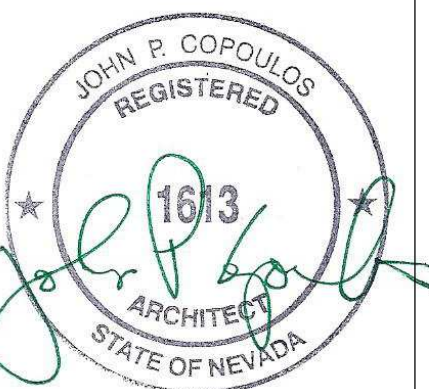


P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N. Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City School District

CHS - Bus Barn TI

Cover Sheet

Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

**A100**

Scale As indicated

CODE DATA

2018 INTERNATIONAL BUILDING CODE (I.B.C.)  
2018 INTERNATIONAL ENERGY CONSERVATION CODE  
2018 INTERNATIONAL FIRE CODE  
2018 UNIFORM MECHANICAL CODE  
2018 UNIFORM PLUMBING CODE  
2017 NATIONAL ELECTRICAL CODE  
2018 NORTHERN NEVADA AMMENDMENT PACKAGE  
ICC/ANSI A117.1-2017 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES

PROJECT ELEVATION 4.252  
ROOF SNOW LOAD 30 LBS  
LATERAL LOADS WIND 105 MPH BASIC WIND SPEED  
EXPOSURE C  
SEISMIC CATEGORY D

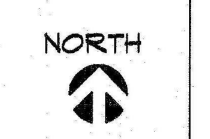
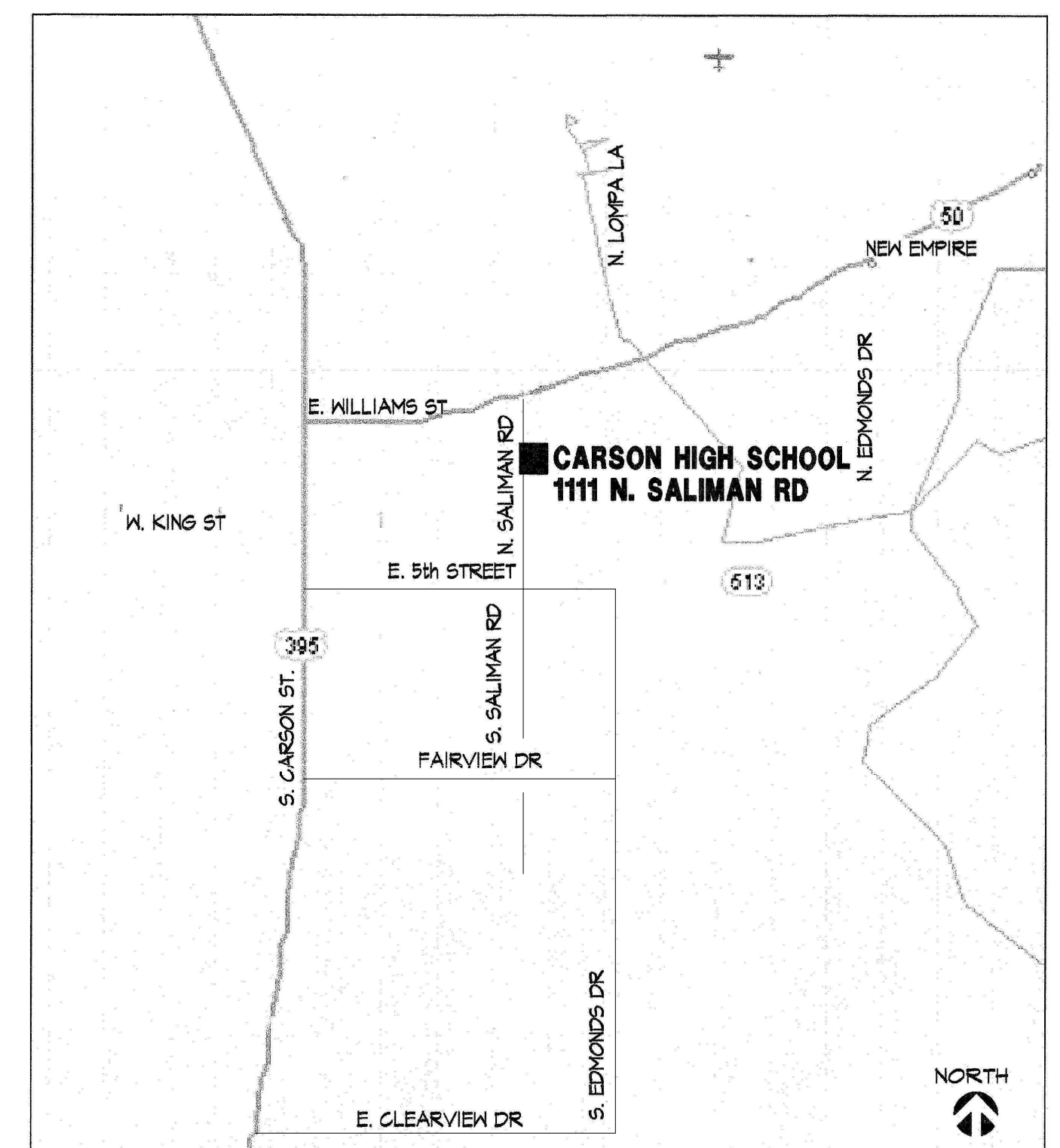
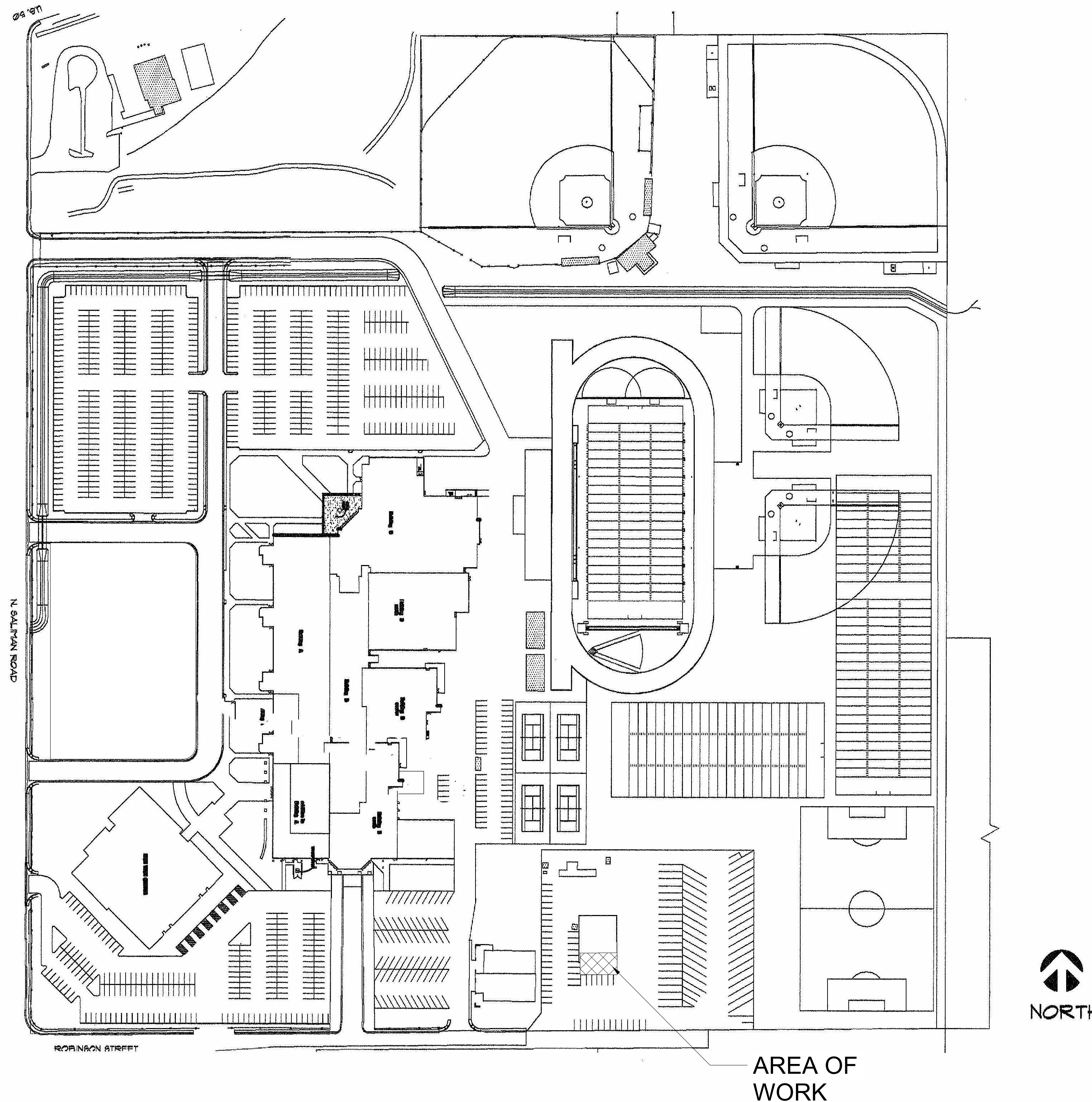
OCCUPANCY CLASSIFICATION: B & S1  
OCCUPANT LOAD: OFFICE 977 / 150 = 7  
SERVICE BAYS 3875 / 200 = 19  
TOOLS 1273 / 200 = 6  
32

CONSTRUCTION TYPE: V-B NO CHANGE  
FIRE ALARM NO  
FIRE SPRINKLERS NO

NO CHANGE ALLOWABLE AREA BLDG AREA  
BUS BARN 9,000 S.F. 6,125 S.F.

BUILDING HEIGHT 20'-8" ONE STORY  
DISTANCE FROM PROPERTY LINES NO CHANGE  
NORTH X.XX'  
SOUTH X.XX'  
EAST X.XX'  
WEST X.XX'

1 Code Data  
3/16" = 1'-0"



Sheet Number	Sheet Name
--------------	------------

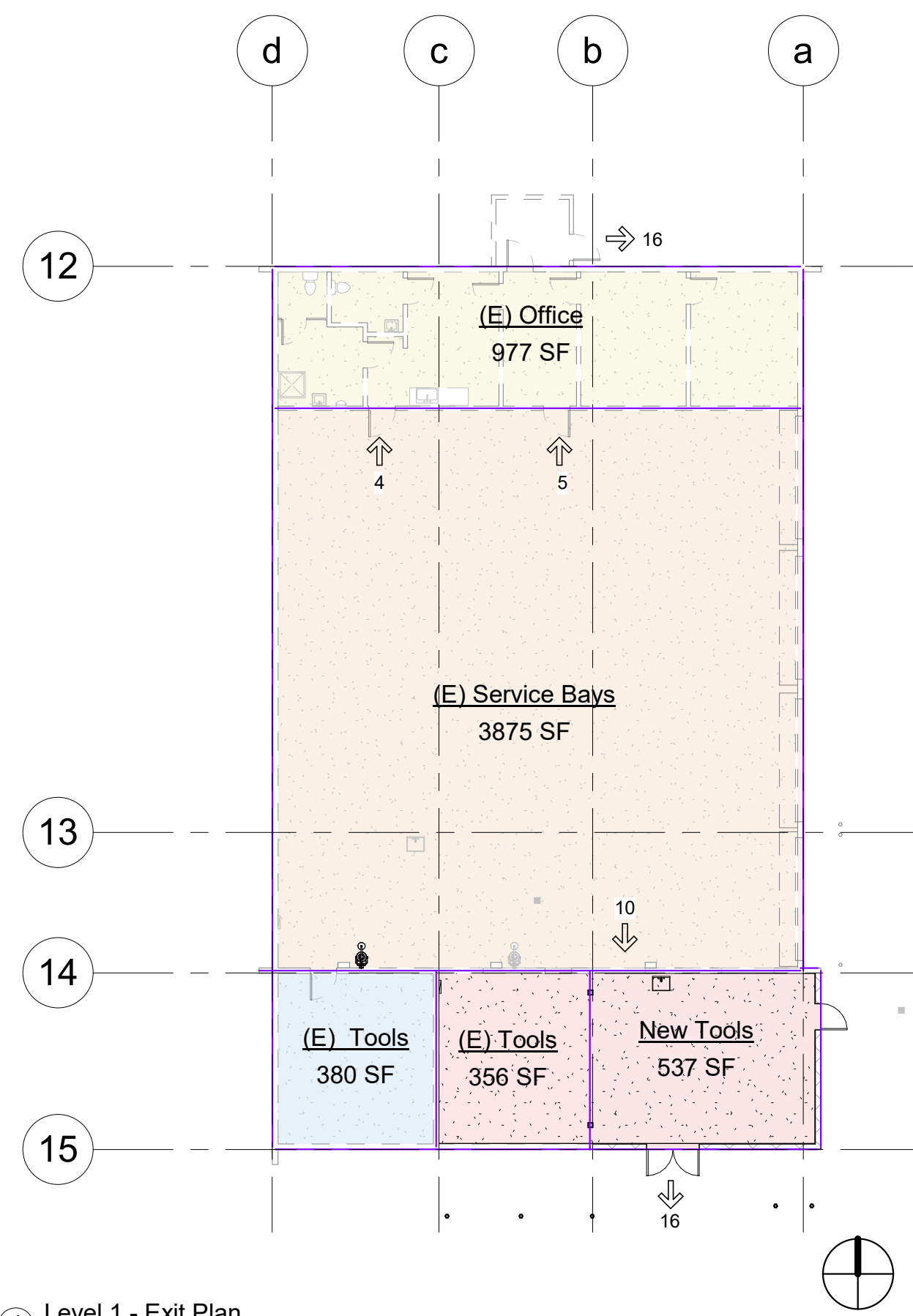
A100	Cover Sheet
A201	Bus Barn Demolition
A202	Bus Barn Remodel
A203	Bus Barn Remodel Equipment plan
A204	Bus Barn Roof & Reflected Ceiling Plan
A300	Bus Barn Elevations
A400	Bus Barn Building Sections
A500	Architectural Specifications

S0.1	Structural Notes
S0.2	Structural Notes
S0.3	Statement of Special Inspections
S1.1	Standard Details
S1.2	Standard Details
S2.1	Partial Foundation & Roof Framing Plans
S3.1	300 Series Details

MP001	Mechanical & Plumbing Specification
-------	-------------------------------------

M001	Mechanical Schedules & Notes
M002	Mechanical Compliance
M201	Mechanical Plan
P001	Plumbing Schedules & Notes
P101	Plumbing Demolition Plan
P201	Plumbing Plan

E001	Electrical Symbols
E002	Electrical Specifications
E101	Existing Electrical Conditions & Demolition
E201	Proposed Electrical Plans
E301	Electrical Schedules



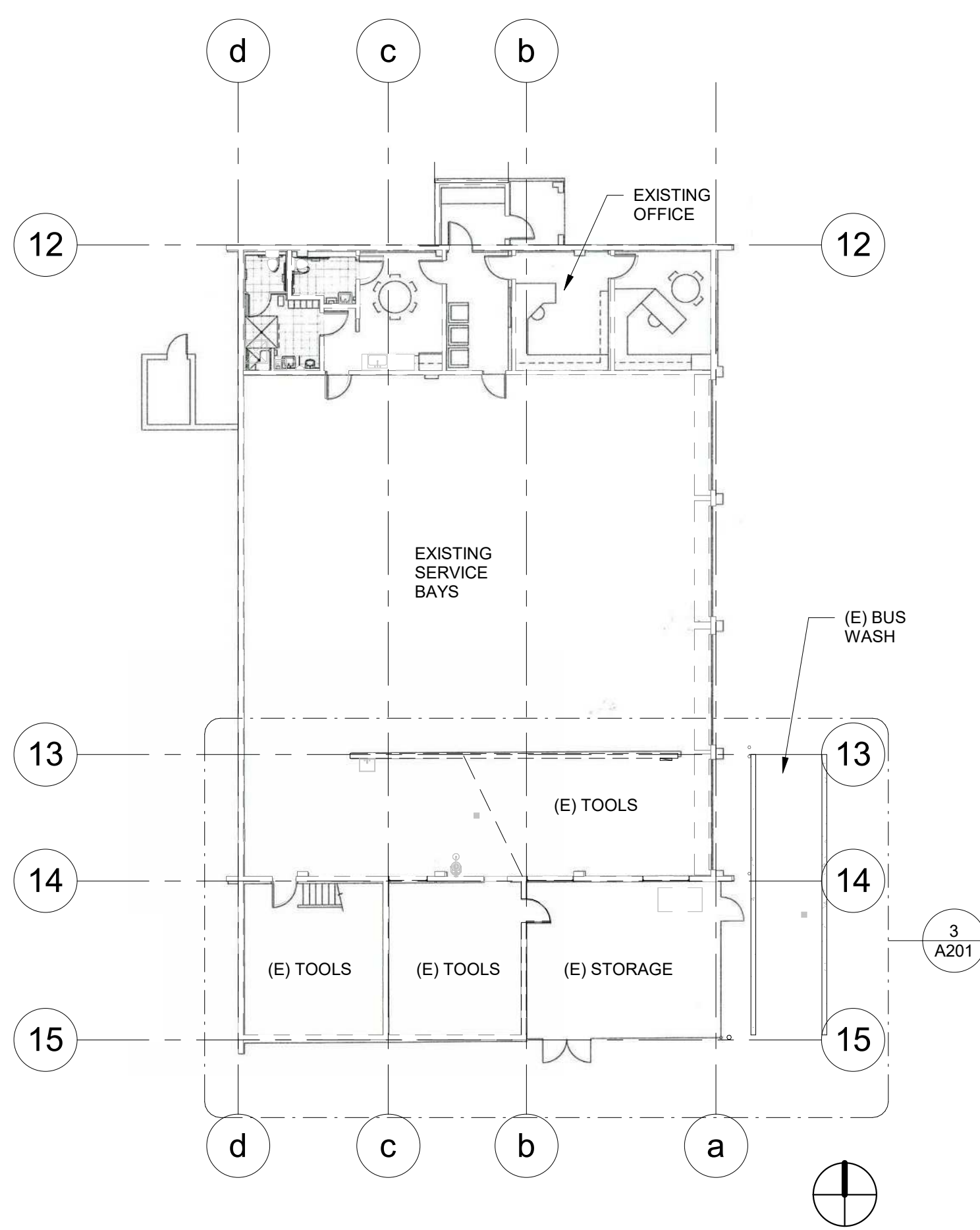
3 Site Plan  
3/32" = 1'-0"

**CARSON CITY SCHOOL DISTRICT  
BUS BARN TENANT IMPROVEMENT**

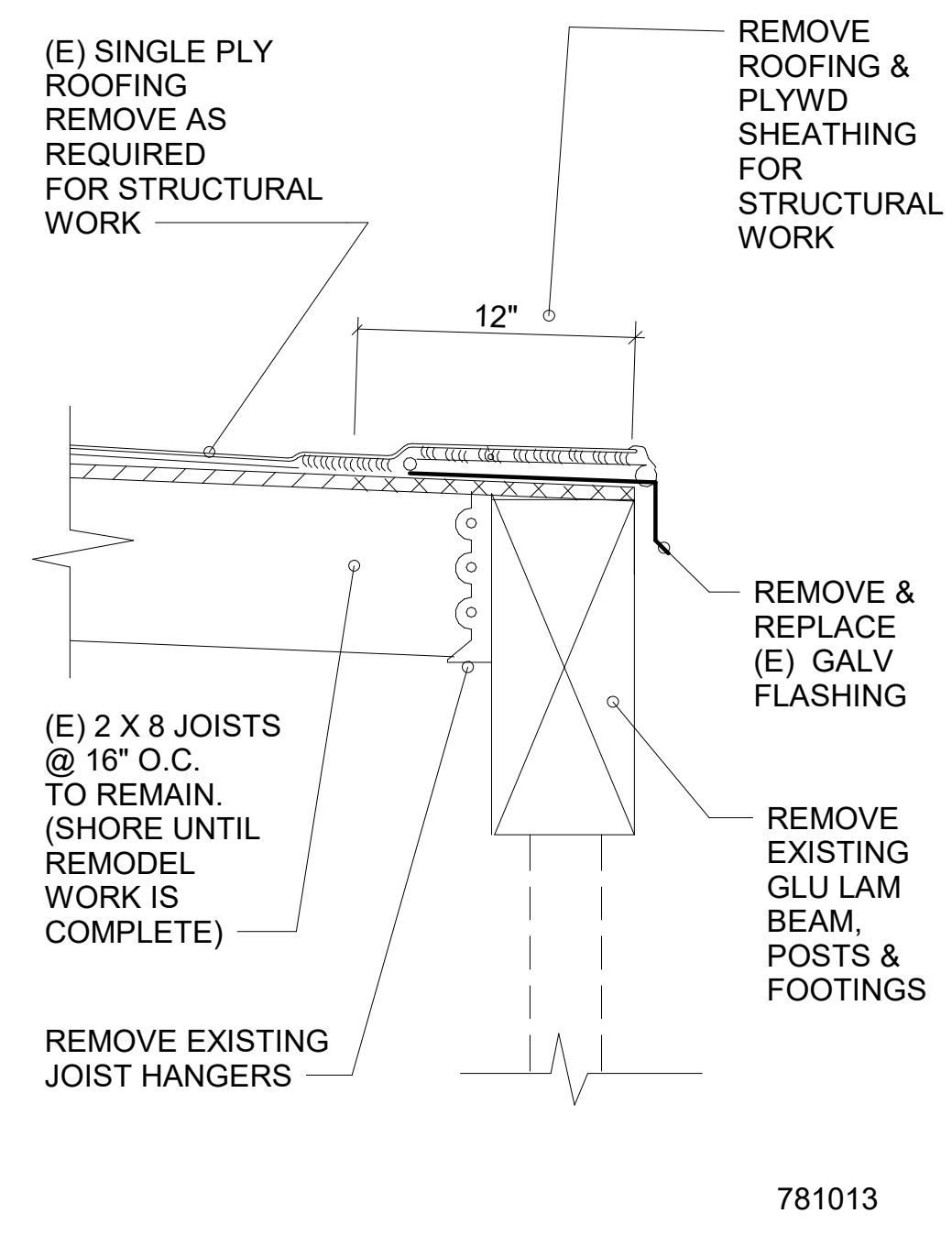
CARSON CITY, NEVADA

<b>MECHANICAL</b> EEI 10597 DOUBLE R BLVD RENO, NEVADA 89521 (775) 853-1131	<b>ARCHITECT</b> J.P. COPOULOS, ARCHITECT P.O. BOX 2517 CARSON CITY, NEVADA 89702 (775)720-4051	<b>ELECTRICAL</b> JENSEN ENGINEERING 9655 GATEWAY DRIVE SUITE A RENO, NEVADA 89521 (775) 852-2288	<b>STRUCTURAL</b> SHIELDS ENGINEERING 9585 PROTOTYPE COURT SUITE AE RENO, NEVADA 89521 (775) 829-9277
---	---	---	---

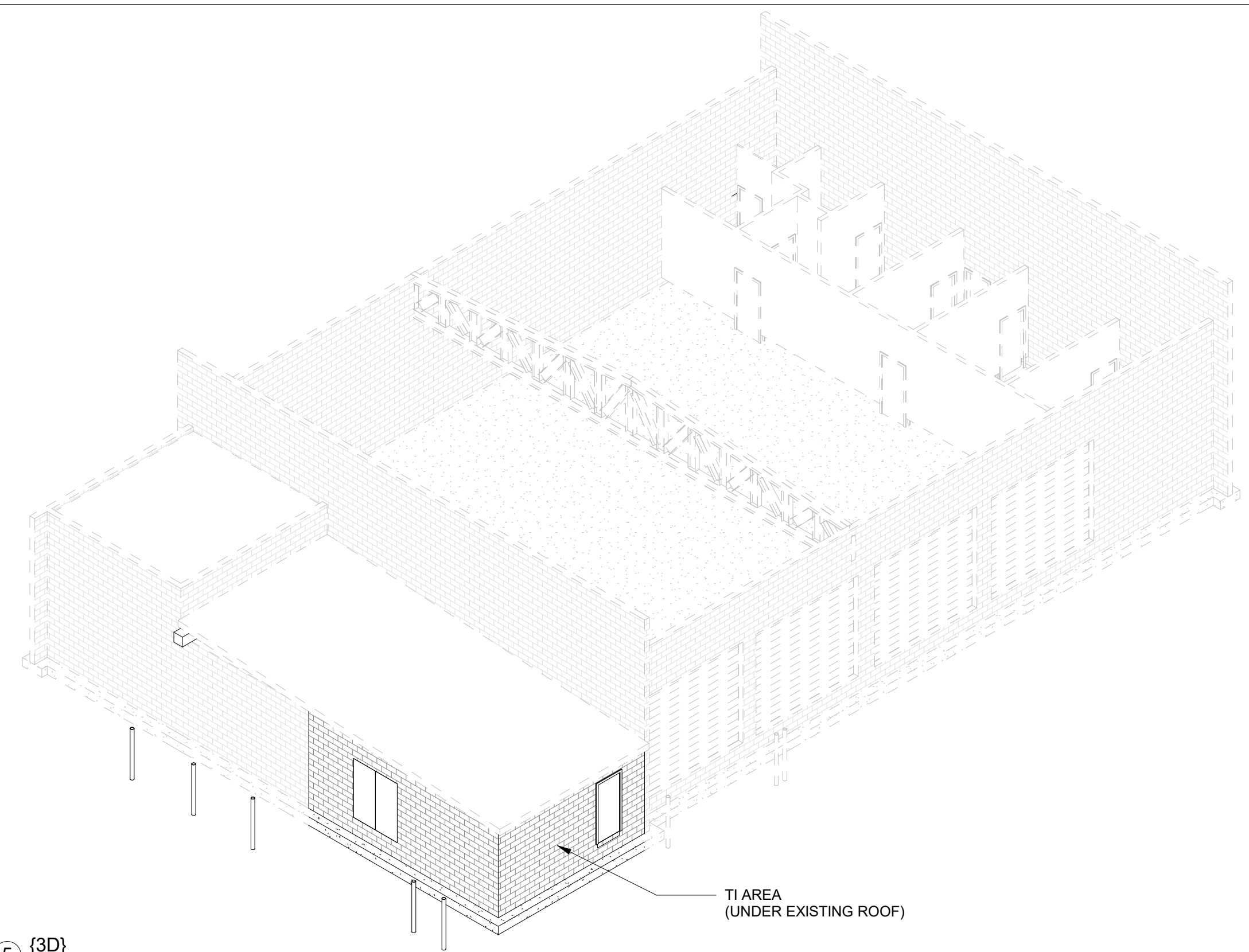
4 Level 1 - Exit Plan  
1/16" = 1'-0"



1 As Built Level 1  
1/16" = 1'-0"



4 Roof Edge Demo  
1 1/2" = 1'-0"



5 (3D)

**GENERAL NOTES**

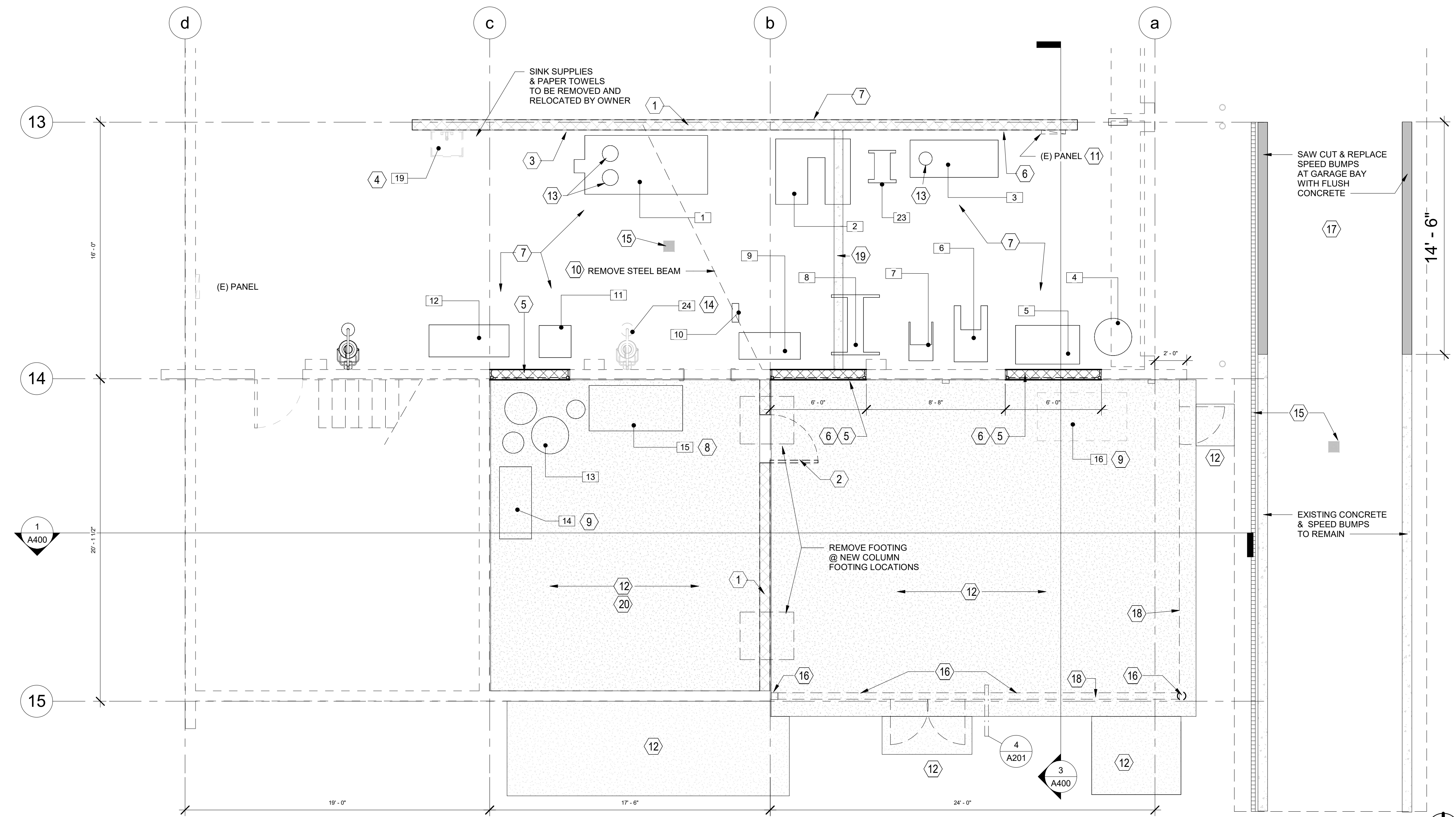
1. VERIFY ALL UTILITY INFORMATION PRIOR TO START OF DEMOLITION
2. COORDINATE DEMOLITION WORK WITH OWNER. PROVIDE PROTECTION TO EXISTING SURFACES TO REMAIN
3. PROVIDE BARRICADES TO PROTECT OCCUPANTS FROM ADJACENT DEMOLITION
4. PROVIDE PLASTIC OR OTHER PROTECTION TO MINIMIZE DUST IN OCCUPIED SPACES

6 Demo Notes  
1/4" = 1'-0"

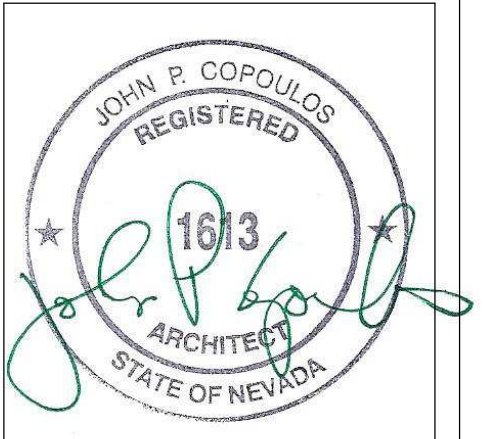
**DEMOLITION SCHEDULE**

ITEM	CONTRACTOR OWNER	REMOVAL BY			
		REMOVE FROM SITE	SALVAGE TO OWNER	REUSE IN REMODEL	ITEM TO REMAIN IN PLACE PROTECT FROM DAMAGE
1 CMU WALLS					
2 DOOR & HARDWARE					
3 GAS & WATER LINES					
4 SINK					
5 WINDOW & CMU BELOW					
6 ELECTRICAL OUTLETS					
7 EQUIPMENT TO RELOCATE					ALL EQUIPMENT TO RELOCATE UNLESS NOTED
8 EQUIPMENT TO REMAIN					
9 EQUIPMENT TO DEMO					
10 STEEL BEAM					
11 ELECTRIC PANEL					
12 ASPHALT					
13 EXHAUST FLUE					
14 EYE WASH					
15 TRENCH & AREA DRAIN					
16 POSTS, BEAM & FOOTING					
17 CONCRETE SPEED BUMP					
18 CHAIN LINK FENCE					
19 SAW CUT CONCRETE					
20 CEILING GYP BD & INSULATION					

2 Demolition Schedule - Bus Barn  
1/4" = 1'-0"



3 As Built Level 1 - Demo  
1/4" = 1'-0"



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

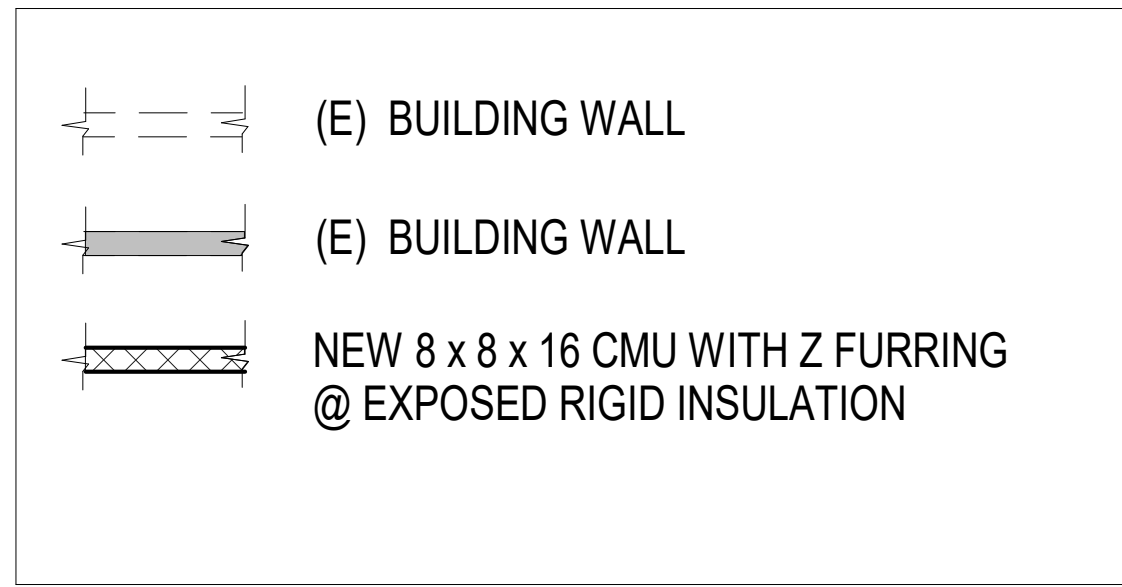
Revision Number	Revision Date

Carson City School District  
**CHS - Bus Barn TI**  
Bus Barn Demolition

Project number  
Date 3-2-23  
Drawn by JPC  
Checked by JPC

**A201**  
Scale As indicated

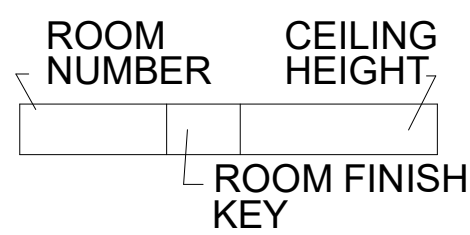
# WALL LEGEND



## GENERAL NOTES

- PATCH TO MATCH ALL SURFACES DAMAGED FROM DEMOLITION AND REMODEL WORK TO PROVIDE FINISHED APPEARANCE.
- VERIFY ALL DIMENSIONS. REPORT ANY DISCREPANCIES TO THE ARCHITECT.

FINISH KEY	FLOOR	BASE	WALLS	CEILING	REMARKS
A	EPOXY PAINT	---	PAINTED CMU	PAINT EXISTING JOISTS	PAINT NEW & EXISTING CMU
B	VINYL TILE	4" RUBBER	GYPSUM BOARD	T-GRID	
C	CERAMIC TILE	6" CERAMIC TILE	GYPSUM BOARD	GYPSUM BOARD	
E	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	



100220

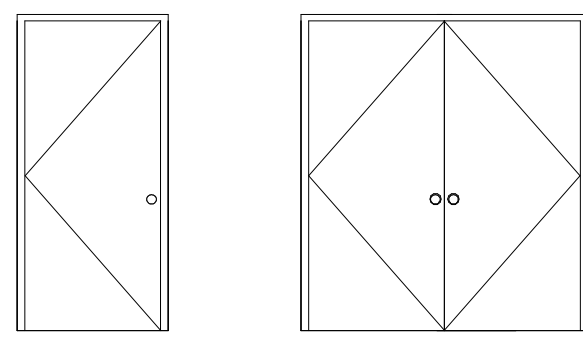
2 Wall Legend  
3/16" = 1'-0"

Door Schedule							
Mark	Type Mark	Width	Height	Fire Rating	Hardware	Detail	Comments
54	A	3' - 0"	7' - 0"		2	5 A-B-C/A300	
55	D	6' - 0"	7' - 0"		1	5 A-B-C/A300	

## HARDWARE SETS

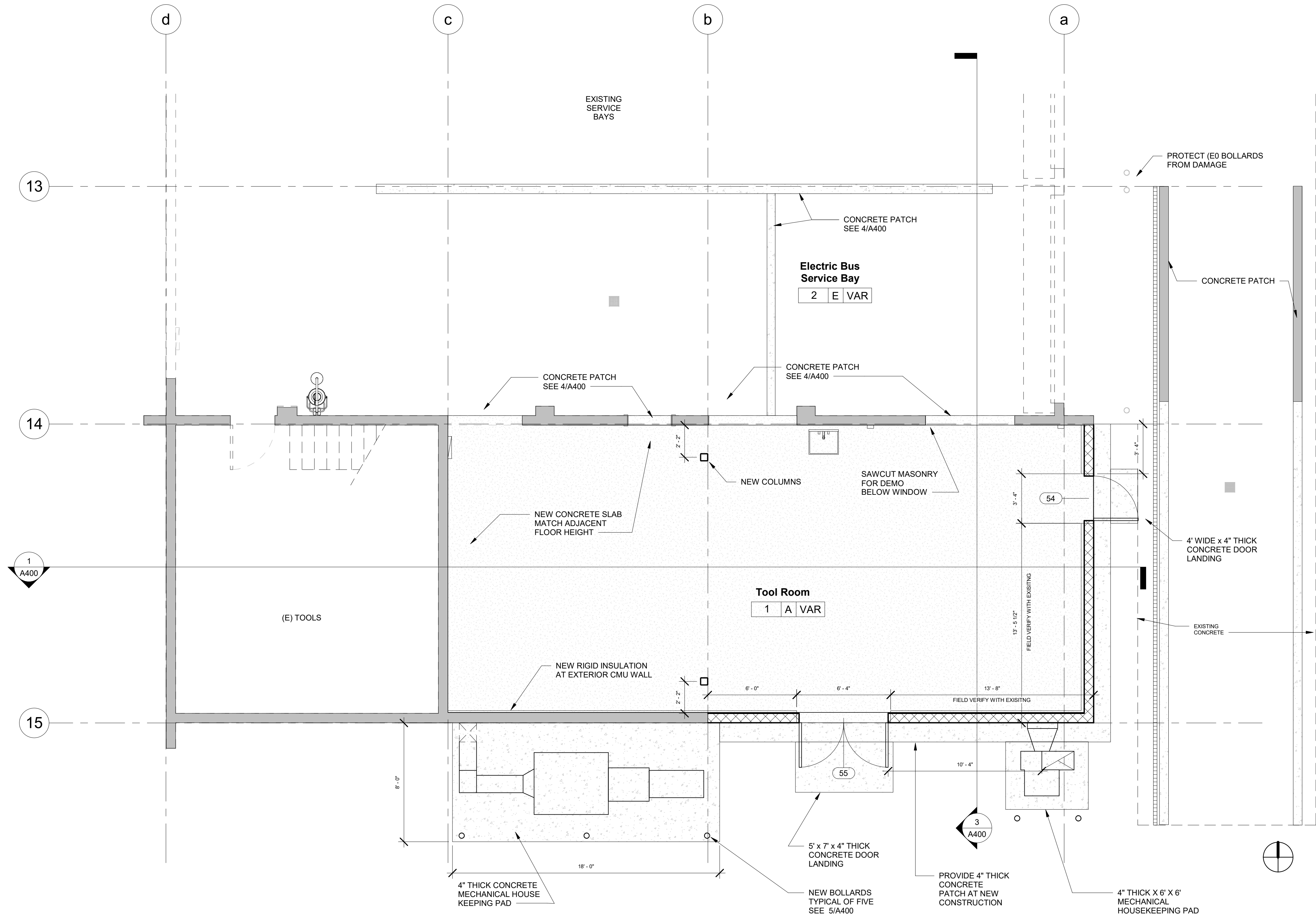
- CONTINUOUS HINGE EACH SIDE  
CLOSER ONE SIDE  
LATCHSET  
LATCH GUARD  
FLUSH BOLTS  
WEATHER STRIP  
THRESHOLD
- CONTINUOUS HINGE  
CLOSER  
LATCHSET  
LATCH GUARD  
WEATHER STRIP  
THRESHOLD

LATCHSETS TO BE CARSON CITY SCHOOL DISTRICT STANDARD: NO SUBSTITUTIONS  
BEST: REMOVABLE CORE CLASSROOM LOCK FUNCTION  
HARDWARE & FINISH: SEE SPECS PAGE A500

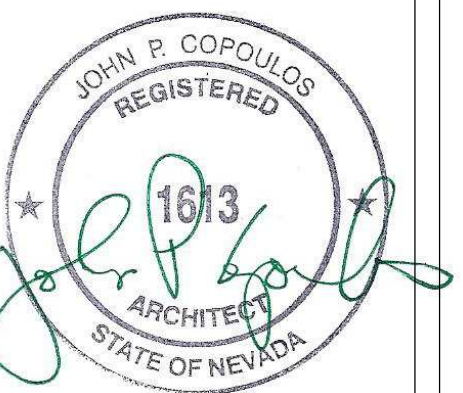


A PAINTED INSULATED HOLLOW METAL  
D PAINTED INSULATED HOLLOW METAL

3 Door Types  
1/4" = 1'-0"



1 Level 1 - Callout 1  
1/4" = 1'-0"



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

### Revision Schedule

Revision Number	Revision Date

Carson City School District

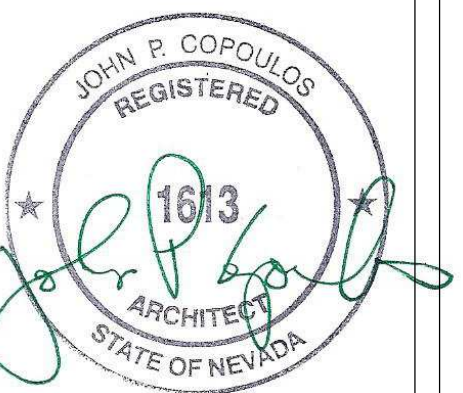
CHS - Bus Barn TI

Bus Barn Remodel

Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

A202

Scale As indicated



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
School District

CHS - Bus  
Barn TI

Bus Barn  
Remodel  
Equipment plan

Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

**A203**

Scale As indicated

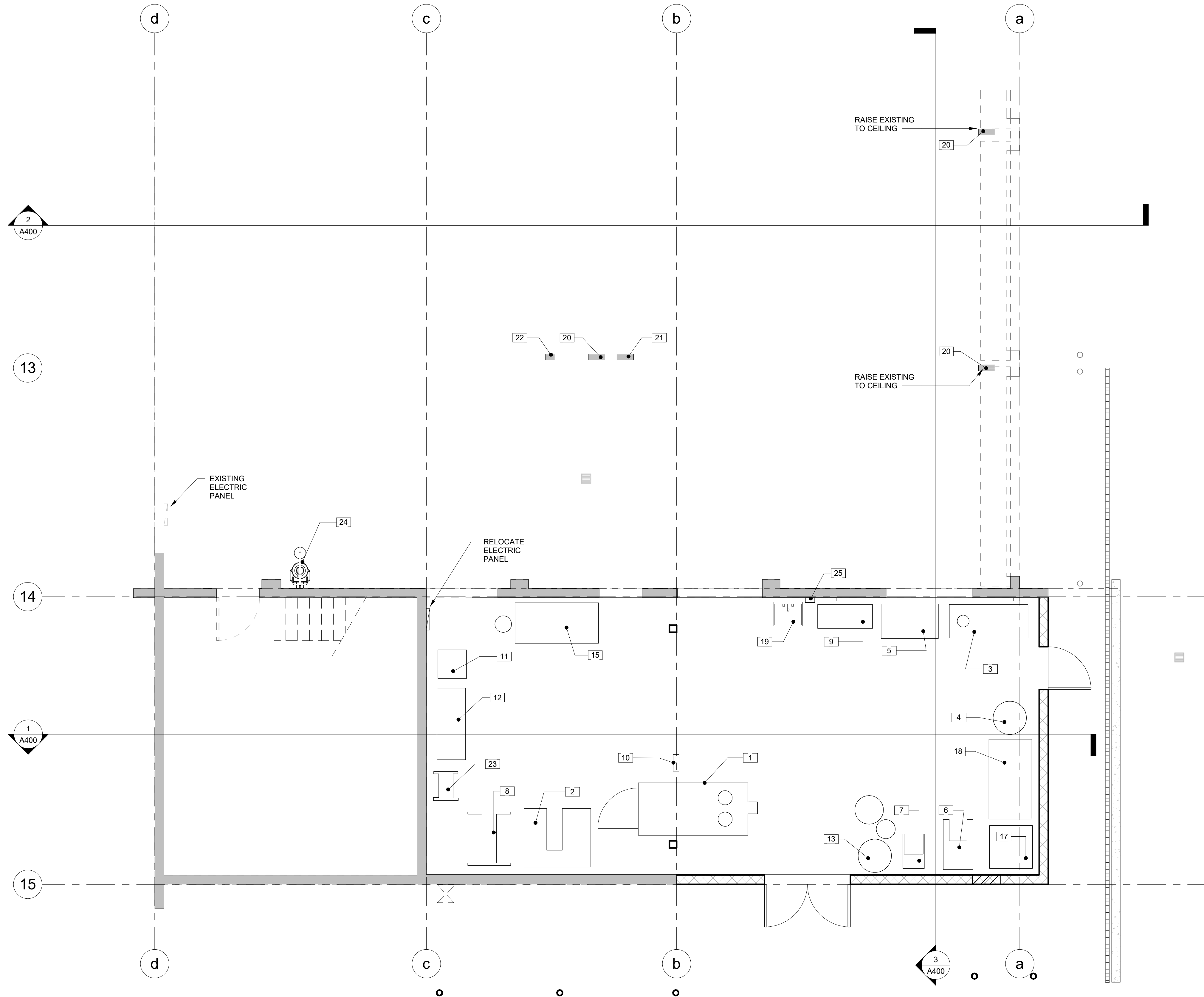
**EQUIPMENT SCHEDULE**

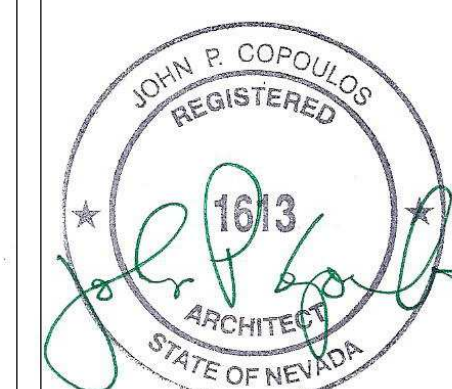
ITEM	GAS	WATER	ELECTRIC				COMPRESSED AIR	MECHANICAL		DATA				
			VOLTS	AMPS	PLUG QUANTITY	PHASE		H. P.	SIZE	DESCRIPTION	COMPUTER	ETHERNET		
1 PART CLEANER														
2 COATS LESSON														
3 HOTSY CLEANER														
4 TRU BLUE														
5 AMCO														
6 OIL FILTER RECOVERY #1														
7 OIL FILTER RECOVERY #2														
8 NAPA														
9 LATHE														
10 CHAIN HOIST														
11 GRINDER														
12 BAND SAW														
13 LUBE SYSTEM														
14 (E) OIL TANK														
15 AIR BLAST														
16 (E) WASTE OIL TANK														
17 (N) WASTE OIL TANK														
18 (N) OIL TANK														
19 HAND WASH SINK														
20 1/2" COMP AIR REEL														
21 5/8" COMP AIR REEL														
22 POWER DROP														
23 SNAP ON WHEEL BALANCE														
24 EYE WASH - SHOWER														
25 WATER HEATER														

- ALL UTILITY EXTENSIONS BY CONTRACTOR UNLESS NOTED
- ALL EQUIPMENT BY OWNER UNLESS NOTED IN THE SCHEDULE

1 Equipment Schedule  
1/8" = 1'-0"

3 Level 1 - Callout 1 Equipment  
1/4" = 1'-0"





Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Salliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
School District

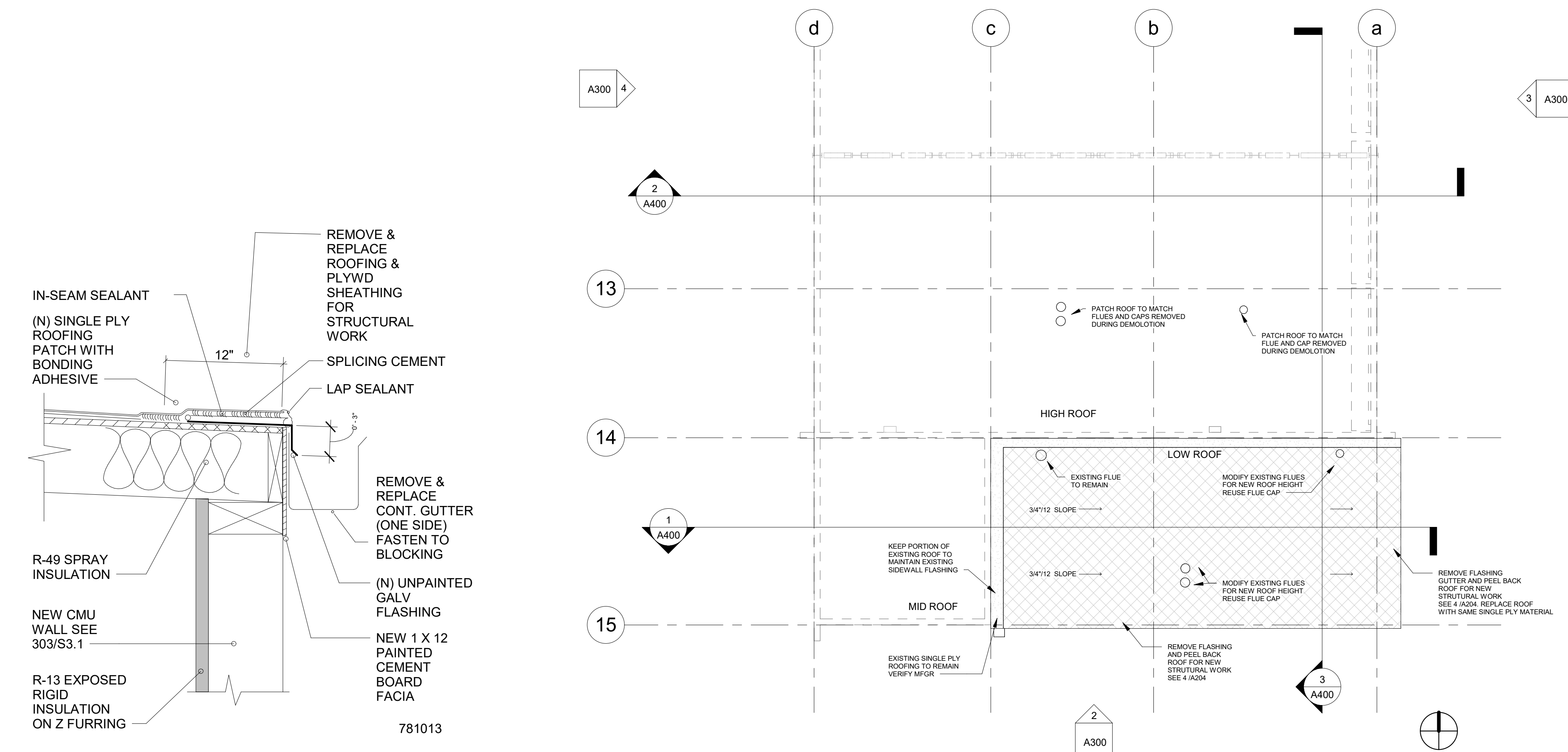
CHS - Bus  
Barn TI

Bus Barn Roof  
& Reflected  
Ceiling Plan

Project number  
Date 3-2-23  
Drawn by JPC  
Checked by JPC

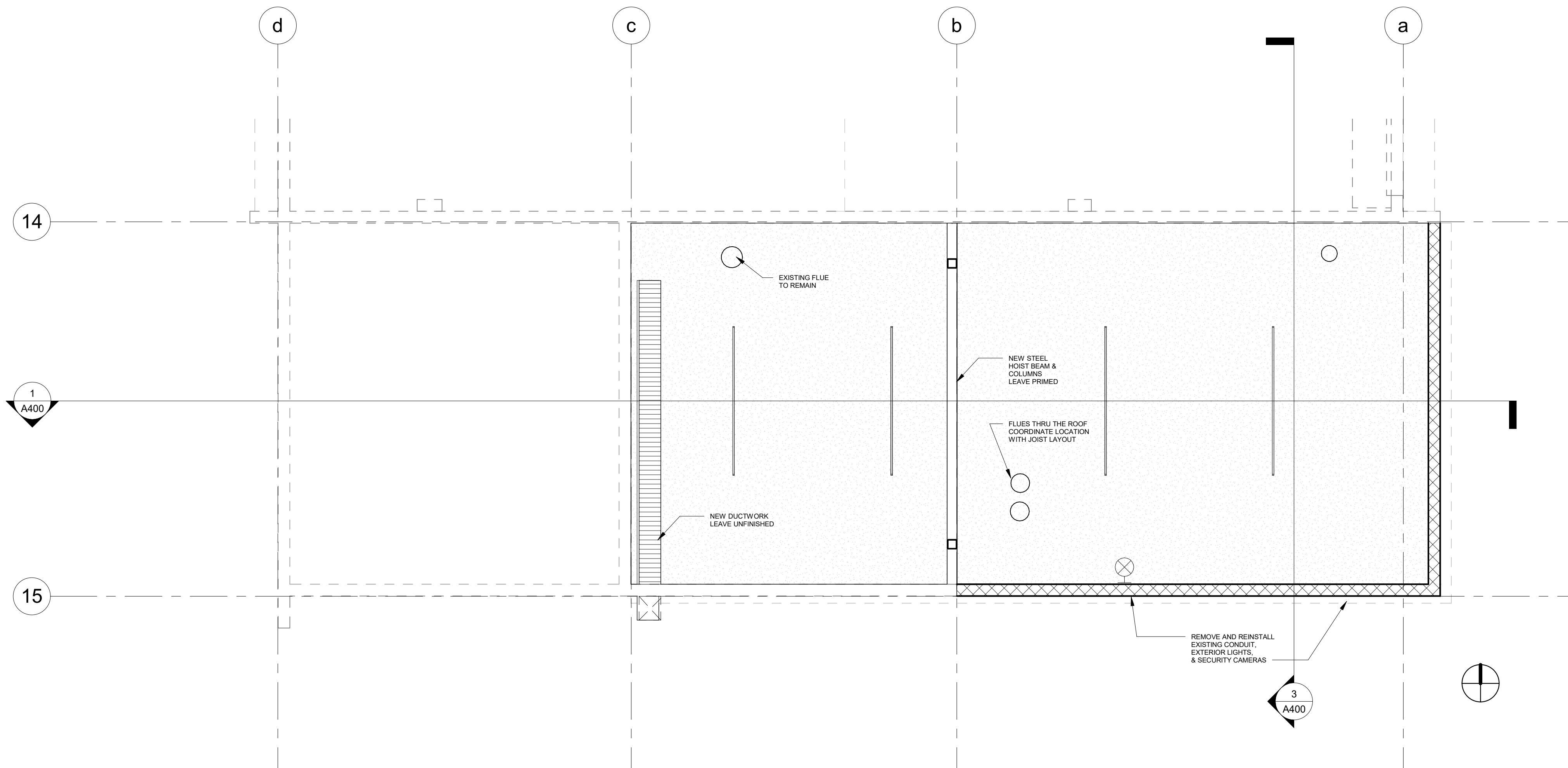
**A204**

Scale As indicated

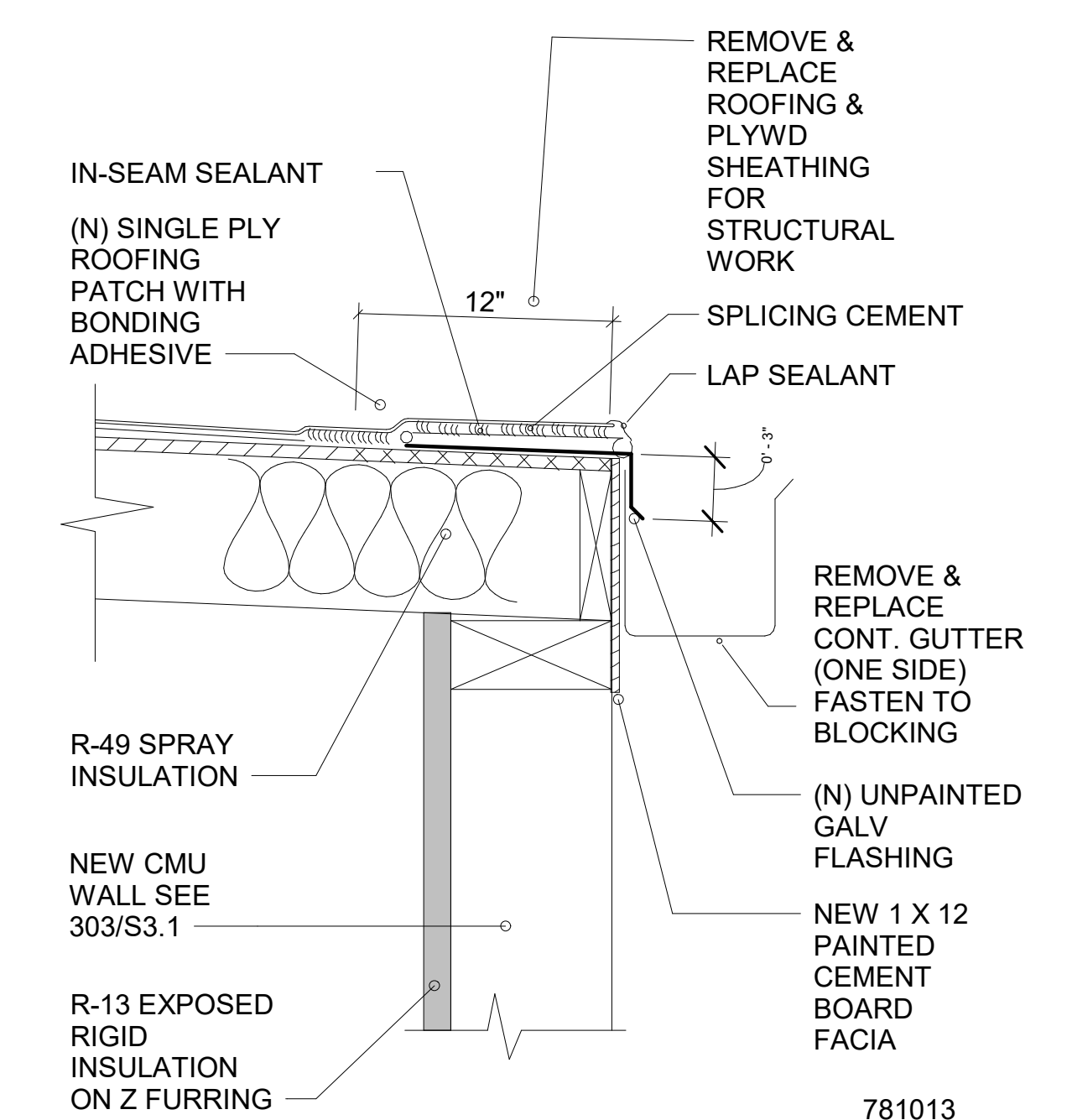


④ Roof Edge  
1 1/2" = 1'-0"

③ Low Roof  
1/8" = 1'-0"



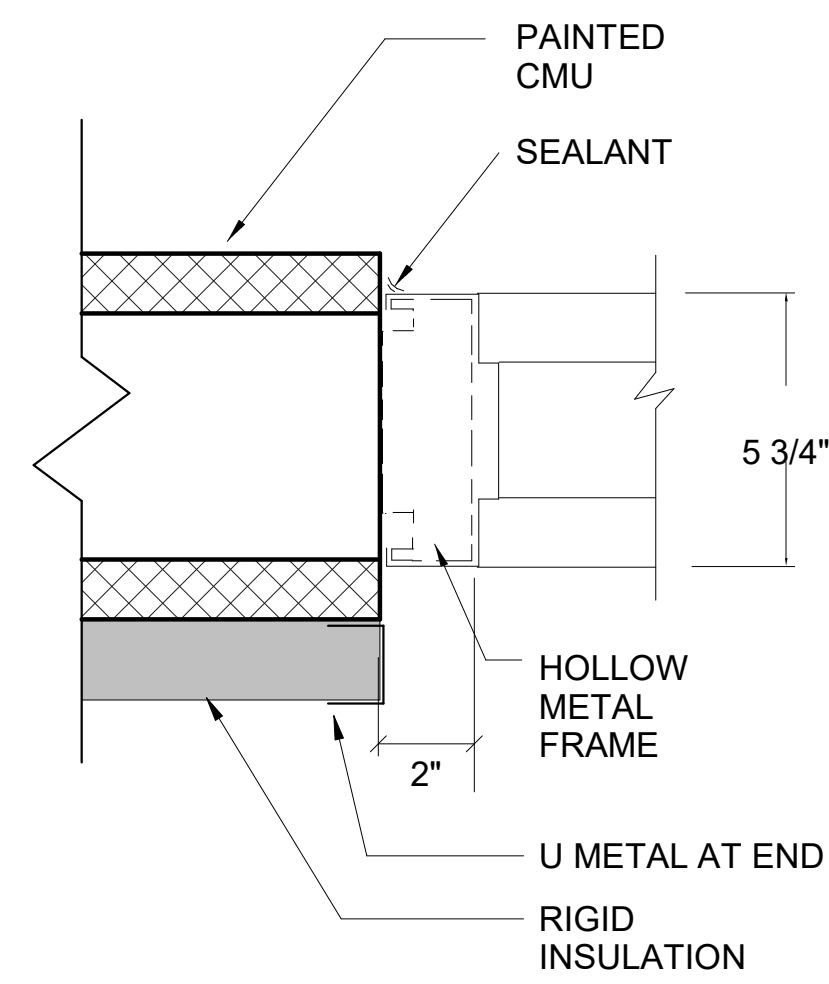
② Low Roof  
1/4" = 1'-0"



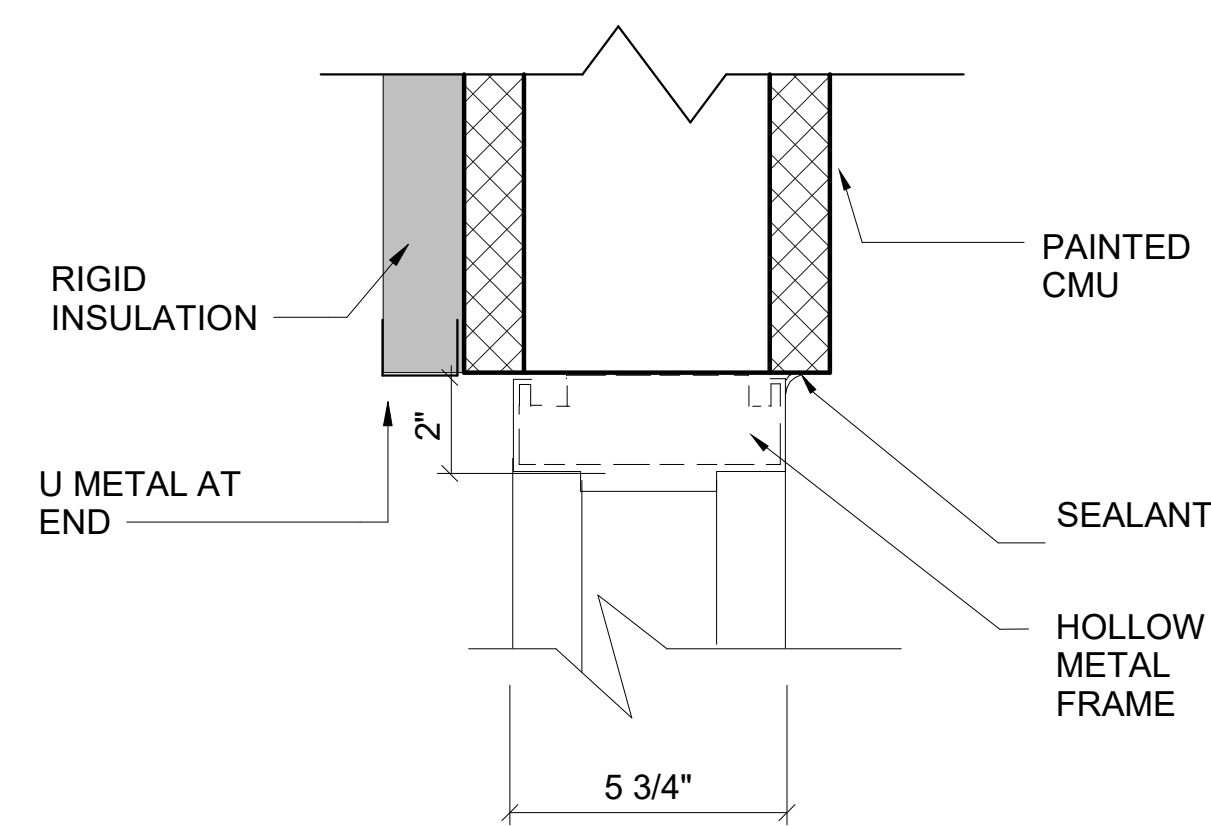
- CEILING DIFFUSER - SUPPLY
- CEILING DIFFUSER - RETURN
- EXHAUST FAN
- EXISTING CEILING DIFFUSER
- EXISTING LIGHT FIXTURES
- NEW LIGHT FIXTURES -
- NEW EXPOSED DUCTS LEAVE UNFINISHED HOLD HIGH IN THE ROOM AS PRACTICAL (8'-0" MINIMUM CLEARANCE)
- NEW PAINT @ EXPOSED JOIST CEILING
- EXIT LIGHT
- EMERGENCY LIGHT

① Reflected Ceiling Legend  
1/4" = 1'-0"

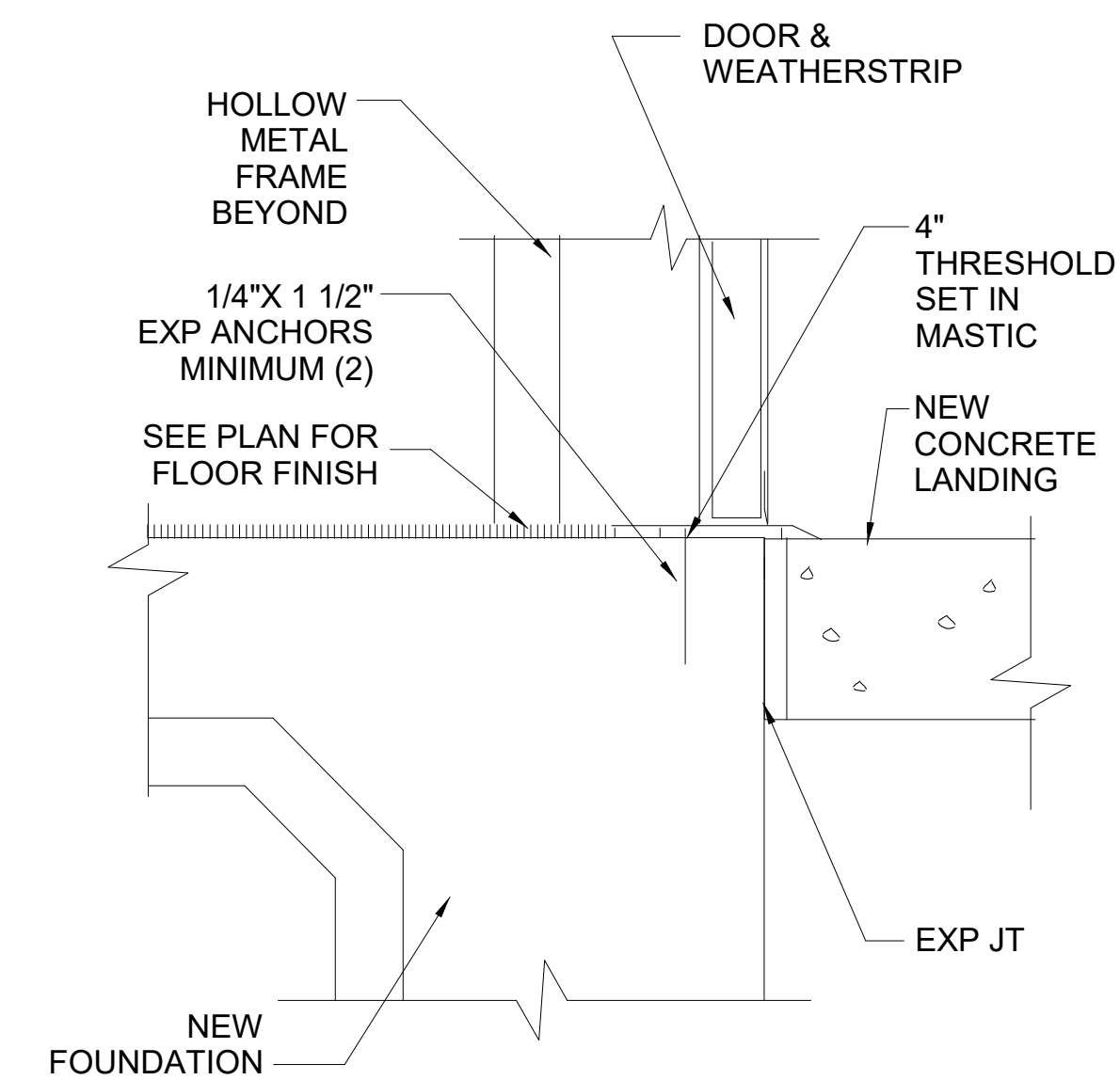
100017



811111  
**DOOR JAMB** 3"=1'-0" C

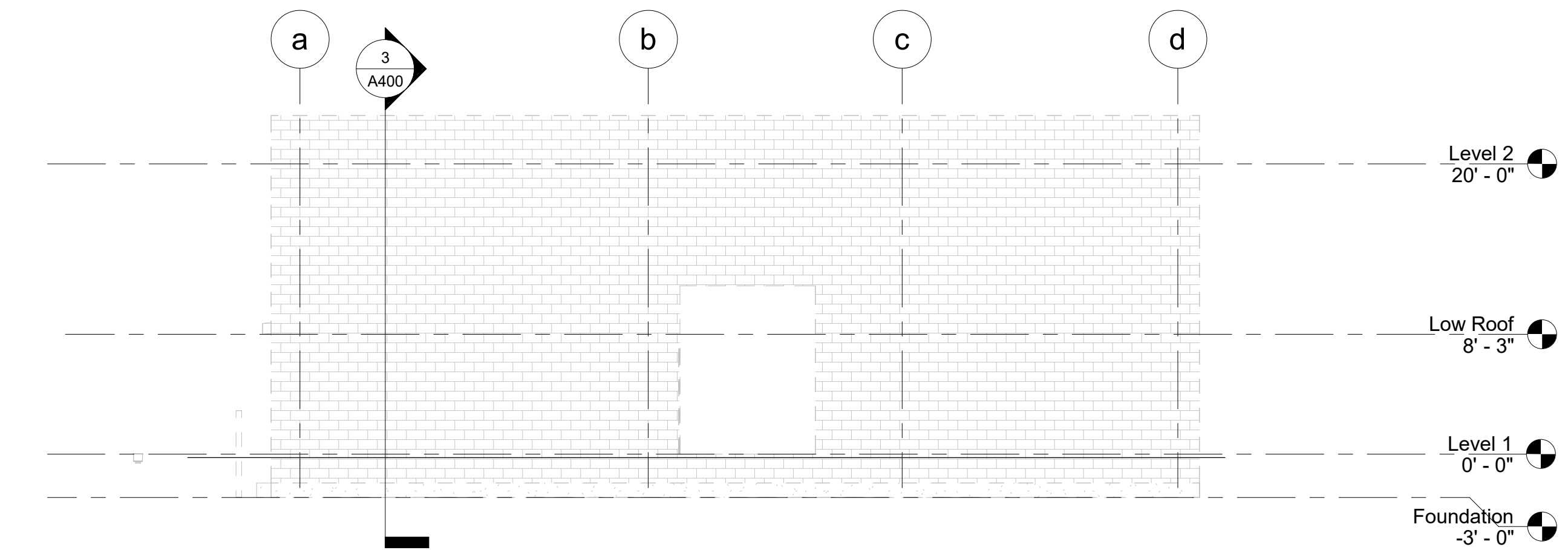


811110  
**DOOR HEAD** 3"=1'-0" B

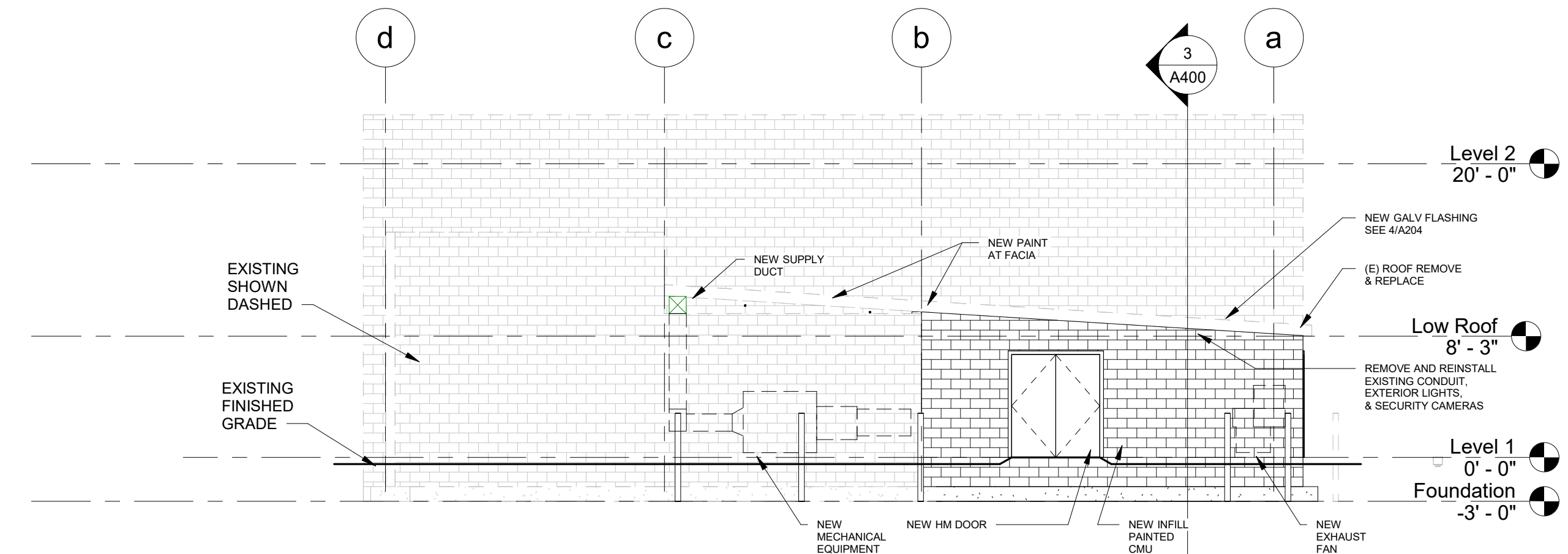


874009  
**THRESHOLD** 3"=1'-0" A

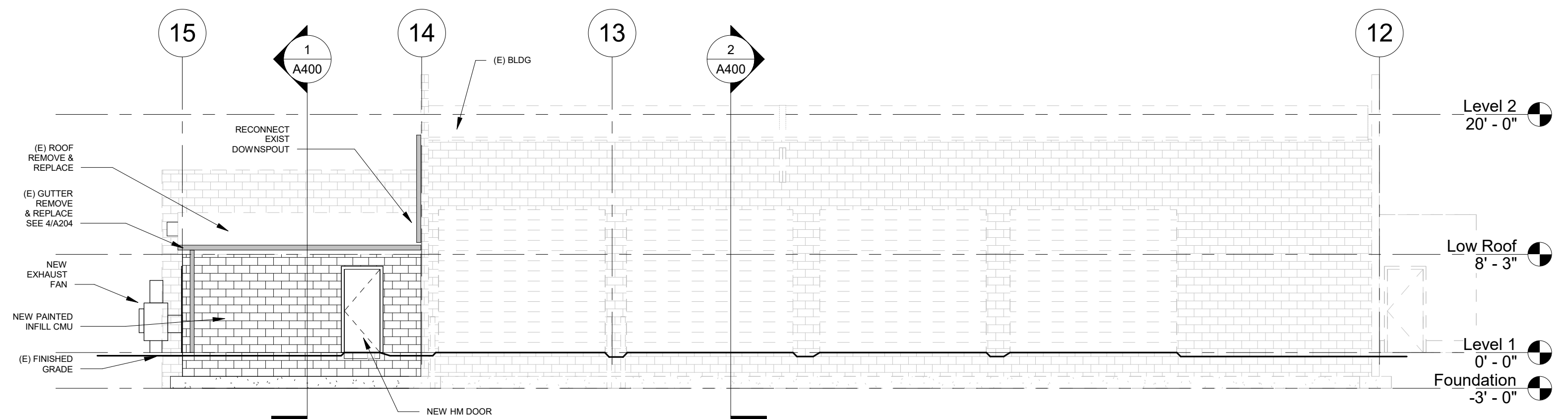
5 Door Details  
 3" = 1'-0"



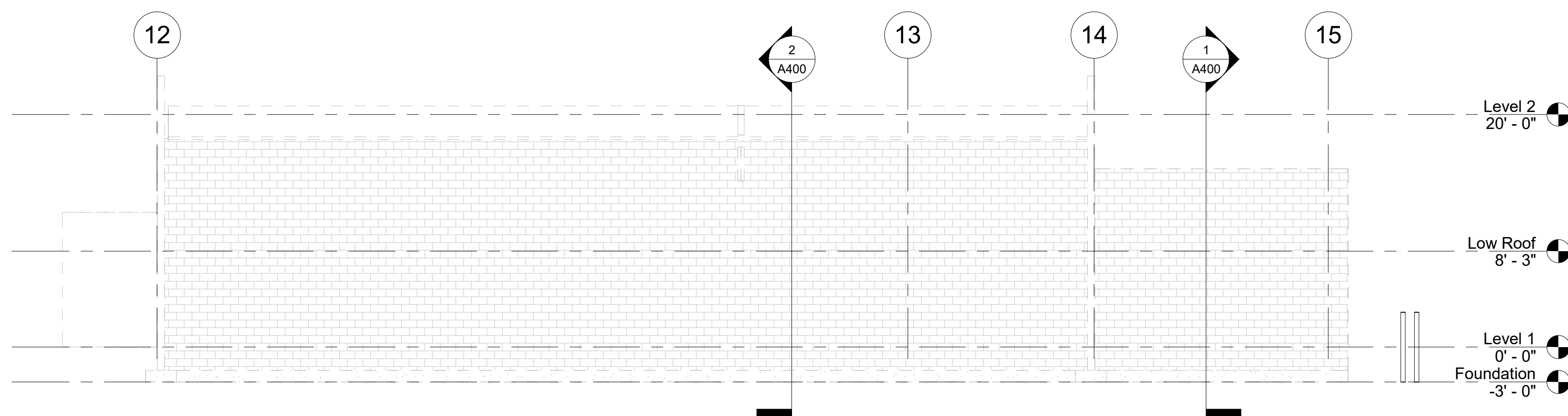
1 North  
 1/8" = 1'-0"



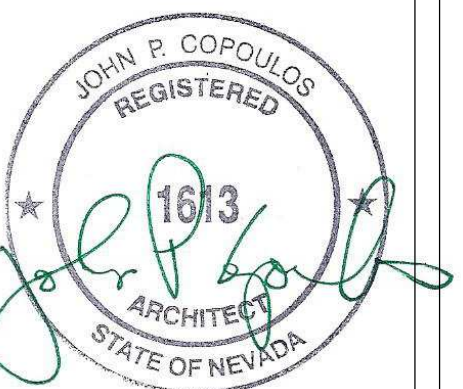
2 South  
 1/8" = 1'-0"



3 East  
 1/8" = 1'-0"



4 West  
 1/8" = 1'-0"



Property Owner:  
 Carson City School District  
 1402 West King St  
 Carson City, Nevada 89703

Project Address:  
 1111 N Salliman Rd  
 Carson City, Nevada 89701  
 A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
 School District

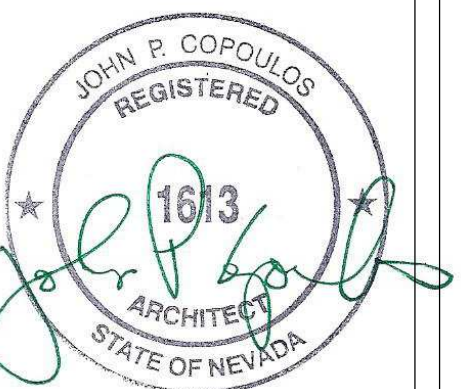
CHS - Bus  
 Barn TI

Bus Barn  
 Elevations

Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

**A300**

Scale As indicated



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
School District

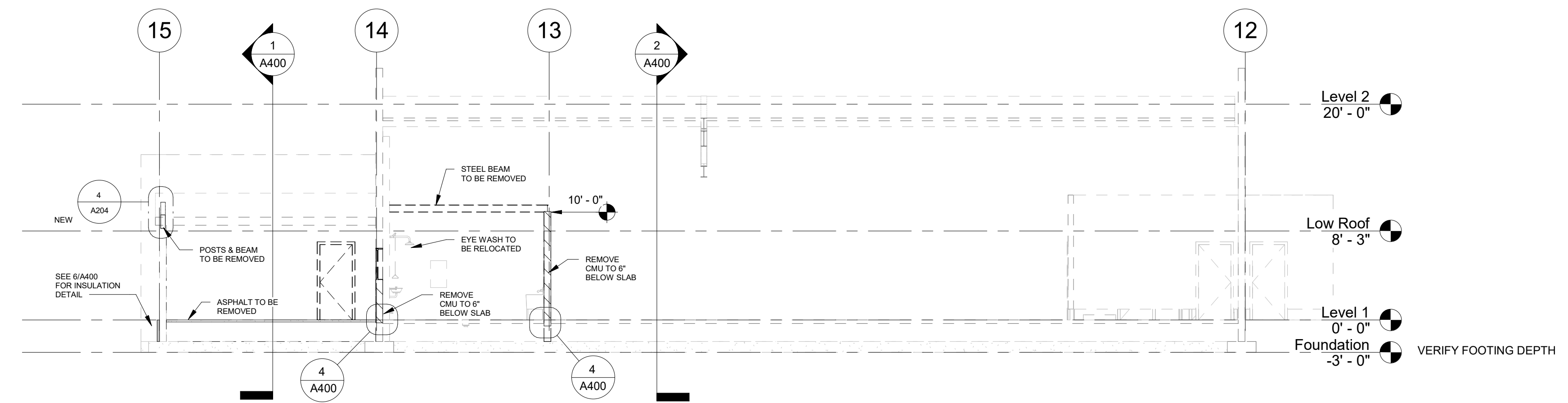
CHS - Bus  
Barn TI

Bus Barn  
Building  
Sections

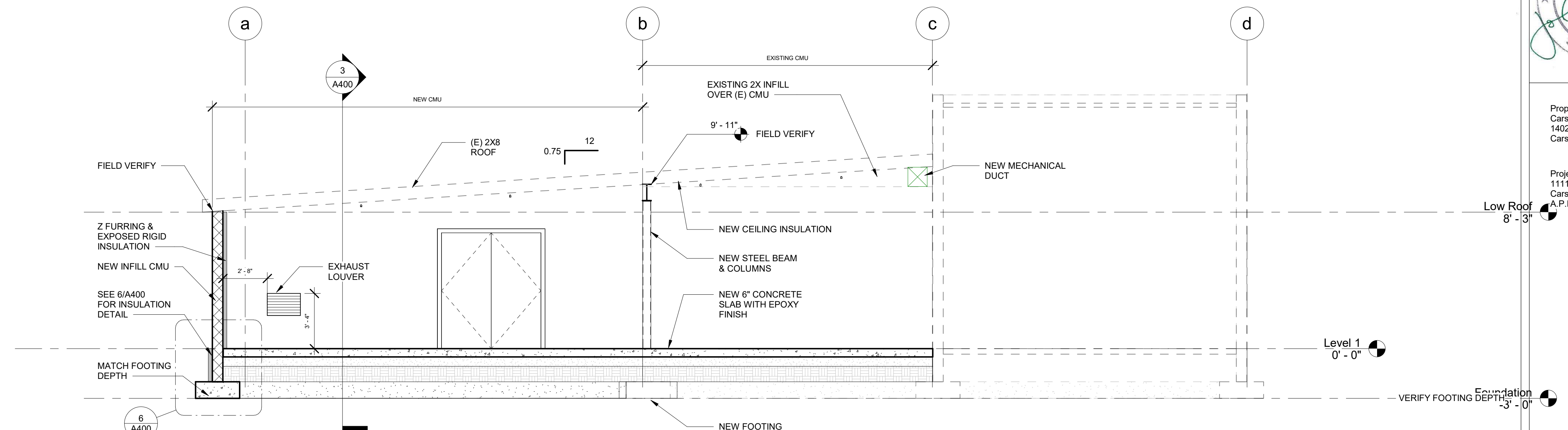
Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

**A400**

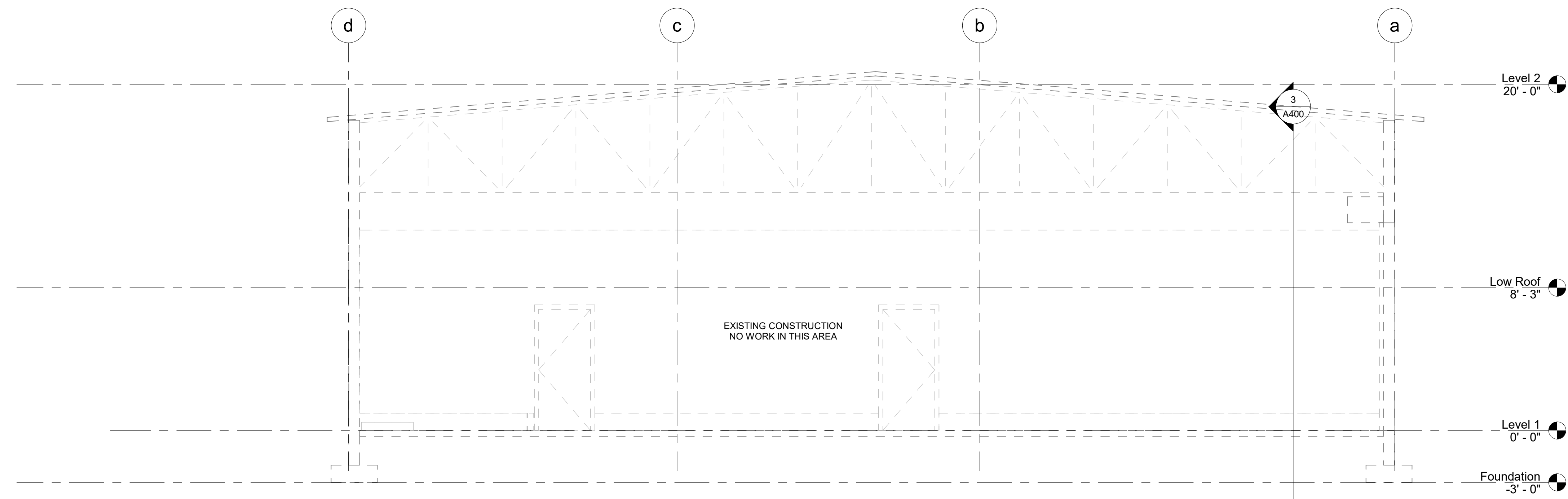
Scale As indicated



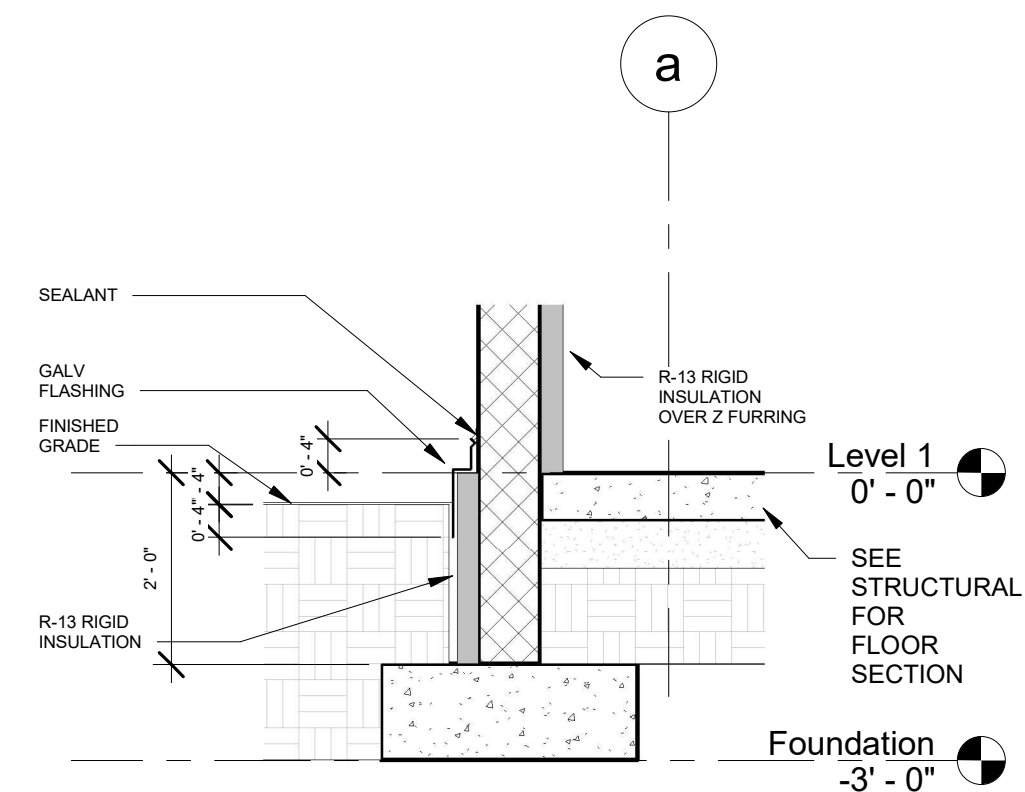
3 Section 6  
1/8" = 1'-0"



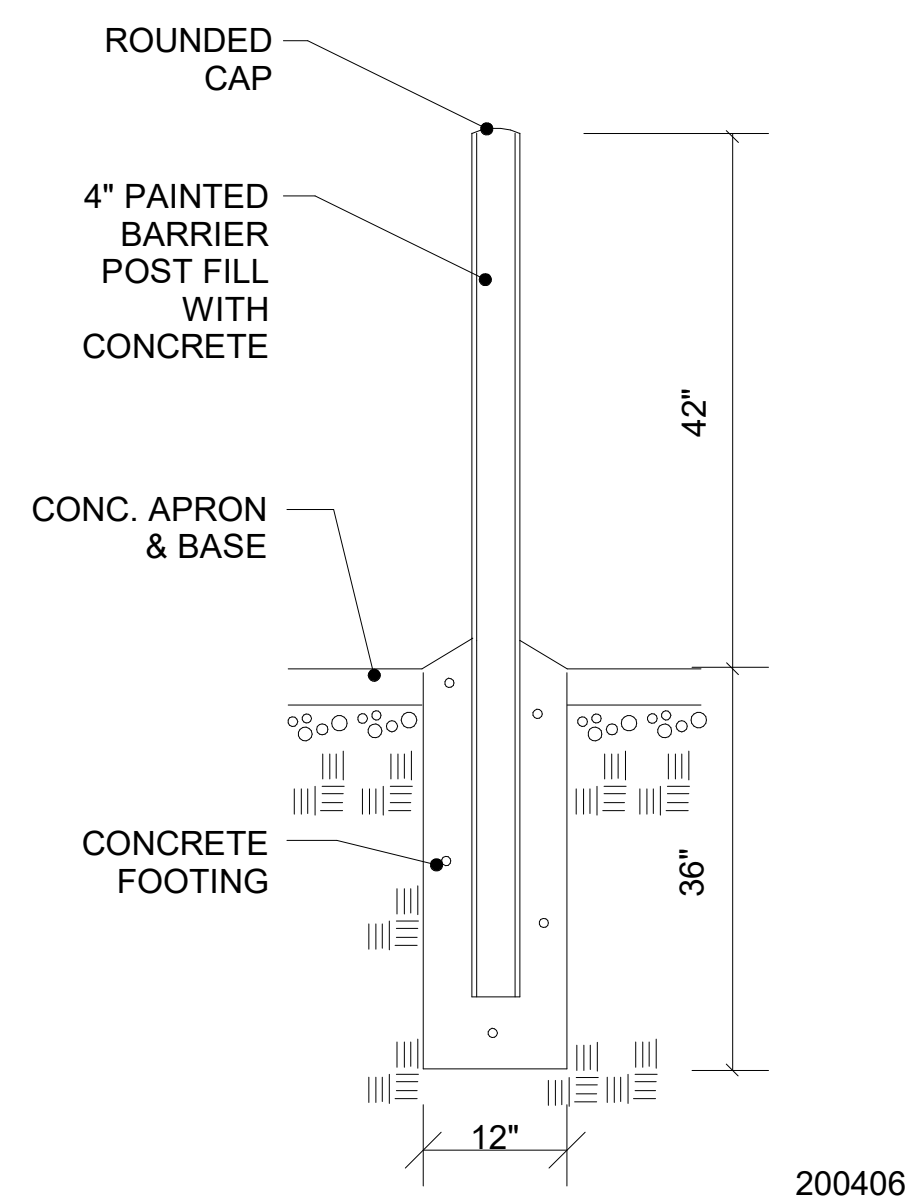
1 Section 4  
1/4" = 1'-0"



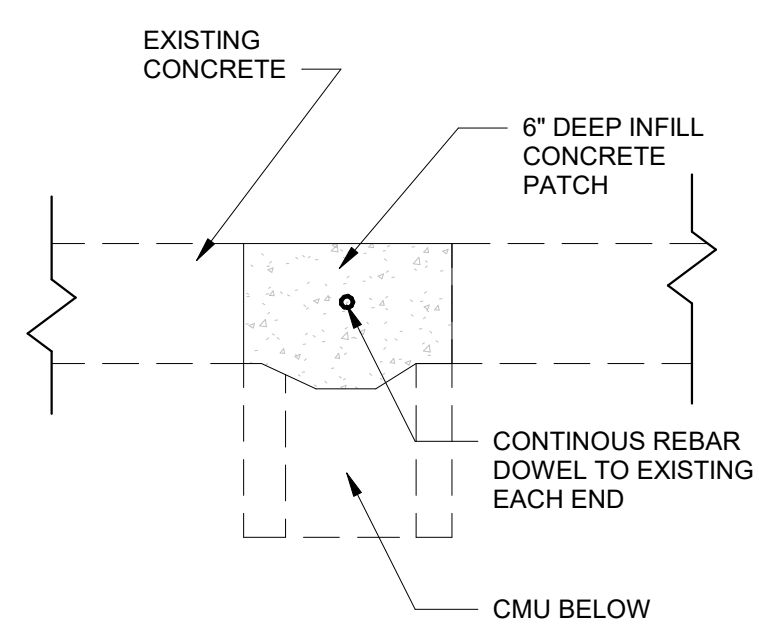
2 Section 5  
1/4" = 1'-0"



6 Insulation Detail  
1/2" = 1'-0"



5 Bollard  
3/4" = 1'-0"



4 Concrete Patch  
1 1/2" = 1'-0"

200406

GENERAL , SUPPLEMENTARY and SPECIAL CONDITIONS

General Conditions: Owner's General Conditions the "General Conditions of the Contract for the Construction of Buildings", latest edition, is hereby made a part of these specifications and is on file at the Owner's office. In case of conflict, the following paragraphs shall govern over the General Conditions.

Contract Documents: Include the drawings, specifications, general conditions, and agreement (building contract). They are complimentary, and what is called for by any one shall be as binding as if called for by all. Their intention is to include all labor and materials necessary for the proper execution of the work except as may be specifically noted otherwise on the drawings or for which separate prices may be asked in the bid proposal.

Regulations, Taxes and Permits: The whole of the work is to be executed in strict accordance with applicable regulations and codes. The contract sum, and any agreed variations thereof, shall include all taxes imposed by law except taxes and assessments on the real property comprising the site of this project.

Subcontractors: Division of these specifications into trade headings conforms roughly to customary practice. They are for convenience only. The Architect is not bound to define the limits of any subcontract. Note: The acceptance of a bid is contingent upon submission of a list of acceptable subcontractors whom the General Contractor proposes to use.

Number of Specified Items Required: Wherever in these specifications an article, device or piece of equipment is referred to in singular number, such reference shall apply to as many such articles as are shown in the drawings or required to complete the installation.

Claims for Extra Costs: If the Contractor claims that any instructions from the Architect involves extra cost under this contract, he shall give the Architect written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for changes in the work. No such claim shall be valid unless so made.

Contractor's Supervision: There shall be continuing superintendence throughout the job which can either be performed by the General Contractor himself or by someone in his employ.

Guarantee: The Contractor shall be responsible for and shall replace or remedy any faulty, improper of inferior materials or workmanship or any damage to other work resulting there from, without cost to the Owner, which shall appear within one year after the completion and acceptance of the work under this contract.

SITE WORK \*\*\*\*\*

General: Maintain survey stakes, monuments, reference points; replace where disturbed or destroyed. Contractor responsible for accuracy of layout of the work.

Excavation: Allow ample space for form work. Excavate to solid bearing leaving bearing surfaces undisturbed, level and true, to minimum of 24" below finish grade unless otherwise noted. Keep earth under footings dry and free from frost. Should bearing surfaces be softened by frost or water, re-excavate to solid bearing.

Filling: Remove any debris and decayable matter from all areas before filling. Use approved materials for fills. Make fills as early as practicable, compact thoroughly, especially under concrete slabs and other paved areas. Fill material shall be placed in approximately 8" layers, compacted and moisture conditioned thoroughly between layers to 95% relative compaction. Any excess fill material will be removed from site.

Grading: Grade to smooth, even surfaces and slopes between building and natural grades that remain around the site. Slope grades away from building to establish natural drainage all around.

Dust control: A dust control Plan and permits will be required by the contractor for this project.

CONCRETE\*\*\*\*\*

Materials: Ready mix concrete, see structural specifications for requirements.

Forms: Standard grade Douglas Fir shiplap, nominal 1"x 8" or plywood, round paper "Sonotube" forms for piers and columns. Alternative forming methods must be approved by the Architect. Forms, wherever concrete is to be exposed, must have form boards of plywood sheets set plumb and level. Brace to be strong and unyielding. Make sufficiently tight to prevent concrete leakage. Architect must approve forms and reinforcing steel placement before pouring of concrete.

Reinforcing Steel: See structural specifications.

Concrete Work: Protect from sun, wind, rain, freezing, and other disturbances until thoroughly hardened. Set all anchors, bolts, etc., shown on the drawings or other items as are necessary for success of the work. Deposit concrete as nearly as practical in its final position to avoid segregation. Once started, concreting shall be carried as a continuous operation until placing of a section is completed. Repair voids, gravel pockets and other defects. Exposed concrete wall tops to be smooth troweled and straight with tooled edges. Stub 5/8" reinforcing steel drift pins 6" out of piers for all columns. Concrete surfaces will receive no further treatment when exposed so Contractor is expected to use the same quality standards as with carpentry.

Slab Finishes: Finish slabs level or to true slopes as shown on drawings. Achieve a tolerance of 1/8" in 10' - 0"

Underlayment to be 10 mil visquene with 4" lapped joints at interior slabs, over 6" of Type II base. Interior slab finishes to be smooth troweled; bring sufficient mortar to top of slab for proper finishing. Float by hand or machine to insure true, compact surfaces.

Trowel by hand or machines to hard, dense surfaces, free from trowel marks. Do not add cement to surface. Treat with hardener; Truscon "Tru-seal" ; Horn "Clear Seal" ; Sonneborn "Kur n Seal" or equal.

Interior slabs to receive epoxy coating; screed level and float. Provide moisture testing for use by the flooring contractor.

Exterior slabs to receive broom finish; Slope 1/4" per foot for drainage. Screed and tamp to bring fine particles to surface. Float with wood or carpet float to true surfaces. Leave slightly roughened surface. Round edges to 1/4" radius.

MASONRY\*\*\*\*\*

-Hollow Load-Bearing Concrete Masonry Units: See structural specifications and as follows:

Basalite Natural Precision Grey

-Mortar & Grout: See structural specifications for requirements. Match cmu color.

-Reinforcing Steel: See structural specifications.

-Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that come in contact with such masonry. -Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface. -Protect sills, ledges, and projections from mortar droppings. -Protect surfaces of window and door frames, as well as similar products with painted and integral finishes from mortar droppings.

-Cold-Weather Construction: Comply with referenced unit masonry standard for cold-weather construction and the following:

-Do not lay masonry units that are wet or frozen. -Remove masonry damaged by freezing conditions.

-Hot-Weather Construction: Comply with referenced unit masonry standard.

-Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting where possible.

-Comply with construction tolerances of referenced unit masonry standard.

-Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

-Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

-Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water. Use High Pressure water cleaning with job-mixed detergent solution.

MISCELLANEOUS METALS \*\*\*\*\*

General: Provide all screws, bolts and accessories shown and as necessary for complete installation. Shop prime all exposed items after fabrication but before erection. One coat red lead of gray metal primer applied to clean surfaces. No paint shall be applied to steel parts embedded in concrete.

Steel and iron: Conform to the requirements of the IBC. Steel not otherwise specified to be best " Commercial" quality mill steel. Structural steel to be ASTM A - 36

Flashings: 26 ga. galvanized iron, shop primed with gray primer, where shown and detailed or as required for a watertight job.

METAL FRAMING \*\*\*\*\*

General: Provide all screws, bolts and accessories shown and as necessary for complete installation.

Z Furring: Provide size for insulation called for on the drawings, 25 ga minimum. Add flat 1x horizontal strips at 48" o.c. to hold insulation in place. Provide U channels at door openings.

ROUGH CARPENTRY\*\*\*\*\*

General: Grading rules of association having jurisdiction shall apply. All lumber and plywood to be grade stamped. Storage and protection: Protect lumber and millwork from weather. See that building is thoroughly dry before finished woods are placed in it. Rough hardware: Provide all necessary nails, spikes, screws, bolts, hangers, and connectors in necessary amounts for proper installation of carpentry and millwork, sizes and quantities sufficient to meet the requirements of the IBC to hold and draw members rigidly and permanently in place.

Hardware and fasteners exposed to the weather and moisture to be hot dipped galvanized. -Wood in contact with concrete to be heavily painted with two coats of "Woodlife", "Fungiseal", or other toxic repellent solution.

Rough Framing: Lay out, fir, and erect all framing true, plumb, and level to minimum 1/4" in 8'- 0". Nailing: (2) 16d nails minimum at all framing connections unless otherwise noted. Consult with the IBC for special conditions.

Materials and Installation: Plates (mud sills) in contact with concrete shall be pressure treated Construction grade Douglas Fir or Redwood.

INSULATION\*\*\*\*\*

- Roof insulation: Closed cell spray insulation 7" thickness for R-49. Huntsman Building Solutions or equal.

- Wall & Foundation insulation: Rigid foil face Polyisocyanurate 2" thickness R-13. Johns Mansville, Dupont or equal. Glue application at exterior. Provide Class A fire rating.

SEALANT\*\*\*\*\*

Butyl, silicone or one part polysulfide caulking at windows, doors, flashings, siding, plumbing, and elsewhere as necessary to make entire building envelope watertight.

Provide back up material per manufacturer's recommendations Apply continuous bead 1/2 to 1 times the joint width by not less than 1/4" or more than 1/2".

ROOFING\*\*\*\*\*

-Furnish roofing & patch material compatible with existing single ply roofing. Follow manufactures recommendations for roofing installation & patch required

DOORS & FRAMES\*\*\*\*\*

-Furnish and install hollow metal frames as shown on the drawings. Provide metal frames for doors of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled steel.

-Fabricate frames with mitered, coped, or welded corners. Provide accessories as required for hardware specified.

-Exterior Doors: ANSI/SDI-100, Grade III, extra heavy-duty, Model 4, minimum 16-gage galvanized steel faces. Insulated U = 0.53 minimum

-Provide manufacturers standard primed finish.

FINISH HARDWARE \*\*\*\*\*

- Finishes: Satin chromium plated, 626. - Hardware Schedule: No Substitutions. Hardware supplier shall submit two copies of proposed finish hardware schedule for owner's approval prior to delivery of any finish hardware to site. All hinged doors will have Glynn-Johnson 65 silencers or equal, two per door at the 1/4 points. - Butts: Continuous Hinges. - Locksets: Best : 93K-7R-15D-STK/S3-626. No Substitutions. Contractor to provide blank cores keys (two keys per core) for Owner to key. - Flush Bolts: Ives FB51P Top & Bottom - Door Stops: Wall mounted Trimco 1270WX. - Closer: LCN 1460 series parallel arm (where specified in hardware sets) - Threshold: Pemko 1710A - Door Bottom: Pemko 315 N - Weatherstrip: Pemko 379 S - Strike Latch Guard: submit for approval

Hardware sets: See 3/A202 on plans.

GYPSUM BOARD \*\*\*\*\*

General: Subcontractor must be a specialist in this type of work employing experienced personnel, and be approved by the Architect. Subcontractor must be able to show similar installations in good condition after approximately three years service. Provide adequate heat and ventilation for proper drying. Materials and installation:

5/8" thick gypsum wallboard, recess edge type, taped and spackled. Where fire rated wallboard is required on the drawings, USG 5/8" Fire code "C" gypsum wallboard or equal. Bent or rusty materials not acceptable. Nailing in strict accordance with manufacturer's recommendations, using annular ring flathead nails or drywall screws. All electrical boxes and all other rough in openings must be cleaned of excess spackle before painter starts. Use metal corner bead on all outside corners. Spackled areas shall be sanded to smooth even surfaces. All other areas to receive knockdown finish to match existing. Provide samples for owner's approval. Paint will have no texture additives to hide defects.

Backblock all unsupported wallboard joints where wallboard is applied to ceiling joists rafters with extra layer of board set in cement.

PAINTING AND FINISHING \*\*\*\*\*

General: Use tarpaulins or drop cloths when working above finished work. Clean paint splatters, etc. from finished surfaces. Take extraordinary care to prevent fire. Deliver materials in unbroken containers. Application of first coat constitutes acceptance of surfaces by Painting Subcontractor. Colors: Owner will submit color schedule to Painting Subcontractor who, if requested, will prepare samples of each color on same base as materials are to be applied. Allow ample time for selection of colors. Do no work until colors are approved by the owner. Brand names: where brand names are specifically called out, they cannot be substituted for without permission of the Architect. Where not otherwise called out, materials shall be of general quality and price range as Sherwin Williams products.. Fill all nail holes. Finish flush with adjacent surfaces.

Schedule: Surfaces to receive no finish: unless specifically noted otherwise, apply no finish to the following: Aluminum, brass, bronze, stainless steel, copper, brick, concrete,ceramic tile, glass, resilient flooring.

Exposed metal surfaces: two coats latex based enamel, first coat gloss and second coat semi gloss. Apply appropriate primer where items are not shop primed. New flues, exhaust vents, mechanical equipment, and other new mechanical penetrations will remain unfinished.

New Interior floor finish: Urethane Floor Enamel, Primer & Top Coat, Sherwin Williams Armorseal 1K or equal 33 Epoxy primer/sealer: 650 SL/RC poly urethane.

New CMU inside & outside: One coat block sealer, two coats exterior latex paint. Paint interior CMU before installation of insulation.

Exposed wood Joists: No texture additives in paint. One coat of primer sealer. Two coats of flat latex paint.

\*\*\*\*\*END OF SPECIFICATIONS\*\*\*\*\*

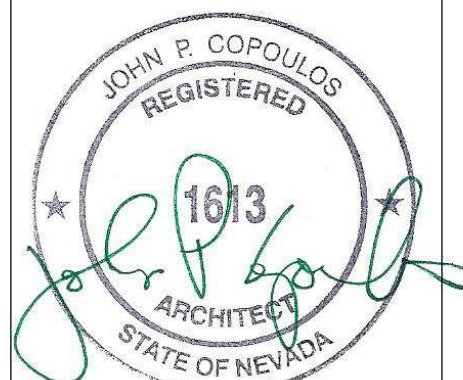


P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
School District

CHS - Bus  
Barn TI

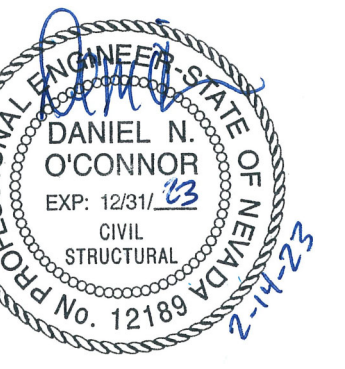
Architectural  
Specifications

Project number	
Date	3-2-23
Drawn by	JPC
Checked by	JPC

A500

Scale 12" = 1'-0"





Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

**Revision Schedule**

Revision Number	Revision Date

**Carson City  
School District**

**CHS - Bus  
Barn TI**

**STRUCTURAL  
NOTES**

Project number 22983

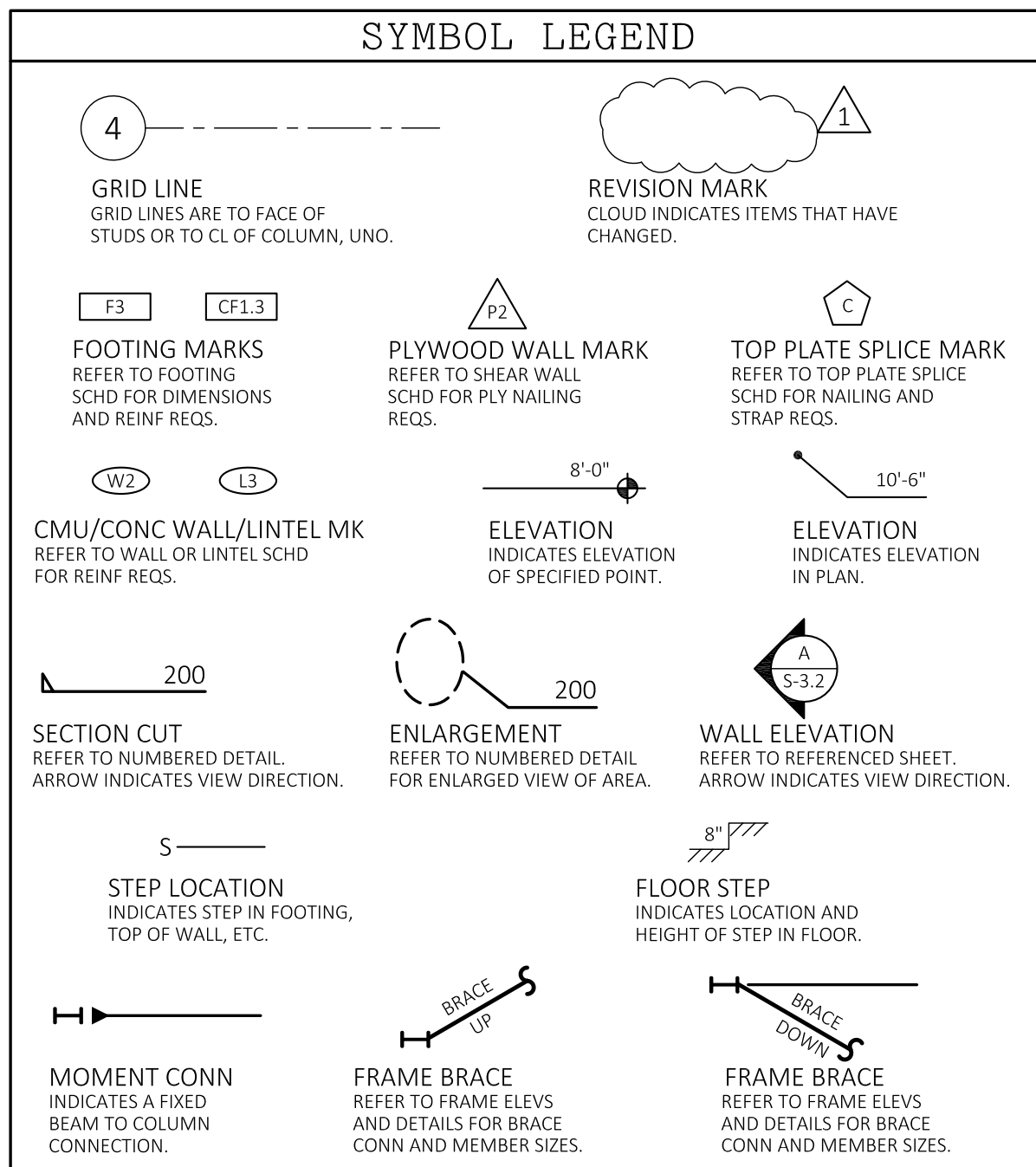
Date 14 February, 2023

Drawn by JPA

Checked by OC

**S0.1**

Scale



**STRUCTURAL ABBREVIATIONS**

AB	Anchor Bolt	(H)	Horizontal Reinforcement	R	Radius, Ridge
ABV	Above	ICF	Insulating Concrete Form	RC	Reinforced Concrete
ADDL	Additional	ID	Inside Diameter	REF	Refer to...
ADJ	Adjacent	IP	Inside Pace	REBAR	Reinforcing Bar
AFP	Above Finish Floor	IN	Inches	RECT	Rectangular Bar
AGGR	Aggregate	INSUL	Insulation	REINFP	Reinforcement
AL	Aluminum	INT	Interior	REQ	Require
ALT	Alternate	INTZ	Horizontal Connection	REQD	Required
ANCH	Anchor	CONSTR	Construction	REQS	Requirements
APFD	Approved	CONT	Continuous	RET	Return
APPROX	Approximate	CTJ	Control Joint	REV	Reversed
AR	Anchor Rod	CTR	Center	RO	Rough Opening
ARCH	Architectural	CTSK	Countersink	RR	Roof Rafter
ASSY	Assembly	CU	Cubic	RS	Rough Sawn
AVG	Average			RTU	Roof-Top Unit
B-B	Back-to-Back	d	Penny (Nail Size)	SCHD	Schedule
BC	Bottom Chord	D	Deep, Depth	SCHD	Schedule
BEL	Below	DBA	Deformed Bar Anchor	SDS	Simpson StrongDrive Screw
BLDG	Building	DBL	Double	SDSMS	Self-Drilling Sheet Metal Screw
BLK	Block	DCTJ	Doweled Control Joint	SECT	Section
BLKG	Blocking	DEFL	Deflection	SEIS	Seismic
BLM	Beam	DEMO	Demolish, Demolition	SET	Simpson SET Anchor
BN	Boundary Nailing	DEPR	Depressed	SET-XP	Simpson SET-XP Anchor
BO	Bottom of...	DF-L	Douglas Fir-Larch	SP	Square Feet
BOD	Bottom of Deck	DIA	Diameter	SHT	Sheet
BOF	Bottom of Footing	DIAG	Diagonal	SHTG	Sheathing
BP	Button Punch	DIAPH	Diaphragm	SIM	Similar
BRG	Bearing	DIM	Dimension	SIMP	Simpson Strong-Tie
BRK	Brick	DIR	Direction	SMS	Sheet Metal Screw
BS	Both Sides	DN	Down	SMU	Solid Masonry Unit (clay)
BTM	Bottom	do	Ditto	SOG	Slab-on-Grade
BTWN	Between	DTL	Detail	SP	Spiral
		DWG	Drawing	SPA	Spacing
		DWL	Dowel	SPECD	Specifications
				SPECS	Specifications
				SFF	Spruce-Pine-Fir
				SQ	Square
				SS	Stainless Steel
				SSH	Short Slotted Holes
				SSJ	Seismic Separation Joint
				STD	Standard
				STFPHR	Stiffener
				STRGD	Staggered
				STL	Steel
				STR	Straight
				STRUCT	Structural
				SUPP	Support
				S/W	Shear Wall
				SYMM	Symmetrical
				T&B	Top and Bottom
				T&G	Tongue & Groove
				TC	Top Chord
				THK	Thick
				THKND	Thickend
				THKNS	Thickness
				THRD	Threaded
				THRU	Through
				TJI	Trus-Joist Wood I-Joist
				TO	Top of...
				TOB	Top of Beam
				TOC	Top of Concrete
				TOD	Top of Deck
				TOE	Top of Edge
				TOF	Top of Footing
				TOS	Top of Steel
				TOW	Top of Wall
				TR	Threaded Rod
				TRANS	Transverse
				TSM	Top Seam Weld
				TYF	Typical
				UBC	Uniform Building Code
				UNO	Unless Noted Otherwise
				UTIL	Utility
				PAP	Powder-Actuated Fastener
				PAR	Parallel
				PART	Partition
				PC	Pipe Column (steel)
				(V)	Vertical Reinforcement
				V	Valley
				VB	Vapor Barrier
				VERT	Vertical
				W	Wide Flange (steel), Width
				W/	With
				W/O	Without
				WOOD	Wood
				WP	Wide Flange (steel)
				WP	Waterproof, Work Point
				WS	Waterstop
				WT	Welded Wire Fabric
				W/WP	Welded Wire Fabric
				YD	Yard

**STRUCTURAL NOTES**

**1. GENERAL**

- Promptly report any discrepancy found among the Drawings, the Project Specifications, these Structural Notes, and the site conditions to the Architect, who will issue correction for such discrepancy in writing. Any work done by the Contractor after the discovery of such discrepancy is at the Contractor's own risk. Verify and coordinate the dimensions among all drawings prior to proceeding with any work or fabrication.
  - Do not scale working dimensions from the plans, sections or details.
  - Field verify all dimensions. Pay particular attention to approximate dimensions marked with the symbol ±.
  - Construction or details for elements or portions of the work not specifically shown shall be similar to construction or details shown.
  - Standard details and schedules (100-series) apply to the work in general and may not be specifically referenced on the plans. Determine where each standard detail or schedule applies prior to proceeding with the work.
- Promptly notify the Engineer if conditions are found which are not specifically detailed and for which no standard detail or schedule applies.
- Notes and details specifically indicated on the plans take precedence over these Notes.
  - Where these Notes, and the plans conflict, use the more restrictive criteria, unless directed otherwise by the Architect or Engineer.
  - Coordinate with electrical and mechanical contractors for blockouts, conduits, pipe sleeves, embedded items, etc., to be embedded in concrete or masonry, as well as openings in the structure for mechanical and electrical installations.
  - Submit shop drawings of all fabricated items for review prior to fabrication. A registered Professional Engineer, licensed to practice in the state in which the construction is located, shall seal all calculations and shop drawings for Contractor-designed elements.
- Submittals not approved and stamped by the Contractor will be cause for rejection without action.

Include erection and fabrication drawings in shop drawing submittals. DO NOT INCLUDE ANY REPRODUCTIONS OF THE CONTRACT DOCUMENTS IN THE SHOP DRAWINGS.

- Modifications or substitutions in the design, material, equipment or products specified may be considered provided a written request, subject to review, is submitted to the Engineer prior to its use or inclusion in the work.
- Provide and maintain adequate erection shoring and bracing as required for stability and protection of the structure during all phases of construction. Contractor is responsible for the design and installation of all required cribbing, sheathing and shoring. Site Observations by the Engineer do not include inspection of shoring, bracing, or other elements pertaining to the means or method of construction.

**2. DESIGN AND CONSTRUCTION [IBC Ch 16]**

- All design, materials and workmanship shall be in accordance with the following:
    - 2018 International Building Code (IBC), as amended and adopted by the governing code agency or Building Official.
    - Other codes and standards as specified herein and in the contract documents. All codes and standards shall be the most current edition as of the date of these drawings.
  - An ICC Evaluation Service (ICC-ES) or IAPMO Uniform Evaluation Service (IAPMO-UES) report is required for all manufactured materials that are not covered by an appropriate section in the IBC. Such report shall indicate the allowable design loads, acceptable applications, installation requirements, and special inspection requirements, if applicable.
- Materials requiring an ICC-ES or IAPMO-UES report include, but are not limited to:
- Post-installed anchors, including adhesive anchors
  - Priming hardware
  - Non-shrink grout
- Design Loads:
    - Roof Snow Load:
 

Ground Snow Load, Pg	30 psf
Snow Importance Factor, Is	1.0
Snow Exposure Factor, Ce	1.0
Thermal Factor, Ct	1.1
Flat-Roof Snow Load, Pf	23.1 psf
    - Roof Rain Load:
 

Rainfall Intensity, i	1.25 in/hr
-----------------------	------------
    - Floor Live Load:
 

Slabs-on-Grade	150 psf
----------------	---------

 structural on-grade are not designed as structural diaphragms, unless specifically indicated on the drawings.
    - Wind Design:
 

Risk Category	II
Basic Wind Speed, V	120 mph
ASD Wind Speed, Vasd	93 mph
Exposure Category	C
Topographic Factor, Kzt	1.0
Ground Elevation Factor, Ke	1.0
Analysis Method	Directional Procedure, Part 1 (ASCE 7-16, Chapter 27)
Internal Pressure Coefficient, GCpi	0.18
Components and Cladding (10 sf tributary area; Ultimate level)	31.1 psf
Middle Zone (Zone 4)	38.3 psf
Corners (Zone 5)	3.0 psf
Dimension "a"	3.0 feet
Wind Uplift (10 sf tributary area; Ultimate level)	58 psf
Zone 1	58 psf
Zone 2e	58 psf
Zone 2r	84.6 psf
Zone 2n	84.6 psf
Zone 3e	84.6 psf
Zone 3r	100.5 psf
  - Earthquake Design:
 

Risk Category	II
Seismic Importance Factor, Ie	1.0
Mapped Spectral Acceleration, Ss	2.076 g
Site Class	S1
Spectral Response Coefficient, SDS	0.752 g
Spectral Response Coefficient, SD1	D
Seismic Design Category	1.661 g
Basic Seismic-Force-Resisting System	0.852 g
Analysis Method	D
Response Modification Factor, R	Special Reinforced Masonry Shear Walls
Seismic Response Coefficient, Cs	Equivalent Lateral Force Procedure (ASCE 7-16, Sec. 12.8)
	5
	0.332

**3. FOUNDATIONS [IBC Ch 18]**

- Foundations were designed for the following values:
 

Element	Design Value	Increase for Wind/Seismic
Allowable Soil Bearing Pressure	1500 psf	1.33
Passive Pressure	150 pcf	
Friction	0.25	
Retaining, Active	45 pcf	
Retaining, At Rest	60 pcf	
Subgrade Modulus	150 psf/in	
Minimum depth of footing:		
Adjacent to Exterior Grade	24" Min	
Interior Grade/SOG	12" Min	
  - Before commencing any earthwork, verify locations of all underground utilities or structures and do not perform any work that will damage or interfere with utilities or structures.
  - Footing excavations shall be neat and true, with all loose material and standing water removed before footing concrete is placed.
  - Provide for proper de-watering of excavations from surface water, ground water, seepage, etc.
  - Earth forms may be used for footings only where the soil is firm and stable and the concrete will not be exposed. Concrete surfaces within 6' of finished grade are considered exposed surfaces. Where earth forms are used, the excavation shall be at least 2' wider than specified.
  - Place all foundations on firm, undisturbed earth. Fill holes due to removal of large rocks or over-excavation with concrete.
  - Place all loose soil and fill in 6" maximum lifts and compact to at least 95 percent of maximum density.
- REINFORCED CONCRETE [IBC Ch 19]
    - All Concrete work and materials shall conform to IBC Ch. 19, ACI 318-14, ACI 301-16, ACI 305R-10, and ACI 306R-16.
 

Bar supports, detailing, placing, etc., shall comply with the provisions and recommendations contained in the Concrete Reinforcing Steel Institute "Manual of Standard Practice."

Property	Class A	Class B
28-day f'c	4000 psi	4000 psi
Slump, max.	3"	4"
W/C	0.55	0.44
Air Content(1)	NAE	3% max.(2)
Unit Wt.(3)	145 pcf	145 pcf
Shrinkage(4)	NR	0.00055
Cement(5)	Type II/IL	Type II/IL

Class A: Footings, UNO.  
Class B: Interior slabs-on-grade.

Notes:  
(1) Air content per ASTM C231 or C173. (NAE = Non-air-entrained.)  
(2) Non-air-entrained concrete with air content not to exceed 3.0 percent.  
(3) Aggregate per ACI 318, Sec. 3.3.  
(4) Shrinkage at 28 days (in/in) per ASTM C157. (NR = No Requirement.)  
(5) ASTM C150, C595, or C1157, as appropriate.
    - Concrete properties and composition shall be as follows:
 

The slumps indicated above are for unplasticized concrete. Larger slumps may be attained through the use of a superplasticizer.
Admixtures for concrete shall comply with ACI 318 Sec. 26.4.1.4.
Evaluation and acceptance of concrete shall conform with ACI 318 Sec. 26.12. In addition to the two cylinders required, make two additional cylinders (total of four for each test). One cylinder shall be tested at 7 days.
If the 7-day break is less than 80 percent of the specified 28-day strength, the Contractor shall investigate and make any corrections or changes as necessary to ensure future concrete will reach the specified strength.
If the average of the two 28-day strengths is below the acceptable limits, test the fourth cylinder at 56 days.
    - Cold weather construction: Concrete that is to be placed during freezing or near-freezing weather shall comply with the requirements of ACI 318 Sec. 26.5.4.2 and ACI 306R.
 

Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. Concrete materials and reinforcement, forms, fillers, and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used.
    - Hot weather construction: Concrete that is to be placed during hot weather shall comply with the requirements of ACI 318 Sec. 26.5.5.2 and ACI 305R.
 

Proper attention shall be given to ingredients, production methods, handling, placing, protection, and curing to prevent excessive concrete temperature or water evaporation that could impair required strength or serviceability.
    - Prior to placing concrete, approval shall be obtained from the Engineer or local building agency for sleeves, openings, or other attachments not shown on the drawings.
    - Use the following cover on reinforcement in cast-in-place concrete, unless noted otherwise on the drawings:
 

3"	Concrete cast against and permanently exposed to earth.
1-1/2"	Clear to top for reinforcement in slabs-on-grade.
    - Provide matching foundation dowels for all vertical bars, unless detailed otherwise.
    - Provide standard hooks and seismic hooks per ACI 318 Sec. 25.3, unless detailed otherwise.
    - Use 1" or (1) bar diameter, whichever is greater, minimum clear distance between parallel reinforcing bars, including spliced bars. For bundled bars, use an effective diameter, based on the total area of the bundle, to establish the required clearance.
    - Provide lap splices, welded splices, mechanical connections, and development of standard hooks as specified in ACI 318 Ch. 25. Make lap splices only at the locations shown on the drawings, as indicated in these Notes, or as approved in advance by the Engineer.
 

For normal weight concrete, use the minimum lap splice lengths listed below, but not less than 24", unless detailed otherwise:

Bar Size	Top Bars	Other Bars
#3 - #6	(74) Bar Dia.	(57) Bar Dia.
#7 - #11	(93) Bar Dia.	(72) Bar Dia.

"Top bars" are horizontal bars with more than 12" of fresh concrete cast below the bars.

Lap splice lengths listed above apply only when the clear distance between bars, including lapped reinforcement, is (2) bar diameters or greater and clear cover is not less than (1) bar diameter. When the clear distance between bars is less than (2) bar diameters or the clear cover is less than (1) bar diameter, increase the splice length by 50%.



**Revision Schedule**

Revision Number	Revision Date

**STRUCTURAL  
NOTES**

10. STRUCTURAL STEEL [IBC Ch 22]

- 10.1. Structural steel detailing, fabrication, and erection shall conform to IBC Ch. 22 and AISC 360-16, AISD 341-16, and AISD 303-16.
- 10.2. Structural steel shapes shall be as follows, unless indicated otherwise on the drawings:
- a. Wide Flange shapes ("W", "WT"): ASTM A992 (Fy = 50 ksi).
  - b. Channels ("C", "MC"), Angles ("L", "LL"), Plates, Bars, and other miscellaneous shapes: ASTM A36 (Fy = 36 ksi).
  - c. Square and Rectangular Hollow Structural Sections ("HSS"): ASTM A500 Grade B (Fy = 46 ksi).
- 10.3. High-strength bolting and inspection shall comply with IBC 1705.2, AISC 360 Sec. N5.6, and the Research Council on Structural Connections "Specification for Structural Joints Using High-Strength Bolts" (RCSC).
- a. Use ASTM F3125 Grade A325 bolts and ASTM A563 Grade C heavy-hex nuts, unless specifically noted otherwise. ASTM F3125 Grade F1852 twist-off-type tension-control bolts may be used in place of Grade A325 bolts. Use ASTM A563 Grade DH heavy-hex nuts with tension-control bolts.
  - b. Where not noted, use 3/4" diameter bolts.
  - c. Use snug-tight joints per RCSC 8.1, unless specifically noted otherwise.
- Where threads are not required to be excluded from the bearing area of the connection, bolts are indicated on the drawings as A325.
- Where threads are required to be excluded from the bearing area of the connection, bolts are indicated on the drawings as A325-X.
- 10.4. Bolts indicated as machine bolts (MB) shall be ASTM A307 Grade A, unless detailed otherwise. Threaded rod (TR) shall be ASTM F1554 Grade 36 or weldable Grade 55, unless detailed otherwise. Where not indicated, use ASTM A563 Grade A nuts; where heavy-hex nuts are indicated, use ASTM A563 Grade C nuts.
- 10.5. Bolt holes shall comply with RCSC Sec. 3.3. Use standard holes, unless detailed otherwise. Holes may be drilled, punched, or thermally-cut by machine. Manual thermal-cut holes are not allowed.
- 10.6. Welding shall conform to AWS D1.1, "Structural Welding Code-Steel." Certified welders shall perform all welding.
- Use E7018 (SMAW) or E71T-8 (FCAW-S) electrodes, with a minimum Charpy V-notch toughness (CVN) of 20 ft-lb at 0°F.
- At complete penetration welds, backing bars shall be removed and welds repaired on both sides with fillet welds.
- 10.7. Base plate holes for anchor bolts may be oversized as follows:
- | Anchor Bolt Dia. | Hole Size       |
|------------------|-----------------|
| 3/4" - 7/8"      | 5/16" Oversized |
- 10.8. Use pre-blended, pre-bagged non-metallic, non-shrink grout under base plates. Install according to the manufacturer's printed instructions.

11. SAWN LUMBER, TIMBER, AND MANUFACTURED WOOD PRODUCTS [IBC Ch 23]

- 11.1. All rough framing shall conform to the requirements of IBC Ch. 23, ANSI/AWC NDS-18, and ANSI/AWC SDPWS-15.
- 11.2. For sawn lumber, use Douglas Fir-Larch per NDS-18, Tables 4A and 4D, of the following minimum grades, unless noted otherwise on the plans:
- | Description                       | Grade | Allowable Stress               | Mod. of Elasticity           |
|-----------------------------------|-------|--------------------------------|------------------------------|
| 2x, 3x and 4x Beams and Stringers | No. 2 | Fb = 900 psi                   | E = 1600 ksi                 |
| Post and Timbers                  | No. 1 | Fb = 1350 psi<br>Pc = 1000 psi | E = 1600 ksi<br>E = 1600 ksi |

Use pressure-treated Douglas Fir-Larch No. 2 for sill plates and wood within 6" of earth. (Note: Special framing hardware requirements apply when using pressure-treated lumber. See framing hardware note below.)

- 11.3. Use Structural Composite Lumber products as manufactured by RedBull, of the type and size indicated on the plans and with the following minimum properties:

Description	Grade	Allow. Stress	Elasticity	ICC-ES Report
Redlam LVL	2.0E DP/LP/WH	Fb = 2900 psi	E = 2000 ksi	ESR-2993

Blocking, stiffeners and hangers are the responsibility of the manufacturer, unless specifically indicated on the plans.

Substitute products from other manufacturers require prior written approval from the Engineer.

- 11.4. For wood to wood nailed connections, use spacing and edge distances of (1) diameters and (6) diameters, respectively, or as required to avoid splitting the wood.
- 11.5. Where required to avoid splitting, pre-drill holes with a drill bit diameter equal to the next smaller nail diameter.
- 11.6. Where nails will be exposed to weather, use zinc coated or stainless steel nails conforming to ASTM A153.
- 11.7. Provide H1, H2.5A or H2.5T ties for all roof joists, rafters and trusses, unless noted otherwise.
- 11.8. Use framing hardware as manufactured by Simpson Strong-Tie and of the type and size indicated on the plans. Install as recommended by the manufacturer. Where hardware can be specified with different size or numbers of fasteners, use the largest size or number of fasteners, unless noted otherwise.

Alternate hardware requires Engineer's approval prior to installation. Submit proposed equivalent and ICC-ES or IAPMO-UES report for each alternate item. Contractor/Installer assumes full liability resulting from the use of non-approved framing hardware including, but not limited to, product and framing system performance.

- 11.9. Use ASTM A307 Grade A machine bolts (MB), with ASTM A563 Grade A nuts, and use washers where bolt head or nut bears on wood. Drill holes 1/32" to 1/16" larger than the bolt diameter.
- Where bolts are shown countersunk into plates, nailers or ledgers, do not exceed 1" countersink depth.

12. MISCELLANEOUS

- 12.1. The Contractor shall provide additional secondary supports as required by the various trades, including, but not be limited to:

Mechanical equipment, including seismic restraints

13. SPECIAL INSPECTIONS [IBC Ch 17]

Provide special inspections in compliance with IBC 1704 as indicated in the "STATEMENT OF SPECIAL INSPECTIONS" included in the structural drawings.

END OF STRUCTURAL NOTES

8. MASONRY [IBC Ch 21]

- 8.1. All masonry work and materials shall conform to IBC Ch. 21 and TMS 402/602-16.
- 8.2. All masonry shall be solid grouted, unless noted otherwise.
- 8.3. Special Inspection and Testing:
- a. Special inspection is required for masonry as described in the Special Inspection section of these Notes.
  - b. Pre-construction testing is required for both special inspection and non-special inspection, and shall be in conformance with TMS 602 Table 3. For determination of f'm, the Unit Strength Method, TMS 602 Art. 1.4B.2, is recommended.
  - c. Testing as the construction progresses is required for special inspection and shall be in conformance with TMS 602 Tables 3 and 4.

- 8.4. Masonry properties shall be as specified below:

Property	Class MA
Masonry Type	CMU
Strength, f'm	1500 psi
Unit Strength	1900 psi
Grout, f'c	2500 psi

- 8.5. Concrete masonry units (CMU) shall conform to ASTM C90, Grade N, Type I. Refer to the Architect for texture, special shape, and color requirements.

At exterior walls, provide units made with liquid polymeric integral water repellent admixture that does not reduce flexural bond strength. Use "RainBloc" manufactured by ACM Chemistries, Inc., or "Dry-Block" manufactured by W.R. Grace & Co.

- 8.6. Mortar shall conform to ASTM C270, and TMS 602 Art. 2.6A. Use Portland cement mortar only; do not use mortar made with masonry cement or mortar cement. The minimum compressive strength shall be as required to attain the design f'm, but not less than 1800 psi for Type S and 2500 psi for Type M. Use mortar types as follows:

Masonry Type	Location	Mortar Type
CMU	Below Grade	M
	Above Grade	M or S

At exterior walls, use liquid water repellent admixture intended for use with CMUs containing integral water repellent by the same manufacturer. Use "RainBloc OP" manufactured by ACM Chemistries, Inc., or "Dry-Block Mortar Admixture" manufactured by W.R. Grace & Co.

- 8.7. Grout shall conform to ASTM C476, and TMS 602 Art. 2.2 and 2.6B, and shall have a minimum 28-day compressive strength as required to attain the specified f'm, but not less than indicated for the class of masonry. Use 3/8" maximum aggregate and 8" to 11" slump. Larger slumps may be attained through the use of a superplasticizer.
- 8.8. Cold weather construction: When ambient air temperature is below 40°F, implement cold weather procedures and comply with TMS 602 Art. 1.8C.
- 8.9. Hot weather construction: When ambient air temperature exceeds 100°F, or 90°F with winds greater than 8 mph, implement hot weather procedures and comply with TMS 602 Art. 1.8D.
- 8.10. Install anchors, reinforcement, flashing, lintels and other items as the stacking progresses. Cut or notch masonry units as required.
- Pre-cut masonry units for inserts as indicated on the plans.
- Cut masonry units to fit openings. Do not use pieces less than 1-1/4" in length in the wall.

- 8.11. Use ASTM A615, Grade 60 reinforcement for masonry, UNO.
- 8.12. Splices in reinforcement shall comply with TMS 602 Art.3.4B.9. Minimum lap length shall be as follows, unless detailed otherwise:
- | Bar Size | Min Lap Splice |
|----------|----------------|
| #3       | 1'-6"          |
| #4       | 2'-2"          |
| #5       | 3'-4"          |
| #6       | 4'-6"          |
| #7       | 5'-3"          |
| #8       | 6'-0"          |

- 8.13. Center vertical reinforcement in masonry, unless detailed otherwise. Where reinforcement is to be located near one face, maintain a cover distance of 2" from the outside face of the masonry to the surface of the bar.
- 8.14. Provide matching foundation dowels for all vertical bars, unless detailed otherwise.
- 8.15. Reinforce wall openings greater than 24" in either direction with (2) vertical bars on each side of the opening and extend the reinforcement 32" each way beyond the opening. Reinforce openings greater than 48" in either direction as for doors and windows.
- 8.16. Shore masonry lintels until the masonry has gained sufficient strength to sustain its self-weight and the weight of any imposed loads.
- 8.17. Provide jamb bars and foundation dowels at each side of door and window openings. Extend reinforcement to the next floor or to the roofline above, unless detailed otherwise.

9. CONNECTIONS TO MASONRY AND MASONRY INSERTS [IBC Ch 21]

- 9.1. Anchor bolts (AB) and other bolts embedded in masonry shall be ASTM A307 Grade A, hex head bolts. Bent bar anchor bolts (L- and J-bolts) are not allowed. Threaded rod (TR) shall be ASTM F1554 Grade 36 or weldable Grade 55, unless detailed otherwise. Where not indicated, use ASTM A563 Grade A nuts; where heavy-hex nuts are indicated, use ASTM A563 Grade C nuts.
- 9.2. Place anchor bolts or headed stud anchors in the side of masonry to extend to 1/2" clear of the opposite face or to an embedment of 6", unless detailed otherwise. Where the anchor passes through the masonry face shell, provide a hole at least 1" larger in diameter than the anchor diameter and center the anchor to provide a 1/2" minimum grout ring around the anchor per TMS 602 Art. 3.4D.3.
- 9.3. Hot-dip galvanize, after fabrication, all inserts and plates embedded in masonry and permanently exposed to weather, unless noted otherwise.
- 9.4. Post-installed anchors in masonry shall be as follows, unless indicated otherwise on the drawings:
- a. Adhesive anchors for grout-filled CMU: Simpson AT-XP acrylic adhesive anchorage system, with ASTM F1554 Grade 36 threaded rod per and ASTM A563 Grade A nuts, IAPMO-UES Report ER-281.
  - b. Screw-in anchors for grout-filled CMU: Simpson TITEN-HD screw anchors per ICC-ES Report ESR-1056.
  - c. Install anchors in accordance with the manufacturer's printed instructions. Observe anchor spacing, embedment, and edge clearances indicated on the drawings.
  - d. Special Inspection is required for post-installed anchors.
  - e. Use of alternate products requires written pre-approval of the Engineer. Substitute products require an ICC-ES or IAPMO-UES report, showing compliance with the building code.

- 4.14. Provide 3/4" chamfer on all exposed corners of concrete, unless shown otherwise on Architectural details.
- 4.15. Where new concrete is deposited against concrete that is greater than 28 days old, thoroughly clean existing surfaces of laitance and foreign material and saturate with water. Remove all standing water prior to placement of new concrete. Roughen the existing surface to an amplitude of 1/4".
- 4.16. Securely tie all reinforcement before placing concrete.

5. REINFORCEMENT [IBC Ch 19]

- 5.1. Reinforcement shall conform to ACI 318-14 Sec. 20.2, 20.3, and 26.6, and ASTM A615 and A706.
- 5.2. Use reinforcement for concrete as follows:
- | Standard Reinforcement, UNO | A615, Grade 60 |
|-----------------------------|----------------|
|                             |                |
- 5.3. Bend reinforcing steel in accordance with ACI 301 Sec. 3.3.2.8. Reinforcing bars #3, #4, and #5 may be bent cold the first time, provided bar temperature is above 32°F. For other bars sizes, preheat reinforcing bars prior to bending per ACI 301 Sec. 3.3.2.8.a.
- 5.4. Submit reinforcing steel shop drawings in accordance with Section 1 of these Notes. Indicate size and placement of reinforcement, splices, details and locations of embedded items on such shop drawings.
- 5.5. Promptly notify the Engineer if conditions arise where there are insufficient minimum clear distances or where construction problems related to congestion are encountered.

6. CONNECTIONS TO CONCRETE AND CONCRETE INSERTS [IBC Ch 19]

- 6.1. Anchor bolts (AB) and other bolts embedded in concrete shall be ASTM A307 Grade A, with ASTM A563 Grade A nuts, unless detailed otherwise. Anchor rods (AR) shall be ASTM F1554 Grade 36 or weldable Grade 55, with ASTM A563 Grade C heavy-hex nuts, unless detailed otherwise. High-strength anchor rods shall be ASTM F1554 Grade 105 with ASTM A563 Grade DH or ASTM A194 Grade 2H nuts, unless detailed otherwise.
- 6.2. Post-installed anchors shall be as follows, unless indicated otherwise on the drawings:
- a. Adhesive anchors: Simpson AT-XP acrylic adhesive anchorage system, with ASTM F1554 Grade 36 threaded rod and ASTM A563 Grade A nuts, per IAPMO-UES Report ER-263.
  - b. Screw-in anchors: Simpson TITEN-HD screw anchors per ICC-ES Report ESR-2713.
  - c. Install anchors in accordance with the manufacturer's printed instructions. Observe anchor spacing, embedment, and edge clearances indicated on the drawings.
  - d. Special Inspection is required for post-installed anchors.
  - e. Use of alternate products requires written pre-approval of the Engineer. Substitute products require an ICC-ES or IAPMO-UES report, showing compliance with the building code.
- 6.3. Post-installed adhesive-grouted steel reinforcement shall be as follows, unless indicated otherwise on the drawings:
- a. Use Simpson AT-XP acrylic adhesive anchoring system per IAPMO-UES Report ER-263.
  - b. Install in accordance with the manufacturer's printed instructions. Observe rebar spacing, embedment, and edge clearances indicated on the drawings.
  - c. Special Inspection is required for post-installed steel reinforcement.
  - d. Use of alternate products requires written pre-approval of the Engineer. Substitute products require an ICC-ES or IAPMO-UES report, showing compliance with the building code.

7. SLABS-ON-GRADE (SOG) [IBC Ch 18 and Ch 19]

- 7.1. Slabs-on-grade shall conform to ACI 302.1R-15.
- 7.2. Use concrete as specified under the Concrete Section and below.
- 7.3. Slabs-on-grade shall be as specified below, unless noted otherwise:
- | Location         | Thkns | Reinforcement |
|------------------|-------|---------------|
| Typical Interior | 6"    | #4 @ 18" EW   |
- 7.4. Finish and measure floor surface so gap at any point between concrete surface and a freestanding (unleveled) 10-foot-long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed 1/8".
- Variation in slab elevation across the entire floor shall not exceed 3/16".

- 7.5. Construct interior slabs-on-grade as follows:
- a. Scarify upper 6" of subgrade and compact to ≥ 95%.
  - b. Place a 15-mil, ASTM E1785 Class "A", Stego Wrap extruded polyolefin vapor barrier. Seal all seams, splices, penetrations and patches with manufacturer's standard polyolefin tape. Install and tape in accordance with manufacturer's printed instructions.
  - c. Place a 6" layer of free-draining, crushed aggregate base, and compact to ≥ 95%.
  - d. Inspection shall be made to ensure that there is no free moisture present in the crushed aggregate base immediately prior to concrete placement.
- 7.6. Construct exterior slabs-on-grade as follows (where more restrictive requirements are contained in the Geotechnical Report, use those requirements):
- a. Scarify upper 6" of subgrade and compact to ≥ 95%.
  - b. Place a 6" layer of free-draining, crushed aggregate base, and compact to ≥ 95%.
- 7.7. Locate construction or control joints as shown on the plans. Make joints as soon as the slab is strong enough to accept the joint. Where not indicated, provide control joints at a maximum spacing, in feet, equal to (3) times the slab thickness in inches. Provide joints such that the panel length to panel width does not exceed 1.5 to 1 in any panel.

Unless noted otherwise, control joints shall be soft-cut or tooled.

Where saw-cut control joints are used, use a concrete with a minimum 3-day strength of 3000 psi. If soft-cut or tooling methods for jointing are used, this requirement does not apply.

STATEMENT OF SPECIAL INSPECTIONS

This Statement of Special Inspections implements the requirements of 2018 International Building Code (IBC) 1704.3 and 1705. The Contractor is responsible for compliance with the requirements of IBC 1704.4.

1. Special Inspection Requirements [IBC 1705]

The following items shall be inspected in accordance with IBC Section 1705 by a certified special inspector from an established inspection and testing agency engaged by the Owner. Specific inspection and testing requirements for various classes of materials are given in following sections. Refer to the project Specifications and the Structural Notes for additional requirements. The inspection agency shall provide copies of all inspection reports directly to the Architect and the Structural Engineer and, if directed, to the building department having jurisdiction. Any construction that fails to comply with the approved construction documents shall be immediately brought to the attention of the Architect.

ITEM	REMARKS
1.1. Inspection of fabricators	IBC 1704.2.5 (Not required for a registered and approved fabricator's shop per IBC 1704.2.5.1, subject to approval of the building department having jurisdiction. At completion of fabrication, certificate of compliance shall be provided by fabricator.)
1.2. Steel construction	IBC 1705.2 See below
1.3. Concrete construction	IBC 1705.3 - See below
1.4. Masonry construction	IBC 1705.4 - See below
1.5. Soils	IBC 1705.6 - See below

2. Required Verification and Inspection of Steel Construction [IBC 1705.2, IBC 1705.12.1]

ITEM	CONTINUOUS/ PERIODIC	REFERENCE/REMARKS
2.1. Material verification of high-strength bolts, nuts and washers		
a. Identification markings to conform to ASTM standards specified in the approved construction documents	Periodic	AISC 360-16 A3.3 and applicable ASTM material standards
b. Manufacturer's certificate of compliance required	Periodic	
2.2. Inspection of high-strength bolting		AISC 360-16 N5.6 and AISC 341-16 J7
a. Snug-tight joints	Periodic	AISC 360-16 N2.5
2.3. Material verification of structural steel		
a. For structural steel, identification markings conforming to AISC 360	Periodic	AISC 360-16 A3.1
b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents	Periodic	Applicable ASTM material standards
c. Manufacturer's certified test reports	Periodic	
2.4. Material verification of weld filler material		
a. Identification markings to conform to AWS specification in the approved construction documents	Periodic	AISC 360-16 A3.5 and applicable AWS A5 documents
b. Manufacturer's certificate of compliance required	Periodic	
2.5. Inspection of welding		AISC 360-16 N5.4 and AISC 341-16 J6.1
a. Structural steel		
1. Complete and partial joint penetration groove welds	Continuous	AWS D1.1, AWS D1.8
2. Multipass fillet welds	Continuous	AWS D1.1, AWS D1.8
3. Single-pass fillet welds > 5/16"	Continuous	AWS D1.1, AWS D1.8
4. Plug and slot welds	Continuous	AWS D1.1, AWS D1.8
5. Single-pass fillet welds ≤ 5/16"	Periodic	AWS D1.1, AWS D1.8

3. Required Verification and Inspection of Concrete Construction [IBC 1705.3]

ITEM	CONTINUOUS/ PERIODIC	REFERENCE/REMARKS
3.1. Inspection of reinforcing steel and placement	Periodic	ACI 318-14 20.2, 20.6, 25.3-25.6
3.2. Inspection of anchors cast in concrete	Periodic	ACI 318-14 17.8, 26.7
3.3. Inspection of anchors post-installed in hardened concrete members, including adhesive anchors and epoxied rebar dowels	Periodic	ACI 318-14 26.7
3.4. Verify use of required mix design	Periodic	ACI 318-14 Ch. 19, 26.4
3.5. Sample fresh concrete and fabricate specimens for compressive strength testing	Continuous	Each day and every 100 cubic yards. Cast (4) cylinders for each test.
a. Compressive strength (f'c) testing	Periodic	Test (1) specimen at 7 days; (2) specimens at 28 days; hold final specimen for testing at 56 days, if necessary.
b. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	Continuous	ACI 318-14 26.12
3.6. Inspection of concrete for proper application technique	Continuous	IBC 1908, ACI 318-14 26.5
3.7. Inspection for maintenance of specified curing temperature and techniques	Periodic	ACI 318-14 26.5

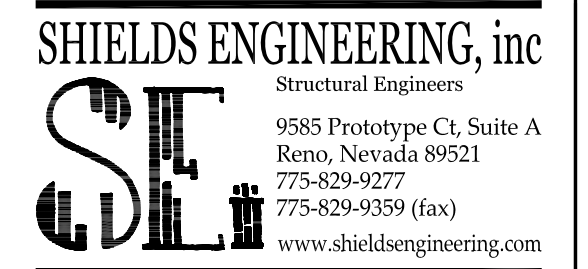
4. Required Verification and Inspection of Masonry (TMS 602-16 Level 2) [IBC 1705.4]

ITEM	CONTINUOUS/ PERIODIC	REFERENCE/REMARKS
4.1. Verify compliance with approved submittals	Periodic	TMS 602 1.5
4.2. Verification of f'm prior to construction, except where specifically exempted by TMS 402	Periodic	TMS 602 1.4B
4.3. As masonry construction begins, verify that the following are in compliance:		
a. Proportions of site-prepared mortar	Periodic	TMS 602 2.1, 2.6A, 2.6C
b. Grade, type and size of reinforcement, connectors, anchor bolts	Periodic	TMS 602 3.4, 3.6A
4.4. Prior to grouting, verify that the following are in compliance:		
a. Grout space	Periodic	TMS 602 3.2D, 3.2F
b. Placement of reinforcement, connectors, and anchor bolts	Periodic	TMS 602 3.2E, 3.4
c. Proportions of site-prepared grout	Periodic	TMS 602 2.6B, 2.4G.1.b
4.5. Verify during construction:		
a. Materials and procedures with the approved submittals	Periodic	TMS 602 1.5
b. Placement of masonry units and mortar joint construction	Periodic	TMS 602 3.3B
c. Size and location of structural members	Periodic	TMS 602 3.3P
d. Type, size and location of anchors	Periodic	TMS 402 1.2.1(e), 6.2.1, 6.3.1
e. Preparation, construction and protection of masonry during cold weather (< 40°F) or hot weather (> 90°F)	Periodic	TMS 602 1.8C, 1.8D
4.6. Observe preparation of grout specimens, mortar specimens and/or prisms	Periodic	TMS 602 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4

4. Required Verification and Inspection of Soils [IBC 1705.6]

ITEM	CONTINUOUS/ PERIODIC	REFERENCE/REMARKS
4.1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	Periodic	
4.2. Verify excavations are extended to proper depth and have reached proper material	Periodic	
4.3. Perform classification and testing of controlled fill materials	Periodic	
4.4. Verify use of proper materials, densities and lift thickness during placement and compaction of compacted fill	Continuous	
4.5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	Periodic	

END OF STATEMENT OF SPECIAL INSPECTIONS



P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule

Revision Number	Revision Date

Carson City  
School District  
  
CHS - Bus  
Barn TI

STATEMENT  
OF SPECIAL  
INSPECTIONS

Project number 22983  
Date 14 February, 2023  
Drawn by JPA  
Checked by OC

S0.3

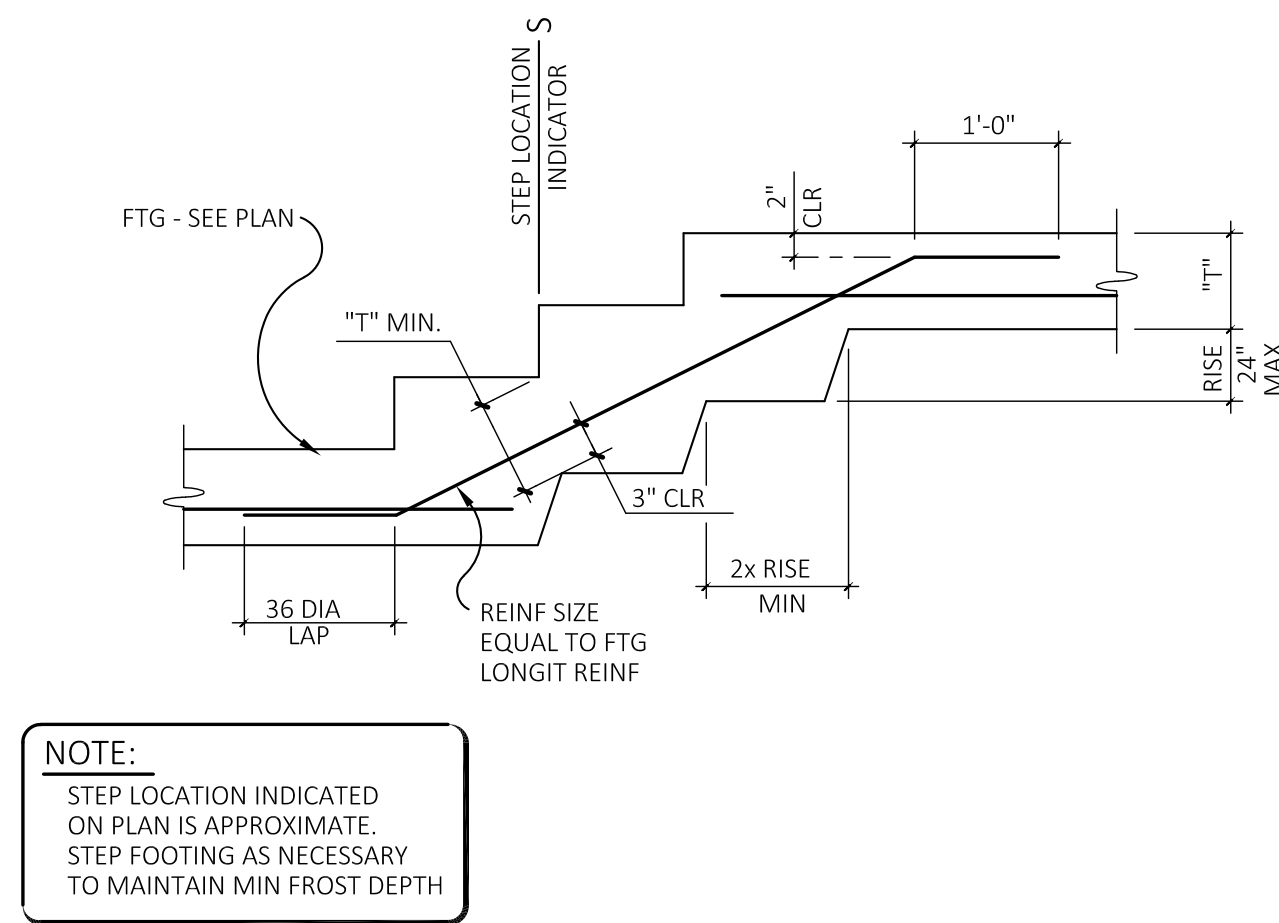
Scale



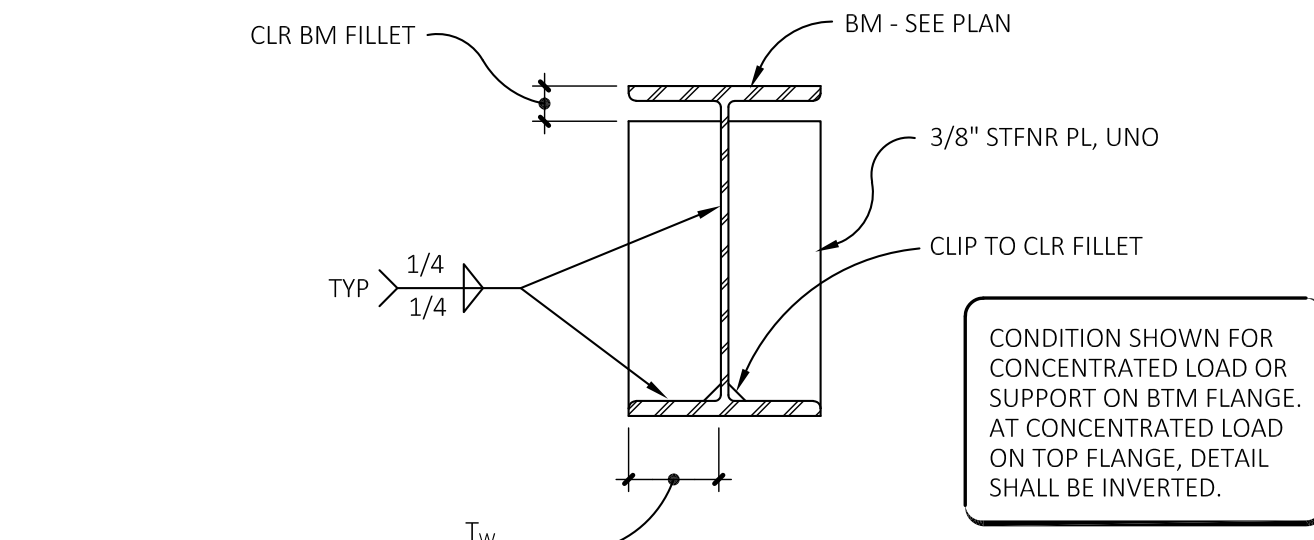


Property Owner:  
 Carson City School District  
 1402 West King St  
 Carson City, Nevada 89703

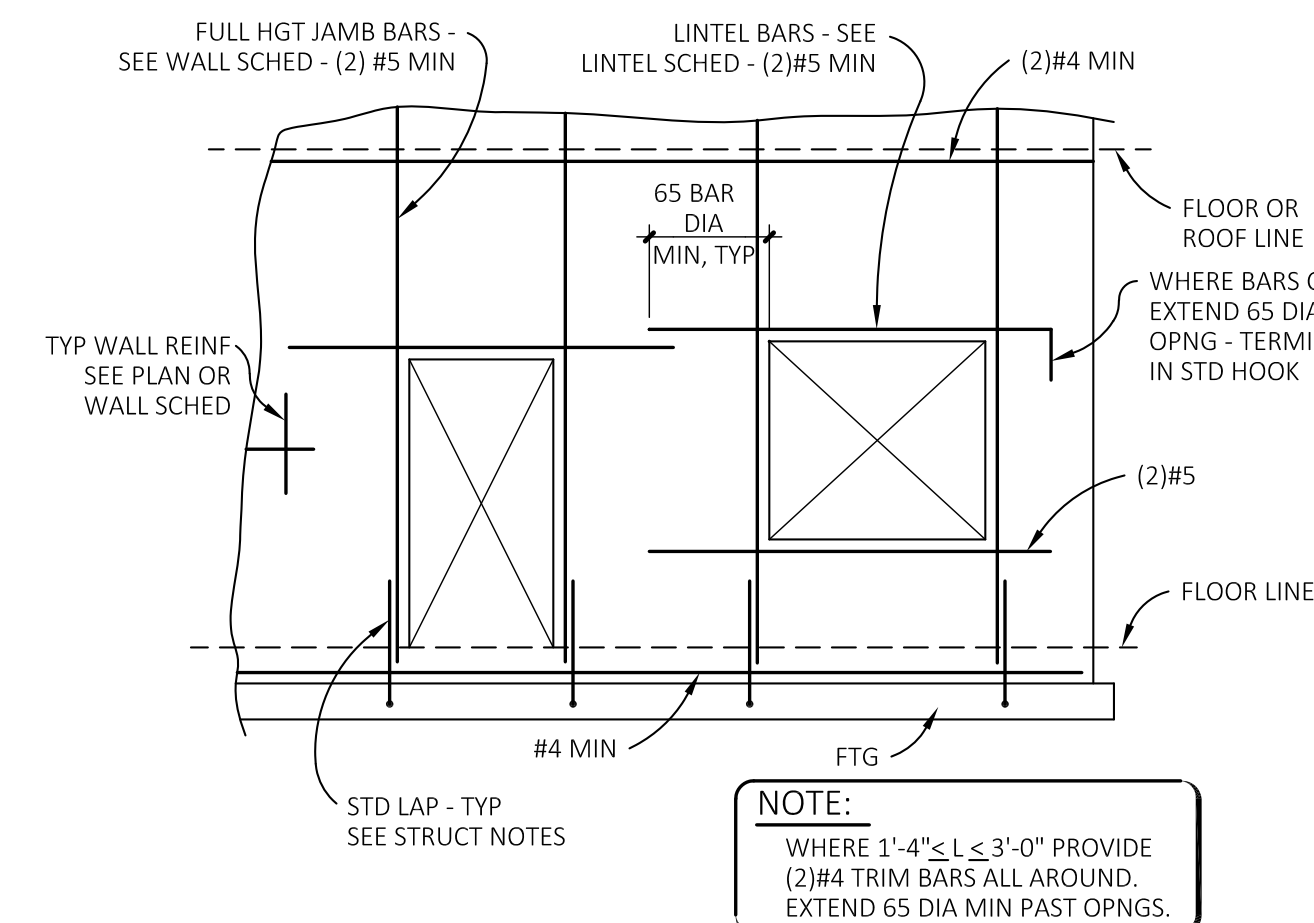
Project Address:  
 1111 N Salliman Rd  
 Carson City, Nevada 89701  
 A.P.N. 010-041-64



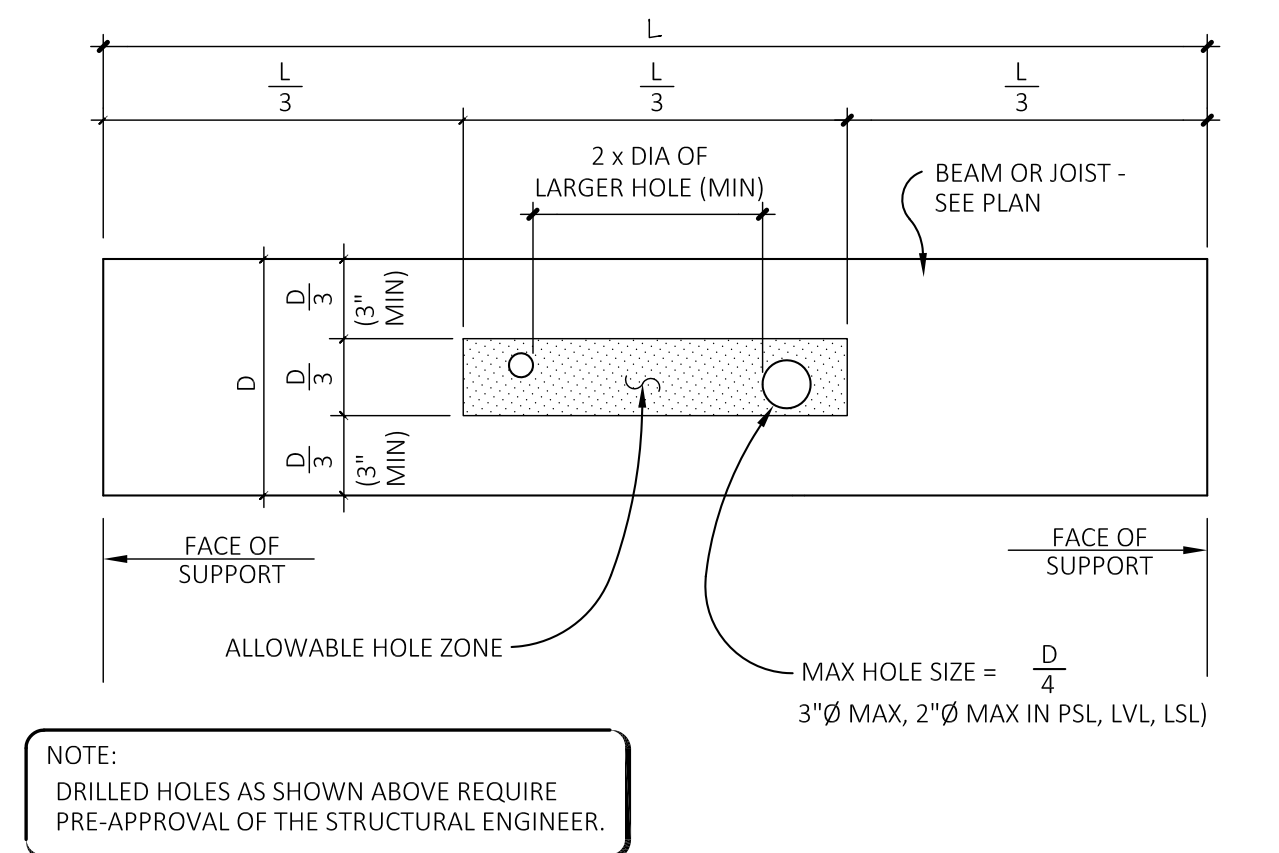
**119** STD - STEPPED FTG  
 SCALE: 3/4" = 1'-0"



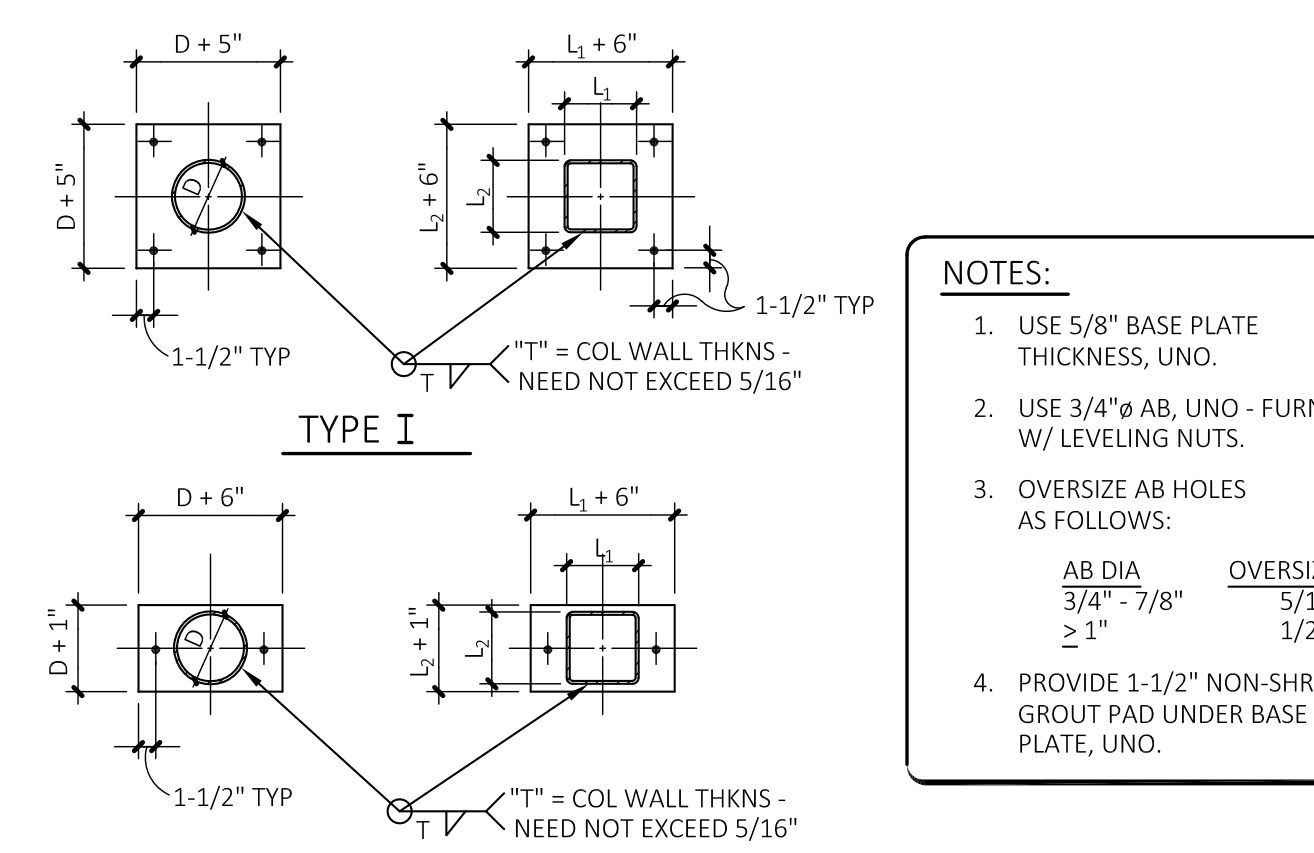
**115** STD - WEB STIFFENER  
 SCALE: NO SCALE



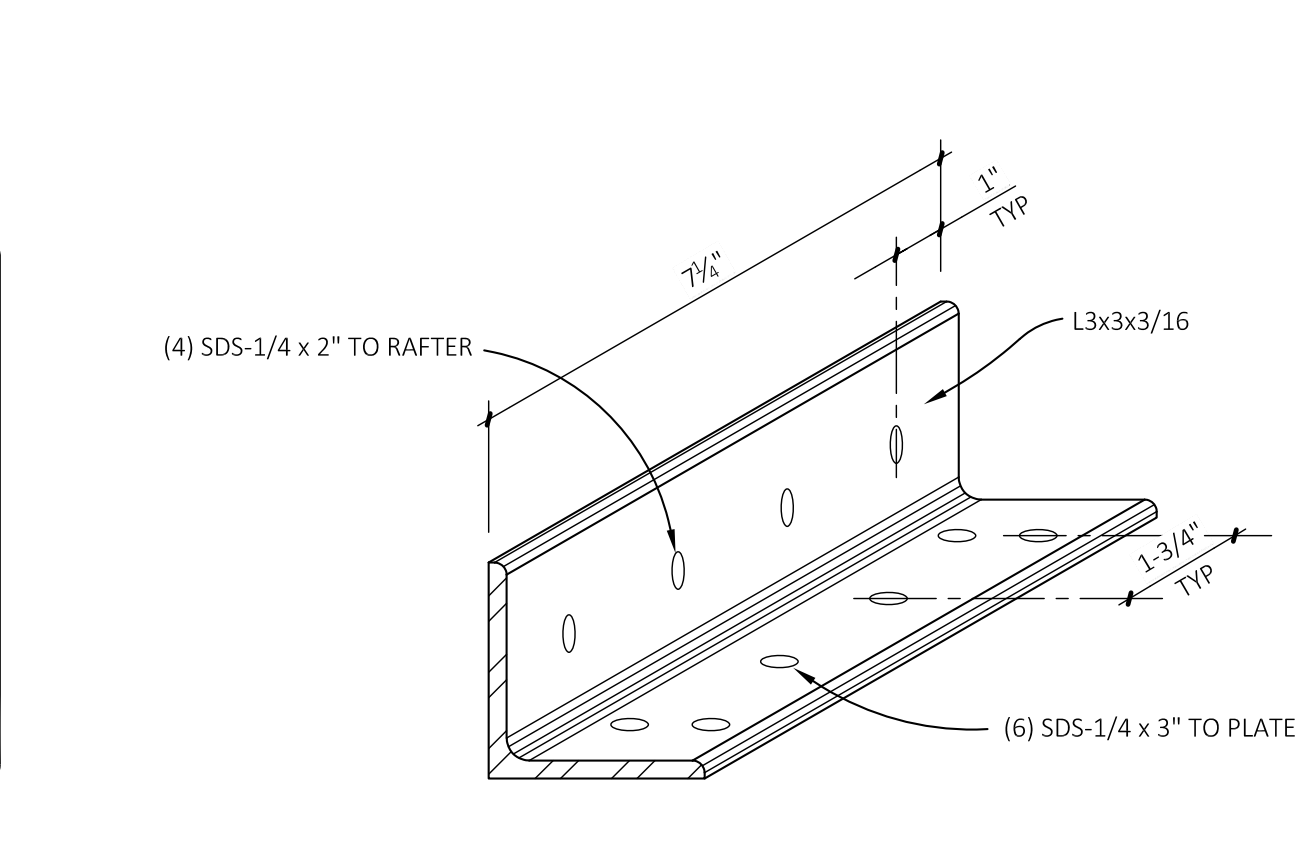
**111** STD - REINF AROUND OPN'G IN CMU  
 SCALE: NO SCALE



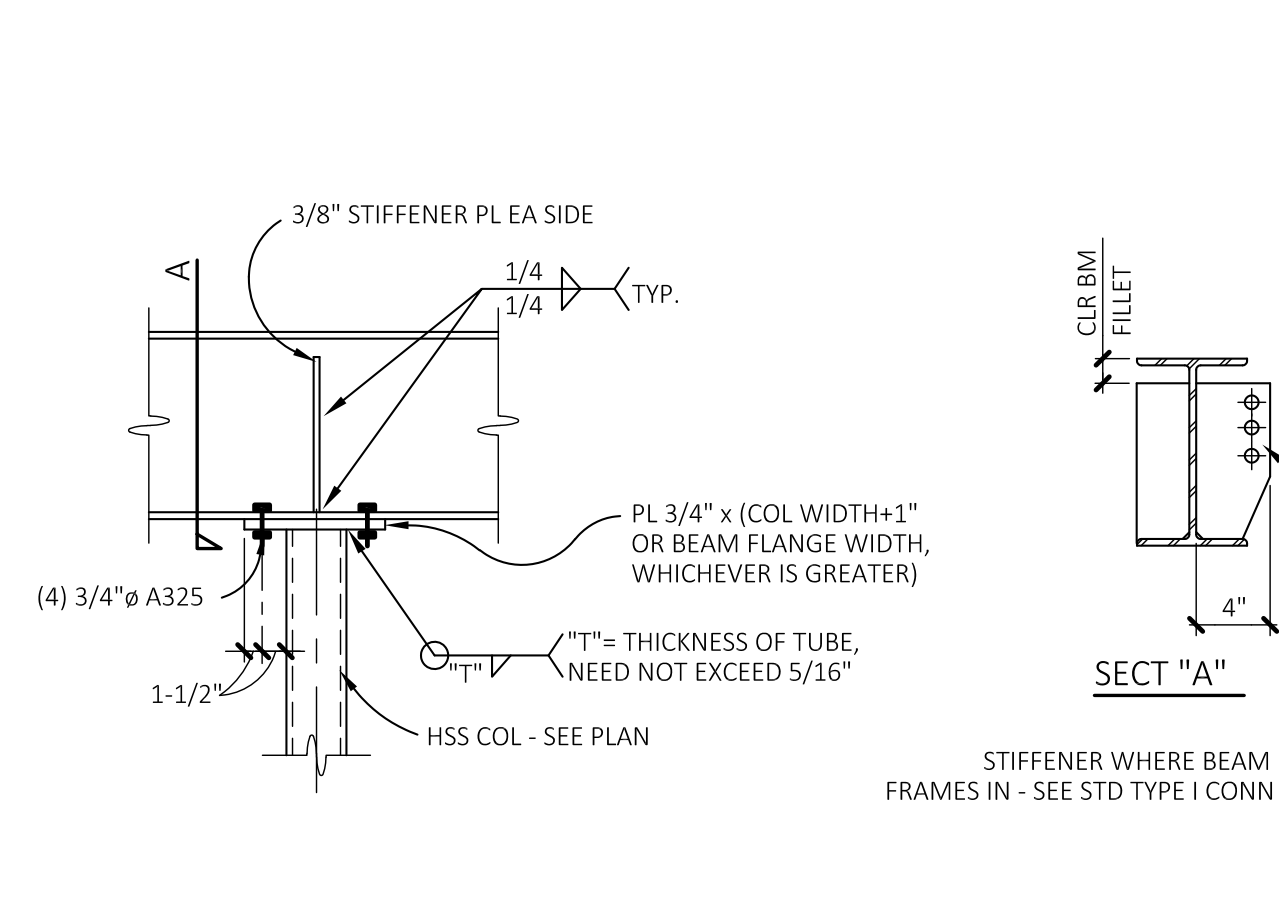
**118** STD - HOLES IN WOOD BEAMS  
 SCALE: NO SCALE



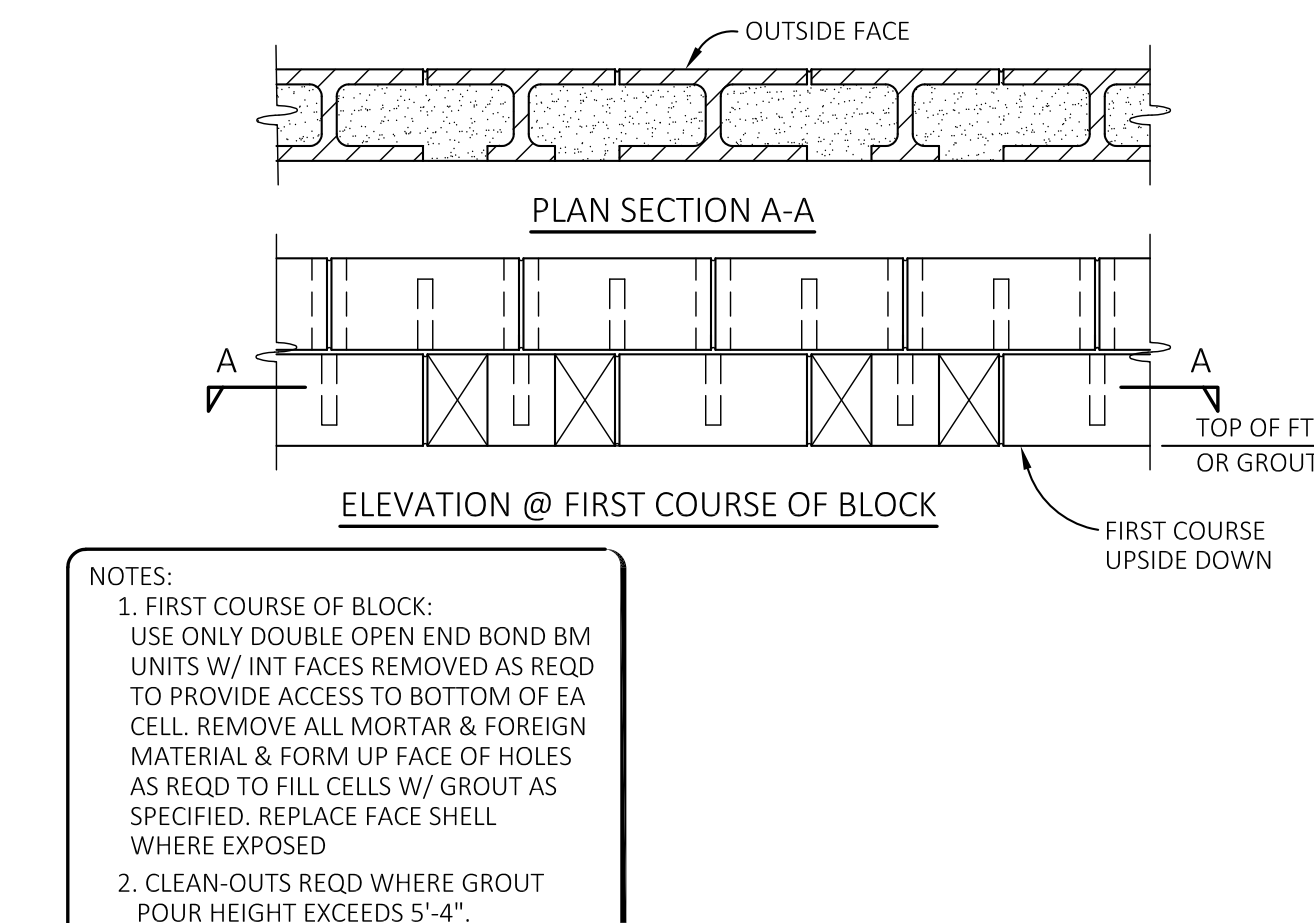
**114** STD - HSS & PC COL BASE PLATE  
 SCALE: NO SCALE



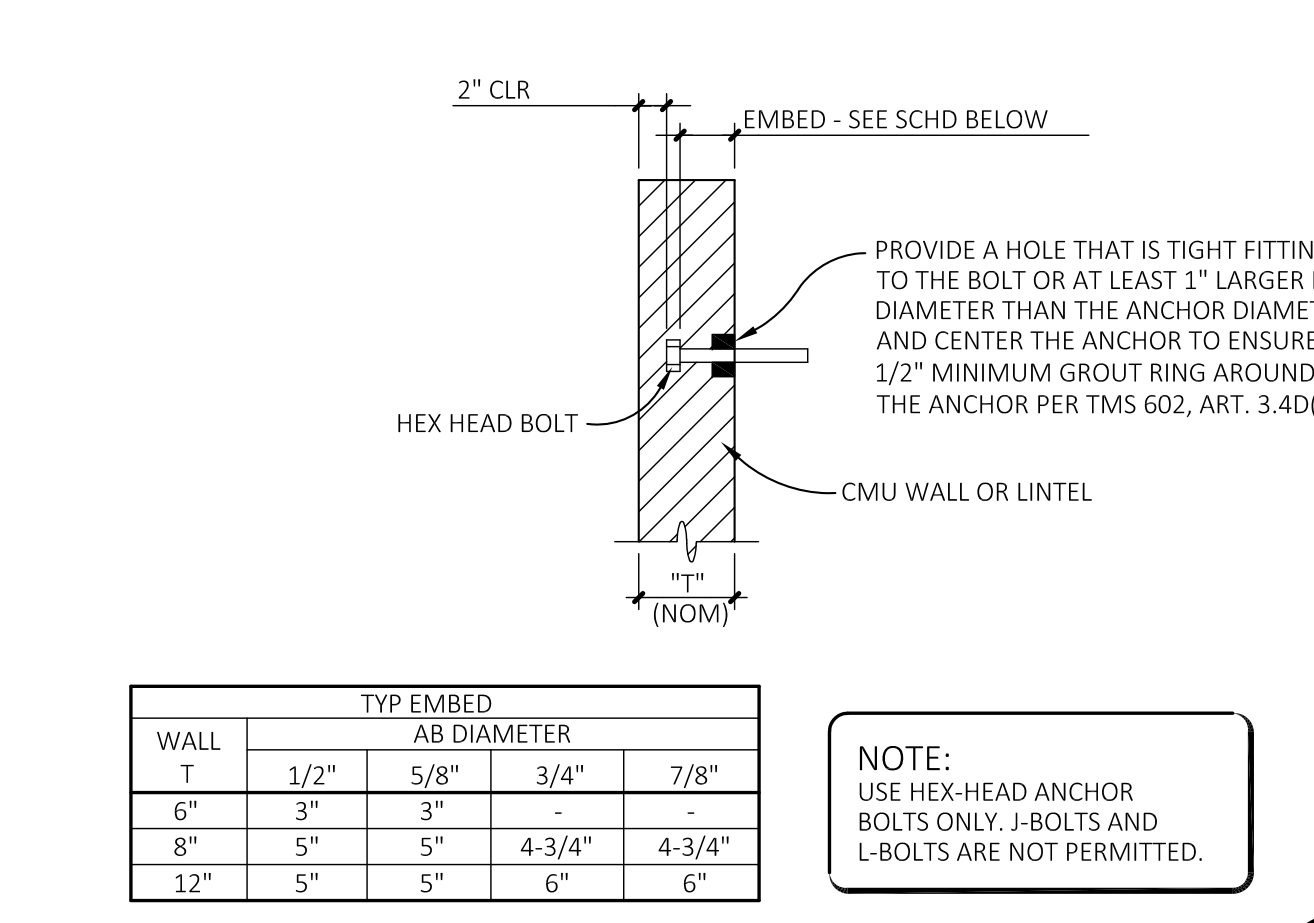
**110** STD - ANGLE WALL BRACE / UPLIFT CLIP  
 SCALE: NO SCALE



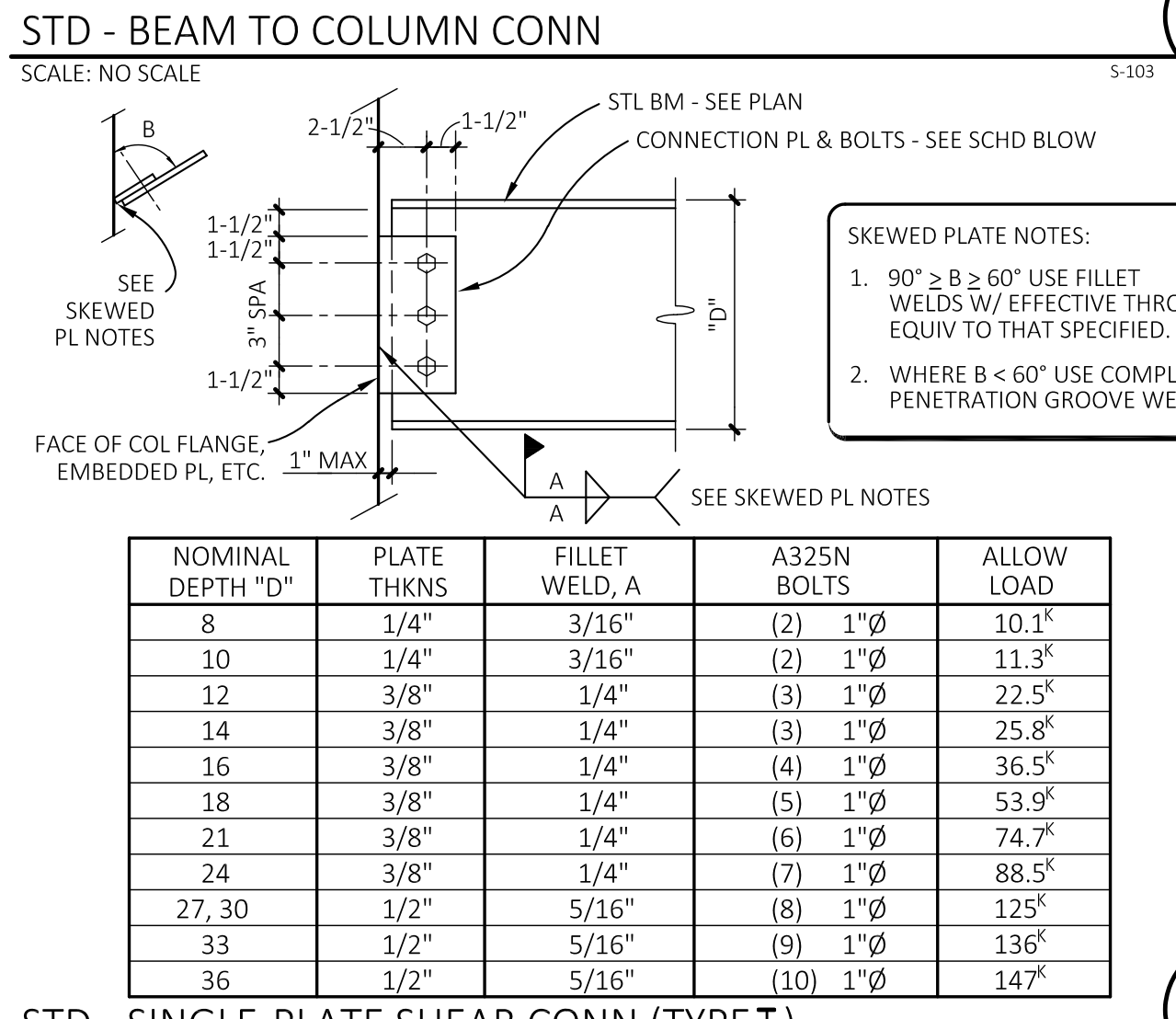
**117** STD - BEAM TO COLUMN CONN  
 SCALE: NO SCALE



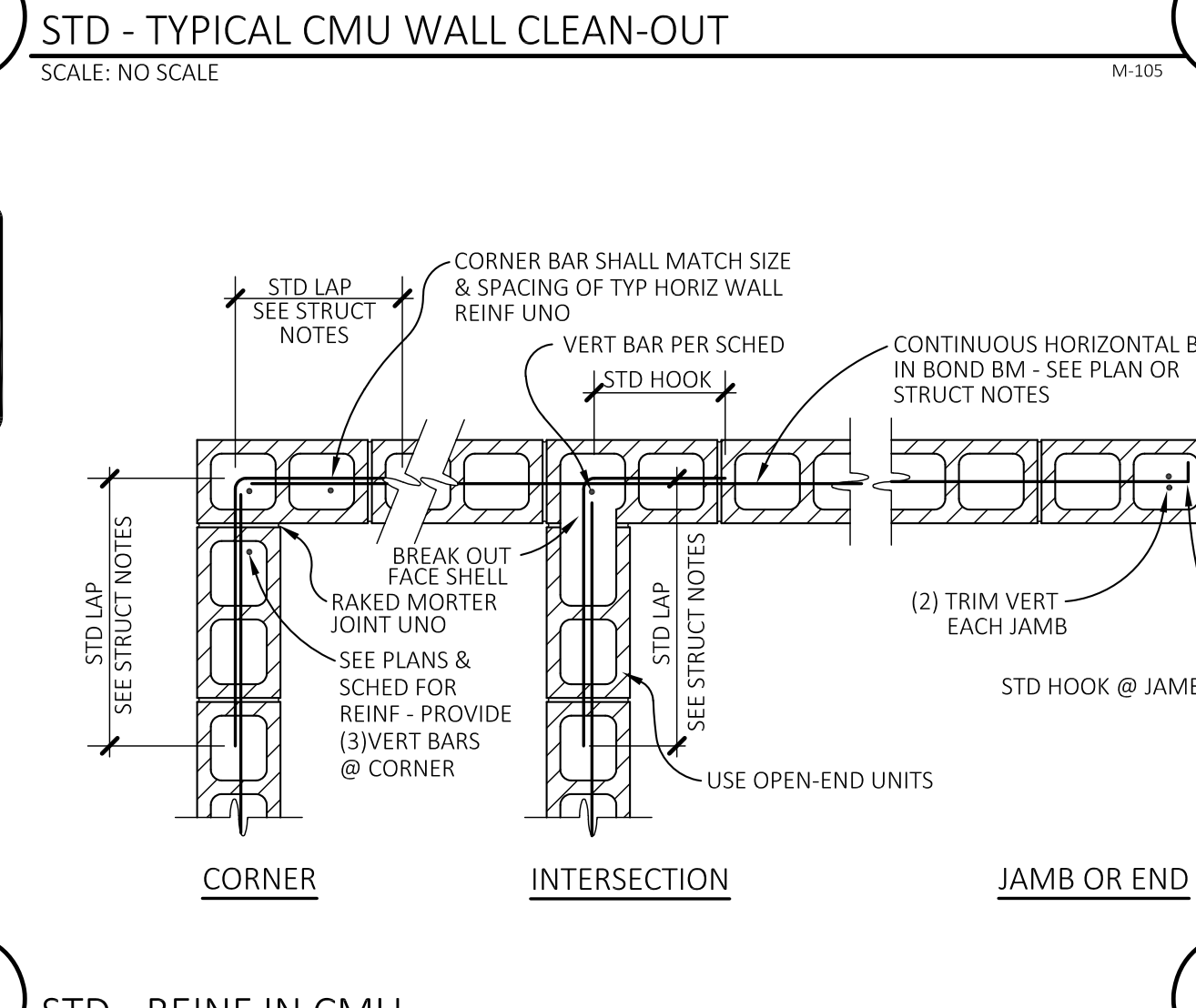
**113** STD - TYPICAL CMU WALL CLEAN-OUT  
 SCALE: NO SCALE



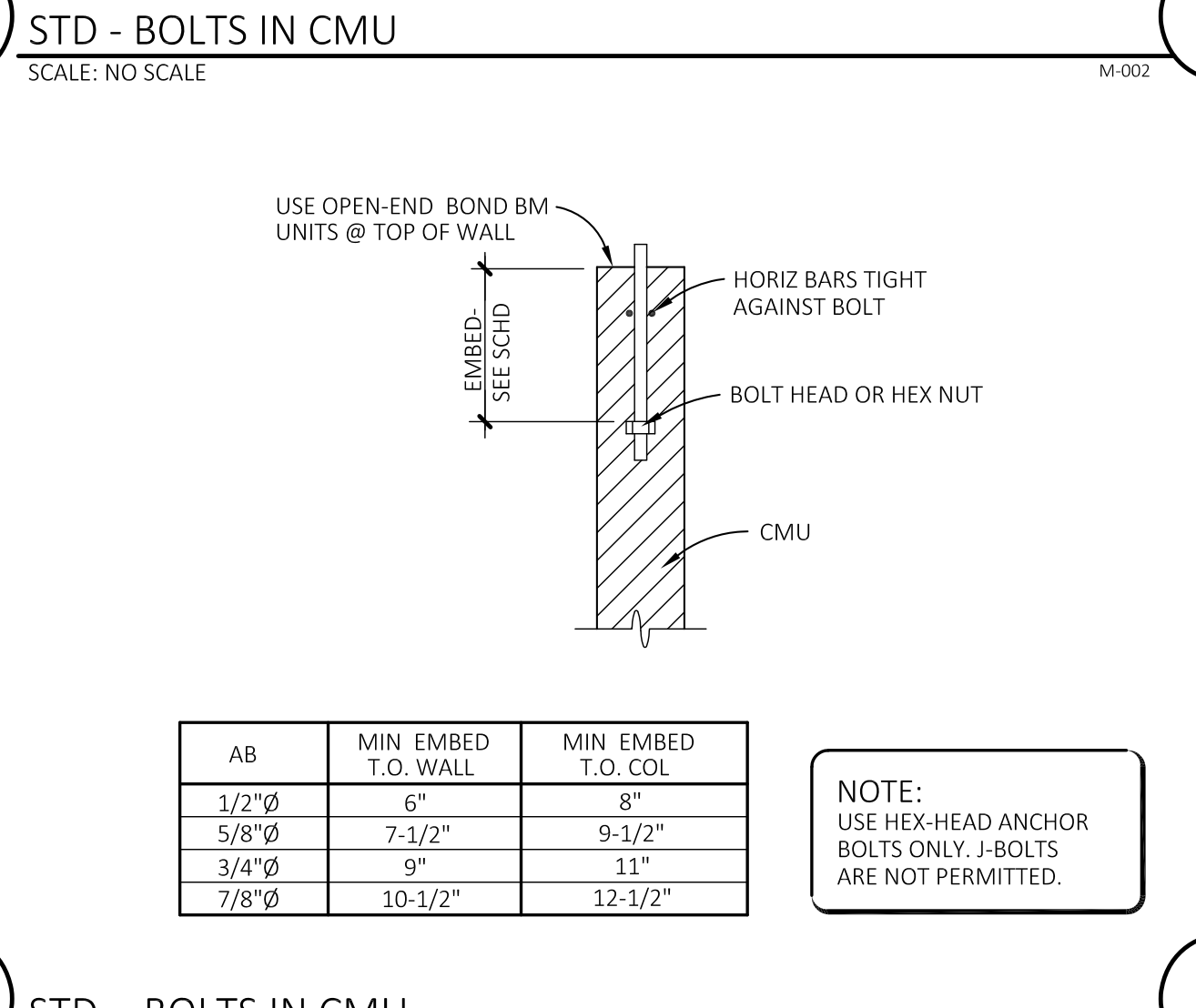
**109** STD - BOLTS IN CMU  
 SCALE: NO SCALE



**116** STD - SINGLE-PLATE SHEAR CONN (TYPE I)  
 SCALE: NO SCALE



**112** STD - REINF IN CMU  
 SCALE: NO SCALE



**108** STD - BOLTS IN CMU  
 SCALE: NO SCALE

Revision Schedule	
Revision Number	Revision Date

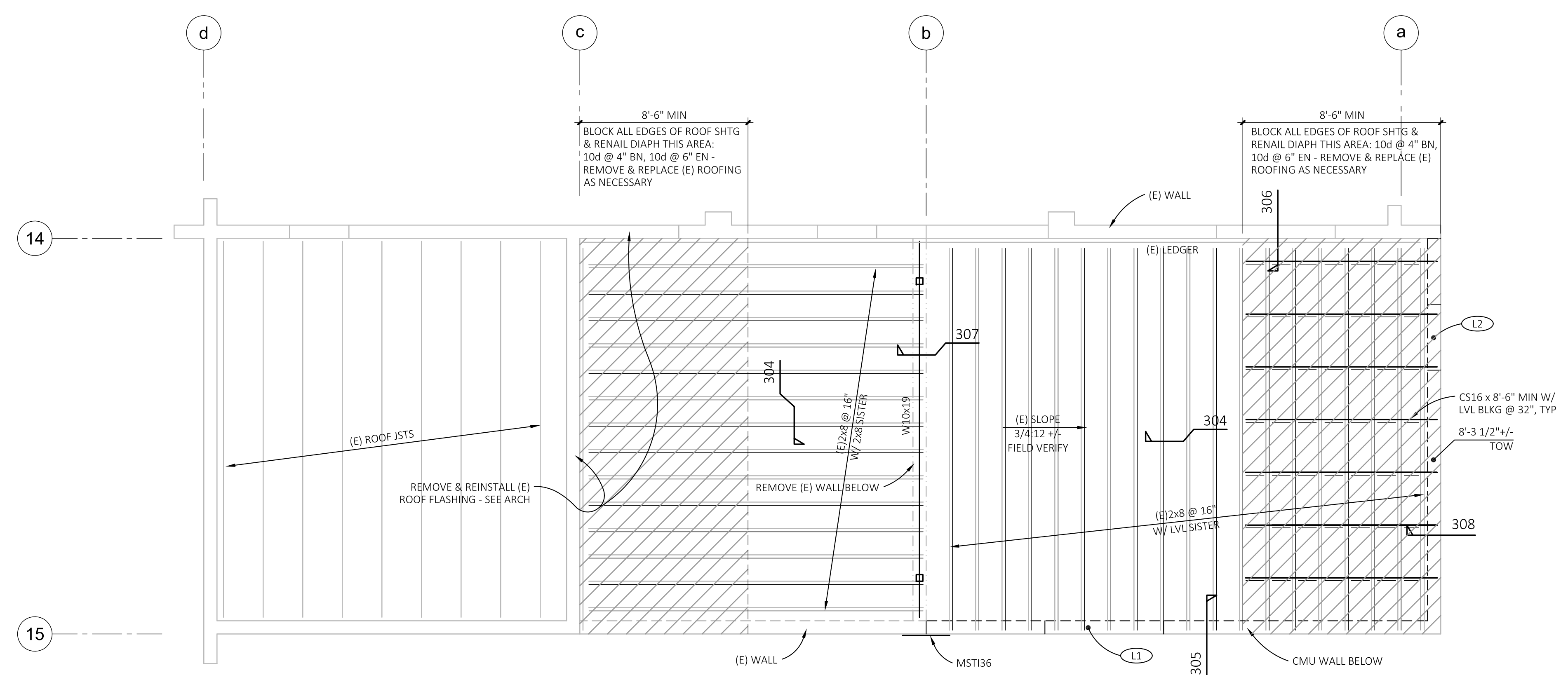
**Carson City School District**  
**CHS - Bus Barn TI**

**STANDARD DETAILS**  
 Project number: 22983  
 Date: 14 February, 2023  
 Drawn by: JPA  
 Checked by: O'C  
**S1.2**  
 Scale:



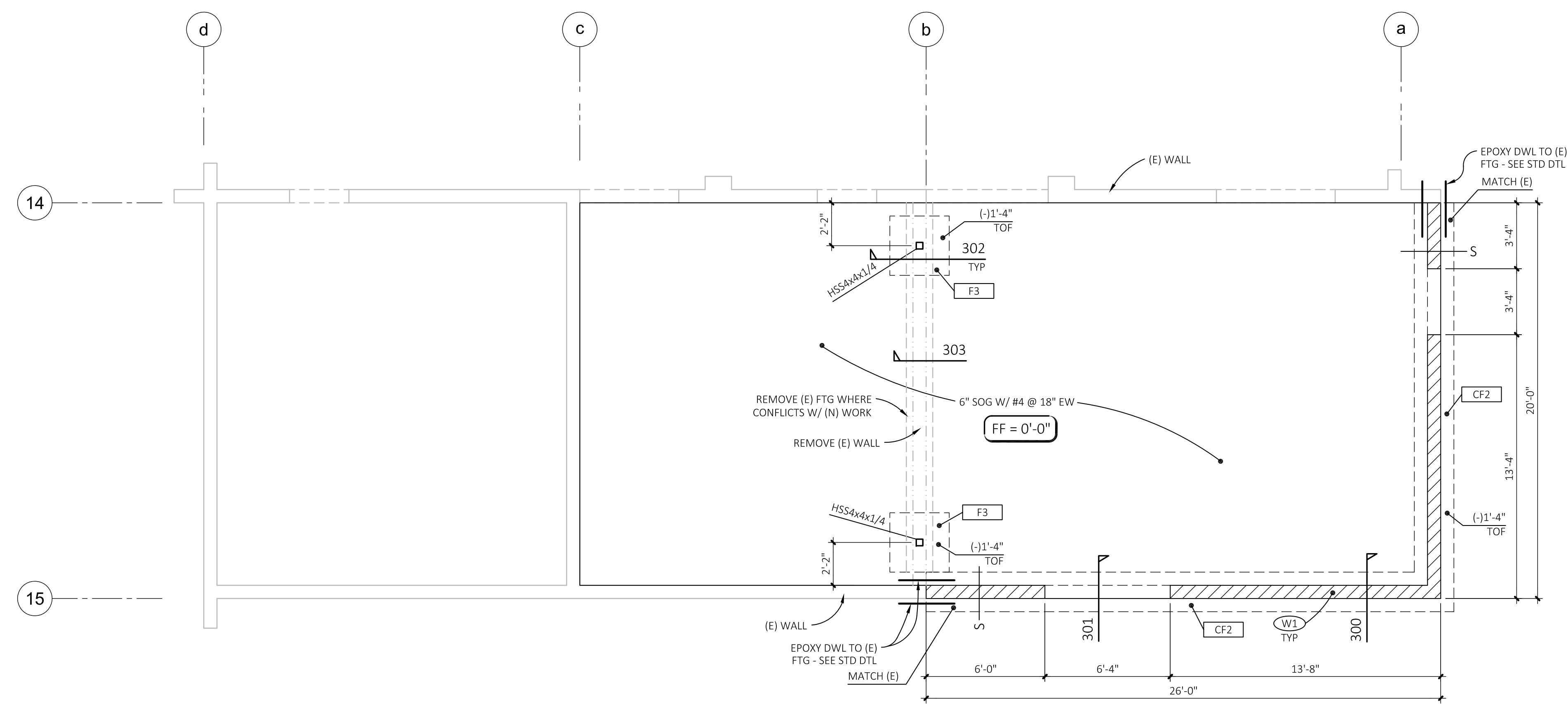
Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64



**PARTIAL ROOF FRAMING PLAN**

SCALE: 1/4" = 1'-0"



**PARTIAL FOUNDATION PLAN**

SCALE: 1/4" = 1'-0"

- NOTES:**
1. ALL ELEVATIONS ARE WITH RESPECT TO A FIRST FLOOR DATUM OF 0'-0", UNO.
  2. SLAB-ON-GRADE SHALL BE 6" THK W/ #4 @ 18" EW. SEE SECT 7 OF STRUCTURAL NOTES FOR UNDERSLAB REQUIREMENTS.
  3. [CF2] INDICATES CONTINUOUS FOOTING PER A/S1.1.
  4. [F3] INDICATES SQUARE FOOTING PER B/S1.1.
  5. [W1] INDICATES STUD SIZE PER C/S1.1.
  6. [L1] INDICATES LINTEL PER D/S1.1.
  7. FLAG SECTION INDICATES DETAILS SHOWN ON SHT S3.1.

Revision Schedule

Revision Number	Revision Date

Carson City School District

CHS - Bus Barn TI

PARTIAL FRAMING PLANS

Project number	22983
Date	14 February, 2023
Drawn by	JPA
Checked by	O'C

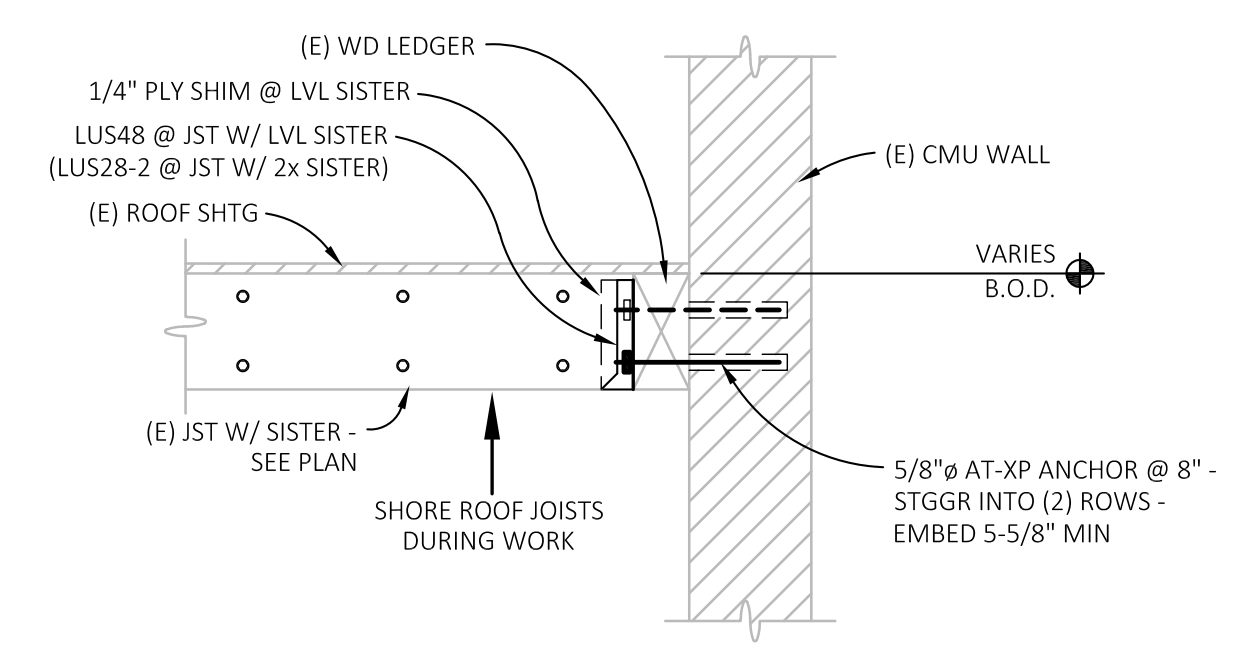
S2.1

Scale



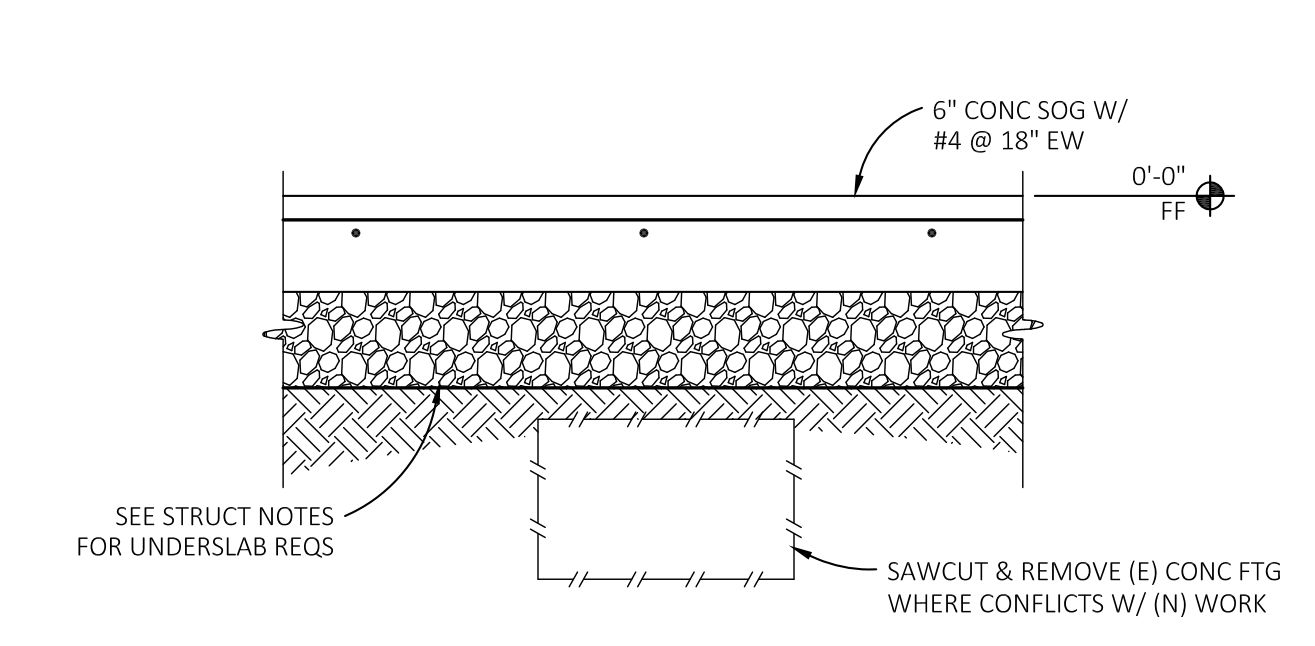
Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Salliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64



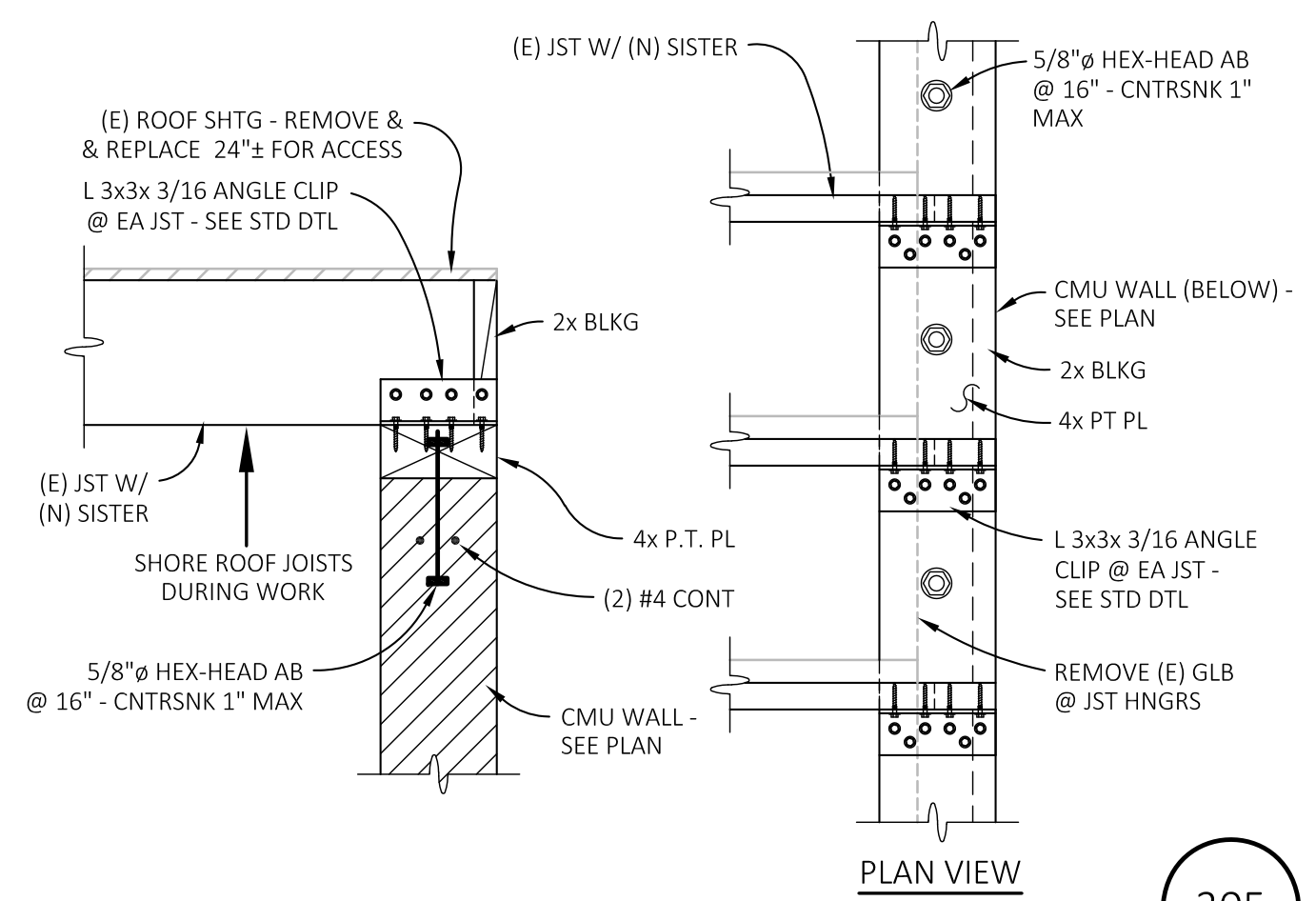
DETAIL  
SCALE: 1" = 1'-0"

306



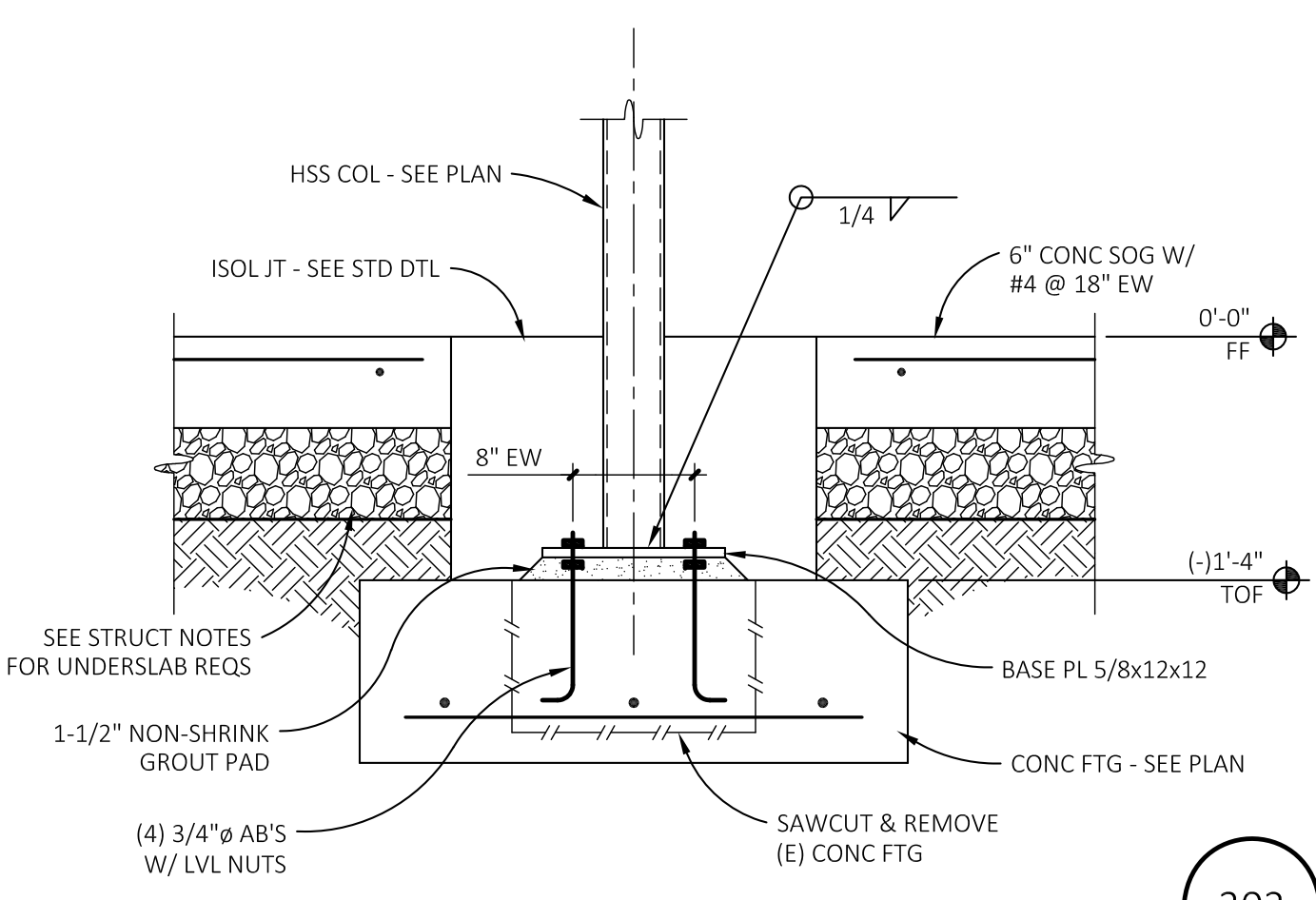
DETAIL  
SCALE: 1" = 1'-0"

303



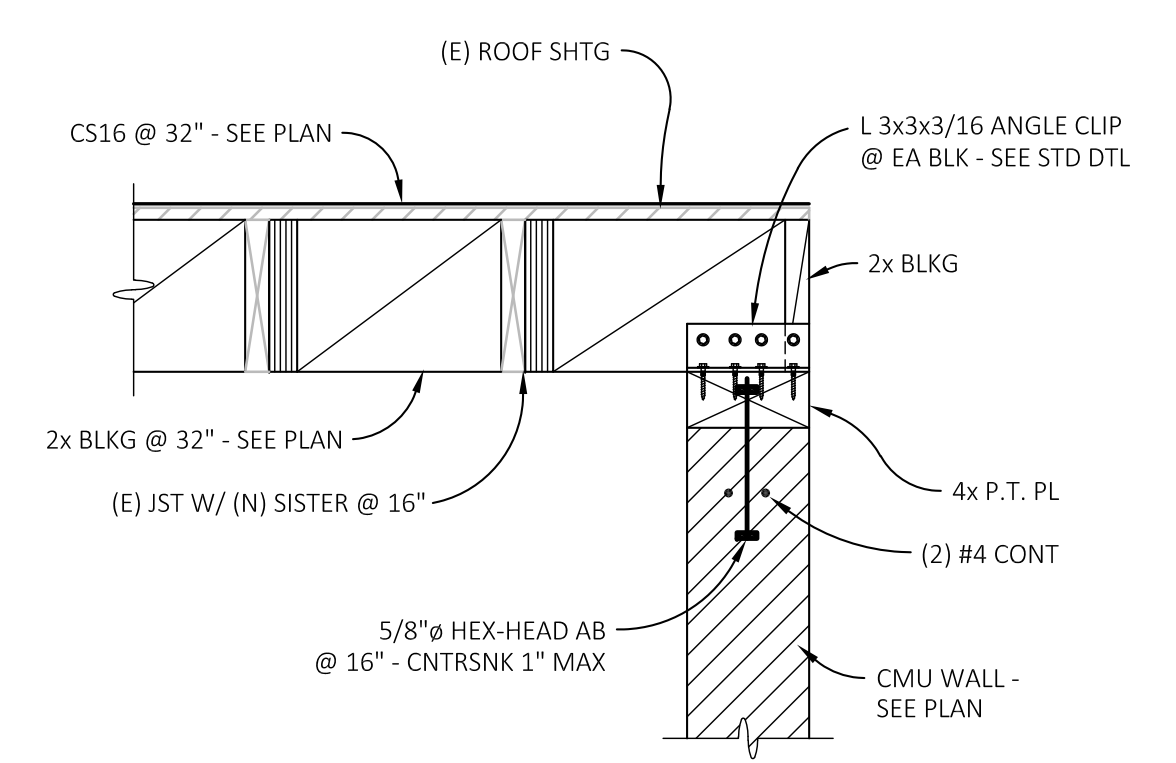
DETAIL  
SCALE: 1" = 1'-0"

305



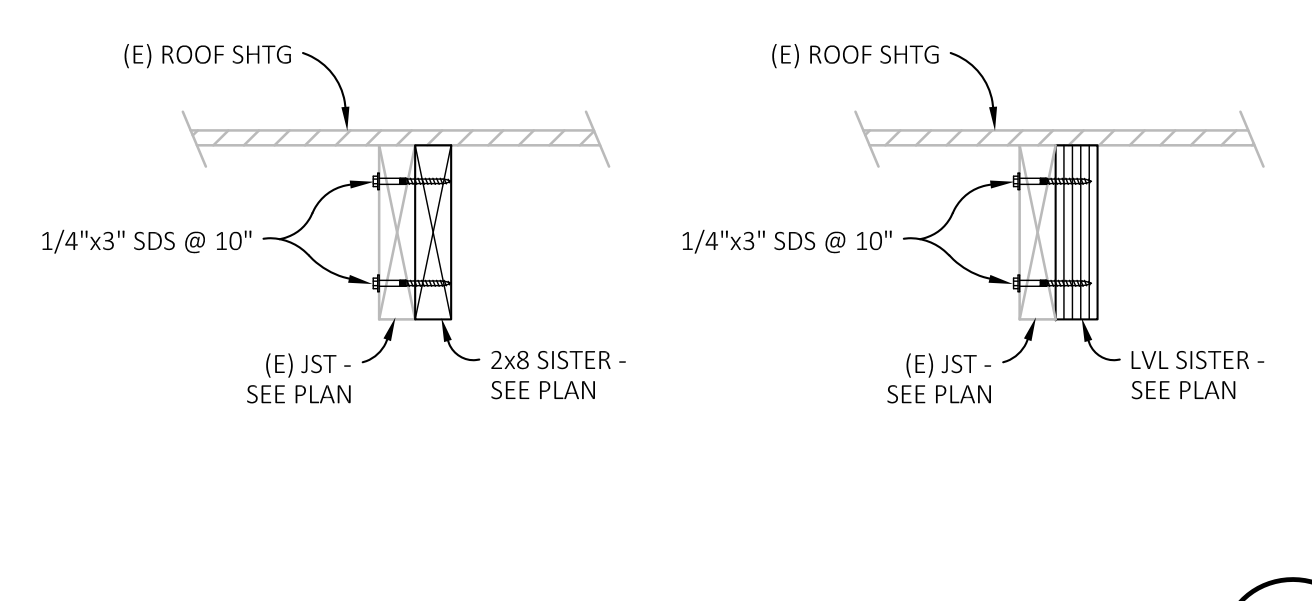
DETAIL  
SCALE: 1" = 1'-0"

302



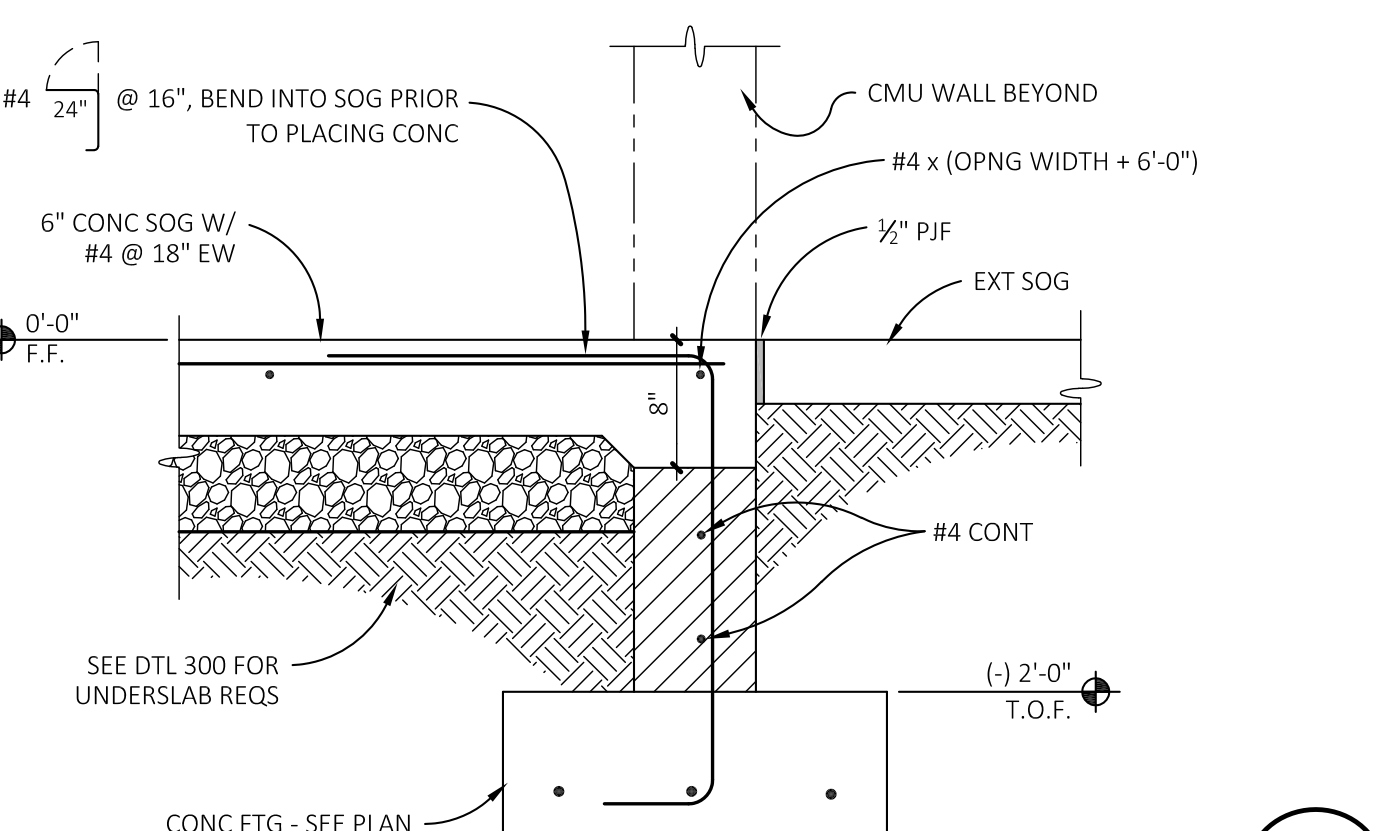
DETAIL  
SCALE: 1" = 1'-0"

308



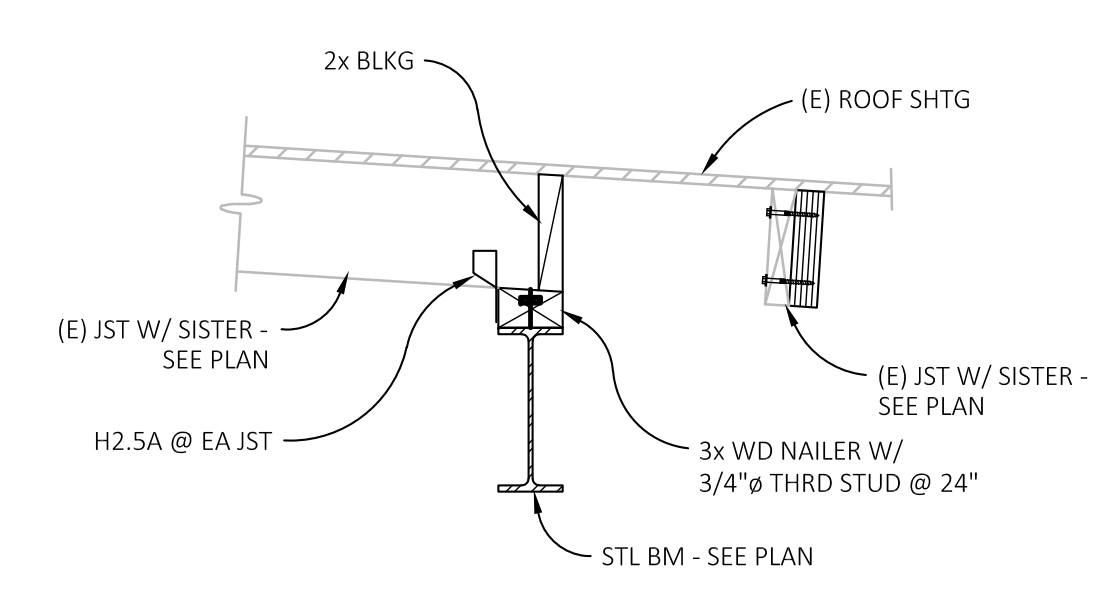
DETAIL  
SCALE: 1-1/2" = 1'-0"

304



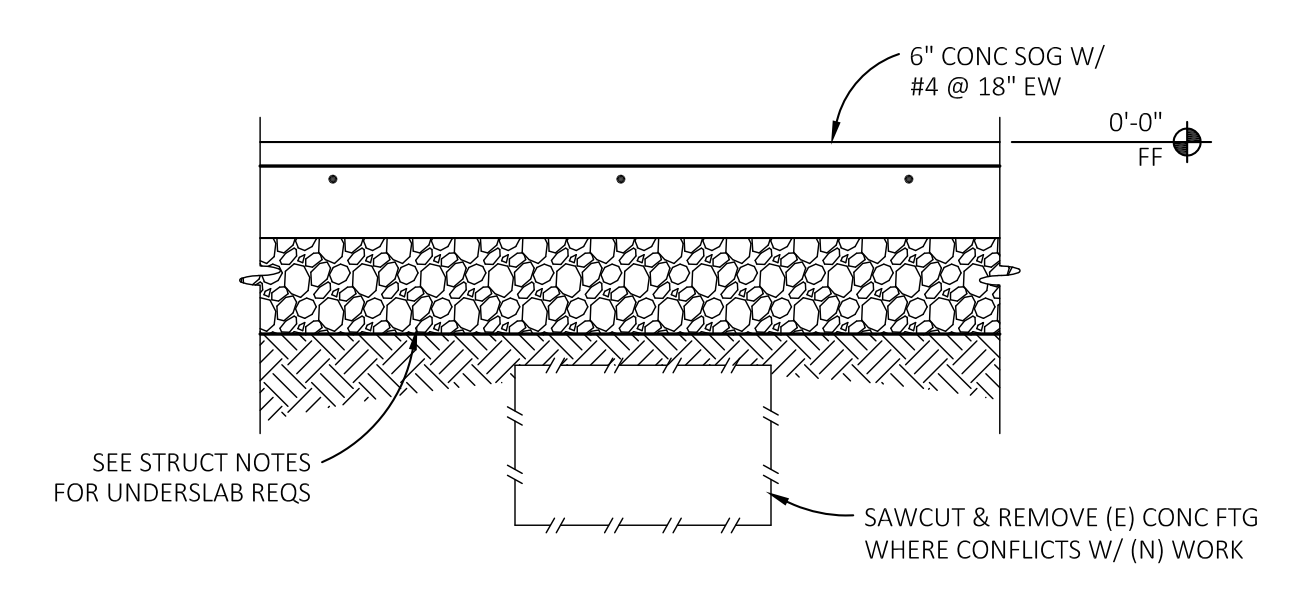
DETAIL  
SCALE: 1" = 1'-0"

301



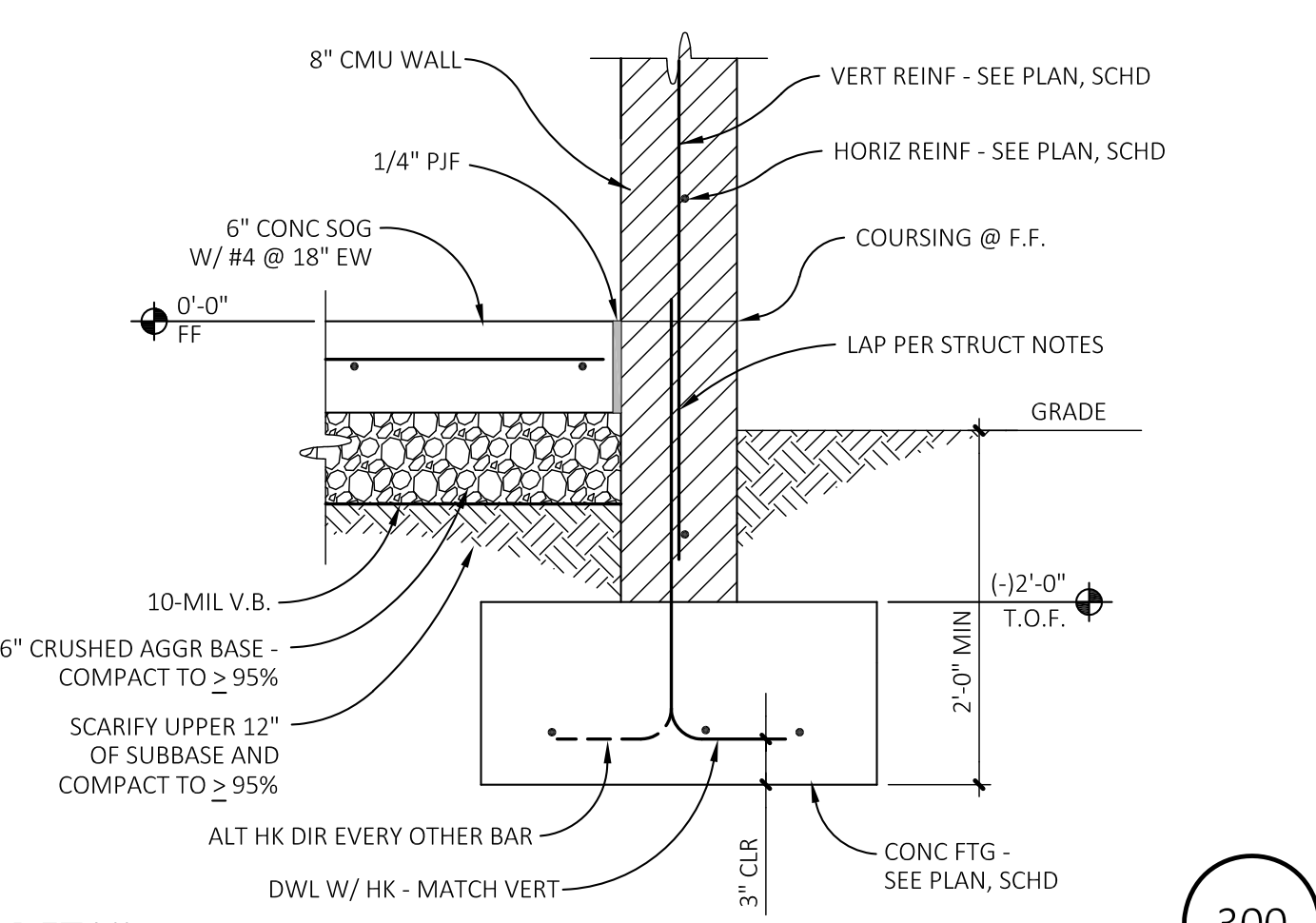
DETAIL  
SCALE: 1" = 1'-0"

307



DETAIL  
SCALE: 1" = 1'-0"

303



DETAIL  
SCALE: 1" = 1'-0"

300

Revision Schedule	
Revision Number	Revision Date

Carson City School District  
CHS - Bus Barn TI

300 SERIES DETAILS

Project number	22983
Date	14 February, 2023
Drawn by	JPA
Checked by	O'C

S3.1

Scale

# MECHANICAL & PLUMBING SPECIFICATIONS

- 15.1 GENERAL NOTES:**
- 15.2 SCOPE:** THE WORK TO BE COMPLETED UNDER THIS CONTRACT IS TO INCLUDE NECESSARY EQUIPMENT, MATERIALS, LABOR AND INSPECTION NECESSARY FOR PROVIDING A FULLY OPERATIONAL SYSTEM PER THE INTENT AND REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. ALL WORK, EQUIPMENT AND FINALIZED SYSTEMS ARE TO BE OF THE HIGHEST STANDARDS AND CONFORM WITH THE BEST MODERN PRACTICES THIS WORK IS TO BE COMPLETED WITH THE UNDERSTANDING THAT A LIMITED AMOUNT OF DETAIL CAN BE AFFORDED BY THE LARGE SCALE DRAWING REPRESENTATION OF THE REQUIRED SYSTEM. DUE TO THE NATURE OF THIS LIMITATION IT IS EXPECTED OF THE CONTRACTOR TO PROVIDE THE NECESSARY PRODUCTS AND LABOR TO MEET THE INTENT OF THE DOCUMENTS AND REQUEST FURTHER INFORMATION WHERE THE FULL INTENT CANNOT BE DETERMINED OR IS DETERMINED TO BE ERRONEOUS. SUCH OCCURRENCES ARE TO BE ASSUMED AND INCLUDED IN THE CONTRACTOR'S SCOPE OF WORK AND PRICING.
- 15.3 CODES AND STANDARDS:** ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ADOPTED STATE AND NATIONAL CODES AS WELL AS INDUSTRY STANDARDS (IE ASHRAE, ASHRAE, ANSI, SMACNA ETC.) GOVERNING SUCH WORK. THIS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING WORK SHOWN OR SPECIFIED WHICH MAY EXCEED THE REQUIREMENTS OF SUCH ORDINANCES, LAWS, REGULATIONS AND CODES.
- 15.4 WORKMANSHIP AND INSTALLATION:** ALL WORK COMPLETED ON THE PROJECT IS TO BE DONE SO IN A PROFESSIONAL MANNER UTILIZING THE BEST MODERN PRACTICES AND INSTALLATION TECHNIQUES. UNLESS OTHERWISE NOTED ALL EQUIPMENT, PIPING, DUCTWORK, FIXTURES, ETC. ARE TO BE INSTALLED LEVEL AND TRUE; PARALLEL AND/OR PERPENDICULAR TO THE BUILDING STRUCTURE AND WALLS. COORDINATION DRAWINGS ARE TO BE COMPLETED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK PROVIDING THE CONTRACTOR A FULL WORKING KNOWLEDGE OF THE TASK AT HAND. ALL WORK IS TO BE LAID OUT ON SITE BY THE CONTRACTOR TO ENSURE PROPER PIV, ORIENTATION AND COORDINATION WITH OTHER BUILDING TRADES PRIOR TO INSTALLATION. FIELD CHANGES ARE TO BE EXPECTED AS REQUIRED BY ACTUAL CONSTRUCTION CONDITIONS AND THE CONTRACTOR IS TO ALLOW SHIFTS, RELOCATIONS, RECONFIGURATIONS OF ANY EQUIPMENT OR MATERIAL UP TO 10'. LACK OF ADHERENCE TO ANY OF THE ABOVE MENTIONED REQUIREMENTS WILL NOT CONSTITUTE, NOR WILL BE ALLOWED, A CHANGE IN SCOPE OR ALLOWANCE OF ADDITIONAL FEES.
- ALL COMPONENTS OF THE HVAC AND PLUMBING SYSTEMS ARE TO BE INSTALLED IN ACCORDANCE WITH THE PUBLISHED MANUFACTURERS REQUIREMENTS AND DETAILS. ANY CONFLICTS BETWEEN THE MANUFACTURERS REQUIREMENTS AND THE CONTRACT DOCUMENTS ARE TO BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
- 15.5 COPYRIGHT:** THESE PLANS, SPECIFICATIONS AND ALL RELATED ADDENDA AND DOCUMENTS CONSTITUTE COPYRIGHT MATERIALS OF ETCHENREDDY ENGINEERING INC. THESE MATERIALS SHALL REMAIN THE SOLE PROPERTY OF ETCHENREDDY ENGINEERING INC. THEY ARE TO BE REPRODUCED, DISTRIBUTED TO OTHER OR USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN CONSENT OF ETCHENREDDY ENGINEERING INC.
- 15.6 DRAWINGS:** DRAWINGS ARE GRAPHICAL REPRESENTATIONS OF THE WORK INTENDED TO BE COMPLETED UNDER THE SCOPE OF THIS PROJECT. ALL DATA PROVIDED ON THESE DRAWINGS IS TO BE FIELD VERIFIED AS THE LARGE SCALE OF PLANS DOES NOT AFFORD EXACT REPRESENTATION OF ALL CONDITIONS. EXAMPLES OF OPPOSING DIRECTIONS OF SCALE OF OFFSETS, DIMENSIONS, LOCATIONS, ORIENTATIONS, AND/OR DIRECTIONS OF FLOW, DUCTWORK OR PIPING, EXACT LOCATION OF VALVES, FITTINGS, ACTUATORS, AND DAMPERS ETC. IT IS THE CONTRACTORS' RESPONSIBILITY TO COORDINATE WITH CIVIL, ARCHITECTURAL, AND STRUCTURAL, FIRE AND ELECTRICAL DRAWINGS AND CONTRACTORS TO VERIFY THE VALIDITY OF THE MECHANICAL DRAWINGS GOVERNED UNDER THESE DRAWINGS. FIELD CHANGES NOTED BY THE CONTRACTOR IN THE FIELD ARE TO HAVE EXPRESS DIRECTION AND CONSENT OF THE ENGINEER. DO NOT SCALE THE MECHANICAL DRAWINGS FOR EQUIPMENT, TERMINATIONS, AND FIXTURE LOCATIONS ETC. VERIFY EXACT PROJECT DIMENSIONS AND SCALE WITH THE DIMENSIONED ARCHITECTURAL DRAWINGS. ADDITIONAL FEES OR CHANGE ORDERS WILL BE ALLOWED TO BE INCURRED WITH OTHER TRADES IN CONNECTION WITH THE VERIFICATION OF PROPER SCALE BY CONFIGURED DIMENSIONAL ARCHITECTURAL PLANS.
- 15.7 COORDINATION:** CIVIL, ARCHITECTURAL, STRUCTURAL, FIRE PROTECTION AND ELECTRICAL DRAWINGS ALL CONTAIN DETAILS REGARDING THE INSTALLATION OF HVAC AND PLUMBING SYSTEMS. THE CONTRACTOR IS TO REVIEW ALL PROJECT DRAWING, SPECIFICATIONS AND ADDENDA FOR RELEVANT INFORMATION TO THEIR INSTALLATION.
- 15.8 EXAMINATION OF SITE AND EXISTING CONDITIONS:** BEFORE BIDDING ON THE WORK, THE CONTRACTOR IS TO VISIT THE SITE TO FAMILIARIZE THEMSELVES WITH THE PROJECT REQUIREMENTS AND EXISTING CONDITIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTORS LACK OF UNDERSTANDING OF EXISTING CONDITIONS AND THE IMPACT THEY HAVE ON THE PROJECT. ANY APPARENT VARIATION OR CONFLICT BETWEEN THE SITE CONDITIONS AND THE DRAWINGS OR SPECIFICATIONS IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
- 15.9 CONFLICTS:** IN THE EVENT OF A CONFLICT BETWEEN THE DRAWINGS, SPECIFICATIONS, OR OTHER TRADES THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY FOR PROPER DIRECTION TO BE PROVIDED. SHOULD AN INSTANCE OCCUR WHERE THE DOES NOT ALLOW FOR PROPER DIRECTION IN THE CASE OF BIDDING THE CONTRACTOR IS TO INCLUDE THE MOST STRINGENT COURSE OF ACTION AS DIRECTED BY THE CONTRACT DOCUMENTS.
- 15.10 PERMITS:** A PERMIT SHALL BE OBTAINED FROM THE AUTHORITY HAVING JURISDICTION TO COMPLETE THE WORK REQUIRED BY THIS PROJECT SCOPE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL FEES INSPECTIONS AND CLOSEOUT DOCUMENTS FROM THE AUTHORITY HAVING JURISDICTION.
- 15.11 SUBSTITUTIONS:** ALL EQUIPMENT AND MATERIALS SCHEDULED ON THE DRAWINGS OR LISTED IN THE SPECIFICATIONS ARE THE BASIS OF DESIGN. EQUIPMENT AND MATERIALS USED ON THE PROJECT ARE SUBJECT TO COMPLIANCE WITH ALL LISTED REQUIREMENTS. IN SUBMITTING A BID TO COMPLETE SERVICES IN THIS PROJECT THE CONTRACTOR SHALL INCLUDE AND REPRESENTS THAT ITS BID IS BASED ON MATERIALS AND EQUIPMENT DESCRIBED IN THE CONTRACT DOCUMENTS, INCLUDING ADDENDA. CONTRACTORS ARE ENCOURAGED TO REQUEST A REVIEW OF SUBSTITUTE MATERIALS AND EQUIPMENT. SUBSTITUTES WILL BE CONSIDERED ONLY IF THEY KEEP WITH THE GENERAL INTENT OF THE CONTRACT DOCUMENTS, INCLUDING QUALITY OF WORK AND PRODUCT, AND ARE FULLY DOCUMENTED. ALL REQUESTS FOR ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER 7 WORKING DAYS PRIOR TO THE DATE OF BID OPENING. SUBSTITUTES NOT PROPERLY SUBMITTED MAY BE REJECTED WITHOUT CAUSE. IN REQUESTING A REVIEW OF SUBSTITUTES THE CONTRACTOR IS TO PROVIDE AN ITEM-BY-ITEM COMPARISON OF THE ALTERNATE PRODUCT TO THE BASIS OF DESIGN. COMPARISONS SHALL INCLUDE BUT ARE NOT LIMITED TO: CAPACITY, CONSTRUCTION, WARRANTY, FINISH, ETC. CONTRACTORS WILL NOT BE GRANTED EXTENDED CONTRACT TIME OR FEES IN CONNECTION WITH THE REJECTION OF A SUBSTITUTE PRODUCT. CONTRACTOR SHALL FABRICATE, FURNISH, INSTALL AND PAY FOR ANY ADDITIONAL MATERIALS AND/OR SERVICES BY ANY OTHER TRADE REQUIRED TO FACILITATE THE USE OF A SUBSTITUTED ITEM.
- 15.12 SUBMITTALS:** BEFORE ORDERING ANY EQUIPMENT CONTRACTOR IS TO PROVIDE 4 SETS OF SUBMITTALS FOR ALL EQUIPMENT ACCESSORIES, TEST AND BALANCE, STARTUP, FIXTURES, ETC. THAT BARE IMPORTANCE ON PROPER PROJECT COMPLETION. ALL CERTIFICATIONS FOR WELDERS, BALANCE CONTRACTORS AND STARTUP TECHNICIANS ARE TO BE PROVIDED IN THEIR APPROPRIATE SECTIONS. SUBMITTALS EXPECTED FOR FINAL REVIEW ARE TO BE SUBMITTED A MINIMUM OF 14 WORKING DAYS PRIOR TO THE REQUIRED REVIEW AND RETURN TIME. THE CONTRACTOR IS TO PROVIDE 2 REVIEWS OF SAID SUBMITTALS. ANY TIME INCURRED BY ADDITIONAL SUBMITTAL REVIEWS CAUSED BY REJECTED OR UNACCEPTABLE SUBMITTALS WILL BE CHARGED TO THE CONTRACTOR AT THE ENGINEER'S HOURLY BILLING RATE. SUBMITTALS WILL NOT BE ACCEPTED THAT HAVE NOT BEEN REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR AND/OR CONSTRUCTION MANAGER. SUBMITTALS WILL NOT BE ACCEPTED THAT INCLUDE BUT ARE NOT LIMITED TO: A SINGLE FULLY ENCOMPASSING SUBMITTAL IS TO BE PROVIDED BY EACH TRADE. CONTRACTORS WILL NOT BE GRANTED EXTENDED CONTRACT TIME OR FEES IN CONNECTION WITH THE REJECTION OF SUBMITTALS OR DELAYS CAUSED BY UNHARRIED SUBMITTAL DELIVERY.
- STANDARD FACTORY BROCHURES WILL NOT SUFFICE AS PRODUCT SUBMITTALS; FACTORY SUBMITTAL PACKAGES INDICATING THE PRODUCTS, PERFORMANCE, DIMENSIONS, CLEARANCES, COLORS, TESTING AND LISTING CERTIFICATIONS AND ALL ACCESSORIES TO BE USED ARE TO BE PROVIDED. IN THE CASE OF ALTERNATES COMPARISON DOCUMENTATION IS TO BE PROVIDED SHOWING PER OF EQUALITY.
- IN THE CASE THAT ADDITIONAL DESIGN SERVICES ARE REQUIRED BY A REGISTERED PROFESSIONAL THE CONTRACTOR IS TO PROVIDE SEALED AND SIGNED DOCUMENTATION OF WORK TO BE COMPLETED DEPENDING NECESSARY DESIGNS, AND PERFORMANCE IN ACCORDANCE WITH ALL ADOPTED CODES.
- 15.13 OWNER COORDINATION:** SHOULD ANY PORTION OF THE SITE BE OCCUPIED DURING ANY PROJECT CONSTRUCTION CONTRACTORS ARE TO COORDINATE WITH OWNERS TO MINIMIZE CONFLICTS AND ENABLE NECESSARY OCCUPANT USAGE. WORK IS TO BE PERFORMED AS REQUIRED TO MAINTAIN FULL ACCESS, OPERATION, MOVEMENT AND EXITING OF THE SPACE WITHOUT WRITTEN CONSENT BY THE OWNER/OCCUPANT. A MINIMUM 2 HOUR NOTICE UNLESS LONGER IS REQUIRED BY OWNER/OCCUPANT IS TO BE PROVIDED PRIOR TO THE COMMENCEMENT OF ANY NORMAL FACILITY OPERATION.
- 15.14 PRODUCT DELIVERY AND STORAGE:** PRODUCTS ARE TO BE DELIVERED TO THE SITE IN SUCH A MANNER AS TO PREVENT DAMAGE (EITHER NATURAL OR HUMAN CAUSED) TO THE EQUIPMENT OR MATERIALS. SHIPPING, STORAGE AND DELIVERY IS TO BE COMPLETED AS REQUIRED BY THE MANUFACTURER. PRODUCTS ARE TO BE DELIVERED TO THE SITE IN THE MANUFACTURERS SHIPPING CONTAINER OR PACKAGING WITH MANUFACTURERS LABELS STILL AFFIXED. DELIVERIES OF EQUIPMENT AND MATERIAL ARE TO BE SCHEDULED TO MINIMIZE UNWANTED TIME ON THE JOBSITE. CONTRACTOR IS TO INSPECT ALL EQUIPMENT AND MATERIAL FOR DAMAGE OR DEFACEMENT AND TAKE NECESSARY STEPS TO PROVIDE REPAIR OR REPLACE DAMAGED PIECES PRIOR TO INSTALLATION.
- 15.15 ACCESSIBILITY:** ALL EQUIPMENT, VALVES, ACTUATORS, DAMPERS, ETC. ARE TO BE POSITIONED AND INSTALLED SUCH THAT THEY ARE EASILY ACCESSIBLE FROM AN 8' LADDER. CARE IS TO BE TAKEN TO ENSURE PROPER MAINTENANCE AND OPERATIONAL ACCESS AND CLEARANCE IS PROVIDED FOR ADJUSTMENT AND UPKEEP OF THE INSTALLED SYSTEMS.
- 15.16 PAINTING:** HVAC CONTRACTOR IS TO PAINT OUT ALL DIFFUSER, GRILLE AND INTERNAL DUCTWORK PORTIONS VISIBLE BEHIND TERMINATIONS IN SPACE. ALL DUCTWORK INSTALLED EXPOSED WITHIN THE SPACE IS TO BE PAINTED PER THE ARCHITECTURAL REQUIREMENTS. COORDINATE EXACT REQUIREMENTS WITH ARCHITECTURAL DRAWINGS.
- 15.18 GUARANTEE:** THE CONTRACTOR SHALL GUARANTEE THE COMPLETE MECHANICAL, PLUMBING AND FIRE SYSTEMS, AND ALL PORTIONS THEREOF TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. SHOULD A PIECE OF EQUIPMENT FAIL AND NEED REPLACEMENT DURING THIS TIME THE GUARANTEE SHALL BE TREATED AS MINIMAL AS APPLICABLE TO OVERSEE PROMPT REMEDY SUCH DEFECTS AND ANY SUBSEQUENT DAMAGE CAUSED BY THE DEFECTS OR REPAIR THEREOF AT NO EXPENSE TO THE OWNER. THE OWNER RESERVES THE RIGHT TO MAKE TEMPORARY CHANGES TO THE SYSTEMS IN ORDER TO MAINTAIN OPERATION WHILE WAITING FOR THE REMEDY FROM THE CONTRACTOR WITHOUT VOIDING THIS GUARANTEE.
- 15.19 OPERATIONS AND MAINTENANCE MANUALS:** CONTRACTOR IS TO PROVIDE THREE COPIES OF A FULL OPERATION AND MAINTENANCE MANUAL TO THE OWNER FOR EACH PIECE OF MECHANICAL AND PLUMBING EQUIPMENT. MANUALS ARE TO BE PROVIDED IN A BOUND NOTEBOOK (THREE RING STYLE) AND ARE TO INCLUDE EQUIPMENT CUT SHEETS, MANUFACTURERS INSTALLATION MANUALS, MANUFACTURERS OPERATION AND MAINTENANCE MANUAL AND A SCHEDULE OF ROUTINE MAINTENANCE TO BE PERFORMED FOR THE FIRST TWELVE MONTHS OF OPERATION.
- 15.20 OWNER DEMONSTRATION AND TRAINING:** INSTRUCTIONAL TRAINING IS TO BE PROVIDED TO OWNERS AND OWNERS REPRESENTATIVE ON MECHANICAL AND PLUMBING EQUIPMENT INSTALLED ON THE PROJECT. ALL TRAINING AND MATERIALS ARE TO BE INCLUDED IN THE CONTRACTORS BID AND PROVIDED AT NO EXTRA COST. CONTRACTOR IS TO ASSEMBLE INSTRUCTIONAL MATERIALS FOR ALL EQUIPMENT AND GENERATE AN OUTLINE OF THE INSTRUCTIONAL SESSION FOR OWNERS USE. ALL DOCUMENTATION IS TO BE PROVIDED TO THE OWNER AND OWNER REPRESENTATIVE AT THE INSTRUCTIONAL COURSE. A QUALIFIED PRESENTER FOR EACH PIECE OF EQUIPMENT IS TO BE SCHEDULED FOR TRAINING SESSIONS. THIS MAY REQUIRE A FACTORY REPRESENTATIVE ON MORE COMPLEX SYSTEMS. TIMES FOR THE INSTRUCTION TRAINING IS TO BE AGREED UP BY THE MECHANICAL, PLUMBING AND GENERAL CONTRACTORS WITH THE OWNER AND OWNERS REPRESENTATIVE.
- 15.21 RECORD DRAWINGS:** CONTRACTOR IS TO KEEP ACCURATE DOCUMENTATION OF ACTUAL INSTALLATION CONDITIONS. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR IS TO PROVIDE 3 SETS OF RECORD DRAWINGS AND 1 ORIGINAL COPY TO THE OWNER. RECORD DRAWINGS ARE TO BE SINGLE IDENTIFIABLE COLOR AT A DRAFTING QUALITY EQUALING THE ORIGINAL CONSTRUCTION DRAWINGS DEPICTING THE ACTUAL INSTALLATION CONDITIONS. DRAWINGS ARE TO BE MARKED WITH AND EASILY IDENTIFIABLE NOTATION STATING THEY ARE AS-BUILT RECORD DRAWINGS. CONTRACTOR IS ALSO TO PROVIDE A FULL SET OF RECORD SUBMITTALS, IN ADDITION TO OPERATION AND MAINTENANCE MANUALS, CLEARLY MARKING THE SPECIFIC EQUIPMENT USED AND ADHERING TO ALL OTHER REQUIREMENTS OF PROJECT SUBMITTALS.
- 15.22 BIDDING:** ALL PIPING IS TO BE SHIPPED, STORED, AND INSTALL IN ACCORDANCE WITH THE BEST MODERN PRACTICES AND THE GENERAL NOTES SECTION OF THIS SPECIFICATION. DRAWINGS INDICATE GENERAL LOCATION AND ROUTING OF ALL PIPING. THE LAYOUT AS SHOWN WAS USED FOR CALCULATIONS CALCULATING OF ALL VARIABLES IN THE PIPING SYSTEMS OPERATIONS AND THUSLY IS TO BE INSTALLED AS DETAILED UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
- ALL PIPING IS TO BE INSTALLED CONCEALED FROM VIEW AND PROTECTED CONTACT UNLESS OTHERWISE NOTED. IN ACCESSIBLE CEILING AREAS INSTALL PIPING ALLOWING'S PROPER REMOVAL OF TILES. PIPING IS TO BE INSTALLED FREE OF SAGS AND BENDS AND PARALLEL OR AT RIGHT ANGLES TO MAIN BUILDING STRUCTURAL ELEMENTS. PIPING IS ALSO TO BE INSTALLED TO ALLOW ACCESS TO ALL VALVES, FLANGES, UNIONS AND OTHER ACCESSORIES REQUIRED MAINTENANCE AND OPERATION ACCESS.
- REAR THE ENDS OF PIPES TO REMOVE BURRS AND BEVEL THE ENDS OF STEEL PIPES. CAP OPEN ENDS OF PIPING TO PREVENT DEFORMATION OF PIPE ENDS AND CONSTRUCTION DEBRIS ENTERING THE PIPING. MANUFACTURED FITTINGS ARE TO BE USED FOR CHANGE IN DIRECTION AND BRANCH FITTINGS. PIPING IS TO BE INSTALLED AT SLOPES INDICATED ON THE DRAWING OR IN THIS SPECIFICATION. DIELECTRIC UNIONS OR FLANGES 4" AND SMALLER IS TO BE JOINED WITH MALLEABLE, TREADED FITTINGS MEETING ASME B16.3 CLASS 80. PIPING 4" AND LARGER IS TO BE JOINED WITH WROUGHT STEEL WELDED FITTINGS MEETING ASTM A 234/ASTM 234M.
- 15.23 AIR HANDLING:**
- 15.32 SUPPORT:** ALL BUILDING HVAC SYSTEMS ARE TO BE SUPPORTED FROM BUILDING STRUCTURAL SUPPORT MEMBERS OR WALLS. SUPPORT CLAMPS AND STRUTS ARE TO BE USED FOR SUPPORT. OTHER PIPING, DUCTWORK, CONDUIT ETC. SHALL NOT BE USED FOR SUPPORT UNDER ANY CIRCUMSTANCES. CABLE SYSTEMS ARE NOT ACCEPTABLE FOR DUCT SUPPORT. SUPPORTS ARE TO BE INSTALLED ALLOWING CONTROLLED MOVEMENT NECESSARY SEISMIC EVENTS. ALL SUPPORTS ARE TO BE LATERALLY BRACED IN OPPOSING DIRECTIONS TO PREVENT SYSTEM MOVEMENT. HANGERS AND SUPPORTS AS REQUIRED BY BELOW MENTIONED CODES. HANGERS ARE TO BE POSITIVELY FASTENED TO CONCRETE, STEEL OR WOOD BUILDING SYSTEMS FOR ADEQUATE SUPPORT. HANGER SHALL BE ADJUSTABLE IN TYPE ALLOWING PROPER LOAD DISTRIBUTION. HANGER MATERIAL IS TO MATCH THAT OF THE SYSTEM BEING SUPPORTED OR TO AVOID DISSIMILAR METAL CONTACT.
- ALL HANGERS ARE TO BE SIZED AND SPACED PER THE REQUIREMENTS OF THE UNIFORM MECHANICAL CODES, SMACNA, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. ALL SUPPORT SYSTEMS REQUIRING ENGINEERING DESIGN UNDER THESE STANDARDS ARE TO BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER WITH CAPACITY TO DO SO. COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS ARE TO BE PROVIDED AS A PART OF THE CONTRACTORS BID AND ARE TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.
- 15.33 SEISMIC RESTRAINT:** ALL BUILDING HVAC SYSTEMS, INCLUDING DUCTWORK, IS TO BE SEISMICALLY RESTRAINED PER THE UNIFORM MECHANICAL CODES, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. RESTRAINT SYSTEMS ARE TO BE COMPLETED IN A "DESIGN BUILT" FASHION BY THE AWARDED CONTRACTOR AND ARE TO BE INCLUDED IN THE PROJECT BID. THE CONTRACTOR IS TO ENLIST A QUALIFIED LICENSED PROFESSIONAL TO PROVIDE COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS FOR SAID SYSTEMS. ALL DESIGN DATA IS TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.
- 15.34 IDENTIFICATION:** IDENTIFICATION LABELS ARE TO BE PROVIDED ON ALL HVAC EQUIPMENT. BUILDING EQUIPMENT IS TO HAVE A PERMANENTLY AFFIXED ENGRAVED PVC LABEL BARING ITS UNIQUE IDENTIFIER AS CALLED OUT ON THE PROJECT DRAWINGS. LABELS ARE TO BE 3"X5" AND LOCATED IN PLAIN VIEW. LABEL COLOR AND FONT SIZE ARE TO BE AS PRESCRIBED BY THE LATEST VERSION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS STANDARD.
- 15.35 VIBRATION CONTROL:** VIBRATION ISOLATION IS TO BE PUT IN PLACE BETWEEN ANY HVAC EQUIPMENT WITH FANS, MOTORS AND COMPRESSORS TO PREVENT RESONATION OF MECHANICAL VIBRATION THROUGH BUILDING SYSTEMS. IF EQUIPMENT PROVIDED HAS INTERNAL ISOLATION FROM THE FACTORY ADDITIONAL ISOLATION IS NOT TO BE INSTALLED. EQUIPMENT SUSPENDED FROM THE BUILDING STRUCTURE IS TO HAVE HANGER SPRING ISOLATORS INSTALLED IN THE HANGER SYSTEM BETWEEN THE UNIT AND THE BUILDING. ISOLATORS ARE TO BE SIZED AS REQUIRED BUT TO SUPPORT WEIGHTS AT EACH ISOLATOR. EQUIPMENT SUPPORTED ON THE FLOOR OR PLATFORMS MOUNTED TO THE WALLS ARE TO BE SECURED DOWN WITH ELASTOMERIC PADS BETWEEN THE EQUIPMENT AND MOUNTING SURFACE. DURO DYNE METAL-FAB TYPE FABRIC FLEXIBLE CONNECTORS ARE TO BE PROVIDED BETWEEN ALL AIR MOVING DEVICES AND DUCTWORK SUPPLY AND RETURN STAINLESS STEEL BRAIDED FLEX CONNECTORS ARE TO BE INSTALLED BETWEEN PUMPS AND PIPING 2-1/2" AND SMALLER. CABLE SPHERE RUBBER CONNECTORS ARE TO BE INSTALLED BETWEEN PUMPS AND PIPING 3" AND LARGER.
- 15.36 ALL EQUIPMENT REQUIRING SEISMIC RESTRAINT AND VIBRATION ISOLATION IS TO BE SEISMICALLY RESTRAINED PER THE UNIFORM MECHANICAL CODES, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. RESTRAINT SYSTEMS ARE TO BE COMPLETED IN A "DESIGN BUILT" FASHION BY THE AWARDED CONTRACTOR AND ARE TO BE INCLUDED IN THE PROJECT BID. THE CONTRACTOR IS TO ENLIST A QUALIFIED LICENSED PROFESSIONAL TO PROVIDE COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS FOR SAID SYSTEMS. ALL DESIGN DATA IS TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.**
- 15.37 INSULATION:** ALL DUCTWORK SCHEDULED TO BE INSULATED SHALL ADHERE WITH THE FOLLOWING:
- EXTERNAL DUCT WRAP - SHALL BE FLEXIBLE BLANKET INSULATION OR GLASS INSULATION COMPLYING WITH ASTM C 553, TYPE II AND ASTM C 590 TYPE III PJK JACKET. INSULATION IS TO BE 1" THICK WITH AN INSTALLED R-VALUE OF 6.0. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL JOINTS AND SEAMS ARE TO BE BONDED COVERED WITH TAPE PER THE MANUFACTURERS RECOMMENDATION.
- INTERNAL DUCT INSULATION - SHALL BE FLEXIBLE MINERAL OR GLASS TYPE INSULATION COMPLYING WITH ASTM C 518 TYPE I. INSULATION IS TO BE 1" THICK WITH AN INSTALLED R-VALUE OF 6.0. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL EXPOSED EDGES INSIDE OF DUCTWORK ARE TO BE COATED WITH A MANUFACTURER APPROVED DUCT LINER COATING. DUCT SIZES SHOWN ON DRAWINGS ARE NOMINAL INSIDE DIMENSIONS. ALL INTERNALLY LINED DUCTWORK OVERALL DIMENSION TO BE INCREASED TO MAINTAIN FREE OPEN AREA DIMENSIONS CALLED FOR ON THE PLANS.
- LINED DUCTWORK - SHALL BE INTERNALLY INSULATED FOR SOUND DEADENING PURPOSES. SOUND ABSORPTION SHALL MEET THE FOLLOWING CYCLES PER SECOND AND THE LISTED FREQUENCY: 125-01, 250-0.41, 500-0.85, 1000-1.01, 2000-1.02, 4000-0.99. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL EXPOSED EDGES INSIDE OF DUCTWORK ARE TO BE COATED WITH A MANUFACTURER APPROVED DUCT LINER COATING. DUCT SIZES SHOWN ON DRAWINGS ARE NOMINAL INSIDE DIMENSIONS. ALL INTERNALLY LINED DUCTWORK OVERALL DIMENSION TO BE INCREASED TO MAINTAIN FREE OPEN AREA DIMENSIONS CALLED FOR ON THE PLANS.
- INSTALL ALL INSULATION IN A CLEAN TIGHT MANNER WITH EVEN SURFACES FREE OF VOIDS THE LENGTH OF THE DUCTWORK. ALL JOINING COMPOUNDS ARE TO BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS.
- ALL INDOOR INSULATION, JACKETS MATERIAL, ADHESIVES, MASTICS TAPES AND CEMENTS ARE TO COMPLY WITH ASTM E 84 WITH A MAXIMUM FLAME SPREAD INDEX OF 25 AND SMOKE-DEVELOPED INDEX OF 50. ALL OUTDOOR INSULATION, JACKETS MATERIAL, ADHESIVES, MASTICS TAPES AND CEMENTS ARE TO COMPLY WITH ASTM E 84 WITH A MAXIMUM FLAME SPREAD INDEX OF 15 AND SMOKE-DEVELOPED INDEX OF 150.
- ADHESIVE SHALL HAVE A VOC CONTENT NOT GREATER THAN 50G/L IN ACCORDANCE WITH EPA METHOD 24 AND SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES "STANDARD PRACTICE FOR THE TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES USING SMALL SCALE ENVIRONMENTAL CHAMBERS."
- DUCTWORK IS TO BE INSULATED PER THE FOLLOWING SCHEDULE:
- ALL CONCEALED ROUND OR SQUARE SUPPLY AND RETURN AIR DUCTWORK - EXTERNAL DUCT WRAP
- ALL EXPOSED ROUND OR SQUARE SUPPLY AND RETURN AIR DUCTWORK - NO INSULATION REQUIRED
- ALL DUCTWORK CALLED TO BE INTERNALLY LINED - LINED DUCTWORK
- ALL OUTSIDE SQUARE SUPPLY AND RETURN AIR DUCTWORK - DOUBLE WALL WITH INTERNAL INSULATION
- ALL OUTSIDE AIR AND EXHAUST AIR DUCTWORK - NO INSULATION REQUIRED.
- TYPE I COMMERCIAL HOOD GREASE DUCT - TWO LAYERS OF 31# 651 FIRE RATED DUCT WRAP INSTALLED PER THE PROJECT DETAILS AND THE MANUFACTURERS INSTRUCTIONS.
- 15.38 DUCTWORK:** ALL DUCTWORK IS TO BE SHIPPED, STORED, AND INSTALL IN ACCORDANCE WITH THE BEST MODERN PRACTICES AND THE GENERAL NOTES SECTION OF THIS SPECIFICATION. DRAWINGS INDICATE GENERAL LOCATION AND ROUTING OF ALL DUCTING. THE LAYOUT AS SHOWN WAS USED FOR CALCULATIONS CALCULATING
- MEET ASTM D 2465 AND FITTINGS SHALL MEET ASTM D 2465 AND ASTM D 3381.
- PIPING OUTSIDE OF BUILDING ABOVE GRADE:  
SANITARY, GREASE WASTE AND VENT PIPING SHALL BE SCHEDULE 40 SOLID WALL CPVC DIV. CPVC PIPE SHALL MEET ASTM D 2465 AND FITTINGS SHALL MEET ASTM D 2465 AND ASTM D 3381. CAST IRON NO-HUB PIPE MAY BE USED IN LIEU OF CPVC. CAST IRON PIPE SHALL MEET ASTM A 14, ANSI A 125.1 AND CISPI 30. FITTINGS ARE TO MEET CISPI 300 AND ASTM C1271.
- GAS PIPING, SCHEDULE 40 BLACK STEEL TYPE "E" OR "S" GRADE B MEETING ASTM A 53/A53M. PIPE SHALL HAVE FACTORY-APPLIED, THREE-LAYER COATING OF EPOXY, ADHESIVE, AND PE. PIPING SHALL NOT BE LAPPED FACE. JOINTS SHALL HAVE COVER KITS CONSISTING OF EPOXY PAINT, ADHESIVE, AND HEAT-SHRINK PE SLEEVES.
- PIPING INSIDE OF BUILDING BELOW GRADE:  
SANITARY, GREASE WASTE AND VENT PIPING SHALL BE SCHEDULE 40 SOLID WALL PVC DIV. PVC PIPE SHALL MEET ASTM D 2465 AND FITTINGS SHALL MEET ASTM D 2465 AND ASTM D 3381.
- PIPING INSIDE OF BUILDING ABOVE GRADE:  
SANITARY, GREASE WASTE AND VENT PIPING SHALL BE SCHEDULE 40 SOLID WALL PVC DIV MEETING ASTM D 2465 AND FITTINGS SHALL MEET ASTM D 2465 AND ASTM D 3381. CAST IRON NO-HUB PIPE MAY BE USED IN LIEU OF PVC. CAST IRON PIPE SHALL MEET ASTM A 14, ANSI A 125.1 AND CISPI 30. FITTINGS ARE TO MEET CISPI 300 AND ASTM C1271.
- DOMESTIC COLD, HOT WATER I HOT WATER RETURN SHALL BE TYPE "L" HARD COPPER MEETING ASTM 88 WITH WROUGHT-COPPER FITTINGS MEETING ASME B16.9. JOINTS SHALL BE SOLDERED WITH LEAD FREE SOLDER MEETING ASTM B 32 AND WATER FUSIBLE PLUG MEETING ASTM B 83.
- GAS PIPING, SCHEDULE 40, BLACK STEEL TYPE "E" OR "S" GRADE B MEETING ASTM A 53/A53M. PIPING 2-1/2" AND SMALLER IS TO BE JOINED WITH MALLEABLE, TREADED FITTINGS MEETING ASME B16.3 CLASS 80. PIPING 3" AND LARGER IS TO BE JOINED WITH WROUGHT STEEL WELDED FITTINGS MEETING ASTM A 234/ASTM 234M.
- 15.31 AIR HANDLING:**
- 15.32 SUPPORT:** ALL BUILDING HVAC SYSTEMS ARE TO BE SUPPORTED FROM BUILDING STRUCTURAL SUPPORT MEMBERS OR WALLS. SUPPORT CLAMPS AND STRUTS ARE TO BE USED FOR SUPPORT. OTHER PIPING, DUCTWORK, CONDUIT ETC. SHALL NOT BE USED FOR SUPPORT UNDER ANY CIRCUMSTANCES. CABLE SYSTEMS ARE NOT ACCEPTABLE FOR DUCT SUPPORT. SUPPORTS ARE TO BE INSTALLED ALLOWING CONTROLLED MOVEMENT NECESSARY SEISMIC EVENTS. ALL SUPPORTS ARE TO BE LATERALLY BRACED IN OPPOSING DIRECTIONS TO PREVENT SYSTEM MOVEMENT. HANGERS AND SUPPORTS AS REQUIRED BY BELOW MENTIONED CODES. HANGERS ARE TO BE POSITIVELY FASTENED TO CONCRETE, STEEL OR WOOD BUILDING SYSTEMS FOR ADEQUATE SUPPORT. HANGER SHALL BE ADJUSTABLE IN TYPE ALLOWING PROPER LOAD DISTRIBUTION. HANGER MATERIAL IS TO MATCH THAT OF THE SYSTEM BEING SUPPORTED OR TO AVOID DISSIMILAR METAL CONTACT.
- ALL HANGERS ARE TO BE SIZED AND SPACED PER THE REQUIREMENTS OF THE UNIFORM MECHANICAL CODES, SMACNA, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. ALL SUPPORT SYSTEMS REQUIRING ENGINEERING DESIGN UNDER THESE STANDARDS ARE TO BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER WITH CAPACITY TO DO SO. COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS ARE TO BE PROVIDED AS A PART OF THE CONTRACTORS BID AND ARE TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.
- 15.33 SEISMIC RESTRAINT:** ALL BUILDING HVAC SYSTEMS, INCLUDING DUCTWORK, IS TO BE SEISMICALLY RESTRAINED PER THE UNIFORM MECHANICAL CODES, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. RESTRAINT SYSTEMS ARE TO BE COMPLETED IN A "DESIGN BUILT" FASHION BY THE AWARDED CONTRACTOR AND ARE TO BE INCLUDED IN THE PROJECT BID. THE CONTRACTOR IS TO ENLIST A QUALIFIED LICENSED PROFESSIONAL TO PROVIDE COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS FOR SAID SYSTEMS. ALL DESIGN DATA IS TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.
- 15.34 IDENTIFICATION:** IDENTIFICATION LABELS ARE TO BE PROVIDED ON ALL HVAC EQUIPMENT. BUILDING EQUIPMENT IS TO HAVE A PERMANENTLY AFFIXED ENGRAVED PVC LABEL BARING ITS UNIQUE IDENTIFIER AS CALLED OUT ON THE PROJECT DRAWINGS. LABELS ARE TO BE 3"X5" AND LOCATED IN PLAIN VIEW. LABEL COLOR AND FONT SIZE ARE TO BE AS PRESCRIBED BY THE LATEST VERSION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS STANDARD.
- 15.35 VIBRATION CONTROL:** VIBRATION ISOLATION IS TO BE PUT IN PLACE BETWEEN ANY HVAC EQUIPMENT WITH FANS, MOTORS AND COMPRESSORS TO PREVENT RESONATION OF MECHANICAL VIBRATION THROUGH BUILDING SYSTEMS. IF EQUIPMENT PROVIDED HAS INTERNAL ISOLATION FROM THE FACTORY ADDITIONAL ISOLATION IS NOT TO BE INSTALLED. EQUIPMENT SUSPENDED FROM THE BUILDING STRUCTURE IS TO HAVE HANGER SPRING ISOLATORS INSTALLED IN THE HANGER SYSTEM BETWEEN THE UNIT AND THE BUILDING. ISOLATORS ARE TO BE SIZED AS REQUIRED BUT TO SUPPORT WEIGHTS AT EACH ISOLATOR. EQUIPMENT SUPPORTED ON THE FLOOR OR PLATFORMS MOUNTED TO THE WALLS ARE TO BE SECURED DOWN WITH ELASTOMERIC PADS BETWEEN THE EQUIPMENT AND MOUNTING SURFACE. DURO DYNE METAL-FAB TYPE FABRIC FLEXIBLE CONNECTORS ARE TO BE PROVIDED BETWEEN ALL AIR MOVING DEVICES AND DUCTWORK SUPPLY AND RETURN STAINLESS STEEL BRAIDED FLEX CONNECTORS ARE TO BE INSTALLED BETWEEN PUMPS AND PIPING 2-1/2" AND SMALLER. CABLE SPHERE RUBBER CONNECTORS ARE TO BE INSTALLED BETWEEN PUMPS AND PIPING 3" AND LARGER.
- 15.36 ALL EQUIPMENT REQUIRING SEISMIC RESTRAINT AND VIBRATION ISOLATION IS TO BE SEISMICALLY RESTRAINED PER THE UNIFORM MECHANICAL CODES, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. RESTRAINT SYSTEMS ARE TO BE COMPLETED IN A "DESIGN BUILT" FASHION BY THE AWARDED CONTRACTOR AND ARE TO BE INCLUDED IN THE PROJECT BID. THE CONTRACTOR IS TO ENLIST A QUALIFIED LICENSED PROFESSIONAL TO PROVIDE COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS FOR SAID SYSTEMS. ALL DESIGN DATA IS TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW DURING THE SUBMITTAL PROCESS.**
- 15.37 INSULATION:** ALL DUCTWORK SCHEDULED TO BE INSULATED SHALL ADHERE WITH THE FOLLOWING:
- EXTERNAL DUCT WRAP - SHALL BE FLEXIBLE BLANKET INSULATION OR GLASS INSULATION COMPLYING WITH ASTM C 553, TYPE II AND ASTM C 590 TYPE III PJK JACKET. INSULATION IS TO BE 1" THICK WITH AN INSTALLED R-VALUE OF 6.0. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL JOINTS AND SEAMS ARE TO BE BONDED COVERED WITH TAPE PER THE MANUFACTURERS RECOMMENDATION.
- INTERNAL DUCT INSULATION - SHALL BE FLEXIBLE MINERAL OR GLASS TYPE INSULATION COMPLYING WITH ASTM C 518 TYPE I. INSULATION IS TO BE 1" THICK WITH AN INSTALLED R-VALUE OF 6.0. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL EXPOSED EDGES INSIDE OF DUCTWORK ARE TO BE COATED WITH A MANUFACTURER APPROVED DUCT LINER COATING. DUCT SIZES SHOWN ON DRAWINGS ARE NOMINAL INSIDE DIMENSIONS. ALL INTERNALLY LINED DUCTWORK OVERALL DIMENSION TO BE INCREASED TO MAINTAIN FREE OPEN AREA DIMENSIONS CALLED FOR ON THE PLANS.
- LINED DUCTWORK - SHALL BE INTERNALLY INSULATED FOR SOUND DEADENING PURPOSES. SOUND ABSORPTION SHALL MEET THE FOLLOWING CYCLES PER SECOND AND THE LISTED FREQUENCY: 125-01, 250-0.41, 500-0.85, 1000-1.01, 2000-1.02, 4000-0.99. INSULATION IS TO BE DRAIN TIGHT AND ATTACHED AS REQUIRED BY MANUFACTURER. ALL EXPOSED EDGES INSIDE OF DUCTWORK ARE TO BE COATED WITH A MANUFACTURER APPROVED DUCT LINER COATING. DUCT SIZES SHOWN ON DRAWINGS ARE NOMINAL INSIDE DIMENSIONS. ALL INTERNALLY LINED DUCTWORK OVERALL DIMENSION TO BE INCREASED TO MAINTAIN FREE OPEN AREA DIMENSIONS CALLED FOR ON THE PLANS.
- INSTALL ALL INSULATION IN A CLEAN TIGHT MANNER WITH EVEN SURFACES FREE OF VOIDS THE LENGTH OF THE DUCTWORK. ALL JOINING COMPOUNDS ARE TO BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS.
- ALL INDOOR INSULATION, JACKETS MATERIAL, ADHESIVES, MASTICS TAPES AND CEMENTS ARE TO COMPLY WITH ASTM E 84 WITH A MAXIMUM FLAME SPREAD INDEX OF 25 AND SMOKE-DEVELOPED INDEX OF 50. ALL OUTDOOR INSULATION, JACKETS MATERIAL, ADHESIVES, MASTICS TAPES AND CEMENTS ARE TO COMPLY WITH ASTM E 84 WITH A MAXIMUM FLAME SPREAD INDEX OF 15 AND SMOKE-DEVELOPED INDEX OF 150.
- ADHESIVE SHALL HAVE A VOC CONTENT NOT GREATER THAN 50G/L IN ACCORDANCE WITH EPA METHOD 24 AND SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES "STANDARD PRACTICE FOR THE TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES USING SMALL SCALE ENVIRONMENTAL CHAMBERS."
- DUCTWORK IS TO BE INSULATED PER THE FOLLOWING SCHEDULE:
- ALL CONCEALED ROUND OR SQUARE SUPPLY AND RETURN AIR DUCTWORK - EXTERNAL DUCT WRAP
- ALL EXPOSED ROUND OR SQUARE SUPPLY AND RETURN AIR DUCTWORK - NO INSULATION REQUIRED
- ALL DUCTWORK CALLED TO BE INTERNALLY LINED - LINED DUCTWORK
- ALL OUTSIDE SQUARE SUPPLY AND RETURN AIR DUCTWORK - DOUBLE WALL WITH INTERNAL INSULATION
- ALL OUTSIDE AIR AND EXHAUST AIR DUCTWORK - NO INSULATION REQUIRED.
- TYPE I COMMERCIAL HOOD GREASE DUCT - TWO LAYERS OF 31# 651 FIRE RATED DUCT WRAP INSTALLED PER THE PROJECT DETAILS AND THE MANUFACTURERS INSTRUCTIONS.
- 15.38 DUCTWORK:** ALL DUCTWORK IS TO BE SHIPPED, STORED, AND INSTALL IN ACCORDANCE WITH THE BEST MODERN PRACTICES AND THE GENERAL NOTES SECTION OF THIS SPECIFICATION. DRAWINGS INDICATE GENERAL LOCATION AND ROUTING OF ALL DUCTING. THE LAYOUT AS SHOWN WAS USED FOR CALCULATIONS CALCULATING

OF ALL VARIABLE S IN THE DUCTING SYSTEMS OPERATIONS AND THUSLY IS TO BE INSTALLED AS DETAILED UNLESS OTHERWISE PERMITTED BY THE ENGINEER.

ALL DUCTWORK IS TO BE INSTALLED PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." SUPPLY AIR DUCTWORK IS TO BE CONSTRUCTED TO WITHSTAND 2" W.G. POSITIVE PRESSURE. RETURN EXHAUST AND UNFORCED OUTDOOR AIR DUCTWORK IS TO BE CONSTRUCTED TO WITHSTAND 2" W.G. NEGATIVE PRESSURE. DUCTWORK IS TO BE INSTALLED WITH THE FEWEST NUMBER OF JOINTS POSSIBLE USING SHOP OR FACTORY FABRICATED FITTINGS. IN ACCESSIBLE CEILING AREAS INSTALL DUCTWORK ALLOWING'S PROPER REMOVAL OF TILES. DUCTWORK IS TO BE INSTALLED FREE OF SAGS AND BENDS AND PARALLEL OR AT RIGHT ANGLES TO MAIN BUILDING STRUCTURAL FEATURES. DUCTWORK IS ALSO TO BE INSTALLED TO FACILITATE ACCESS TO ALL MANUAL, AUTOMATIC, FIRE, FIRE SHOKE DAMPERS AND OTHER ACCESSORIES REQUIRED MAINTENANCE AND OPERATION ACCESS.

ALL DUCTWORK INSTALLED IN EXPOSED AREAS IS TO BE DONE IN A WORKMAN LIKE MANNER WITH SYMMETRY AND UNIFORMITY BETWEEN ALL DUCTING, FITTINGS AND TERMINATIONS. EXPOSED DUCTS ARE TO BE SEALED WITH AN INTERNAL WATER BASED DUCT SEALANT WITH ALL VISIBLE EXCESS TRIMMED IN A SMOOTH MANNER. ALL EXPOSED DUCTWORK IS TO BE FREE FROM DENTS, SCRATCHES AND ANY OTHER UNWARRANTING DAMAGE.

ALL CONCEALED DUCTWORK JOINTS, FITTINGS AND FLEXIBLE DUCT CONNECTIONS ARE TO BE SEALED WITH BRUSHED ON WATER BASED MASTIC.

ALL DUCT SEALANTS ARE TO HAVE A MAXIMUM VOC CONTENT OF 150G/L IN ACCORDANCE WITH EPA METHOD 24 AND SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES "STANDARD PRACTICE FOR THE TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES USING SMALL SCALE ENVIRONMENTAL CHAMBERS."

ALL DUCTWORK INSTALLED DURING ROUGH-IN AND FINISH STAGES OF CONSTRUCTION IS TO BE SEALED AT ALL OPEN ENDS TO PREVENT COLLECTION OF DUST AND CONSTRUCTION DEBRIS.

**15.39 CONSTRUCTION:** SINGLE WALL DUCTWORK, GAUGES AND SEAMS ARE TO BE PER THE LATEST EDITION OF THE UNIFORM MECHANICAL CODES AND SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." UNLESS OTHERWISE NOTED DUCTWORK IS TO BE CONSTRUCTED FROM GALVANIZED SHEET METAL CONFORMING WITH ASTM A 653/A653 M. THE DUCT SHALL CONSIST OF AN OUTER DUCT LAYER CONSTRUCTED PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS, AN INTERSTITIAL INSULATING LAYER PER THE INTERNAL INSULATION REQUIREMENTS OF THIS SPECIFICATION AND AN INNER GALVANIZED DUCT LAYER CONSTRUCTED PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS"

DOUBLE WALL DUCTWORK, GAUGES AND SEAMS ARE TO BE PER THE LATEST EDITION OF THE UNIFORM MECHANICAL CODES AND SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." UNLESS OTHERWISE NOTED DUCTWORK IS TO BE CONSTRUCTED FROM GALVANIZED SHEET METAL CONFORMING WITH ASTM A 653/A653 M. THE DUCT SHALL CONSIST OF AN OUTER DUCT LAYER CONSTRUCTED PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS, AN INTERSTITIAL INSULATING LAYER PER THE INTERNAL INSULATION REQUIREMENTS OF THIS SPECIFICATION AND AN INNER GALVANIZED DUCT LAYER CONSTRUCTED PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS"

ALUMINUM DUCT: IS TO BE ALLOY 3003 WITH AND H4 TEMPER AND COMPLY WITH ASTM 209 WITH A MILL FINISH.

STEEL DUCTWORK: TO COMPLY WITH ASTM A 1008/A WITH AN OILED MATTE FINISH.

STAINLESS STEEL DUCTWORK: TO COMPLY WITH ASTM A 480, A480M.

**15.40 FITTINGS:** FITTINGS ARE TO BE CONSTRUCTED AS SET FORTH IN THE LATEST EDITION OF THE UNIFORM MECHANICAL CODES AND SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." UNLESS OTHERWISE SPECIFIED ALL BRANCH, WYE AND OTHER TAKE-OFF FITTINGS ARE TO BE 45° BRANCHES. CONICAL SADDLE OR OTHER TAPS ARE NOT ACCEPTABLE. ALL REDUCERS ARE TO BE CONICALLY FORMED WITH A RATE OF NOT LESS THAN 1" PER EVERY 4" OF RUN. ELBOWS FOR DUCTWORK 1500 FPM ARI VELOCITY AND LESS ARE TO HAVE A 10 RADIUS TO DIAMETER RATIO. ELBOWS FOR DUCTWORK EXCEEDING 1500 FPM ARE TO HAVE A 15 RADIUS TO DIAMETER RATIO.

**15.41 DIFFUSER MOUNTING:** DIFFUSERS SHALL BE INDEPENDENTLY SUPPORTED BY MINIMUM TWO #2 SLACK WIRES ATTACHED TO OPPOSITE CORNERS THE DIFFUSER PER THE NATIONAL SMACNA REQUIREMENTS. THESE WIRES SHALL BE SECURED TO THE STRUCTURAL FRAMING SUCH THAT FAILURE OF THE SUSPENDED CEILING SHALL NOT ALLOW THE DIFFUSER TO DROP.

**15.42 BALANCE:** THE HVAC SYSTEM IS TO BE BALANCED BY A CERTIFIED AABC TEST AND BALANCE AGENCY. ALL BALANCE STRATEGIES ARE TO BE COMPLETED PER THE NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. BALANCE IS TO BE CONDUCTED AT THE COMPLETION OF INSTALLATION WORK. FINAL BALANCE RESULTS SHALL BE TO THE SATISFACTION OF THE ARCHITECT, MECHANICAL ENGINEERING, OWNER REPRESENTATIVE AND OWNER.

BALANCE AGENCY IS TO ADJUST UNIT AIRFLOW TO PROVIDE THE TOTAL AIRFLOW CALLED FOR IN THE PROJECT SCHEDULES. TOTAL AIRFLOW IS TO BE DETERMINED BY PLOT-TUBE TRAVERSES FOR TOTAL SUPPLY AND RETURN AIR DUCTWORK. TAB AGENCY WILL SUPPLY NEW DRYE COMPONENTS AS REQUIRED TO PROVIDE AIR FLOWS INDICATED. THE DRIVE SHAFT BE SELECTED AT NOT LESS THAN TWO TIMES THE RATED NAME PLATE HORSEPOWER OF THE FAN MOTOR AND BE FIXED PITCH. VARIABLE PITCH SHAFTS WILL NOT BE PERMITTED EXCEPT TO DETERMINE PROPER SHAFT SIZE. OVERSPEED GRILLES, REGISTER PATTERNS AS SHOWN ON THE DRAWINGS, ADJUST AIR QUANTITIES WITHIN -0 TO +0% OF THE DESIGN AIR QUANTITIES. IF ANY ADDITIONAL BALANCING DAMPERS ARE NEEDED TO PROVIDE A BALANCED SYSTEM THEY SHALL BE FURNISHED AND INSTALLED BY THE INSTALLING MECHANICAL CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.

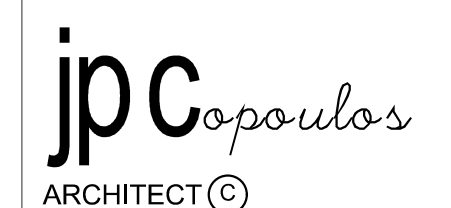
BALANCE AGENCY IS TO VISUALLY INSPECT THE SYSTEM INSTALLATION FOR PROPER INSTALLATION, ROUTING, SEALING AND GENERAL QUALITY OF THE INSTALLATION. ANY CAUSES FOR CONCERN WITH REGARD TO THE OPERATION AND/OR BALANCING OF THE SYSTEM ARE TO BE RECORDED.

ALL FINDINGS ARE TO BE REPORTED IN AN AIR BALANCE REPORT TO BE PROVIDED TO THE OWNER, ARCHITECT AND MECHANICAL ENGINEER. A SCHEMATIC DRAWINGS OF THE INSTALLED SYSTEM IS TO BE PROVIDED FOR CORRELATION WITH THE SUBMITTED REPORT. ALONG WITH AIRFLOW DATA THE BALANCE REPORT IS TO INCLUDE THE NAMEPLATE INFORMATION ON THE UNIT AND MOTOR, VOLTAGE AND AMPERAGE READINGS ARE TO BE TAKEN AT DESIGN OPERATING CONDITIONS AND RECORDED IN THE SUBMITTED REPORT.

CONTROLS CONTRACTOR SHALL HAVE A MECHANIC AVAILABLE TO ASSIST THE TAB AGENCY AS REQUIRED THROUGHOUT THE BALANCING PROCESS.

AIR SYSTEM ALL COMPONENTS SHALL BE TESTED AND ADJUSTED TO -0 TO +0% . REPORT SHALL INCLUDE SCHEDULED NAMEPLATE AND TESTED DATA. PROVIDE FAN/MOTOR RPM, AIR PRESSURE DROP FOR INDIVIDUAL COMPONENTS, TSP, ESP, CFM, VOLTAGE, AMPS, HP, BHP, AND SHEAVE SIZES FOR ALL EQUIPMENT, AIR OUTLETS AND AIR INLETS.

**15.44 CONTROLS:** A FULLY FUNCTIONAL CONTROLS SYSTEM IS TO BE PROVIDED AS REQUIRED TO MEET THE NEEDS OF THE HVAC SYSTEM. IF NO SPECIFIC CONTROLS CONTRACTOR IS ENLISTED TO COMPLETE THE WORK THE MECHANICAL CONTRACTOR IS TO ASSUME THE RESPONSIBILITY OF THE CONTROLS. ALL CONTROLLERS, RELAYS, THE CLOCKS, WIRING, LOGIC ETC. NECESSARY TO MEET THE NEEDS OF THE PROJECT ARE TO BE INSTALLED BY THE CONTROLS CONTRACTOR. ALL WIRING IS TO BE INSTALLED IN RIGID CONDUIT IN ACCORDANCE WITH THE DIVISION 8 REQUIREMENTS FOR CONDUIT ROUTING AND INSTALLATION.

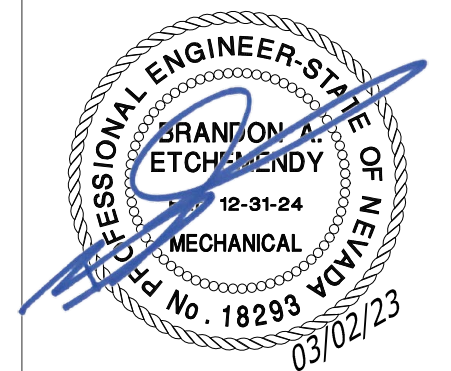


P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com





**GENERAL NOTES:**

STANDARDS AND CODES: LATEST EDITION OF THE UNIFORM MECHANICAL CODE (UMC), AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING WORK SHOWN OR SPECIFIED WHICH MAY EXCEED THE REQUIREMENTS OF SUCH ORDINANCES, LAWS, REGULATIONS AND CODES.

COMPLETE INSTALLATION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, ACCESSORIES, ETC., NECESSARY TO ACCOMPLISH A COMPLETE MECHANICAL SYSTEM IN ACCORDANCE WITH THE PLANS TOGETHER WITH THE SPECIFICATIONS.

PERMITS: OBTAIN AND PAY FOR ALL BUILDING AND WORKING PERMITS AND INSPECTION FEES REQUIRED FOR THIS PROJECT.

DRAWINGS: DATA PRESENTED ON THESE DRAWINGS SHALL BE FIELD VERIFIED SINCE ALL DIMENSIONS, LOCATIONS, AND LEVELS ARE GOVERNED BY ACTUAL FIELD CONDITIONS. REVIEW ALL ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL AND SPECIALTY SYSTEMS DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS ON CONDITIONS SHOWN THEREON. DO NOT SCALE MECHANICAL PLANS FOR EQUIPMENT, DUCTING, PIPING, APPLIANCE ETC. LOCATIONS. USE CONFIGURED DIMENSIONS IF GIVEN OR CHECK ARCHITECTURAL DRAWINGS.

COPYRIGHT: THESE PLANS, SPECIFICATIONS AND ALL RELATED ADDENDA AND DOCUMENTS CONSTITUTE COPYRIGHT MATERIALS OF ETCHENDEY ENGINEERING INC. ALL RIGHTS CONFERRED BY THE COPYRIGHT AND SIMILAR LAWS ARE RESERVED TO ETCHENDEY ENGINEERING INC. THESE MATERIALS SHALL REMAIN THE SOLE PROPERTY OF ETCHENDEY ENGINEERING INC. AND MAY NOT BE REPRODUCED, DISTRIBUTED TO OTHERS OR USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN CONSENT OF ETCHENDEY ENGINEERING INC.

LOCATIONS: INDICATED LOCATIONS OF ALL EQUIPMENT, DUCTING, PIPING ETC. ARE SUBJECT TO CHANGE, SHIFT/RELOCATE/RECONFIGURE ANY OR CONNECTION POINT UP TO 10' AS DIRECTED BY ENGINEER, AT NO ADDED COST.

RECORD DRAWINGS: CONTRACTOR SHALL PROVIDE, PRIOR TO FINAL ACCEPTANCE AND OBSERVATION, ONE SET OF REVISED RECORD MECHANICAL CONSTRUCTION DOCUMENTS ON REPRODUCIBLE MEDIUM, INDICATING THE FOLLOWING ADDITIONAL INFORMATION:

RECORD NOTATIONS SHALL BE CLEARLY DRAWN AT A DRAFTING APPEARANCE EQUAL TO THE ORIGINAL DRAWINGS. CONTRACTOR SHALL ALSO PROVIDE ALL OPERATING AND MAINTENANCE MANUALS PRIOR TO FINAL PAYMENT.

EXAMINATION OF SITE AND EXISTING CONDITIONS: BEFORE SUBMITTING A PROPOSAL, CONTRACTOR SHALL EXAMINE THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR HIS LACK OF KNOWLEDGE OF ANY SITE CONDITIONS WHICH MAY AFFECT HIS WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING A PROPOSAL.

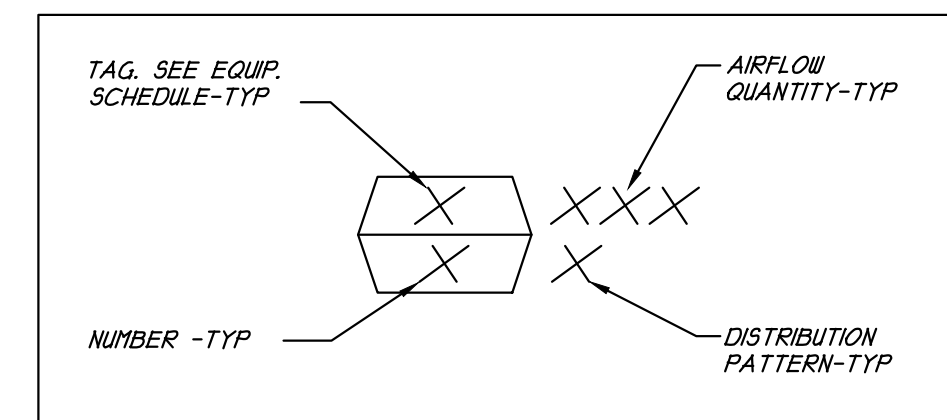
EQUIPMENT: ALL HVAC AND REFRIGERATION EQUIPMENT SHALL NOT CONTAIN CFC OR HALONS.

SEISMIC RESTRAINT: ALL BUILDING HVAC SYSTEMS, INCLUDING DUCTWORK, IS TO BE SEISMICALLY RESTRAINED PER THE UNIFORM MECHANICAL CODES, INTERNATIONAL BUILDING CODE, AMERICAN SOCIETY OF CIVIL ENGINEERS AND STRUCTURAL ENGINEERING INSTITUTE. RESTRAINT SYSTEMS ARE TO BE COMPLETED IN A "DESIGN BUILD" FASHION BY THE AWARDED CONTRACTOR AND ARE TO BE INCLUDED IN THE PROJECT BID. THE CONTRACTOR IS TO EMPLOY A QUALIFIED LICENSED PROFESSIONAL TO PROVIDE COMPREHENSIVE DESIGN CALCULATIONS AND SHOP DRAWINGS FOR SAID SYSTEMS. ALL DESIGN DATA AND DETAILED DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL DURING THE SUBMITTAL PROCESS.

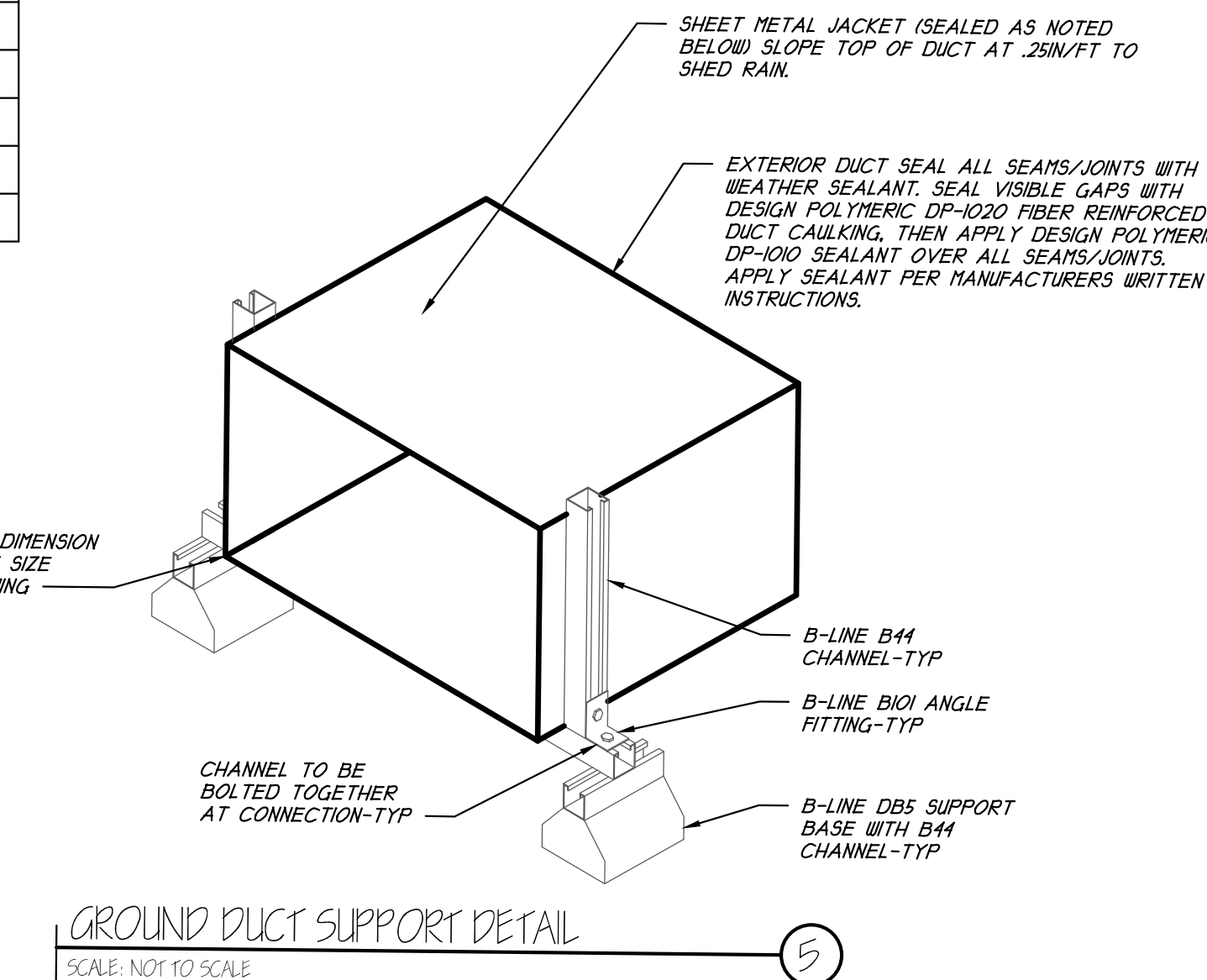
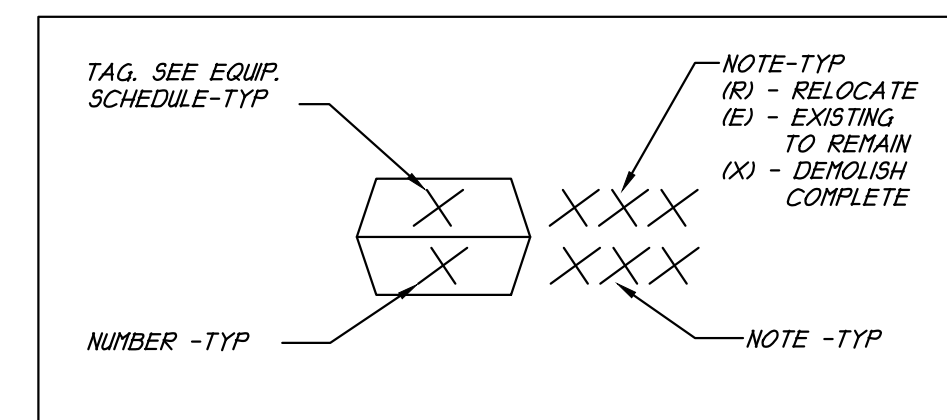
**MECHANICAL LEGEND**

SYMBOL	ABBREVIATION	INTENT
		RIGID DUCT
		INTERNALLY LINED DUCTWORK
		RIGID EXHAUST DUCT
		DUCT DOWN
		DUCT UP
		TURNING VANES
	D	SUPPLY AIR
	G	RETURN AIR
	EXH	EXHAUST AIR
	D	SUPPLY AIR
	G	RETURN AIR
	MVD	MANUAL VOLUME DAMPER
	AD	AUTOMATIC DAMPER (MOTORIZED)
	FLEX	FLEXIBLE DUCTWORK
		VERTICAL BRANCH WITH DAMPER
	DOWN	PIPE DOWN
	UP	PIPE UP
	φ	DIAMETER ROUND
	(N)	NEW
	(E)	EXISTING
	⊙	POINT OF CONNECTION
	⊖	POINT OF DISCONNECT
	AFF	ABOVE FINISHED FLOOR
	BFF	BELOW FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	TYP	TYPICAL
	MIN	MINIMUM
	CFM	CUBIC FEET PER MINUTE
	OSA	OUTSIDE AIR
	ESP	EXTERNAL STATIC PRESSURE
	BTU, BTUH	BRITISH THERMAL UNIT PER HOUR
	MBH	THOUSAND BTU
	CLG	COOLING
	HTG	HEATING
	CAP	CAPACITY
	SENS	SENSIBLE
	LTNT	LATENT

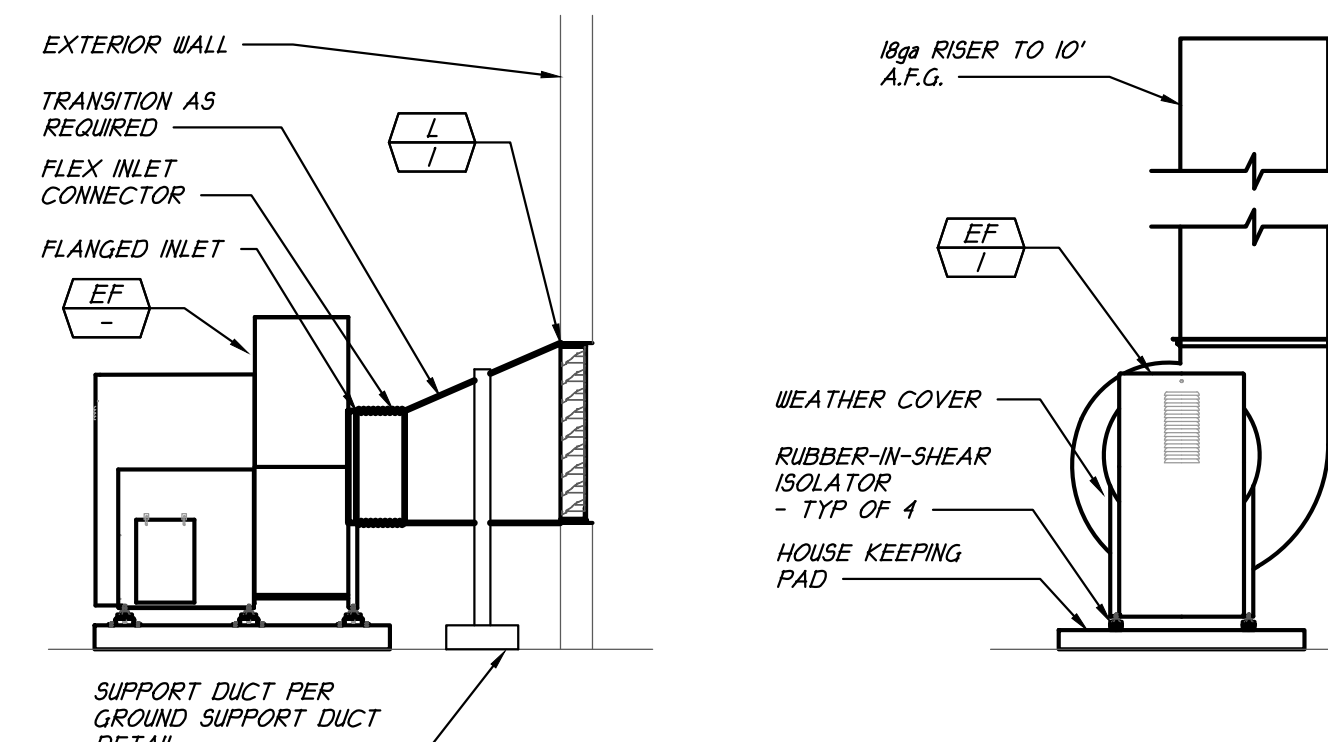
**DIFFUSER/GRILLE SYMBOL LEGEND**



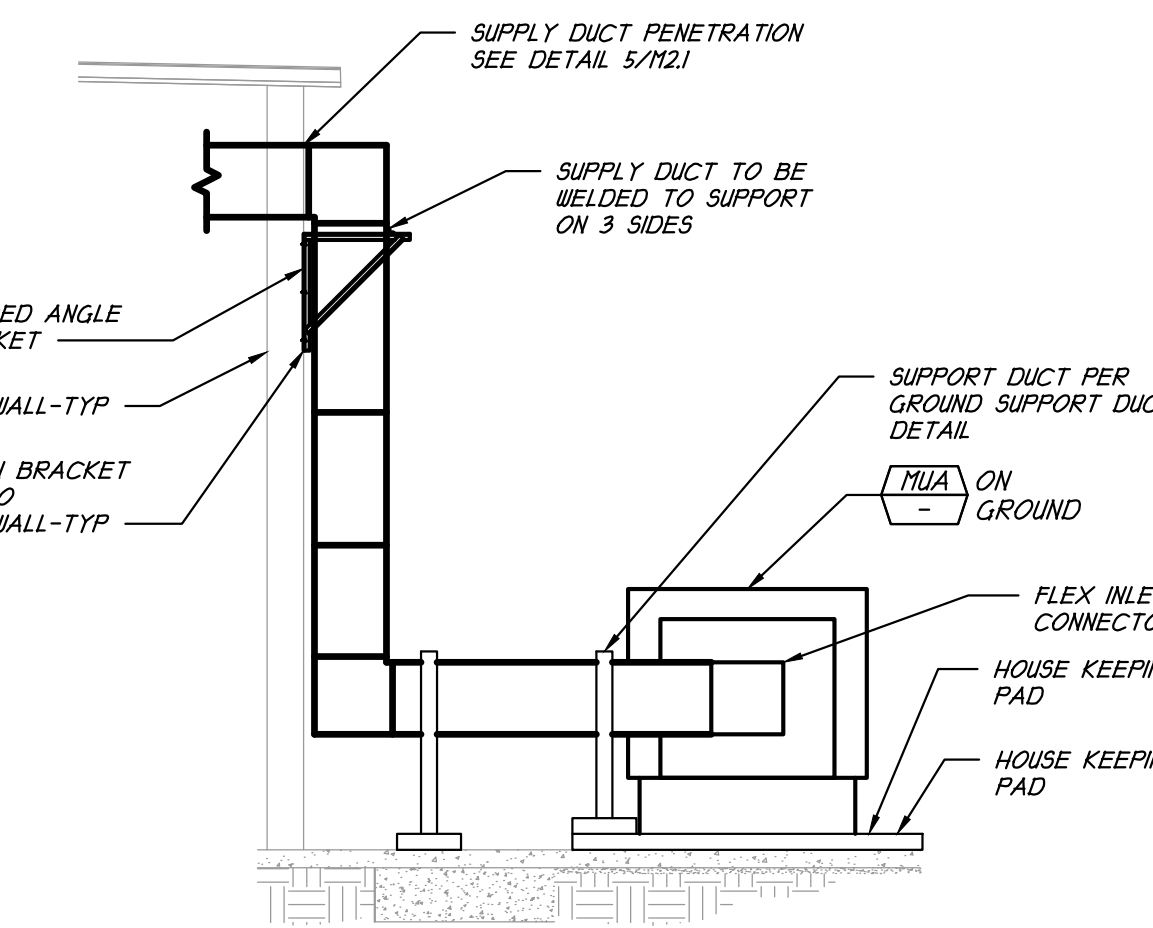
**EQUIPMENT SYMBOL LEGEND**



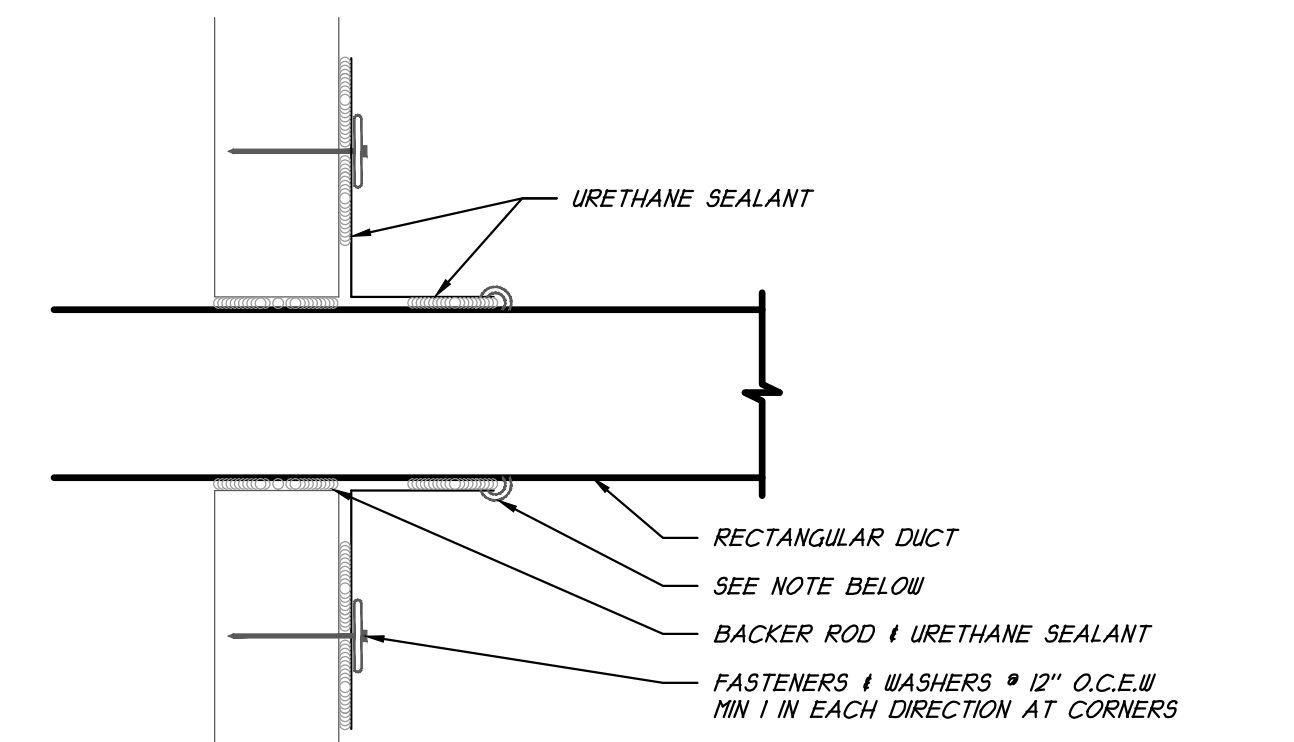
**GROUND DUCT SUPPORT DETAIL**  
SCALE: NOT TO SCALE



**UTILITY SET MOUNTING DETAIL**  
SCALE: NOT TO SCALE

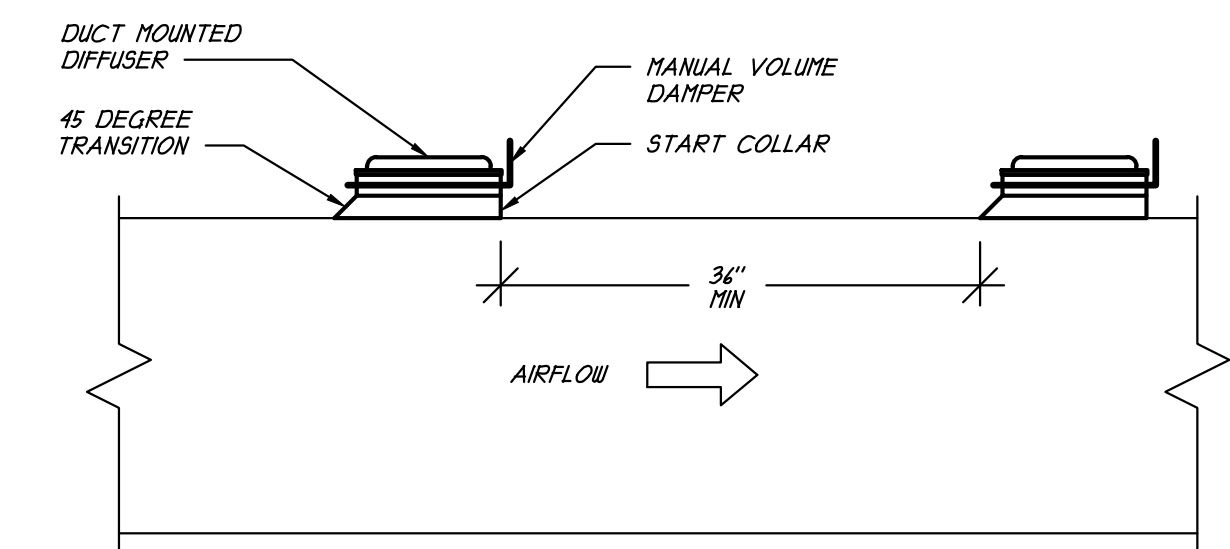


**SUPPLY AIR DUCT ON WALL MOUNTING DETAIL**  
SCALE: NOT TO SCALE



SEALANT SHALL BE DESIGN POLYMERICS DP-100 DUCT SEALANT. APPLY SEALANT IN STRICT CONFORMANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

**EXTERIOR DUCT THRU VERTICAL WALL**  
SCALE: NOT TO SCALE



**SQUARE DUCT MOUNTED DIFFUSER**  
SCALE: NOT TO SCALE

**MAKE-UP AIR UNIT SCHEDULE**

SYMBOL	DESCRIPTION	MODEL	HEATING PERFORMANCE			AIRFLOW			ELECTRICAL				WEIGHT	REMARKS
			INPUT	EAT/LAT(TP)	AFUE	SUPPLY	ESP	HP	VOLTAGE	PHASE	FLA	MOCP		
	HORIZONTAL INDIRECT FIRED MAKEUP AIR UNIT	CAPTIVE AIRE MODEL AH-BT-50-5D	104 MBH	0 / 80	80	1,000	0.5"	3/4"	208	3	2.5	15	1,350	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

REMARKS:  
 1. NEMA 3 CONTROL PANEL WITH SPACE TEMP SENSOR  
 2. HIGH EFFICIENCY MOTOR  
 3. FACTORY WIRE DISCONNECT  
 4. 2" MERV 8 PLEATED AIR FILTER - (2) SETS  
 5. FAN STATUS  
 6. SHIPPED LOOSE FIELD INSTALLED SUPPLY AIR SMOKE DETECTOR  
 7. STAINLESS STEEL GAS-FIRE HEAT EXCHANGER  
 8. EXHAUST FAN INTERLOCK SWITCH  
 9. LOW-LEAK INLET MOTORIZED DAMPER  
 10. FREEZE PROTECTION DRAIN KIT

NOTES:  
 1. WEATHER HOOD - PAINTED, COLOR PER ARCH  
 2. BAGNET INTERFACE  
 3. SUPPLY AIR SMOKE DETECTOR

NOTES:  
 1. ALL HVAC UNITS OR SYSTEMS SERVING A COMMON AIR SPACE MUST BE INTERCONNECTED TO SHUT DOWN IMMEDIATELY UPON ALARM CONDITION FROM DUCT DETECTORS (OR FIRE ALARM SYSTEM WHEN USING AREA SMOKE DETECTORS IN LIEU OF DUCT DETECTORS) WITHOUT INTERFERENCE FROM EIS OR ANY OTHER SYSTEMS. ALL CONTROL RELAYS USED FOR SHUT DOWN MUST BE NEVADA STATE FIRE MARSHAL LISTED FOR RELEASING SERVICE.  
 2. SUPPLY FAN TO RUN CONTINUOUS DURING BUSINESS HOURS.

**EXHAUST FAN SCHEDULE**

SYMBOL	DESCRIPTION	MODEL	AIRFLOW	ELECTRICAL	WT (LBS)	REMARKS
	GROUND MOUNTED UPBLAST UTILITY SET EXHAUST FAN	CAPTIVE AIRE MODEL RABTIDD-RM	1,000 CFM 0.5 ESP	208V, 3φ 0.5 HP	275	1, 2, 3, 4, 5

REMARKS:  
 1. ROOF CURB  
 2. BACKDRAFT DAMPER  
 3. VFD  
 4. ANCA B EXPLOSION PROOF CONSTRUCTION

NOTES:  
 1. EF 1 TO BE INTERLOCKED WITH THE OPERATION OF MUA

**AIR DISTRIBUTION SCHEDULE**

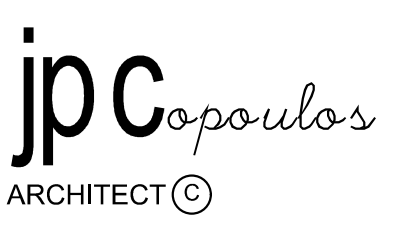
SYMBOL	DESCRIPTION	MODEL	SIZE	FRAME	PANEL	FINISH	ACCESSORIES
	STEEL MODULAR CORE SUPPLY AIR DIFFUSER	KRUEGER MODEL 5460H	12"x8"	-	-	BRITISH WHITE	OPPOSED BLADE DAMPER

**LOUVER SCHEDULE**

TAG	DESCRIPTION	MODEL	SIZE	COLOR	ACCESSORIES
	FIXED DRAINABLE BLADE WALL LOUVER	UNITED ENERTECH MODEL FL-D-41	24"x6"	PER ARCHITECT	1, 2, 3, 4

REMARKS:  
 1. EXTENDED SILL  
 2. WALL SLEEVE  
 3. INSECT SCREEN  
 4. WELDED CONSTRUCTION

NOTES:

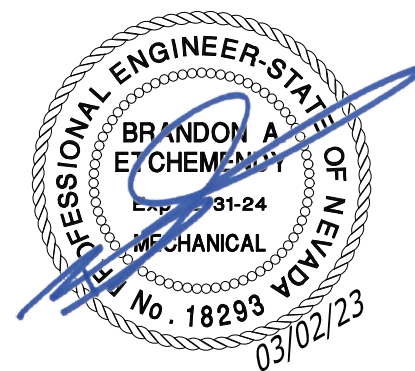


P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

**Revision Schedule**

Revision Number	Revision Date

Carson City School District

CHS - Bus Barn TI

**MECHANICAL SCHEDULES, NOTES & DETAILS**

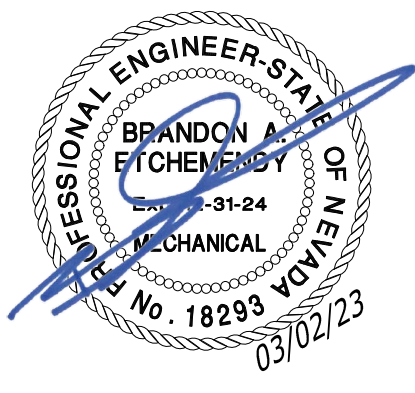
Project number	22080
Date	03-02-23
Drawn by	bae
Checked by	bae

**M001**

Scale As indicated



ETCHENMEY ENGINEERING  
 1111 N. SALIMAN RD.  
 CARSON CITY, NEVADA 89701  
 P. 775-720-4051 E. 775-720-4052  
 BRUCE@ETCHENMEY-NEV.COM



**COMcheck Software Version 4.1.5.5  
Mechanical Compliance Certificate**

**Project Information**  
Energy Code: 2018 IECC  
Project Title: Carson City School District Bus Barn T1  
Location: Reno, Nevada  
Climate Zone: 5b  
Project Type: Addition  
Construction Site: 1311 N Sallman Rd  
Owner/Agent: Carson City, NV 89701  
Designer/Contractor: John Copoulos  
JP Copoulos Architect  
PO Box 2517  
Reno, NV 89702  
775-720-4051  
info@jpcarchitect.com

**Mechanical Systems List**  
Quantity: 1  
System Type & Description: HVAC System 1 (Single Zone)  
Heating: 1 each - Duct Furnace, Gas, Capacity = 104 MBtu/h  
Proposed Efficiency = 81.00% Ee, Required Efficiency = 80.00 % Ee  
Fan System: FAN SYSTEM 1 (Bus Barn Addition - Compliance (Motor nameplate HP method) - Passes  
Fans: FAN 1 Supply, Constant Volume, 1000 CFM, 0.8 motor nameplate hp, 0.0 fan efficiency grade

**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 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title	Signature	Date

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 1 of 10

**COMcheck Software Version 4.1.5.5  
Inspection Checklist**  
Energy Code: 2018 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 (M92)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standards are claimed. Load calculations per acceptable engineering standards and handbooks.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 (M93)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 2 of 10

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2 (F09)	Snow/melt system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. Future connection to controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.12.3 (F16)	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 3 of 10

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5 (F14)	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 (F17)	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 (F18)	Demand recirculation water systems have controls that start the pump upon receiving a signal from the appliance and limits the temperature of the water entering the cold-water piping to 124°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 4 of 10

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 (ME141)	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.4 (ME142)	Motors for fans that are not less than 1/2 hp and less than 1 hp are electrically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.5 (ME143)	Each DX cooling system > 45 kbtu and chiller water-responsive 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.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.12.1 (ME17)	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.3 (ME55)	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.2 (ME56)	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.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.1 (ME59)	Demand control ventilation provided for spaces > 500 ft <sup>2</sup> and > 25 people/2000 ft <sup>2</sup> occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow > 3.00 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.2 (ME115)	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% of rated design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.6 (ME141)	HVAC systems serving guestrooms in Group R-1 buildings with > 30 guestrooms. Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.4 (ME15)	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.5 (ME116)	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and safety hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 5 of 10

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.11.1 (ME67)	HVAC ducts and plenums insulated in accordance with C403.11.1 and C403.11.2, verification may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1 (ME63)	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 40°F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 40°F and cooling setpoint >= 60°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406.2.2 (ME53)	Air outlets and zone terminal devices have means for air balancing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5 (ME12)	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers that are located in a condensing unit, have fan-powered systems that comply with Section C403.5.1 and refrigeration compressor systems that comply with C403.5.2.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 6 of 10

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 (EL15)	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.7 (EL17)	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 rating shall be provided by motor manufacturer (where certification programs do not exist).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.8.2 (EL28)	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.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.9 (EL29)	Total voltage drop across the combination of feeders and branch circuits <= 5%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 7 of 10

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C403.2 (F10)	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.2 (F17)	HVAC systems and equipment capacity does not exceed calculated loads.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4 (F17)	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1 (F138)	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4 (F120)	Temperature controls have setback/override restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4 (F140)	Each zone equipped with setback controls using automatic time clock or programmable control system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4 (F140)	Automatic Controls: Setback to 55°F (heat) and 65°F (cool). 7-day clock, 2-hour occupant override, 10-hour backup.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4 (F141)	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.1.1 (F157)	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturer's information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.1 (F128)	Commissioning plan developed by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3 (F131)	HVAC equipment has been tested to ensure proper operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 8 of 10

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.3 (F110)	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.4 (F129)	Preliminary commissioning report completed and certified by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5 (F17)	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5 (F143)	An air and/or hydronic system balancing report is provided for HVAC systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5 (F130)	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

**Additional Comments/Assumptions:**

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

Project Title: Carson City School District Bus Barn T1 Report date: 03/02/23  
Data Filename: Z:\22000\22080 CCSD Bus Barn\EC\CCSD Bus Barn EC.cck Page 9 of 10

Revision Schedule	
Revision Number	Revision Date

**Carson City School District**  
**CHS - Bus Barn T1**

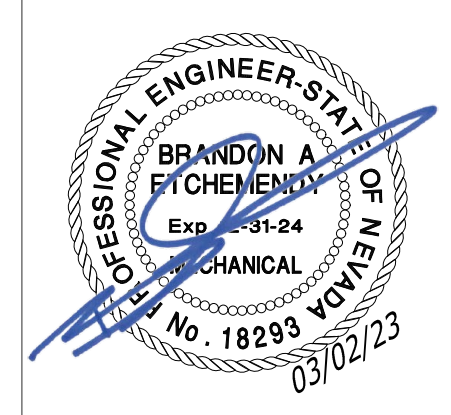
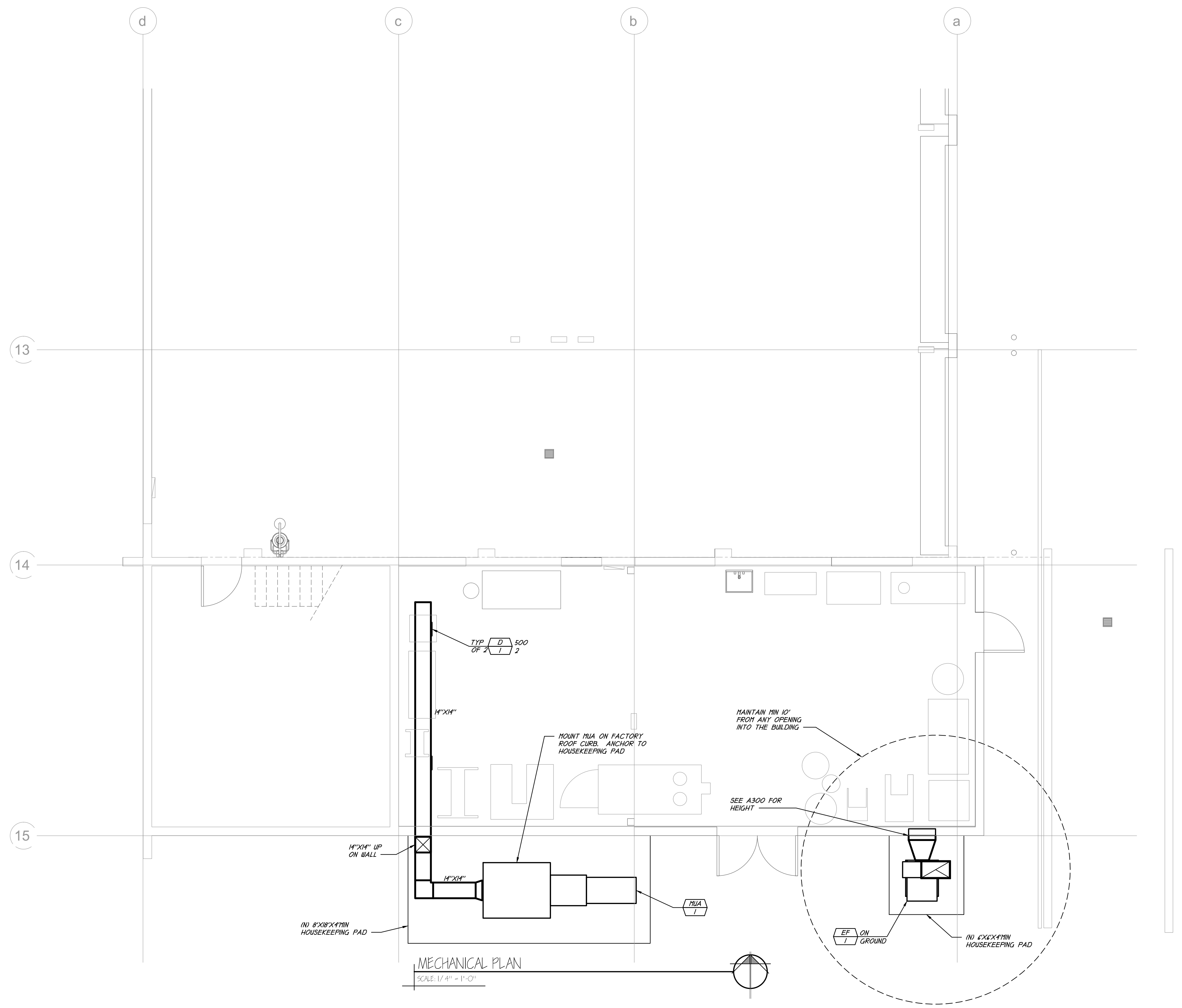
**MECHANICAL SCHEDULES, NOTES & DETAILS**

Project number	22080
Date	03-02-23
Drawn by	bae
Checked by	bae

**M002**  
Scale As Indicated



DESIGN: JPC, ARCHITECT  
P.O. BOX 2517  
RENO, NV 89702  
TEL: 775-720-4051  
WWW.JPCARCHITECT.COM



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule	
Revision Number	Revision Date

**Carson City  
School District**

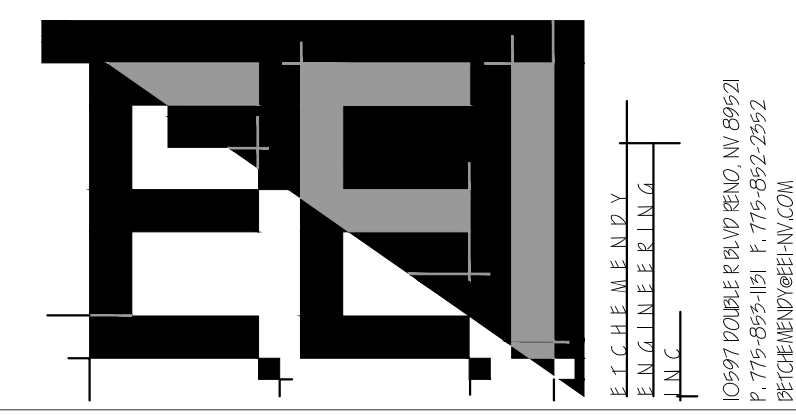
**CHS - Bus  
Barn TI**

**MECHANICAL  
PLAN**

Project number	22080
Date	03-02-23
Drawn by	bae
Checked by	bae

**M201**

Scale As indicated



**GENERAL NOTES:**

STANDARDS AND CODES: LATEST EDITION OF THE UNIFORM PLUMBING CODE (UPC), AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING WORK SHOWN OR SPECIFIED WHICH MAY EXCEED THE REQUIREMENTS OF SUCH ORDINANCES, LAWS, REGULATIONS AND CODES.

COMPLETE INSTALLATION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, ACCESSORIES, ETC., NECESSARY TO ACCOMPLISH A COMPLETE PLUMBING SYSTEM IN ACCORDANCE WITH THE PLANS TOGETHER WITH THE SPECIFICATIONS.

PERMITS: OBTAIN AND PAY FOR ALL BUILDING AND WORKING PERMITS AND INSPECTION FEES REQUIRED FOR THIS PROJECT.

DRAWINGS: DATA PRESENTED ON THESE DRAWINGS SHALL BE FIELD VERIFIED SINCE ALL DIMENSIONS, LOCATIONS, AND LEVELS ARE GOVERNED BY ACTUAL FIELD CONDITIONS. REVIEW ALL ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL AND SPECIALTY SYSTEMS DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS ON CONDITIONS SHOWN THEREON. DO NOT SCALE PLUMBING PLANS FOR FIXTURE, PIPING, APPLIANCE ETC. LOCATIONS. USE CONFIGURED DIMENSIONS IF GIVEN OR CHECK ARCHITECTURAL DRAWINGS.

COPYRIGHT: THESE PLANS, SPECIFICATIONS AND ALL RELATED ADDENDA AND DOCUMENTS CONSTITUTE COPYRIGHT MATERIALS OF ETCEHENDY ENGINEERING INC. ALL RIGHTS CONFERRED BY THE COPYRIGHT AND SIMILAR LAWS ARE RESERVED TO ETCEHENDY ENGINEERING INC. THESE MATERIALS SHALL REMAIN THE SOLE PROPERTY OF ETCEHENDY ENGINEERING INC. AND MAY NOT BE REPRODUCED, DISTRIBUTED TO OTHERS OR USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN CONSENT OF ETCEHENDY ENGINEERING INC.

LOCATIONS: INDICATED LOCATIONS OF ALL FIXTURES, PIPING, EQUIPMENT ETC. ARE SUBJECT TO CHANGE. SHIFT/RELOCATE/RECONFIGURE ANY FIXTURE, PIPE, EQUIPMENT OR CONNECTION POINT UP TO 10' AS DIRECTED BY ENGINEER. AT NO ADDED COST.

RECORD DRAWINGS: CONTRACTOR SHALL PROVIDE, PRIOR TO FINAL ACCEPTANCE AND OBSERVATION, ONE SET OF REVISED RECORD PLUMBING CONSTRUCTION DOCUMENTS ON REPRODUCIBLE MEDIUM, INDICATING THE FOLLOWING ADDITIONAL INFORMATION:

RECORD NOTATIONS SHALL BE CLEARLY DRAWN AT A DRAFTING APPEARANCE EQUAL TO THE ORIGINAL DRAWINGS. CONTRACTOR SHALL ALSO PROVIDE ALL OPERATING AND MAINTENANCE MANUALS PRIOR TO FINAL PAYMENT.

EXAMINATION OF SITE AND EXISTING CONDITIONS: BEFORE SUBMITTING A PROPOSAL, CONTRACTOR SHALL EXAMINE THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR HIS LACK OF KNOWLEDGE OF ANY SITE CONDITIONS WHICH MAY AFFECT HIS WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING A PROPOSAL.

EXISTING CONDITIONS: ALL (E) SIZES AND LOCATIONS ARE APPROXIMATIONS AND ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR COMMENCEMENT OF ANY WORK. NO ADDITIONAL FEES WILL BE ALLOWED DUE TO LACK OF FIELD VERIFICATION.

WATER HEATING TESTING: THE WATER HEATING SYSTEM SHALL BE TESTED AND ADJUSTED TO MAINTAIN A DELIVERY WATER TEMPERATURE AS INDICATED ON THE WATER HEATER PIPING DIAGRAM FOR ALL OPERATING CONDITIONS.

**PLUMBING SCHEDULE**

SYMBOL	DESCRIPTION	MODEL	TRIM	FLOWRATE	CONNECTIONS				ACCESSORIES
					SS	V	CW	HW	
	UTILITY SINK	FLORESTONE MODEL FM	T15 BRASS B-122 FAUCET		2	1-1/2	1/2	1/2	

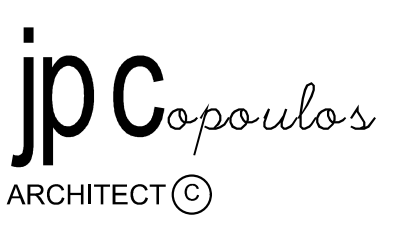
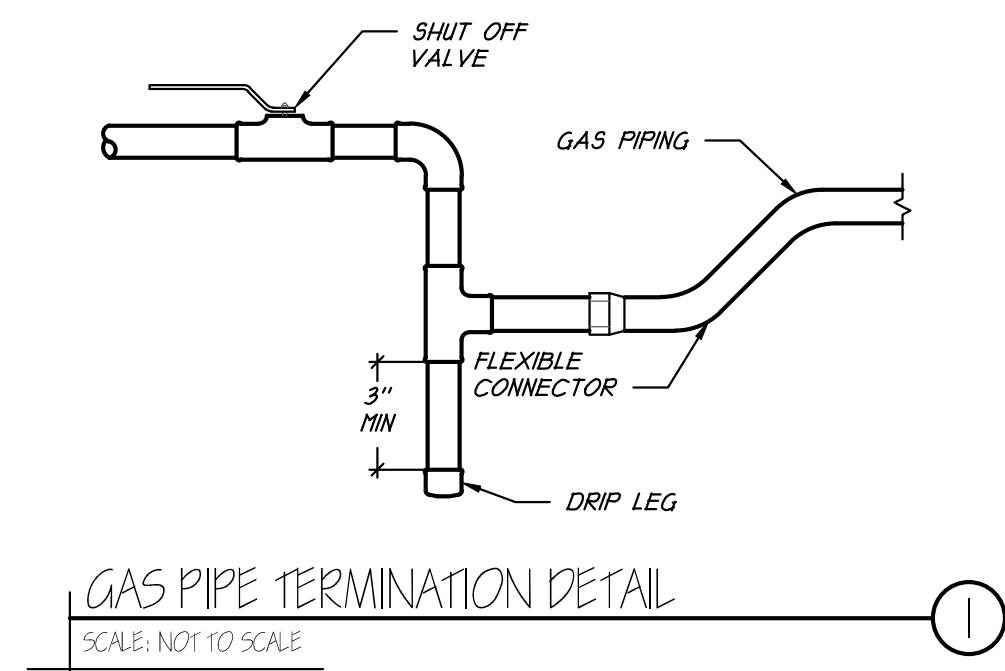
NOTES:  
 1. ALL FIXTURES, EQUIPMENT, PIPING AND MATERIALS SHALL BE LISTED.  
 2. ALL PLUMBING FIXTURES SHALL MEET THE REQUIREMENTS SPECIFIED IN THE PLUMBING CODE.  
 3. PUBLIC LAVATORIES SHALL HAVE CONTROLS TO LIMIT THE WATER TEMPERATURE TO 100°F MAXIMUM.  
 4. ALL FAUCETS SERVICING TRANSIENT PUBLIC SHALL BE SELF-CLOSING METERING FAUCETS PER SECTION 401.4 OF THE UPC

**WATER HEATER SCHEDULE**

SYMBOL	DESCRIPTION	MODEL	STORAGE	TEMP RISE	CONNECTIONS		WEIGHT	ELECTRICAL	ACCESSORIES
					CW	HW			
	ELECTRIC WALL MOUNT INSTANTANEOUS WATER HEATER	EEMAX MODEL EX8208	- GALLONS	15 GPH @ 38°F RISE	1/2	1/2	10	208V, 10,830W WATTS	-

**PLUMBING LEGEND**

LINETYPE	ABBREVIATION	INTENT
	SS	SANITARY WASTE PIPING
	SOI	SAND OIL INTERCEPTOR PIPING
	V	VENT PIPING
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HW/R	HOT WATER RETURN PIPING
	G	GAS PIPING
	C	CONDENSATE PIPING
	UP	PIPE UP
	DOWN	PIPE DOWN
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
	VTR	VENT THRU ROOF
		BALANCING VALVE
		BALL VALVE
	(N)	NEW
	(E)	EXISTING
	AFF	ABOVE FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	BFF	BELOW FINISHED FLOOR
	BFG	BELOW FINISHED GRADE
	MIN	MINIMUM
	TYP	TYPICAL
	GPF	GALLONS PER FLUSH
	GPH	GALLONS PER HOUR
	GPM	GALLON PER MINUTE
	FCO	FLOOR CLEANOUT
	COTG	CLEANOUT TO GRADE
	WCO	WALL CLEAN OUT
	TDL	TOTAL DEVELOPED LENGTH

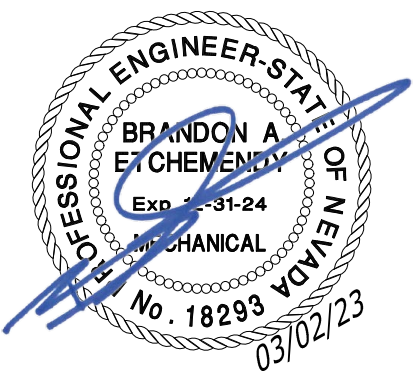


P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Salliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

**Revision Schedule**

Revision Number	Revision Date

Carson City School District

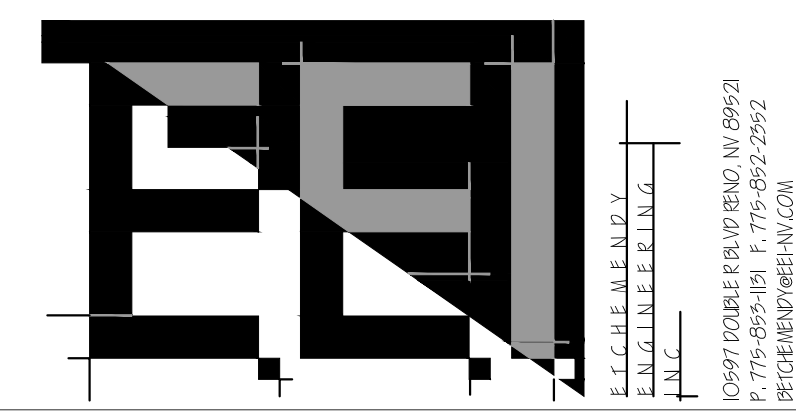
CHS - Bus Barn TI

**PLUMBING SCHEDULES, NOTES & DETAILS**

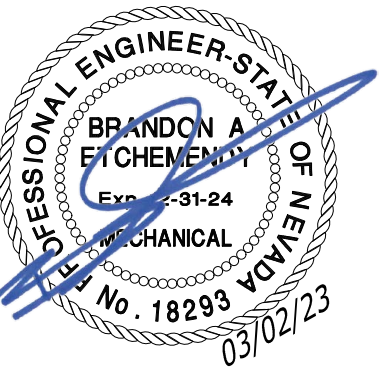
Project number	22080
Date	03-02-23
Drawn by	bae
Checked by	bae

**P001**

Scale As indicated

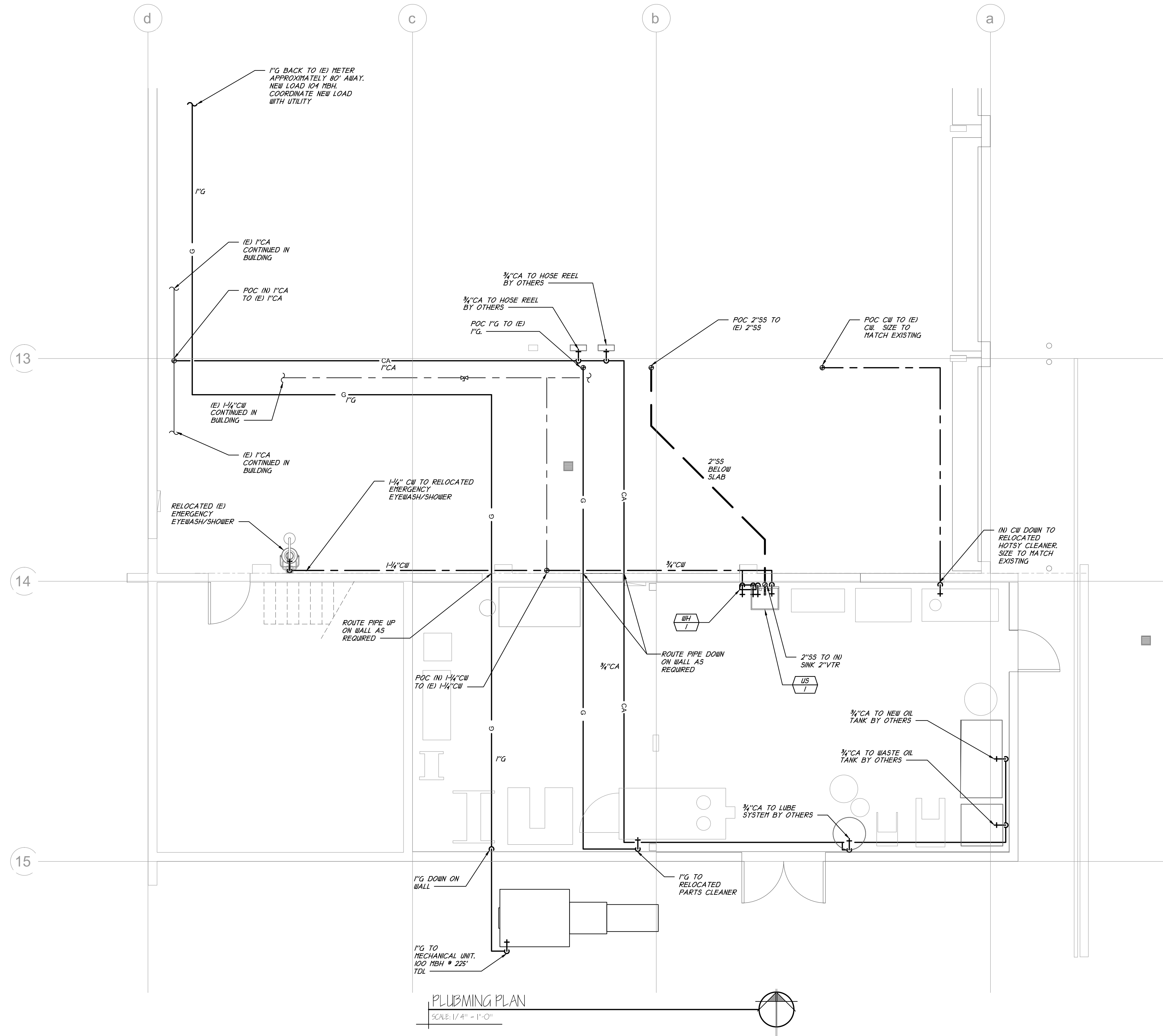






Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Sallman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64



**PLUMBING PLAN**  
SCALE: 1/4" = 1'-0"

Revision Schedule

Revision Number	Revision Date

Carson City  
School District

CHS - Bus  
Barn TI

PLUMBING  
PLAN

Project number	22080
Date	03-02-23
Drawn by	bae
Checked by	bae

**P201**

Scale As Indicated



ELECTRICAL SYMBOLS LIST <sup>1,2,3</sup>			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE - DECORA STYLE +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		DATA/TELECOM BACK-BOX AND CONDUIT SINGLE-GANG BOX WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE
	DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		SAFETY DISCONNECT SWITCH FRAME AMPACITY/FUSE AMPACITY/POLE QUANTITY, VOLTAGE CLASS, ENCLOSURE RATING AS NOTED
	DUPLEX RECEPTACLE - DECORA STYLE WITH TWO INTEGRAL USB CHARTER PORTS +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		CEILING MOUNTED SMOKE AND CARBON-MONOXIDE DETECTOR 120 VOLT WITH BATTERY BACKING
	DUPLEX RECEPTACLE - DECORA STYLE WITH TAMPER RESISTANT PROTECTION +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		FIRE-SMOKE DAMPER (PROVIDED BY OTHERS) 4" SQUARE BOX WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE
	DUPLEX RECEPTACLE WITH INTEGRAL GFI PROTECTION AND EXTRA-DUTY WEATHERPROOF IN-USE HOOD +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		LIGHTING TOGGLE SWITCH - DECORA STYLE +44" AFF (CENTER OF BOX) UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE - DECORA STYLE +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		LIGHTING DIMMING SWITCH +44" AFF (CENTER OF BOX) UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		LIGHTING TOGGLE SWITCH WITH INTEGRAL OCCUPANT SENSOR - DECORA STYLE +44" AFF (CENTER OF BOX) UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE - DECORA STYLE WITH TWO INTEGRAL USB CHARTER PORTS +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		LIGHTING SWITCH - THREE WAY CONFIGURATION +44" AFF (CENTER OF BOX) UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE - DECORA STYLE WITH TAMPER RESISTANT PROTECTION +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		LIGHTING SWITCH WITH LOCKING COVER +44" AFF (CENTER OF BOX) UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE WITH INTEGRAL GFI PROTECTION AND EXTRA-DUTY WEATHERPROOF IN-USE HOOD +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		MOTOR RATED TOGGLE SWITCH (SERVICE DISCONNECT FOR MECHANICAL EQUIPMENT)
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		CEILING MOUNTED OCCUPANCY/VACANCY SENSOR
	DOUBLE DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		CEILING MOUNTED DAYLIGHT SENSOR
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE WITH FOUR INTEGRAL USB CHARTER PORTS +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		MECHANICAL EQUIPMENT IDENTIFIER TAG EXAMPLE: AIR CONDITIONER #1
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE WITH TAMPER RESISTANT PROTECTION +15" AFF (BOTTOM OF BOX) UNLESS OTHERWISE NOTED		SHEET NOTE BUBBLE
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		ELECTRICAL EQUIPMENT IDENTIFIER TAG
	DOUBLE DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		ELECTRICAL FEEDER IDENTIFIER TAG
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE WITH FOUR INTEGRAL USB CHARTER PORTS +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		REFERENCE TAG EXAMPLE: DETAIL 'A', SHEET EXXX
	DOUBLE DUPLEX RECEPTACLE - DECORA STYLE WITH TAMPER RESISTANT PROTECTION +48" AFF (TOP OF BOX) UNLESS OTHERWISE NOTED		BRANCH CIRCUIT WIRING 3/4" CONDUIT WITH (2)-#12 Cu + (1)-#12 Cu GROUND UNLESS OTHERWISE NOTED
	JUNCTION BOX - SIZED AS REQUIRED		UNDERGROUND/UNDERFLOOR BRANCH CIRCUIT WIRING 3/4" CONDUIT WITH (2)-#12 Cu + (1)-#12 Cu GROUND UNLESS OTHERWISE NOTED
	SPECIAL CONFIGURATION RECEPTACLE - NEMA CONFIGURATION AS NOTED		LOW VOLTAGE INTERCONNECTION WIRING VERIFY CABLING TYPE UNLESS OTHERWISE NOTED
NOTES:			
1. GROUND-FAULT INTERRUPTING RECEPTACLES SHALL BE "STAND-ALONE" AND SHALL NOT BE CONFIGURED FOR SERIES PROTECTION.			
2. PROVIDE AND INSTALL BACK-BOX AND 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING OR FLOOR SPACE FOR ALL TELEVISION, DATA/COMMUNICATION, INTERNET, ETC. BACK-BOXES FOR FUTURE CABLING AND TERMINATIONS.			
3. PROVIDE AND INSTALL PLASTIC COVERS FOR ALL RECEPTACLES, SWITCHES, DATA AND COMMUNICATIONS BOXES, ETC. VERIFY COLORS WITH ARCHITECT AND OWNER.			
4. PROVIDE FACEPLATES WITH TERMINATION JACKS FOR INTERNAL COMMUNICATION SYSTEMS (TELEVISION, TELEPHONE, INTERNET) PER BRAND STANDARDS.			
5. VERIFY INTERCONNECTION AND CONTROL WIRING TYPE, QUANTITY, TERMINATION, ETC. WITH AUXILIARY SYSTEM CONTRACTOR AND MANUFACTURER'S WIRING DIAGRAMS.			

LIGHTING FIXTURE SCHEDULE										
FIXTURE SYMBOL	FIXTURE TYPE	MANUFACTURER DETAILS		POWER (WATTS)	MOUNTING		LAMP TYPE	DESCRIPTION	NOTES	VOLTAGE
		MAKE	MODEL		HEIGHT	CONFIG.				
	A8	ACUITY LITHONIA	CLX L96-10000LM-SEF-WDL-MVOLT-GZ10-40K-80CRI	64	CEILING	SURFACE	INTEGRAL LED	8' LED STRIP LIGHT		120
	X1	ACUITY LITHONIA	LHQM-LED-G	5	+8'-6"	SURFACE	INTEGRAL LED	EXIT-SIGN/EMERGENCY-LIGHT COMBINATION UNIT		120
	X2	ACUITY LITHONIA	LQM-S-W-G-MVOLT	5	+8'-6"	SURFACE	INTEGRAL LED	EXIT SIGN (LESS EMERGENCY LIGHT HEADS)		120
	X3	ACUITY LITHONIA	ELM6L-UVOLT-LTP	5	+8'-6"	SURFACE	INTEGRAL LED	EMERGENCY LIGHT "BUG-EYE" UNIT		120
	X4	ACUITY LITHONIA	AFF-OEL-XXX-UVOLT-LTP-SDRT-WT-CW	5	+8'-6"	SURFACE	INTEGRAL LED	EXTERIOR EGRESS PATH EMERGENCY LIGHT	COLOR PER ARCHITECT	120
Notes:										
1. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED CONNECTING AND MOUNTING HARDWARE PER MANUFACTURER'S INSTRUCTIONS.										
2. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL UNSWITCHED "STEADY-HOT" CONDUCTOR TO ALL FIXTURES WITH INTEGRAL BATTERIES PER MANUFACTURER'S INSTRUCTIONS.										
3. ALL BATTERY BACKED FIXTURES SHALL OPERATE FOR A MINIMUM OF 90 MINUTES UPON LOSS OF POWER.										
4. COORDINATE WITH ARCHITECT OR OWNER FOR SELECTION OF ALL FINISHES, COLORS, ETC. PROVIDE ALL STANDARD OPTIONS AND ADVISE OF CUSTOM OPTIONS (IF AVAILABLE).										
5. PROVIDE AND INSTALL COMPLETE TAPE LIGHT ASSEMBLY. INCLUDE ALL MOUNTING HARDWARE, JUMPER CABLES, POWER SUPPLIES, ETC. AS REQUIRED.										

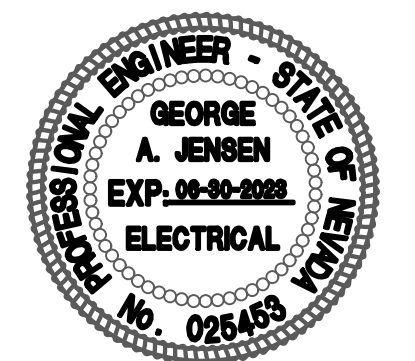
jp copoulos  
ARCHITECT

P.O. Box 2517  
Carson City  
Nevada  
89702

T 775-720-4051

info@jpcarchitect.com

www.jpcarchitect.com



2 MAR 2023

Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89703

Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule	
Revision Number	Revision Date

Carson City  
School District

CHS - Bus  
Barn TI

ELECTRICAL SYMBOLS

Project number RJ155L  
Date 9 JAN 2023  
Drawn by GAJ  
Checked by GAJ

E001

Scale As indicated

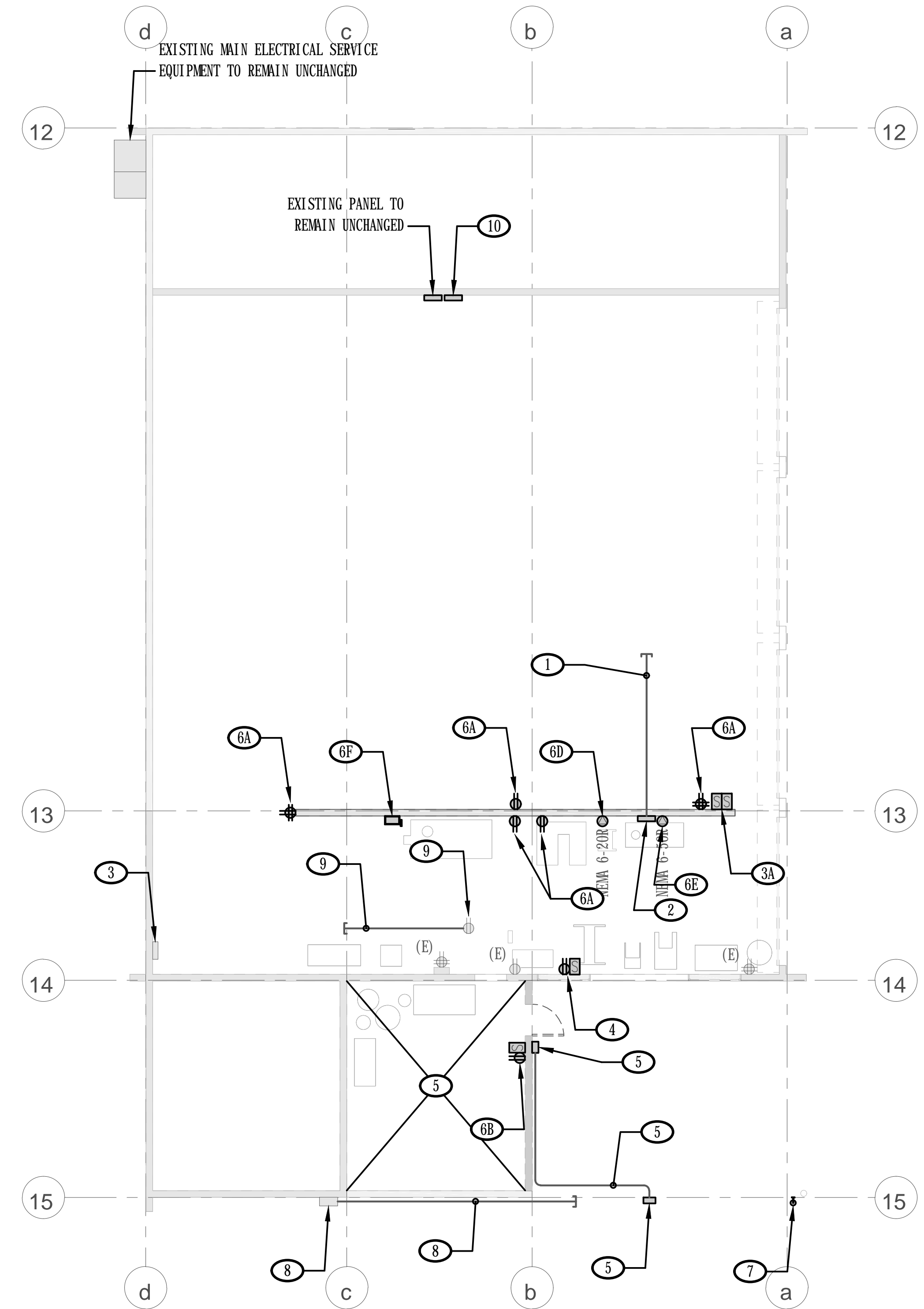
# GENERAL ELECTRICAL SPECIFICATIONS

PART 1.0	GENERAL PROVISIONS	PART 2.0	INCLUSIONS AND EXCLUSIONS (CONTINUED...)	PART 3.0	DRAWINGS, SPECIFICATIONS, PROCEDURES (CONTINUED...)	PART 4.0	ELECTRICAL COMPONENTS, METHODS, AND MATERIALS (CONTINUED...)	PART 5.0	PENETRATIONS																																				
1.1	<p>ELECTRICAL DESIGN DOCUMENT SET</p> <p>THE ELECTRICAL DESIGN DOCUMENT SET SHALL BE CONSIDERED AS A WHOLE AND THE SCOPE-OF-WORK SHALL BE CONSIDERED TO INCLUDE COMPLETE AND PROFESSIONAL PERFORMANCE OF ALL WORK, AND COMPLIANCE WITH ALL REQUIREMENTS PUT FORTH IN THE FOLLOWING:</p> <ol style="list-style-type: none"> <li>1. THE GENERAL AND SPECIFIC TERMS OF THE ACCEPTED CONTRACT.</li> <li>2. THE COMPLETE "FINAL" ELECTRICAL DRAWING SET.</li> <li>3. ALL ELECTRICAL SPECIFICATIONS AND GENERAL REQUIREMENTS.</li> <li>4. ALL FORMAL RESPONSES BY THIS ENGINEER TO REQUESTS-FOR- INFORMATION.</li> <li>5. ALL FORMAL REVIEWS BY THIS ENGINEER OF EQUIPMENT SUBMITTALS.</li> <li>6. ALL RELEVANT CODES AND ORDINANCES.</li> </ol> <p>ANY RULINGS OR INTERPRETATIONS BY GOVERNING AUTHORITIES AND AGENCIES SHALL BE CONSIDERED A PART OF THIS DIVISION INsofar AS THOSE RULINGS AND INTERPRETATIONS ARE COMMONLY IMPOSED UPON THE TRADE.</p> <p>THE ELECTRICAL DESIGN DOCUMENT SET SHALL BE CONSIDERED THE INTELLECTUAL PROPERTY OF JENSEN ENGINEERING, INC. (ALL RIGHTS RESERVED) AND SHALL NOT BE USED FOR ANY APPLICATION BEYOND THE PROJECT FOR WHICH THEY ARE PREPARED.</p>	2.4	<p>TRADE COORDINATION</p> <p>ELECTRICAL CONTRACTOR SHALL COORDINATE THE ELECTRICAL INSTALLATION WORK WITH THE OWNER AND ALL OTHER TRADE CONTRACTORS AS REQUIRED. REFER TO PLANS AND SPECIFICATIONS OF ALL OTHER TRADES. ELECTRICAL CONTRACTOR SHALL CONSULT WITH OTHER CONTRACTORS AND THE OWNER AS REQUIRED TO ENSURE TIMELY PERFORMANCE OF ELECTRICAL WORK FOR OTHER TRADES AS REQUIRED. ALL INTERCONNECTION WIRING, DEDICATED CIRCUITS, ETC. SHALL BE CONSIDERED PART OF THE SCOPE-OF-WORK.</p> <p>STANDARD TESTING</p> <p>ELECTRICAL CONTRACTOR SHALL PERFORM 1000 VOLT DC CONDUCTOR INSULATION TEST PER TEST EQUIPMENT MANUFACTURER'S RECOMMENDED TESTING PROCEDURES. TEST SHALL BE CARRIED OUT WITH CONDUCTORS INSTALLED IN-PLACE AND DISCONNECTED AT BOTH ENDS. MINIMUM INSULATION RESISTANCE SHALL BE 100 MEGAohms AFTER 30 SECONDS. ELECTRICAL CONTRACTOR SHALL CORRECT ANY DEFICIENCIES PRIOR TO ENERGIZING.</p> <p>ELECTRICAL CONTRACTOR SHALL PERFORM THREE-POINT FALL-OF-POTENTIAL GROUNDING ELECTRODE RESISTANCE TEST PER TEST EQUIPMENT MANUFACTURER'S RECOMMENDED TESTING PROCEDURES. MAXIMUM GROUND RESISTANCE VALUE(S) SHALL BE 5 OHMS. WHERE GROUND RESISTANCE EXCEEDS 5 OHMS, PROVIDE AND INSTALL AN ADDITIONAL COPPER-CLAD GROUND ROD.</p> <p>ELECTRICAL CONTRACTOR SHALL PERFORM POLARITY TESTS FOR ALL UTILIZATION EQUIPMENT, OUTLETS/RECEPTACLES, ETC.</p> <p>ELECTRICAL CONTRACTOR SHALL CHECK ALL BUS AND LUG CONNECTIONS FOR PROPER CONTACT PRESSURE USING CALIBRATED TORQUE WRENCH OR SCREW-DRIVER ACCORDING TO MANUFACTURER'S TIGHTENING RECOMMENDATIONS.</p> <p>TESTED ELEMENTS WHICH FAIL TO MEET THE LISTED REQUIREMENTS SHALL BE CONSIDERED DEFECTIVE AND SHALL BE PROMPTLY CORRECTED OR REMOVED FROM THE SITE.</p>	3.6	<p>DATA-SHEET AND SHOP-DRAWING SUBMITTALS</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE MANUFACTURER'S DATA-SHEETS AND SHOP-DRAWING SUBMITTALS FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT (SWITCHBOARDS, TRANSFORMERS, PANELBOARDS/LOADCENTERS, DISCONNECT SWITCHES, AND SO FORTH), WIRING DEVICES, LIGHTING FIXTURES AND LIGHTING CONTROL ELEMENTS. SUBMITTALS FOR GENERAL ELECTRICAL MATERIALS (CONDUIT, CONNECTORS, FITTINGS, SPLICE KITS, WIRE-CONNECTORS, CONDUCTORS, ETC.) ARE NOT REQUIRED. SUBMITTALS FOR UTILITY METERING EQUIPMENT SHALL BE PROVIDED TO THE SERVING UTILITY FOR REVIEW AND APPROVAL.</p> <p>SUBMITTALS SHALL BE PROVIDED TO THE OWNER AND THIS ENGINEER IN ELECTRONIC FORMAT AND HARD-COPY FORMAT UPON REQUEST. ELECTRICAL CONTRACTOR SHALL OBTAIN ENGINEER'S APPROVED WRITTEN REVIEW OF AND RESPONSE TO DATA-SHEET AND SHOP-DRAWING SUBMITTALS PRIOR TO PURCHASE OR USE OF SUBMITTED EQUIPMENT.</p> <p>SUBSTITUTION SUBMITTALS MUST BE PROVIDED NO FEWER THAN TEN WORKING DAYS PRIOR TO BID ACCEPTANCE. ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED ESTIMATES TO THE OWNER REFLECTING ANY APPROVED SUBSTITUTIONS IMMEDIATELY.</p> <p>ELECTRICAL CONTRACTOR SHALL PROCEED TO ORDER ELECTRICAL EQUIPMENT AND/OR RELEASE ELECTRICAL MATERIALS IMMEDIATELY UPON RECEIPT OF APPROVED SUBMITTAL REVIEW. NO SUBSTITUTIONS OR ALTERNATES WILL BE ACCEPTED AS A RESULT OF UNTIMELY WORK.</p>	4.8	<p>CONDUIT SYSTEMS</p> <p>CONDUIT ROUTES DEPICTED ON THE ELECTRICAL DESIGN DOCUMENTS SHALL BE CONSIDERED AS DIAGRAMS. ACTUAL ROUTES SHALL BE DETERMINED BY THE ELECTRICAL CONTRACTOR AT THE TIME OF INSTALLATION. ELECTRICAL CONTRACTOR SHALL NOT USE DIAGRAMS DEPICTED FOR ESTIMATION OR PRICING.</p> <p>ALL CONDUIT SYSTEMS SHALL BE SELECTED FOR USE PER NEC/CEC. NO CONDUIT TYPE SHALL BE APPLIED WHERE NOT PERMITTED FOR USE BY CODE, AND LOCAL ORDINANCE. PROVIDE AND INSTALL GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL NON-METALLIC CONDUIT SYSTEMS.</p> <p>RIGID METALLIC CONDUIT (RMC) AND INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE PERMITTED FOR ALL LOCATIONS AND SHALL BE USED WHERE CONDUIT IS SUBJECT TO PHYSICAL DAMAGE (EXPOSED ON ROOF TOPS, CORROSIVE ATMOSPHERES, RISERS FROM GRADE TO EQUIPMENT, DRIVE-AISLES, ETC.). CONDUITS SHALL BE CONCEALED WHEREVER POSSIBLE.</p> <p>FOR UNDERGROUND CONDUIT SYSTEMS: RIGID NON-METALLIC (PVC SCHEDULE 40) CONDUIT, WITH RIGID STEEL ELBOWS. UNDERGROUND ELECTRICAL CONDUITS SHALL BE BURIED A MINIMUM OF 24" BELOW FINISHED GRADE, OR PER UTILITY WORK ORDER DRAWINGS.</p> <p>ELECTRICAL METALLIC TUBING (EMT) SHALL BE PERMITTED FOR USE IN INTERIOR AND EXTERIOR LOCATIONS WHERE NOT SUBJECT TO PHYSICAL DAMAGE. CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE. EMT SHALL NOT BE USED WHERE SUBJECT TO PHYSICAL DAMAGE. ALL FITTINGS SHALL BE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS.</p> <p>FLEXIBLE METALLIC CONDUIT (FMC) SHALL BE USED ONLY IN DRY CONCEALED LOCATIONS INCLUDING MILLWORK/CASEWORK AND AS ALLOWED BY AUTHORITY HAVING JURISDICTION. FMC CABLES SHALL NOT OPERATE MORE THAN ONE CIRCUIT. FMC SHALL BE PERMITTED FOR USE FOR SHORT CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT IN DRY, INDOOR LOCATIONS.</p> <p>LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC) SHALL BE USED FOR SHORT CONNECTIONS (3' MAX) TO MOTORS AND VIBRATING EQUIPMENT IN WET OR OUTDOOR LOCATIONS.</p> <p>LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT (LFNC) AND ELECTRICAL NON-METALLIC TUBING (ENT) ARE NOT PERMITTED FOR USE.</p> <p>NON-METALLIC JACKED CABLING ("ROMEX") SHALL BE SUITABLE FOR USE IF ALLOWED BY AUTHORITY HAVING JURISDICTION FOR RESIDENTIAL INTERIOR CONCEALED LOCATIONS.</p>	5.1	<p>PENETRATIONS</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SEALING FOR ALL CONDUIT PENETRATIONS. PROVIDE AND INSTALL UL LISTED ASSEMBLIES AND EMPLOY ARCHITECTURALLY APPROVED METHODS FOR WATER-TIGHT SEAL AT EXTERIOR WALLS AND FIRE-RATED SEAL AT FIRE-RATED WALLS. VERIFY FIRE-RATING PRIOR TO INSTALLATION. COORDINATE PENETRATION LOCATIONS WITH ARCHITECT AND GENERAL CONTRACTOR AS REQUIRED.</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIRE-RATED WALL ASSEMBLIES WHERE REQUIRED. ONE, TWO, THREE, AND FOUR HOUR FIRE-RATED WALL ASSEMBLIES SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:</p> <ol style="list-style-type: none"> <li>A. STUD WALL FRAMING MAY CONSIST OF WOOD STUDS (FOR A MAXIMUM OF TWO HOUR FIRE-RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS SHALL CONSIST OF NOMINAL 2"x4" LUMBER SPACED 16" ON-CENTER. END PLATES AND CROSS-BRACES SHALL BE NOMINAL 2"x4" LUMBER. STEEL STUDS TO BE MINIMUM 3-5/8"x1-3/8" CHANNELS SPACES 24" ON-CENTER MAX.</li> <li>B. GYPSUM BOARD SHALL BE NOMINAL 1/2" OR 5/8" THICK, 4' WIDE WITH SQUARE OR TAPERED EDGES. WALLBOARD TYPE, THICKNESS, QUANTITY OF LAYERS, FASTENER TYPE, AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAMETER OF OPENING IS 28".</li> </ol> <p>PENETRATIONS AT FIRE-RATED WALLS SHALL CONSIST OF ONE METALLIC PIPE, CONDUIT, OR TUBE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRE STOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT, OR TUBING AND PERIPHERY OF OPENING SHALL BE A MINIMUM OF 0" (POINT OF CONTACT) TO A MAXIMUM OF 2". PIPE, CONDUIT, OR TUBE SHALL BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY.</p> <p>THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS, OR TUBES MAY BE USED.</p> <ol style="list-style-type: none"> <li>A. STEEL PIPE: NOMINAL 24" DIAMETER (OR SMALLER) SCHEDULE 10 OR HEAVIER.</li> <li>B. CAST IRON SOIL PIPE: NOMINAL 24" DIAMETER (OR SMALLER) SERVICE WEIGHT OR HEAVIER.</li> <li>C. DUCTILE IRON PRESSURE PIPE: NOMINAL 12" DIAMETER (OR SMALLER) CLASS 50.</li> <li>D. CONDUIT: NOMINAL 6" DIAMETER (OR SMALLER) STEEL CONDUIT OR NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.</li> <li>E. COPPER TUBING: NOMINAL 6" DIAMETER (OR SMALLER) TYPE 'L' OR HEAVIER.</li> <li>F. COPPER PIPE: NOMINAL 6" DIAMETER (OR SMALLER) REGULAR OR HEAVIER.</li> </ol> <p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.2	<p>CODES AND STANDARDS FOR WORK</p> <p>ALL ELECTRICAL WORK SHALL BE PERFORMED BY LICENSED ELECTRICIANS AND TECHNICIANS. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE FOLLOWING CODES AND STANDARDS:</p> <ul style="list-style-type: none"> <li>NATIONAL ELECTRICAL CODE (NEC)</li> <li>INTERNATIONAL ENERGY CONSERVATION CODE (IECC)</li> <li>NATIONAL FIRE PROTECTION AGENCY (NFPA)</li> <li>INTERNATIONAL BUILDING CODE (IBC)</li> <li>AMERICANS WITH DISABILITIES ACT (ADA)</li> <li>OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)</li> </ul> <p>LISTED CODES AND STANDARDS SHALL BE CONSIDERED THE MINIMUM STANDARD FOR ELECTRICAL WORK. ELECTRICAL CONTRACTOR SHALL NOT OMIT ANY ITEMS, EQUIPMENT, COMPONENTS, ETC. DETAILED WITHIN THE ELECTRICAL DESIGN DOCUMENT SET WHICH MAY EXCEED THE LISTED CODES AND STANDARDS.</p> <p>NO PORTION OF THE ELECTRICAL DESIGN DOCUMENTS SHALL BE INTERPRETED TO DETAIL OR PERMIT WORK WHICH FAILS TO CONFIRM WITH THE LISTED CODES AND STANDARDS. WHERE CONFLICTS OR DEFICIENCIES OCCUR, THE STRICTER AND HIGHER CODES AND STANDARDS SHALL GOVERN.</p> <p>ADDITIONALLY, ALL ELECTRICAL WORK SHALL BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES INCLUDING THE LOCAL FIRE PREVENTION JURISDICTION AND THE LOCAL UTILITY COMPANIES.</p>	2.5	<p>FINALIZING</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PERMANENT PHENOLIC NAMEPLATES (BLACK FIELD, WHITE LETTERS) FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT INCLUDING SWITCHGEAR, PANELBOARDS, TRANSFORMERS, CONTROL PANELS, LOAD CENTERS, ETC. PROVIDE NEAT, CLEAR, PRINTED CIRCUIT DIRECTORIES FOR ALL ALL PANELBOARDS AND LOAD CENTERS.</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE A NEAT AND COMPLETE SET OF "AS-BUILT" RECORD DRAWINGS TO THE OWNER WITHIN TEN DAYS OF FINAL ACCEPTANCE OF WORK. RECORD DRAWINGS SHALL INDICATE ANY DEVIATIONS FROM THE ELECTRICAL DESIGN DOCUMENTS, LOCATIONS OF CONDUIT STUBS AND CONCEALED ITEMS BASED ON FIELD DIMENSIONS. RECORD DRAWINGS SHALL BE OF QUALITY EQUAL TO OR HIGHER THAN THE ELECTRICAL DESIGN DOCUMENTS INCLUDING SIZE, CLARITY, MEDIUM TYPE, ETC.).</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE ALL OPERATING AND MAINTENANCE MANUALS FOR EQUIPMENT USED TO THE OWNER UPON PROJECT COMPLETION.</p> <p>UPON OWNERS ACCEPTANCE OF OPERATING AND MAINTENANCE MANUALS, ELECTRICAL CONTRACTOR SHALL SCHEDULE A FINAL PROJECT WALK-THROUGH WITH THIS ENGINEER. ANY ITEMS NOTED AS DEFICIENT SHALL BE CORRECTED IMMEDIATELY.</p>	3.7	<p>WARRANTY AND GUARANTEE</p> <p>ELECTRICAL CONTRACTOR SHALL GUARANTEE THE ELECTRICAL WORK PERFORMED TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE-YEAR FROM DATE OF FINAL ACCEPTANCE. LAMPS FOR LIGHTING FIXTURES ARE EXEMPT FROM THIS REQUIREMENT, HOWEVER, LAMPS SHALL BE IN NEW AND PERFECT OPERATING CONDITION AT THE TIME OF FINAL ACCEPTANCE.</p> <p>REPAIRS AND REPLACEMENTS FOR DEFECTIVE EQUIPMENT AND/OR MATERIALS AS COVERED BY CONTRACTOR WARRANTY SHALL BE CONSIDERED WITHIN THE SCOPE-OF-WORK AND SHALL BE PERFORMED AT NO ADDITIONAL COST EXCEPT AS SPECIFIED ABOVE.</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE MANUFACTURER'S WARRANTY FOR ALL PRODUCTS AND MATERIALS FOR WHICH SAID WARRANTY IS AVAILABLE AND SHALL PROVIDE ALL RELEVANT DOCUMENTATION TO THE OWNER AT TIME OF FINAL ACCEPTANCE.</p>	4.9	<p>CONDUCTORS</p> <p>ALL CONDUCTORS SHALL BE UL LISTED OR SHALL MEET UL LISTING STANDARDS. CONDUCTORS SHALL BE COPPER (UNLESS OTHERWISE NOTED), SOFT-DRAWING, AND CONCEALED IN CONDUIT. SIZES SHALL BE AMERICAN WIRE GAUGE. CONDUCTORS SIZED #10 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS SIZED #8 AWG AND LARGER SHALL BE STRANDED. MINIMUM WIRE SIZE SHALL BE #12 AWG (UNLESS OTHERWISE NOTED). CONDUCTOR INSULATION SHALL BE 600 VOLT RATED. CONDUCTORS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION WITHOUT SPLICES PER NEC/CEC. WHERE REQUIRED, SPLICES SHALL BE INSTALLED IN BOXES. WIRE/CABLE SHALL BE HANDLED TO AVOID DAMAGE TO CONDUCTOR AND INSULATION. WIRE/CABLE SHALL BE DELIVERED TO SITE IN STANDARD COILS OR REELS WITH SUITABLE PROTECTION FROM WEATHER AND DAMAGE DURING STORAGE, HANDLING, AND INSTALLATION. ELECTRICAL CONTRACTOR SHALL COLOR-CODE CONDUCTORS CONSISTENTLY THROUGHOUT THE PROJECT AS FOLLOWS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>VOLTAGE</th> <th>PHASE A</th> <th>PHASE B</th> <th>PHASE C</th> <th>NEUTRAL</th> <th>GROUND</th> </tr> </thead> <tbody> <tr> <td>208Y/120V</td> <td>BLACK</td> <td>RED</td> <td>BLUE</td> <td>WHITE</td> <td>GREEN</td> </tr> <tr> <td>480Y/277V</td> <td>BROWN</td> <td>ORANGE</td> <td>YELLOW</td> <td>GRAY</td> <td>GREEN</td> </tr> </tbody> </table>	VOLTAGE	PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND	208Y/120V	BLACK	RED	BLUE	WHITE	GREEN	480Y/277V	BROWN	ORANGE	YELLOW	GRAY	GREEN	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0
VOLTAGE	PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND																																								
208Y/120V	BLACK	RED	BLUE	WHITE	GREEN																																								
480Y/277V	BROWN	ORANGE	YELLOW	GRAY	GREEN																																								
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.3	<p>WORK SPECIFIED ELSEWHERE</p> <p>ALL ELECTRICAL WORK PERFORMED, INCLUDING ELECTRICAL WORK PERFORMED AS PART OF OTHER DIVISIONS, SHALL COMPLY WITH THE REQUIREMENTS OF THIS DIVISION.</p>	2.6	<p>FIRE DETECTION AND ANNUNCIATION</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE, TESTED AND TAGGED, AUTOMATIC FIRE DETECTION AND ANNUNCIATION SYSTEM PER THE LOCAL FIRE JURISDICTION. ELECTRICAL CONTRACTOR SHALL VERIFY THE SPECIFIC PROJECT REQUIREMENTS AND SHALL PROVIDE DETAILED PLANS WHICH CLEARLY INDICATE ALL METHODS AND COMPONENTS TO BE USED FOR APPROVAL OF THE FIRE JURISDICTION. THIS WORK SHALL BE PERFORMED UNDER SEPARATE PERMIT SUBMITTAL. SUBMITTALS TO THIS ENGINEER ARE NOT REQUIRED.</p>	4.0	<p>ELECTRICAL COMPONENTS, METHODS, AND MATERIALS</p>	4.10	<p>ELECTRICAL DISTRIBUTION EQUIPMENT</p> <p>ALL ELECTRICAL EQUIPMENT (SWITCHGEAR, PANELBOARDS, CIRCUIT BREAKERS, ETC) SHALL BE OF THE SAME MANUFACTURE. ACCEPTABLE MANUFACTURERS ARE: EATON, GE, SIEMENS, OR SQUARE-D (NO SUBSTITUTES). SERVICE EQUIPMENT SHALL BE FULLY ENCLOSED, FACTORY ASSEMBLED, AND SHALL OPERATE PER SERVING ELECTRICAL UTILITY STANDARDS.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.4	<p>PERFORMANCE OF ELECTRICAL EQUIPMENT AND MATERIALS</p> <p>ALL ELECTRICAL EQUIPMENT AND MATERIALS USED FOR COMPLETION OF THE ELECTRICAL SCOPE OF WORK SHALL BE NEW AND IN NORMAL WORKING ORDER AT TIME OF INSTALLATION. ANY DEFECTIVE MATERIALS SHALL BE IDENTIFIED AND IMMEDIATELY REMOVED FROM THE PROJECT SITE.</p> <p>ALL ELECTRICAL WORK, EQUIPMENT, AND MATERIALS SHALL BE OF THE HIGHEST AVAILABLE QUALITY. APPEARANCE AND FINISH OF WORK SHALL BE HELD TO THE HIGHEST COMMONLY IMPOSED STANDARD.</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE UNDERWRITERS LABORATORY (UL) LISTED EQUIPMENT AND MATERIALS WHEREVER STANDARDS FOR SAID ITEMS HAVE BEEN ESTABLISHED. USE AND INSTALLATION OF UNLISTED EQUIPMENT AND MATERIALS SHALL CONFORM TO LISTED STANDARDS TO THE MAXIMUM POSSIBLE EXTENT.</p>	2.7	<p>FINALIZING</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PERMANENT PHENOLIC NAMEPLATES (BLACK FIELD, WHITE LETTERS) FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT INCLUDING SWITCHGEAR, PANELBOARDS, TRANSFORMERS, CONTROL PANELS, LOAD CENTERS, ETC. PROVIDE NEAT, CLEAR, PRINTED CIRCUIT DIRECTORIES FOR ALL ALL PANELBOARDS AND LOAD CENTERS.</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE A NEAT AND COMPLETE SET OF "AS-BUILT" RECORD DRAWINGS TO THE OWNER WITHIN TEN DAYS OF FINAL ACCEPTANCE OF WORK. RECORD DRAWINGS SHALL INDICATE ANY DEVIATIONS FROM THE ELECTRICAL DESIGN DOCUMENTS, LOCATIONS OF CONDUIT STUBS AND CONCEALED ITEMS BASED ON FIELD DIMENSIONS. RECORD DRAWINGS SHALL BE OF QUALITY EQUAL TO OR HIGHER THAN THE ELECTRICAL DESIGN DOCUMENTS INCLUDING SIZE, CLARITY, MEDIUM TYPE, ETC.).</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE ALL OPERATING AND MAINTENANCE MANUALS FOR EQUIPMENT USED TO THE OWNER UPON PROJECT COMPLETION.</p> <p>UPON OWNERS ACCEPTANCE OF OPERATING AND MAINTENANCE MANUALS, ELECTRICAL CONTRACTOR SHALL SCHEDULE A FINAL PROJECT WALK-THROUGH WITH THIS ENGINEER. ANY ITEMS NOTED AS DEFICIENT SHALL BE CORRECTED IMMEDIATELY.</p>	4.1	<p>VANDAL PROTECTION</p> <p>ALL ELECTRICAL WORK THAT IS ACCESSIBLE TO THE PUBLIC SHALL BE TAMPERPROOF AND VANDAL RESISTANT PER PROJECT REQUIREMENTS. COORDINATE WITH OWNER AND GENERAL CONTRACTOR AS REQUIRED TO VERIFY EXTENTS OF PUBLIC AREA AND REQUIRED LEVEL OF PROTECTION. ALL EQUIPMENT WITH OPERABLE DOORS OR SWITCHES SHALL BE LOCKING TYPE, OR PAD-LOCKING.</p>	4.11	<p>GROUNDING AND BONDING</p> <p>PROVIDE AND INSTALL GROUNDING FOR ALL EQUIPMENT AND SYSTEM NEUTRAL IN ACCORDANCE WITH NEC/CEC ARTICLE 250.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.5	<p>CLEAN WORK</p> <p>ELECTRICAL CONTRACTOR SHALL REGULARLY REMOVE DEBRIS, PACKAGING MATERIALS, ETC. FROM THE PROJECT SITE DURING CONSTRUCTION ACTIVITIES AS REQUIRED TO ENSURE AN ORGANIZED AND SAFE CONSTRUCTION SITE. CLEAN ALL RACEWAYS, FIXTURES, AND OTHER EQUIPMENT PRIOR TO FINAL ACCEPTANCE BY THE OWNER.</p>	3.0	<p>DRAWINGS, SPECIFICATIONS, PROCEDURES</p>	4.2	<p>TERMINATIONS AND SPLICES</p> <p>TWIST-ON WIRE CONNECTORS SHALL BE SCOTCHLOK OR EQUIVALENT FOR WIRE SIZES #14 AWG THROUGH #8 AWG. SPLICES SHALL BE UL LISTED ASSEMBLIES SUITABLE FOR THE ENVIRONMENT.</p> <p>CONDUCTORS SHALL TERMINATE AT UL-LISTED LUGS AND LANDINGS AT ALL UTILIZATION EQUIPMENT.</p>	4.12	<p>SHORT CIRCUIT PROTECTION</p> <p>SHORT CIRCUIT INTERRUPTING VALUES, AS INDICATED ON THESE ELECTRICAL CONSTRUCTION DOCUMENTS, REFER TO BOTH SHORT-CIRCUIT WITHSTAND RATINGS FOR EQUIPMENT, AND SHORT-CIRCUIT INTERRUPTING CAPABILITY FOR CIRCUIT BREAKERS.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.6	<p>SUPPORTS AND FASTENINGS</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED SUPPORT AND HANGING HARDWARE, INCLUDING SEISMIC CONTROL, FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT, LIGHTING FIXTURES, FEEDERS AND BRANCH CIRCUITS, BOXES/BACK-BOXES, AND OTHER EQUIPMENT AS REQUIRED. SUPPORTS AND HANGERS SHALL BE SECURELY ATTACHED TO STRUCTURE USING UL LISTED ASSEMBLIES SUITABLE FOR THE STRUCTURAL ELEMENT. SUPPORTS AND HANGERS SHALL BE LISTED FOR FIVE TIMES THE STATIC LOAD.</p>	3.1	<p>CONTROL OF ACTIVITIES</p> <p>ALL SERVICES RENDERED BY THIS ENGINEER ARE PROFESSIONAL OPINIONS AND RECOMMENDATIONS ONLY. UNDER NO CIRCUMSTANCES IS IT THE INTENT OF THIS ENGINEER TO DIRECTLY CONTROL THE PHYSICAL ACTIVITIES OF THE CONTRACTOR OR THE CONTRACTOR'S EMPLOYEES OR AGENTS.</p>	4.3	<p>BACK-BOXES AND FACE-PLATES</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SINGLE OR MULTI-GANG OUTLET BOXES AS REQUIRED FOR EACH RECEPTACLE, SWITCH, OR OTHER WIRING DEVICE AS INDICATED IN THE ELECTRICAL DESIGN DOCUMENTS.</p> <p>PROVIDE AND INSTALL ONE-PIECE THERMOPLASTIC FACEPLATE COVERS FOR ALL RECEPTACLES, SWITCHES, AND OTHER WIRING DEVICES. FACEPLATE COVERS SHALL BE SELECTED TO MATCH THE ASSOCIATED BACKBOX. VERIFY COLOR AND FINISH OF ALL FACEPLATE COVERS WITH OWNER, ARCHITECT, AND GENERAL CONTRACTOR PRIOR TO PURCHASE.</p>	4.12	<p>SHORT CIRCUIT PROTECTION</p> <p>SHORT CIRCUIT INTERRUPTING VALUES, AS INDICATED ON THESE ELECTRICAL CONSTRUCTION DOCUMENTS, REFER TO BOTH SHORT-CIRCUIT WITHSTAND RATINGS FOR EQUIPMENT, AND SHORT-CIRCUIT INTERRUPTING CAPABILITY FOR CIRCUIT BREAKERS.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
1.7	<p>INSPECTION</p> <p>ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE CONSTRUCTION TEAM AS REQUIRED TO ACCOMMODATE ON-SITE INSPECTIONS AS REQUIRED. ELECTRICAL CONTRACTOR SHALL NOT CONCEAL, BURY, OR CLOSE-IN ANY WORK PERFORMED PRIOR TO INSPECTION AND APPROVAL.</p>	3.2	<p>SITE ASSESSMENT</p> <p>ELECTRICAL CONTRACTOR SHALL INSPECT THE PROJECT SITE AND VERIFY THAT ALL PROPOSED ELECTRICAL EQUIPMENT IS SUITABLE FOR USE IN THE PROPOSED ENVIRONMENT AND THAT ADEQUATE SPACE FOR THE EQUIPMENT AND ANY ASSOCIATED CLEARANCE IS PRESENT. WHERE CONFLICT ARISES, ELECTRICAL CONTRACTOR SHALL NOTIFY THIS ENGINEER IMMEDIATELY AND SUBMIT A WRITTEN REQUEST-FOR- INFORMATION.</p>	4.4	<p>125-VOLT, 15-AMP AND 20-AMP RECEPTACLES</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 125-VOLT, 15-AMP AND 20-AMP RECEPTACLES PER THE ELECTRICAL DESIGN DOCUMENTS. RECEPTACLES SHALL INCLUDE GROUNDING TERMINALS AND SHALL FEATURE COMMON NEWM CONFIGURATIONS. RECEPTACLES IN DWELLING UNITS AND GUEST ROOMS SHALL BE RESIDENTIAL GRADE. RECEPTACLES IN ALL COMMERCIAL SPACES SHALL BE COMMERCIAL GRADE. RECEPTACLES IN PATIENT CARE AREAS SHALL BE HOSPITAL GRADE. VERIFY COLOR OF ALL RECEPTACLES PRIOR TO PURCHASE. PROVIDE AND INSTALL ACOUSTICAL PUTTY ON BACK-BOXES OF ELECTRICAL ELEMENTS IN CORRIDORS WHERE ADJACENT DWELLING UNITS.</p>	4.12	<p>SHORT CIRCUIT PROTECTION</p> <p>SHORT CIRCUIT INTERRUPTING VALUES, AS INDICATED ON THESE ELECTRICAL CONSTRUCTION DOCUMENTS, REFER TO BOTH SHORT-CIRCUIT WITHSTAND RATINGS FOR EQUIPMENT, AND SHORT-CIRCUIT INTERRUPTING CAPABILITY FOR CIRCUIT BREAKERS.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/ PENETRANT INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SIDES OF PENETRATED ASSEMBLY. THE HOURLY F-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY T-RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE-RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. SEE THE FOLLOWING TABLE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MAX PIPE DIAMETER</th> <th>F-RATING</th> <th>T-RATING</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>1 OR 2</td> <td>0-, 1, OR 2</td> </tr> <tr> <td>2"</td> <td>3 OR 4</td> <td>3 OR 4</td> </tr> <tr> <td>4"</td> <td>1 OR 2</td> <td>0</td> </tr> <tr> <td>6"</td> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td>12"</td> <td>1 OR 2</td> <td>0</td> </tr> </tbody> </table> <p>SYSTEM NO: W-L-1001                      F-RATINGS: ONE, TWO, THREE, AND FOUR HOUR (SEE ITEMS 2 AND 3).                      T-RATINGS: ZERO, ONE, TWO, THREE, AND FOUR HOUR (SEE ITEM 3)                      L-RATING AT AMBIENT: LESS THAN 1 CFM/sq. ft.</p>	MAX PIPE DIAMETER	F-RATING	T-RATING	1"	1 OR 2	0-, 1, OR 2	2"	3 OR 4	3 OR 4	4"	1 OR 2	0	6"	3 OR 4	0	12"	1 OR 2	0																		
MAX PIPE DIAMETER	F-RATING	T-RATING																																											
1"	1 OR 2	0-, 1, OR 2																																											
2"	3 OR 4	3 OR 4																																											
4"	1 OR 2	0																																											
6"	3 OR 4	0																																											
12"	1 OR 2	0																																											
2.0	<p>INCLUSIONS AND EXCLUSIONS</p>	3.3	<p>REQUEST-FOR- INFORMATION (RFI)</p> <p>WHERE CONFLICT OR AMBIGUITY ARISES, ELECTRICAL CONTRACTOR SHALL SUBMIT WRITTEN REQUEST-FOR- INFORMATION (RFI) DOCUMENTS TO THIS ENGINEER IMMEDIATELY. ELECTRICAL CONTRACTOR SHALL OBTAIN APPROVED WRITTEN RESPONSE PRIOR TO PERFORMING ANY RELATED WORK. ELECTRICAL CONTRACTOR SHALL NOT PERFORM ANY FIELD MODIFICATIONS OR DEVIATIONS FROM THE DESIGN DOCUMENTS WITHOUT APPROVED WRITTEN RESPONSE TO AN APPROPRIATELY SUBMITTED RFI.</p>	4.5	<p>LIGHTING SWITCHES</p> <p>ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL LIGHTING SWITCHES COMPLETELY PER MANUFACTURER'S INSTRUCTIONS. REFER TO ELECTRICAL SYMBOLS LIST. SINGLE-POLE, SINGLE-THROW TOGGLE SWITCHES SHALL BE DECORA STYLE. DIMMING SWITCHES SHALL BE SELECTED FOR COMPATIBILITY WITH LIGHTING LOAD. REFER TO MANUFACTURER'S DATA-SHEETS. OCCUPANT SENSING SWITCHES SHALL INCLUDE DUAL-TECHNOLOGY SENSING EQUIPMENT.</p>	4.12	<p>SHORT CIRCUIT PROTECTION</p> <p>SHORT CIRCUIT INTERRUPTING VALUES, AS INDICATED ON THESE ELECTRICAL CONSTRUCTION DOCUMENTS, REFER TO BOTH SHORT-CIRCUIT WITHSTAND RATINGS FOR EQUIPMENT, AND SHORT-CIRCUIT INTERRUPTING CAPABILITY FOR CIRCUIT BREAKERS.</p>	5.1	<p>PLASTIC COVERING ON STEEL FLEXIBLE METAL GAS PIPING (NOMINAL 2" DIAMETER OR SMALLER) MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.</p> <p>PROVIDE CAVITY/VOID FILL MATERIAL (CAULK OR SEALANT) AS REQUIRED. CAULK OR SEALANT SHALL BE APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. CAULK OR SEALANT THICKNESS SHALL BE APPLIED TO SUIT FIRE-RATING. MINIMUM 5/8" THICK FOR ONE-HOUR RATING, 1-1/4" THICK FOR TWO-HOUR RATING, 1-7/8" FOR THREE-HOUR RATING, AND 2-1/2" THICK FOR FOUR-HOUR RATING. MINIMUM OF 1/4" THICK DIAMETER BEAD OF CAULK AP</p>																																				



**SHEET NOTES**

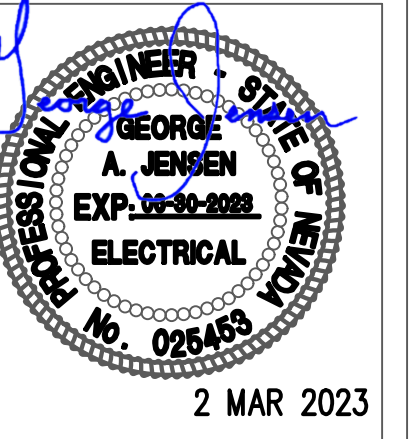
- ① INSPECT PROJECT SITE AND IDENTIFY EXISTING ELECTRICAL FEEDER SERVING SUB-PANEL 'SUB'. DISCONNECT ELECTRICAL FEEDER AT PANEL 'SUB' AND PREPARE FOR REDIRECTION AND RECONNECTION AT NEW LOCATION OF PANEL 'SUB'. SEE PROPOSED ELECTRICAL PLANS.
- ② INSPECT PROJECT SITE AND IDENTIFY EXISTING SUB-PANEL 'SUB'. DISCONNECT SERVING ELECTRICAL FEEDER (SEE SHEET NOTE #1) AND BRANCH CIRCUIT WIRING SERVED BY PANEL 'SUB'. REMOVE EXISTING PANEL AND PREPARE FOR RELOCATION AND REINSTALLATION. SEE PROPOSED ELECTRICAL PLANS.
- ③ INSPECT PROJECT SITE AND IDENTIFY EXISTING PANEL 'P2'. IDENTIFY EXISTING BLANK CIRCUIT BREAKER SPACES AT CIRCUITS 17, 19, 25, 27, 29, 20, 22, 24, 26, 28, AND 30. PREPARE EXISTING BREAKER SPACES FOR ADDITION OF NEW BREAKERS FOR SHOP AREA LOADS. SEE PROPOSED ELECTRICAL PLANS.
- ④ REMOVE AND RETIRE EXISTING TWO-GANG BOX WITH SWITCH AND RECEPTACLE. PREPARE EXISTING BRANCH CIRCUIT WIRING FOR REUSE WITH NEW SINGLE-GANG BOX WITH RECEPTACLE ONLY. SEE PROPOSED ELECTRICAL PLANS.
- ⑤ REMOVE AND RETIRE EXISTING LIGHTING FIXTURES AND BRANCH CIRCUIT WIRING FOR LIGHTING ATTACHED TO WALLS TO BE DEMOLISHED AND OVERHANG STRUCTURE TO BE DEMOLISHED.
- ⑥ COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED FOR DEMOLITION OF ELECTRICAL ELEMENTS LOCATED ON WALLS WHICH ARE TO BE DEMOLISHED. REMOVE EXISTING BRANCH CIRCUIT WIRING BACK TO NEAREST JUNCTION BOX AND SAFE-OFF AS FOLLOWS:
  - A. REMOVE AND RETIRE EXISTING GENERAL USE RECEPTACLES (TYPICAL OF ALL INDICATED RECEPTACLES).
  - B. EXISTING TWO-GANG BOX WITH SWITCH AND RECEPTACLE (SEE SHEET NOTE #5).
  - C. EXISTING EXTERIOR LIGHTING FIXTURE.
  - D. EXISTING NEMA 6-20 RECEPTACLE. PREPARE FOR RELOCATION AND REINSTALLATION IN NEW SHOP-AREA. SEE PROPOSED ELECTRICAL PLANS.
  - E. EXISTING NEMA 6-50 RECEPTACLE. PREPARE FOR RELOCATION AND REINSTALLATION. SEE PROPOSED ELECTRICAL PLANS.
  - F. EXISTING DISCONNECT SWITCH. PREPARE FOR RELOCATION AND REINSTALLATION. SEE PROPOSED ELECTRICAL PLANS.
- ⑦ DISCONNECT EXISTING SECURITY CAMERA ATTACHED TO OVERHANG STRUCTURE. PREPARE EXISTING CAMERA FOR RELOCATION AND REINSTALLATION AT NEW WALL STRUCTURE. SEE PROPOSED ELECTRICAL PLANS.
- ⑧ EXISTING BUILDING MOUNTED LIGHTING TO REMAIN UNCHANGED. MODIFY EXISTING BRANCH CIRCUIT WIRING ATTACHED TO OVERHANG STRUCTURE AS REQUIRED TO MAINTAIN OPERATION OF BUILDING MOUNTED LIGHTING.
- ⑨ INSPECT PROJECT SITE AND IDENTIFY EXISTING RECEPTACLE MOUNTED TO TRUSS STRUCTURE ABOVE (SERVING CRANE). DISCONNECT EXISTING RECEPTACLE AND PREPARE FOR RELOCATION AND REINSTALLATION. PREPARE EXISTING BRANCH CIRCUIT WIRING FOR REDIRECTION AND RECONNECTION.
- ⑩ INSPECT PROJECT SITE AND IDENTIFY EXISTING PANEL 'P'. IDENTIFY EXISTING BLANK SPACES AT CIRCUITS 2 AND 4. PREPARE EXISTING SPACES FOR INSTALLATION OF NEW CIRCUIT BREAKER FOR WATER HEATER. SEE PROPOSED ELECTRICAL PLANS.



**A OVERALL FLOOR PLAN - EXISTING ELECTRICAL CONDITIONS AND DEMOLITION**  
 1/8" = 1'-0" **N**

jp copoulos  
 ARCHITECT ©

P.O. Box 2517  
 Carson City  
 Nevada  
 89702  
 T 775-720-4051  
 info@jpcarchitect.com  
 www.jpcarchitect.com



Property Owner:  
 Carson City School District  
 1402 West King St  
 Carson City, Nevada 89703  
 Project Address:  
 1111 N Saliman Rd  
 Carson City, Nevada 89701  
 A.P.N. 010-041-64

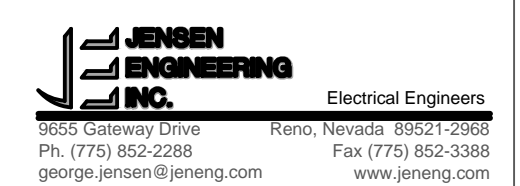
Revision Schedule	
Revision Number	Revision Date

Carson City  
 School District  
 CHS - Bus  
 Barn TI

OVERALL FLOOR PLAN  
 EXISTING ELECTRICAL  
 CONDITIONS AND DEMOLITION

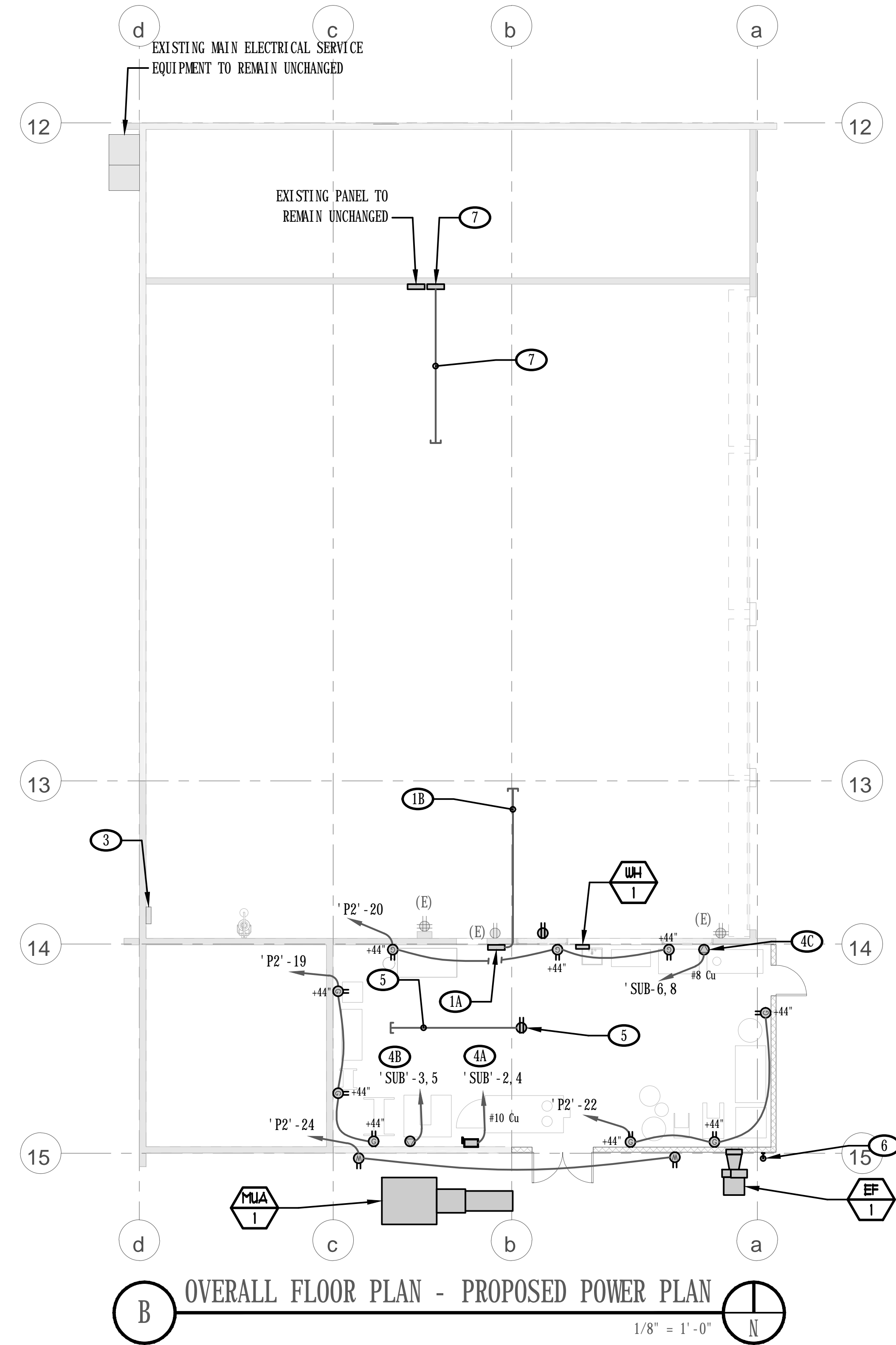
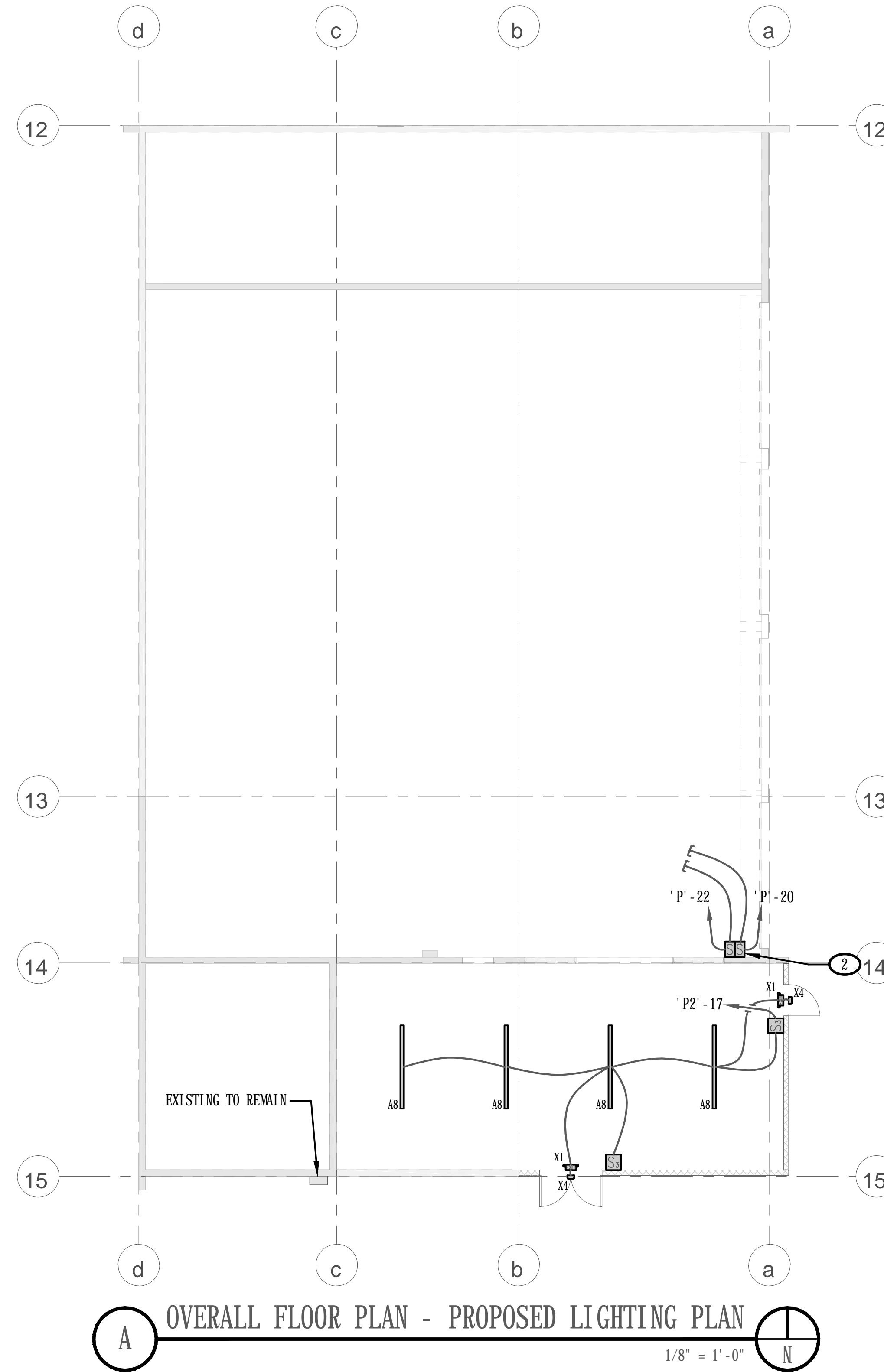
Project number	RJ155L
Date	9 JAN 2023
Drawn by	GAJ
Checked by	GAJ

**E101**  
 Scale As indicated



# SHEET NOTES

- 1 RELOCATE AND RECONNECT EXISTING ELECTRICAL CONNECTIONS ASSOCIATED WITH EXISTING PANEL 'SUB' AS FOLLOWS:
  - A. RELOCATE AND REINSTALL PANEL AS SHOWN.
  - B. EXTEND SERVING ELECTRICAL FEEDER TO NEW LOCATION AND RECONNECT PER MANUFACTURER'S INSTRUCTIONS.
- 2 RELOCATE EXISTING LIGHTING SWITCHES AS SHOWN. EXTEND BRANCH CIRCUIT WIRING TO NEW SWITCH LOCATIONS AND RECONNECT EXISTING LIGHTING TO EXISTING SERVING CIRCUIT BREAKERS AS SHOWN.
- 3 PROVIDE AND INSTALL NEW 20-AMP/1-POLE BREAKERS IN EXISTING PANEL 'P2' AT CIRCUITS 17, 19, 20, AND 22. EXTEND BRANCH CIRCUIT WIRING FOR NEW ELECTRICAL LOADS IN SHOP AREA TO NEW BREAKER AND CONNECT COMPLETELY PER MANUFACTURER'S INSTRUCTIONS.
- 4 COORDINATE WITH GENERAL CONTRACTOR AND MAINTENANCE SHOP PERSONNEL AS REQUIRED TO RELOCATE AND REINSTALL EXISTING ELECTRICAL CONNECTIONS RELOCATED FROM EXISTING CONDITIONS. VERIFY EXACT LOCATION OF EACH ELEMENT AS FOLLOWS:
  - A. DISCONNECT SWITCH FOR PARTS CLEANER.
  - B. NEMA 6-20 RECEPTACLE FOR COATS 4300.
  - C. NEMA 6-50 RECEPTACLE FOR HOTSYS CLEANER.
- 5 RELOCATE AND REINSTALL RECEPTACLE SERVING CHAIN HOIST CRANE. MOUNT RECEPTACLE TO STRUCTURE ABOVE. REDIRECT EXISTING BRANCH CIRCUIT WIRING AND RECONNECT.
- 6 COORDINATE WITH CARSON CITY SCHOOL DISTRICT PERSONNEL AS REQUIRED FOR RELOCATION AND REINSTALLATION OF EXISTING SECURITY CAMERA. RE-MOUNT CAMERA TO NEW WALL IN APPROXIMATELY THE SAME LOCATION. RECONFIGURE WIRING (IF REQUIRED) AND RECONNECT.
- 7 PROVIDE AND INSTALL NEW 50-AMP/2-POLE CIRCUIT BREAKER IN EXISTING PANEL 'P' AT CIRCUIT SPACES 2 AND 4. EXTEND ELECTRICAL CONNECTION FOR NEW WATER HEATER FROM NEW BREAKER TO WATER HEATER IN EXPANSION AREA. CONNECT COMPLETELY PER MANUFACTURER'S INSTRUCTIONS.



MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE				
EQUIP. SYMBOL	VOLTAGE, PHASE, & AMPS	DISCONNECTING MEANS	CONDUIT & CONDUCTORS	FEEDING PANEL & CIRCUIT
EF-1	208 / 3 / 5	30A/15F/3P, 250V, N3R DISCONNECT SWITCH	3/4" CONDUIT (3)-#12 Cu + (1)-#12 Cu GROUND	'P2'-26,28,30
MJA-1	208 / 3 / 5	30A/15F/3P, 250V, N3R DISCONNECT SWITCH	3/4" CONDUIT (3)-#12 Cu + (1)-#12 Cu GROUND	'P2'-25,27,29
WH-1	208 / 1 / 40	60A/50F/2P, 250V, N3R DISCONNECT SWITCH	3/4" CONDUIT (3)-#8 Cu + (1)-#10 Cu GROUND	'P'-2,4

NOTES:  
 1. COORDINATE WITH MECHANICAL AND GENERAL CONTRACTORS AS REQUIRED.  
 2. PROVIDE AND INSTALL COMPLETE ELECTRICAL CONNECTIONS AS DETAILED.

**JENSEN ENGINEERING INC.**  
 Electrical Engineers  
 2500 S. Highway 101  
 Reno, Nevada 89501-1096  
 Ph. (775) 852-2288 Fax (775) 852-3388  
 george.jensen@jeneng.com www.jeneng.com

jp copoulos  
 ARCHITECT ©

P.O. Box 2517  
 Carson City  
 Nevada  
 89702  
 T 775-720-4051  
 info@jpcarchitect.com  
 www.jpcarchitect.com



Property Owner:  
 Carson City School District  
 1402 West King St  
 Carson City, Nevada 89703  
 Project Address:  
 1111 N Saliman Rd  
 Carson City, Nevada 89701  
 A.P.N. 010-041-64

Revision Schedule	
Revision Number	Revision Date

Carson City School District  
 CHS - Bus Barn TI

OVERALL FLOOR PLAN  
 PROPOSED ELECTRICAL PLAN

Project number RJ155L  
 Date 9 JAN 2023  
 Drawn by GAJ  
 Checked by GAJ

E201  
 Scale As indicated

3-Phase, 4-Wire, Y-Connected Electrical Panelboard Schedule by Jensen Engineering, Inc.																							
Project Name:		CCSD BUS BARN		Line to Neutral Voltage:		120		Bus Material:		EXISTING		Short Circuit Rating:		EXISTING									
Panel Name:		P2		Line to Line Voltage:		208		Bus Rating:		EXISTING		New or Existing:		EXISTING									
Panel Location:		COLUMN LINE (D-13.5)		Main Breaker or Lug Only:		EXISTING		Lug/Breaker Rating:		EXISTING		Mousing:		EXISTING									
Ckt. No.	Load (VA)	Description	Load Power Factor	One-Way Ckt Length (ft)	Wire Size (AWG)	Corrected z' (D-to-Neutral)	VORCP (%)	Breaker Poles	Breaker Trip	Phase			Breaker Trip Poles	VORCP (%)	Corrected z' (D-to-Neutral)	Wire Size (AWG)	One-Way Ckt Length (ft)	Load Power Factor	Description	Load (VA)	Ckt. No.		
										A	B	C											
1	1000	EXISTING LOAD						1	20				15	1					EXISTING LOAD	800	2		
3	1000	EXISTING LOAD						1	20				20	2					EXISTING LOAD	1000	4		
5	1000	EXISTING LOAD						1	20				20	2					EXISTING LOAD	1000	6		
7	1000	EXISTING LOAD						2	20				20	2					EXISTING LOAD	1000	8		
9	1000	EXISTING LOAD						1	20				20	1					EXISTING LOAD	1000	10		
11	1000	EXISTING LOAD						1	20				20	1					EXISTING LOAD	1000	12		
13	1000	EXISTING LOAD						2	20				20	1					EXISTING LOAD	1000	14		
15	1000	EXISTING LOAD						2	20				20	1					EXISTING LOAD	1000	16		
17		BLANK											20	1					BLANK		18		
19		BLANK											20	1					BLANK		20		
21	1000	EXISTING LOAD						2	20				20	1					BLANK		22		
23	1000	EXISTING LOAD						2	20				20	1					BLANK		24		
25		BLANK											20	1					BLANK		26		
27		BLANK											20	1					BLANK		28		
29		BLANK											20	1					BLANK		30		
3000 4000 3000 Total Load (VA)				Notes: 1. Corrected impedance calculated using Neher-McGrath method for determining resistance in AC circuits. 2. Circuit length used for calculating voltage drop; not to be used for estimating or pricing. 3. Wire size used for calculating voltage drop; not to be used for estimating or pricing.																	Total Load (VA): 2800 3000 3000		
																					+25% of Largest Motor Load (VA): 0 0 0		
																					Combined Total Load (VA): 5800 7000 6000		
																					Average Line Current (Amps): 48.33 58.33 50.00		
																					Average Total Current (Amps): 52.25		
																					Total Connected Load (kVA): 18.80		

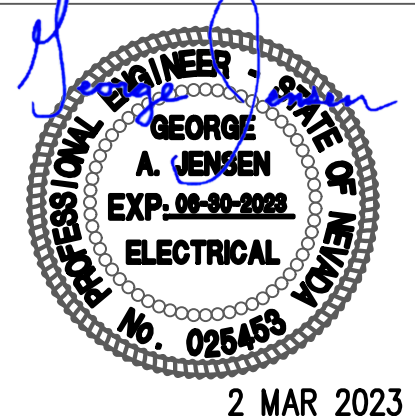
EXISTING CONDITIONS

3-Phase, 4-Wire, Y-Connected Electrical Panelboard Schedule by Jensen Engineering, Inc.																							
Project Name:		CCSD BUS BARN		Line to Neutral Voltage:		120		Bus Material:		EXISTING		Short Circuit Rating:		EXISTING									
Panel Name:		P2		Line to Line Voltage:		208		Bus Rating:		EXISTING		New or Existing:		EXISTING									
Panel Location:		COLUMN LINE (D-13.5)		Main Breaker or Lug Only:		EXISTING		Lug/Breaker Rating:		EXISTING		Mousing:		EXISTING									
Ckt. No.	Load (VA)	Description	Load Power Factor	One-Way Ckt Length (ft)	Wire Size (AWG)	Corrected z' (D-to-Neutral)	VORCP (%)	Breaker Poles	Breaker Trip	Phase			Breaker Trip Poles	VORCP (%)	Corrected z' (D-to-Neutral)	Wire Size (AWG)	One-Way Ckt Length (ft)	Load Power Factor	Description	Load (VA)	Ckt. No.		
										A	B	C											
1	1000	EXISTING LOAD						1	20				15	1					EXISTING LOAD	800	2		
3	1000	EXISTING LOAD						1	20				20	2					EXISTING LOAD	1000	4		
5	1000	EXISTING LOAD						1	20				20	2					EXISTING LOAD	1000	6		
7	1000	EXISTING LOAD						2	20				20	2					EXISTING LOAD	1000	8		
9	1000	EXISTING LOAD						1	20				20	1					EXISTING LOAD	1000	10		
11	1000	EXISTING LOAD						1	20				20	1					EXISTING LOAD	1000	12		
13	1000	EXISTING LOAD						2	20				20	1					EXISTING LOAD	1000	14		
15	1000	EXISTING LOAD						2	20				20	1					EXISTING LOAD	1000	16		
17	500	NEW SHOP AREA LTG	0.7	75	12	1.44	0.75	1	20				20	1					NEW SHOP AREA PLUGS	600	18		
19	600	NEW SHOP AREA PLUGS	0.6	75	12	1.25	0.75	1	20				20	1	0.78	1.25	12	75	0.6	NEW SHOP AREA PLUGS	600	20	
21	1000	EXISTING LOAD						2	20				20	1	0.78	1.25	12	75	0.6	NEW SHOP AREA PLUGS	800	22	
23	1000	EXISTING LOAD						2	20				20	1	0.52	1.25	12	75	0.6	SERVICE RECEPTACLES	400	24	
25	500												20	3	0.52	1.73	12	75	0.85	EF-1	500	26	
27	500	MUA-1	0.85	75	12	1.73	0.52	3	20				20	3	0.52	1.73	12	75	0.85	EF-1	500	28	
29	500												20	3	0.52	1.73	12	75	0.85	EF-1	500	30	
4100 4500 4000 Total Load (VA)				Notes: 1. Corrected impedance calculated using Neher-McGrath method for determining resistance in AC circuits. 2. Circuit length used for calculating voltage drop; not to be used for estimating or pricing. 3. Wire size used for calculating voltage drop; not to be used for estimating or pricing.																	Total Load (VA): 3900 4100 3900		
																					+25% of Largest Motor Load (VA): 0 0 0		
																					Combined Total Load (VA): 8000 8600 7900		
																					Average Line Current (Amps): 66.67 71.67 65.83		
																					Average Total Current (Amps): 68.09		
																					Total Connected Load (kVA): 24.50		

PROPOSED

jp copoulos  
ARCHITECT

P.O. Box 2517  
Carson City  
Nevada  
89702  
T 775-720-4051  
info@jpcarchitect.com  
www.jpcarchitect.com



Property Owner:  
Carson City School District  
1402 West King St  
Carson City, Nevada 89701  
Project Address:  
1111 N Saliman Rd  
Carson City, Nevada 89701  
A.P.N. 010-041-64

Revision Schedule	
Revision Number	Revision Date

Carson City  
School District  
  
CHS - Bus  
Barn TI

ELECTRICAL SCHEDULES

Project number: RJ155L  
Date: 9 JAN 2023  
Drawn by: GAJ  
Checked by: GAJ

E301  
Scale: As indicated

