAN	LOCAL AREA NETWORK
LB(S)	POUND(S)
LV	LOW VOLTAGE

AUDIOVISUAL ABBREVIATIONS

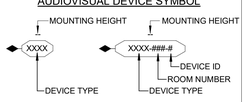
MATV	MASTER ANTENNA TELEVISION
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIC	MICROPHONE
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONITOR
MTD	MOUNTED
MTG	MOUNTING
N	NORTH
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED OWNER INSTALLED
OI	OWNER INSTALLED
OPP	OPPOSITE
OVHD	OVERHEAD
PA	PUBLIC ADDRESS
PAR	PARALLEL
PB	PULL BOX
PENT	PENTHOUSE
PERP	PERPENDICULAR
PHX	PHOENIX CONNECTOR
PLYWD	PLYWOOD
PNL	PANEL
POTS	PLAIN OLD TELEPHONE SERVICE
PRI	PRIMARY RATE INTERFACE
PWR	POWER
QTY	QUANTITY
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
REF	REFERENCE
REFL	REFLECTOR
REQ(D)	REQUIRE(D)
REV	REVISION(S)
RM	ROOM
RND	ROUND
RSC	RIGID STEEL CONDUIT
S	SOUTH
SATV	SATELLITE TELEVISION
SBD	SCHEMATIC BLOCK DIAGRAM
SCHED	SCHEDULE
SCRN	PROJECTION SCREEN
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SL	TO THE LEFT FROM ACTOR PERSPECTIVE
SPEC	SPECIFICATION(S)
SPKR	SPEAKER
SR	TO THE RIGHT FROM ACTOR PERSPECTIVE
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SWBD	SWITCHBOARD
SYM	SYMETRICAL
TBC	TO BE COORDINATED
TBD	TO BE DETERMINED
TEMP	TERMPORARY
TRM	TERMINAL STRIP/LUG
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VTC	VIDEO TELECONFERENCING
W	WIRE
W	WEST
W	WATT
W/	WITH
W/O	WITHOUT
WAN	WIDE AREA NETWORK
WG	WIRE GUARD
WP	WEATHER-PROOF (NEMA 3R)

AUDIOVISUAL CONNECTORS

	KEYSTONE	PANEL MOUNT	DESCRIPTION
			BLANK PLATE
AUDIO			3.5mm STEREO UNBALANCED AUDIO
			RCA CONNECTOR (RECESSED)
			RCA CONNECTOR (STEREO)
			XLR PIN
			XLR SOCKET
			XLR COMBO RECEPTACLE
LOUDSPEAKER			TWIST-LOCK LOUDSPEAKER CONNECTOR - 2 POLE
			TWIST-LOCK LOUDSPEAKER CONNECTOR - 4 POLE
VIDEO			BNC CONNECTOR
			MINI DISPLAYPORT / THUNDERBOLT
			F-TYPE COAXIAL
			HDMI
DATA \ MULTIMEDIA			CAT6A CONNECTOR
			USB - TYPE A
			USB - TYPE B
			USB - TYPE C
FIBEROPTIC			LC DUPLEX FIBEROPTIC CONNECTOR
			SMPTE 304M HYBRID CONNECTOR

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL



ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		'x' REPRESENTS UNIQUE TYPE IDENTIFIERS
FFx	FURNITURE FEED		
ICx	INTERCOM		

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

AV ELECTRICAL LEGEND

△ AVIG RECEPTACLES SHALL USE COLORED RECEPTACLES WITH TRIANGLE MARKING.

CONNECTOR	DESCRIPTION
	DUPLEX POWER RECEPTACLE 15A/20A (NEMA 5-20R) (FOR REFERENCE ONLY)
	NEMA 6-20R (FOR REFERENCE ONLY)
	NEMA L21-30 (FOR REFERENCE ONLY)
	NEMA L5-30 (FOR REFERENCE ONLY)
	NEMA L6-20R (FOR REFERENCE ONLY)
	NEMA L6-30R (FOR REFERENCE ONLY)

AUDIOVISUAL CONDUIT REQUIREMENTS

AUDIOVISUAL SYSTEM WIRING GROUPS ARE COMPRISED ACCORDING TO THEIR NOMINAL VOLTAGE LEVELS.

NEVER INTERMIX GROUPS WITHIN A GIVEN CONDUIT.

GROUP A	0mV-180mV (MIC OR LINE LEVEL)
GROUP B	10V-30V (COM LEVEL)
GROUP C	10V-100V (LOUDSPEAKER LEVEL AND CONTROL WIRING)
GROUP D	VIDEO, DATA, COAX, ANTENNA, SYNC, AND DIGITAL CIRCUITS
GROUP E	FIBER OPTIC CABLE
GROUP X	SPARE FOR FUTURE USE

MINIMUM SEPARATION BETWEEN CONDUITS CONTAINING WIRING OF DIFFERENT GROUPS IS AS FOLLOWS:

	GROUP A	GROUP B	GROUP C	GROUP D	GROUP E
GROUP A	ADJACENT	6"	12"	12"	ADJACENT
GROUP B	-	ADJACENT	12"	6"	ADJACENT
GROUP C	-	-	ADJACENT	6"	ADJACENT
GROUP D	-	-	-	ADJACENT	ADJACENT
GROUP E	-	-	-	-	ADJACENT
GROUP X	ADJACENT	ADJACENT	ADJACENT	ADJACENT	ADJACENT

ALL CONDUIT GROUPS CAN BE ADJACENT WITHIN 6' OF THE DESTINATION AV BACKBOX. 90-DEGREE CROSSINGS ARE EXEMPT FROM SEPARATION REQUIREMENTS.

AUDIOVISUAL CONDUITS AND CONDUITS FOR OTHER ELECTRICAL SERVICES SHALL BE SEPARATED AS DEFINED BELOW:

NOTE: HEAVY CURRENT DEMANDS OR LONG RUNS MAY REQUIRE GREATER SEPARATION TO AVOID INTERFERENCE WITH AUDIO SIGNALS.

	GROUP A	GROUP B	GROUP C	GROUP D	GROUP E	GROUP X
ELECTRONIC DIMMER-CONTROLLED LIGHTING, ELECTRONICALLY SWITCHED POWER SERVICES	36"	12"	6"	12"	ADJACENT	12"
SCR CONTROLLED SERVICES	36"	12"	6"	12"	ADJACENT	12"
208/480 CIRCUITS	36"	12"	6"	12"	ADJACENT	12"
ALL OTHER ELECTRICAL SERVICES	24"	6"	ADJACENT	ADJACENT	ADJACENT	ADJACENT
SERVICE AND TRANSFORMER FEEDERS, TRANSFORMERS, MOTORS	50'	25'	15'	15'	ADJACENT	15'
NON-AV LOW VOLTAGE SIGNAL AND DATA SYSTEMS	ADJACENT	ADJACENT	ADJACENT	ADJACENT	ADJACENT	ADJACENT

1. CONDUIT SIZING ON TA7 SERIES DRAWINGS ARE NOMINAL, AND MUST BE VERIFIED BASED ON FIELD CONDITIONS.
2. AV CONDUITS SHALL BE INSTALLED PER REQUIREMENTS IN DIVISION 26 SPECIFICATIONS.
3. ALL AUDIOVISUAL CONDUITS SHALL BE FERROUS METALLIC GOVERNED BY INSTALLATION CONDITIONS, LOCATIONS, AND MATERIALS PERMITTED BY OTHER SECTIONS.
4. AUDIOVISUAL CONDUIT PATHS SHALL FOLLOW THE SHORTEST ROUTE FROM SOURCE TO DESTINATION WHEREVER POSSIBLE.
5. AVOID PENETRATIONS OF ACOUSTICALLY SENSITIVE WALLS, CEILINGS, AND FLOORS.
6. PROVIDE PLASTIC BUSHINGS AT UNTERMINATED CONDUIT ENDS TO PROTECT CABLES FROM DAMAGE AT SHARP EDGE.
7. FURNISH PULL STRINGS IN EVERY CONDUIT FOR FUTURE CABLING. FURNISH JUNCTION BOXES, STUB-UPS, MOUNTING HARDWARE, ETC. AS REQUIRED.
8. ALL AUDIOVISUAL EQUIPMENT RACKS SHALL BE ELECTRICALLY ISOLATED FROM THE CONDUIT/RACEWAY SYSTEM WITH INSULATING CONDUIT CONNECTORS OR DIELECTRIC COUPLINGS AS REQUIRED.
9. LABEL INSIDE OF AV WIRING DEVICE BACK BOXES WITH WIRING DEVICE TYPE AND NUMBER ACCORDING TO PLANS AND SCHEDULES. INCLUDE MARKING OF CONDUIT GROUP DESIGNATION INSIDE THE BOXES AT EACH CONDUIT ENTRY.
10. CLEAR CONDUITS/RACEWAYS OF ANY DEBRIS AND SEAL OPENINGS WITH PLASTIC WRAP, CAP, OR TAPE. PROVIDE BLANK BOX COVERS FOR ALL BACK BOXES. PROVIDE CARDBOARD FILLERS IN BOXES AT PLASTER RING ADAPTERS TO MINIMIZE COLLECTION OF DEBRIS DURING CONSTRUCTION AND FINISHING.
11. FOR CONDUIT FILL REFER TO THE MOST RECENT VERSION OF NEC AS APPLICABLE:
    - 40% FILL FOR 3+ CABLES
    - 31% FILL FOR 2 CABLES
    - 53% FILL FOR A SINGLE CABLE
    - JAM RATIO SHALL BE CALCULATED USING THE CONDUIT ID/CABLE OD METHOD AND SHALL NOT FALL BETWEEN 2.8-3.2.
12. ANY EXCEPTIONS OR VARIANCES FROM THESE REQUIREMENTS DUE TO PROJECT CONDITIONS MUST BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION.

GENERAL AUDIOVISUAL NOTES

1. SEE AUDIOVISUAL SYSTEM SPECIFICATIONS (SECTION 27 41 16 AND OTHER APPLICABLE SECTIONS) FOR WORK SCOPE DETAILS.
2. LINE VOLTAGE RECEPTACLES SHOWN IN AV WIRING DEVICES ARE PROVIDED AND WIRED BY THE ELECTRICAL CONTRACTOR.
3. PHYSICALLY SEPARATE ELECTRICAL RECEPTACLES AND WIRING FROM ALL LOW VOLTAGE WIRING BY MEANS OF A 1/16" THICK METALLIC BARRIER. RESIZE BACK BOX ACCORDINGLY IF BARRIER CANNOT BE ACCOMMODATED.
4. FACEPLATES FOR FLUSH BACK BOXES TO CONTAIN A 1/2" LIP ON ALL SIDES TO CONCEAL INSTALLATION CUTS.
5. FINAL CONNECTOR NUMBERING CONVENTION TO BE REVIEWED AND APPROVED PRIOR TO PANEL FABRICATION.
6. CONTRACTOR TO VERIFY ALL CONNECTORS, CONTROLS, ETC. ARE POSITIONED TO ALLOW REQUIRED CLEARANCES WITHIN BACK BOX DIMENSIONS AND PANEL MOUNT POINTS. BACK BOXES SHALL NOT BE MODIFIED TO ACCOUNT FOR PANEL CONNECTOR LAYOUT CLEARANCES.
7. LINE VOLTAGE POWER RECEPTACLES SHOWN ON TA SHEETS ARE FOR LOCATION REFERENCE ONLY - ADJACENT TO AV WIRING DEVICES. SEE ELECTRICAL DRAWINGS FOR CIRCUITING AND WIRING.
8. AVIG RECEPTACLES SHALL USE COLORED RECEPTACLES WITH TRIANGLE MARKING.

AUDIOVISUAL SYSTEM SCHEDULE OF RESPONSIBILITY

ITEMS TO BE FURNISHED AND INSTALLED	ELECTRICAL CONTRACTOR		AUDIOVISUAL CONTRACTOR		GENERAL CONTRACTOR / CONSTRUCTION MANAGER		N/A
	FURNISH	INSTALL*	FURNISH	INSTALL	FURNISH	INSTALL	
MAIN POWER SERVICE PANEL BOARDS AND CIRCUIT BREAKERS	X	X					
MAIN POWER SERVICE CONDUIT AND CONDUCTORS	X	X					
MAIN POWER SERVICE TERMINATIONS	X	X					
ELECTRICAL RECEPTACLES	X	X					
AVIG STANDARD LOAD CENTERS AND CIRCUIT BREAKERS	X	X					
AVIG STANDARD LOAD CENTER CONDUIT AND CONDUCTORS	X	X					
AVIG STANDARD LOAD CENTER TERMINATIONS	X	X					
AVIG BRANCH CIRCUIT CONDUIT AND CONDUCTORS	X	X					
AVIG BRANCH CIRCUIT RECEPTACLES AND TERMINATION	X	X					
AVIG CUSTOM SEQUENCING PANEL BOARD	X	X					
AVIG RACK MOUNT POWER DISTRIBUTION DEVICES (EG POWER STRIP, UPS)			X	X			
AVIG HARD-WIRED RACK MOUNT TERMINATIONS	X	X					
AVIG EQUIPMENT RACK TROUGHS AND BACKBOXES	X	X					
AVIG TRANSFORMERS	X	X					
STRUCTURAL RIGGING FOR LOUDSPEAKERS					X	X	
AV AND AVIG OUTLET DEVICE STANDARD BACK BOXES AND ENCLOSURES	X	X					
AV AND AVIG OUTLET DEVICE CUSTOM BACK BOXES AND ENCLOSURES		X	X				
AV AND AVIG OUTLET DEVICE CUSTOM WALL PLATES			X	X			
STRUCTURAL BACKING AND SUPPORTS FOR DISPLAYS AND WALL MTD PROJECTION SCREENS					X	X	
STRUCTURAL SUPPORTS FOR CEILING MTD PROJECTION SCREENS AND PROJECTORS					X	X	
STRUCTURAL BACKING AND SUPPORTS FOR LOUDSPEAKERS MOUNTING					X	X	
AUDIOVISUAL PROJECTION SCREENS		X	X	X			
PROJECTOR LIFTS		X	X	X			
AUDIOVISUAL LV/HV CONTROL INTERFACES		X	X	X			
AUDIOVISUAL SYSTEM FLOORPOCKET BACKBOXES (FLOORBOX)	X	X					
AUDIOVISUAL SYSTEM FLOORBOX COVER/LID	X	X					
AUDIOVISUAL SYSTEM FLOORBOX PLATES			X	X			
AUDIOVISUAL SYSTEM WALLBOX	X	X					
AUDIOVISUAL SYSTEM WALLBOX CONSTRUCTION COVERS	X	X					
AUDIOVISUAL SYSTEM WALLBOX FACEPLATES / CUSTOM PLATES			X	X			
CONDUIT, JUNCTION BOXES, AND RACEWAY FOR LOW VOLTAGE AUDIOVISUAL CABLES	X	X					
AUDIOVISUAL SYSTEM CONDUIT RISER DIAGRAM (SHOP DRAWINGS)	X		X				
LOW VOLTAGE AUDIOVISUAL CABLES AND CONNECTORS			X	X			
LOW VOLTAGE AUDIOVISUAL TERMINATIONS			X	X			
AUDIOVISUAL CABLE ROUTING DIAGRAM (SHOP DRAWINGS)			X				

*ELECTRICAL CONTRACTOR TO OBTAIN INSTALLATION CRITERIA FROM ARCHITECT AND/OR AUDIOVISUAL CONTRACTOR PRIOR TO INSTALLATION

NOTES
1. ELECTRICAL CONTRACTOR TO FURNISH CONDUIT TO LOCATION OF FUTURE AUDIOVISUAL EQUIPMENT OR JUNCTION BOX INDICATED ON DRAWINGS.
2. ALL ELECTRICAL CIRCUITS SERVING AV DEVICES (EXCEPT MOTORS AND LIFTS) SHALL BE TERMINATED ON DEDICATED AV PANEL BOARDS.
3. IT/VOICE/DATA FACEPLATES AND TERMINATIONS TO BE FURNISHED BY THE TELECOM CONTRACTOR.

AUDIOVISUAL CABLE
(DIMENSIONS IN INCHES)

NAME	TYPE	DESCRIPTION	MFR.	PART #	GROUP	O.D. [in]
ANTENNA	ANTENNA CABLE	10 AWG RG-8 50 OHM COAX	BELDEN	7810R	D	0.403
AUDIO	MICROPHONE / LINE LEVEL AUDIO	22 AWG SHIELDED TWISTED PAIR	BELDEN	1800B	A	0.185
COM	PRODUCTION INTERCOM	18 AWG SHIELDED TWISTED PAIR	BELDEN	9460	B	0.230
CONTROL	RS-232 SERIAL COMM/RELAY	20 AWG STRANDED 5 CONDUCTOR, SHIELDED	BELDEN	9445	D	0.239
DATA	CAT6 U/TP	23 AWG CATEGORY 6	BELDEN	2412	D	0.224
DATA-S	CAT6A F/UTP	23 AWG CATEGORY 6A, FOIL SHIELDED	BELDEN	10GX62F	D	0.300
DC POWER	DC POWER CABLE	SIZE WIRE ACCORDING TO AMPS, VOLTAGE, DISTANCE & LOAD	CONTRACTOR NOMINATED		C	-
FIBER-6	6-STRAND SM FIBER	OS2 SINGLEMODE FIBER, INDOOR RISER	BELDEN	FISD006R9	E	0.220
FIBER-24	24-STRAND SM FIBER	OS2 SINGLEMODE FIBER, INDOOR RISER	BELDEN	FISD024R9	E	0.325
FIBER-96	96-STRAND SM FIBER	OS2 SINGLEMODE FIBER, INDOOR RISER	BELDEN	FISD096RK	E	0.953
FIBER-144	144-STRAND SM FIBER	OS2 SINGLEMODE FIBER, INDOOR RISER	BELDEN	FISD144RK	E	1.076
HDBT	HDBASET MEDIA	23 AWG, 4K UHD MEDIA CABLE, FOIL SHIELDED	BELDEN	2183R	D	0.290
HDMI	DVI/HDMI VIDEO	HDMI CABLE ASSEMBLY	CONTRACTOR NOMINATED		D	-
IR	IR CONTROL	22 AWG 2 CONDUCTOR SHIELDED	BELDEN	5500FE	D	0.126
MIC-S	STAR QUAD MICROPHONE CABLE	20 AWG SHIELDED TWISTED 4 CONDUCTOR	CANARE	L-4E6AT	A	0.244
SDI-3G	DIGITAL COAX	18 AWG RG6 COAX	BELDEN	1694A	D	0.274
SDI-12G	DIGITAL COAX, 4K UHD 12G-SDI	18 AWG RG6 COAX	BELDEN	4694R	D	0.274
SPKR18-2	LOUDSPEAKER CABLE 18 AWG, 2 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	6300UE	C	0.154
SPKR18-4	LOUDSPEAKER CABLE 18 AWG, 4 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	6302UE	C	0.180
SPKR16-2	LOUDSPEAKER CABLE 16 AWG, 2 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	6200UE	C	0.176
SPKR14-2	LOUDSPEAKER CABLE 14 AWG, 2 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	5100UP	C	0.266
SPKR12-2	LOUDSPEAKER CABLE 12 AWG, 2 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	5000UP	C	0.312
SPKR12-4	LOUDSPEAKER CABLE 12 AWG, 4 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	(2x) 5000UP	C	(2x) 0.312
SPKR10-2	LOUDSPEAKER CABLE 10 AWG, 2 CONDUCTORS	STRANDED UNSHIELDED TWISTED PAIR	BELDEN	5T00UP	C	0.356
SPKR-UB	LOUDSPEAKER + 48V DC CABLE	COMPOSITE #16 PR + #20 PR INDIVIDUALLY SHIELDED PAIRS	BELDEN	3086A	C	0.398
USB	USB	USB CABLE	CONTRACTOR NOMINATED		D	-

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL GENERAL NOTES

TA0.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:34 AM

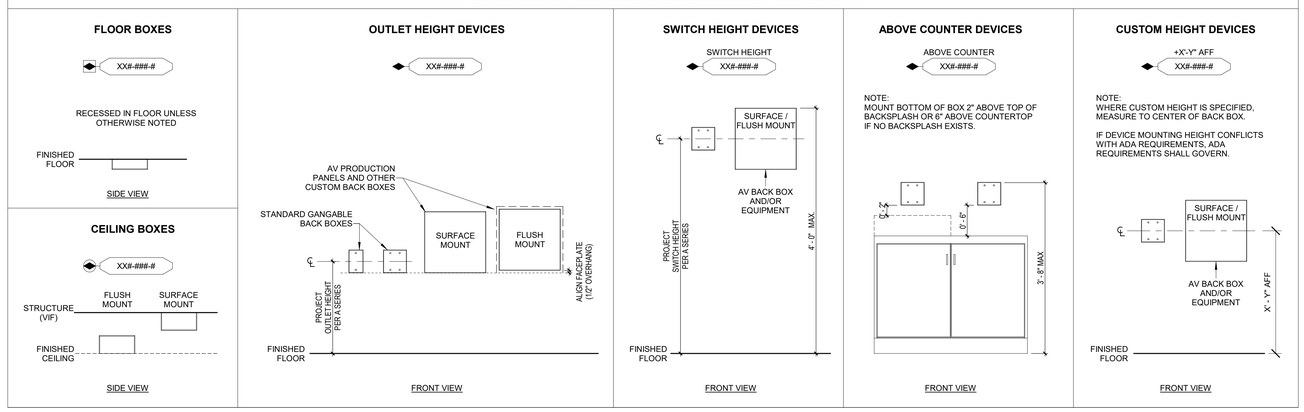
AUDIOVISUAL ABBREVIATIONS

#	NUMBER
&	AND
@	AT
ABV	ABOVE
AC	ABOVE COUNTER
ACT	ACOUSTIC CEILING TILE
ADA	AMERICANS WITH DISABILITY ACT
ADDN	ADDITION OR ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AUTO	AUTOMATIC
AV	AUDIOVISUAL
AVIG	AUDIOVISUAL ISOLATED GROUND
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BLDG	BUILDING
BRI	BASIC RATE INTERFACE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CONDUIT
CATV	CABLE / COMMUNITY ANTENNA TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CL	CENTER LINE
CLG	CEILING
CM	CONSTRUCTION MANAGER
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CTR	CENTER
D	DEPTH
DB	DECIBEL
DC	DIRECT CURRENT
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	SPECIFICATION DIVISION
DN	DOWN
DWG(S)	DRAWING(S)
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EXIST	EXISTING
EXT	EXTERIOR
F.V.	FIELD VERIFY
FB	FLOOR BOX
FBO	FURNISHED BY OTHERS
FFE	FURNITURE FIXTURES & EQUIPMENT
FIB	FIBER
FIN	FINISHED
FL	FLOOR
FT	FEET
FUT	FUTURE
GC	GENERAL CONTRACTOR
GOVT	GOVERNMENT
H	HEIGHT
HD	HIGH DEFINITION
HL	TO THE LEFT FROM AUDIENCE PERSPECTIVE
HORIZ	HORIZONTAL
HR	TO THE RIGHT FROM AUDIENCE PERSPECTIVE
HV	HIGH VOLTAGE
HZ	HERTZ (FREQUENCY)
i.e.	THAT IS
IBC	INTERNATIONAL BUILDING CODE
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
INT	INTERIOR
IR	INFRARED
ISDN	INTEGRATED SERVICES DIGITAL NETWORK
JB	JUNCTION BOX
LAN	LOCAL AREA NETWORK
LB(S)	POUND(S)
LV	LOW VOLTAGE

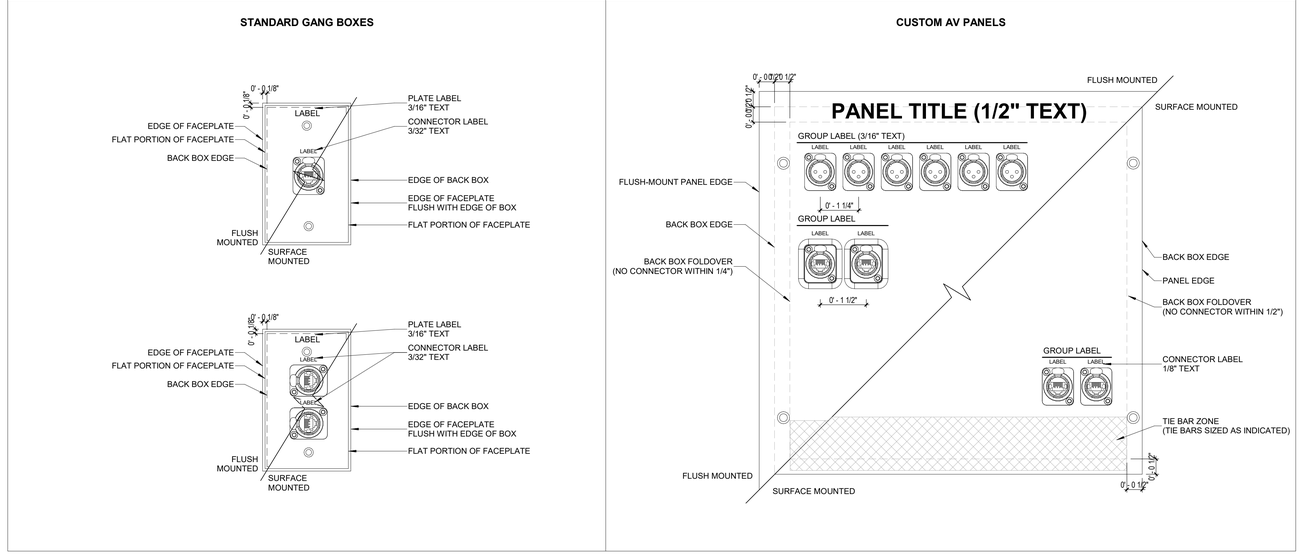
AUDIOVISUAL ABBREVIATIONS

MATV	MASTER ANTENNA TELEVISION
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIC	MICROPHONE
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONITOR
MTD	MOUNTED
MTG	MOUNTING
N	NORTH
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED OWNER INSTALLED
OI	OWNER INSTALLED
OPP	OPPOSITE
OVHD	OVERHEAD
PA	PUBLIC ADDRESS
PAR	PARALLEL
PB	PULL BOX
PENT	PENTHOUSE
PERP	PERPENDICULAR
PHX	PHOENIX CONNECTOR
PLYWD	PLYWOOD
PNL	PANEL
POTS	PLAIN OLD TELEPHONE SERVICE
PRI	PRIMARY RATE INTERFACE
PWR	POWER
QTY	QUANTITY
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
REF	REFERENCE
REFL	REFLECTOR
REQ(D)	REQUIRE(D)
REV	REVISION(S)
RM	ROOM
RND	ROUND
RSC	RIGID STEEL CONDUIT
S	SOUTH
SATV	SATELLITE TELEVISION
SBD	SCHEMATIC BLOCK DIAGRAM
SCHED	SCHEDULE
SCRN	PROJECTION SCREEN
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SL	TO THE LEFT FROM ACTOR PERSPECTIVE
SPEC	SPECIFICATION(S)
SPKR	SPEAKER
SR	TO THE RIGHT FROM ACTOR PERSPECTIVE
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SWBD	SWITCHBOARD
SYM	SYMETRICAL
TBC	TO BE COORDINATED
TBD	TO BE DETERMINED
TEMP	TERMPORARY
TRM	TERMINAL STRIP/LUG
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VTC	VIDEO TELECONFERENCING
W	WIRE
W	WEST
W	WATT
W/	WITH
W/O	WITHOUT
WAN	WIDE AREA NETWORK
WG	WIRE GUARD
WP	WEATHER-PROOF (NEMA 3R)

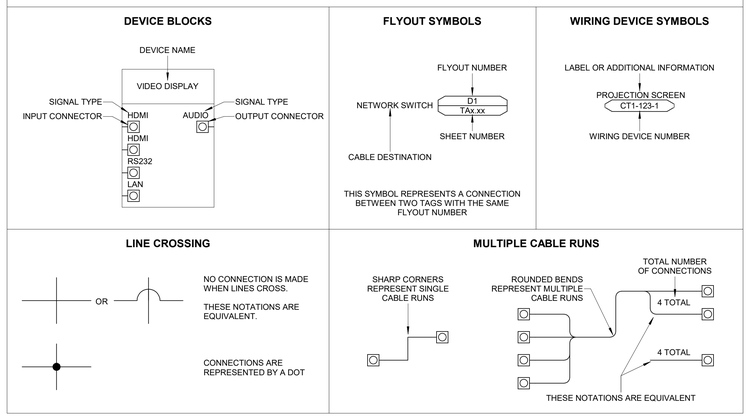
TYPICAL AUDIOVISUAL BACK BOX MOUNTING HEIGHT



TYPICAL AV FACEPLATE DETAIL



SYSTEM BLOCK DIAGRAM LEGEND



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

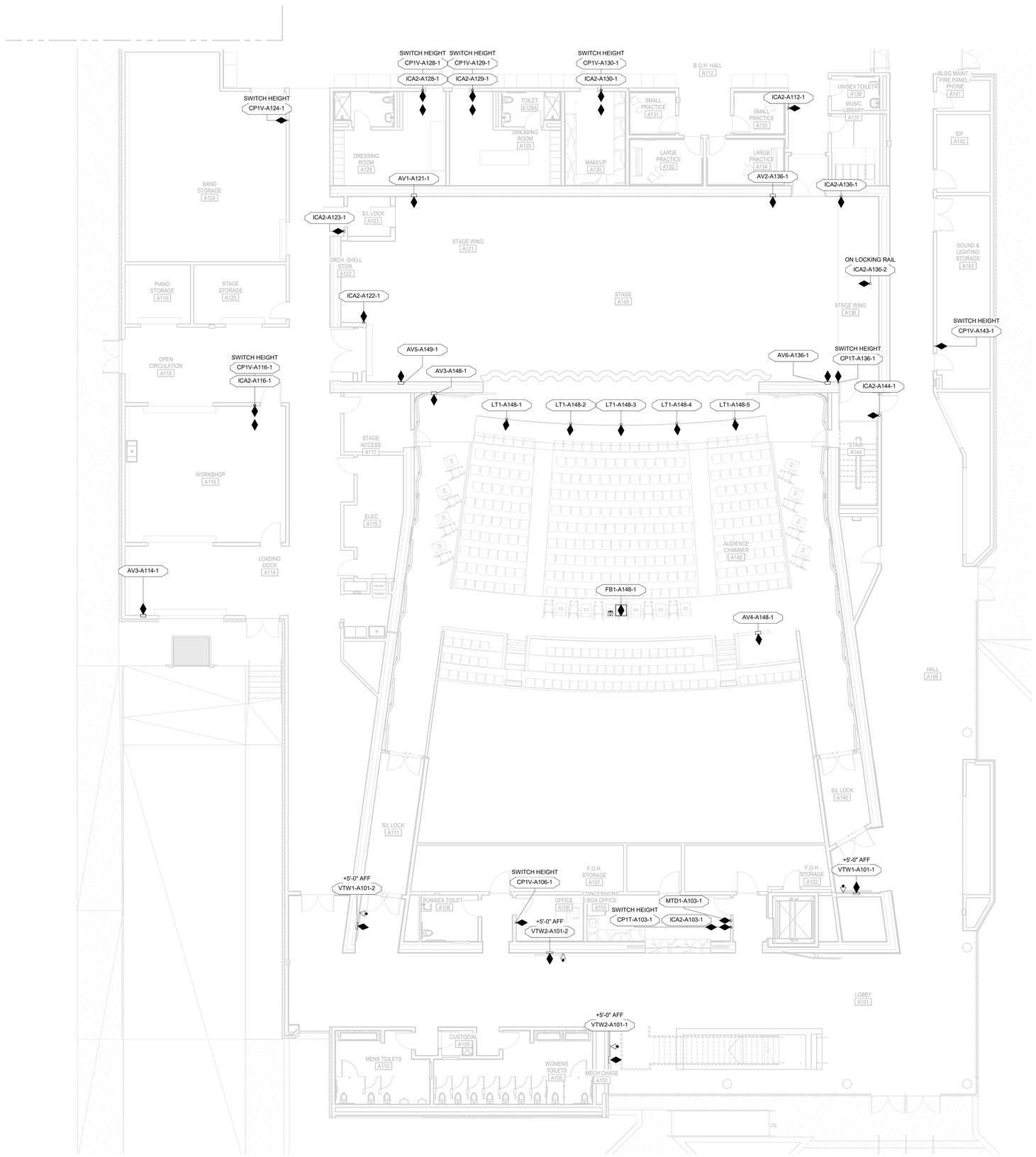
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL GENERAL DETAILS

TA0.02

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:06 AM



N

AUDIOVISUAL WIRING DEVICE PLAN - LEVEL 01 - AREA A

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE ID, ROOM NUMBER, DEVICE TYPE

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR / WALL MOUNTED / INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR / CEILING MOUNTED / INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR / FLOOR MOUNTED / INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

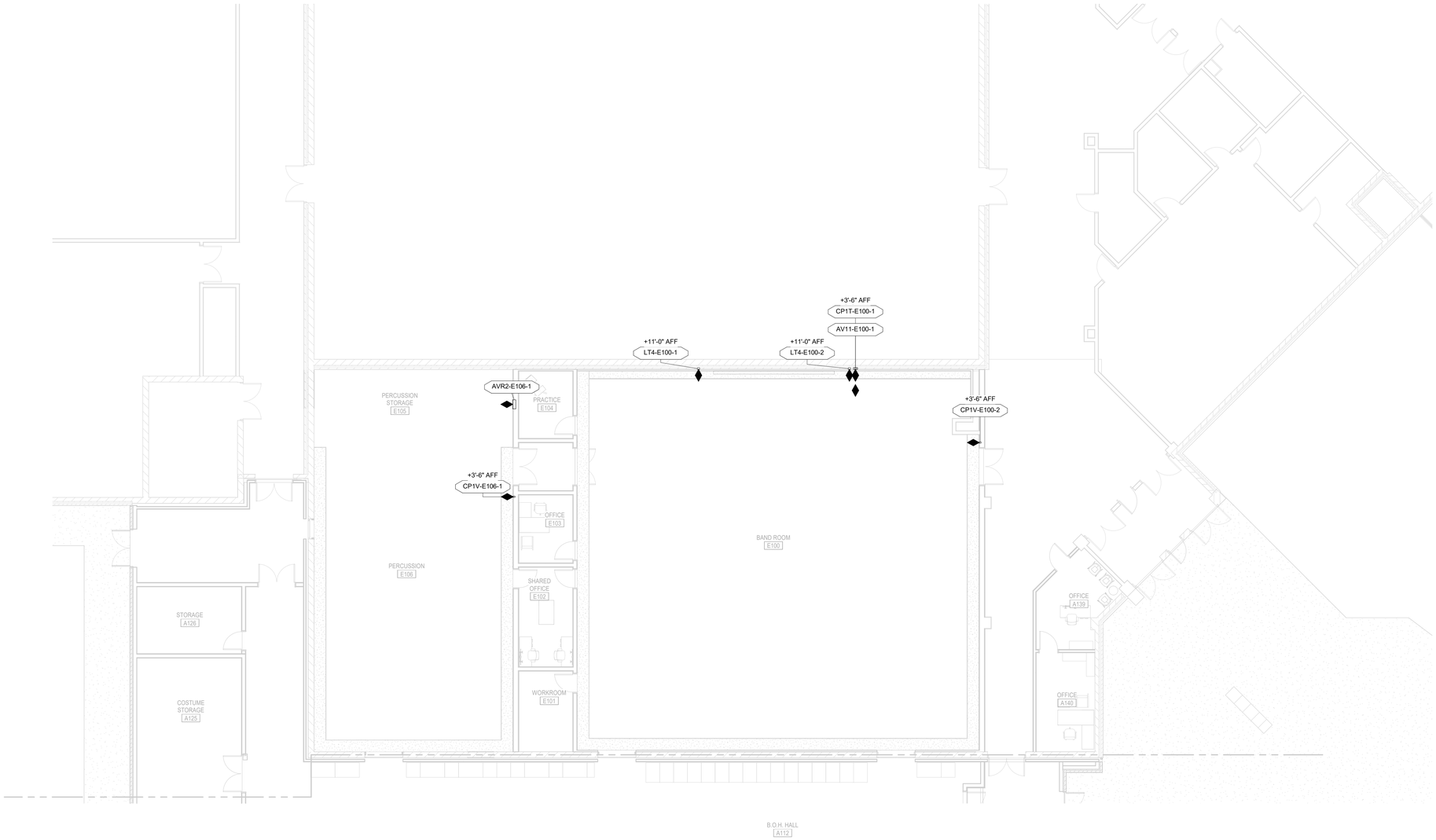
REVISIONS

39-23712-00

LEVEL 01 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN

TA1.01A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:07 AM



AUDIOVISUAL WIRING DEVICE PLAN - LEVEL 01 - AREA B

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE ID, ROOM NUMBER, DEVICE TYPE

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

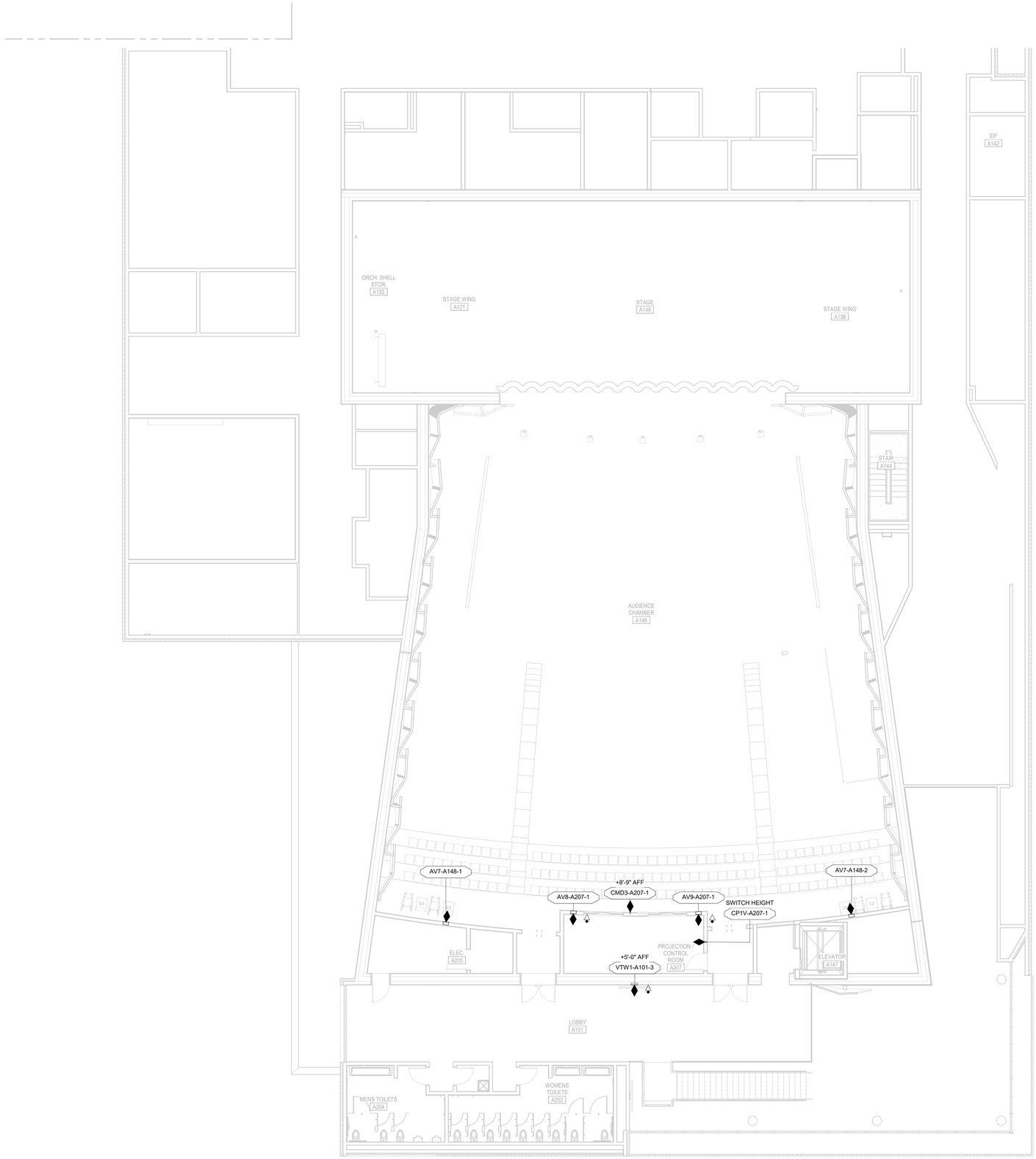
REVISIONS

39-23712-00

LEVEL 01 - AREA B - AUDIOVISUAL WIRING DEVICE PLAN

TA1.01B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:09 AM



AUDIOVISUAL WIRING DEVICE PLAN - LEVEL 02 - AREA A

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE ID, ROOM NUMBER, DEVICE TYPE

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR; WALL MOUNTED; INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR; CEILING MOUNTED; INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR; FLOOR MOUNTED; INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

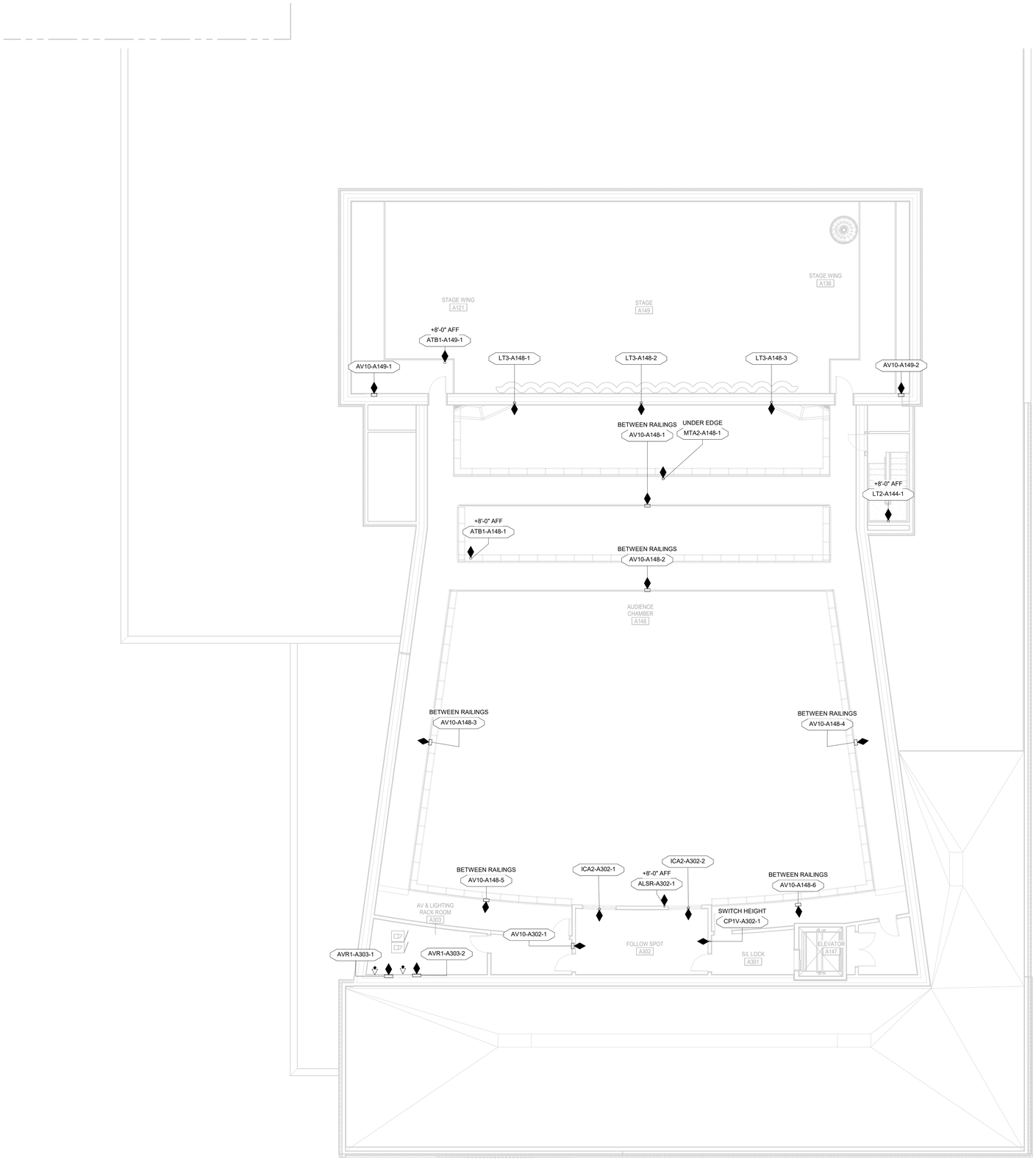
REVISIONS

39-23712-00

LEVEL 02 - AREA A - AUDIOVISUAL WIRING DEVICE PLAN

TA1.02A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:12 AM



AUDIOVISUAL WIRING DEVICE PLAN - CATWALK

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE ID, ROOM NUMBER, DEVICE TYPE

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

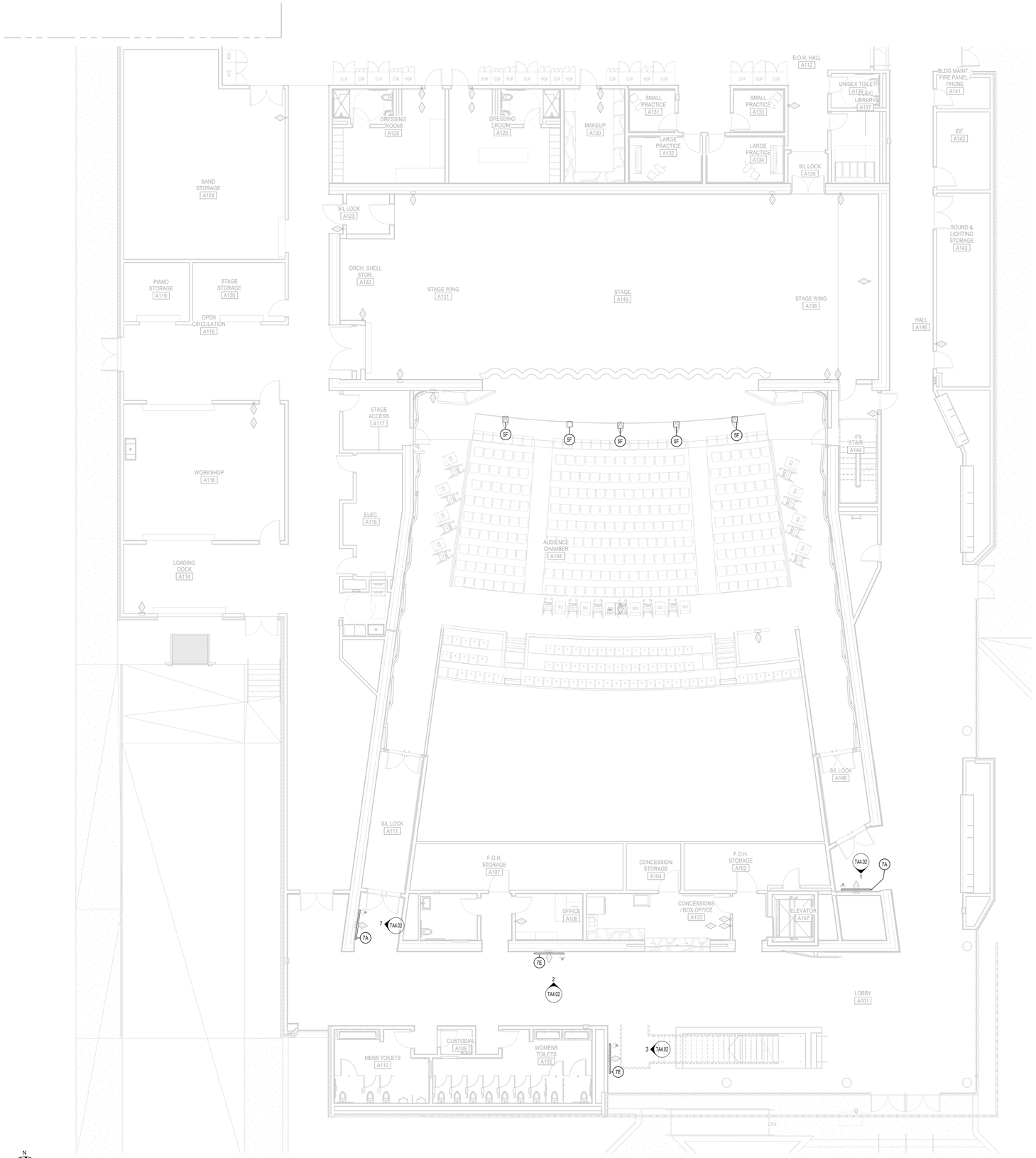
REVISIONS

39-23712-00

CATWALK - AREA A - AUDIOVISUAL WIRING DEVICE PLAN

TA1.03A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:20 AM



N

AUDIOVISUAL EQUIPMENT PLAN - LEVEL 01 - AREA A

SCALE: 1/8" = 1'-0"

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
5F	FRONT FILL LOUDSPEAKER
7A	VIDEO DISPLAY, LANDSCAPE
7E	DIGITAL SIGNAGE DISPLAY, LANDSCAPE

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

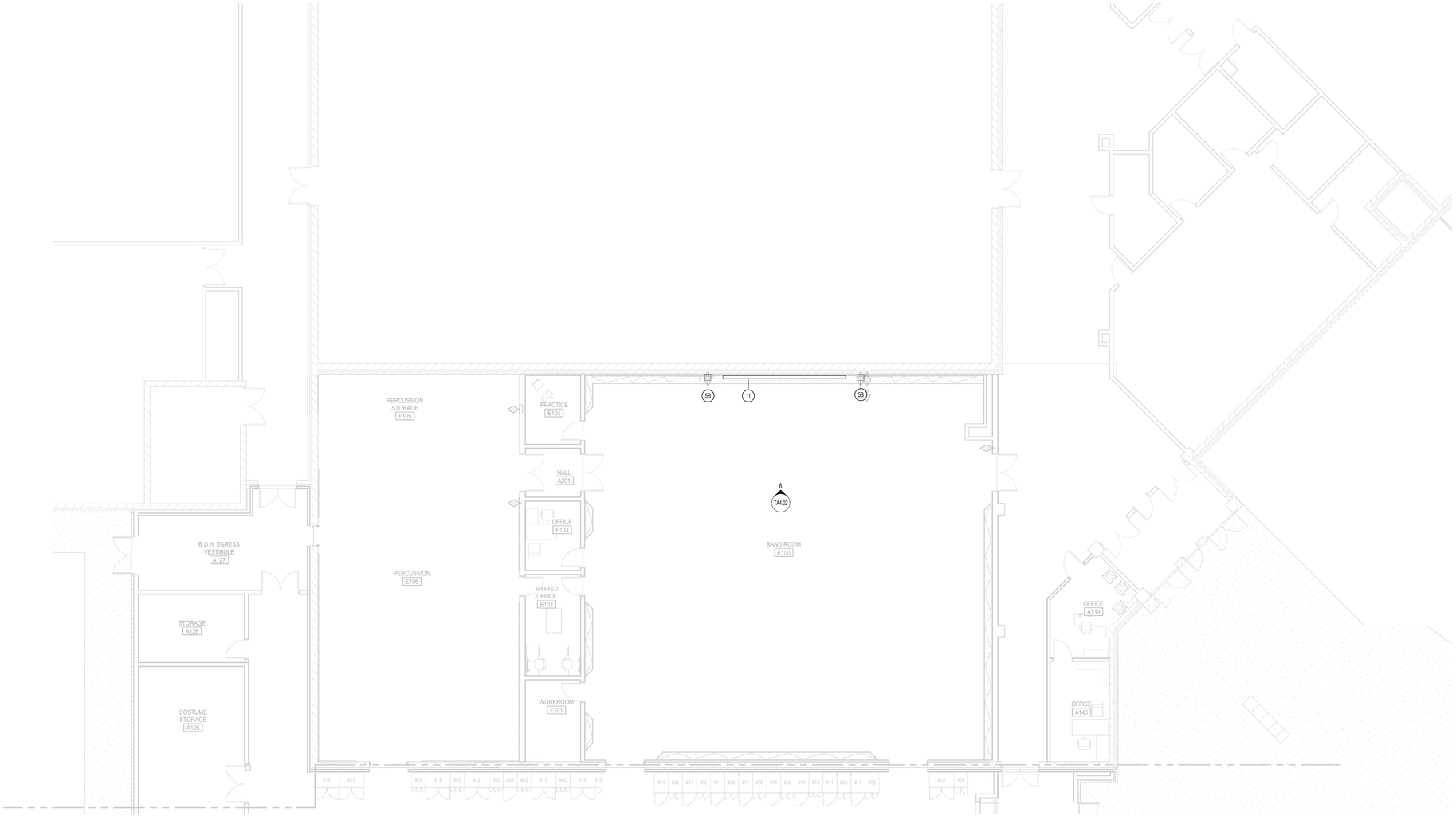
REVISIONS

39-23712-00

LEVEL 01 - AREA A - AUDIOVISUAL EQUIPMENT PLAN

TA1.11A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:30 AM



N

AUDIOVISUAL EQUIPMENT PLAN - LEVEL 01 - AREA B

SCALE: 1/8" = 1'-0"

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
1I	PROJECTION SCREEN, FIXED WALL MOUNT
5B	SURFACE-MOUNTED LOUDSPEAKER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

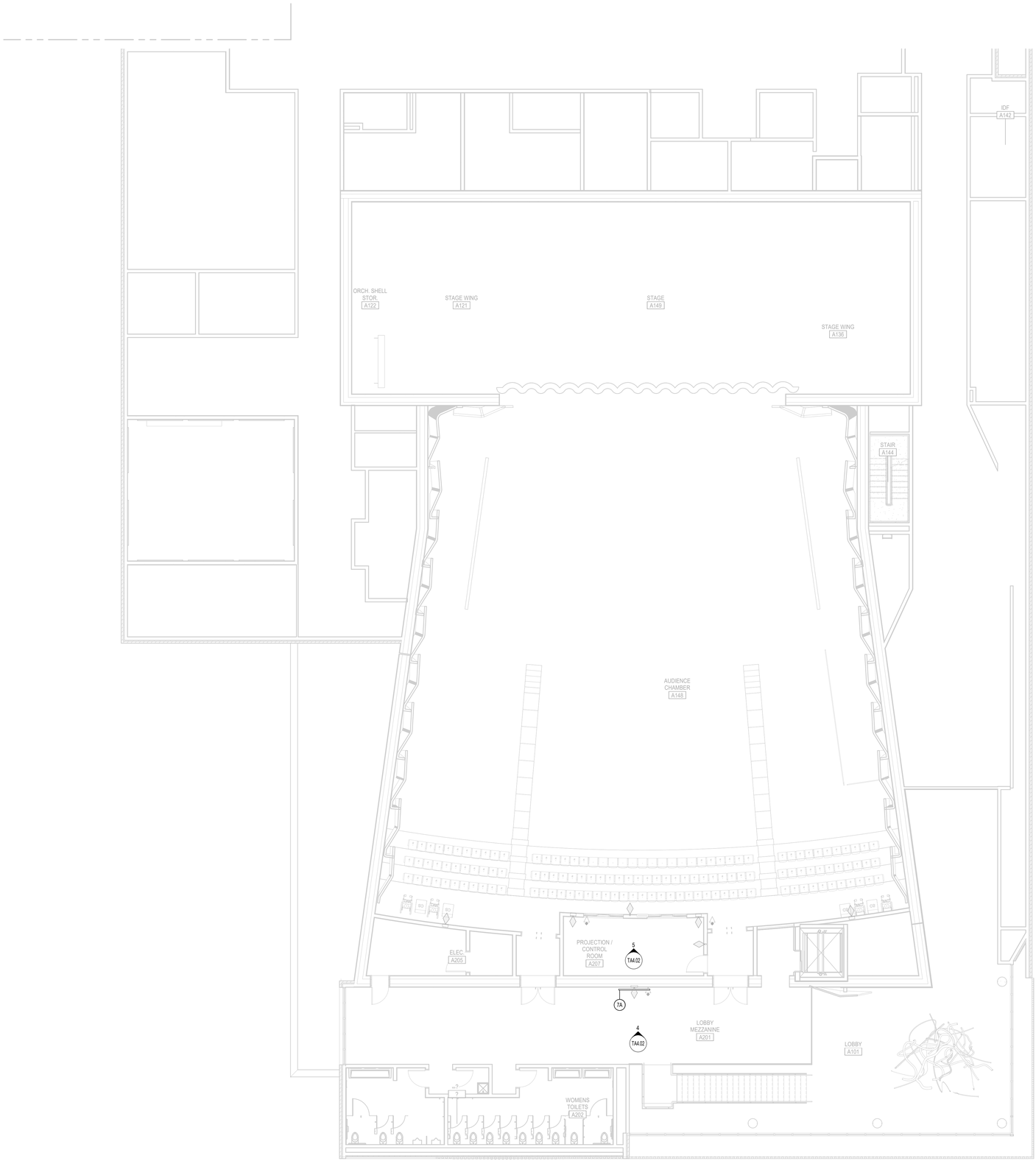
REVISIONS

39-23712-00

LEVEL 01 - AREA B - AUDIOVISUAL EQUIPMENT PLAN

TA1.11B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:32 AM



AUDIOVISUAL EQUIPMENT PLAN - LEVEL 02 - AREA A

SCALE: 1/8" = 1'-0"

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
7A	VIDEO DISPLAY, LANDSCAPE

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

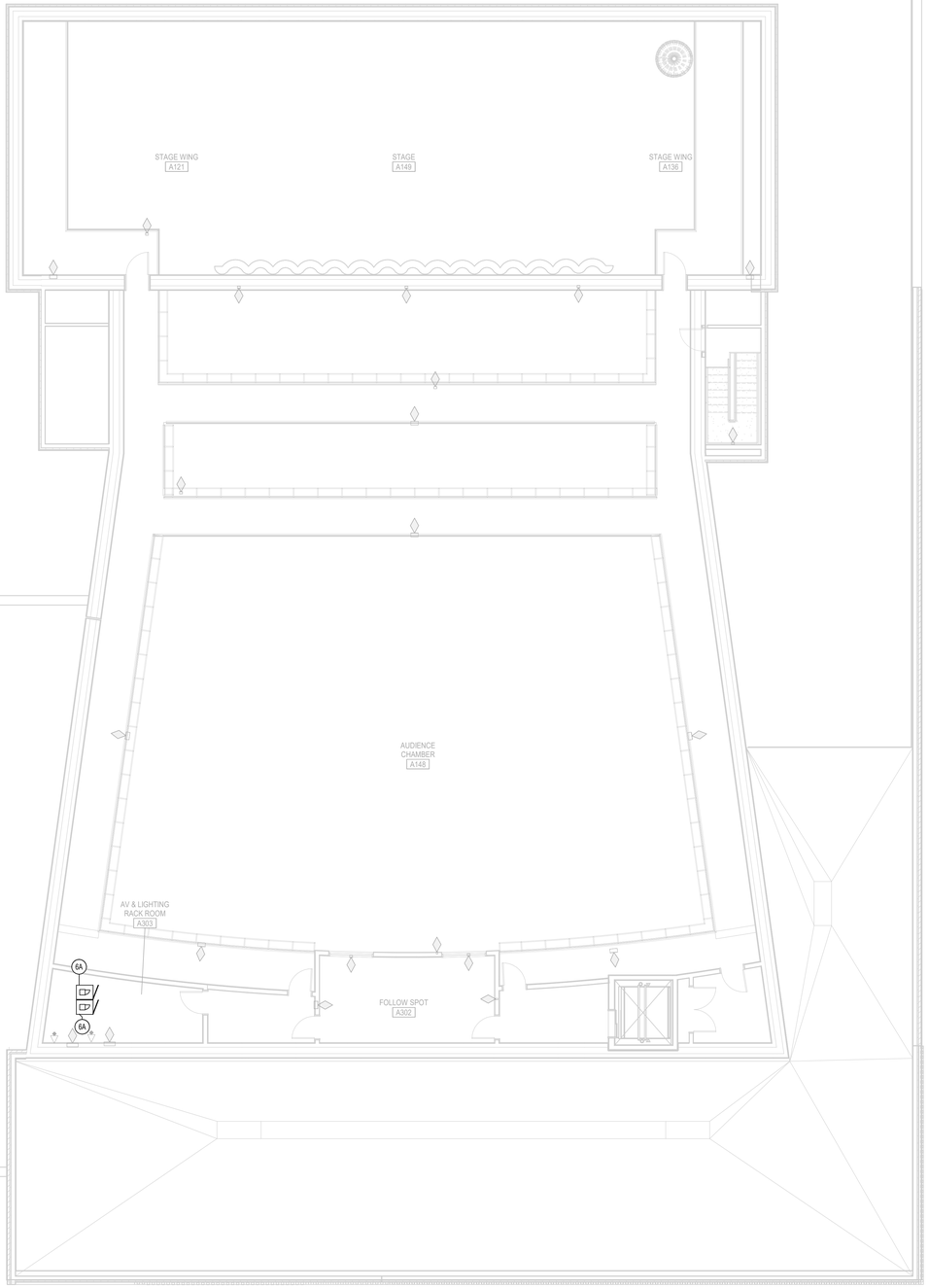
REVISIONS

39-23712-00

LEVEL 02 - AREA A - AUDIOVISUAL EQUIPMENT PLAN

TA1.12A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:37 AM



AUDIOVISUAL EQUIPMENT PLAN - CATWALK - AREA A

SCALE: 1/8" = 1'-0"

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
6A	AV EQUIPMENT RACK

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

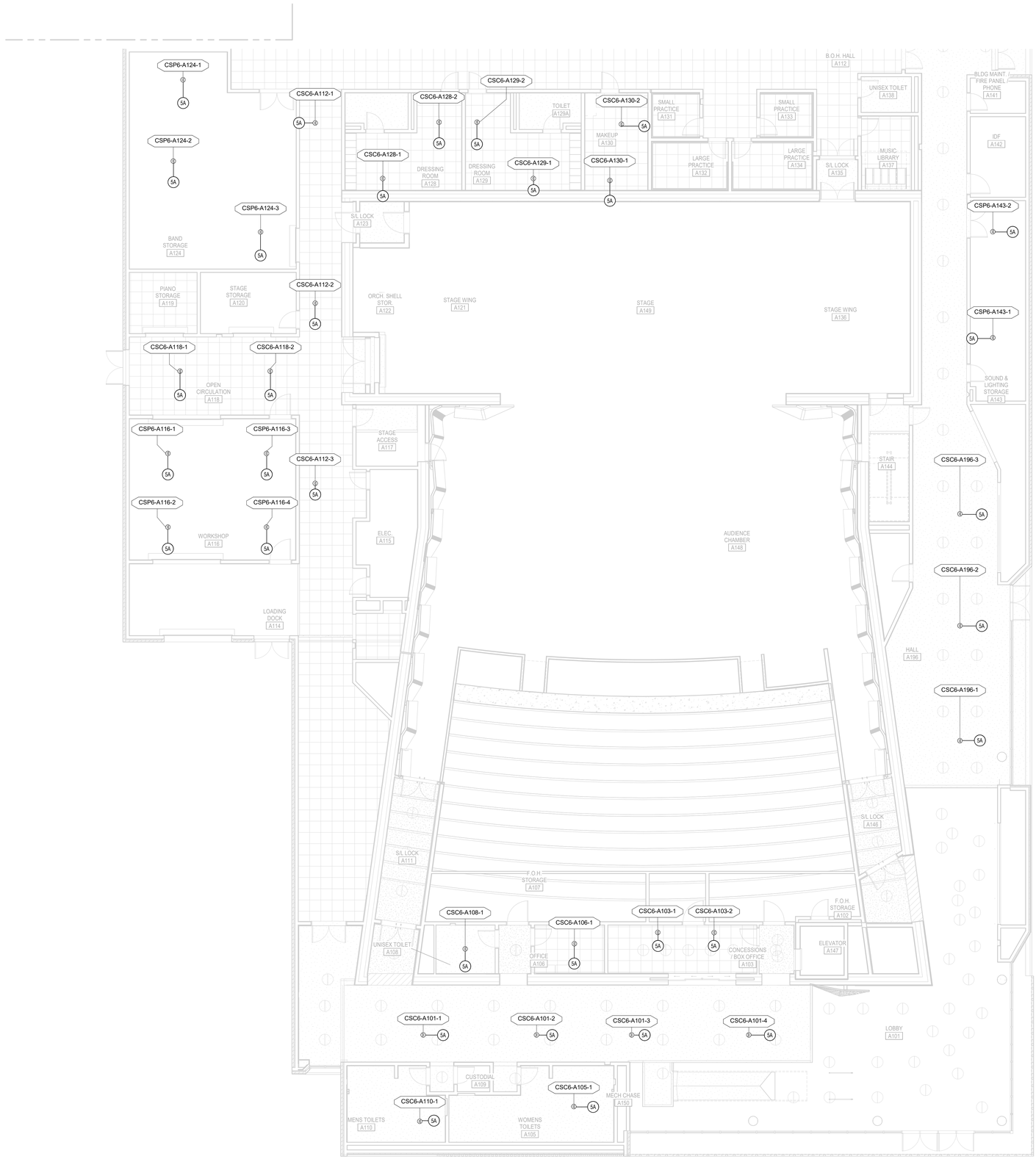
REVISIONS

39-23712-00

CATWALK - AREA A - AUDIOVISUAL EQUIPMENT PLAN

TA1.13A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:45 AM



AUDIOVISUAL CEILING PLAN - LEVEL 01 - AREA A

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE TYPE, ROOM NUMBER, DEVICE ID

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR / WALL MOUNTED / INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR / CEILING MOUNTED / INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR / FLOOR MOUNTED / INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
5A	CEILING LOUDSPEAKER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

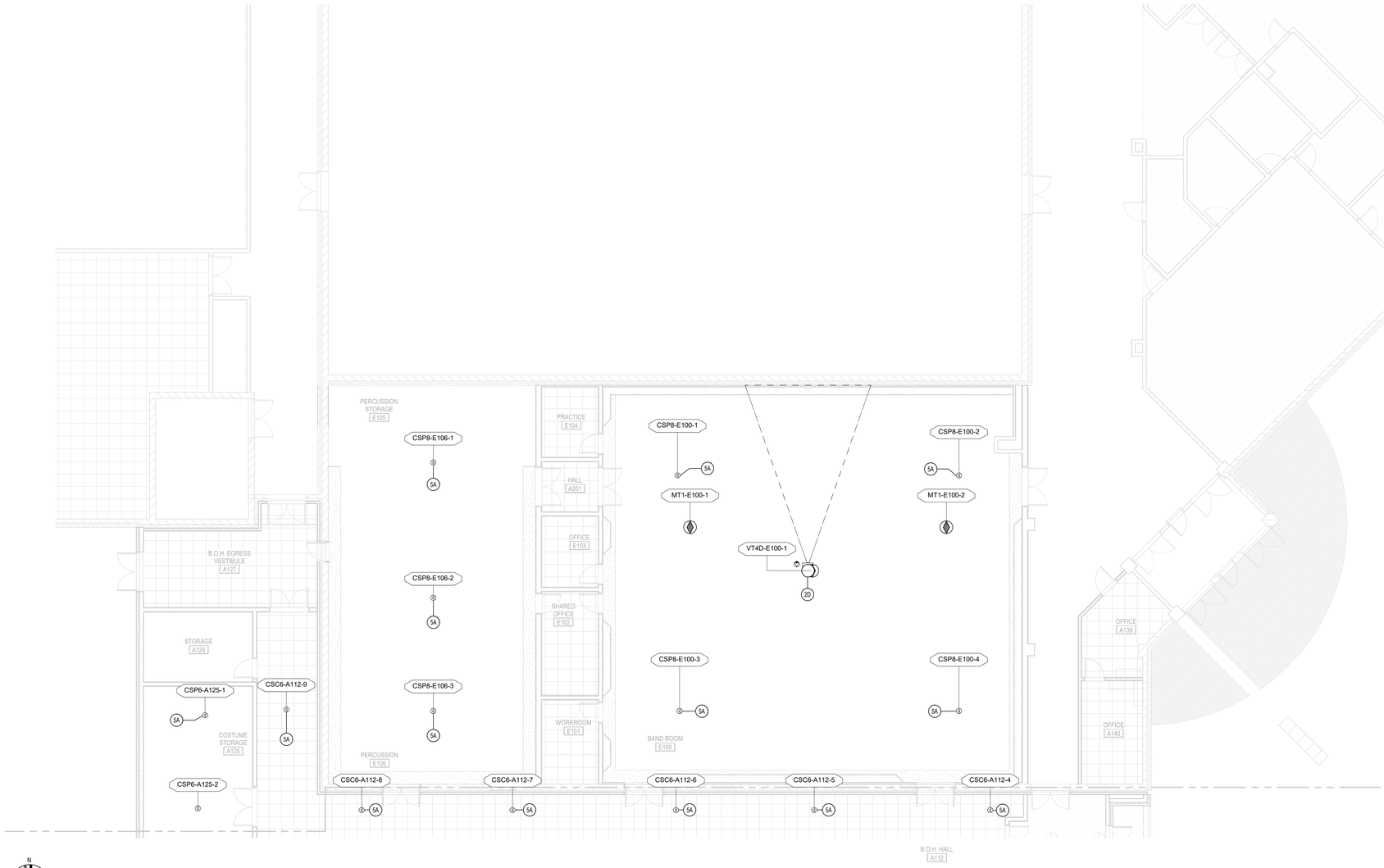
REVISIONS

39-23712-00

LEVEL 01 - AREA A - REFLECTED CEILING PLAN

TA2.01A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:53 AM

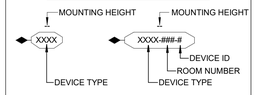


AUDIOVISUAL CEILING PLAN - LEVEL 01 - AREA B

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL



ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
2D	PROJECTOR, CEILING-MOUNTED
5A	CEILING LOUDSPEAKER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

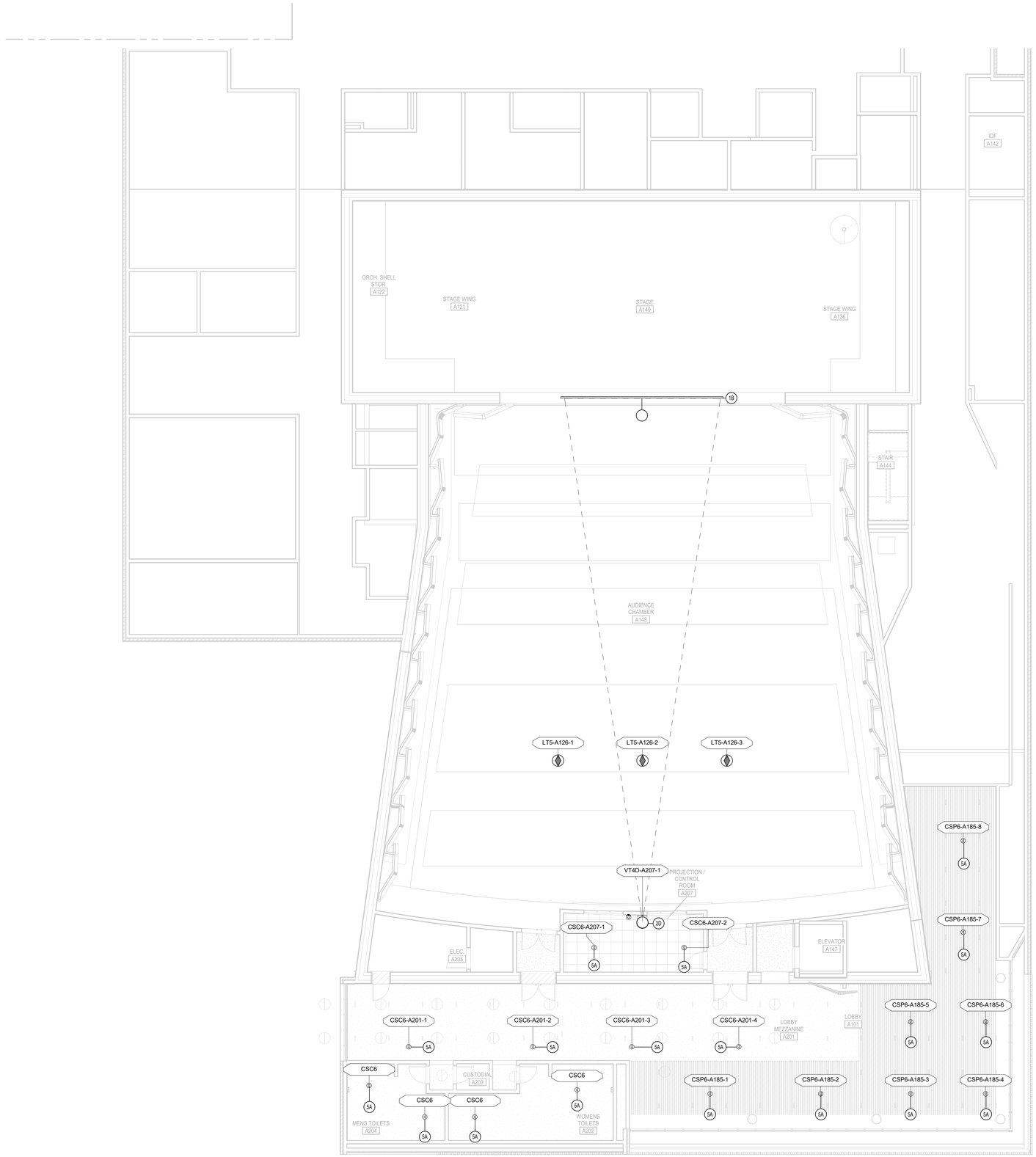
REVISIONS

39-23712-00

LEVEL 01 - AREA B - REFLECTED CEILING PLAN

TA2.01B

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:08:56 AM



N

AUDIOVISUAL CEILING PLAN - LEVEL 02 - AREA A

SCALE: 1/8" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL

MOUNTING HEIGHT — XXXX — DEVICE TYPE

MOUNTING HEIGHT — XXXX-###-# — DEVICE ID, ROOM NUMBER, DEVICE TYPE

ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
1B	PROJECTION SCREEN, CEILING-RECESSED
2D	PROJECTOR, CEILING-MOUNTED
5A	CEILING LOUDSPEAKER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

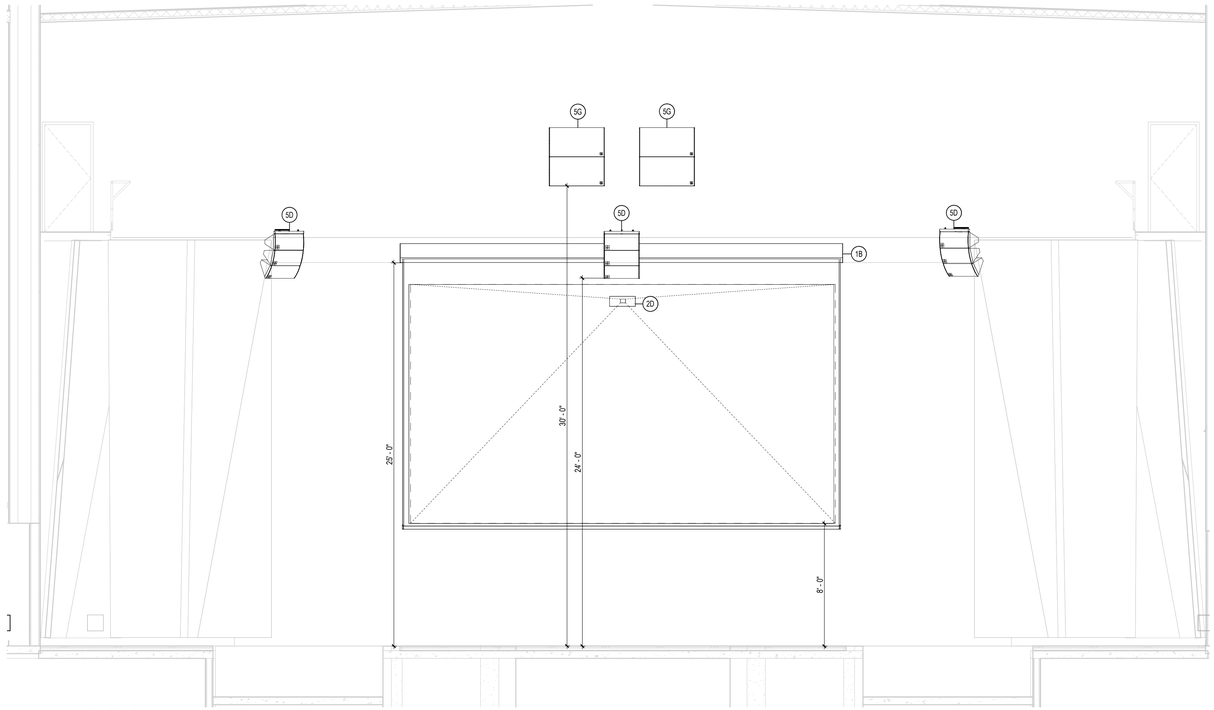
REVISIONS

39-23712-00

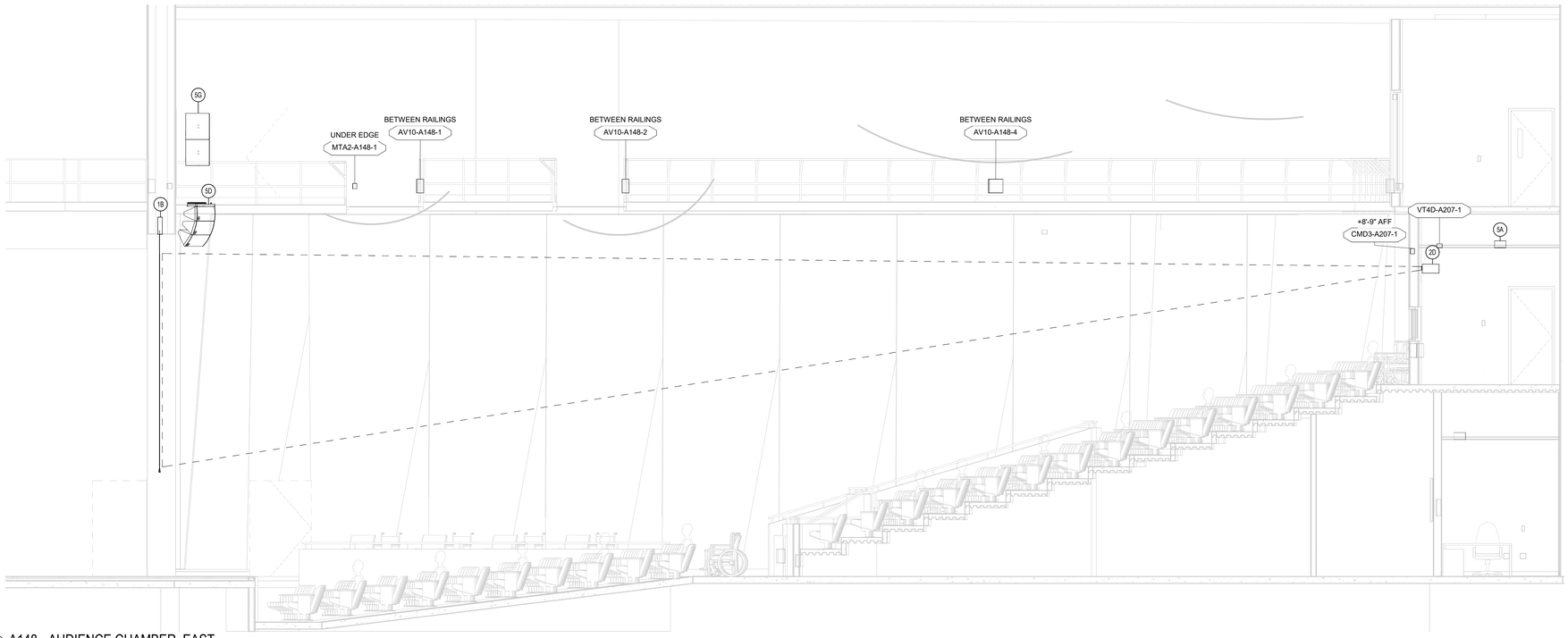
LEVEL 02 - AREA A - REFLECTED CEILING PLAN

TA2.02A

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:00 AM



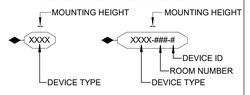
1 TA4.01 A148 - AUDIENCE CHAMBER, NORTH
SCALE: 1/4" = 1'-0"



2 TA4.01 A148 - AUDIENCE CHAMBER, EAST
SCALE: 1/4" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL



ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		'x' REPRESENTS UNIQUE TYPE IDENTIFIERS
FFx	FURNITURE FEED		
ICx	INTERCOM		

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
1B	PROJECTION SCREEN, CEILING-RECESSED
2D	PROJECTOR, CEILING-MOUNTED
5A	CEILING LOUDSPEAKER
5D	PERFORMANCE LINE ARRAY ASSEMBLY
5G	SUBWOOFER

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

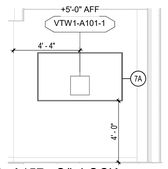
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

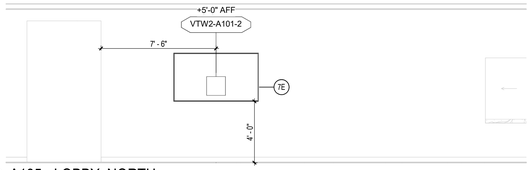
ELEVATIONS, SECTIONS AND 3D VIEWS

TA4.01

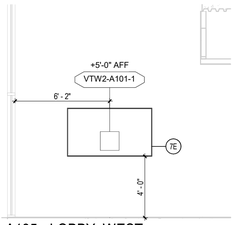
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:05 AM



1 TA4.02 A157 - S/L LOCK
SCALE: 1/4" = 1'-0"

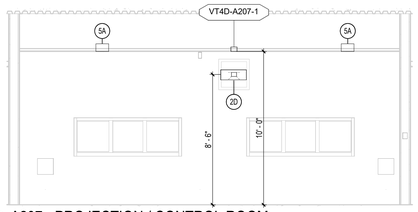


2 TA4.02 A185 - LOBBY, NORTH
SCALE: 1/4" = 1'-0"

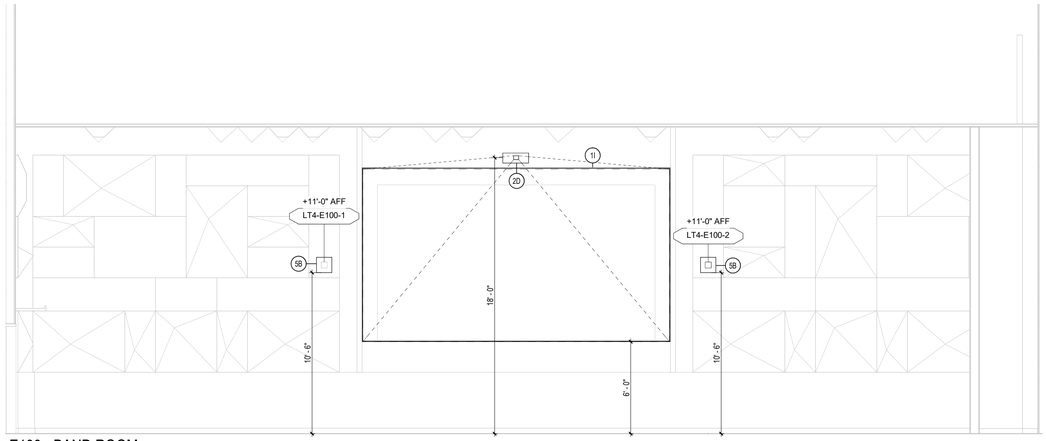


3 TA4.02 A185 - LOBBY, WEST
SCALE: 1/4" = 1'-0"

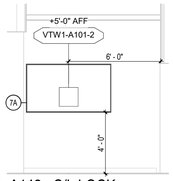
4 TA4.02 A202 - LOBBY MEZZANINE
SCALE: 1/4" = 1'-0"



5 TA4.02 A207 - PROJECTION / CONTROL ROOM
SCALE: 1/4" = 1'-0"



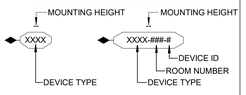
6 TA4.02 E100 - BAND ROOM
SCALE: 1/4" = 1'-0"



7 TA4.02 A142 - S/L LOCK
SCALE: 1/4" = 1'-0"

AUDIOVISUAL SYMBOLS

AUDIOVISUAL DEVICE SYMBOL



ALL DEVICES AT OUTLET HEIGHT UNLESS NOTED OTHERWISE.

REFER TO TYPICAL BACKBOX MOUNTING HEIGHT DETAIL FOR MOUNTING CONDITIONS.

AUDIOVISUAL DEVICE TYPE KEY

ALSx	ASSISTIVE LISTENING	JBx	JUNCTION BOX
ATx	ANTENNA	LPx	LOUDSPEAKER PANEL
AVx	AUDIOVISUAL PANEL	MTx	MIC TERMINATION
AVRx	AV EQUIPMENT RACK	PTx	POKE THRU
BTx	BLUETOOTH PLATE	SCx	PROJECTION SCREEN
CMx	CAMERA	VTx	VIDEO TERMINATION
CPx	CONTROL PANEL		
CSx	CEILING SPEAKER		
CTx	CONTROL DEVICE		
FBx	FLOOR BOX		
FFx	FURNITURE FEED		
ICx	INTERCOM		

'x' REPRESENTS UNIQUE TYPE IDENTIFIERS

AUDIOVISUAL SYMBOLS

- AV WALL BOX
- AV CEILING BOX
- AV FLOOR BOX
- AV CEILING SPEAKER
- AV CABLE PASS

POWER SYMBOLS

- AV ISOLATED GROUND INDICATOR
- WALL MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- CEILING MOUNTED
- INTEGRATED POWER INDICATOR
- AV ISOLATED GROUND INDICATOR
- FLOOR MOUNTED
- INTEGRATED POWER INDICATOR
- 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE - 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE, NEMA 5-20 QUAD RECEPTACLES
- CUSTOM POWER WIRING TO DEVICE/EQUIPMENT
- SPECIALTY POWER - REFER TO ELECTRICAL DOCUMENTS FOR RECEPTACLE TYPE

DATA SYMBOLS

- WALL MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE (+18" AFF UNO).
- WALL MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- FLOOR MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE.
- CEILING MOUNTED DATA RECEPTACLE FOR LAN, NOT CONTAINED IN AUDIOVISUAL WIRING DEVICE PLATE - FOR REFERENCE ONLY.

Keynote Legend

ALL ITEMS PER 274116 UNLESS NOTED OTHERWISE.

Key Value	Keynote Text
1I	PROJECTION SCREEN, FIXED WALL MOUNT
2D	PROJECTOR, CEILING-MOUNTED
5A	CEILING LOUDSPEAKER
5B	SURFACE-MOUNTED LOUDSPEAKER
7A	VIDEO DISPLAY, LANDSCAPE
7E	DIGITAL SIGNAGE DISPLAY, LANDSCAPE

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

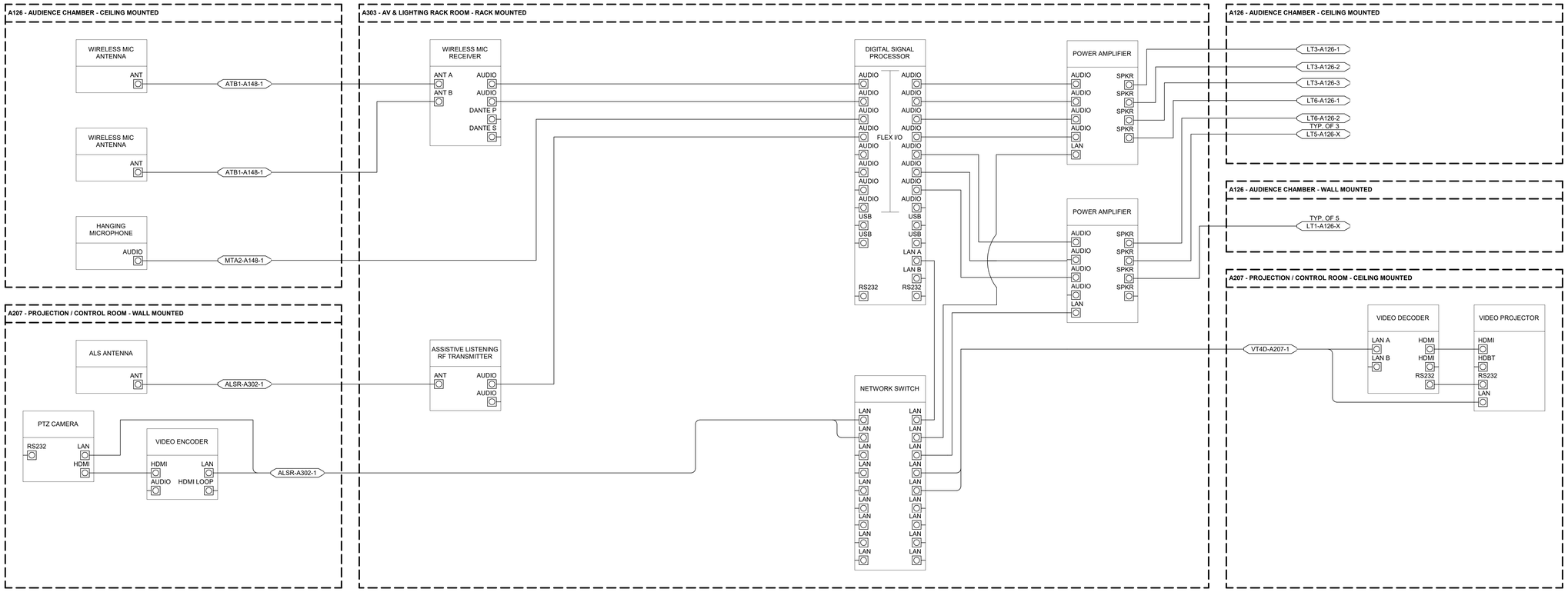
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

ELEVATIONS, SECTIONS AND 3D VIEWS

TA4.02

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:59 AM



SIGNAL BLOCK DIAGRAM - STAGE

SCALE: 3/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

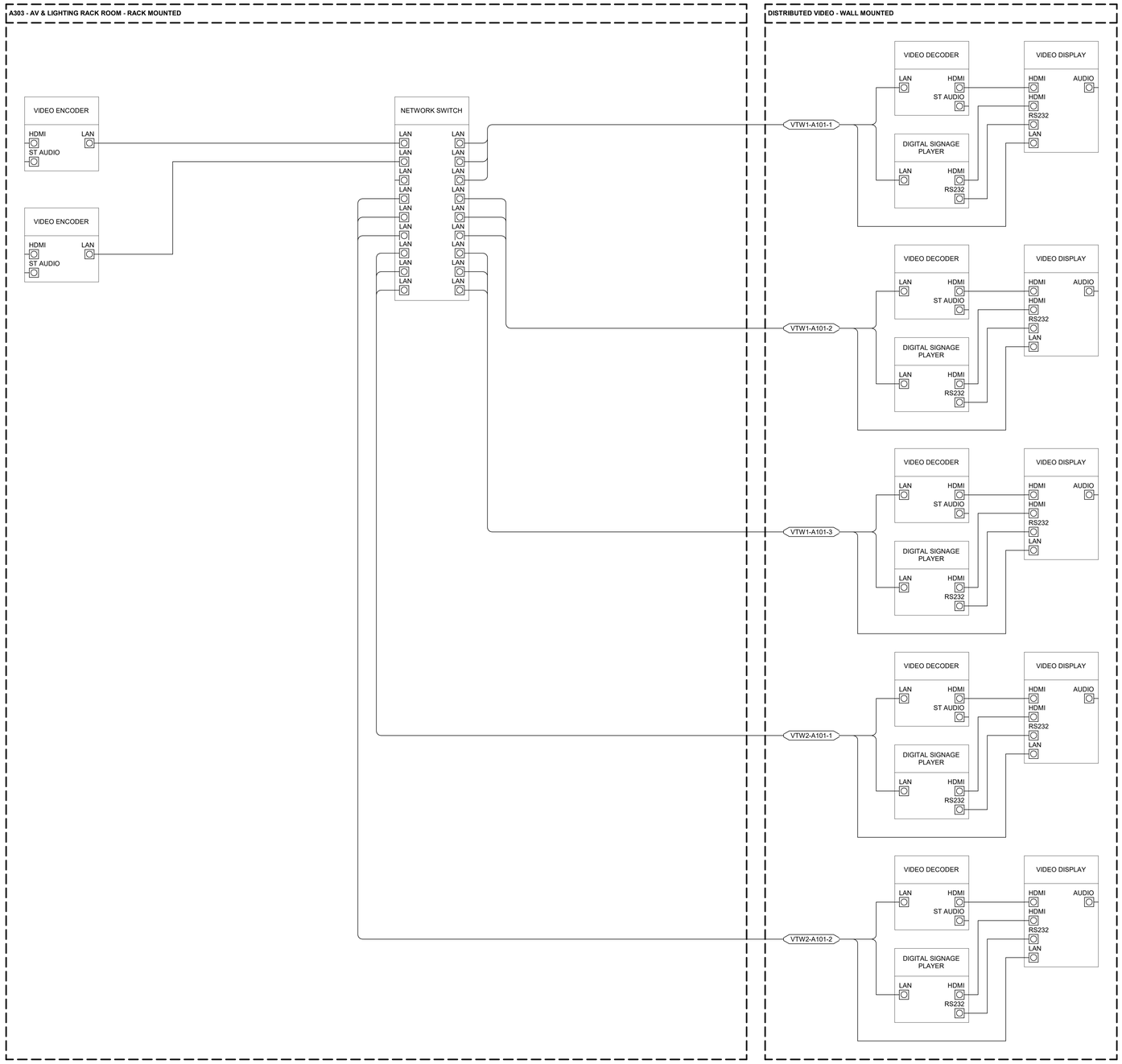
REVISIONS

39-23712-00

AUDIOVISUAL SYSTEM BLOCK DIAGRAM

TA5.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:10 AM



SIGNAL BLOCK DIAGRAM - DIGITAL SIGNAGE

SCALE: 3/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

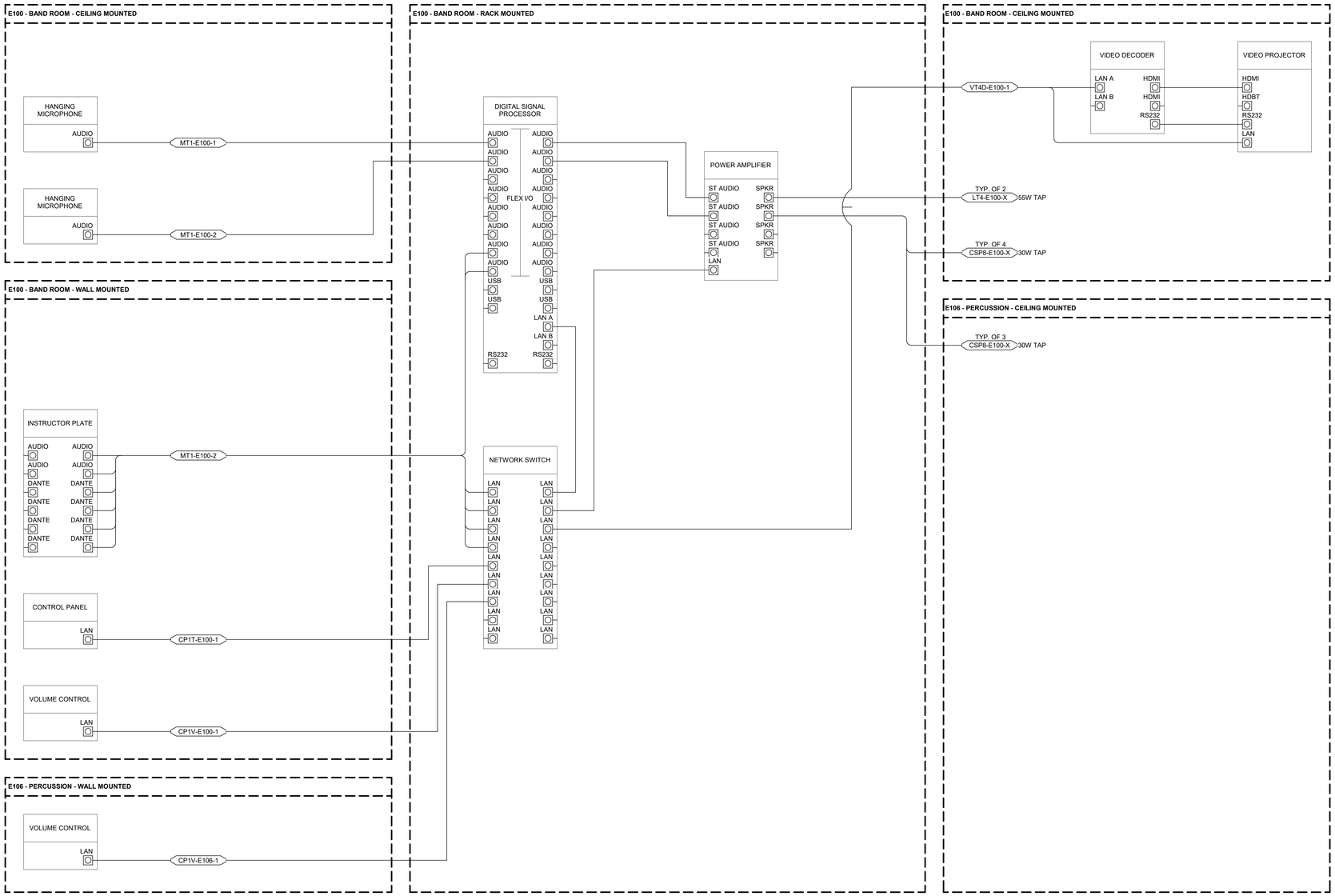
REVISIONS

39-23712-00

AUDIOVISUAL SYSTEM BLOCK DIAGRAM

TA5.02

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:11 AM



SIGNAL BLOCK DIAGRAM - BAND ROOM

SCALE: 3/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

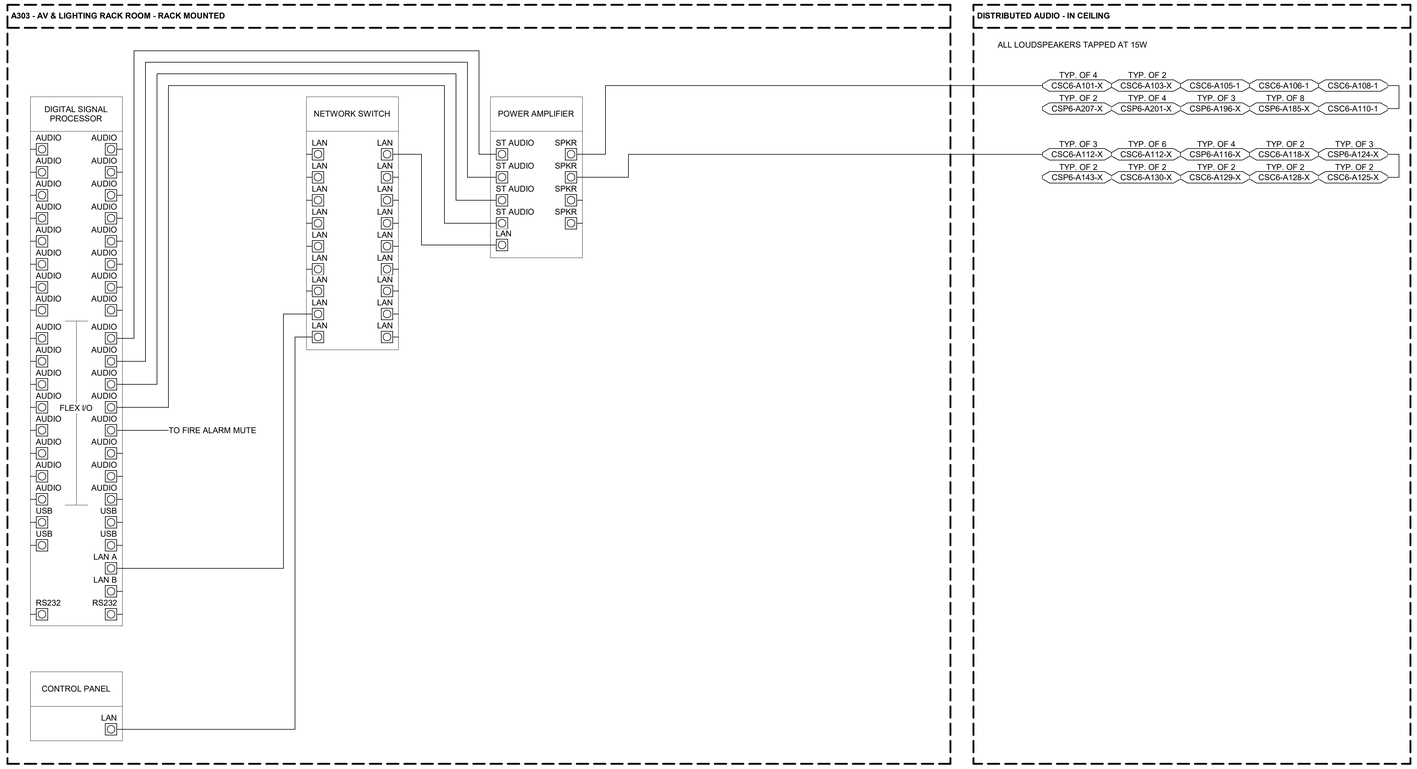
REVISIONS

39-23712-00

AUDIOVISUAL SYSTEM BLOCK DIAGRAM

TA5.03

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:12 AM



SIGNAL BLOCK DIAGRAM - DISTRIBUTED AUDIO

SCALE: 3/8" = 1'-0"

DLRGROUP

© DLR Group

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.07.25

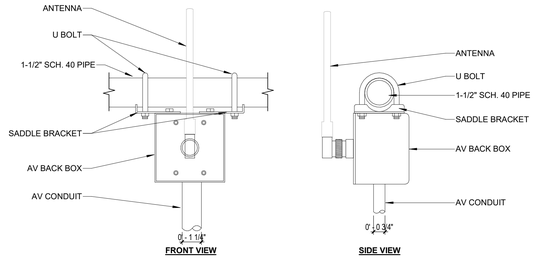
REVISIONS

39-23712-00

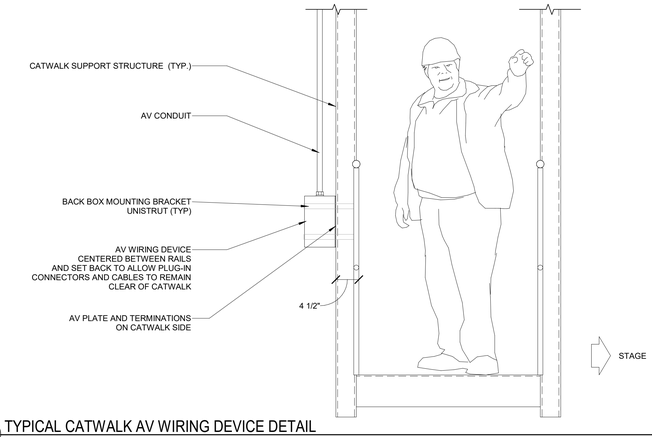
AUDIOVISUAL SYSTEM BLOCK DIAGRAM

TA5.04

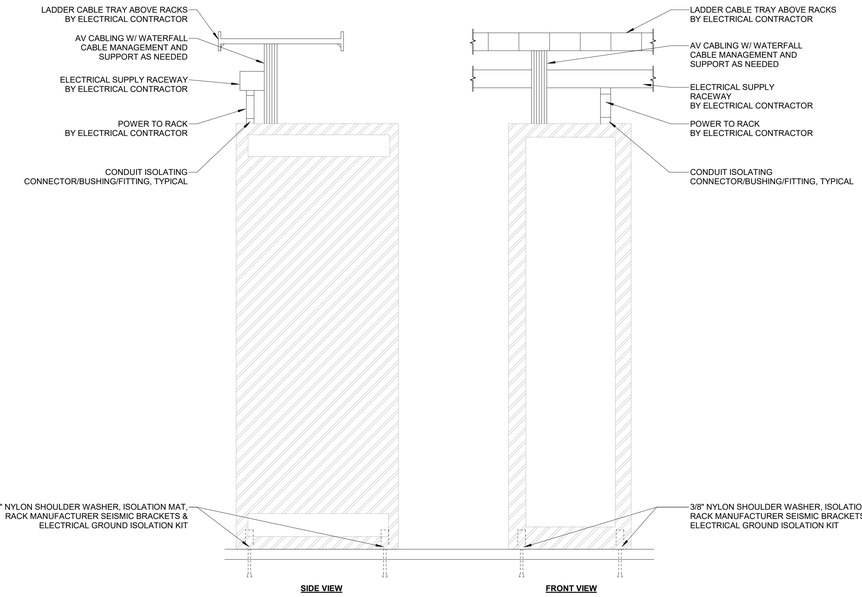
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:13 AM



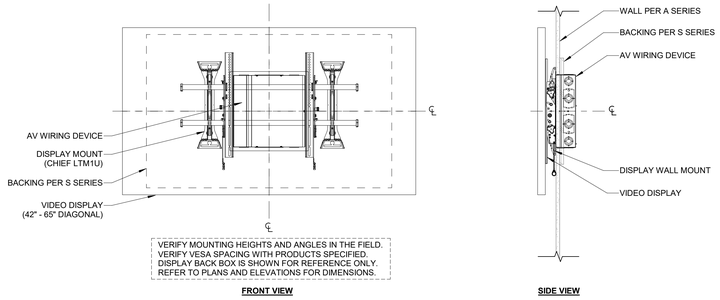
1 / TA6.01 ANTENNA - RAIL MOUNTED
SCALE: 3" = 1'-0"



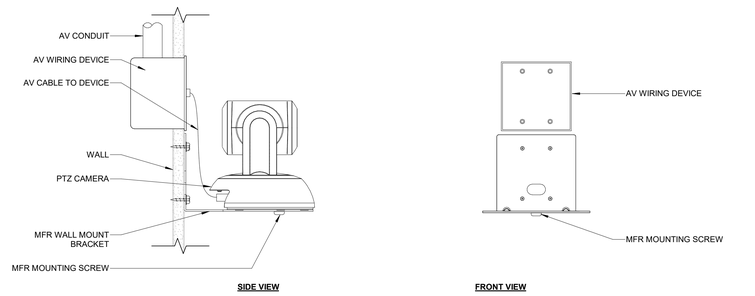
4 / TA6.01 TYPICAL CATWALK AV WIRING DEVICE DETAIL
SCALE: 1" = 1'-0"



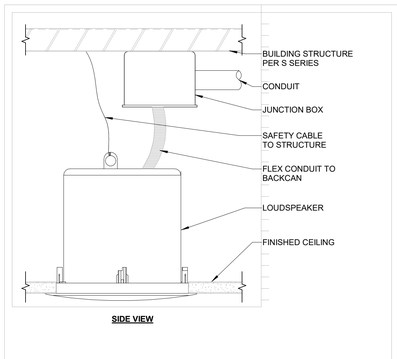
2 / TA6.01 TYPICAL AV EQUIPMENT RACK
SCALE: 1" = 1'-0"



5 / TA6.01 TYPICAL DISPLAY - TILT MOUNT (42" - 65")
SCALE: 1" = 1'-0"



3 / TA6.01 TYPICAL CAMERA - PTZ, WALL MOUNTED (THEATER)
SCALE: 3" = 1'-0"



6 / TA6.01 TYPICAL LOUDSPEAKER - CEILING RECESSED W/ FLEX CONDUIT
SCALE: 3" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

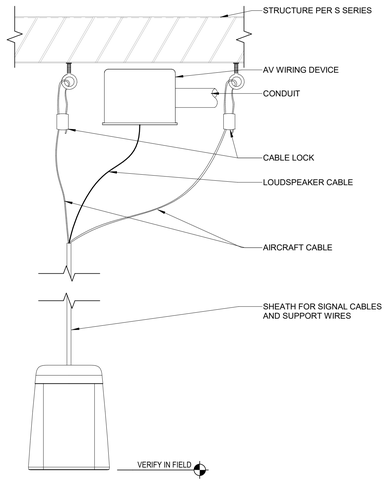
ISSUE FOR BID
AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL
DETAILS

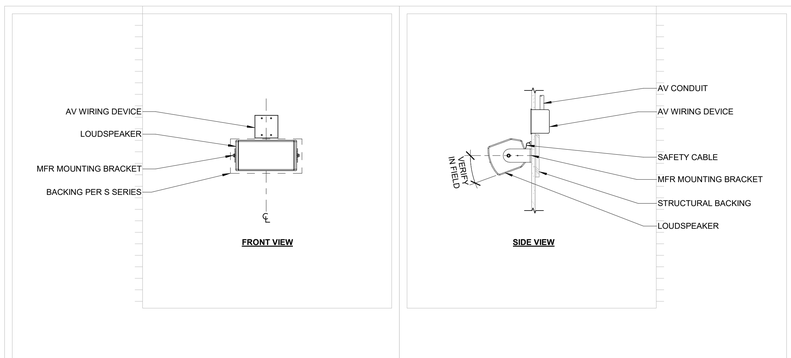
TA6.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:14 AM

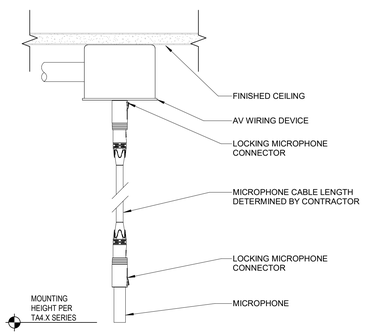


SIDE VIEW

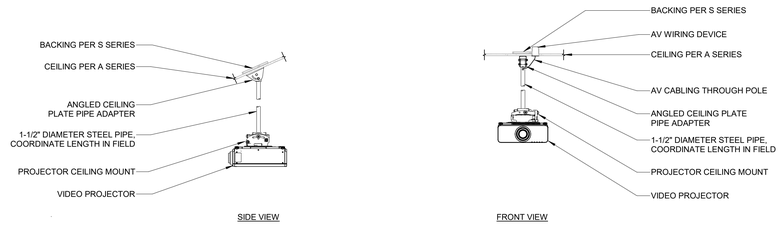
1 / TA6.02 TYPICAL LOUDSPEAKER - PENDANT
SCALE: 3" = 1'-0"



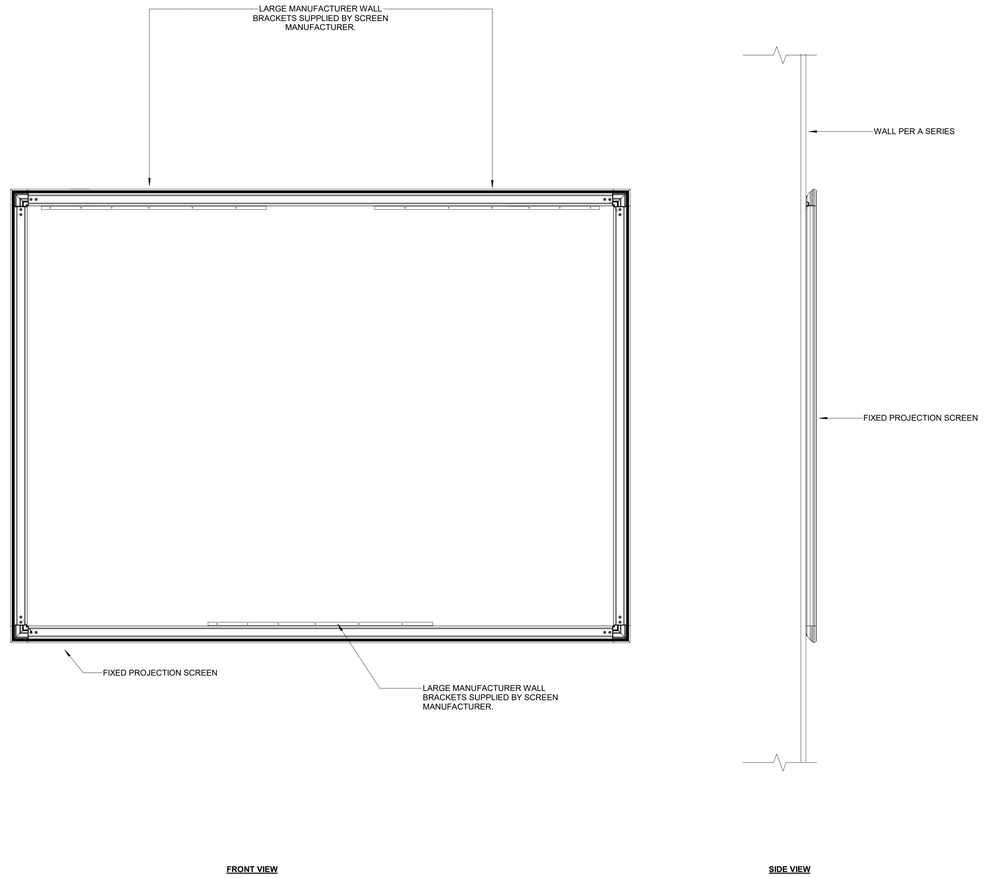
2 / TA6.02 TYPICAL LOUDSPEAKER - WALL MOUNTED (HORIZONTAL)
SCALE: 1" = 1'-0"



3 / TA6.02 TYPICAL HANGING MICROPHONE
SCALE: 3" = 1'-0"



4 / TA6.02 TYPICAL POLE MOUNT PROJECTOR DETAIL
SCALE: 1/2" = 1'-0"



5 / TA6.02 TYPICAL - WALL MOUNTED FIXED FRAME PROJECTION SCREEN
SCALE: 1" = 1'-0"

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Frn 3039, Crandall, TX 75114

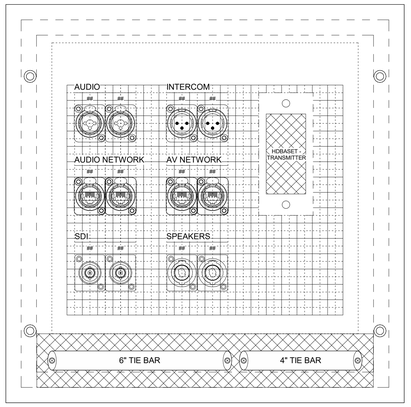
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL DETAILS

TA6.02

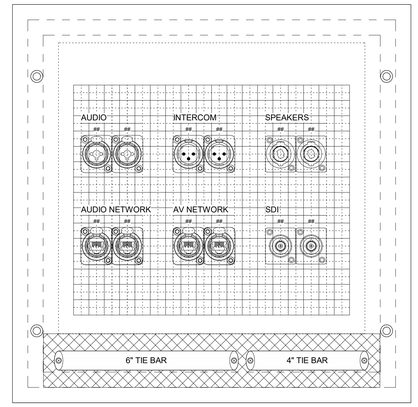
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:16 AM



1 TA6.51 AV1 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

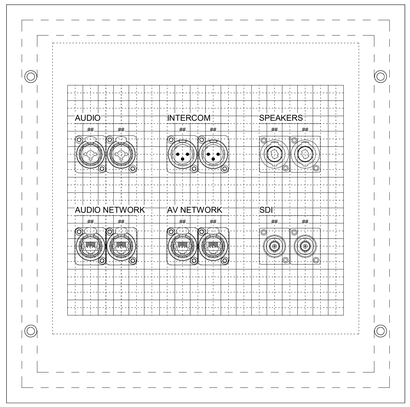
DEVICE TYPE:	AV1
DESCRIPTION:	STAGE LEFT AV PANEL
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(4) DATA-S, (2) SDI-12G
E	-



2 TA6.51 AV2 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

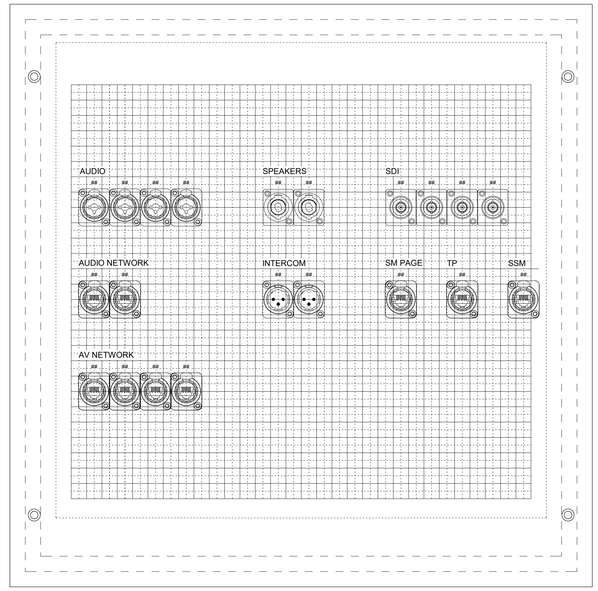
DEVICE TYPE:	AV2
DESCRIPTION:	STAGE RIGHT AV PANEL
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(4) DATA-S, (2) SDI-12G
E	-



3 TA6.51 AV3 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

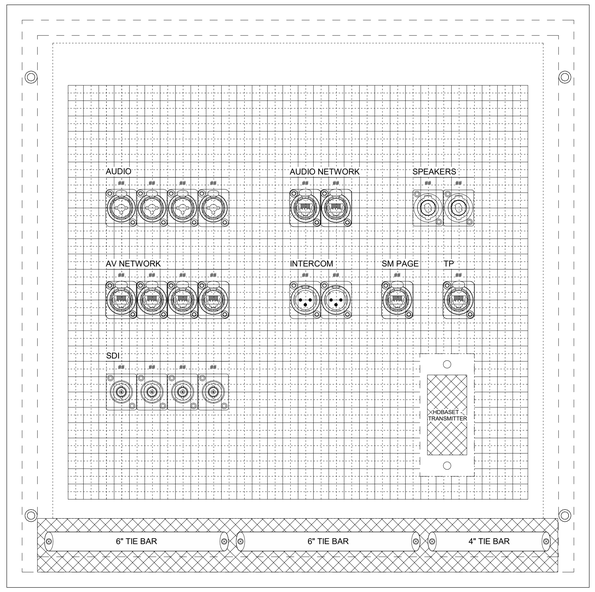
DEVICE TYPE:	AV3
DESCRIPTION:	AV PANEL
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(4) DATA-S, (2) SDI-12G
E	-



4 TA6.51 AV4 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

DEVICE TYPE:	AV4
DESCRIPTION:	AV PANEL
BACKBOX:	18" x 18" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(4) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(9) DATA-S, (4) SDI-12G
E	-



5 TA6.51 AV5 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

DEVICE TYPE:	AV5
DESCRIPTION:	AV PANEL
BACKBOX:	18" x 18" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(4) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(8) DATA-S, (4) SDI-12G
E	-

AUDIOVISUAL CONNECTORS

	KEYSTONE	PANEL MOUNT	DESCRIPTION
AUDIO			BLANK PLATE
AUDIO			3.5mm STEREO UNBALANCED AUDIO
AUDIO			RCA CONNECTOR (RECESSED)
AUDIO			RCA CONNECTOR (STEREO)
AUDIO			XLR PIN
AUDIO			XLR SOCKET
AUDIO			XLR COMBO RECEPTACLE
LOUDSPEAKER			TWIST-LOCK LOUDSPEAKER CONNECTOR - 2 POLE
LOUDSPEAKER			TWIST-LOCK LOUDSPEAKER CONNECTOR - 4 POLE
VIDEO			BNC CONNECTOR
VIDEO			MINI DISPLAYPORT / THUNDERBOLT
VIDEO			F-TYPE COAXIAL
VIDEO			HDMI
DATA \ MULTIMEDIA			CAT6A CONNECTOR
DATA \ MULTIMEDIA			USB - TYPE A
DATA \ MULTIMEDIA			USB - TYPE B
DATA \ MULTIMEDIA			USB - TYPE C
FIBEROPTIC			LC DUPLEX FIBEROPTIC CONNECTOR
FIBEROPTIC			SMPTE 304M HYBRID CONNECTOR

NOTES:
1. REFER TO WIRING DEVICE PLANS AND REFLECTED CEILING PLANS FOR PLATE LOCATIONS.
2. REFER TO WIRING DEVICE SCHEDULE FOR PLATE MOUNTING HEIGHTS, TYPES, AND CONDITIONS.
3. REFER TO AUDIOVISUAL SYSTEMS SPECIFICATION FOR PLATE LABELING, FINISH, AND HARDWARE REQUIREMENTS.
4. FOR SURFACE MOUNT BOXES, PLATES SHALL BE THE SAME SIZE AS THE BACKBOX.
5. FOR FLUSH MOUNT BOXES, PLATES SHALL SHALL EXTEND 1/2" BEYOND THE BOX AT EACH SIDE.
6. PROVIDE BLANK COVERS FOR ALL JUNCTION BOXES (WITH GROMMETS IF REQUIRED). AV CONTRACTOR TO DETERMINE GROMMET SIZES.
7. AV CONTRACTOR SHALL VERIFY PLATE COLOR WITH ARCHITECT PRIOR TO FABRICATION OF THE PLATES.
8. COORDINATE WITH TELECOM CONTRACTOR TO TERMINATE ENTERPRISE LAN AND PoE CONNECTORS ON AV PLATES.
9. COORDINATE WITH ELECTRICAL CONTRACTOR TO TERMINATE POWER RECEPTACLES ON AV PLATES OR IN AV BACK BOXES.
10. SEE AV SYSTEM BLOCK DIAGRAMS FOR AV PLATE CONNECTOR NUMBERING. REPLACE "#" WITH NUMBER ACCORDINGLY. NUMBERING SHALL BE SEQUENTIAL, NON-REPEATING WITHIN EACH SPACE. SUBMIT SHOP DRAWINGS FOR APPROVAL.
11. PANEL LABELS SHALL BE UNIQUE AND INTUITIVE, REFERENCING THE LOCATION IN ROOM (EX. UPSTAGE LEFT). SUBMIT SHOP DRAWINGS FOR APPROVAL.
12. AV CONTRACTOR TO VERIFY BACK BOX SIZES AND ORIENTATION ONSITE PRIOR TO FABRICATION OF AV PLATES.
13. PROVIDE COLORED GASKET FOR RJ45 CONNECTORS DESINATED FOR DANTE, TOUCH PANEL/CONTROL, AND DIGITAL INTERCOM CONNECTIONS:
    A. YELLOW FOR DANTE PRIMARY
    B. GREEN FOR DANTE SECONDARY
    C. BLUE FOR TOUCH PANEL/CONTROL
    D. WHITE FOR DIGITAL INTERCOM

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

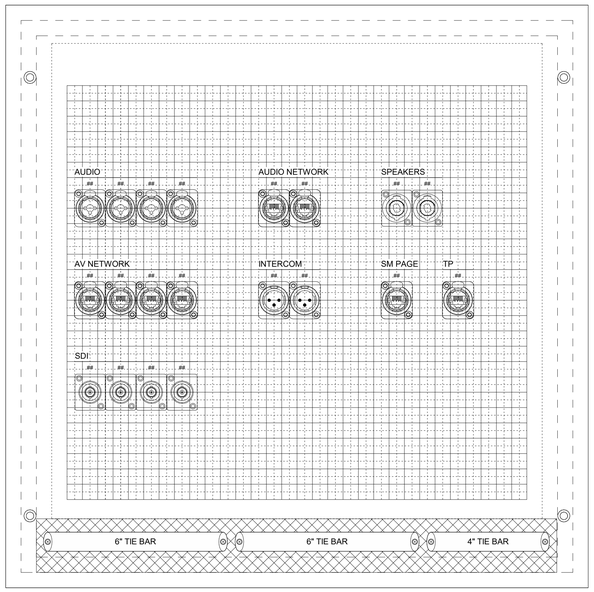
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL WIRING DEVICE DETAILS

TA6.51

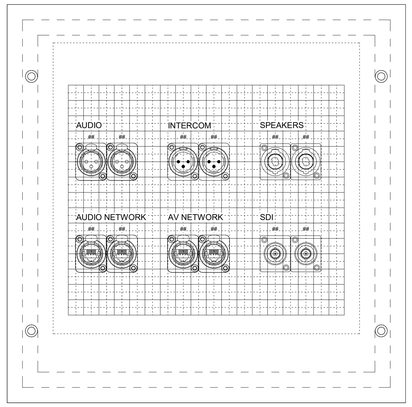
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:27 AM



1 TA6.52 AV6 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

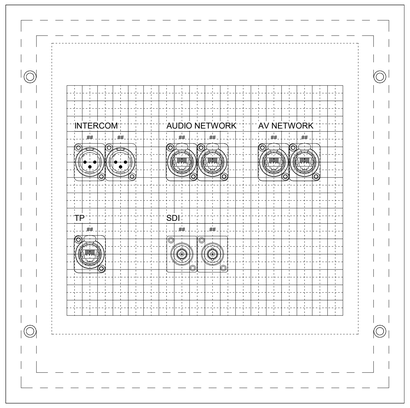
DEVICE TYPE:	AV6
DESCRIPTION:	AV PANEL
BACKBOX:	18" x 18" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(4) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(8) DATA-S, (4) SDI-12G
E	-



2 TA6.52 AV7 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

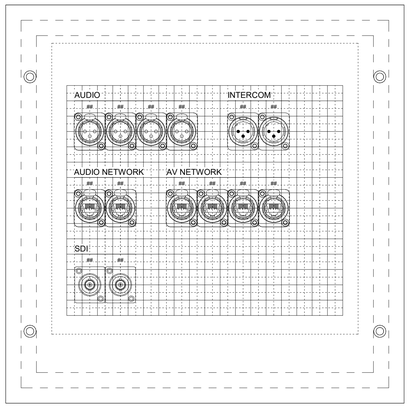
DEVICE TYPE:	AV7
DESCRIPTION:	AV PANEL
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(4) DATA-S, (2) SDI-12G
E	-



3 TA6.52 AV8 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

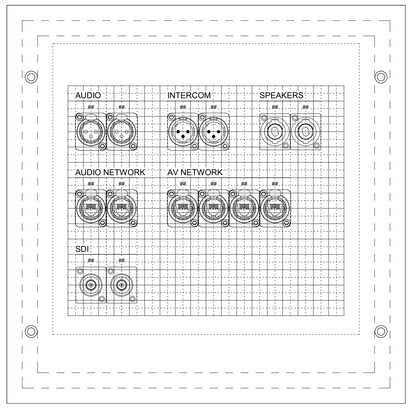
DEVICE TYPE:	AV8
DESCRIPTION:	AV PANEL LX/SM
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	-
B	(2) COM
C	-
D	(6) DATA-S, (2) SDI-12G
E	-



4 TA6.52 AV9 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

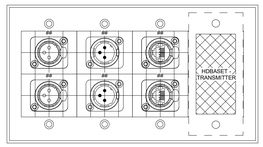
DEVICE TYPE:	AV9
DESCRIPTION:	AV PANEL SOUND
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(4) AUDIO
B	(2) COM
C	-
D	(7) DATA-S, (2) SDI-12G
E	-



5 TA6.52 AV10 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

DEVICE TYPE:	AV10
DESCRIPTION:	AV PANEL
BACKBOX:	12" x12" x 6" BACK BOX
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	(2) SPKR12-4
D	(6) DATA-S, (2) SDI-12G
E	-



6 TA6.52 AV11 - PANEL
SCALE: 6" = 1'-0"

WIRING DEVICE DETAILS

DEVICE TYPE:	AV11
DESCRIPTION:	INSTRUCTOR CONNECTIONS
BACKBOX:	4 GANG, 3-1/2" DEEP
CONDUIT GROUP TYPE:	WIRE TYPE:
A	(2) AUDIO
B	(2) COM
C	-
D	(4) DATA-S
E	-

AUDIOVISUAL CONNECTORS

	KEYSTONE	PANEL MOUNT	DESCRIPTION
AUDIO			BLANK PLATE
AUDIO			3.5mm STEREO UNBALANCED AUDIO
AUDIO			RCA CONNECTOR (RECESSED)
AUDIO			RCA CONNECTOR (STEREO)
AUDIO			XLR PIN
AUDIO			XLR SOCKET
AUDIO			XLR COMBO RECEPTACLE
LOUDSPEAKER			TWIST-LOCK LOUDSPEAKER CONNECTOR - 2 POLE
LOUDSPEAKER			TWIST-LOCK LOUDSPEAKER CONNECTOR - 4 POLE
VIDEO			BNC CONNECTOR
VIDEO			MINI DISPLAYPORT / THUNDERBOLT
VIDEO			F-TYPE COAXIAL
VIDEO			HDMI
MULTIMEDIA			CAT6A CONNECTOR
MULTIMEDIA			USB - TYPE A
MULTIMEDIA			USB - TYPE B
MULTIMEDIA			USB - TYPE C
FIBEROPTIC			LC DUPLEX FIBEROPTIC CONNECTOR
FIBEROPTIC			SMPTE 304M HYBRID CONNECTOR

NOTES:
1. REFER TO WIRING DEVICE PLANS AND REFLECTED CEILING PLANS FOR PLATE LOCATIONS.
2. REFER TO WIRING DEVICE SCHEDULE FOR PLATE MOUNTING HEIGHTS, TYPES, AND CONDITIONS.
3. REFER TO AUDIOVISUAL SYSTEMS SPECIFICATION FOR PLATE LABELING, FINISH, AND HARDWARE REQUIREMENTS.
4. FOR SURFACE MOUNT BOXES, PLATES SHALL BE THE SAME SIZE AS THE BACKBOX.
5. FOR FLUSH MOUNT BOXES, PLATES SHALL SHALL EXTEND 1/2" BEYOND THE BOX AT EACH SIDE.
6. PROVIDE BLANK COVERS FOR ALL JUNCTION BOXES (WITH GROMMETS IF REQUIRED). AV CONTRACTOR TO DETERMINE GROMMET SIZES.
7. AV CONTRACTOR SHALL VERIFY PLATE COLOR WITH ARCHITECT PRIOR TO FABRICATION OF THE PLATES.
8. COORDINATE WITH TELECOM CONTRACTOR TO TERMINATE ENTERPRISE LAN AND PoE CONNECTORS ON AV PLATES.
9. COORDINATE WITH ELECTRICAL CONTRACTOR TO TERMINATE POWER RECEPTACLES ON AV PLATES OR IN AV BACK BOXES.
10. SEE AV SYSTEM BLOCK DIAGRAMS FOR AV PLATE CONNECTOR NUMBERING. REPLACE "#" WITH NUMBER ACCORDINGLY. NUMBERING SHALL BE SEQUENTIAL, NON-REPEATING WITHIN EACH SPACE. SUBMIT SHOP DRAWINGS FOR APPROVAL.
11. PANEL LABELS SHALL BE UNIQUE AND INTUITIVE, REFERENCING THE LOCATION IN ROOM (EX. UPSTAGE LEFT). SUBMIT SHOP DRAWINGS FOR APPROVAL.
12. AV CONTRACTOR TO VERIFY BACK BOX SIZES AND ORIENTATION ONSITE PRIOR TO FABRICATION OF AV PLATES.
13. PROVIDE COLORED GASKET FOR RJ45 CONNECTORS DESINATED FOR DANTE, TOUCH PANEL/CONTROL, AND DIGITAL INTERCOM CONNECTIONS:
    A. YELLOW FOR DANTE PRIMARY
    B. GREEN FOR DANTE SECONDARY
    C. BLUE FOR TOUCH PANEL/CONTROL
    D. WHITE FOR DIGITAL INTERCOM

DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL WIRING DEVICE DETAILS

TA6.52

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:39 AM

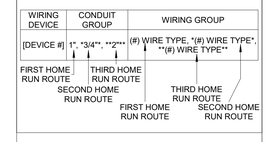
AV WIRING SCHEDULE

AV WIRING DEVICE NUMBER	HOME RUN ROUTE	WIRE TYPE PER SIGNAL GROUP					
		A	B	C	D	E	X
A101 - LOBBY							
CSC6-A101-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A101-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A101-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A101-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
VTW1-A101-1	AVR1-A303-X	-	-	-	(3) DATA-S	-	-
VTW1-A101-2	AVR1-A303-X	-	-	-	(3) DATA-S	-	-
VTW1-A101-3	AVR1-A303-X	-	-	-	(3) DATA-S	-	-
VTW2-A101-1	AVR1-A303-X	-	-	-	(3) DATA-S	-	-
VTW2-A101-2	AVR1-A303-X	-	-	-	(3) DATA-S	-	-
A103 - CONCESSIONS / BOX OFFICE							
CP1T-A103-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
ICA2-A103-1	AVR1-A303-X	-	(2) COM	-	-	-	-
MTD1-A103-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
A103 - CONCESSIONS BOX OFFICE							
CSC6-A103-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A103-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A105 - WOMENS TOILETS							
CSC6-A105-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A106 - OFFICE							
CP1V-A106-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSC6-A106-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A108 - UNISEX TOILET							
CSC6-A108-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A110 - MENS TOILETS							
CSC6-A110-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A112 - B.O.H HALL							
CSC6-A112-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-5	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-7	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-8	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A112-9	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
ICA2-A112-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A114 - LOADING DOCK							
AV3-A114-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
A116 - WORKSHOP							
CP1V-A116-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSP6-A116-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A116-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A116-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A116-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
ICA2-A116-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A118 - OPEN CIRCULATION							
CSC6-A118-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A118-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A121 - STAGE WING							
AV1-A121-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
A122 - ORCH. SHELL STOR.							
ICA2-A122-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A123 - S/L LOCK							
ICA2-A123-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A124 - BAND STORAGE							
CP1V-A124-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSP6-A124-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A124-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A124-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A125 - COSTUME STORAGE							
CSP6-A125-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A125-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A126 - AUDIENCE CHAMBER							
LT1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT5-A126-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT5-A126-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT5-A126-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
A128 - DRESSING ROOM							
CP1V-A128-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSC6-A128-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A128-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
ICA2-A128-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A129 - DRESSING ROOM							
CP1V-A129-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSC6-A129-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A129-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
ICA2-A129-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A130 - MAKEUP							
CP1V-A130-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSC6-A130-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A130-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
ICA2-A130-1	AVR1-A303-X	-	(2) COM	-	-	-	-
A136 - STAGE WING							
AV2-A136-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
AV6-A136-1	AVR1-A303-X	(4) AUDIO	(2) COM	(2) SPKR12-4	(8) DATA-S, (4) SDI-12G	-	-
CP1T-A136-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
ICA2-A136-1	AVR1-A303-X	-	(2) COM	-	-	-	-
ICA2-A136-2	AVR1-A303-X	-	(2) COM	-	-	-	-
A143 - SOUND & LIGHTING STORAGE							
CP1V-A143-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSP6-A143-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A143-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A144 - STAIR							
ICA2-A144-1	AVR1-A303-X	-	(2) COM	-	-	-	-
LT2-A144-1	AVR1-A303-X	-	-	(1) SPKR18-2	-	-	-

AV BACK BOX AND CONDUIT SCHEDULE

AV WIRING DEVICE NUMBER	BACK BOX DESCRIPTION	BACK BOX MOUNTING	ITEM DESCRIPTION	HOME RUN ROUTE	CONDUIT GROUPS					
					A	B	C	D	E	X
A101 - LOBBY										
CSC6-A101-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A101-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A101-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A101-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
VTW1-A101-1	CHIEF PAC526	FLUSH MOUNT	DISPLAY BACK BOX	AVR1-A303-X	-	-	-	1-1/4"	-	-
VTW1-A101-2	CHIEF PAC526	FLUSH MOUNT	DISPLAY BACK BOX	AVR1-A303-X	-	-	-	1-1/4"	-	-
VTW1-A101-3	CHIEF PAC526	FLUSH MOUNT	DISPLAY BACK BOX	AVR1-A303-X	-	-	-	1-1/4"	-	-
VTW2-A101-1	CHIEF PAC526	FLUSH MOUNT	DIGITAL SIGNAGE DISPLAY BACK BOX	AVR1-A303-X	-	-	-	1-1/4"	-	-
VTW2-A101-2	CHIEF PAC526	FLUSH MOUNT	DIGITAL SIGNAGE DISPLAY BACK BOX	AVR1-A303-X	-	-	-	1-1/4"	-	-
A103 - CONCESSIONS / BOX OFFICE										
CP1T-A103-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	TOUCH PANEL DEVICE	AVR1-A303-X	-	-	-	1"	-	-
ICA2-A103-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
MTD1-A103-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	IP MICROPHONE TERMINATION	AVR1-A303-X	-	-	-	1"	-	-
A103 - CONCESSIONS BOX OFFICE										
CSC6-A103-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A103-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A105 - WOMENS TOILETS										
CSC6-A105-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A106 - OFFICE										
CP1V-A106-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSC6-A106-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A108 - UNISEX TOILET										
CSC6-A108-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A110 - MENS TOILETS										
CSC6-A110-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A112 - B.O.H HALL										
CSC6-A112-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-5	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-7	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-8	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A112-9	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
ICA2-A112-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A114 - LOADING DOCK										
AV3-A114-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
A116 - WORKSHOP										
CP1V-A116-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSP6-A116-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A116-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A116-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A116-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
ICA2-A116-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A118 - OPEN CIRCULATION										
CSC6-A118-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A118-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A121 - STAGE WING										
AV1-A121-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	STAGE LEFT AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
A122 - ORCH. SHELL STOR.										
ICA2-A122-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A123 - S/L LOCK										
ICA2-A123-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A124 - BAND STORAGE										
CP1V-A124-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSP6-A124-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A124-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A124-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A125 - COSTUME STORAGE										
CSP6-A125-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A125-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A126 - AUDIENCE CHAMBER										
LT1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT5-A126-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT		AVR1-A303-X	-	-	1"	-	-	-
LT5-A126-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT		AVR1-A303-X	-	-	1"	-	-	-
LT5-A126-3	2 GANG, 3-1/2" DEEP	FLUSH MOUNT		AVR1-A303-X	-	-	1"	-	-	-
A128 - DRESSING ROOM										
CP1V-A128-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSC6-A128-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A128-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
ICA2-A128-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A129 - DRESSING ROOM										
CP1V-A129-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSC6-A129-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A129-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
ICA2-A129-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A130 - MAKEUP										
CP1V-A130-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSC6-A130-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A130-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
ICA2-A130-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A136 - STAGE WING										
AV2-A136-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	STAGE RIGHT AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV6-A136-1	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
CP1T-A136-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	TOUCH PANEL DEVICE	AVR1-A303-X	-	-	-	1"	-	-
ICA2-A136-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
ICA2-A136-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A143 - SOUND & LIGHTING STORAGE										
CP1V-A143-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSP6-A143-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A143-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A144 - STAIR										
ICA2-A144-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
LT2-A144-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	WALL MOUNT LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-

NOTES:
1. SEE TA0.01 FOR AUDIOVISUAL SYSTEMS CONDUIT REQUIREMENTS.
2. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL PULL BOXES AS REQUIRED PER NEC.
3. PROVIDE CABLE DROP OUT KIT / WATERFALL CABLE MANAGEMENT FOR CABLE TRAYS TO PROTECT CABLES EXITING THE TRAY. COORDINATE WITH AV CONTRACTOR FOR TRAY AND CABLE DROP OUT KIT MOUNTING LOCATIONS.
4. AV CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO VERIFY CONDUIT ROUTES, SIZES, AND CABLING ACCORDING TO AUDIOVISUAL SYSTEM DIAGRAMS.
5. CONDUIT RUNS FROM WIRING DEVICES TO THEIR DESINATION MAY BE COMBINED PROVIDED SIGNAL SEPARATION AND GROUPING FOR ALL AV CABLING ARE MAINTAINED PER REQUIREMENTS ON SHEET TA0.01. ANY CONDUIT RUNS COMBINED IN THIS WAY SHALL BE DONE SO WITH A PULL BOX SIZED PER NEC. FOR ANY COMBINED CONDUIT RUNS, THE CONDUITS MUST UPSIZE PER CONDUIT FILL REQUIREMENTS ON SHEET TA0.01.
6. FOR DEVICES WITH MULTIPLE HOME RUN ROUTES, DIFFERENT HOME RUNS ARE INDICATED BY A (*) SYMBOL. FOR EXAMPLE:



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL SCHEDULES

TA7.01

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:42 AM

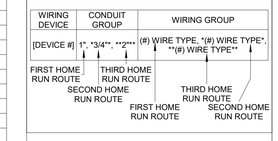
AV WIRING SCHEDULE

AV WIRING DEVICE NUMBER	HOME RUN ROUTE	WIRE TYPE PER SIGNAL GROUP					
		A	B	C	D	E	X
A148 - AUDIENCE CHAMBER							
ATB1-A148-1	AVR1-A303-X	-	-	-	(1) ANTENNA	-	-
AV3-A148-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
AV4-A148-1	AVR1-A303-X	(4) AUDIO	(2) COM	(2) SPKR12-4	(9) DATA-S, (4) SDI-12G	-	-
AV7-A148-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
AV7-A148-2	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(4) DATA-S, (2) SDI-12G	-	-
AV10-A148-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A148-2	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A148-3	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A148-4	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A148-5	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A148-6	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
FB1-A148-1	AVR1-A303-X	-	(2) COM	-	(3) DATA-S, (2) SDI-12G	-	-
LT1-A148-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1-A148-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1-A148-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1-A148-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT1-A148-5	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	-
LT3-A148-1	AVR1-A303-X	-	-	(4) SPKR12-4	-	-	-
LT3-A148-2	AVR1-A303-X	-	-	(4) SPKR12-4	-	-	-
LT3-A148-3	AVR1-A303-X	-	-	(4) SPKR12-4	-	-	-
MTA2-A148-1	AVR1-A303-X	(2) AUDIO	-	-	-	-	-
A149 - STAGE							
ATB1-A149-1	AVR1-A303-X	-	-	-	(1) ANTENNA	-	-
AV5-A149-1	AVR1-A303-X	(4) AUDIO	(2) COM	(2) SPKR12-4	(8) DATA-S, (4) SDI-12G	-	-
AV10-A149-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
AV10-A149-2	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
A185 - LOBBY							
CSP6-A185-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-5	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-7	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSP6-A185-8	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A196 - HALL							
CSC6-A196-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A196-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A196-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A201 - LOBBY MEZZANINE							
CSC6-A201-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A201-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A201-3	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A201-4	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A202 - WOMENS TOILETS							
CSC6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A204 - MENS TOILETS							
CSC6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
A207 - PROJECTION/CONTROL ROOM							
AV8-A207-1	AVR1-A303-X	-	(2) COM	-	(6) DATA-S, (2) SDI-12G	-	-
AV9-A207-1	AVR1-A303-X	(4) AUDIO	(2) COM	-	(7) DATA-S, (2) SDI-12G	-	-
CMD3-A207-1	AVR1-A303-X	-	-	-	(2) DATA-S	-	-
CP1V-A207-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
CSC6-A207-1	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
CSC6-A207-2	AVR1-A303-X	-	-	(1) SPKR12-4	-	-	
VT4D-A207-1	AVR1-A303-X	-	-	-	(4) DATA-S	-	-
A302 - FOLLOW SPOT							
ALSR-A302-1	AVR1-A303-X	-	-	-	(1) ANTENNA	-	-
AV10-A302-1	AVR1-A303-X	(2) AUDIO	(2) COM	(2) SPKR12-4	(6) DATA-S, (2) SDI-12G	-	-
CP1V-A302-1	AVR1-A303-X	-	-	-	(1) DATA-S	-	-
ICA2-A302-1	AVR1-A303-X	-	(2) COM	-	-	-	-
ICA2-A302-2	AVR1-A303-X	-	(2) COM	-	-	-	-
A303 - AV & LIGHTING RACK ROOM							
AVR1-A303-1	-	-	-	-	(2) DATA-S	-	-
AVR1-A303-2	-	-	-	-	(2) DATA-S	-	-
E100 - BAND ROOM							
AV11-E100-1	AVR2-E100-1	(2) AUDIO	(2) COM	-	(4) DATA-S	-	-
CP1T-E100-1	AVR2-E100-1	-	-	-	(1) DATA-S	-	-
CP1V-E100-2	AVR2-E100-1	-	-	-	(1) DATA-S	-	-
CSP8-E100-1	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
CSP8-E100-2	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
CSP8-E100-3	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
CSP8-E100-4	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
LT4-E100-1	AVR2-E100-1	-	-	(1) SPKR12-4	-	-	-
LT4-E100-2	AVR2-E100-1	-	-	(1) SPKR12-4	-	-	-
MT1-E100-1	AVR2-E100-1	(1) AUDIO	-	-	-	-	-
MT1-E100-2	AVR2-E100-1	(1) AUDIO	-	-	-	-	-
VT4D-E100-1	AVR2-E100-1	-	-	-	(4) DATA-S	-	-
E106 - PERCUSSION							
AVR2-E106-1	AVR1-A303-X	-	-	-	-	(1) FIBER-6	-
CP1V-E106-1	AVR2-E100-1	-	-	-	(1) DATA-S	-	-
CSP8-E106-1	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
CSP8-E106-2	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	
CSP8-E106-3	AVR2-E100-1	-	-	(1) SPKR18-2	-	-	

AV BACK BOX AND CONDUIT SCHEDULE

AV WIRING DEVICE NUMBER	BACK BOX DESCRIPTION	BACK BOX MOUNTING	ITEM DESCRIPTION	HOME RUN ROUTE	CONDUIT GROUPS					
					A	B	C	D	E	X
A148 - AUDIENCE CHAMBER										
ATB1-A148-1	2 GANG, 3-1/2" DEEP W/ 1 GANG TRIM RING	FLUSH MOUNT	ANTENNA - SINGLE BNC	AVR1-A303-X	-	-	-	1"	-	-
AV3-A148-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV4-A148-1	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1-1/2"	1"	1"	1-1/2"	-	-
AV7-A148-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
AV7-A148-2	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
AV10-A148-1	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A148-2	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A148-3	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A148-4	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A148-5	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A148-6	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
FB1-A148-1	LEGRAND - EFB10	FLOOR BOX	AV FLOORBOX	AVR1-A303-X	-	1"	-	1-1/2"	-	-
LT1-A148-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1-A148-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1-A148-3	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1-A148-4	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT1-A148-5	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	FRONT FILL LOUDSPEAKER TERMINATION	AVR1-A303-X	-	-	1"	-	-	-
LT3-A148-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	CATWALK LOUDSPEAKER TERMINATION PANEL	AVR1-A303-X	-	-	1-1/2"	-	-	-
LT3-A148-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	CATWALK LOUDSPEAKER TERMINATION PANEL	AVR1-A303-X	-	-	1-1/2"	-	-	-
LT3-A148-3	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	CATWALK LOUDSPEAKER TERMINATION PANEL	AVR1-A303-X	-	-	1-1/2"	-	-	-
MTA2-A148-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	MICROPHONE TERMINATION	AVR1-A303-X	1"	-	-	-	-	-
A149 - STAGE										
ATB1-A149-1	2 GANG, 3-1/2" DEEP W/ 1 GANG TRIM RING	FLUSH MOUNT	ANTENNA - SINGLE BNC	AVR1-A303-X	-	-	-	1"	-	-
AV5-A149-1	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV PANEL	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
AV10-A149-1	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
AV10-A149-2	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
A185 - LOBBY										
CSP6-A185-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-5	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-7	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSP6-A185-8	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" PENDANT LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A196 - HALL										
CSC6-A196-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A196-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A196-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A201 - LOBBY MEZZANINE										
CSC6-A201-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A201-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A201-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A201-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A202 - WOMENS TOILETS										
CSC6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A204 - MENS TOILETS										
CSC6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
A207 - PROJECTION/CONTROL ROOM										
AV8-A207-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL LX/SM	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
AV9-A207-1	12" x12" x 6" BACK BOX	FLUSH MOUNT	AV PANEL SOUND	AVR1-A303-X	1-1/2"	1-1/2"	1"	1-1/2"	-	-
CMD3-A207-1	2 GANG, 3-1/2" DEEP W/ 1 GANG TRIM RING	FLUSH MOUNT	VIDEO CAMERA	AVR1-A303-X	-	-	-	1-1/4"	-	-
CP1V-A207-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
CSC6-A207-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
CSC6-A207-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	6" CEILING RECESSED LOUDSPEAKER	AVR1-A303-X	-	-	3/4"	-	-	
VT4D-A207-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	PROJECTOR VIDEO TERMINATION	AVR1-A303-X	-	-	-	1-1/4"	-	-
A302 - FOLLOW SPOT										
ALSR-A302-1	2 GANG, 3-1/2" DEEP W/ 1 GANG TRIM RING	FLUSH MOUNT	ALS ANTENNA	AVR1-A303-X	-	-	-	1"	-	-
AV10-A302-1	12" x12" x 6" BACK BOX	SURFACE MOUNT	AV PANEL	AVR1-A303-X	1"	1"	1"	1-1/2"	-	-
CP1V-A302-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR1-A303-X	-	-	-	1"	-	-
ICA2-A302-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
ICA2-A302-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	2CH ANALOG INTERCOM PLATE	AVR1-A303-X	-	3/4"	-	-	-	-
A303 - AV & LIGHTING RACK ROOM										
AVR1-A303-1	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV RACK INFRASTRUCTURE	-	2"	2"	2"	2"	-	-
AVR1-A303-2	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV RACK INFRASTRUCTURE	-	2"	2"	2"	2"	-	-
E100 - BAND ROOM										
AV11-E100-1	4 GANG, 3-1/2" DEEP	FLUSH MOUNT	INSTRUCTOR CONNECTIONS	AVR2-E100-1	1"	1"	-	1-1/4"	-	-
CP1T-E100-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	TOUCH PANEL DEVICE	AVR2-E100-1	-	-	-	1"	-	-
CP1V-E100-2	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR2-E100-1	-	-	-	1"	-	-
CSP8-E100-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
CSP8-E100-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
CSP8-E100-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
CSP8-E100-4	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
LT4-E100-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	WALL MOUNT LOUDSPEAKER TERMINATION	AVR2-E100-1	-	-	1"	-	-	-
LT4-E100-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	WALL MOUNT LOUDSPEAKER TERMINATION	AVR2-E100-1	-	-	1"	-	-	-
MT1-E100-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	MICROPHONE TERMINATION	AVR2-E100-1	1"	-	-	-	-	-
MT1-E100-2	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	MICROPHONE TERMINATION	AVR2-E100-1	1"	-	-	-	-	-
VT4D-E100-1	2 GANG, 3-1/2" DEEP	FLUSH MOUNT	PROJECTOR VIDEO TERMINATION	AVR2-E100-1	-	-	-	1-1/4"	-	-
E106 - PERCUSSION										
AVR2-E106-1	18" x 18" x 6" BACK BOX	FLUSH MOUNT	AV RACK INFRASTRUCTURE	AVR1-A303-X	2"	2"	2"	2"	2"	-
CP1V-E106-1	1 GANG, 3-1/2" DEEP	FLUSH MOUNT	VOLUME CONTROL ENCODER	AVR2-E100-1	-	-	-	1"	-	-
CSP8-E106-1	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
CSP8-E106-2	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	
CSP8-E106-3	2 GANG, 3-1/2" DEEP	SURFACE MOUNT	8" PENDANT LOUDSPEAKER	AVR2-E100-1	-	-	3/4"	-	-	

NOTES:
1. SEE TA0.01 FOR AUDIOVISUAL SYSTEMS CONDUIT REQUIREMENTS.
2. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL PULL BOXES AS REQUIRED PER NEC.
3. PROVIDE CABLE DROP OUT KIT / WATERFALL CABLE MANAGEMENT FOR CABLE TRAYS TO PROTECT CABLES EXITING THE TRAY. COORDINATE WITH AV CONTRACTOR FOR TRAY AND CABLE DROP OUT KIT MOUNTING LOCATIONS.
4. AV CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO VERIFY CONDUIT ROUTES, SIZES, AND CABLING ACCORDING TO AUDIOVISUAL SYSTEM DIAGRAMS.
5. CONDUIT RUNS FROM WIRING DEVICES TO THEIR DESINATION MAY BE COMBINED PROVIDED SIGNAL SEPARATION AND GROUPING FOR ALL AV CABLING ARE MAINTAINED PER REQUIREMENTS ON SHEET TA0.01. ANY CONDUIT RUNS COMBINED IN THIS WAY SHALL BE DONE SO WITH A PULL BOX SIZED PER NEC. FOR ANY COMBINED CONDUIT RUNS, THE CONDUITS MUST UPSIZE PER CONDUIT FILL REQUIREMENTS ON SHEET TA0.01.
6. FOR DEVICES WITH MULTIPLE HOME RUN ROUTES, DIFFERENT HOME RUNS ARE INDICATED BY A (*) SYMBOL. FOR EXAMPLE:



DLRGROUP
© DLR Group

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

39-23712-00

AUDIOVISUAL SCHEDULES

TA7.02

Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_TA_2024.rvt
7/25/2024 8:09:44 AM