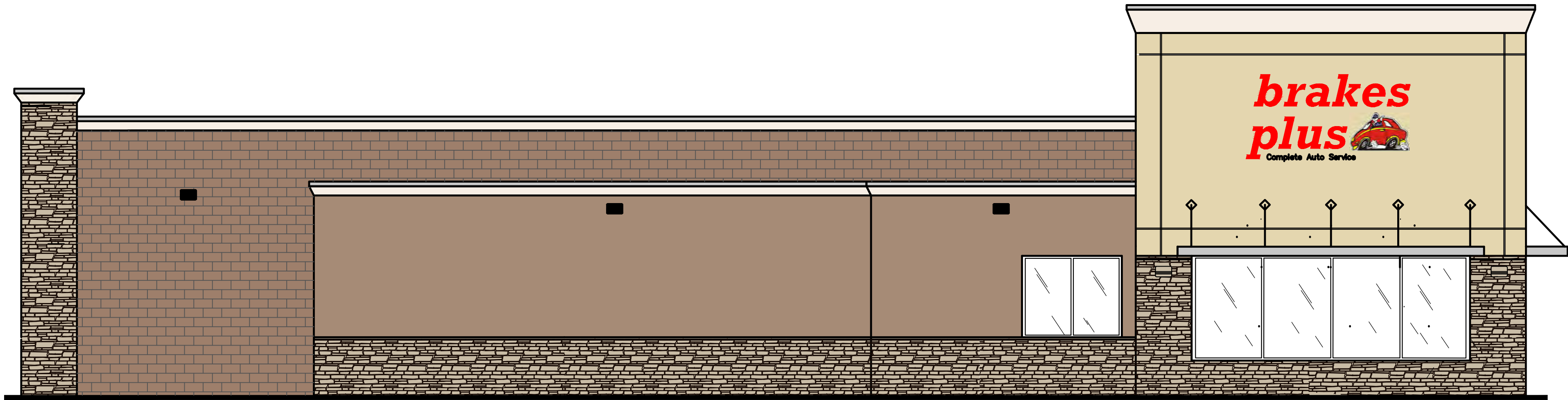


brakes plus

HARKER HEIGHTS, TEXAS



GENERAL NOTES

- WE CERTIFY THAT TO THE BEST OF OUR KNOWLEDGE AND INFORMATION, AND IN ACCORDANCE WITH ACCEPTED PROFESSIONAL STANDARDS, WE HAVE COMPLIED WITH APPLICABLE PORTIONS OF ANSI A117.1 2003 EDITION PERTAINING TO BUILDING ACCESSIBILITY FOR THE PHYSICALLY HANDICAPPED (APES34-401 THROUGH 34-411), IBC CHAPTER STANDARDS AND 1990 AMERICANS WITH DISABILITIES ACT (ADA) TITLE III ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES.
- ALL DIMENSIONS ARE TO THE FACE OF STUD AT FRAME WALLS AND TO THE FACE OF MASONRY WALLS AS SHOWN, UNLESS NOTED OTHERWISE.
- INSTALL SEALANT AT ALL INTERIOR AND EXTERIOR JOINTS, SEAMS, CONNECTIONS OF OPENINGS WHICH WOULD ALLOW WATER OR AIR INFILTRATION EXCEPT AS NOTED OTHERWISE. SEALANT COLOR TO MATCH ADJACENT SURFACE. COLOR REQUIRES ARCHITECTS APPROVAL.
- DOOR OPENINGS IN FRAME CONSTRUCTION WHICH ARE NOT DIMENSIONED ARE EITHER CENTERED IN THE WALL OR LOCATED 5" FROM THE FACE OF STUD TO FINISH JAMB
- ALL HANDICAPPED FACILITIES SHALL BE IDENTIFIED WITH APPROVED SIGNAGE.
- THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING A WEATHER TIGHT BUILDING -- DETAILS AND OMISSIONS TO DRAWINGS NOTWITHSTANDING. ALL DRAWING CONFLICTS WHICH MAY NOT ALLOW THIS ARE TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF TH ARCHITECT.
- DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND PLANS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
- ALL FLOORS WITH DRAINS ARE SLOPED MINIMUM $\frac{1}{8}$ " PER FOOT TO DRAIN UNLESS NOTED OTHERWISE.
- LOCATION OF EXISTING UTILITIES ARE SHOWN TO THE BEST OF OUR KNOWLEDGE. CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF VERIFYING IN THE FIELD BEFORE CONSTRUCTION STARTS, AND COORDINATING ALL NEW UTILITY LOCATIONS, CONNECTIONS, AND PENETRATIONS W/ CIVIL ENGINEER.
- ALL REQUIRED EXITS SHALL BE OPERABLE FROM THE INSIDE WITHOUT SPECIAL KNOWLEDGE OR THE USE OF A KEY.
- PROVIDE FULL 2X6 WOOD BLOCKING AS REQUIRED TO SECURELY ANCHOR ALL WALL MOUNTED EQUIPMENT(E.G., CABINETS, TOILET ROOM, ACCESSORIES, HARDWARE, ETC.). BLOCKING SHALL PROVIDED A RIGID CONNECTION CAPABLE OF SUPPORTING LOADS AS DETERMINED BY MANUFACTURER. PROVIDE SOLID 2X6 WOOD BLOCKING SECURED TO 2 MAIN WALL STUDS TO SECURELY SUPPORT ALL WALL STOPS (DOOR BUMPER).
- THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE WITH ALL TRADES, SIZES AND LOCATIONS OF ALL OPENINGS OF MECHANICAL AND ELECTRICAL EQUIPMENT, EQUIPMENT PADS, AS WELL AS POWER, WATER, AND DRAIN INSTALLATIONS. BEFORE PROCEEDING WITH WORK, ANY CONCERNS OF STRUCTURAL CONFLICTS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. A REASONABLE RESPONSE TIME SHALL BE ALLOWED.
- ALL FLOOR OR WALL OPENINGS REQUIRED FOR PIPES, DUCTS,CONDUITS, ETC. SHALL BE SEALED IN A MANNER APPROVED BY THE ARCHITECT.
- ROOMS ENCLOSED WITH 1-HOUR RATED WALLS REQUIRE RATED DOORS, 1-HOUR PARTITIONS PENETRATING THROUGH AND ABOVE ROOF SURFACE AND STRUCTURE ABOVE. ANY DUCTS PASSING THROUGH WALLS REQUIRE FIRE DAMPERS, ANY CONDUIT OF PIPING REQUIRES RATED SEALANT.
- STRUCTURAL NOTES SHALL GOVERN TYPICAL CONDITIONS WHETHER OR NOT SPECIFICALLY DETAILED OR NOTED.
- CONTROL JOINTS SHALL BE PROVIDED IN CONCRETE FLOOR SLABS AND MASONRY WALLS WHETHER OF NOT SPECIFICALLY REFERENCED ON PLANS. THE MAXIMUM AREA PERMITTED BETWEEN JOINTS SHALL BE 650 SQUARE FEET FOR REINFORCED CONCRETE SLABS, 250 SQUARE FEET FOR NON-REINFORCED SLABS AND 400 SQUARE FEET FOR MASONRY UNLESS SHOWN OTHERWISE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY ELECTRIC CONNECTIONS, METERS, TRANSFORMERS AND GENERATORS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ELECTRICAL RECEPTACLES AND SWITCHES TO AVOID CASEWORK, DOORS, ETC.
- CAULK ALL INTERIOR AND EXTERIOR JOINTS.
- FOLLOW ALL RECOMMENDATIONS OF THE SOILS REPORT BY ESC SOUTHWEST LLP, ECS #17-6451, DATED JAN. 16, 2024.

PROJECT TEAM

OWNER:	EXPRESS OIL 1880 SOUTH PARK DRIVE BIRMINGHAM, AL 35244 ANDY GOLDEN 205943-5770
ARCHITECT:	NORMAN L. HERMAN 5265 RIO GRANDE # 202 LITTLETON, COLORADO 80120 (303)385-1203 ATTN: NORMHERMAN@ARCODEV.COM
STRUCTURAL ENGINEER:	PERFORMANCE ENGINEERING 7400 EAST ORCHARD ROAD, # 240 ENGLEWOOD, COLORADO 80111 (303)721-3322 ATTN: TOM SCHOTT
MECHANICAL PLUMBING ELECTRICAL ENGINEER	LOREN PRIEST 12005 ANTELOPE TRAIL, PARKER, COLORADO 80138 (303)748-1189 ATTN: LOREN@EEPARKER.COM
CIVIL ENGINEER	BOHLER ENGINEERING 6017 MAIN STREET FRISCO, TEXAS ATTN: MATHAS HAUBERT 469-458-7300 MHAUBERT@BOHLERENG.COM

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LOCATION-LEGAL DESCRIPTION

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

CODE INFORMATION

APPLICABLE CODES

2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL PLUMBING CODE
2021 NATIONAL MECHANICAL CODE
2023 NATIONAL ELECTRICAL CODE
2021 IECC
2021 INTENATIONAL FIRE CODE

TYPE OF CONSTRUCTION

TYPE V-B

MAXIMUM BUILDING HEIGHT

1 STORY

ALLOWABLE BUILDING AREA

9,000 S.F.

ACTUAL BUILDING AREA

4,897 S.F.

OCCUPANCY

M AND S-1
(MOTOR VEHICLE REPAIR GARAGE) NON-SEPARATED USES

OCCUPANT LOAD COUNT

SALES / WAITING AREA - 607 SF/ 60 OLF = 11 OCCUPANTS
BREAK ROOM - 125 SF/15 = 9 OCCUPANTS
ADMIN / OFFICE - 116 SF / 100 OLF = 2 OCCUPANTS
INVENTORY - 504 SF / 300 OLF = 2 OCCUPANTS
SERVICE BAYS - 3,221 SF / 200 = 16 OCCUPANTS
RESTROOMS - 148F /100 2 OCCUPANTS

TOTAL OCCUPANT LOAD = 42 OCCUPANTS

FIRE PROTECTION

BUILDING IS NON SPRINKLED

ROOFING MATERIALS

REQUIRED: CLASS "C" (CAN BE CLASS A OR B PER CODE)
PROVIDED: CLASS "A" ROOF

ROOF INSULATION REQUIREMENT: MEETS ASTM C 1289
ROOF INSULATION PROVIDED: MEETS ASTM C 1289

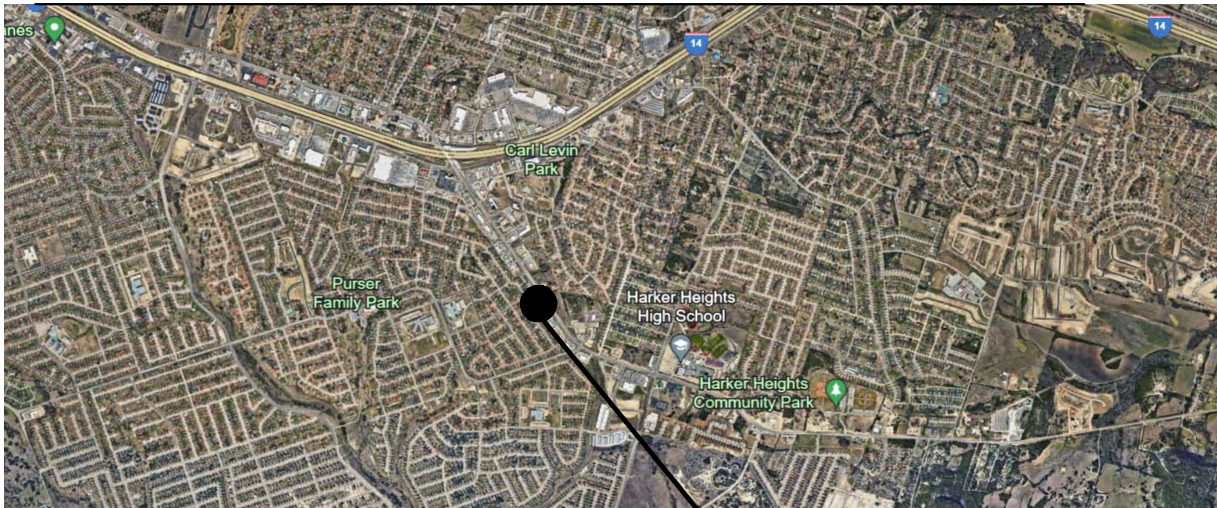
NUMBER OF EXITS PROVIDED:
2 REQUIRED.....2 PROVIDED

FIRE RESISTANCE OF EXTERIOR WALLS:
NONE REQUIRED.....DISTANCE GREATER THAN 30 FEET AND TYPE 5
CONSTRUCTION HAS NO REQUIREMENTS

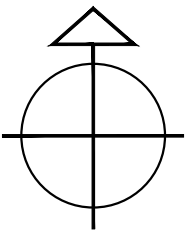
FIRE RESISTANCE OF ELEMENTS:
TYPE 5B CONSTRUCTION HAS NO REQUIREMENTS

OPENING PROTECTION REQUIREMENTS:
NO REQUIREMENTS - FIRE SEPARATION DISTANCE EXCEEDS 30 FEET

VICINITY MAP



BRAKES PLUS
LOCATION



VICINITY PLAN

HAZARDOUS GLAZING REQUIREMENTS:
THESE REQUIREMENTS HAVE BEEN MET...SEE SHEET A6-1

PARAPET REQUIREMENTS - PARAPETS MEET REQUIREMENTS. THEY
EXCEED 30" IN HEIGHT HAD HAVE NO REQUIREMENT FOR FIRE RESISTANCE (SEE EXT. WALLS
ABOVE)

SPECIAL INSPECTION REQUIREMENTS -
A QUALIFIED SPECIAL INSPECTION AGENCY HAS BEEN RETAINED TO DO SPECIAL I
INSPECTIONS PER THIS REQUIREMENT.

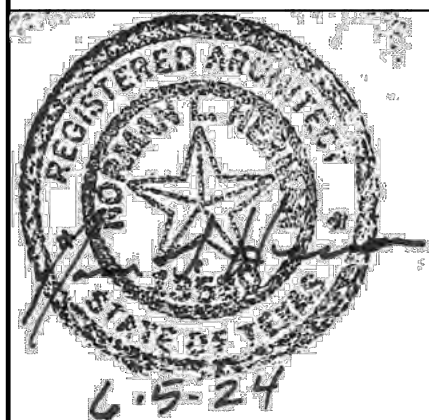
REQUIRED PLUMBING FIXTURES:

- 2 RESTROOMS REQUIRED AND TWO PROVIDED
- 2 WATER CLOSETS REQUIRED AND TWO PROVIDED
- 2 LAVATORIES REQUIRED AND TWO PROVIDED
- HANDICAP WATER FOUNTAIN REQUIRED AND 1 PROVIDED
- 1 SERVICE SINK REQUIRED AND ONE PROVIDED.

ROOF DRAINAGE REQUIREMENTS:
ROOF DRAINAGE HAS BEEN PROVIDED PER #1503. SEE SUBMITTAL DWG A2-4 AND
PLUMBING DRAWINGS

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

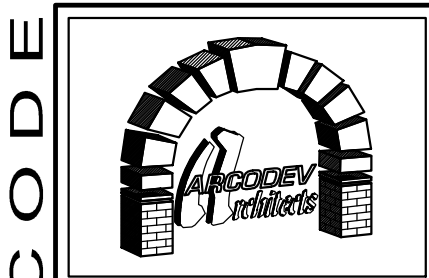


ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
1	03.25.24	SUBMITTED TO BLDG. DEPT.
	05.20.24	RESUBMIT TO BLDG. DEPT.

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CLIENTJOB #: --
DRAWN BY: NLH
CHECKED BY: NLH

DATE OF ISSUE: 03.23.24

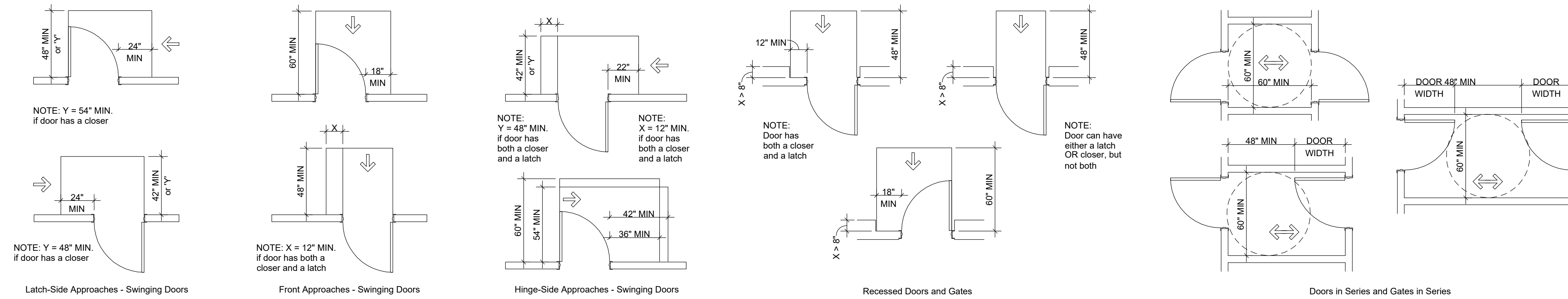
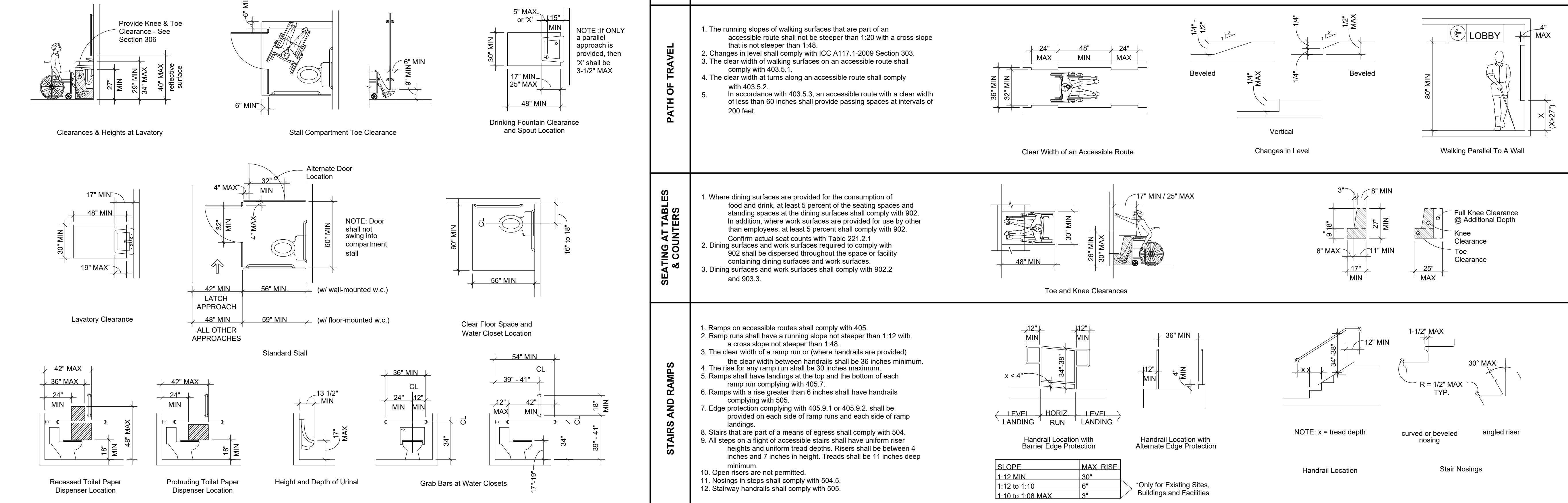
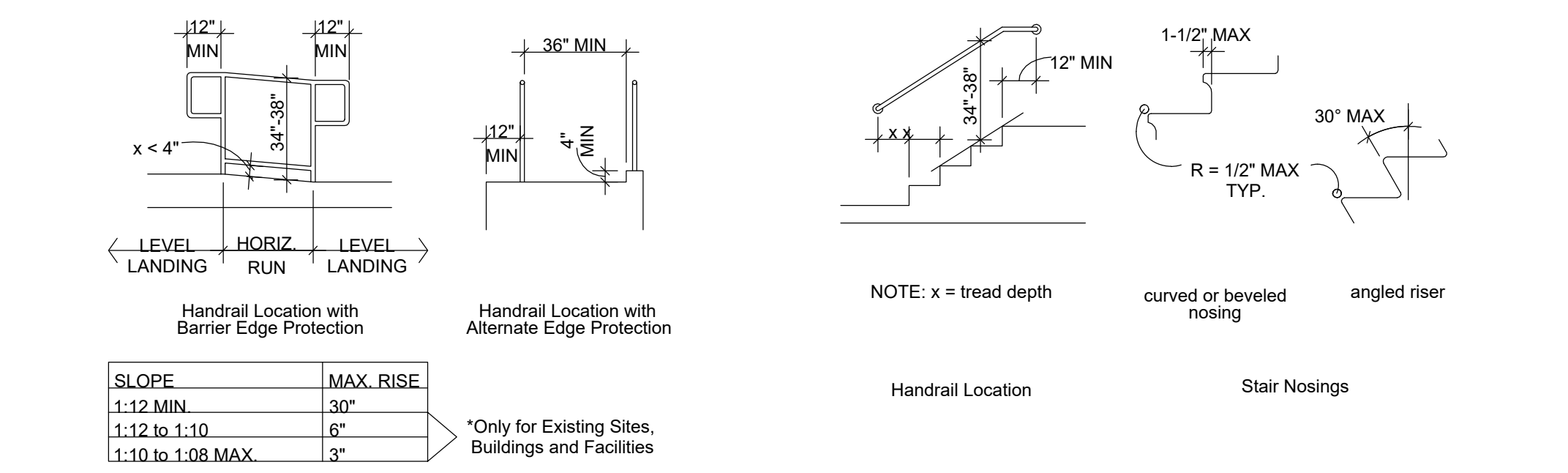


45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.681-8925

SHEET


A0

COVER SHEET

DOORS	<p>1. Doors, doorways, and gates that are part of an accessible route shall comply with 404.</p> <p>2. Door openings shall provide a clear width of 32 inches, unless the opening is more than 24 inches deep, in which case the clear width of the opening shall be 36 inches. For swinging doors, the clear width shall be measured between the face of the door and the stop, with the door open 90 degrees.</p> <p>3. There shall be no projections into the clear opening lower than 34 inches. Projections into the clear opening between 34 inches and 80 inches shall not exceed 4 inches.</p> <p>4. In accordance with 404.2.3 exception 2, door closers and stops shall be permitted to be a minimum of 78 inches above the floor or ground.</p> <p>5. Minimum maneuvering clearances at swinging doors shall comply with ICC A117.1-2009 Section 404.2.3, Table 404.2.3.2 and Figure 404.2.3.2.</p> <p>6. Fire doors shall have a minimum opening force allowable by the appropriate administrative authority.</p> <p>7. Hinged doors other than fire doors shall have an opening force of 5 pounds maximum.</p> <p>8. Sliding doors shall have an opening force of 5 pounds maximum.</p> <p>9. Door and gate surfaces shall comply with 404.2.10.</p> <p>10. Doors shall be permitted to swing into turning spaces, per 304.4.</p> <p>11. Two doors in a series shall comply with ICC A117.1-2009 Section 404.2.5 and Figure 404.2.5.</p>  <p>Latch-Side Approaches - Swinging Doors Front Approaches - Swinging Doors Hinge-Side Approaches - Swinging Doors Recessed Doors and Gates Doors in Series and Gates in Series</p>
RESTROOMS & DRINKING FOUNTAINS	<p>1. Where toilet rooms are provided, each toilet room shall comply with 603.</p> <p>2. Where toilet compartments are provided, at least one toilet compartment shall comply with 604.8.1. In addition to the compartment required to comply with 604.8.1, at least one compartment shall comply with 604.8.2 where six or more toilet compartments are provided, or where the combination of urinals and water closets totals six or more fixtures.</p> <p>3. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches maximum above finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches maximum above the finish floor or ground.</p> <p>4. Coat hooks shall be located within one of the reach ranges specified in 308. Shelves shall be located 40 inches minimum and 48 inches maximum above the finish floor.</p> <p>5. Water closets shall comply with 604.2 through 604.8.</p> <p>6. Toilet paper dispensers shall comply with ICC A117.1-2009, Chapter 6, Section 604.7 and shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.</p> <p>7. Grab bars shall be provided at water closets and shall comply with ICC A117.1-2009, Chapter 6, Figure 604.5.</p> <p>8. Urinals shall comply with 605 and shall be either wall-hung or stall type urinals.</p> <p>9. Lavatories shall comply with 606. Faucets for lavatories shall comply with 606.4. Exposed pipes under lavatories shall be insulated or otherwise protected to prevent against contact.</p> <p>10. Drinking Fountains shall comply with ICC A117.1-2009, Chapter 6, Section 602.2.</p> <p>11. Toilet paper dispensers shall comply with ICC A117.1-2009, Chapter 6, Figure 604.9.2.</p> <p>12. Fixed side wall grab bars shall comply with ICC A117.1-2009, Chapter 6, Section 604.5.1.</p>  <p>Clearances & Heights at Lavatory Stall Compartment Toe Clearance Drinking Fountain Clearance and Spout Location Lavatory Clearance Standard Stall Recessed Toilet Paper Dispenser Location Height and Depth of Urinal Grab Bars at Water Closets Parallel Approach at Sales & Service Counters</p>
FOODSERVICE LINES, TABLEWARE AREAS & CHECKOUT AISLES	<p>1. Signs shall comply with 703.</p> <p>2. Signs identifying permanent rooms and spaces shall comply with 703.1, 703.2, and 703.5. Where pictograms are provided as designations of permanent rooms and spaces, the pictograms shall comply with 703.6 and shall have text descriptors complying with 703.2 and 703.5.</p> <p>3. Signs that provide direction to or information about spaces and facilities shall comply with 703.5.</p> <p>4. Where more than one check-out aisle is provided, check-out aisles complying with 904.3 shall be identified by the International Symbol of Accessibility complying with 703.7.2.1. Where check-out aisles are identified by numbers, letters, or functions, signs identifying check-out aisles complying with 904.3 shall be located in the same location as the check-out aisle identification.</p> <p>1. Where dining surfaces are provided for the consumption of food and drink, at least 5 percent of the seating spaces and standing spaces at the dining surfaces shall comply with 902. In addition, where work surfaces are provided for use by other than employees, at least 5 percent shall comply with 902. Confirm actual seat counts with Table 221.2.1</p> <p>2. Dining surfaces and work surfaces required to comply with 902 shall be dispersed throughout the space or facility containing dining surfaces and work surfaces.</p> <p>3. Dining surfaces and work surfaces shall comply with 902.2 and 903.3.</p> <p>1. Ramps on accessible routes shall comply with 405.</p> <p>2. Ramp runs shall have a running slope not steeper than 1:12 with a cross slope not steeper than 1:48.</p> <p>3. The clear width of a ramp run or (where handrails are provided) the clear width between handrails shall be 36 inches minimum.</p> <p>4. The rise for any ramp run shall be 30 inches maximum.</p> <p>5. Ramps shall have landings at the top and the bottom of each ramp run complying with 405.7.</p> <p>6. Ramps with a rise greater than 6 inches shall have handrails complying with 505.</p> <p>7. Edge protection complying with 405.9.1 or 405.9.2 shall be provided on each side of ramp runs and each side of ramp landings.</p> <p>8. Stairs that are part of a means of egress shall comply with 504.</p> <p>9. All steps on a flight of accessible stairs shall have uniform riser heights and uniform tread depths. Risers shall be between 4 inches and 7 inches in height. Treads shall be 11 inches deep minimum.</p> <p>10. Open risers are not permitted.</p> <p>11. Nosings in steps shall comply with 504.5.</p> <p>12. Stairway handrails shall comply with 505.</p>  <p>Ramp Run Handrail Location with Barrier Edge Protection Handrail Location with Alternate Edge Protection Handrail Location Stair Nosings</p>

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS

ARCODEV

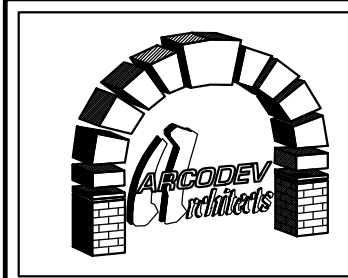
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CHECKED BY: NLH

DATE OF ISSUE: 03.23.24

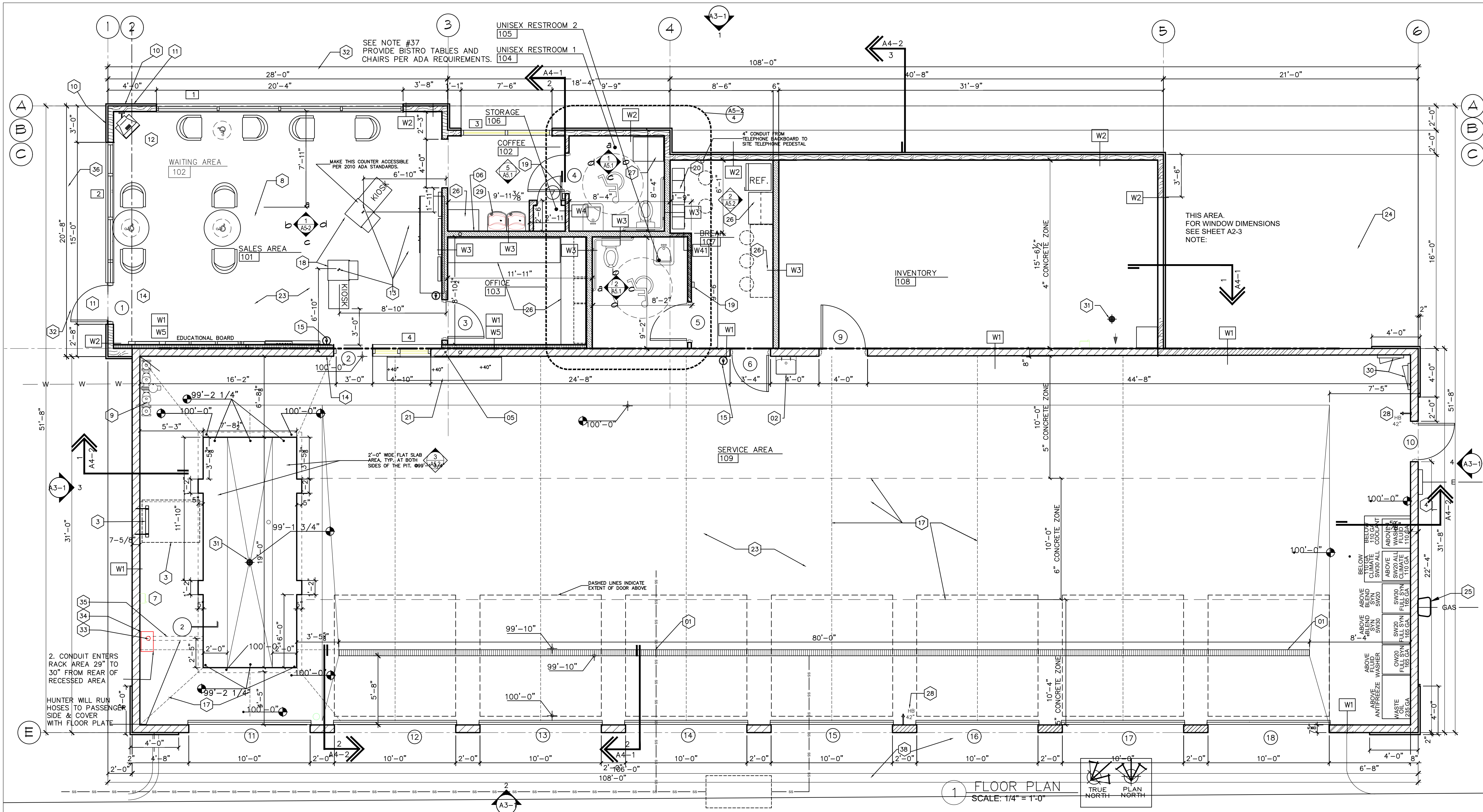


45 SPYGLASS DRIVE
LITTLETON, CO 80231
VOICE: 303.881-8925

SHEET

A0.1

ACCESSIBLE DETAILS



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

WALLS ASSEMBLIES:

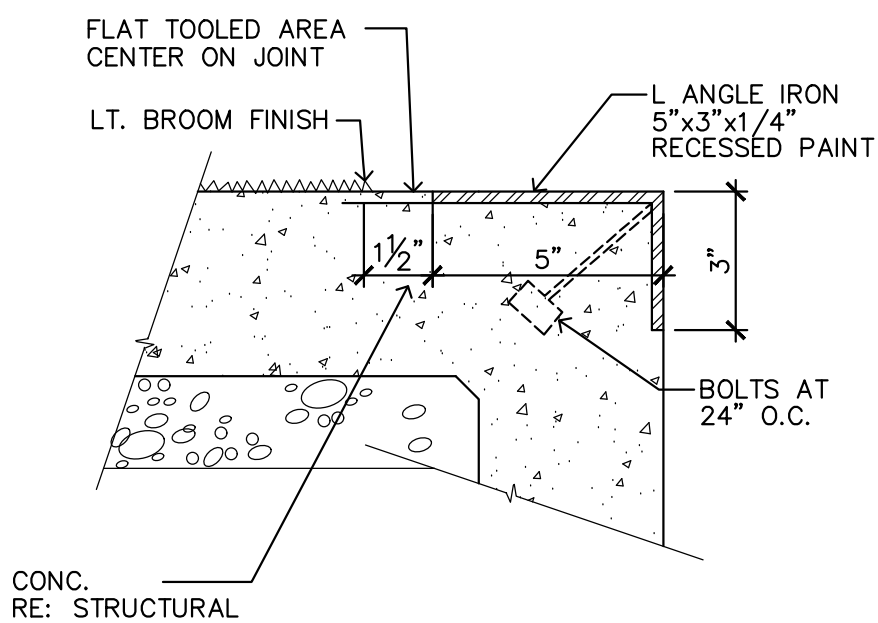
ID	WALL TYPE / SYMBOL	DESCRIPTION	FIRE RATING	UL LISTING
W1	8" NOM. CONCRETE BLOCK FULL HEIGHT / DECK	NOMINAL (SEE PLAN) 8"X16"X8" CONCRETE BLOCK. PROVIDE LOOSE FILL INSULATION IN OPEN CELLS WHERE POSSIBLE. GROUT CELLS SOLID AS SPECIFIED BY THE STRUCTURAL DRAWINGS.	-	-
W2	NEW WOOD STUD WALL	3/4" GYP BD EACH SIDE OVER 2X6 WOOD STUDS @ 16" O.C. TO ELEVATION NOTED ON DRAWINGS. PROVIDE MOISTURE RESISTANT GYP BD AT NET LOCATIONS IN RESTROOM. USE EXTERIOR SHEETING ON OUTSIDE SURFACES.	-	-
W3	NEW WOOD STUD WALL TO STRUCTURE	3/4" GYP BD EACH SIDE OVER 2X6 WOOD STUDS @ 16" O.C. TO UNDERSIDE OF ROOF ABOVE. PROVIDE MOISTURE RESISTANT GYP BD AT NET LOCATIONS IN RESTROOM.	-	-
W4	NEW WOOD STUD WALL	3/4" GYP BD EACH SIDE OVER 2X4 WOOD STUDS @ 24" O.C.	-	-
W41	NEW WOOD STUD WALL	SAME AS W4, BUT HEIGHT IS ONLY 8'	-	-
W5	NEW FURRING	3/4" GYP BD OVER 2X2 WOOD FURRING STUDS @ 16" O.C. TO 6" ABOVE CEILING. PROVIDE FULL BATT INSULATION IN FURRED CAVITY.	-	-

GENERAL WALL CONSTRUCTION NOTES:

PROVIDE SLIP TRACK HEAD RECEPTOR WHERE REQUIRED. ALL WALLS AROUND RESTROOMS TO RECEIVE R-19 BATT INSULATION. ALL RESTROOM CEILINGS TO RECEIVE R-19 BATT INSULATION.

FLOOR PLAN KEYNOTES:

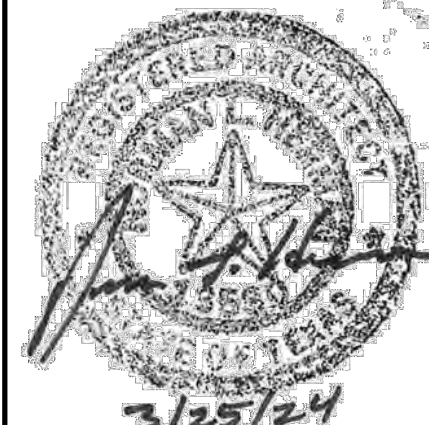
- 6" WIDE CONTINUOUS PRE-FORMED TRENCH DRAIN. MAX OPENING = 3/4". SEE PLUMBING DRAWINGS AND DRAIN SPEC.
- DEEP-BASIN SERVICE SINK. RE: MECHANICAL DRAWINGS. PROVIDE 48" HIGH STAINLESS STEEL PANEL ON WALL BEHIND SINK.
- ROOF LADDER (HATCH ABOVE) - RE: 2/A2-4 - COORDINATE EXACT LOCATION WITH BAR JOIST LOCATIONS.
- ELECTRICAL ENTRY EQUIPMENT. REFER TO ELECTRICAL DRAWINGS.
- PROVIDE ELECTRICAL CONDUIT FROM 18" AFF TO ABOVE CEILING AND PENETRATE THROUGH MASONRY WALL TO OFFICE.
- COLD WATER LINE FOR COFFEE MACHINE. RE: PLUMBING DRAWINGS.
- PROVIDE DISCONNECT FOR A LIFT AT THIS LOCATION.
- HALF HIGH WALLS. SEE 3/A5-1.
- BACK FLOW PREVENTER. SEE CIVIL DRAWINGS. REFER TO PLUMBING DRAWINGS.
- PROVIDE KEY DROP BOX. MODEL NO. D5P2014K AS MANUFACTURED BY ANSEC. INSTALLED BY CONTRACTOR.
- KNOX BOX. OBTAINED FROM LOCAL FIRE DEPARTMENT AND INSTALLED BY CONTRACTOR. VERIFY LOCATION WITH FIRE DEPARTMENT PRIOR TO INSTALLATION.
- PROVIDE BACKING AS REQUIRED TO SUPPORT TV MOUNTING BRACKET. COORDINATE WITH OWNER.
- TWO 1" ELECTRICAL CONDUITS FROM WALL TO EACH KIOSK & SERVICE COUNTER. CONDUIT #1 SHALL BE 7" FROM REAR WALL & 2'-8" FROM CENTERLINE OF FRONT DOOR (UP TO ABOVE CEILING). CONDUIT #2 WILL BE TO THE OUTSIDE OF #1 AND SLIGHTLY BACK TO ALLOW FOR ANGLE MOUNTING OF KIOSK.
- PROVIDE SIGN AT EXIT "MAXIMUM NUMBER OF OCCUPANTS"
- PROVIDE FIRE EXTINGUISHER AS DIRECTED BY LOCAL FIRE DEPARTMENT
- NOT USED
- CONTROL JOINTS TYP.
- KIOSK AND PRINTER CABINET PROVIDED AND INSTALLED BY G.C.
- PROVIDE ACCESSIBLE SIGNAGE AT RESTROOM AS REQUIRED PER CODE
- LOCKERS PROVIDED AND INSTALLED BY GENERAL CONTRACTOR.
- SERVICE COUNTER PROVIDED AND INSTALLED BY G.C.
22. 4'-0" W X 7'-4" H OPENING
- CONCRETE SLAB - RE: STRUCTURAL DRAWINGS.
- PROVIDE CONDUIT FOR CONTROLS AND PIPING TO LANDSCAPE MANIFOLD
- GAS METER.
- MILLWORK PROVIDED AND INSTALLED BY G.C.
- 24" W X 30" H X 12" D UPPER CABINET PROVIDED BY OWNER INSTALLED BY GC. MOUNT BOTTOM AT 46" AFF.
- HOSE BIB. REFER TO PLUMBING DRAWINGS.
- CONTRACTOR SHALL PROVIDE BISTRO TABLE SHOWN ON FLOOR PLAN...SEE ALSO DETAIL 5B ON SHEET A6-2.
- FLOOR DRAIN
- METAL AWNING ABOVE
- CONDUIT CENTER IS 8" FROM THE CENTER.
- CONDUIT FROM CONTROL BOX TO RACK CONTROL BOX.
- 4" DIA. IN SLAB PVC CONDUIT FOR HYDRAULIC, AIR, DATA. CONDUIT TO HAVE NO 90 DEGREE BENDS
- IN LINE. PROVIDE SWEEP IN LINE WHERE CHANGE OF DIRECTION OCCURS. HOLD CONDUIT 2" ABOVE THE PIT FLOOR.
- ACCESSIBLE ENTRY SIDEWALK.
- CONTRACTOR SHALL PROVIDE BISTRO TABLES AS SHOWN ON THE FLOOR PLAN...SEE ALSO DETAIL 5B SHEET A6-2.
- PROVIDE 6" DEEP CONC. APRON PAD WITH WIRE MESH REINFORCING 10 FEET OUT FROM OVERHEAD DOORSU



2 "L" MTL. AT RECESSED SLAB TYP.
SCALE: 1/4" = 1'-0"

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION

DATE

COMMENTS

ARCODEV JOB #:
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CHECKED BY: NLH
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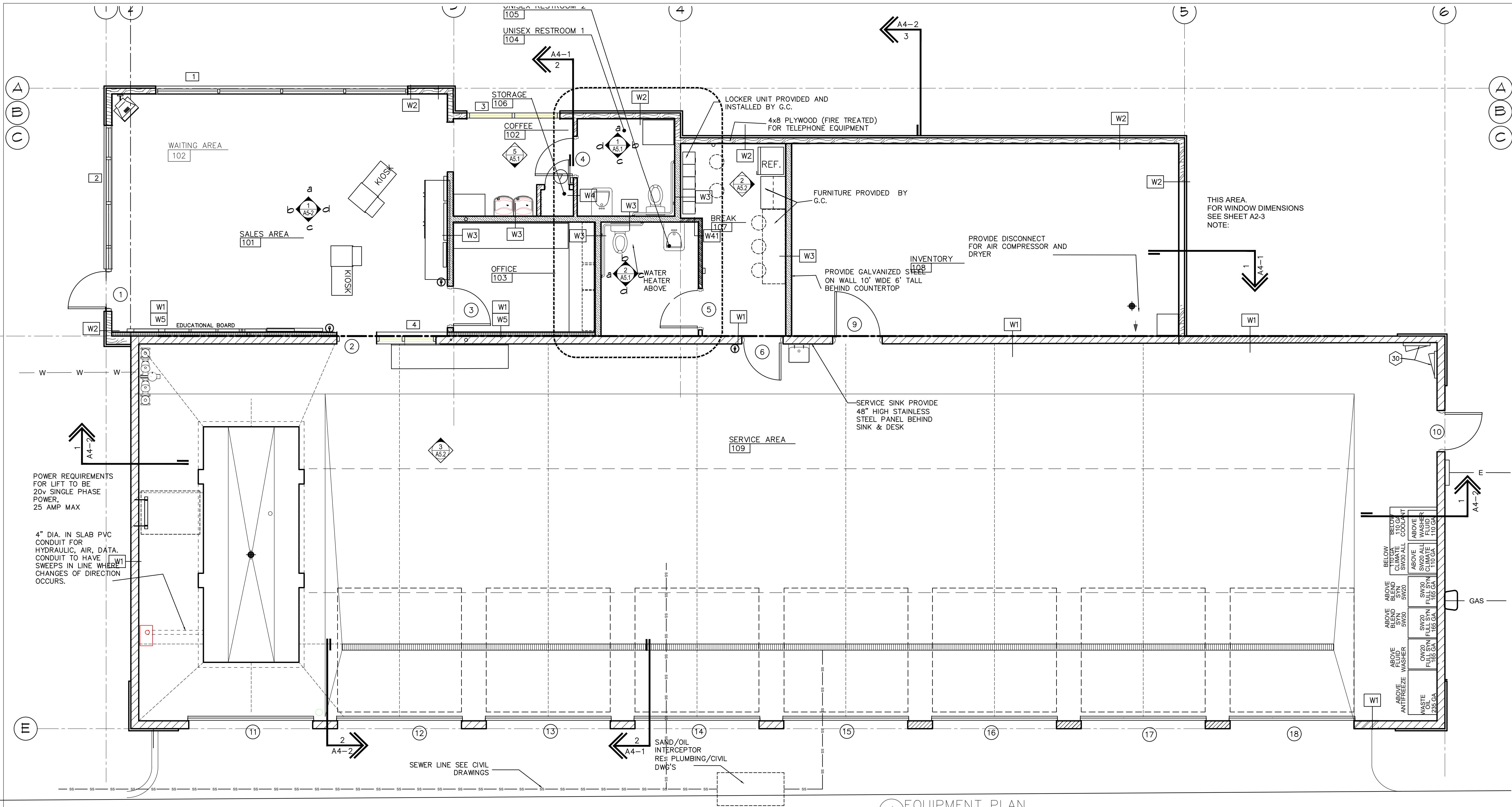


45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.981-9905

SHEET

A2-1

FLOOR PLAN

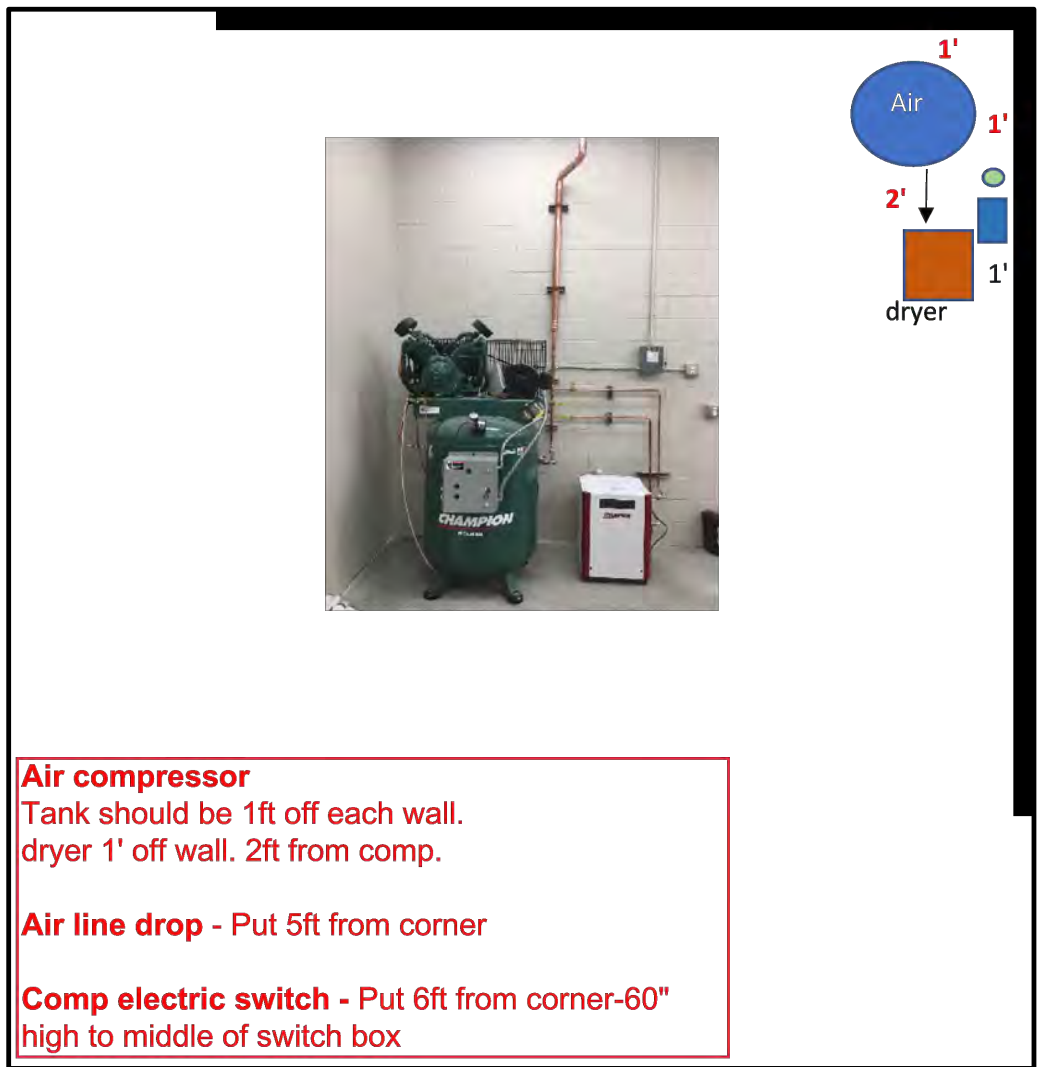


1 EQUIPMENT PLAN
SCALE: 1/4" = 1'-0"

EQUIPMENT SCHEDULE A											
ID	DESCRIPTION	MANUFACTURER	MODEL NUMBER	LENGTH	DEPTH	HEIGHT	HP	VOLTAGE	AMPS	PHASE	NOTES
1	ALIGNMENT RACK - CONTROL BOX	HUNTER	RX10LFT-IS	19'	7'-4 1/2"	6"	-	208-230	26A	1	DEDICATED CIRCUIT
2	ALIGNMENT MACHINE	HUNTER	WA443	36"	2'-6"	5'-8"	-	115	15A	1	DEDICATED CIRCUIT
3	ALIGNMENT SENSORS	HUNTER	HE421	8'-9"	1'-3"	10'-3"	-	120	15A	1	DEDICATED CIRCUIT
4A	AIR COMPRESSOR	CHAMPION	HR50-12	5'-10"	2'-4"	4'-8"	5	208	30A	3	DEDICATED CIRCUIT 30 AMP, WITH DISCONNECT
4B	AIR COMPRESSOR - DRYER	CHAMPION									
5	BRAKE LATHE	HUNTER	BL500	44 1/2"	35 1/2"	-	1.5	115	15A	1	DEDICATED CIRCUIT (115V, 15 AMP)
6	ABOVE-GROUND 10K TWIN POST LIFT	ROTARY	SPD10	11'-6"	-	12'-5"	5	110	-	1	WITH SHOCKWAVE, NON-DEDICATED CIRCUIT
7	ABOVE-GROUND 10K A-TWIN POST LIFT	ROTARY	SPD10A	11'-6"	-	12'-5"	5	110	-	1	WITH SHOCKWAVE, NON-DEDICATED CIRCUIT
8	ABOVE-GROUND 12K TWIN POST LIFT	ROTARY	SPD12RA	11'-6"	-	13'-8"	5	110	-	1	WITH SHOCKWAVE, NON-DEDICATED CIRCUIT
9	NEW OIL TANK	VALVOLINE	-	-	-	-	-	-	-	-	-
10	USED OIL TANK	-	-	3'	4'	-	-	-	-	-	STACKABLE
11	WASHER/COOLANT TANK	-	-	3'	3'	5'-1"	-	-	-	-	DBL WALL. UL LISTED
12	OIL DISPENSER	EP16	-	-	-	-	-	-	-	-	-
13											
14											
15											
16											
17											
18											
19											

ELECTRICAL LEGEND:	
	DUPLEX OUTLET
	DEDICATED DUPLEX OUTLET
	AUTOCLAVE RECEPTACLE
	FOUR-PLEX OUTLET
	220-VOLT OUTLET
	FLOOR OUTLET
	TELEPHONE JACK
	TELEPHONE JACK +60°
	DATA JACK
	PLUGMODE
	AC ABOVE COUNTER
	LIGHT SWITCH
	THREE-WAY LIGHT SWITCH
	TELEPHONE BACKBOARD W/ OUTLET
	ELECTRICAL PANEL
	TIME CLOCK
	SIGN OUTLET
	JUNCTION BOX
	THERMOSTAT
VERIFY ELECTRICAL REQUIREMENTS WITH OWNER PRIOR TO INSTALLATION	

- GENERAL NOTES:
1. VERIFY ALL EQUIPMENT LOCATIONS WITH OWNER PRIOR TO INSTALLATION.
 2. COORDINATE INSTALLATION OF EQUIPMENT ITEMS SUPPLIED BY OWNER.
 3. TELEPHONE SYSTEM PROVIDED BY VENDORS. COORDINATE SCHEDULE WITH GENERAL CONTRACTOR.
 4. COMPRESSED AIR LINE DROPS TO 48" AFF UNLESS NOTED OTHERWISE REFER TO PLUMBING PLAN FOR COMPRESSED AIR LINE SIZES.



BRAKES PLUS
640 EAST FM 2410
HARKER HEIGHTS, TEXAS

ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
1	03.25.24	SUBMITTED TO BLDG. DEPT.

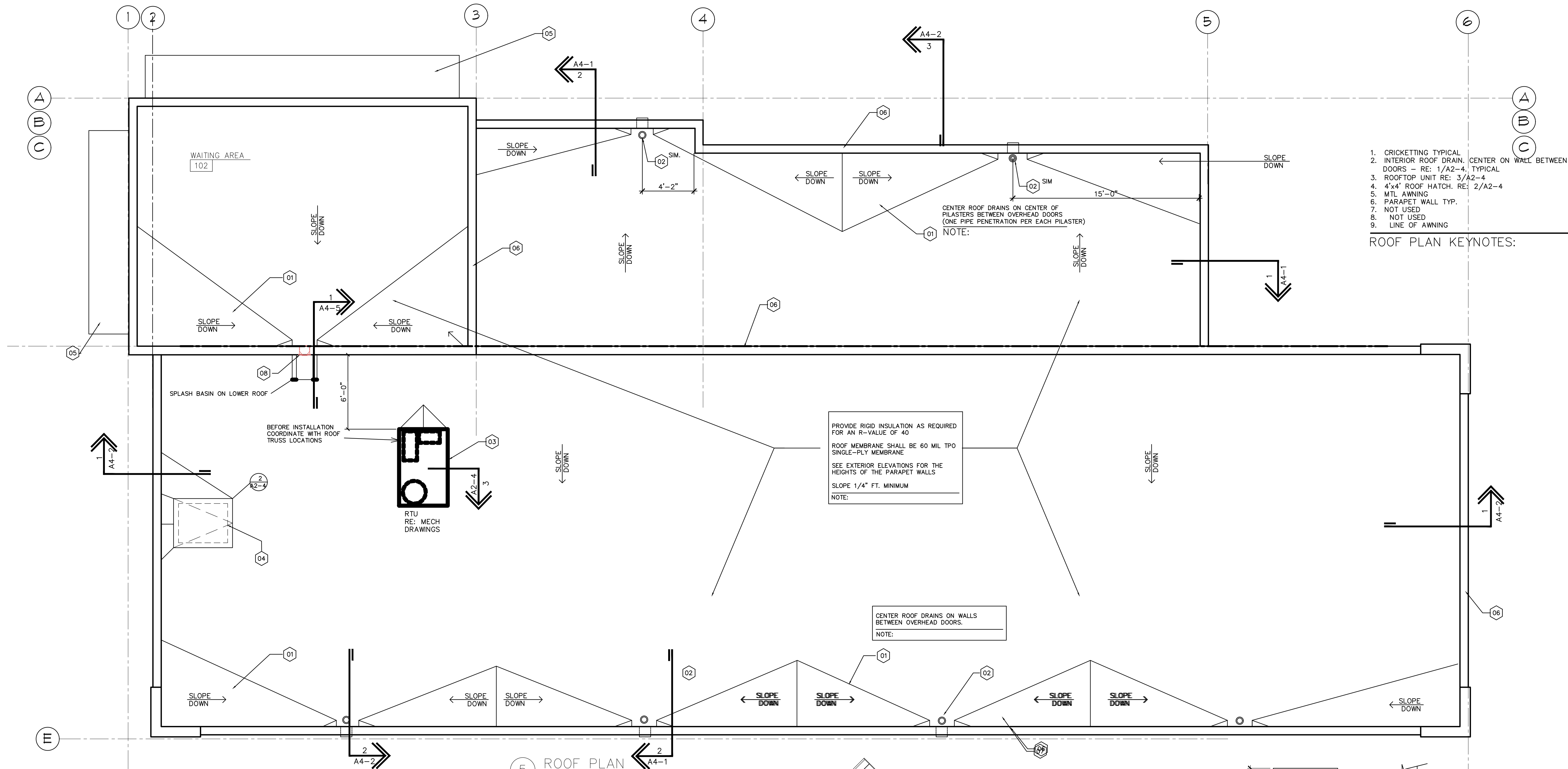
ARCODEV JOB #: _____
CLIENT/JOB #: _____
DRAWN BY: NLH
CHECKED BY: NLH
DATE OF ISSUE: 03.23.24

45 SPYGLASS DRIVE
UTILETON, CO 80123
VOICE: 303.881-8925

SHEET

A2-2

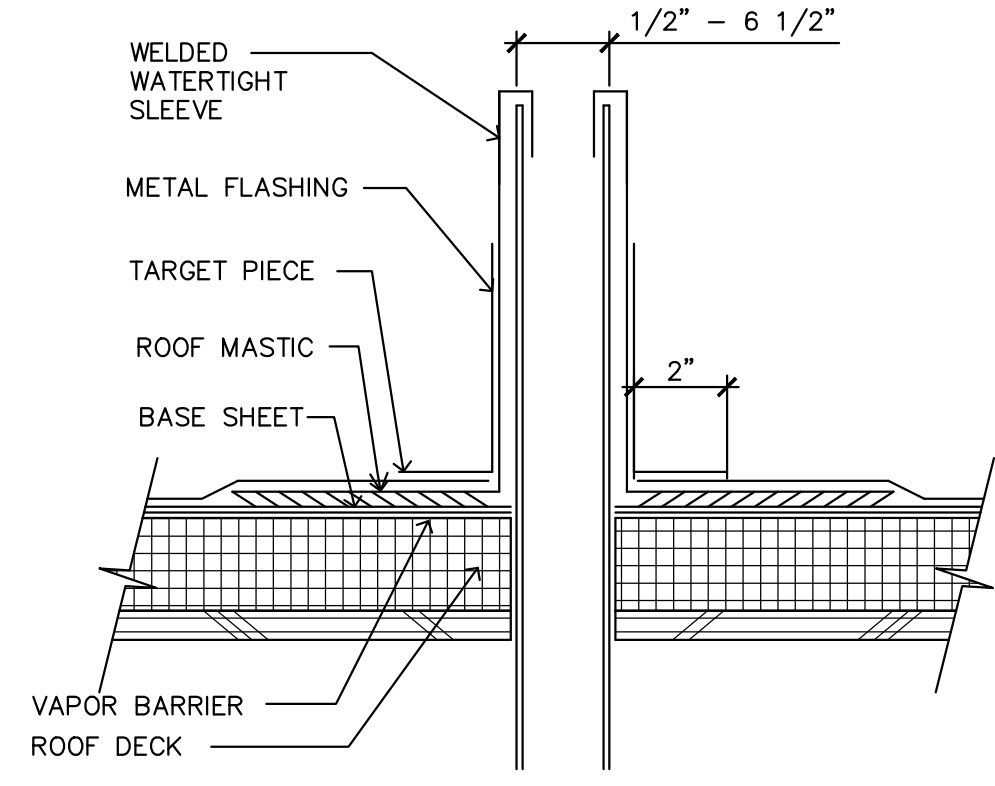
EQUIPMENT PLAN



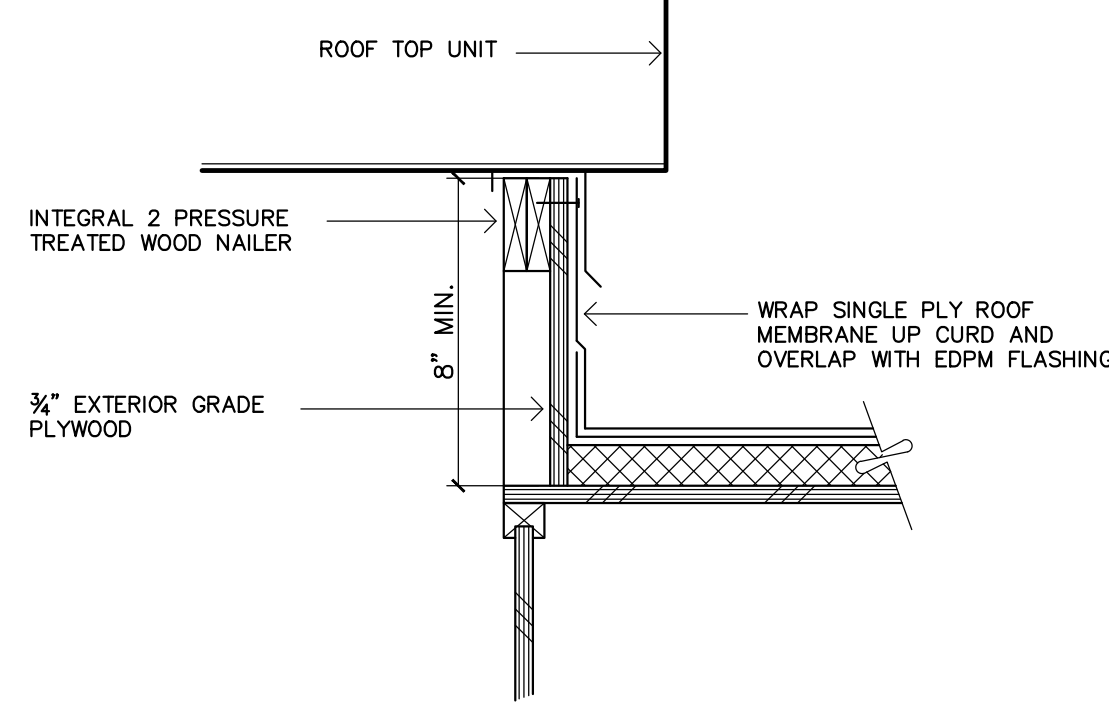
1. CRICKETING TYPICAL
2. INTERIOR ROOF DRAIN, CENTER ON WALL BETWEEN DOORS - RE: 1/A2-4, TYPICAL
3. ROOFTOP UNIT RE: 3/A2-4
4. 4'x4' ROOF HATCH, RE: 2/A2-4
5. MTL AWNING
6. PARAPET WALL TYP.
7. NOT USED
8. NOT USED
9. LINE OF AWNING
- ROOF PLAN KEYNOTES:

PROVIDE RIGID INSULATION AS REQUIRED FOR AN R-VALUE OF 40
ROOF MEMBRANE SHALL BE 60 MIL TPO SINGLE-PLY MEMBRANE
SEE EXTERIOR ELEVATIONS FOR THE HEIGHTS OF THE PARAPET WALLS
SLOPE 1/4" FT. MINIMUM
NOTE:

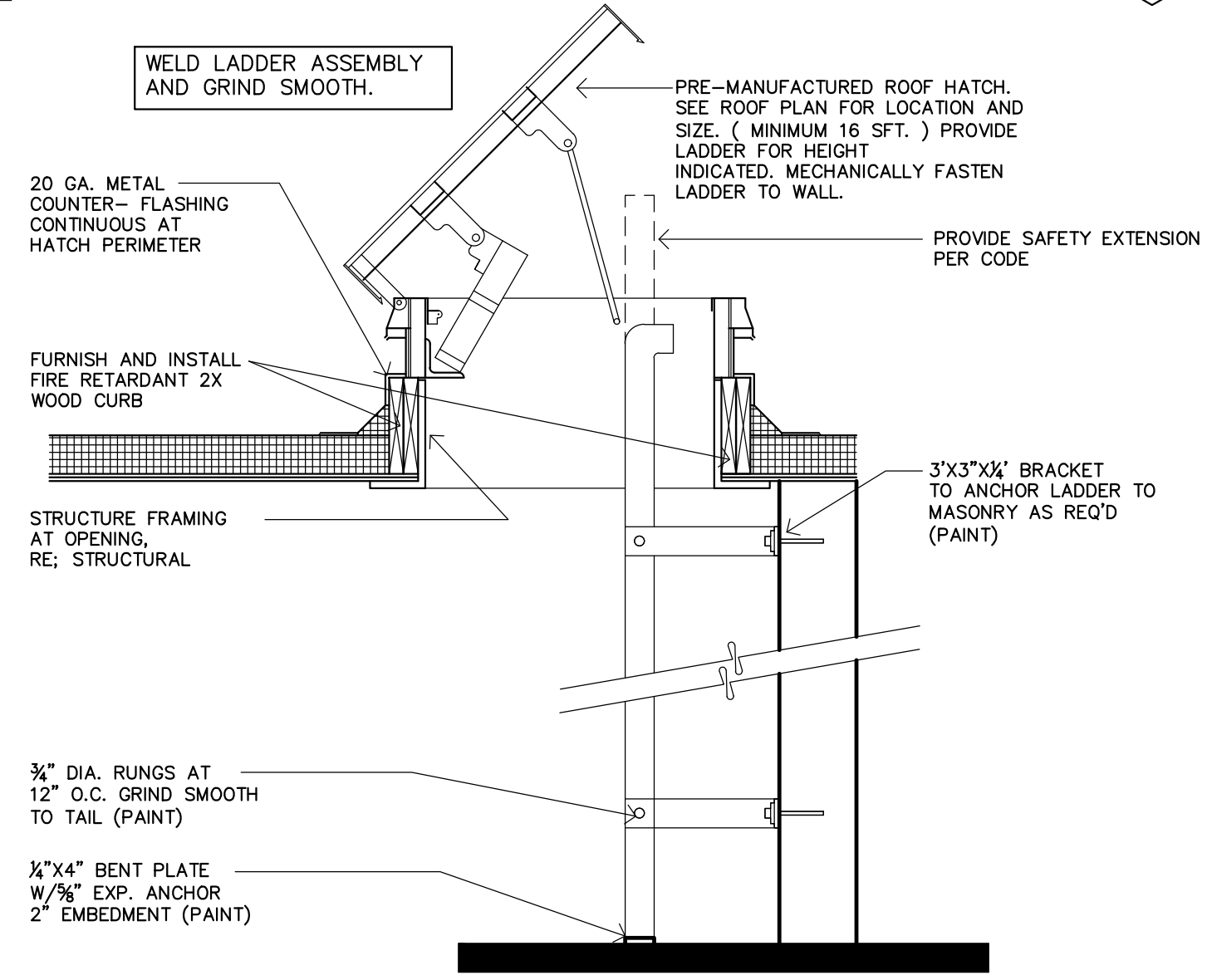
CENTER ROOF DRAINS ON WALLS BETWEEN OVERHEAD DOORS.
NOTE:



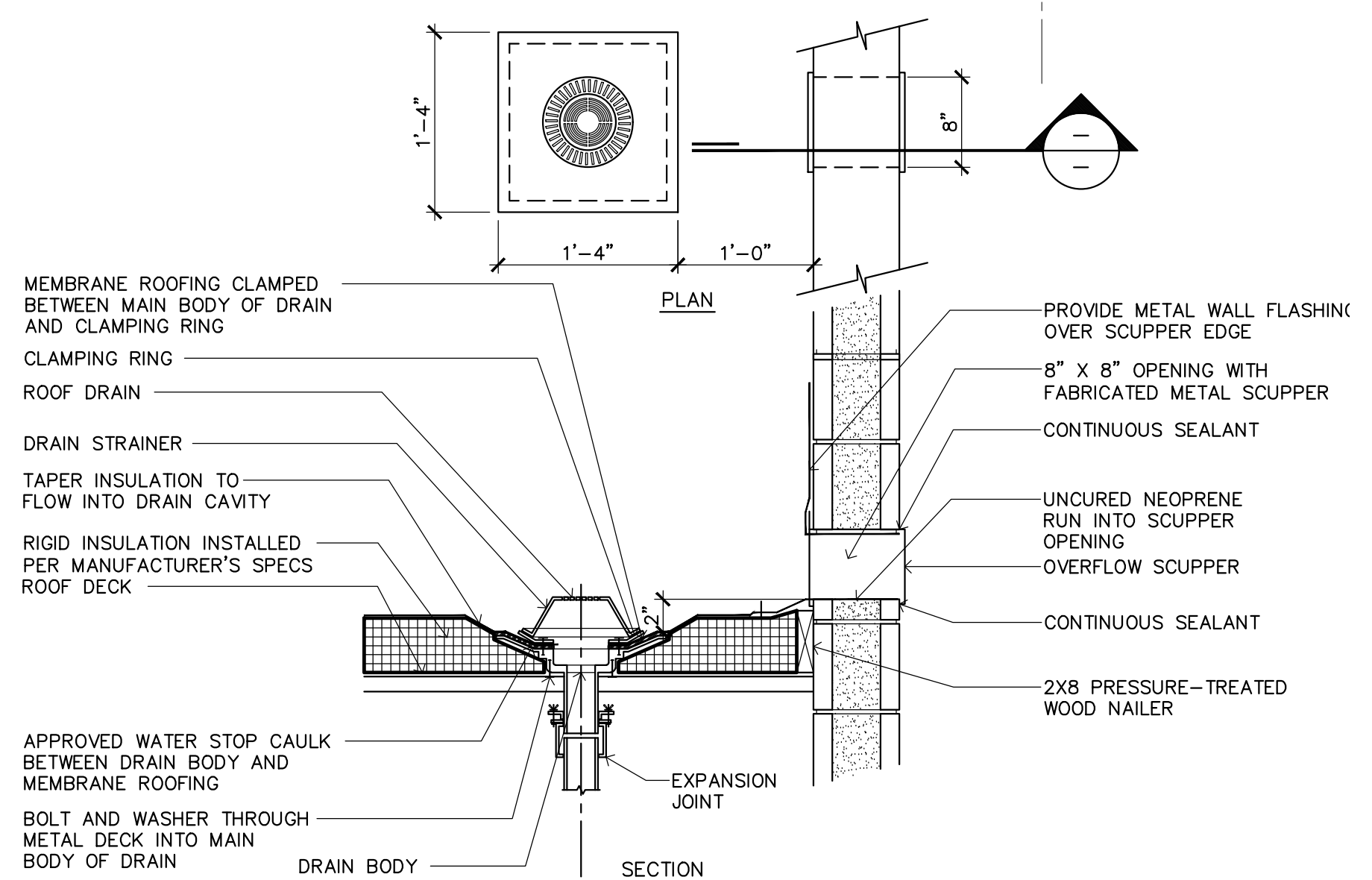
4 PIPE PENETRATION DETAIL
SCALE: 3" = 1'-0"



3 RTU CURB DETAIL
SCALE: 1 1/2" = 1'-0"



2 ROOF HATCH DETAIL
SCALE: 3/4" = 1'-0"



1 DOWNSPOUT / OVERTFLOW DETAIL
SCALE: 1" = 1'-0"

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

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45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

SHEET

A2-4

ROOF PLAN

KEYNOTES

1. SMOOTH FACE CONCRETE BLOCK BY BEST BLOCK
COLOR: #739 MEDIUM BROWN

2. EIFS — INTEGRAL COLOR TO MATCH SHERWIN WILLIAMS #2835 CRAFTSMAN BROWN

3. EIFS — INTEGRAL COLOR TO MATCH SHERWIN WILLIAMS #2834 BIRDSEYE MAPLE

4. EIFS — INTEGRAL COLOR TO MATCH SHERWIN WILLIAMS #6105 DIVINE WHITE

5. METAL. MAN DOOR. PAINT TO MATCH MASONRY
6. ALUMINUM/GLASS STOREFRONT
CLEAR ANODIZED ALUMINUM

7. ALUMINUM SECTIONAL OVERHEAD DOORS
CLEAR ANODIZED ALUMINUM

8. ILLUMINATED SIGNAGE (UNDER SEPARATE PERMIT)

9. PRE-FINISHED METAL CAP FLASHING PREFINISHED TO MATCH FINISH ANODIZED STOREFRONT FRAMING

10. NOT USED.
11. DECORATIVE LIGHT FIXTURE.

12. KEY DROP BOX

13. 1 1/2" X 3/4" REVEAL

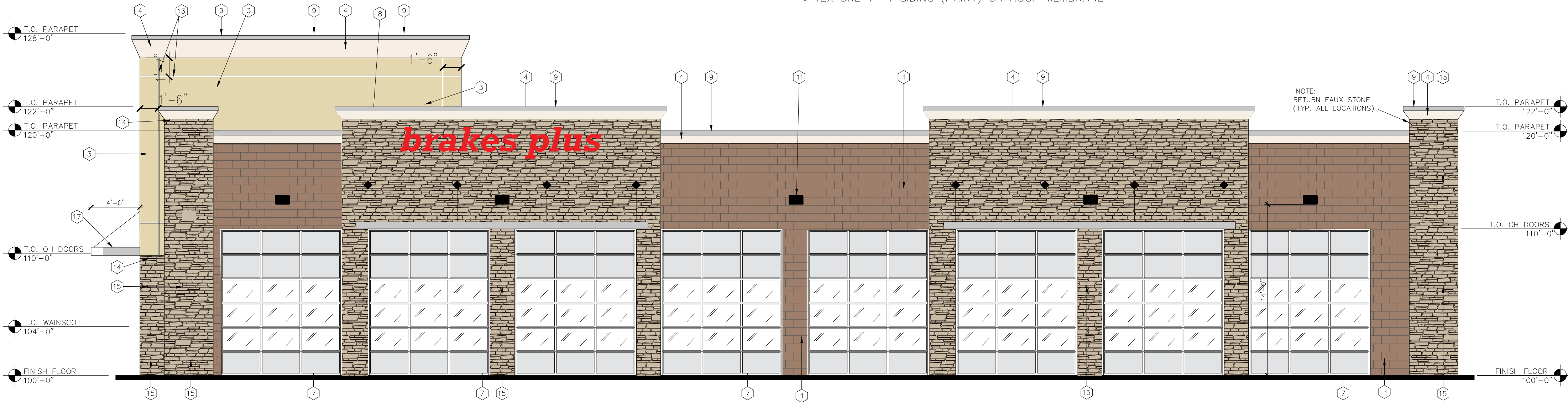
14. WATER SILL — FAUX STONE — CULTURED STONE — WHITE OAK COUNTRY LEDGESTONE CV-20046

15. FAUX STONE — CULTURED STONE — WHITE OAK COUNTRY LEDGESTONE CV-20046

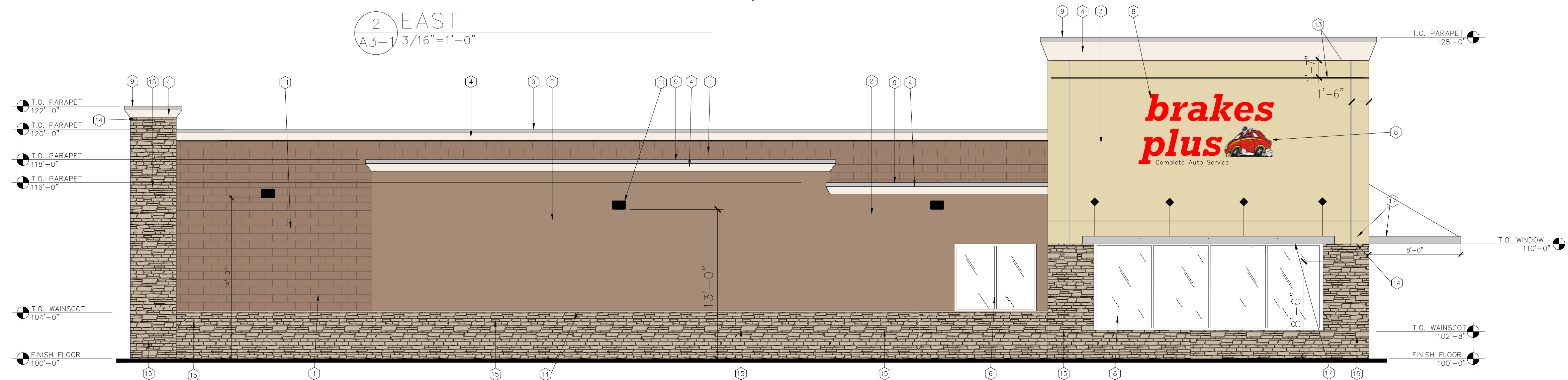
16. METAL HVAC GRILLE — PAINT TO MATCH BLOCK

17. METAL AWNING — BRIGHT SILVER

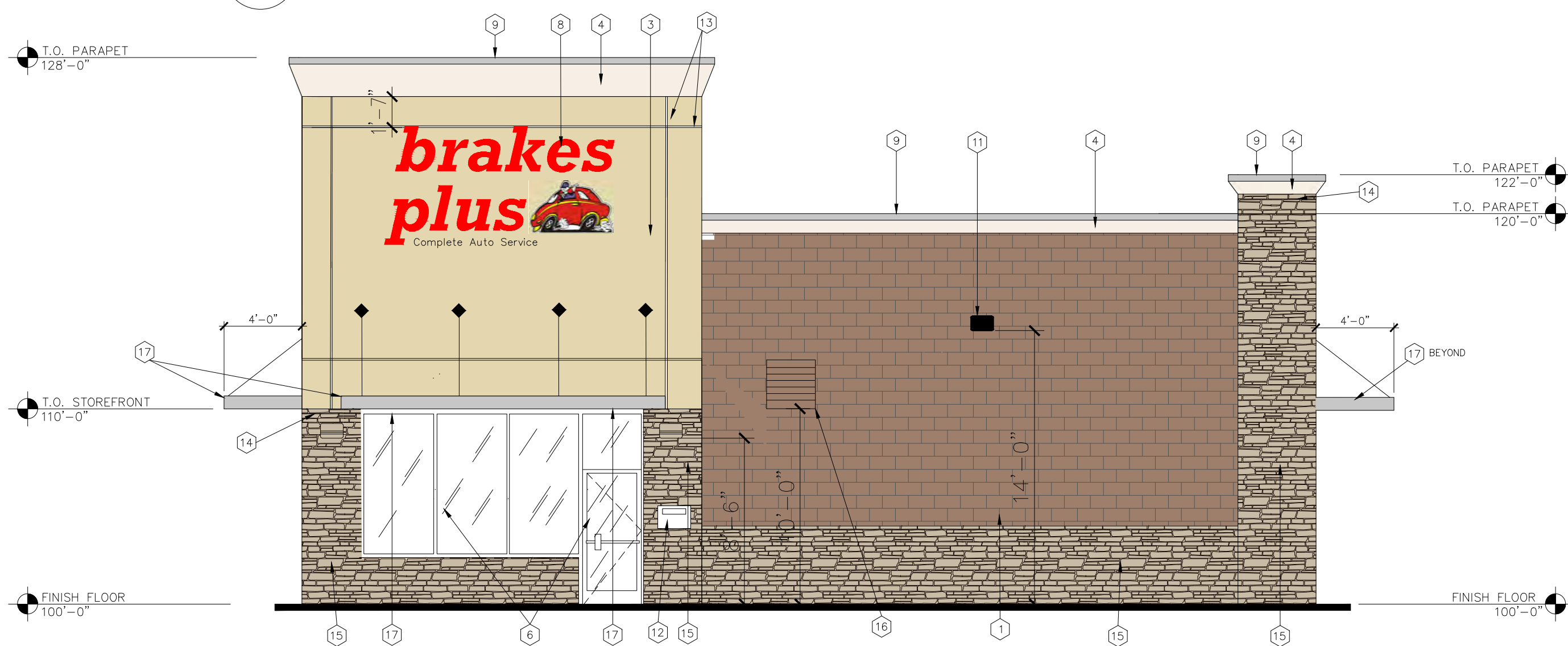
18. TEXTURE 1-11 SIDING (PAINT) OR ROOF MEMBRANE



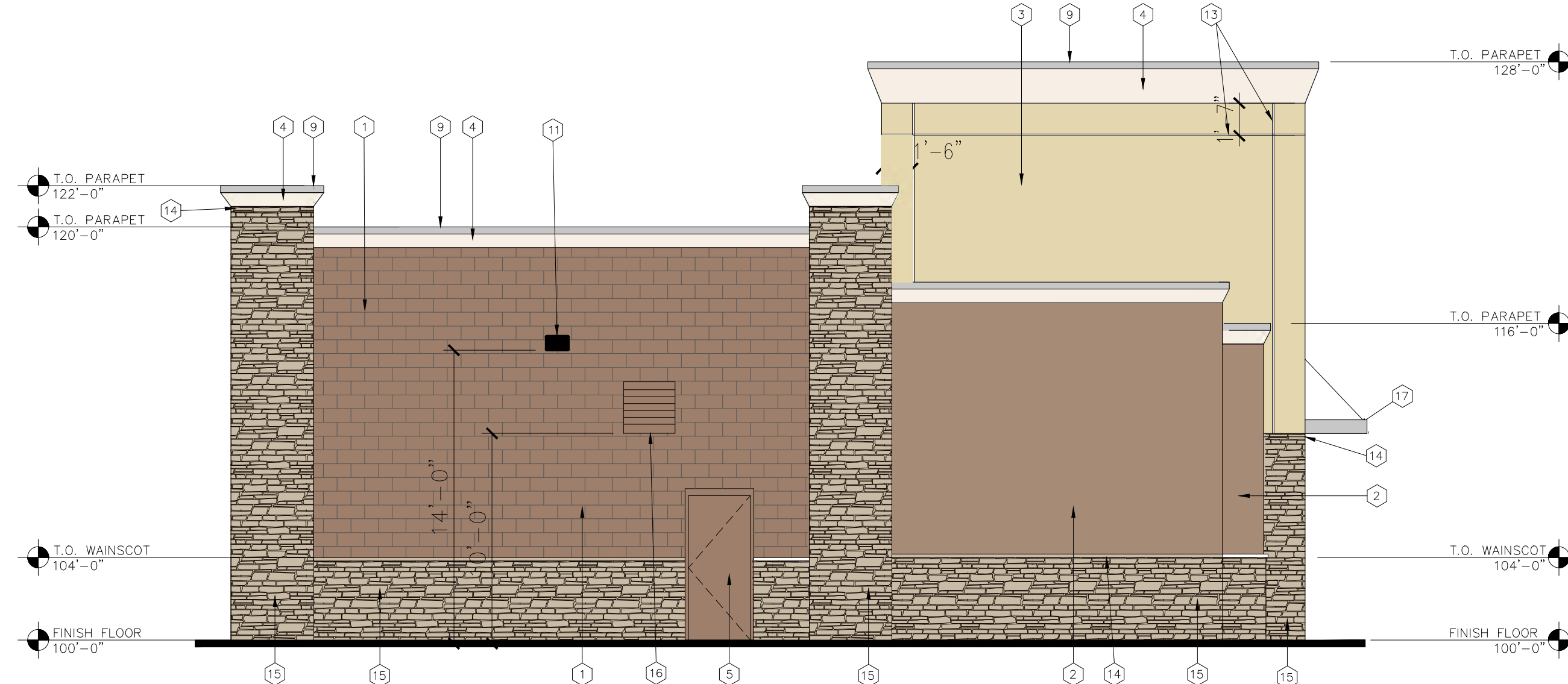
2 EAST
A3-1 3/16"=1'-0"



1 WEST ELEVATION
A3-1 3/16"=1'-0"



3 SOUTH ELEVATION
A3-1 3/16"=1'-0"



4 NORTH ELEVATION
A3-1 3/16"=1'-0"

KNIGHT'S WAY CORRIDOR DESIGN REQUIREMENTS:

- CORNICE IS SHOWN FOR BANDING REQUIREMENTS
- MATERIAL CHANGES ADDED FOR MASSING REQUIREMENTS
- COLOR CHANGES ADDED FOR MASSING REQUIREMENTS
- PARAPET HEIGHTS CHANGES MADE FOR VARIATION REQUIREMENTS
- AWNINGS ADDED FOR PROJECTIONS/RECESSES REQUIREMENTS
- MATERIAL CHANGES ADDED FOR PILASTER CREDITS
- WAINSCOTE BASE INCLUDED FOR BANDING CREDITS

1

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

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1	03.25.24	SUBMITTED TO BLDG. DEPT.
	06.05.24	RESUBMIT TO BLDG. DEPT.

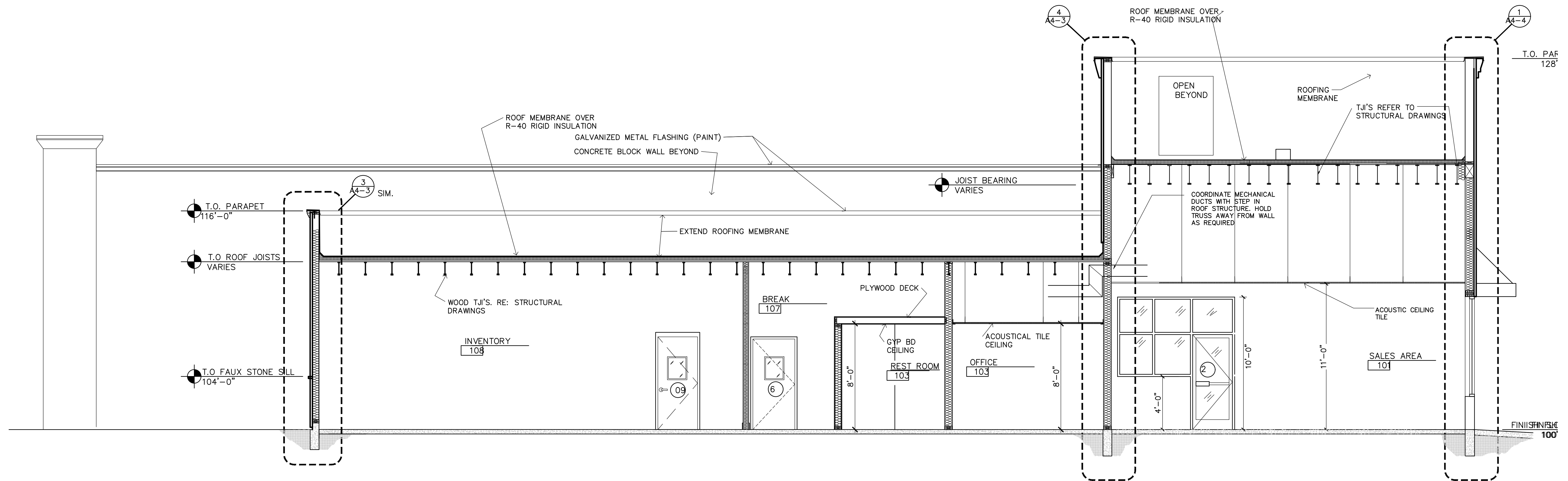
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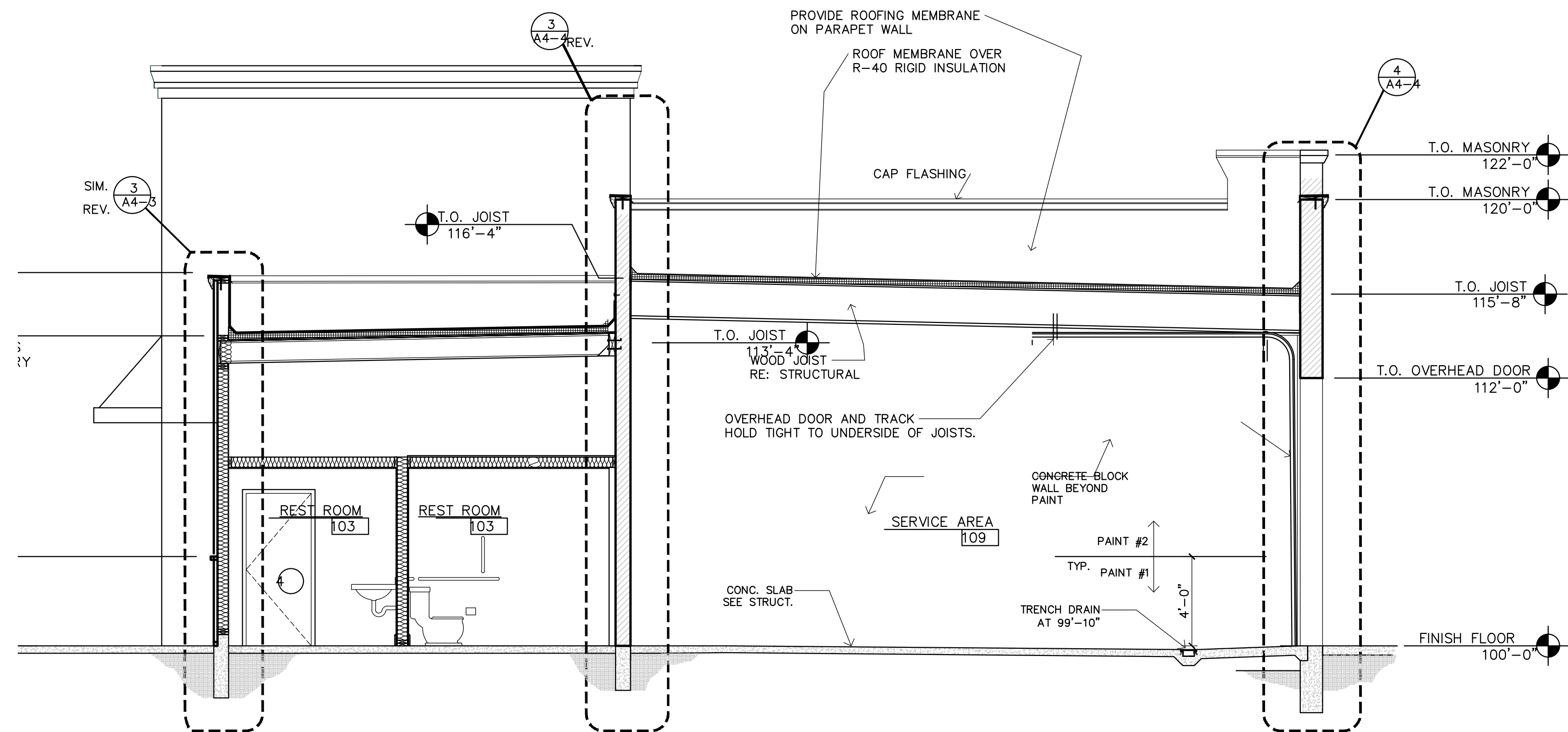
SHEET

A3-1

EXTERIOR ELEVATIONS



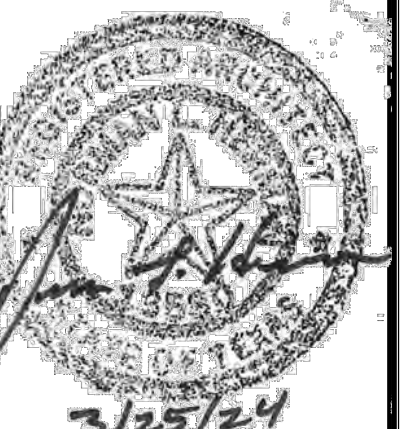
1 BUILDING SECTION
SCALE: 1/4" = 1'-0"



2 BUILDING SECTION
SCALE: 1/4" = 1'-0"

BRAKES PLUS

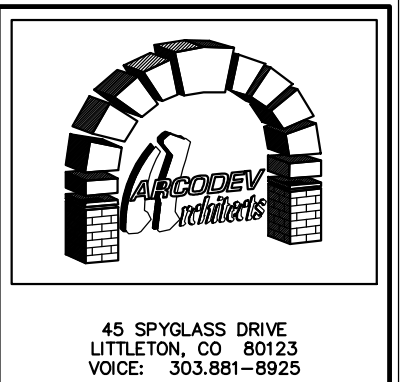
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HARKER HEIGHTS, TEXAS



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1	03.25.24	SUBMITTED TO BLDG. DEPT.
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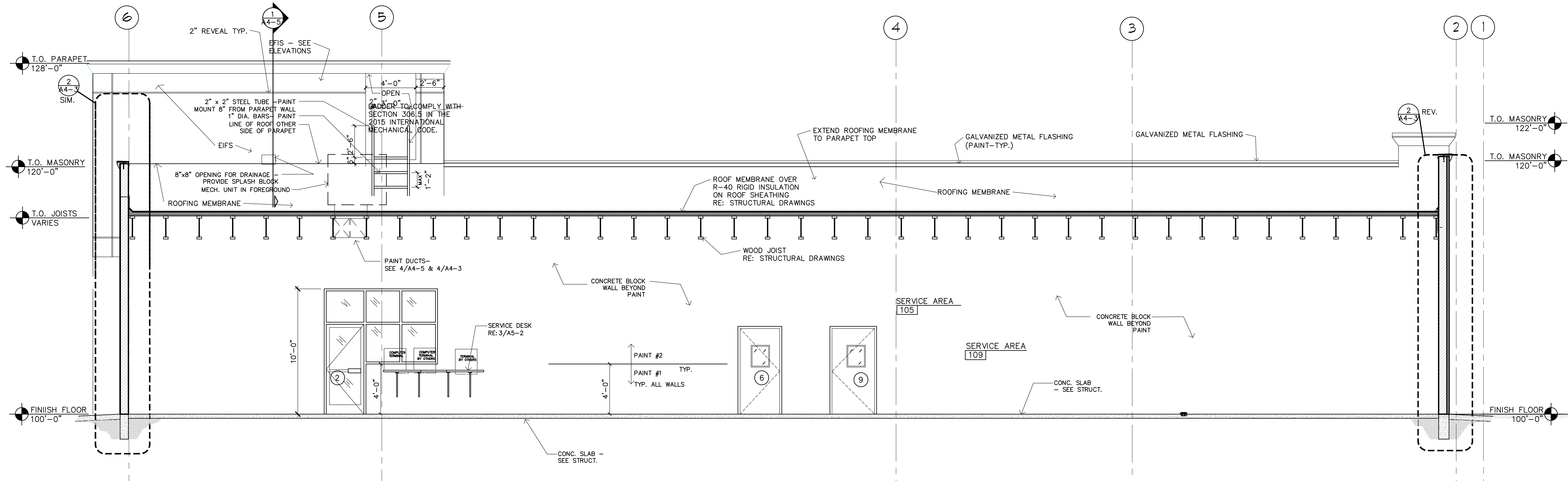
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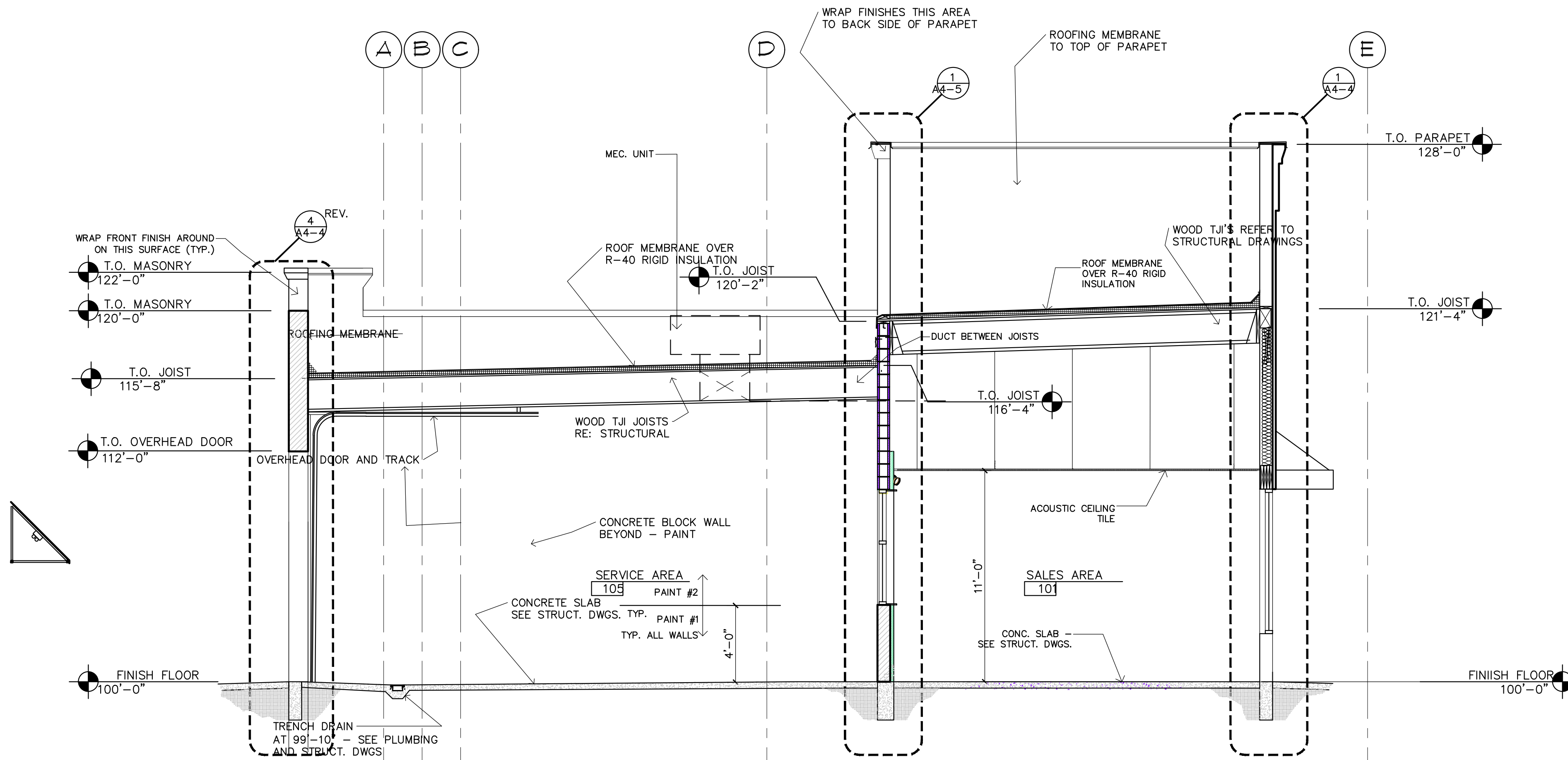
ARCODEV

A4-1

BUILDING SECTIONS



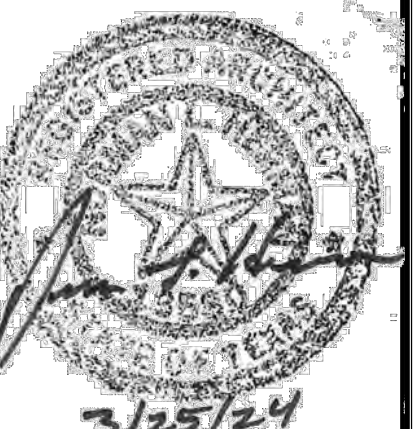
1 BUILDING SECTION
SCALE: 1/4" = 1'-0"



2 BUILDING SECTION
SCALE: 1/4" = 1'-0"

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

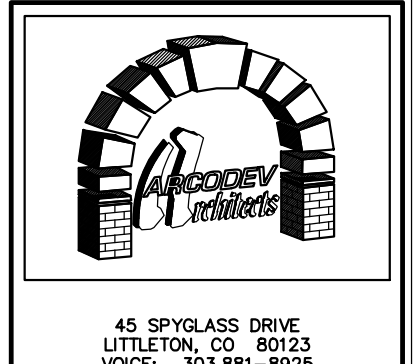


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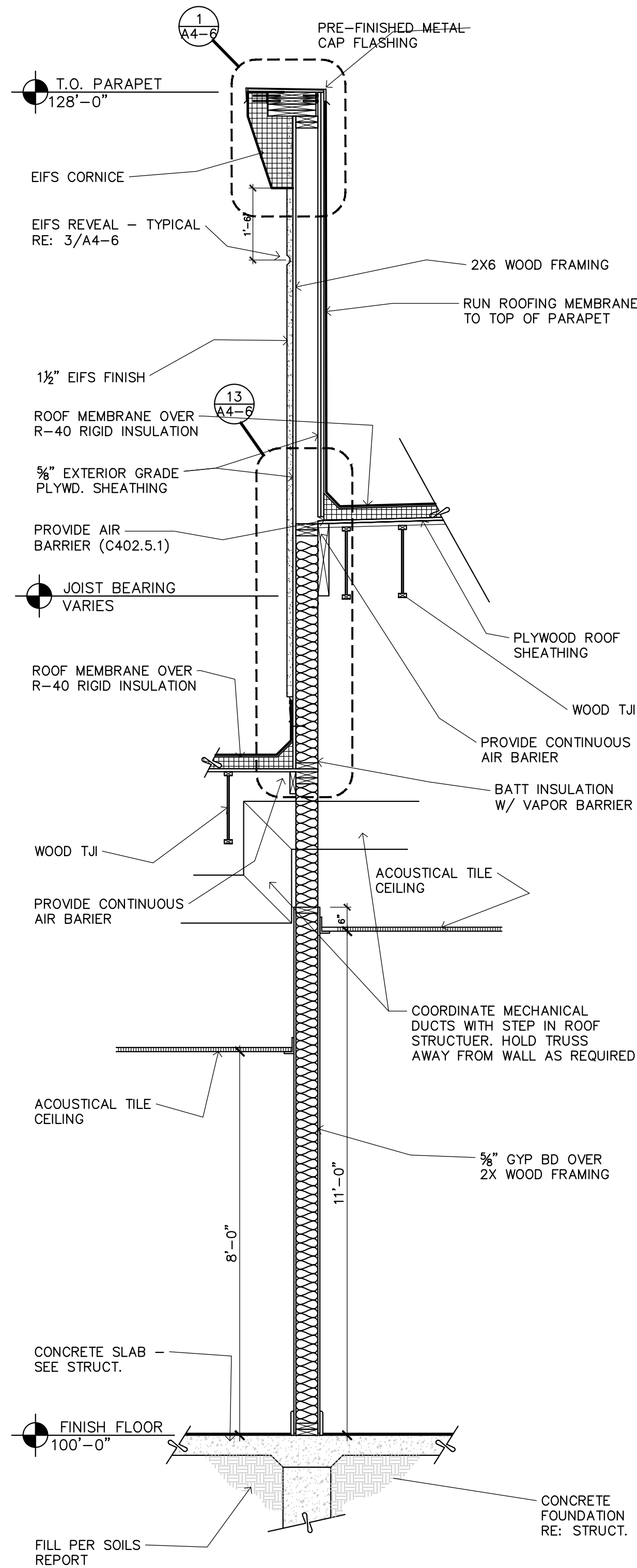
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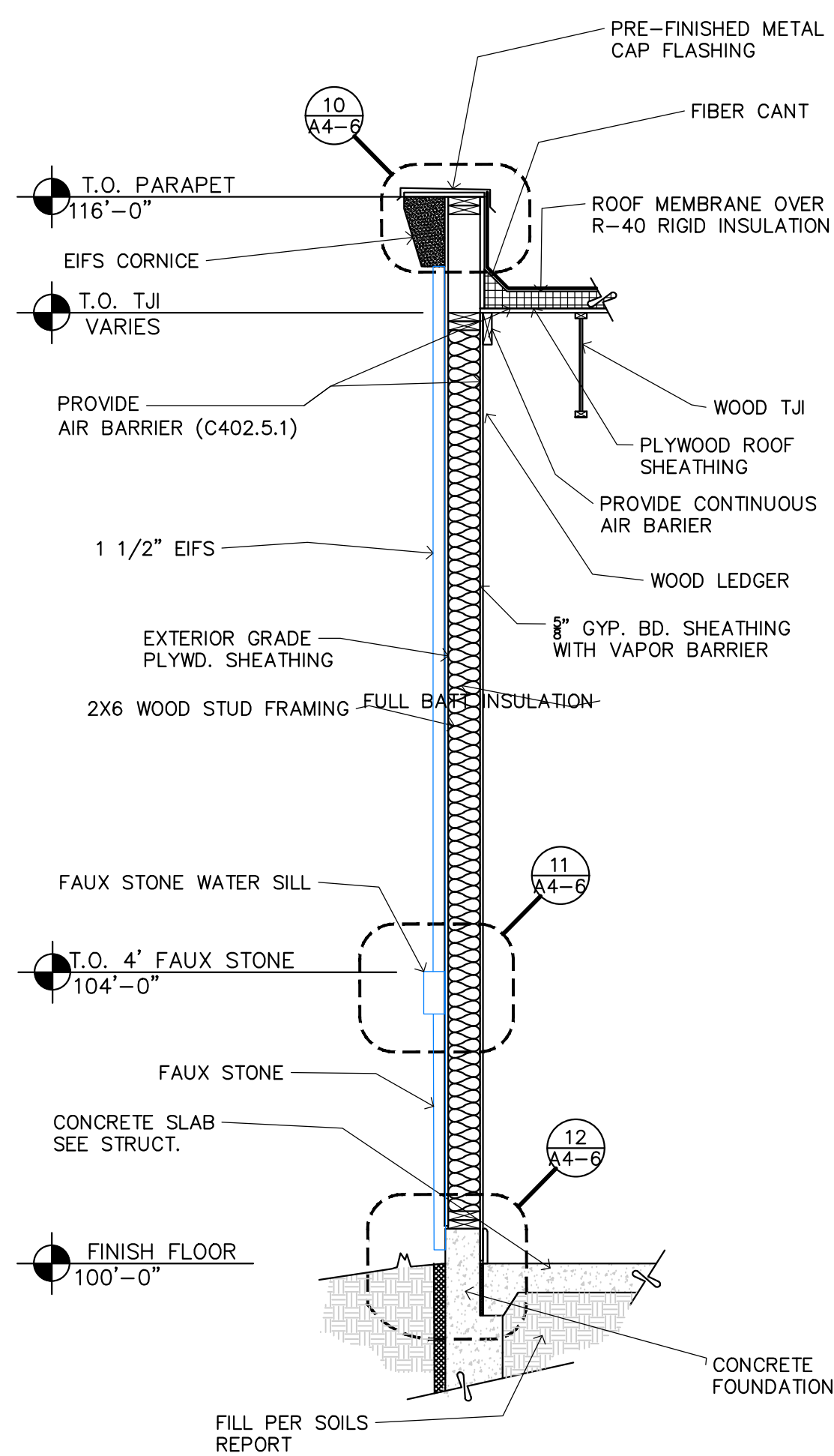
45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

A4-2

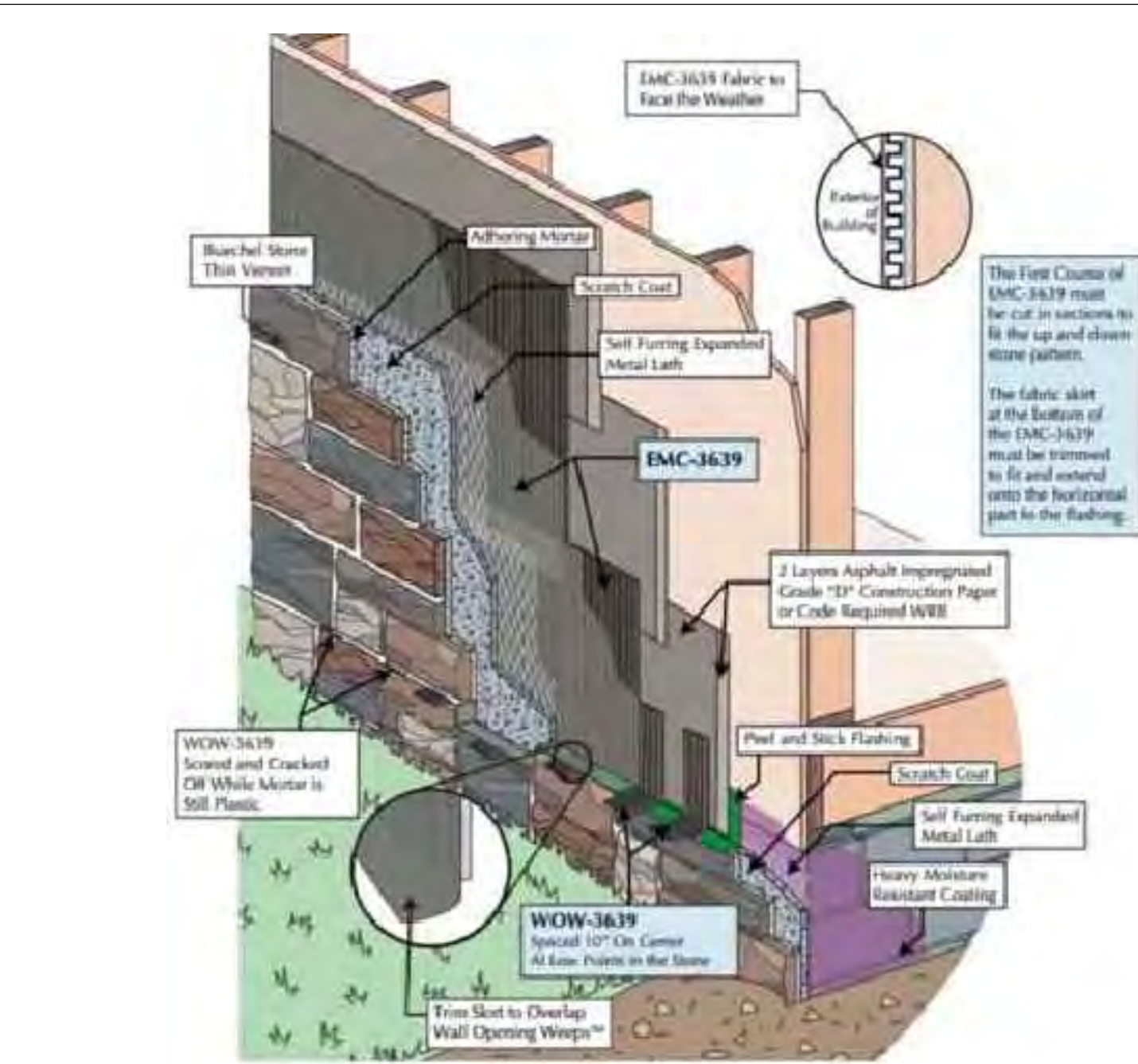
BUILDING SECTIONS



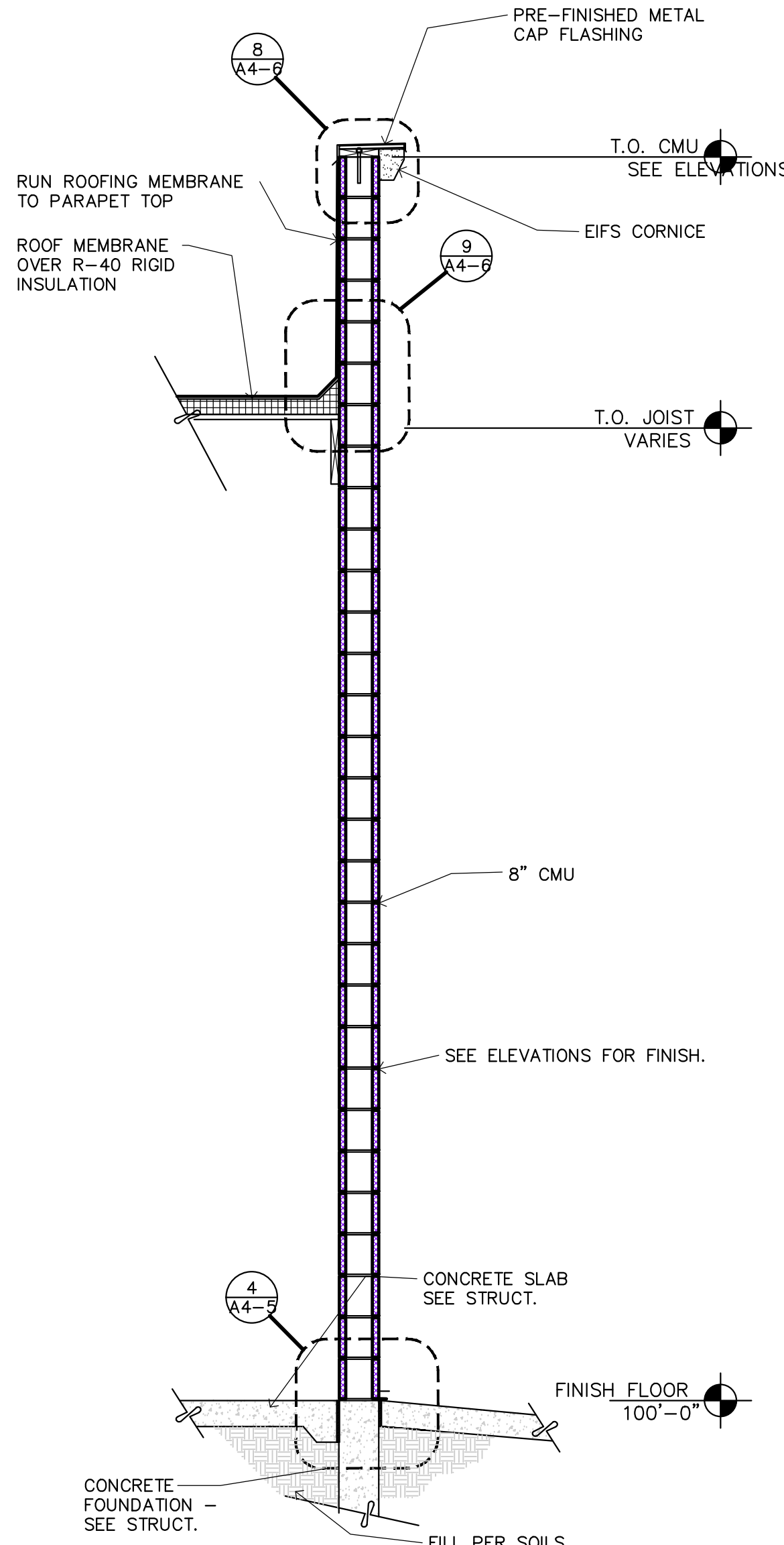
4 WALL SECTION
A4-3 1/2"=1'-0"



3 WALL SECTION
A4-3 1/2"=1'-0"



5 FAUX STONE WATER DRAINAGE DETAILS.
A4-3 NO SCALE

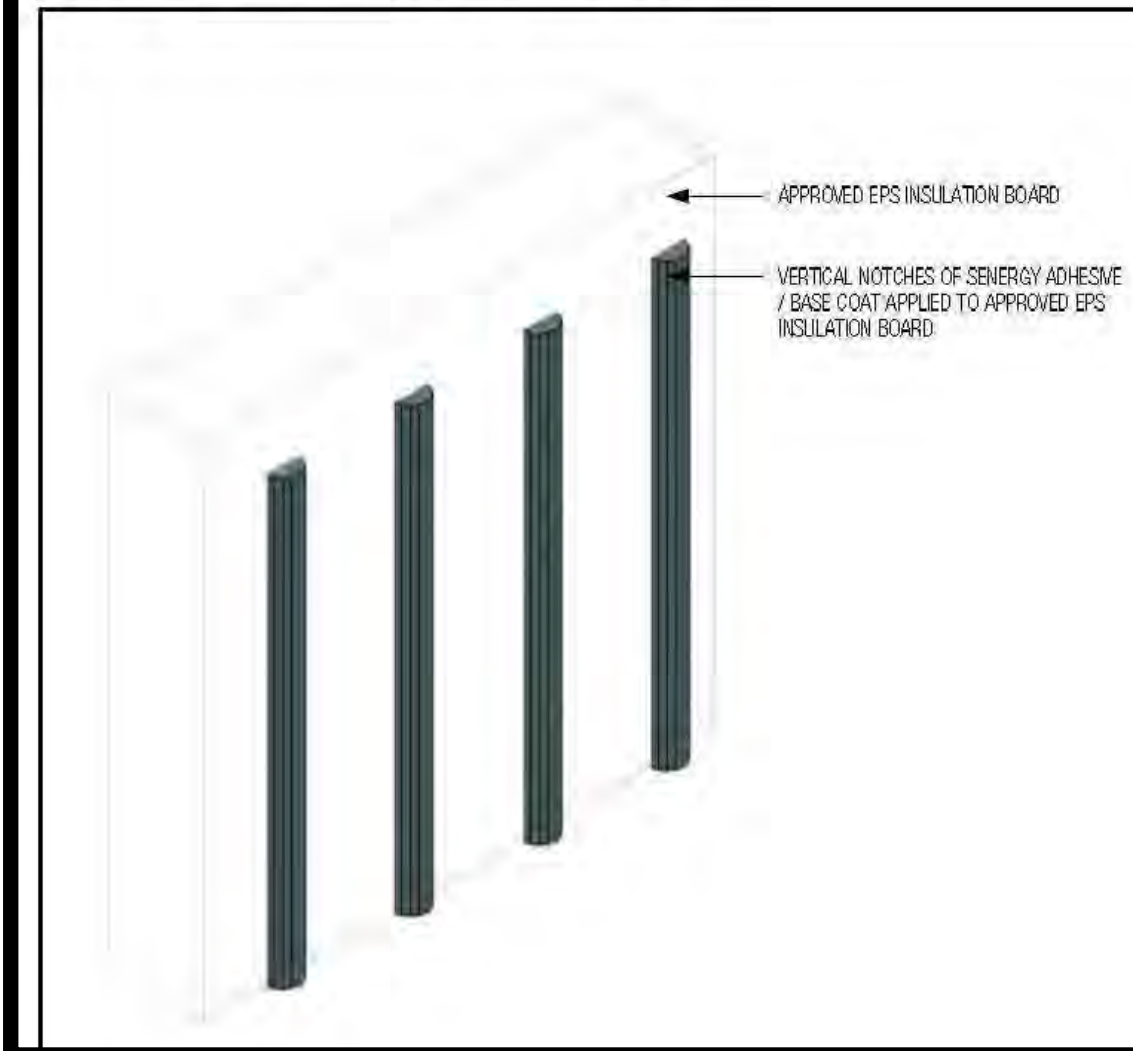


2 WALL SECTION
A4-3 1/2"=1'-0"



Channeled Adhesive CI Design

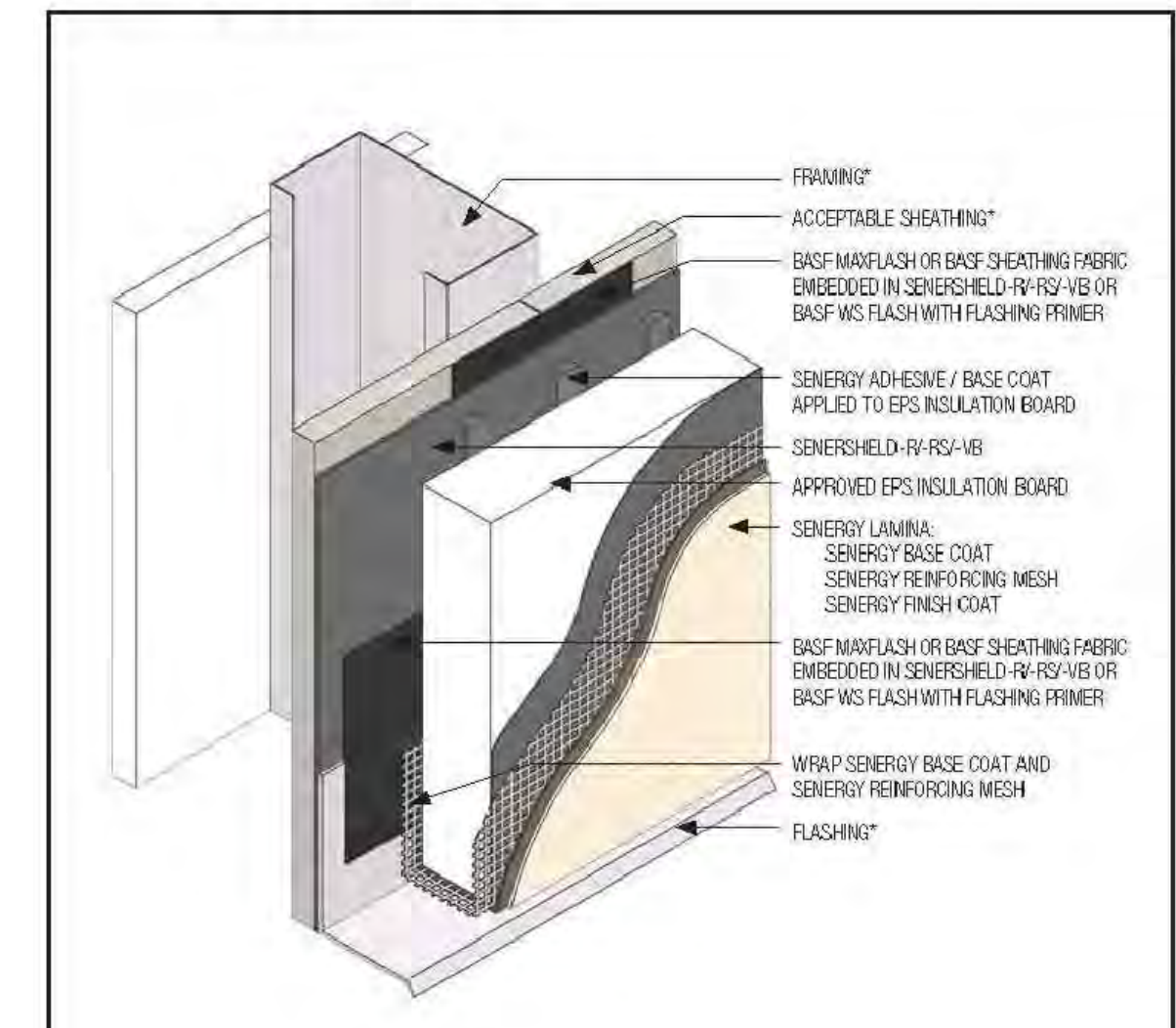
TYPICAL CHANNELED ADHESIVE



- Install BASF materials in accordance with current installation instructions.
- Unsatisfactory conditions shall be reported to the General Contractor and corrected before the application of BASF products.
- Verify all materials are installed in accordance with current installation instructions.
- Apply mixed base coat to entire surface of insulation board using a stainless steel trowel with 1/2" x 1/2" (13 mm x 13 mm) notches spaced 2" (50 mm) apart. Ribbons of adhesive must be applied parallel to the 2' (610 mm) dimension of the EPS insulation board to ensure they are vertical when the EPS insulation board is applied to the substrate.
- Set EPS insulation board into place and apply pressure over entire surface of board to ensure positive uniform contact and high initial grab. Do not slide board into place.

Channeled Adhesive CI Design

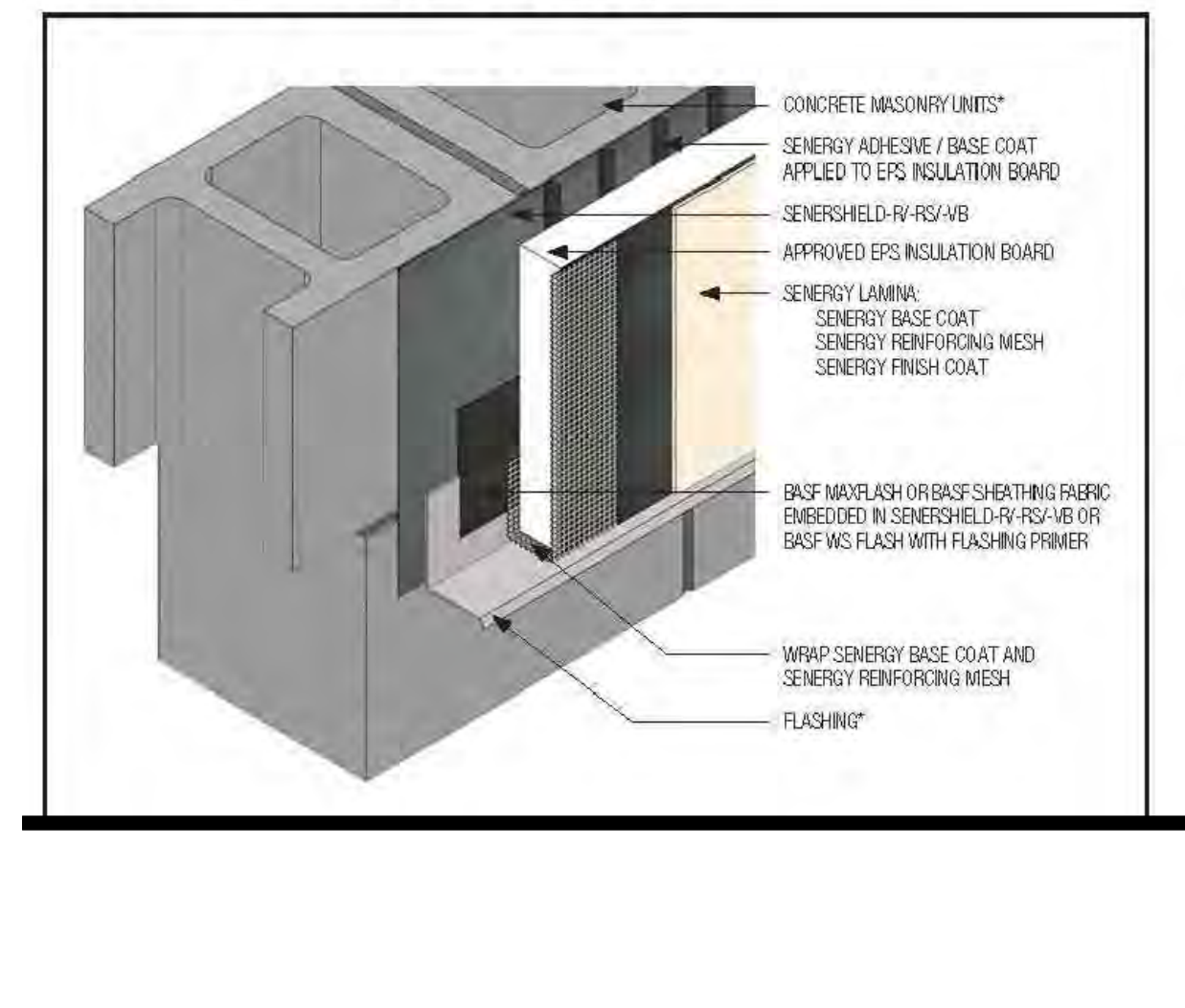
TYPICAL APPLICATION



- Install BASF materials in accordance with current installation instructions.
- Unsatisfactory conditions shall be reported to the General Contractor and corrected before the application of BASF products.
- Verify all materials are installed in accordance with current installation instructions.
- All terminations must be fully encapsulated with mesh reinforced base coat.
- Ensure a means for drainage is provided at system termination.

Channeled Adhesive CI Design

TYPICAL APPLICATION OVER CMU

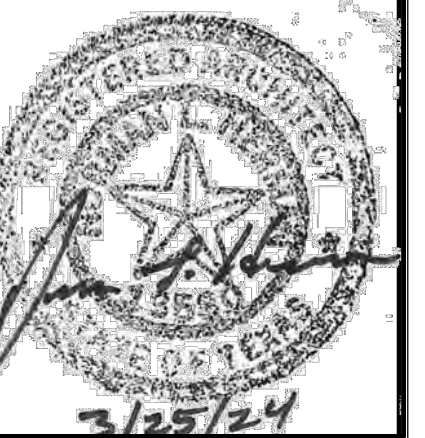


- Install BASF materials in accordance with current installation instructions.
- Unsatisfactory conditions shall be reported to the General Contractor and corrected before the application of BASF products.
- Verify all materials are installed in accordance with current installation instructions.
- All terminations must be fully encapsulated with mesh reinforced base coat.
- Ensure a means for drainage is provided at system termination.

1 EIFS WATER DRAINAGE DETAILS.
A4-3 NO SCALE

BRAKES PLUS

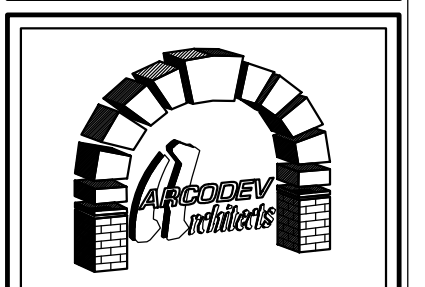
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



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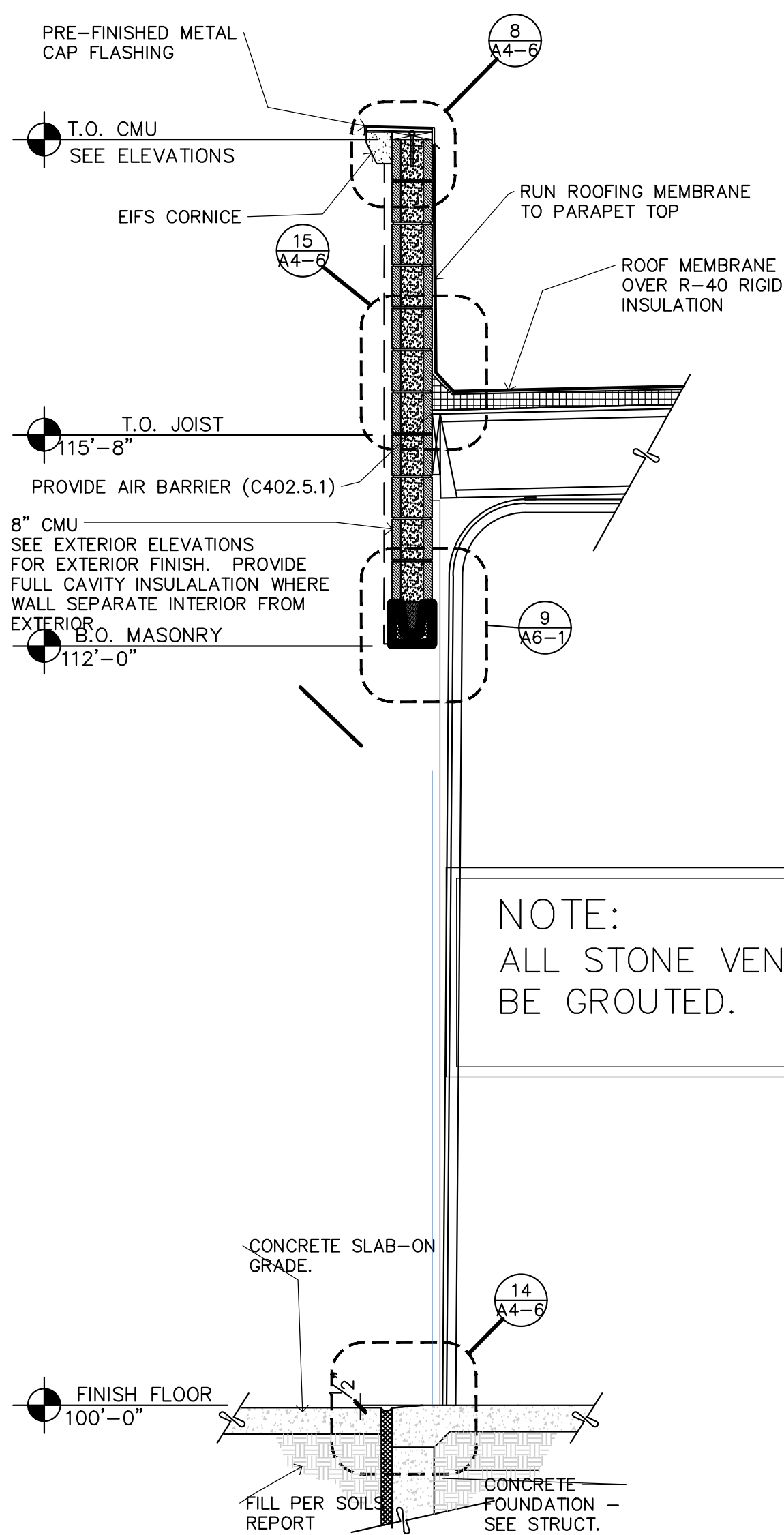


45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.681-8925

A SHEET

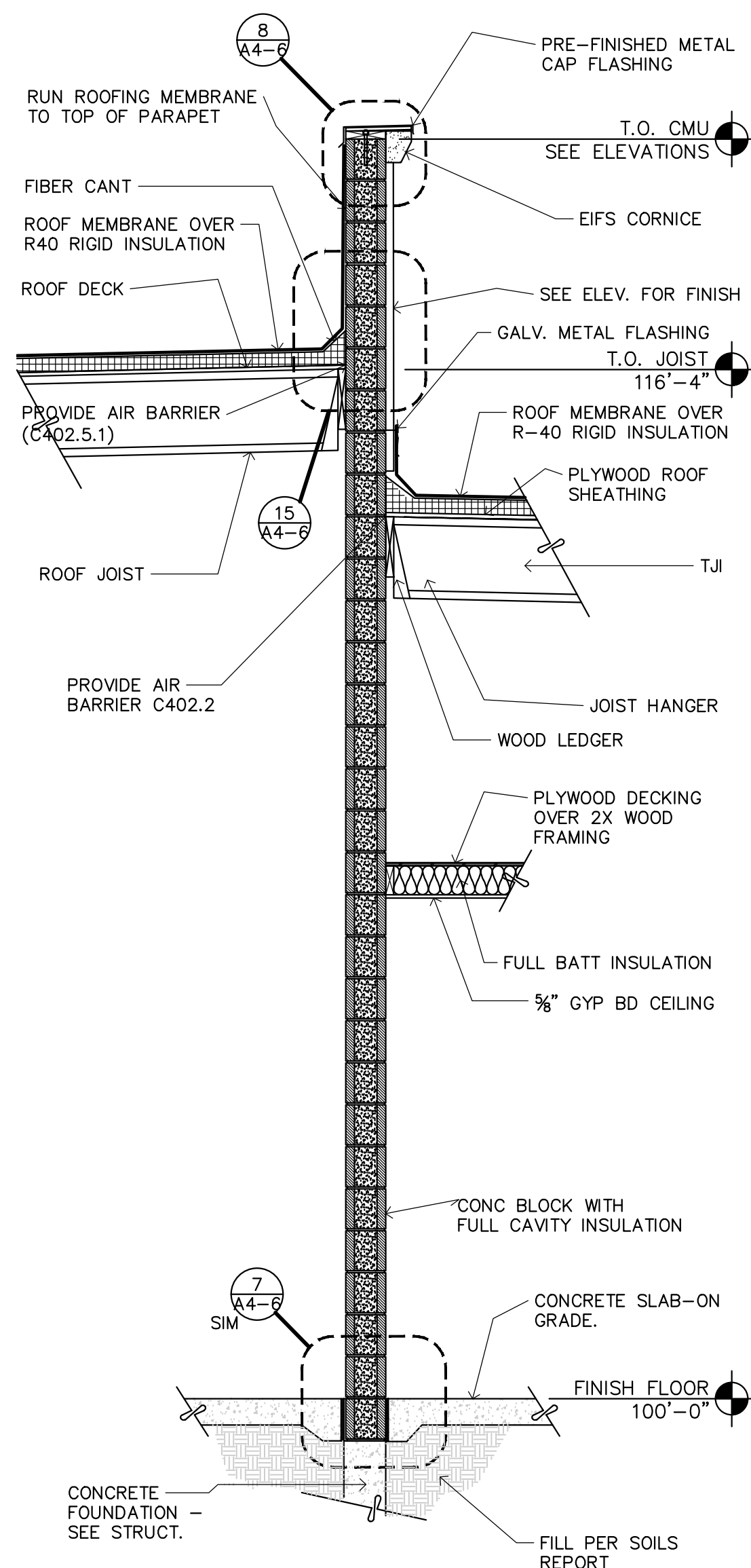
A4-3

WALL SECTIONS

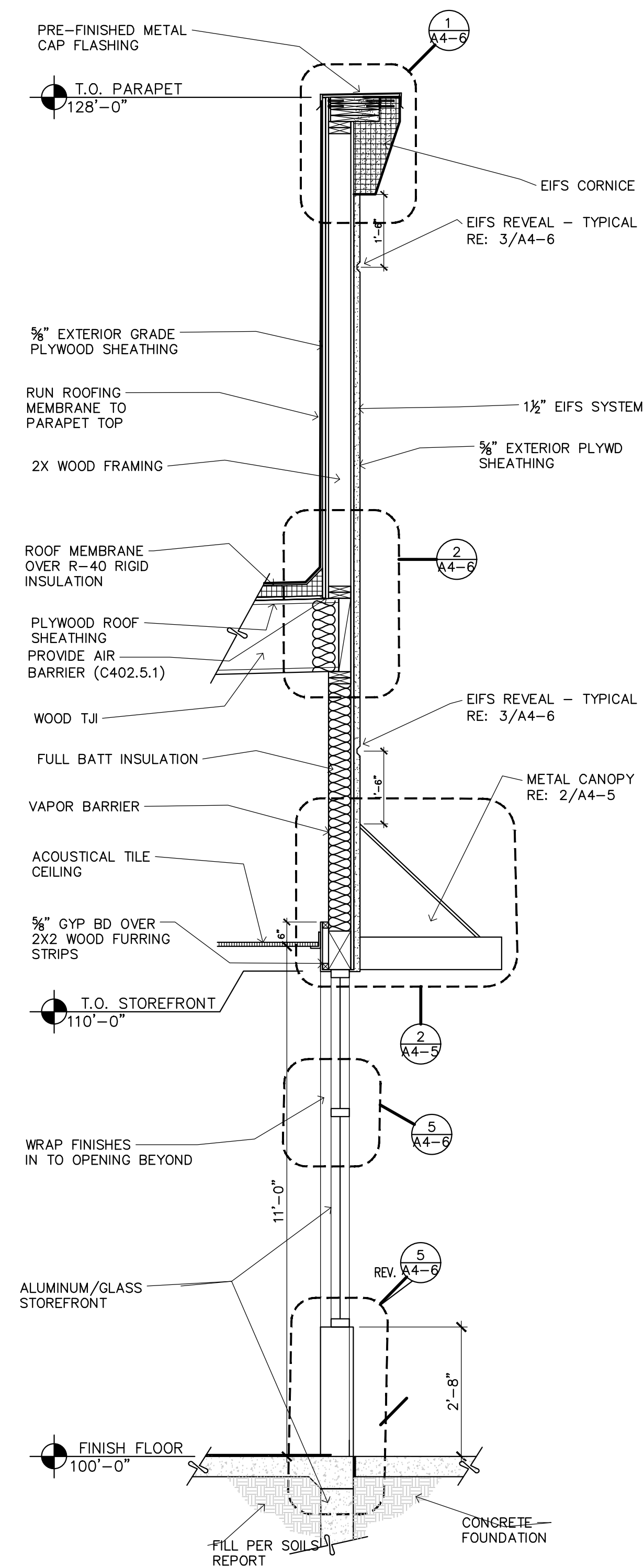


NOTE:
ALL STONE VENEER SHALL BE GROUTED.

4 WALL SECTION
A4-4 1/2"=1'-0"



3 WALL SECTION
A4-4 1/2"=1'-0"



1 WALL SECTION
A4-4 1/2"=1'-0"

BRAKES PLUS

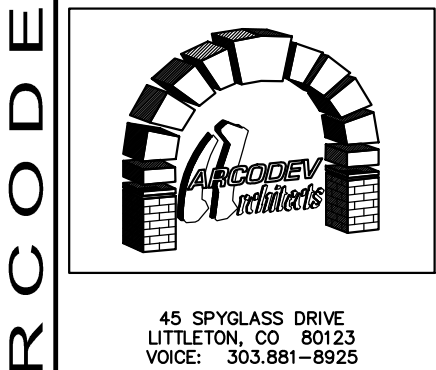
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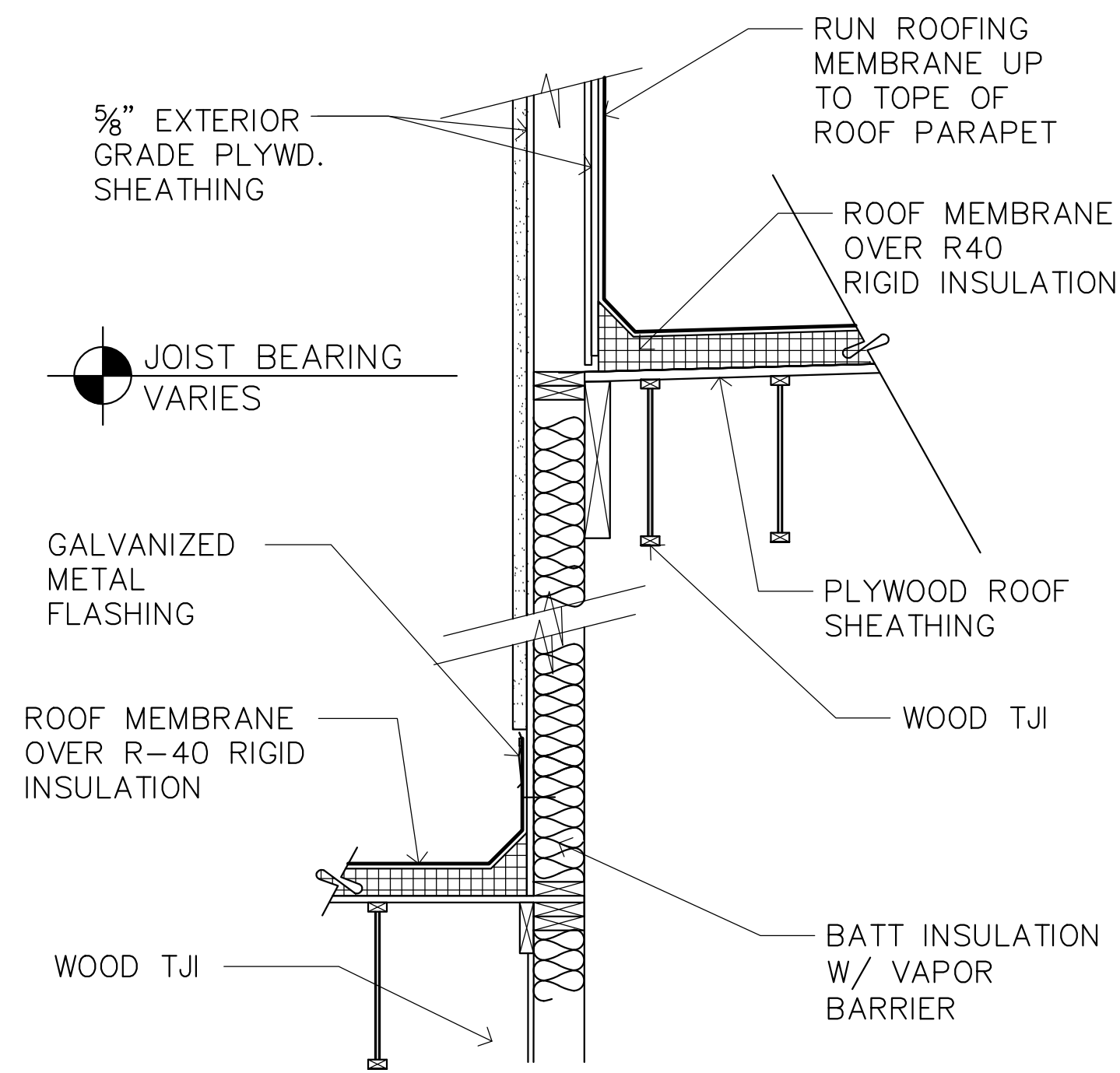
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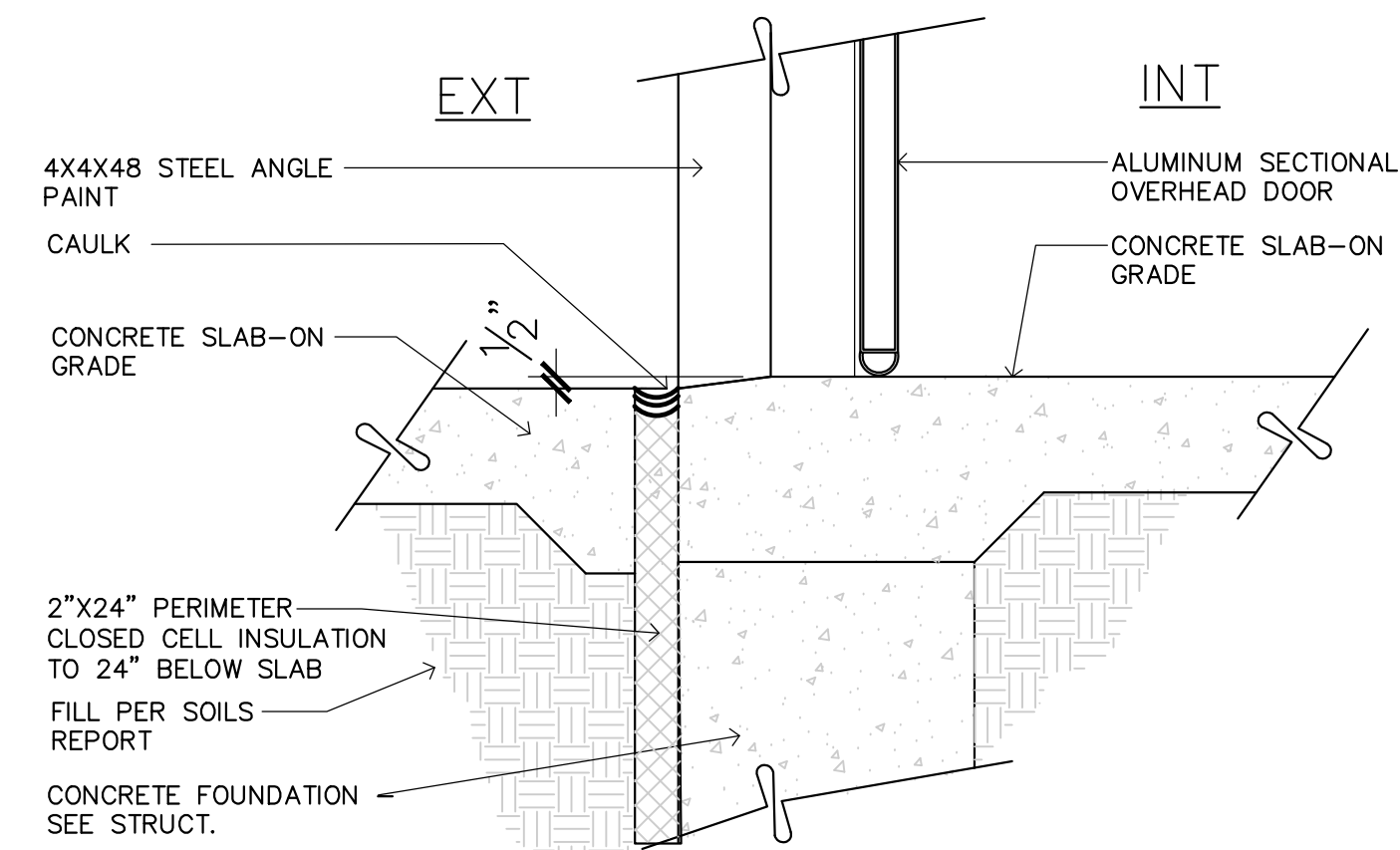
ARCODEV SHEET

A4-4

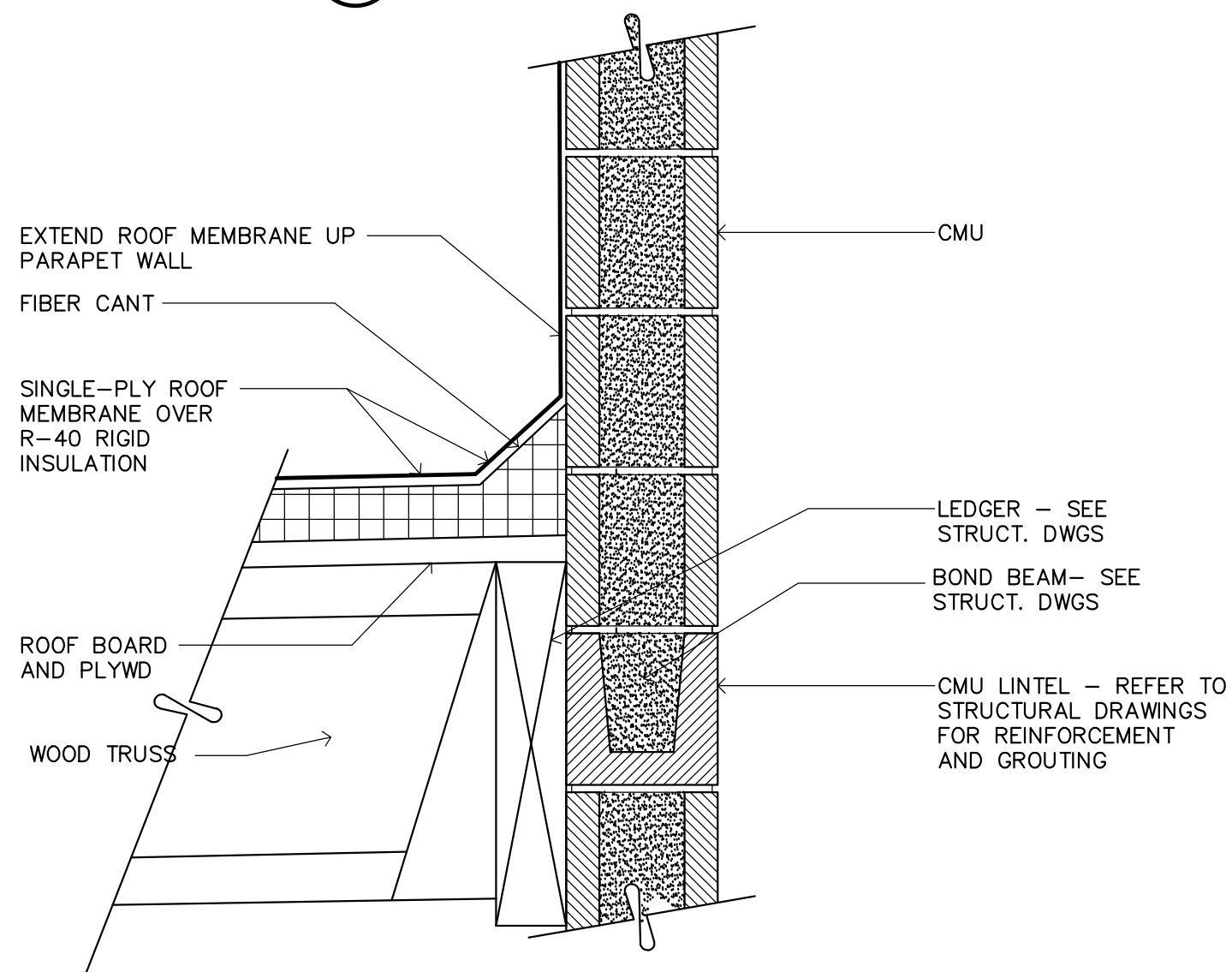
WALL SECTIONS



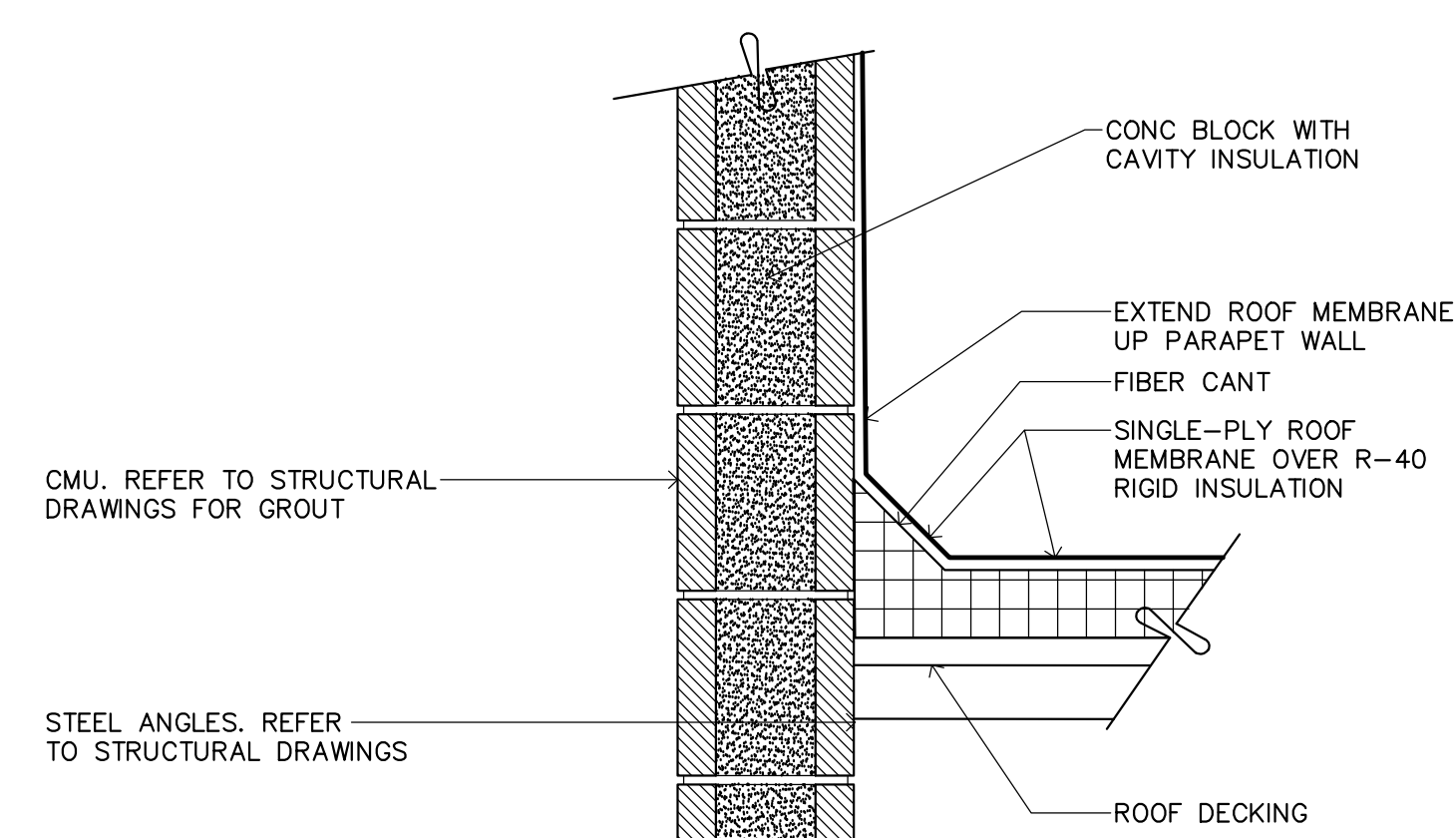
13 ROOF DETAIL
NO SCALE



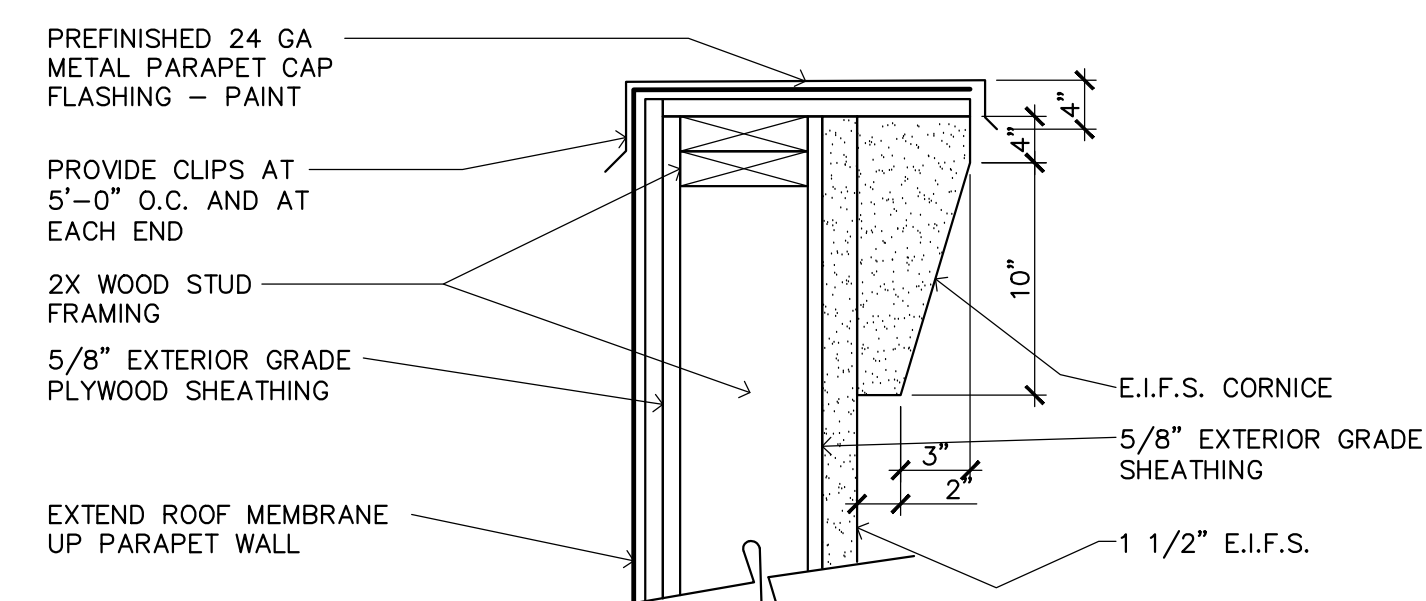
14 FOUNDATION DETAIL
SCALE: 1 1/2"=1'-0"



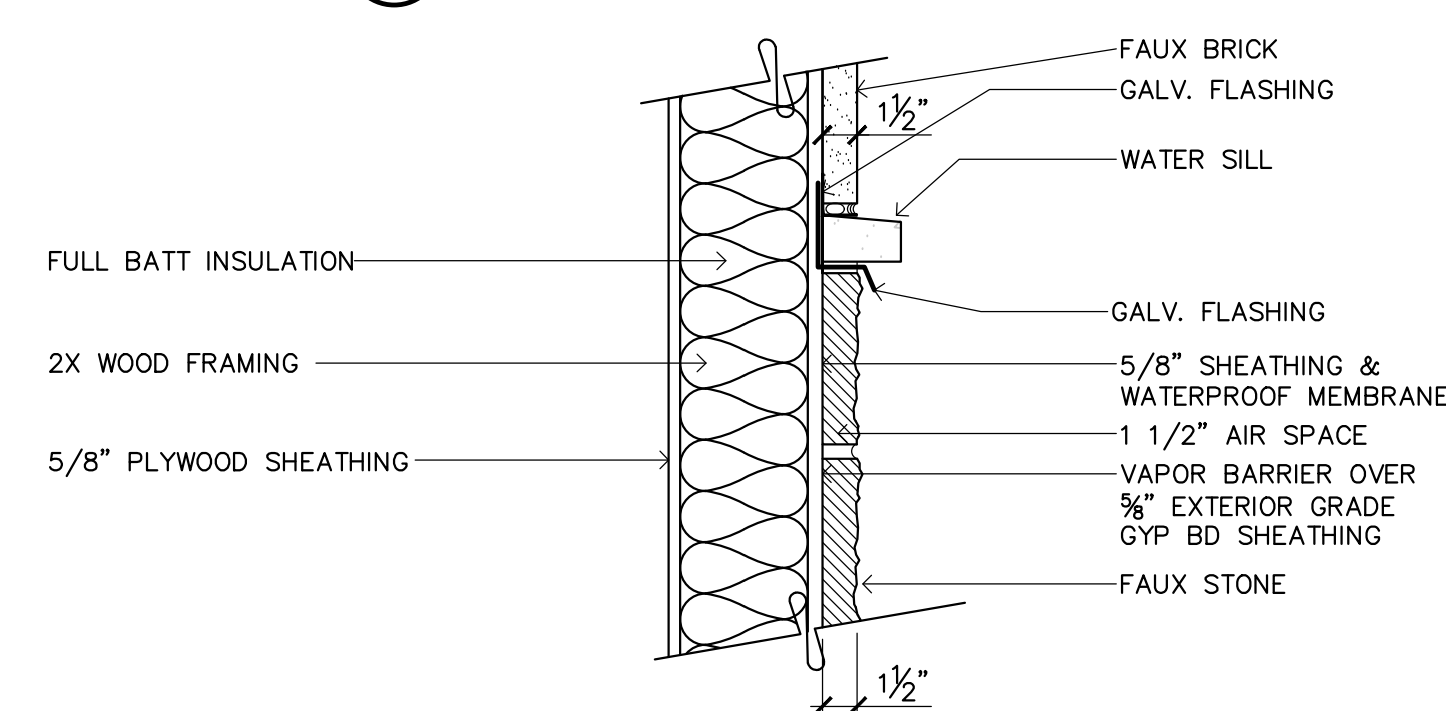
15 ROOF AT CMU DETAIL
SCALE: 1 1/2"=1'-0"



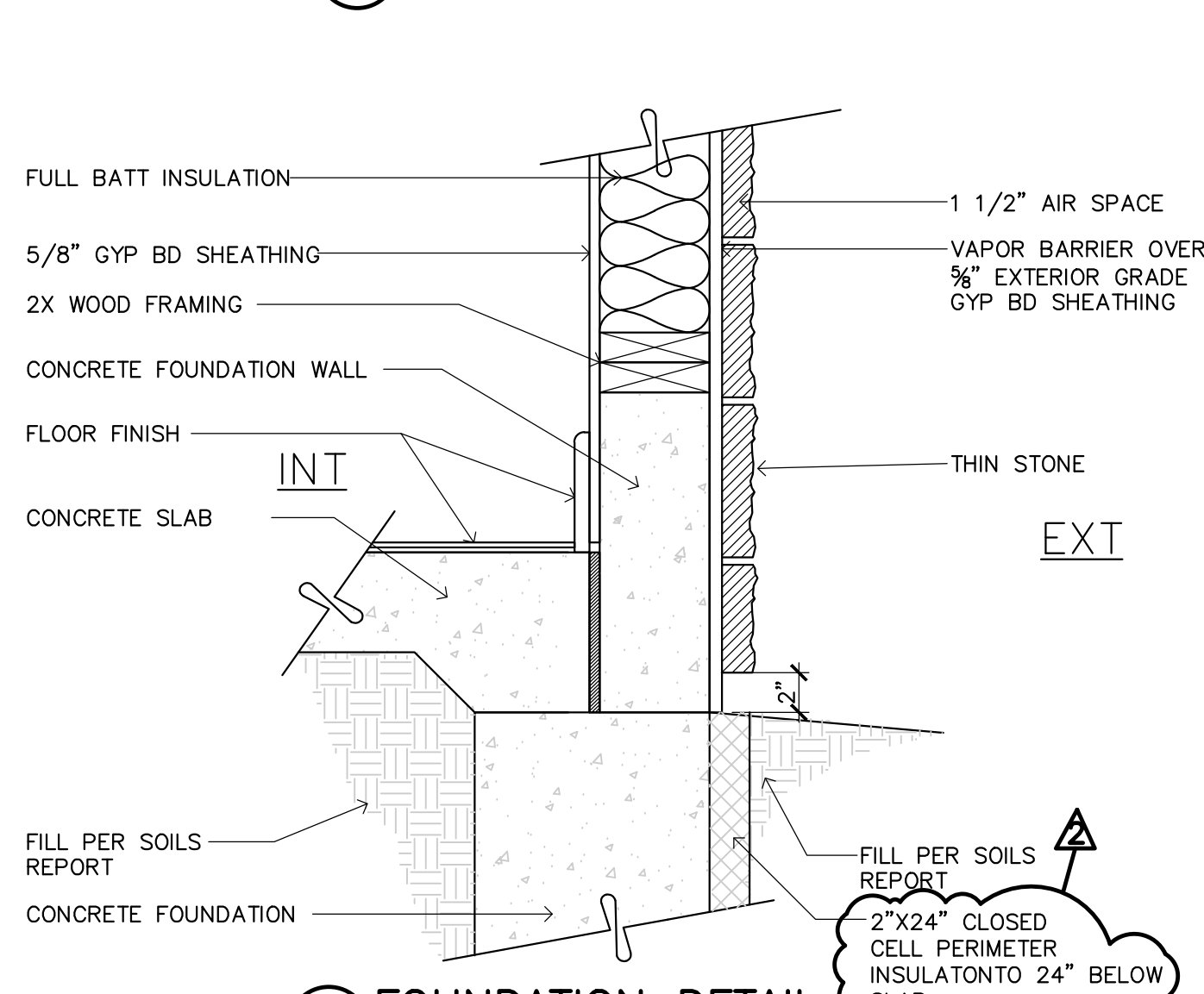
9 DECK AT CMU DETAIL
SCALE: 1 1/2"=1'-0"



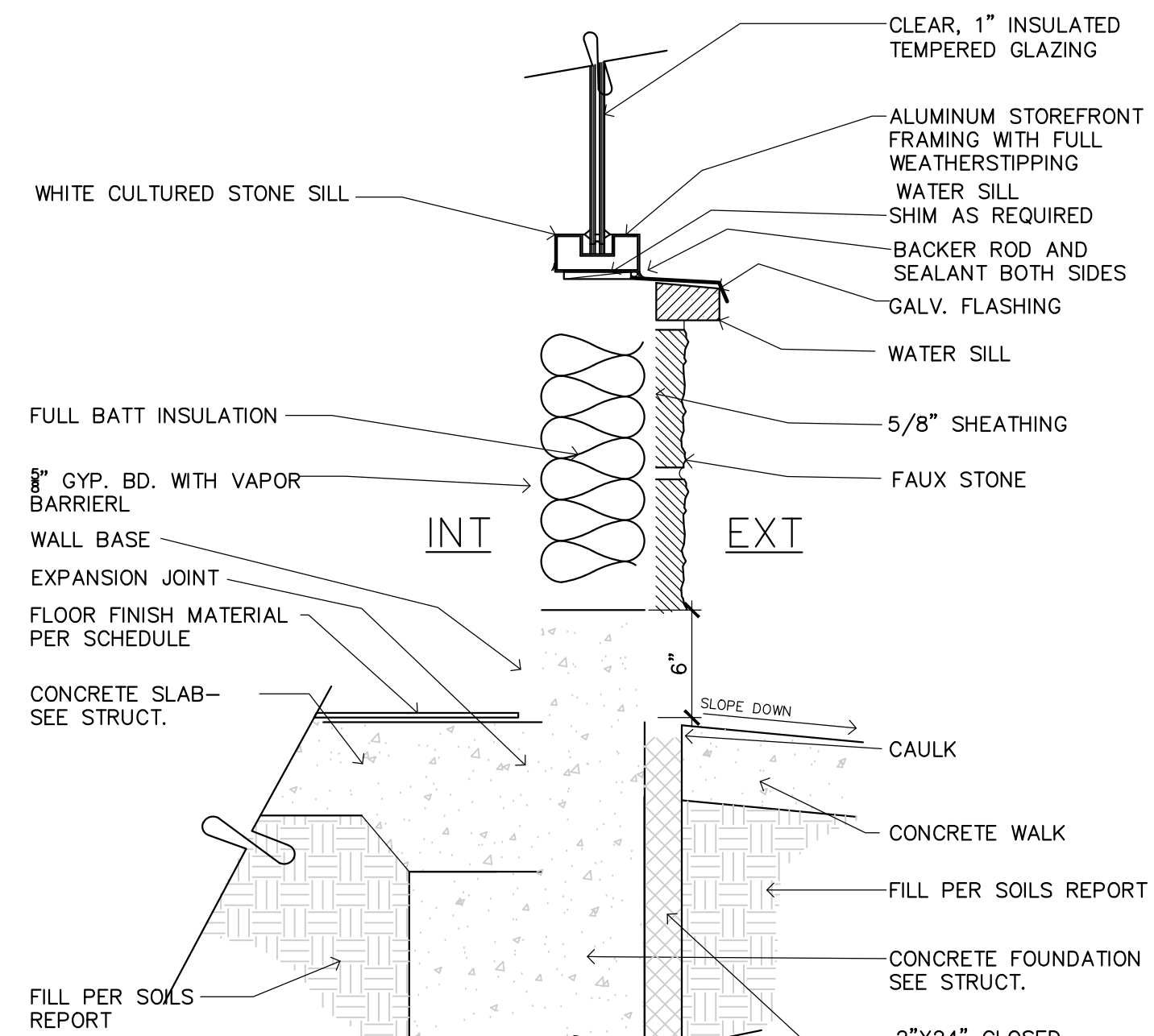
10 CORNICE AT STUD WALL DETAIL
SCALE: 1 1/2"=1'-0"



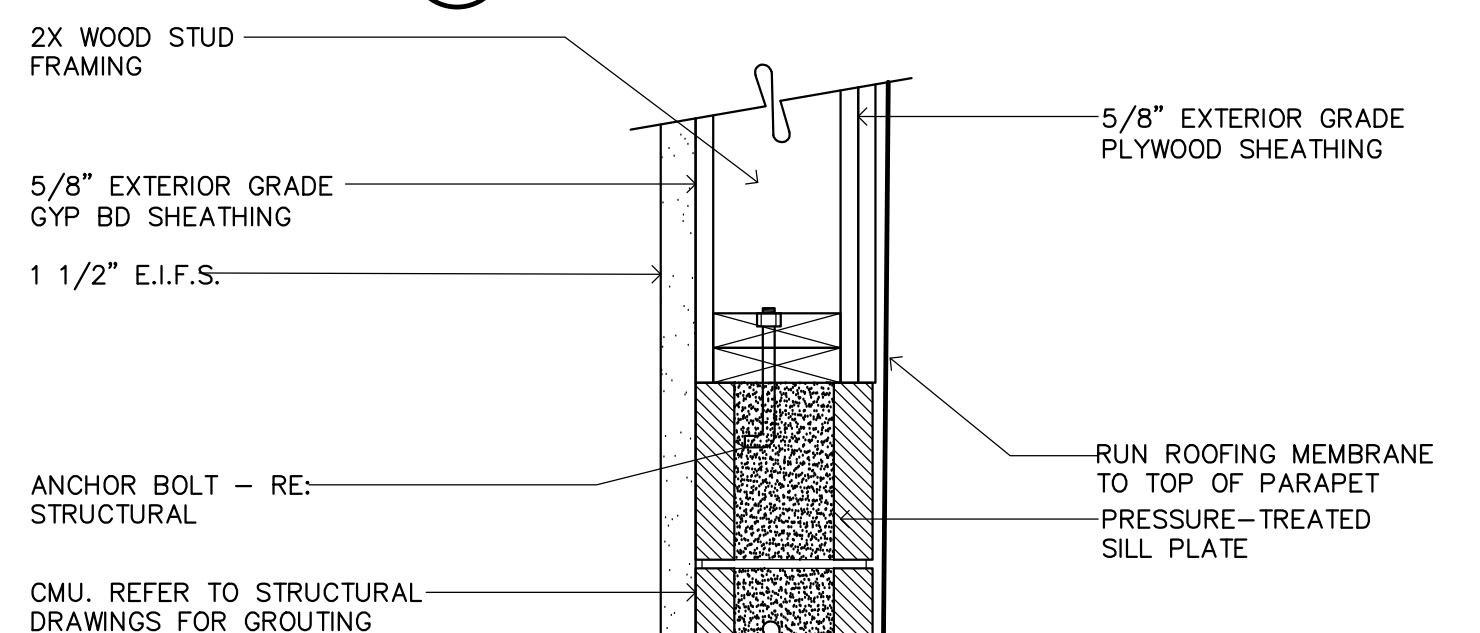
11 WAINSCOT DETAIL
SCALE: 1 1/2"=1'-0"



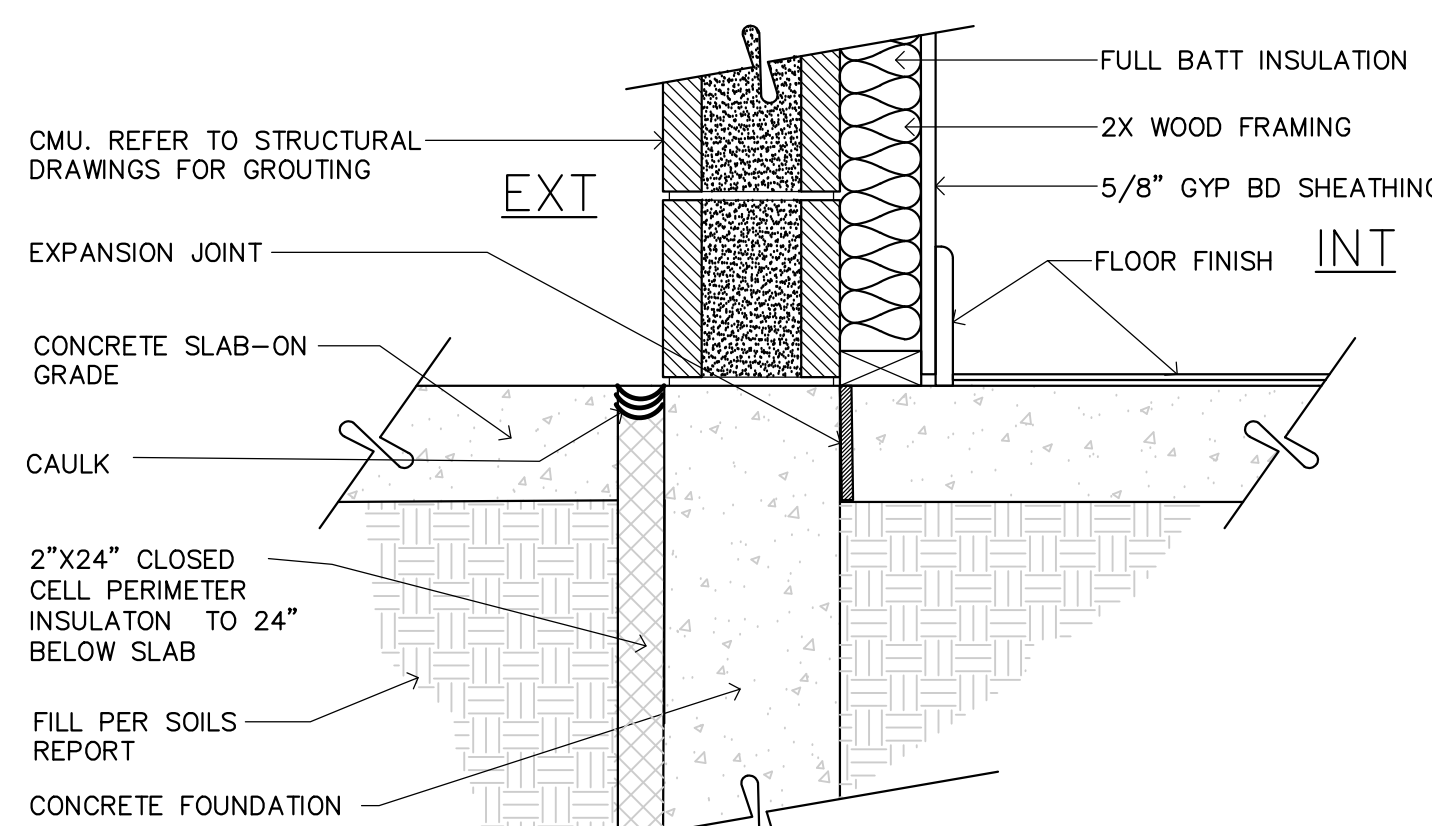
12 FOUNDATION DETAIL
SCALE: 1 1/2"=1'-0"



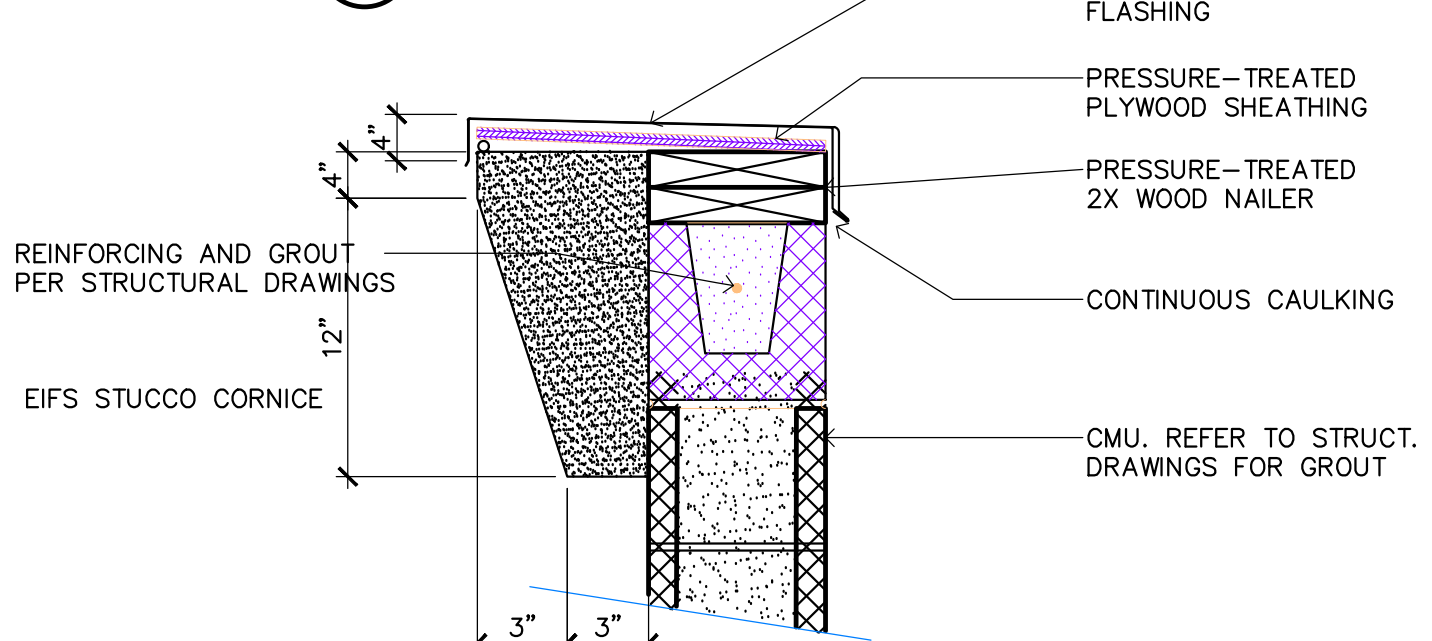
5 FOUNDATION DETAIL
SCALE: 1 1/2"=1'-0"



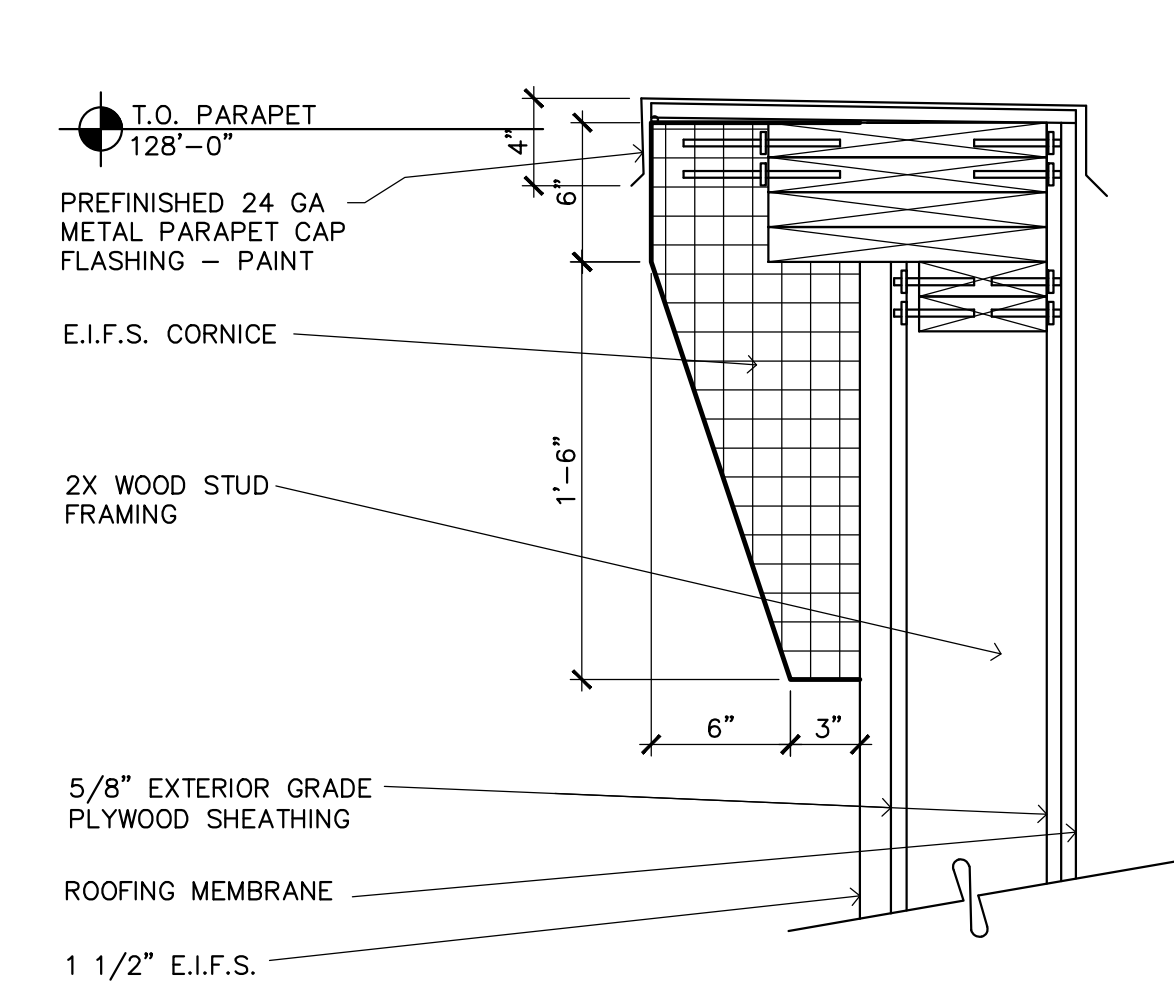
6 CMU AT STUD WALL DETAIL
SCALE: 1 1/2"=1'-0"



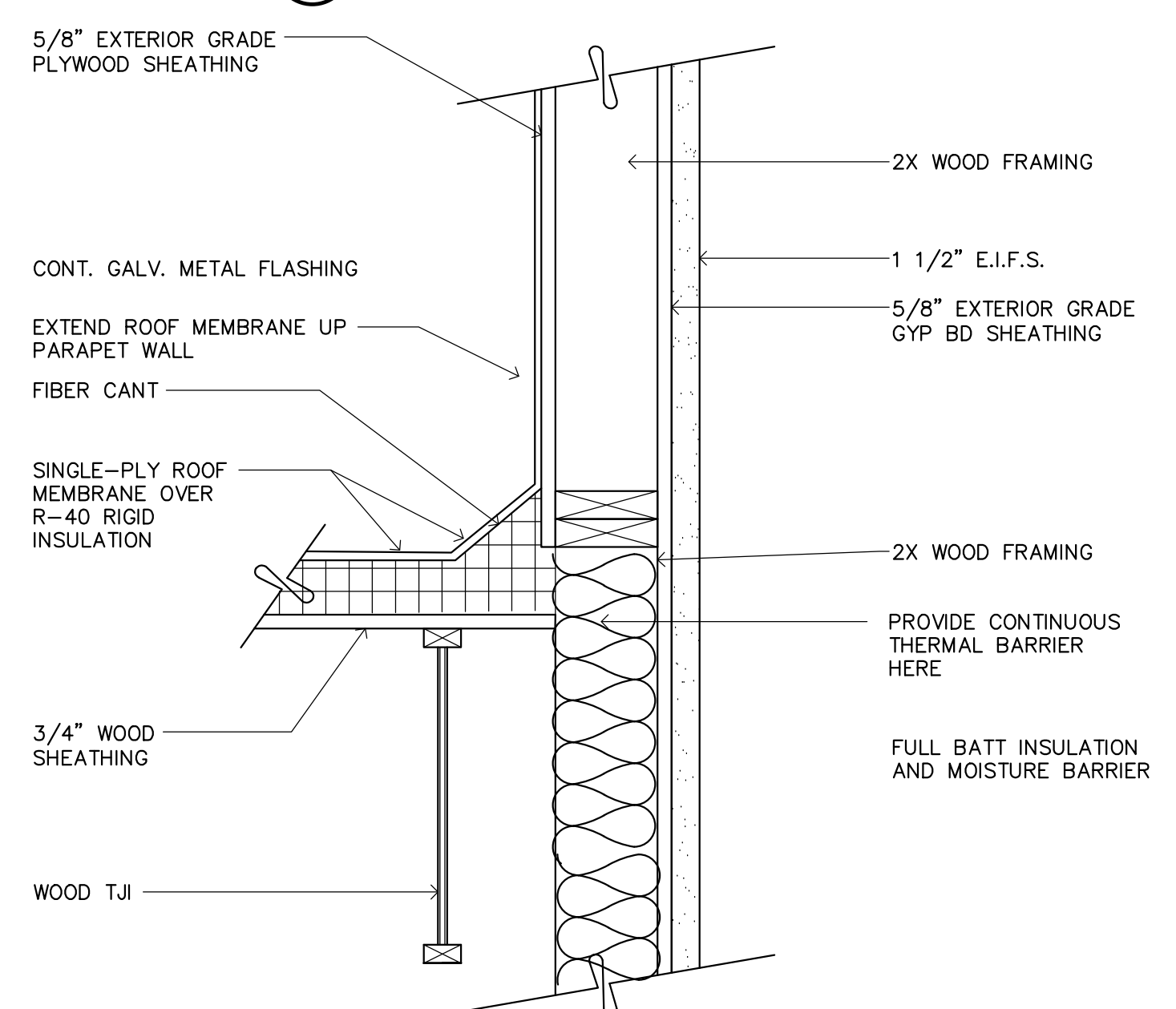
7 FOUNDATION DETAIL
SCALE: 1 1/2"=1'-0"



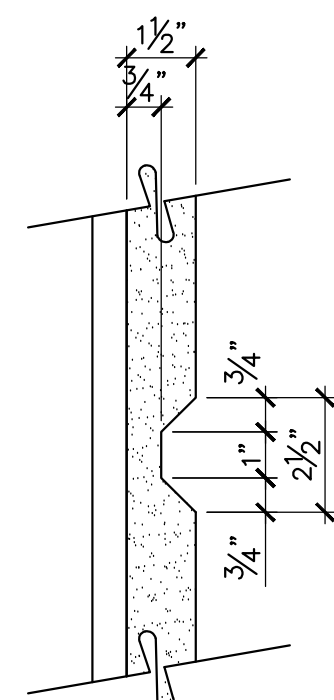
8 CORNICE AT CMU DETAIL
SCALE: 1 1/2"=1'-0"



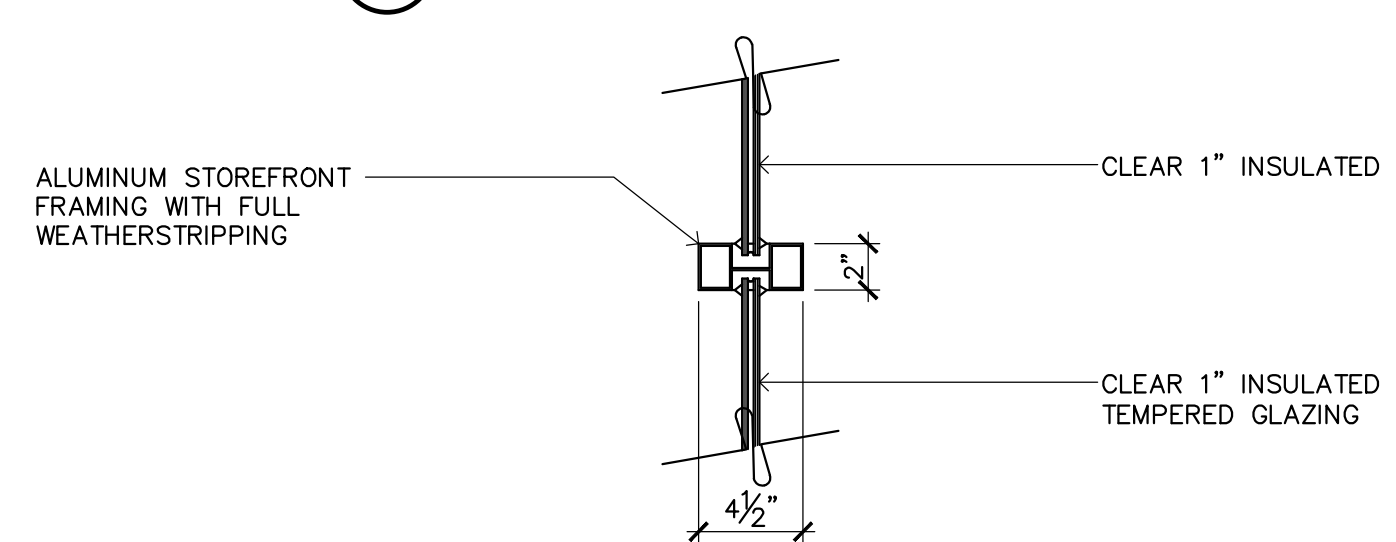
1 CORNICE AT STUD WALL DETAIL
SCALE: 1 1/2"=1'-0"



2 DECK AT STUD WALL DETAIL
SCALE: 1 1/2"=1'-0"



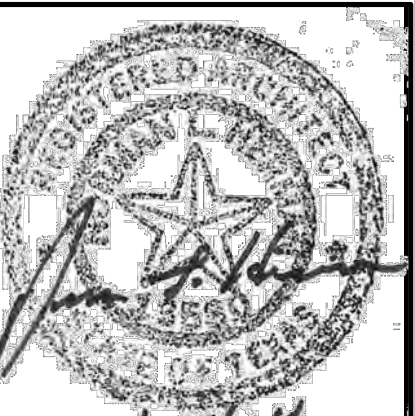
3 REVEAL DETAIL
SCALE: 3"=1'-0"



4 STOREFRONT WINDOW DETAIL
SCALE: 1 1/2"=1'-0"

BRAKES PLUS

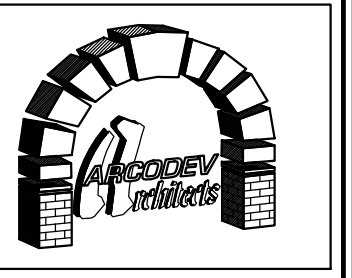
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



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CHECKED BY: NLH
DATE OF ISSUE: 03.23.24

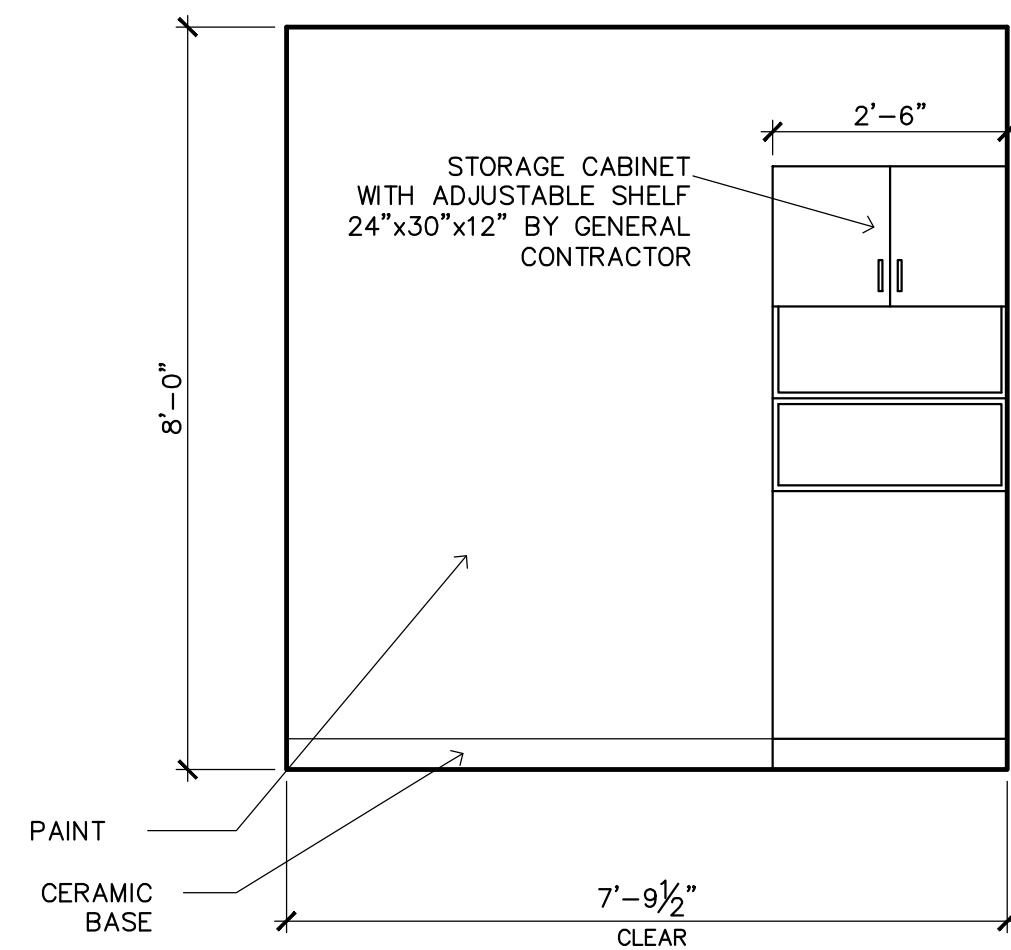


45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

SHEET

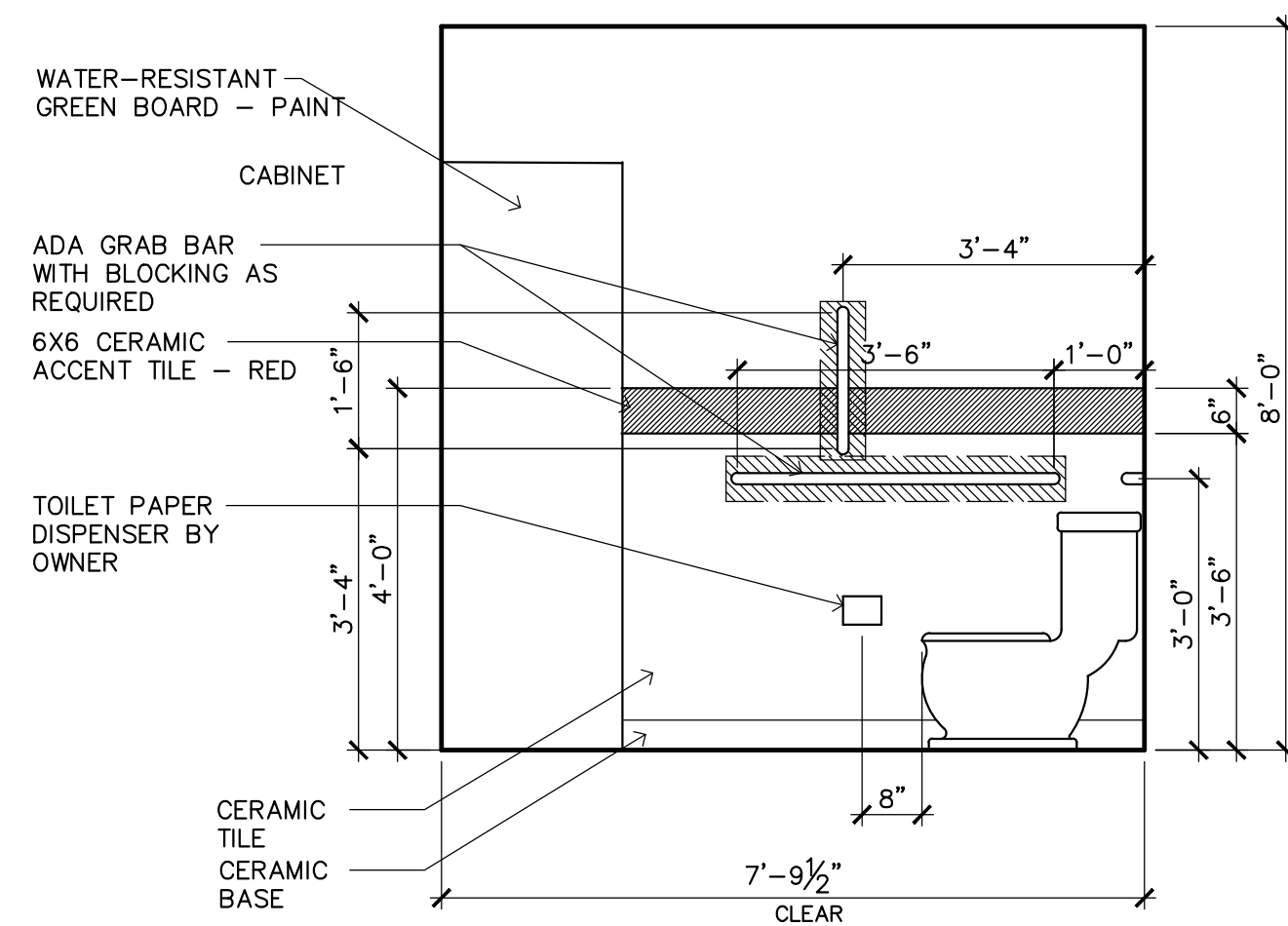
A4-6

DETAILS

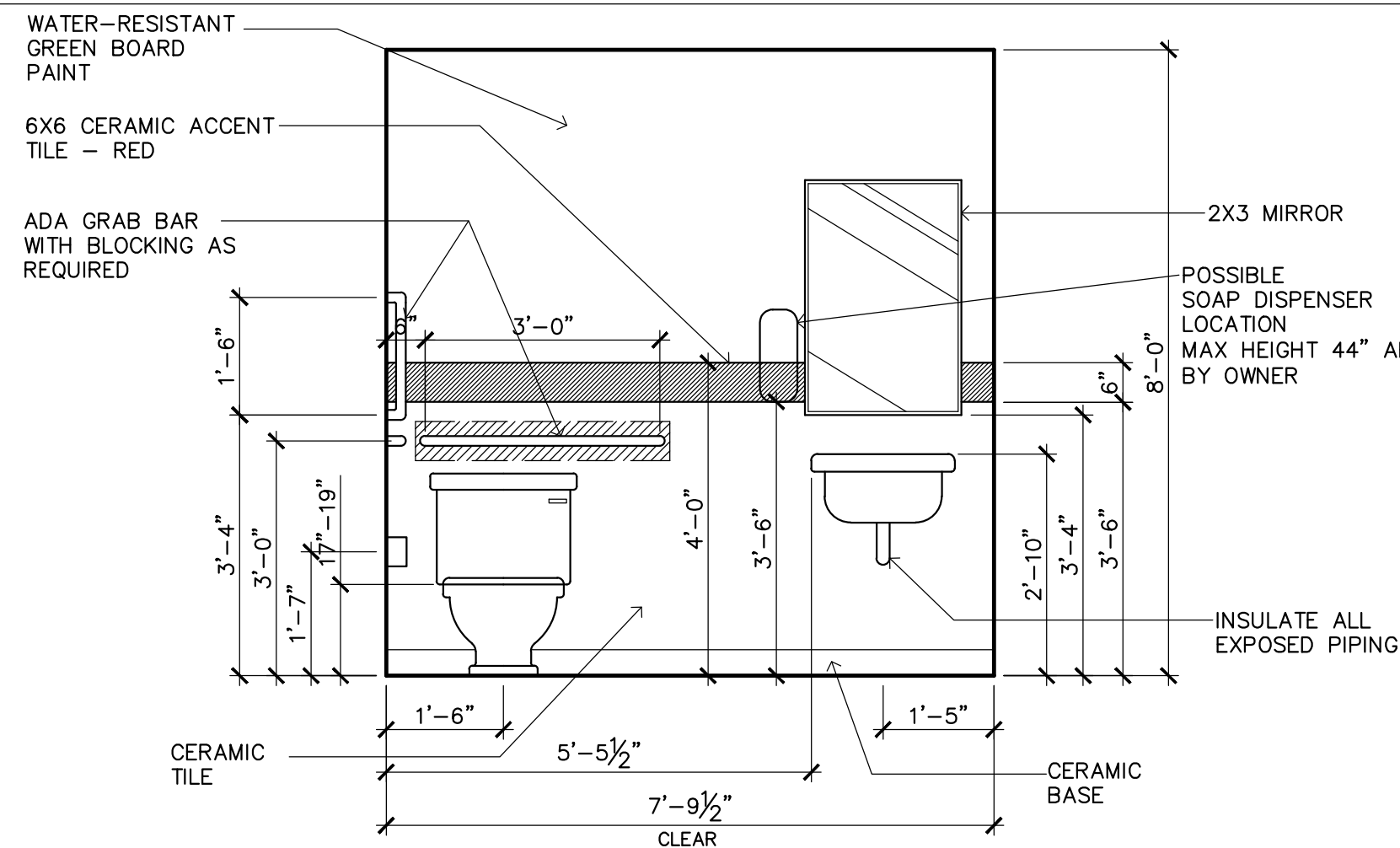


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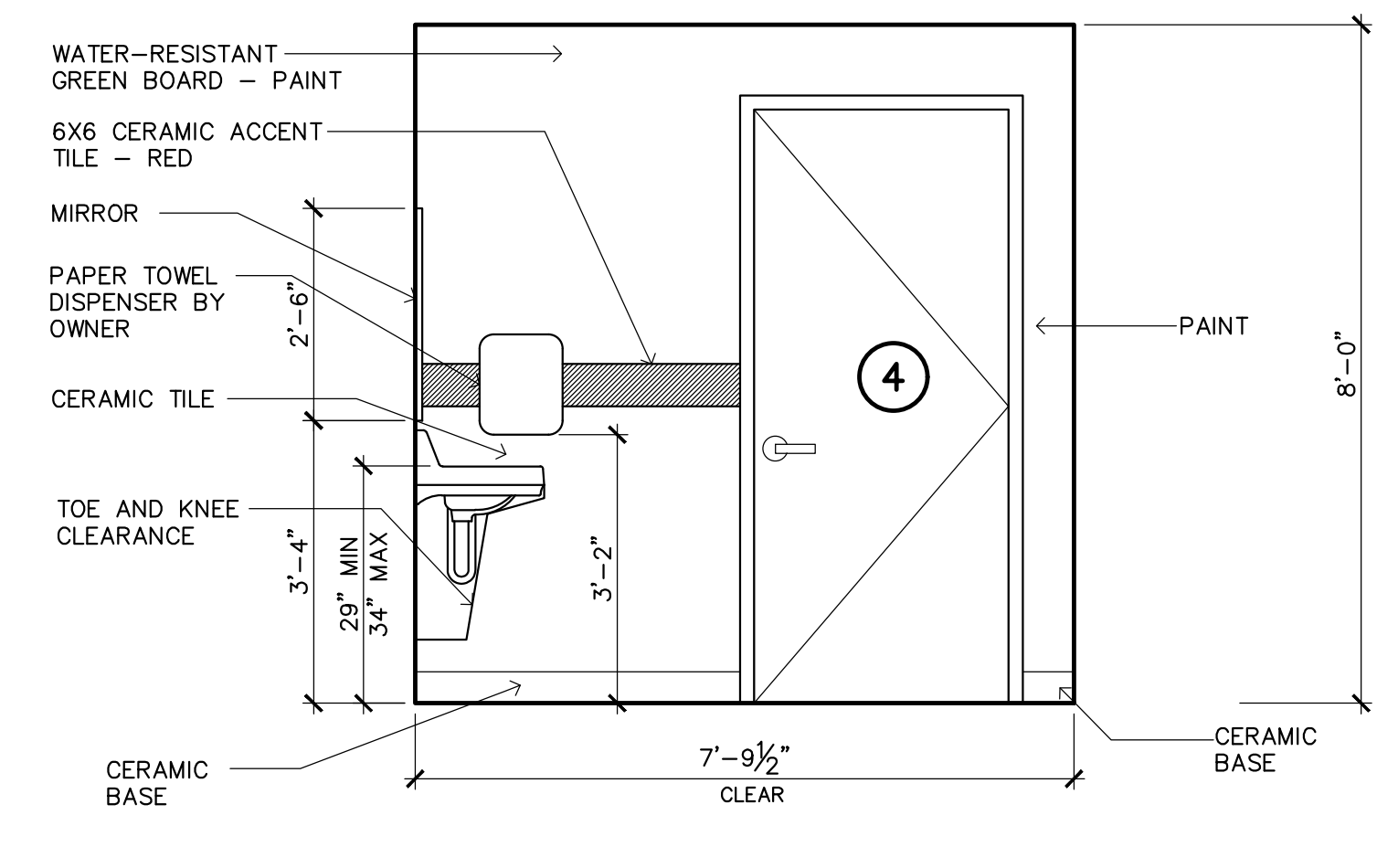
1 WOMEN'S RESTROOM ELEVATION
SCALE: 1/2" = 1'-0"



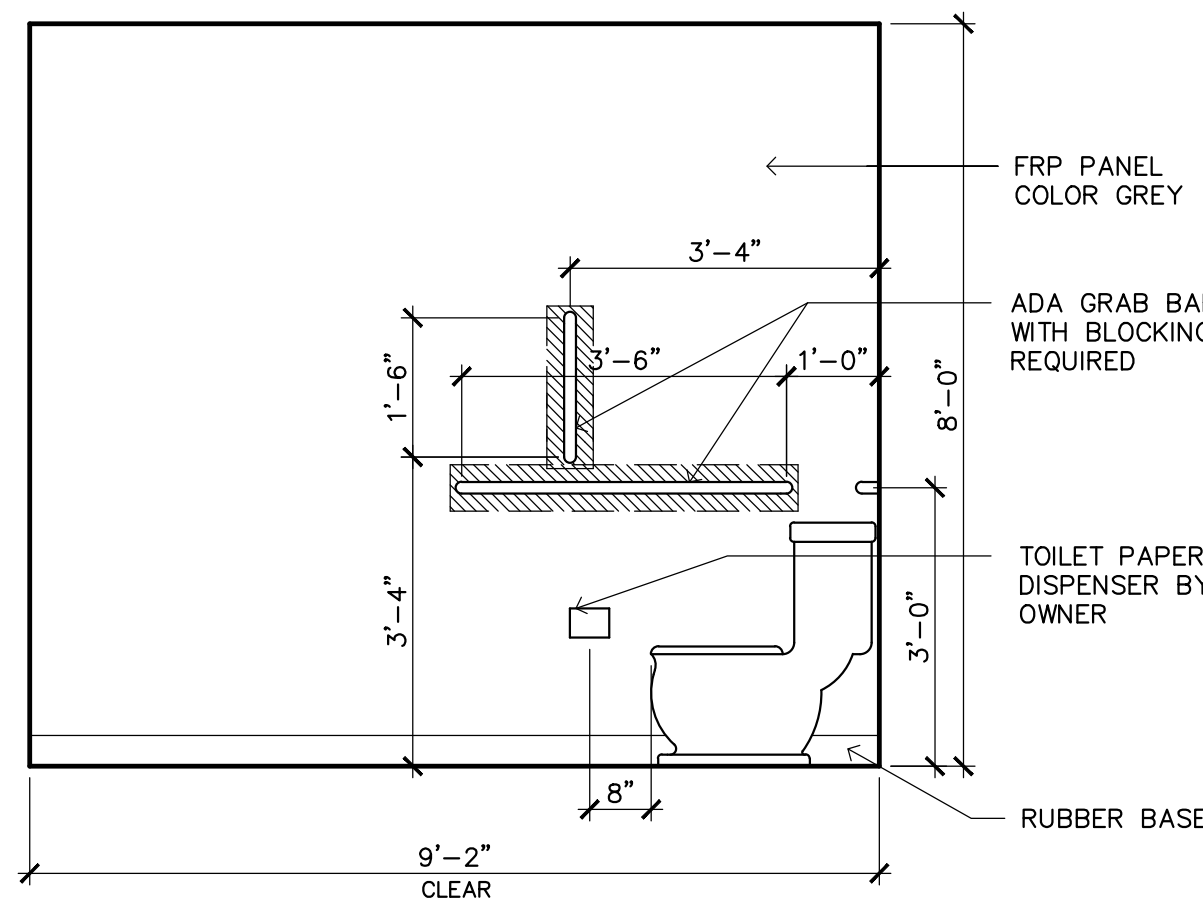
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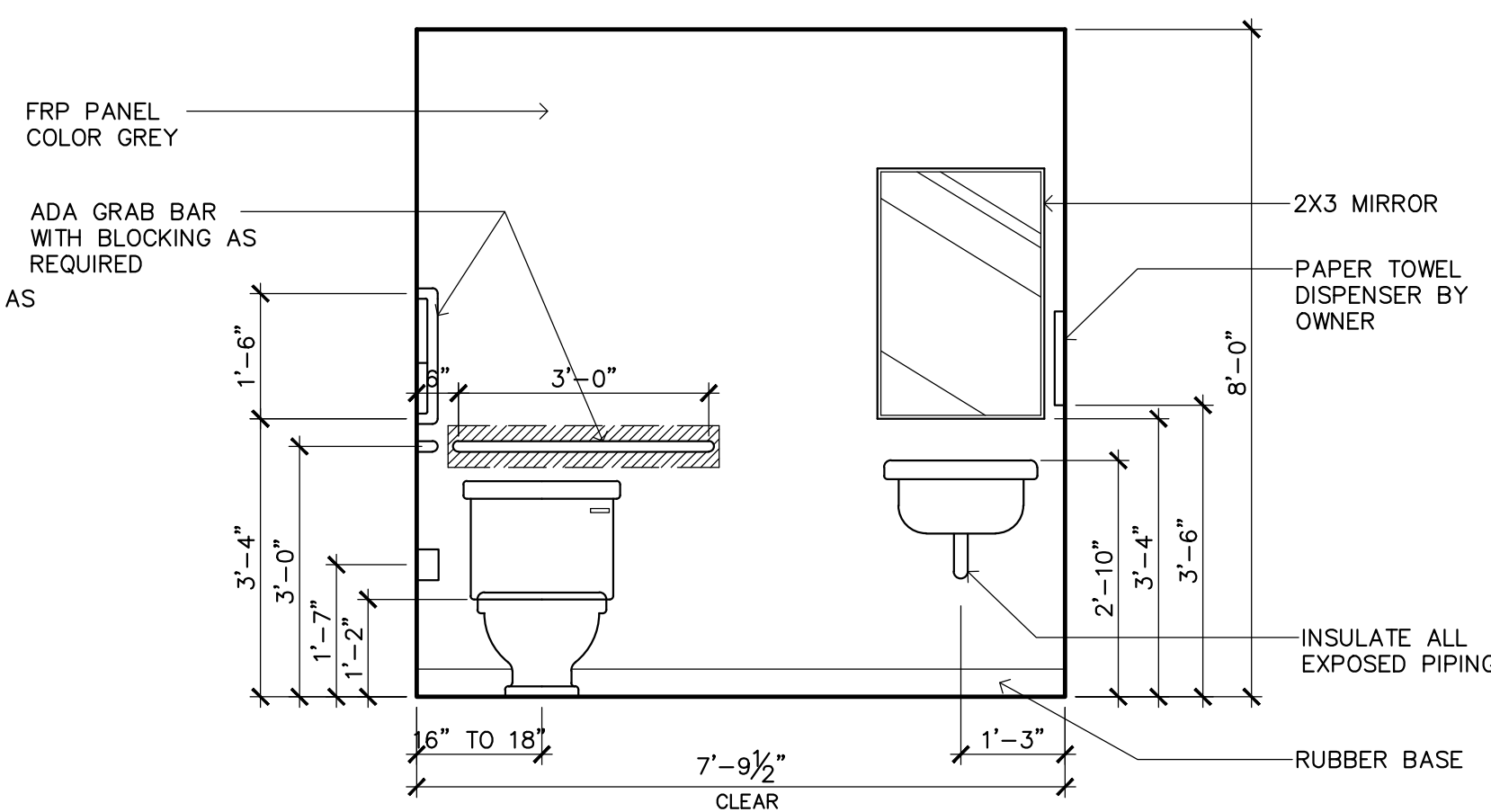


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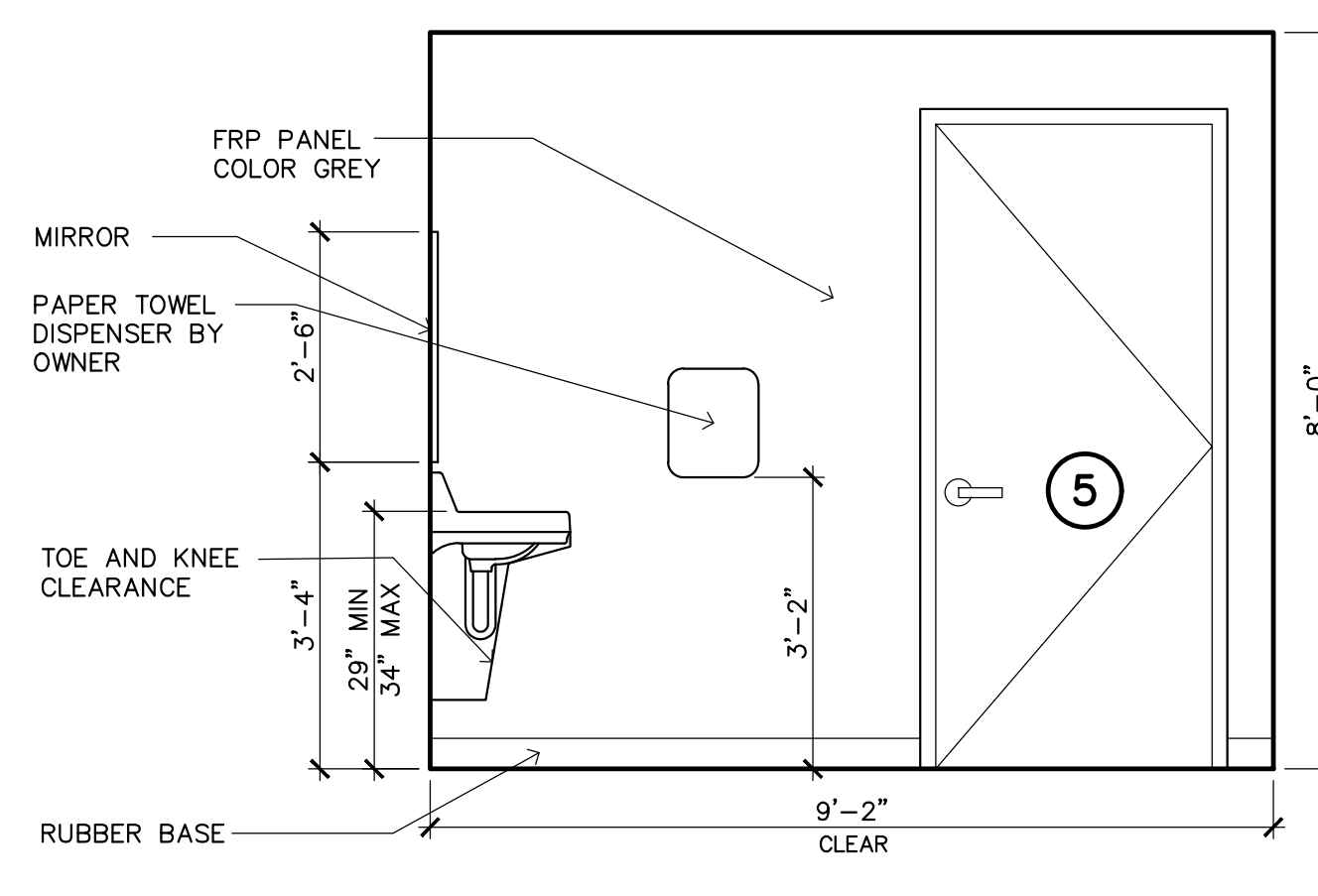


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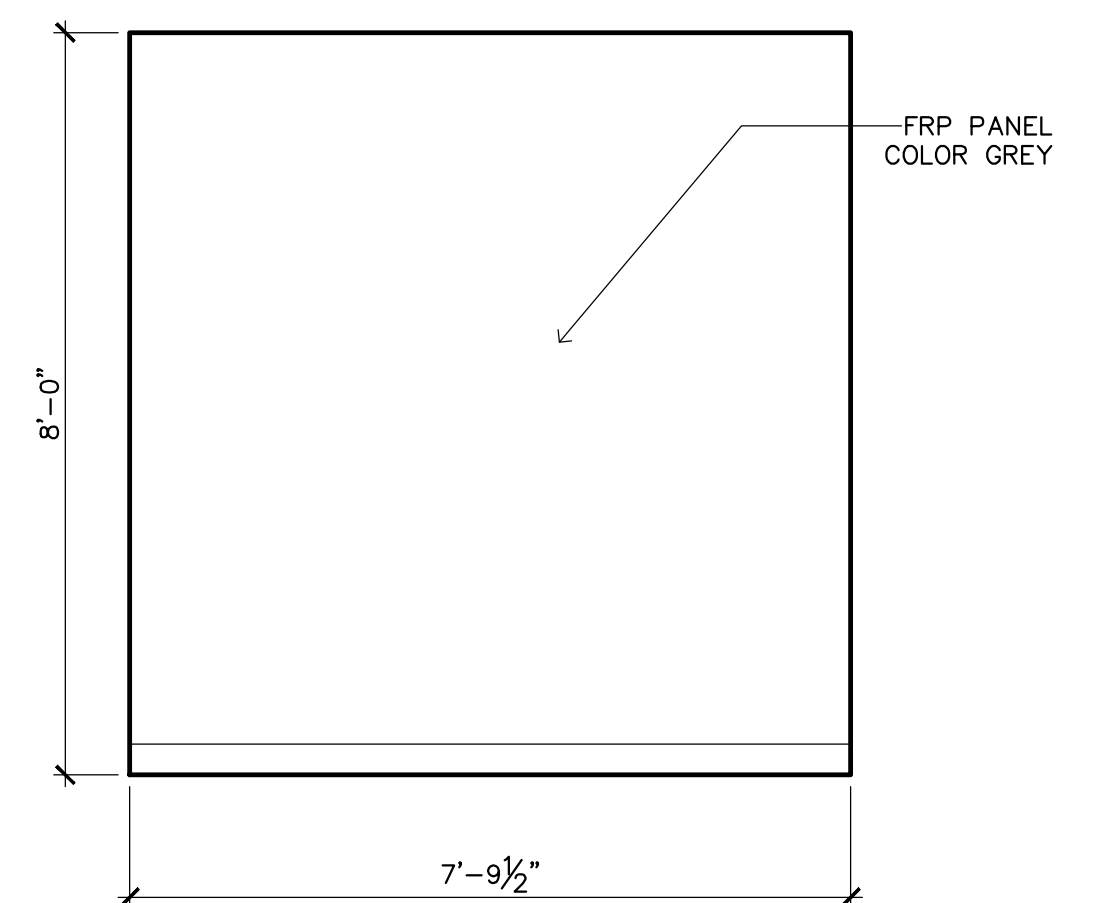
2 UNISEX RESTROOM ELEVATION
SCALE: 1/2" = 1'-0"



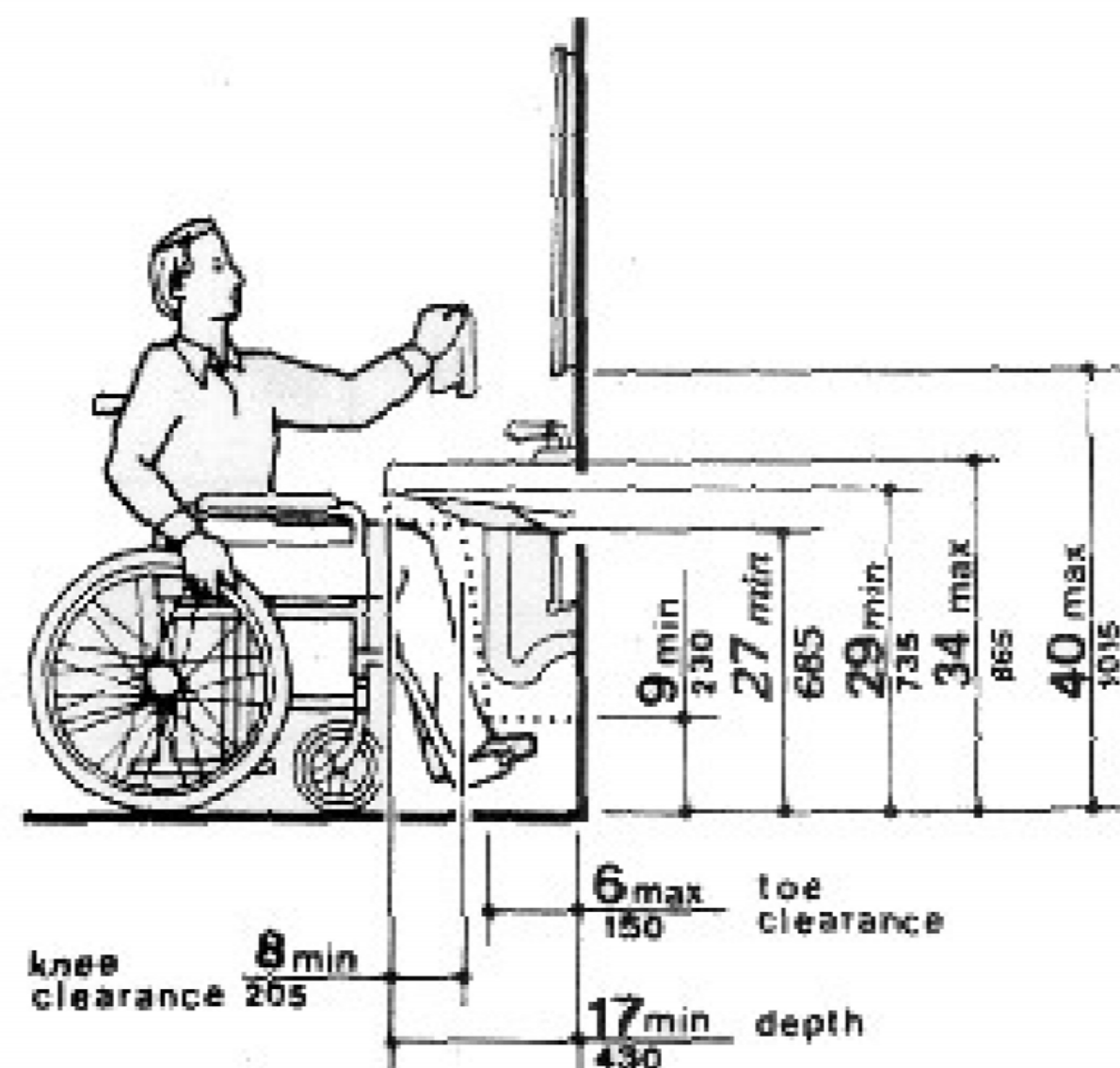
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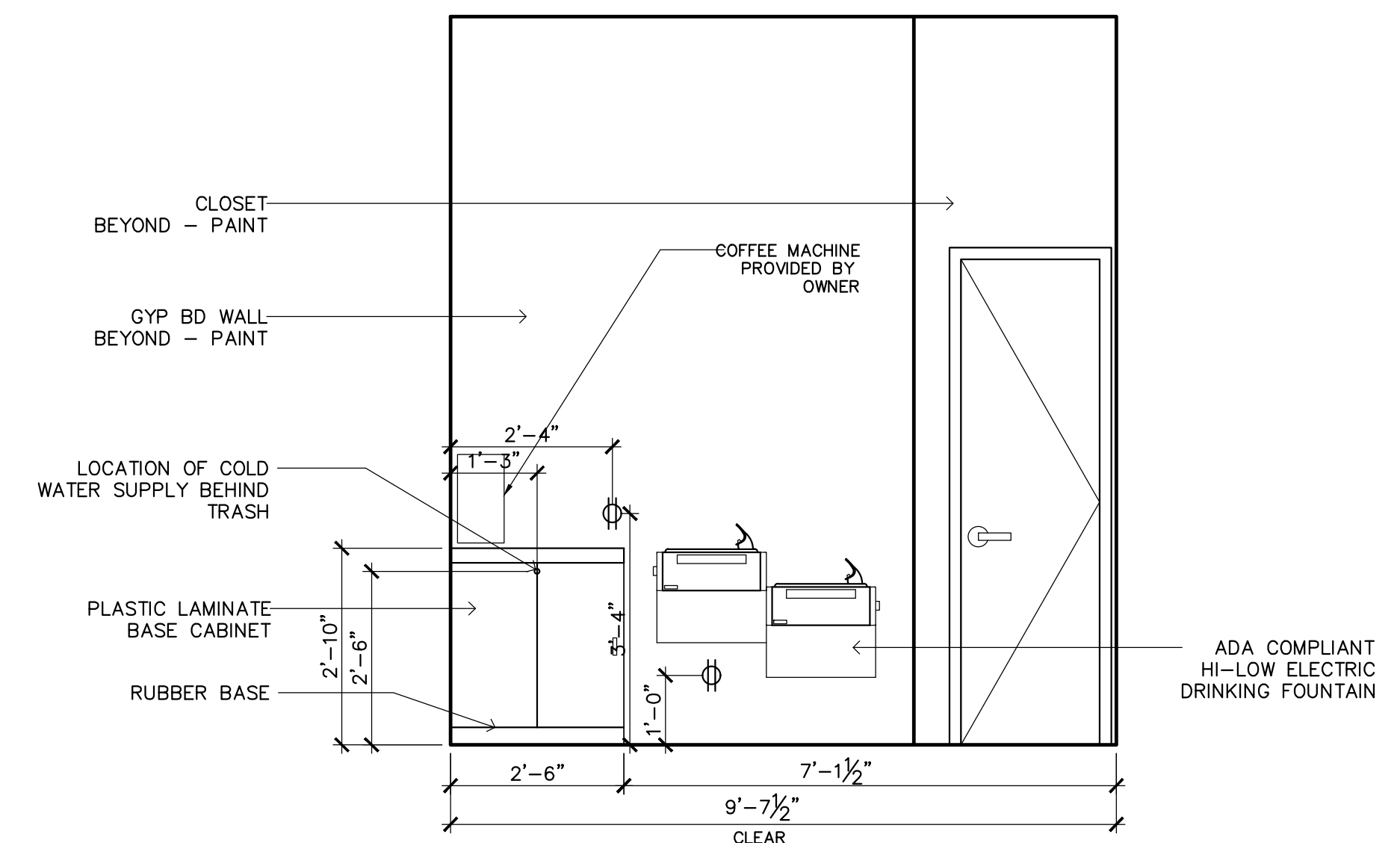
c



d



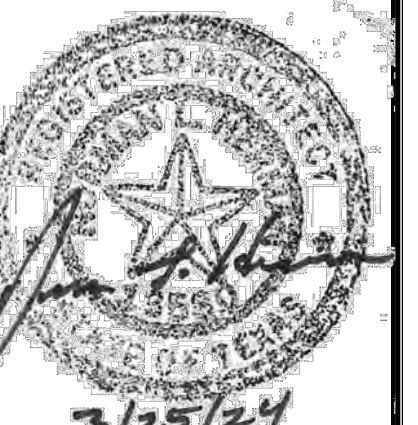
6 ADA PLACEMENT OF FIXTURES
SCALE: 1/2" = 1'-0"



5 COFFEE ROOM ELEVATION
SCALE: 1/2" = 1'-0"

BRAKES PLUS

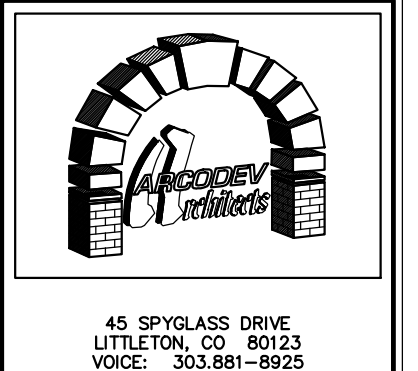
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	03.25.24	SUBMITTED TO BLDG. DEPT.

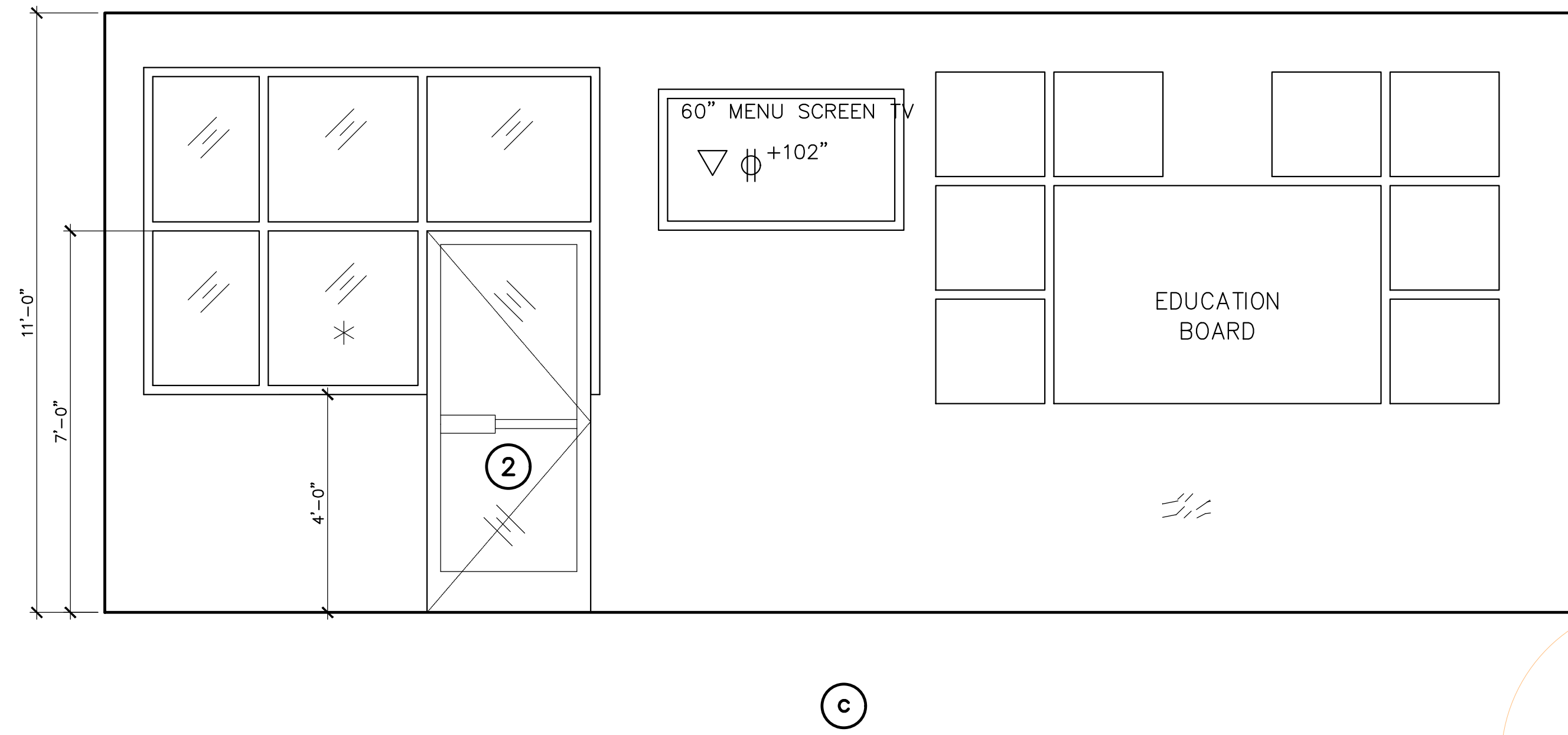
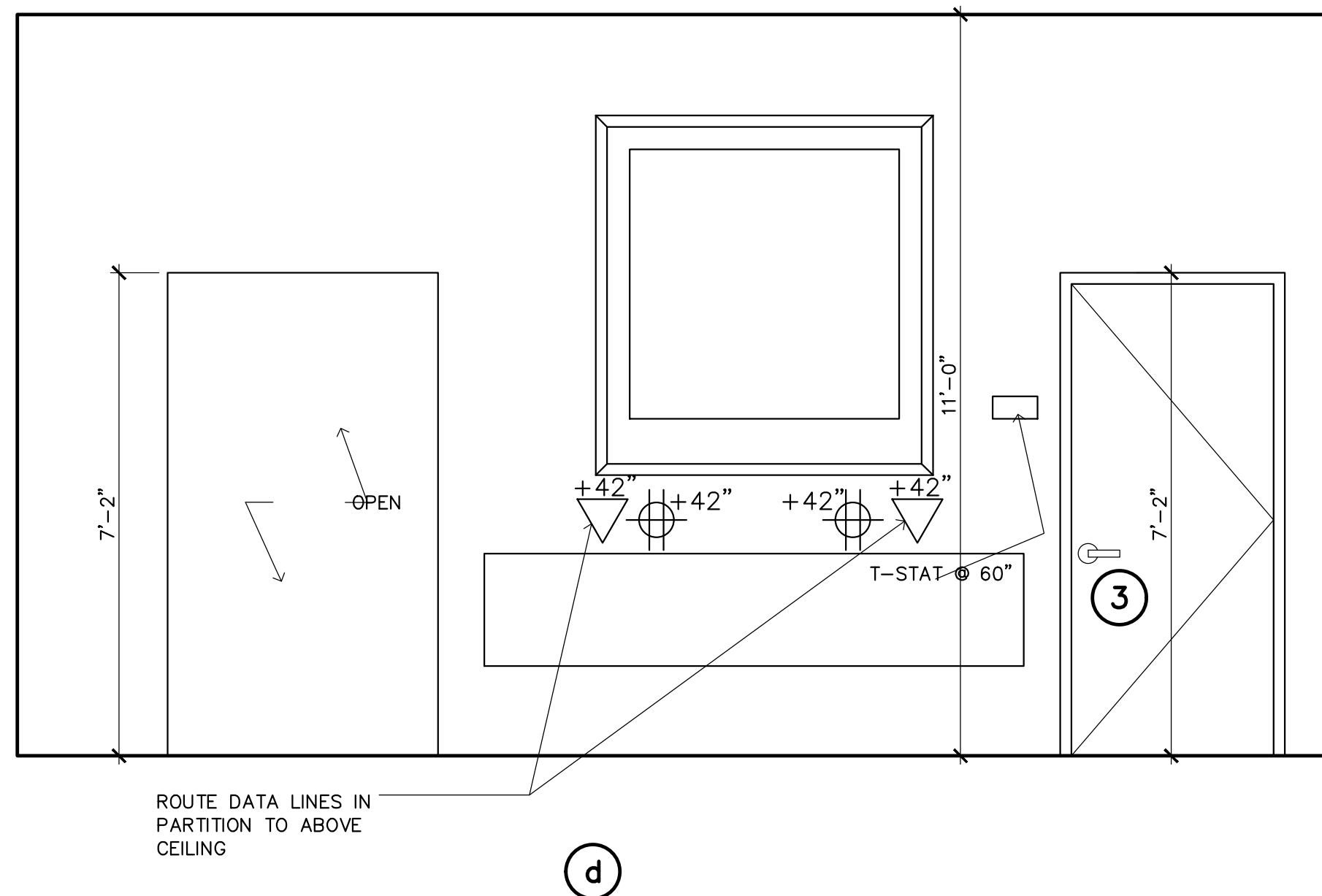
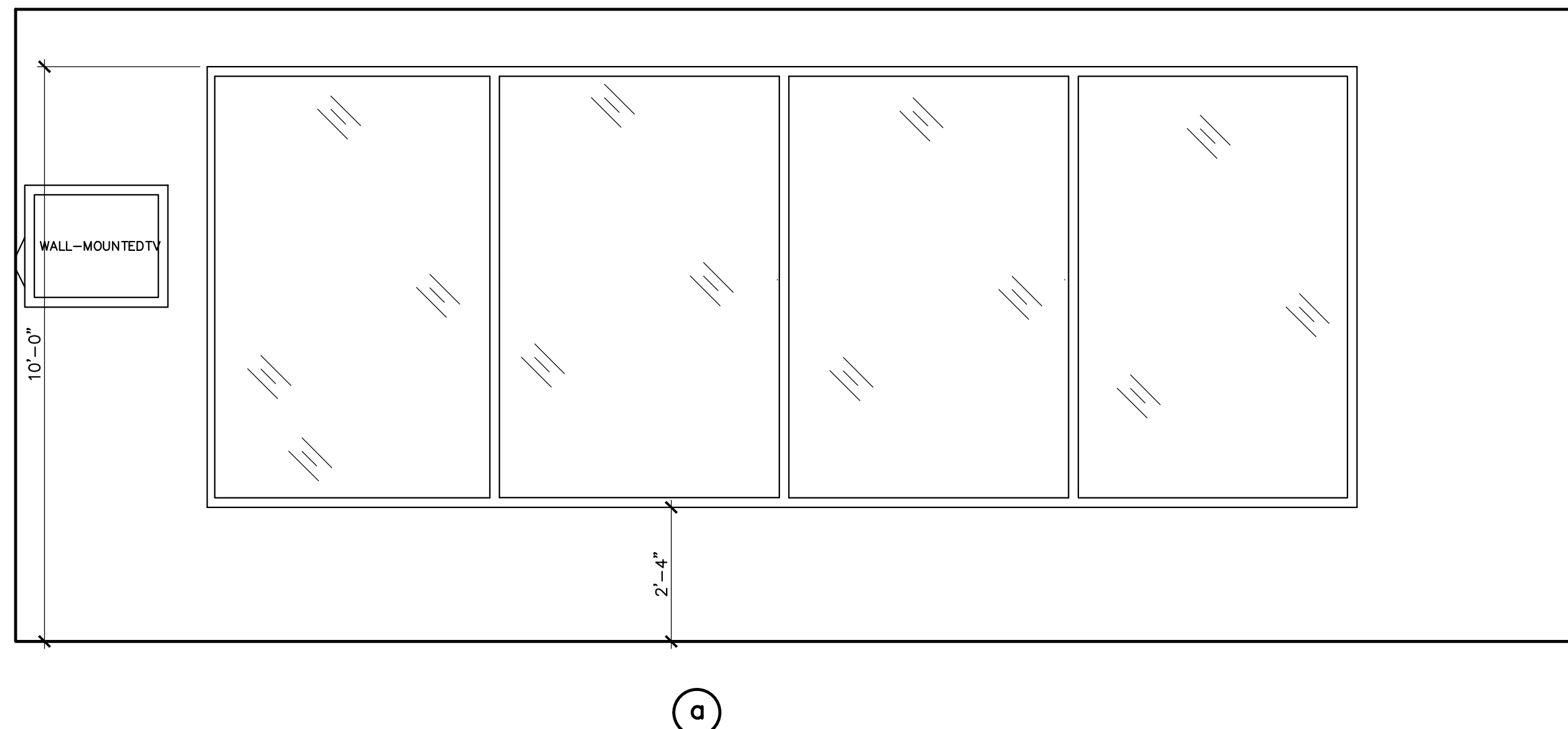
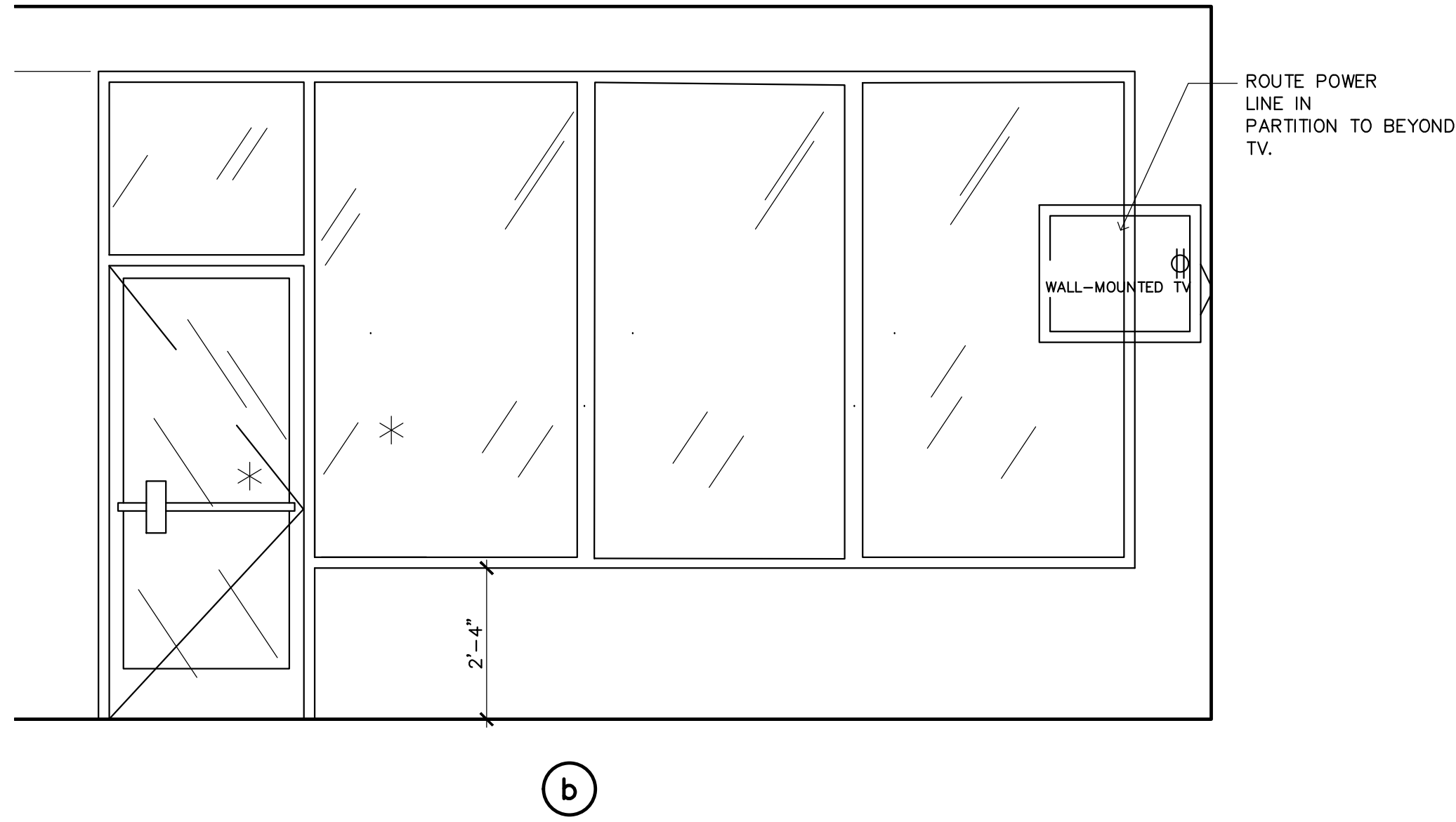
ARCODEV JOB #:
CLIENT/JOB #:
DRAWN BY: NLH
CHECKED BY: NLH
DATE OF ISSUE: 03.23.24



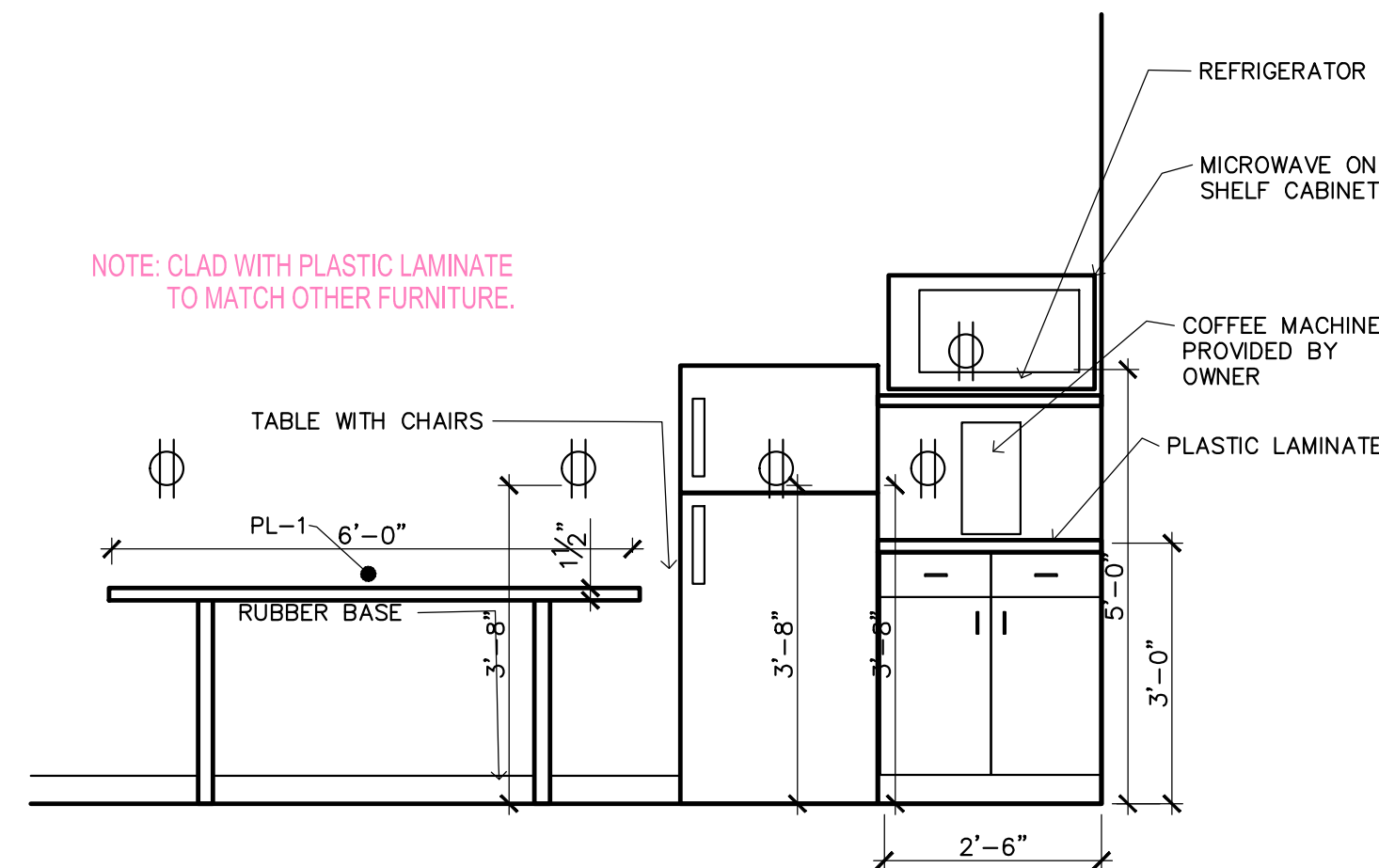
SHEET

A5-1

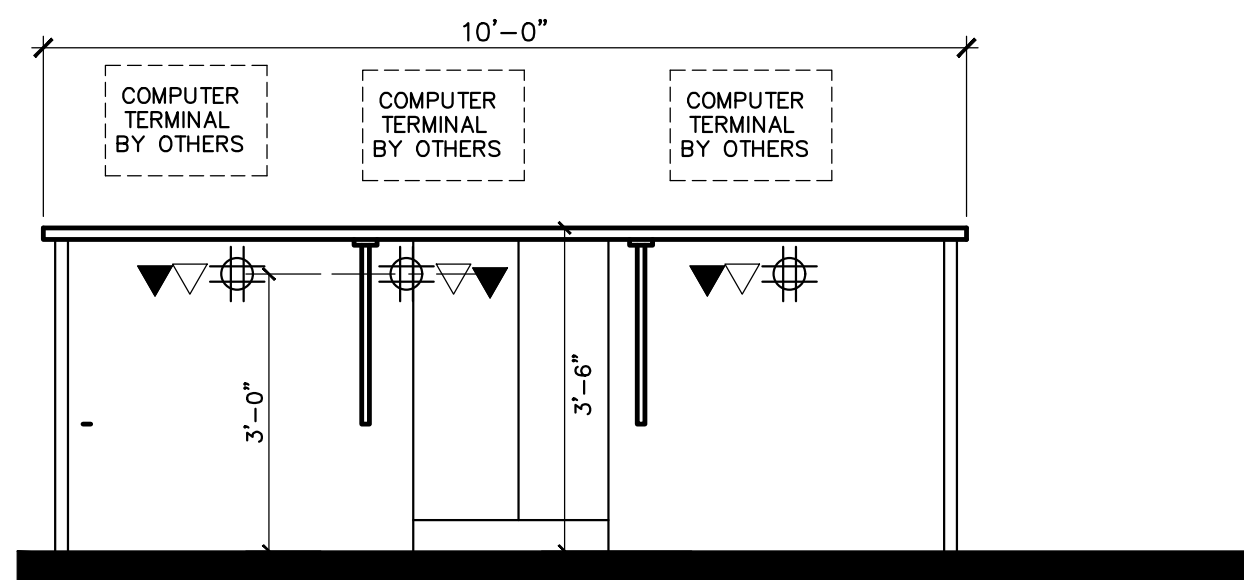
INTERIOR ELEVATIONS
AND DETAILS



2 SALES AREA ELEVATIONS
SCALE: 1/2" = 1'-0"



2 BREAK ROOM ELEVATION
SCALE: 1/2" = 1'-0"



3 SERVICE DESK COMP. TERMINAL STATION
SCALE: 1/2" = 1'-0"

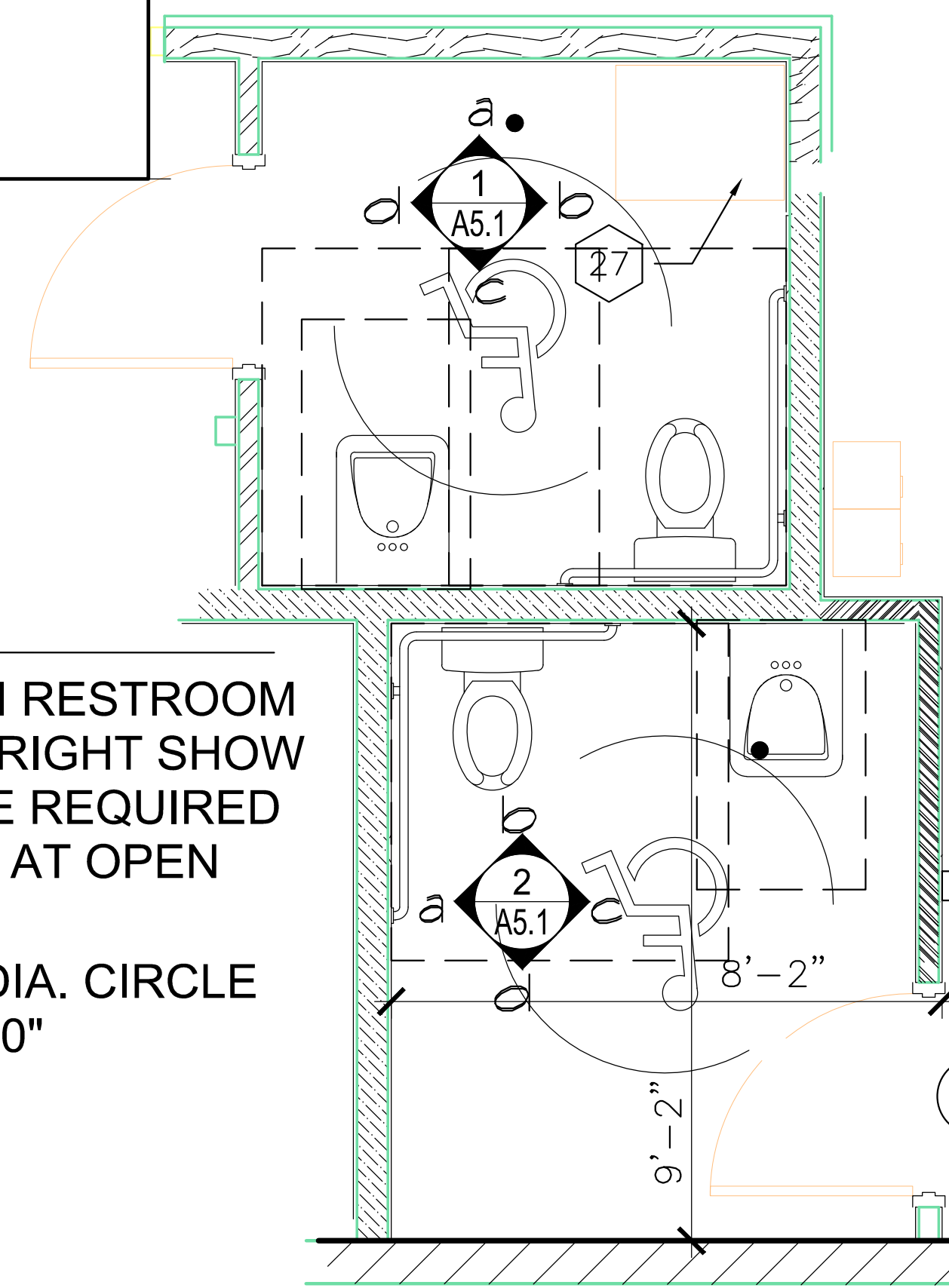
NOTE:

DASHED LINES ON RESTROOM FLOOR PLANS AT RIGHT SHOW THE CLEAR SPACE REQUIRED AT FIXTURES AND AT OPEN

OPEN AREA: 60" DIA. CIRCLE

TOILET: 5'-0" X 5'-0"

SINK: 30"X48"



BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

REGISTERED ARCHITECT
3/25/24

ARCHITECT OF RECORD

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CLIENT JOB #:

DRAWN BY: NLH

CHECKED BY: NLH

DATE OF ISSUE: 03.23.24

ARCODEV

45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

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A5-2

INTERIOR ELEVATIONS AND DETAILS

DOOR SCHEDULE

DOOR NO.	DOOR SIZE	DOOR				FRAME		DETAILS			HWR GROUP	FIRE RATING	REMARKS
		TYPE	MAT'L	FINISH	OUT	MAT'L	FINISH	HEAD	JAMB	SILL			
1	3'-0" X 7'-0"	C	ALUM./GL	M1	M1	ALUM.	M1	8/A6-1	7/A6-1	8/A6-1	6	-	SIGN THIS DOOR SHALL REMAIN UNLOCKED DURING BUSINESS HOURS. NO PANIC BAR REQUIRED.
2	3'-0" X 7'-0"	C	ALUM./GL	M1	M1	ALUM.	M1	8/A6-1	7/A6-1	8/A6-1	6	-	THIS DOOR CLEAR MILL FINISH TO MATCH STOREFRONT FRAMING
3	3'-0" X 7'-0"	B	H.M.	P2	P2	H.M.	P2	3/A6-1	3/A6-1	-	2	-	-
4	3'-0" X 7'-0"	B	H.M.	P2	P2	H.M.	P2	3/A6-1	3/A6-1	-	1	-	PROVIDE ACCESSIBLE RESTROOM SIGNAGE.
5	3'-0" X 7'-0"	F	H.M.	P2	P2	H.M.	P2	3/A6-1	3/A6-1	-	1	-	PROVIDE ACCESSIBLE RESTROOM SIGNAGE.
6	3'-0" X 7'-0"	E	H.M.	P2	P2	H.M.	P2	2/A6-1 SIM	4/A6-1 SIM	2/A6-1 SIM	4	-	PROVIDE 16"X30" VIEW PANEL.
7	2'-0" X 7'-0"	A	H.M.	-	-	-	-	-	-	-	-	-	1 1/2 PR. HINGES, LEVER LATCH SET.
8	NOT USED	-	-	-	-	-	-	-	-	-	-	-	-
9	3'-8" X 7'-0"	E	H.M.	P2	P2	H.M.	P2	1/A6-1	4/A6-1	-	1	-	PROVIDE 16"X30" VIEW PANEL.
10	3'-0" X 7'-0"	B	H.M.	-	-	-	-	1,2/A6-1	4/A6-1	1,2/A6-1	3	-	INSULATED DOOR
11	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
12	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
13	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
14	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
15	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
16	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
17	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK
18	10'-0" X 12'-0"	D	ALUM./GL	-	-	-	-	9/A6-1	6/A6-1	9/A6-1	-	-	PADLOCK

- NOTE:
- THRESHOLD SHALL BE MAXIMUM 1/2" HIGH ABOVE FLOOR AND LANDING ON BOTH SIDES AT BUILDING ENTRANCES.
 - MAXIMUM DOOR OPENING EFFORT SHALL BE 5 LBS AT EXTERIOR AND INTERIOR DOORS PER ANSI 404.2.9.
 - ALL DOORS SHALL BE EQUIPED WITH SIGNLE-EFFORT, NON-GRASP HARDWARE CENTERED BETWEEN 34" AND 48" ABOVE THE FLOOR.

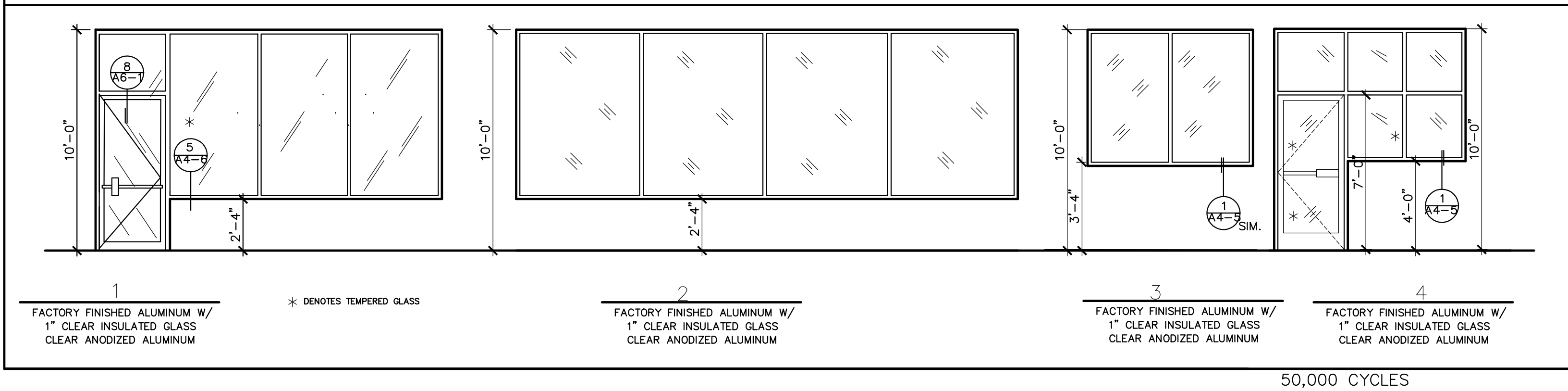
ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOORS		WALLS								CEILINGS		REMARKS
		FLOOR	BASE	EAST		WEST		SOUTH		NORTH		MATERIAL	FINISH	
				MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH			
101	SALES FLOOR	LVT	RB	ALUM./G.B.	F3	GB	F3	GB	F3	ALUM./GB	F3	ACT	F1	11'-0"
102	COFFEE ROOM	LVT	RB	GB	F3	GB	F3	GB	F3	GB	F3	ACT	F1	10'-0"
103	OFFICE	LVT	RB	GB	F3	GB	F3	C.B.	F3	GB	F3	ACT	F1	8'-0"
104	UNISEX R.R. 1	LVT	CT	G.B./CT	F4/F1	GB	G.B.	GB/CT	F4/F1	GB/CT	F4/F1	GB	F4	8'-0"
105	UNISEX R.R. 2	SEALED CONCRETE	RB	FRP	F1	FRP	F1	G.B.	F1	C.B.	F1	GB	F4	8'-0"
106	STO.	LVT	RB	GB	F3	GB	F3	GB	F3	GB	F3	GB	F4	ON TRUSS
107	BREAK ROOM	SEALED CONCRETE	RB	GB	F3	G.B.	F3	G.B.	F3	C.B.	F3	OPEN	P2	PROVIDE 1 COAT BLOCK FILLER AT CMU WALL.
108	INVENTORY	SEALED CONCRETE	RB	GB	F3	G.B.	F3	G.B.	F3	C.B.	F5	OPEN	F4	ON TRUSS
109	SERVICE AREA	SEALED CONCRETE	-	CMU	F5	CMU	F5	CMU	F5	CMU	F5	OPEN	F4	VARIES
110	NOT USED	-	-	-	-	-	-	-	-	-	-	-	-	-
111														

- NOTES:
- PROVIDE MOISTURE-RESISTANT GYPSUM BOARD.

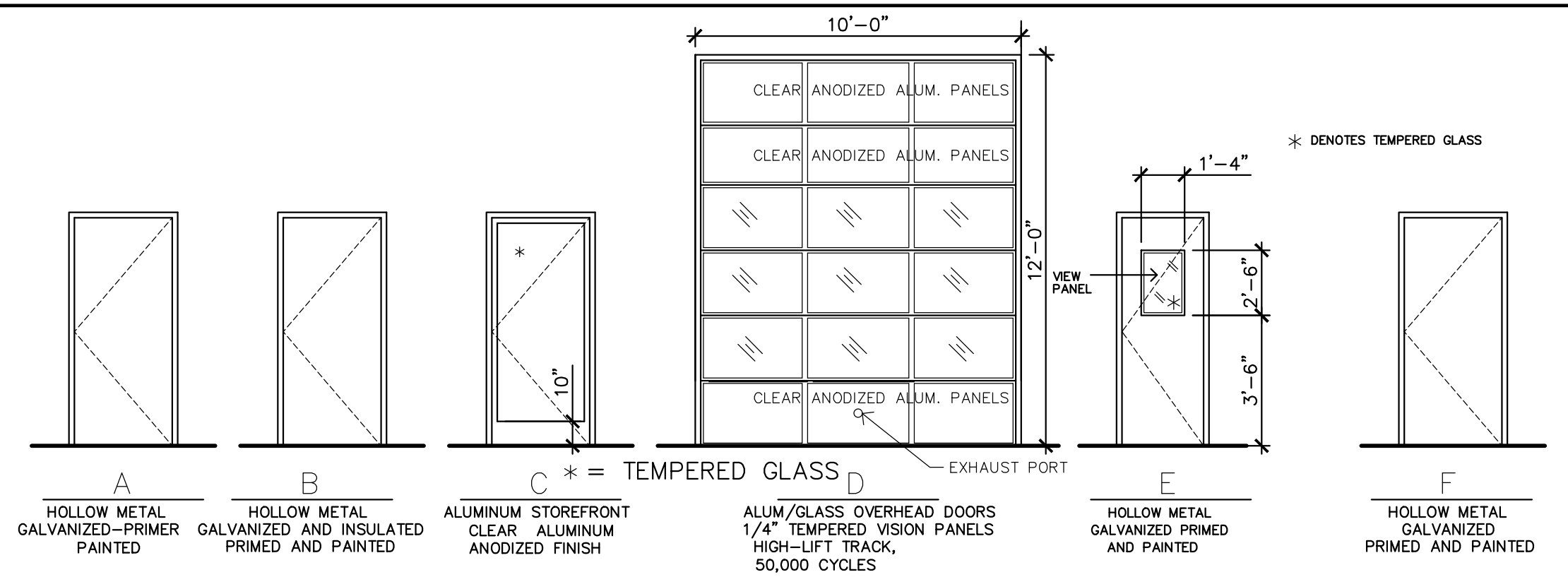
WINDOW TYPES

* = TEMPERED GLAZING



DOOR TYPES

= TEMPERED GLAZING



HARDWARE SCHEDULE

GROUP	QTY.	DESCRIPTION
1	1 EACH 1 EACH 3 EACH 1 EACH 1 EACH	FRAME - ME416 3070 X 5 3/4" HMF DOOR - 3070 X 1 3/4" H.M. HINGE - STANLEY FBB179 4.5 X 4.5 X 626 LOOKSET - SCHLAGE AL40S SAT X 626 (PRIVACY) FLOOR STOP - MM FS13 X US26D
2	1 EACH 1 EACH 3 EACH 1 EACH 1 EACH 1 EACH	FRAME - ME416 3070 X 5 3/4" HMF LH CR ASA DOOR - 3070 X 1 3/4" H.M. HINGE - STANLEY FBB179 4.5 X 4.5 X 626 LOOKSET - SCHLAGE AL53PD SAT X 626 (ENTRY) CLOSER - LCN 1461 REG/PA TBMS X ALU FLOOR STOP - MM FS13 X US26D
3	1 EACH 1 EACH 3 EACH 1 EACH 1 EACH 1 EACH 1 EACH 1 EACH 1 EACH	FRAME - ME416 3070 X 5 3/4" 4" HD HMF RH CR BJPR DOOR - 3070 X 1 3/4" HMD BLANK MOLCR HINGE - STANLEY FBB179 NRP 4.5 X 4.5 X 626 EXIT DEVICE - YON DUFRIN 22NL 3" X SP28 RIM CYLINDER - SCH 'C' X US26D CLOSER - LCN 4041 CUSH TBMS X ALU LATCHGUARD - MM MG2C THRESHOLD - PEMKO 179AV X 36" SWEEP - PEMKO 18137P X 36" SMOKE SEAL - PEMKO S88C 17"
4	1 EACH 1 EACH 3 EACH 1 EACH 1 EACH	FRAME - ME416 3070 X 5 3/4" HMF LH CR ASA DOOR - 3070 X 1 3/4" HM HINGE - STANLEY FBB179 4.5 X 4.5 X 626 LOOKSET - SCHLAGE AL53PD SAT X 626 (ENTRY) CLOSER STOP - MM FS13 X US26D
5	1 EACH 1 EACH 1 EACH 1 EACH 1 EACH	FRAME - ME416 3070 X 5 3/4" HMF DOOR - 3070 X 1 3/4" H.M. HINGE - STANLEY FBB179 4.5 X 4.5 X 626 LOOKSET - SCHLAGE AL10S SAT X 626 (PASSAGE) FLOOR STOP - MM FS13 X US26D
6	2 EACH 1 EACH 1 EACH 1 EACH 1 EACH	HINGE - KAWNEER OFFSET PIVOT CLOSER - LCN 4041 CUSH TBMS X ALU PUSH/PULL - KAWNEER, STYLE F-2 DEADLOCK - KAWNEER ADAMS RITE MS-1850A-505 W/ STANDARD LOCK CYLINDERS WITH HEAD & SILL BOLTS EXIT INDICATOR - KAWNEER ADAMS RITE 4089

* ALL DOOR HARDWARE SHALL BE LEVER TYPE

FINISHES

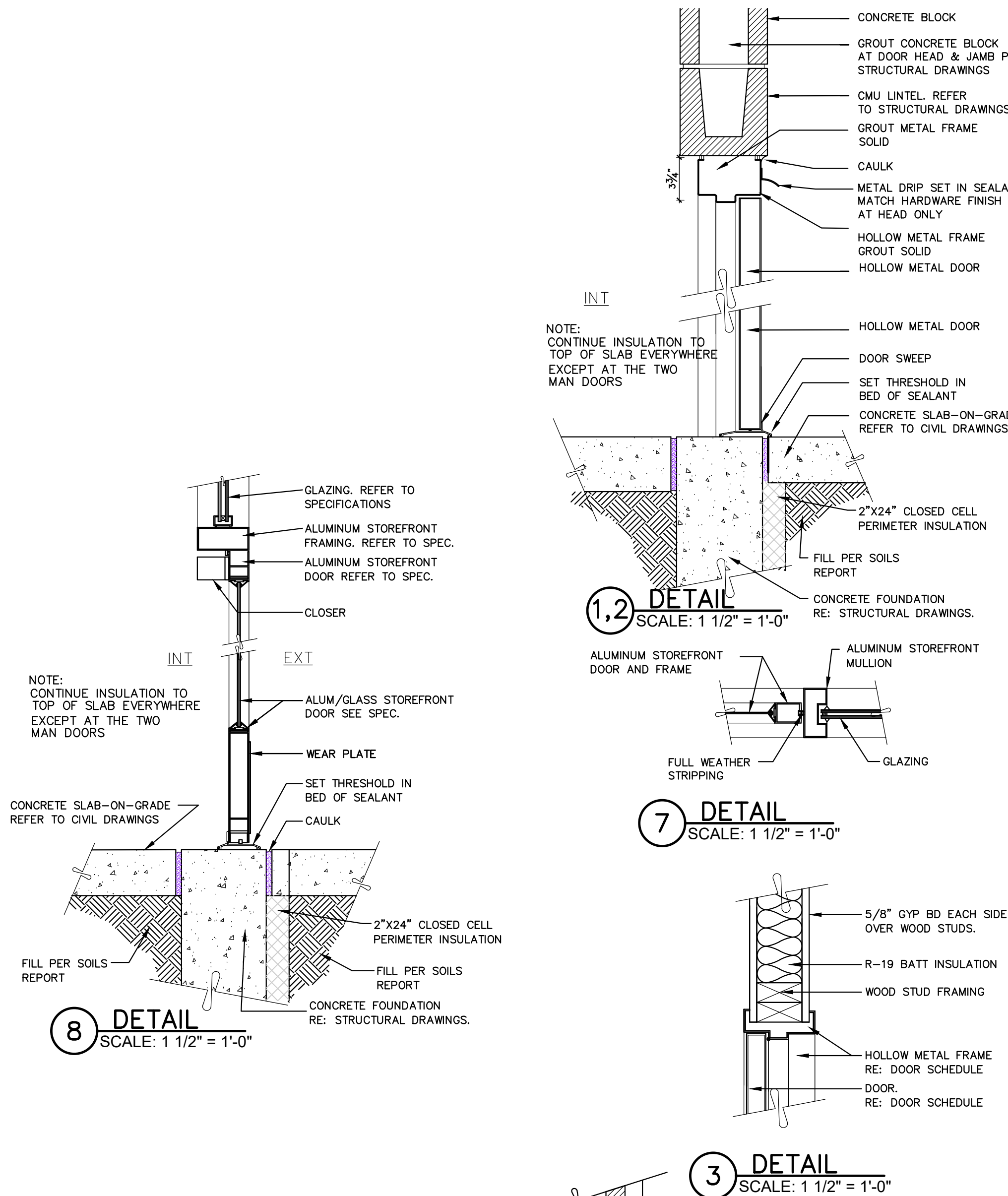
DOOR AND FRAME MATERIAL

SCW SOLID CORE WOOD
HM HOLLOW METAL
ALUM ALUMINUM
STL STEEL
DOOR AND FRAME FINISHES

P1 NOT USED
P2 FACTORY PRIMED, STANDARD WHITE/LIGHT GRAY
P3 CLEAR ANODIZED ALUMINUM, MILL FINISH
M1

FINISH MATERIALS
ACT ACOUSTICAL CEILING TILES
CT CERAMIC TILE
CMU CONCRETE MASONRY UNIT
RB RUBBER BASE
GB GYPSUM BOARD
FRP FIBERGLASS REINFORCED PLASTIC
CPT CARPET

FINISHES
F1 NONE
F2 HARDENER AND SEALER
F3 2 COATS ENAMEL
F4 2 COATS ENAMEL
F5 1 COAT BLOCK FILLER - 2 COAT HIGH GLOSS ENAMEL TO 4'-0" AFF - 1 COATS HIGH GLOSS ENAMEL ABOVE 4'-0" AFF
F6 2 COATS SEMI-GLOSS ENAMEL



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

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

BRAKES PLUS
640 EAST FM 2410
HARKER HEIGHTS, TEXAS

ARCHITECT OF RECORD

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DATE	COMMENTS
03.25.24	SUBMITTED TO BLDG. DEPT.

ARCOCODEV

ARCOCODEV_JOB #:

CLIENTJOB #:

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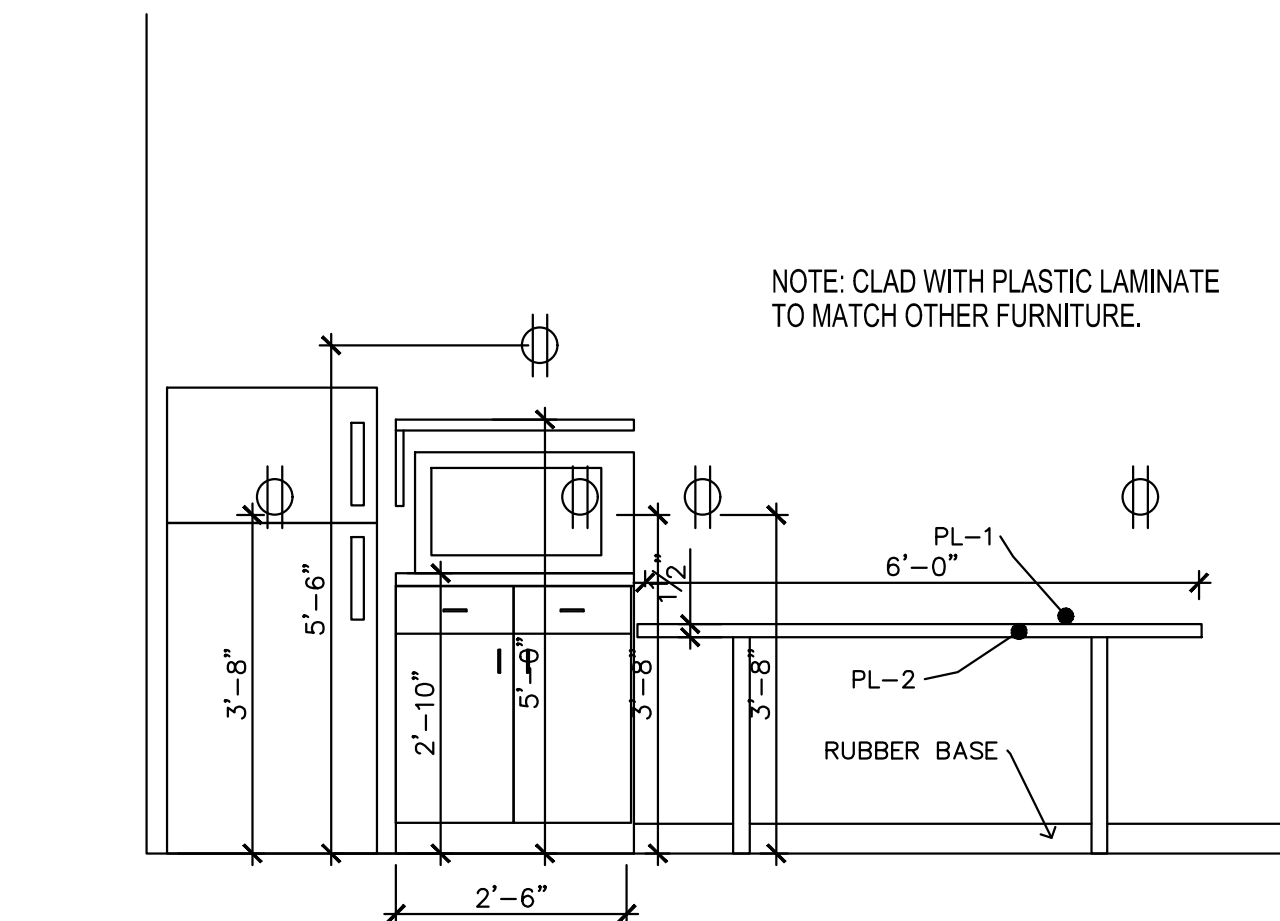
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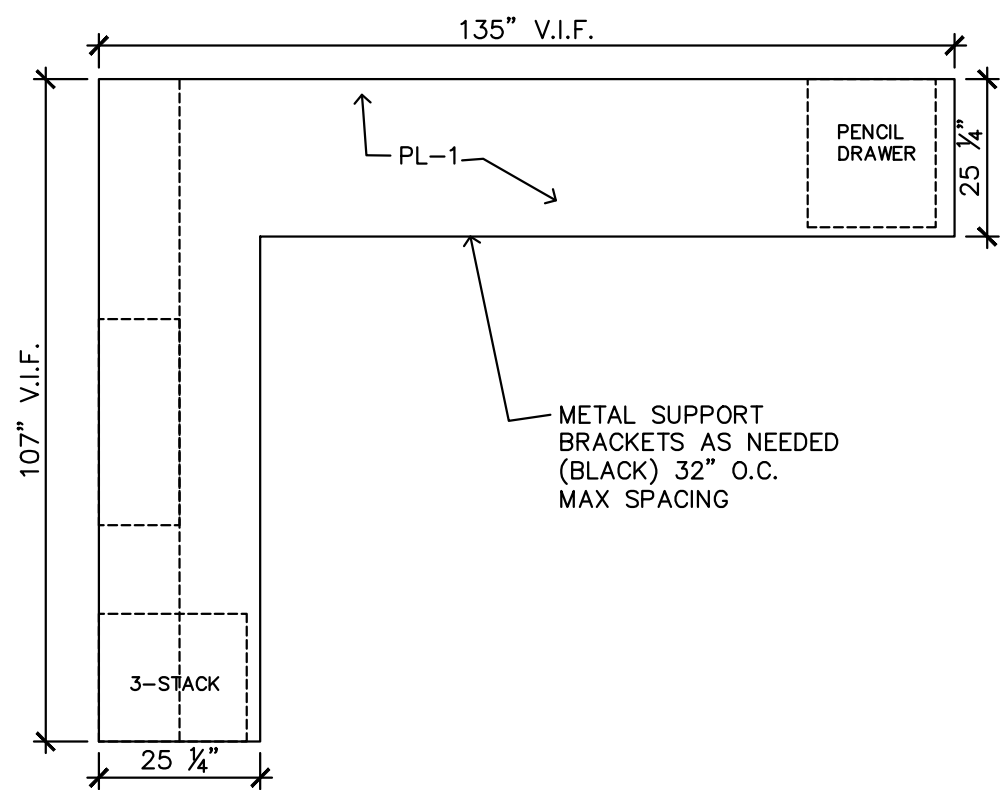
45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

A6-1

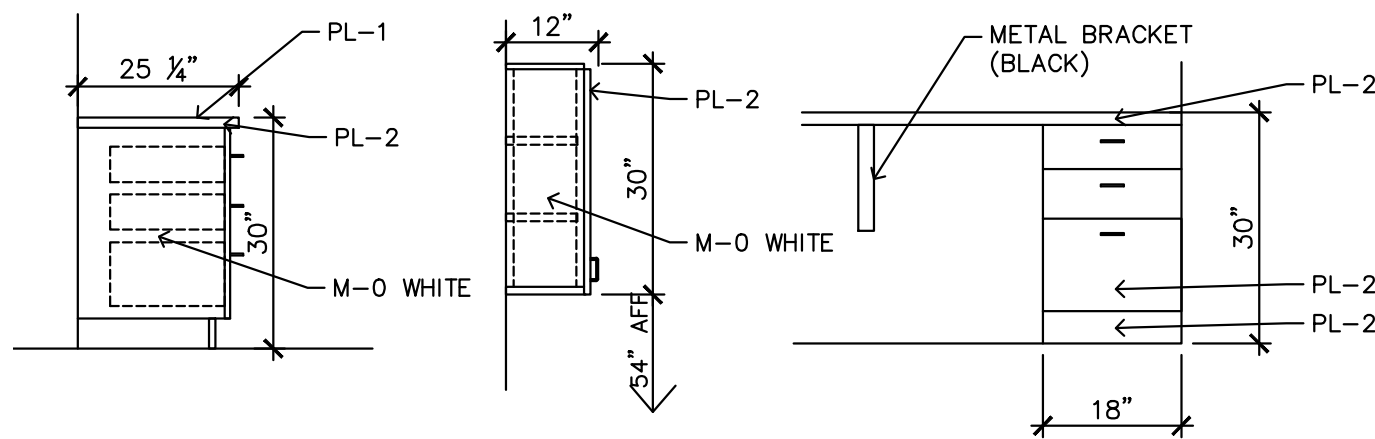
SCHEDULES



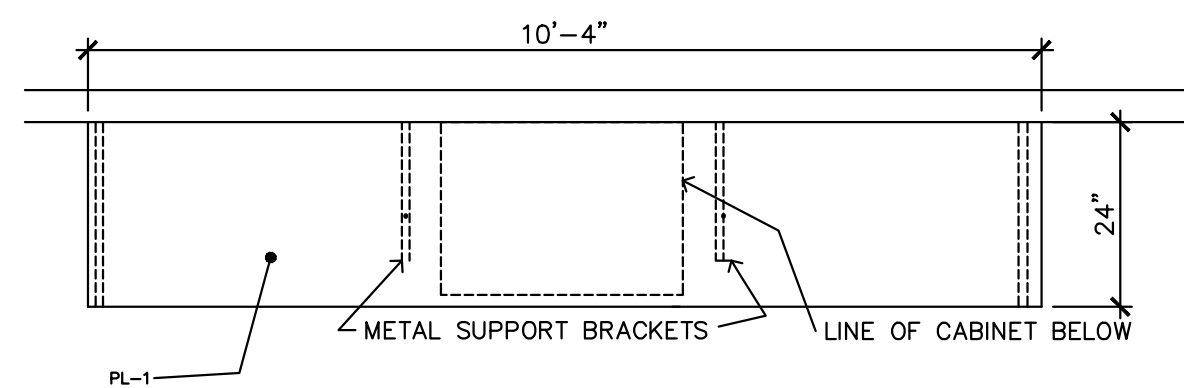
13 DETAIL — BREAK ROOM ELEVATION
SCALE: 1/2" = 1'-0"



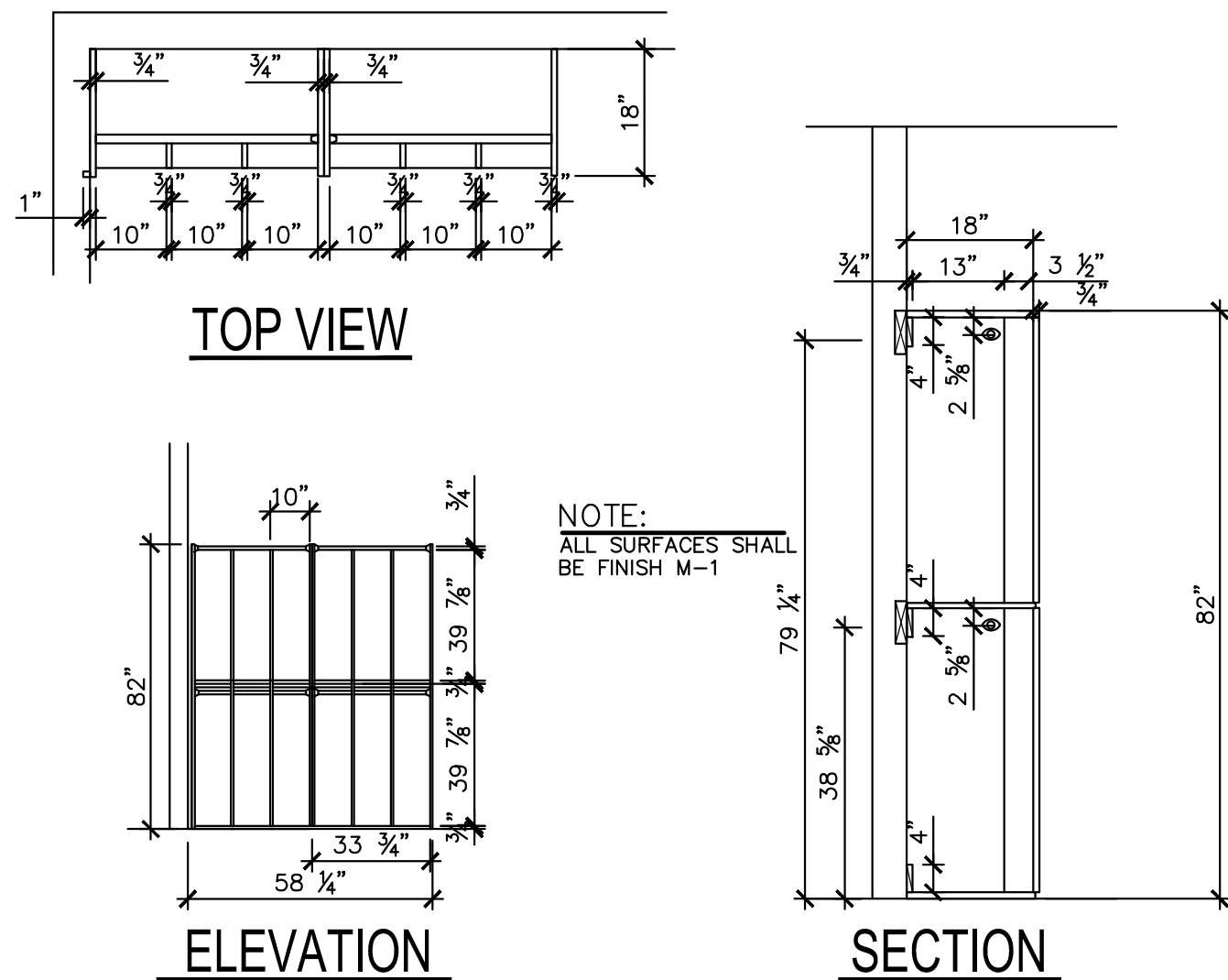
14 DETAIL — OFFICE 103 FURNITURE
SCALE: 1/2" = 1'-0"



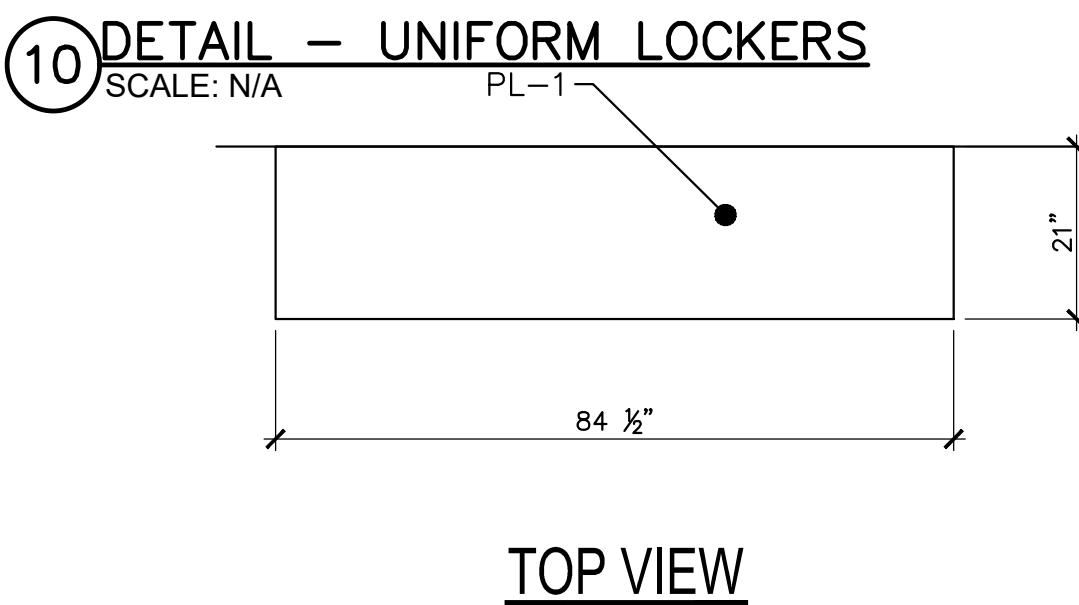
15 DETAIL — OFFICE 103 FURNITURE
SCALE: 1/2" = 1'-0"



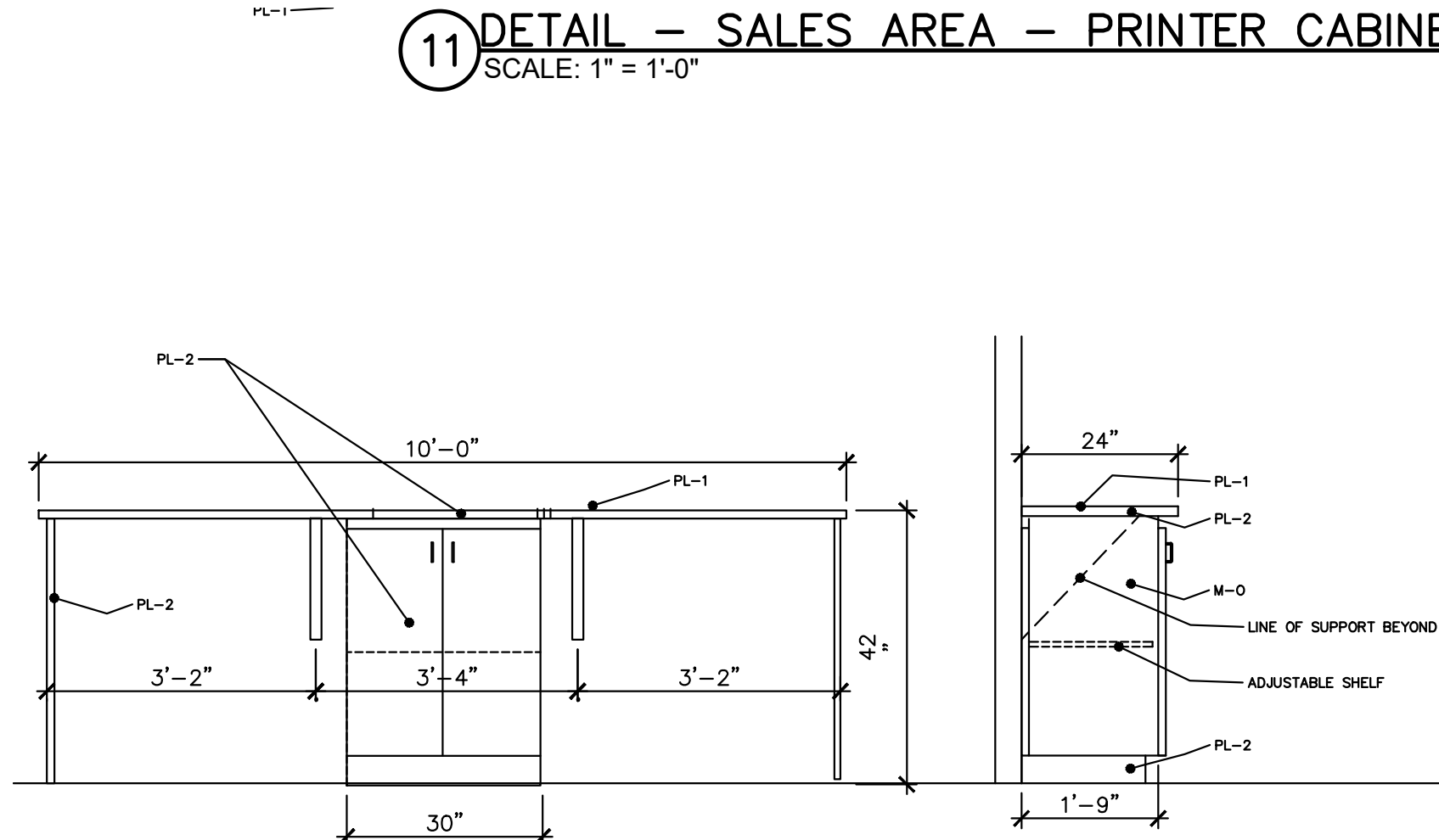
16 DETAIL — SERVICE ADVISORS DESK
SCALE: 1/2" = 1'-0"



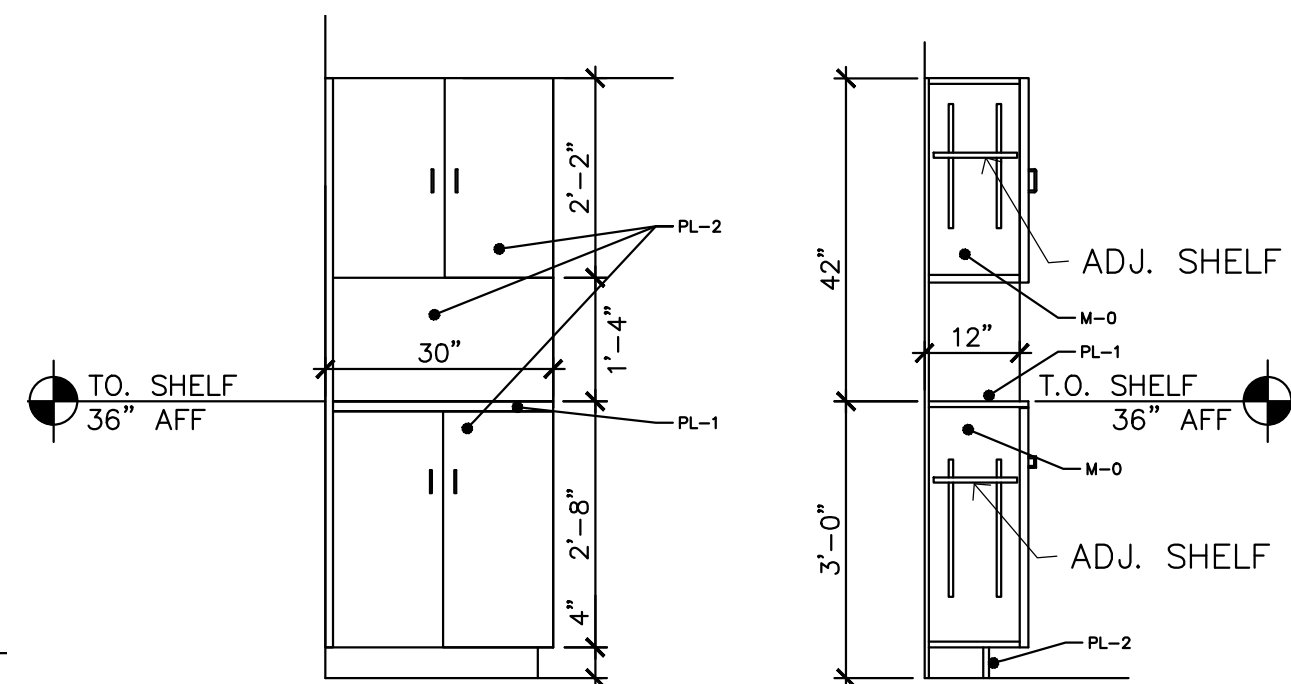
9 DETAIL — MICROWAVE STAND
SCALE: 1/2" = 1'-0"



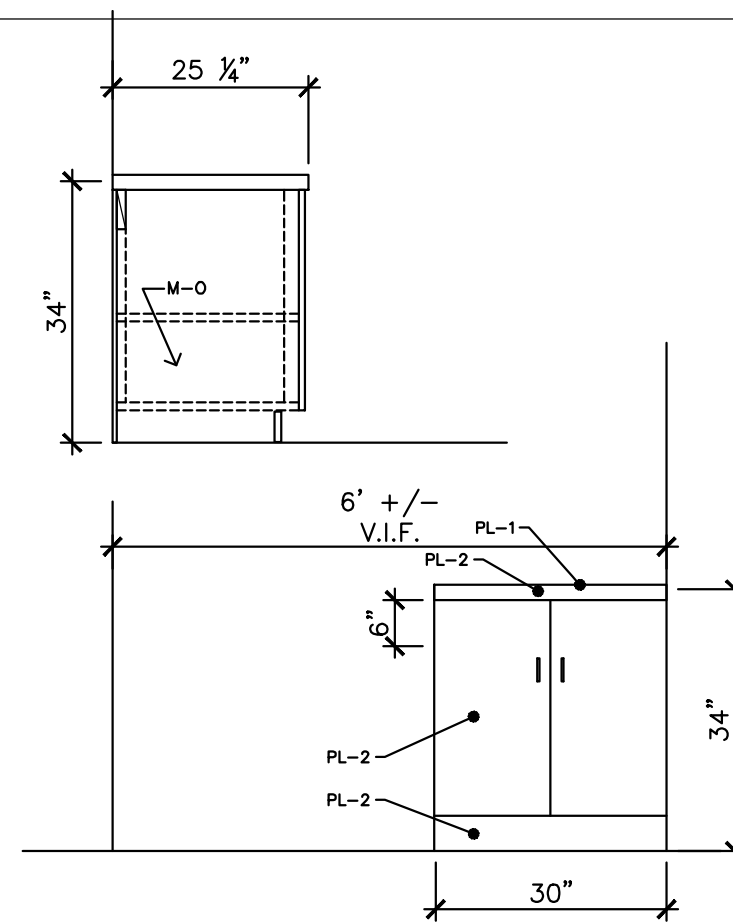
10 DETAIL — UNIFORM LOCKERS
SCALE: N/A



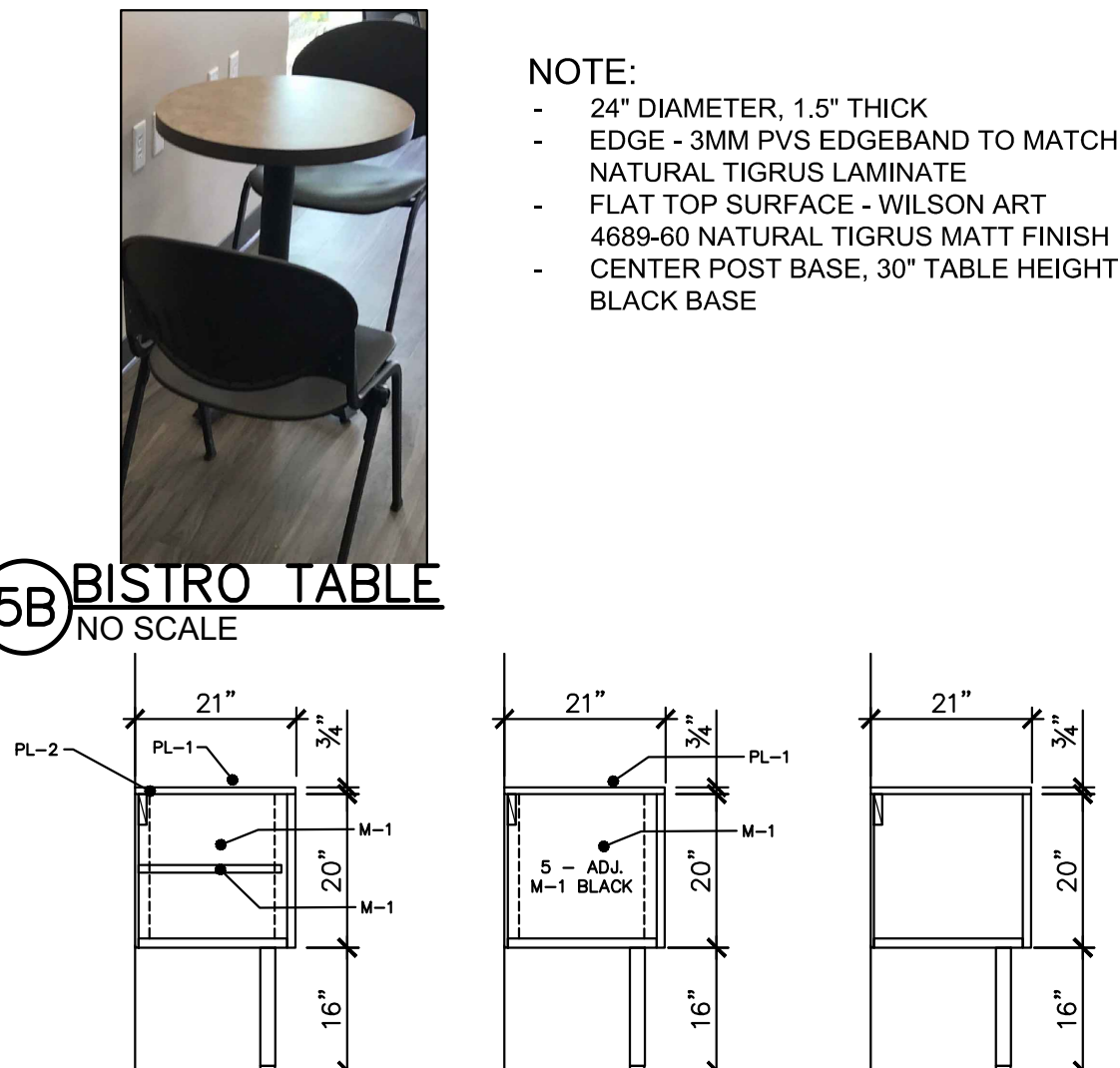
11 DETAIL — SALES AREA — PRINTER CABINETS
SCALE: 1" = 1'-0"



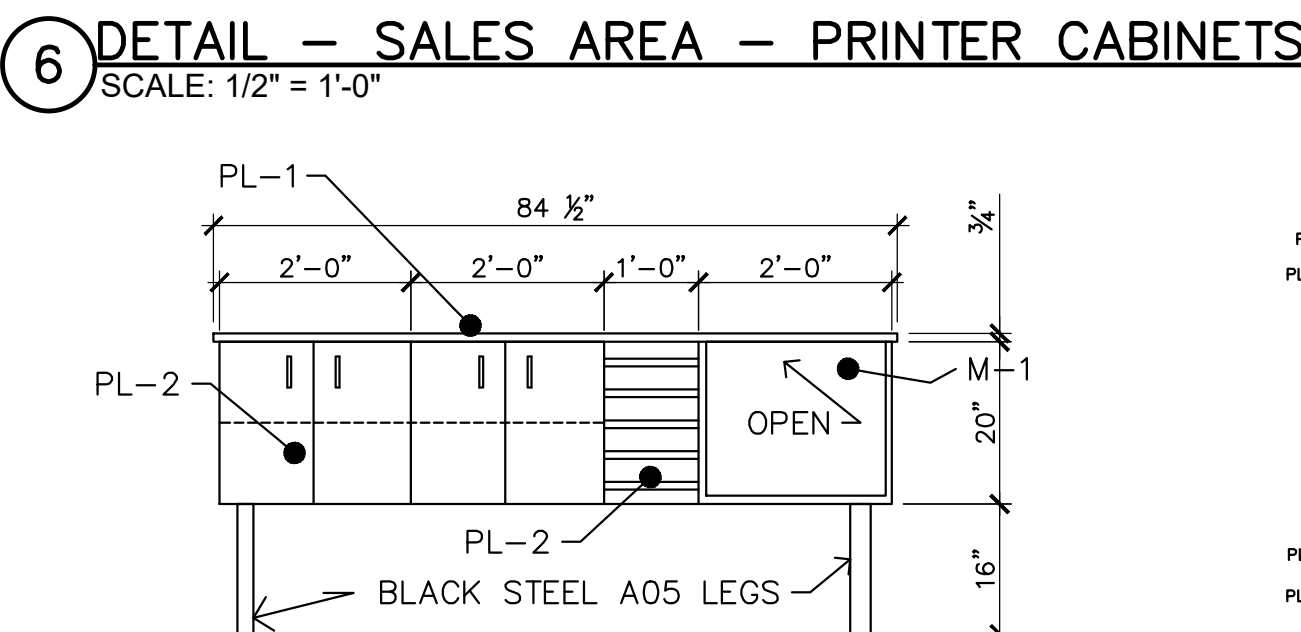
8 DETAIL — RESTROOM CABINETS
SCALE: 1/2" = 1'-0"



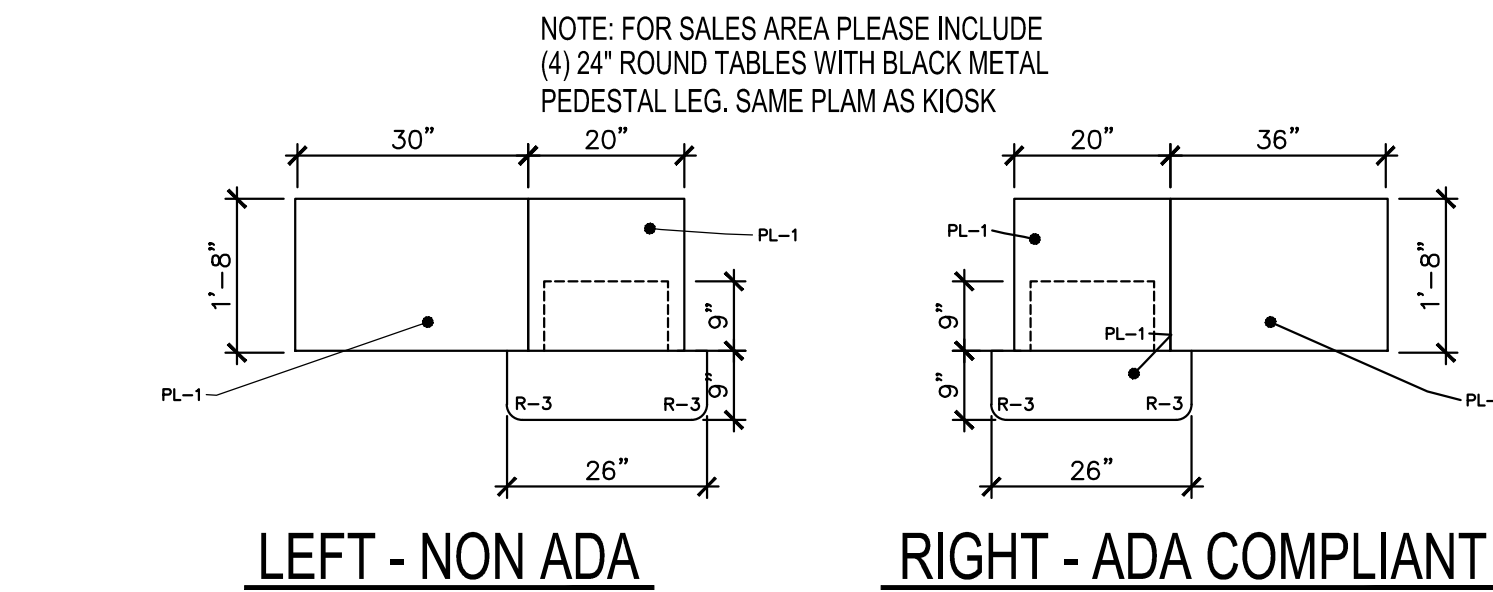
5 DETAIL — COFFEE ROOM 102
SCALE: 1/2" = 1'-0"



5B BISTRO TABLE
NO SCALE

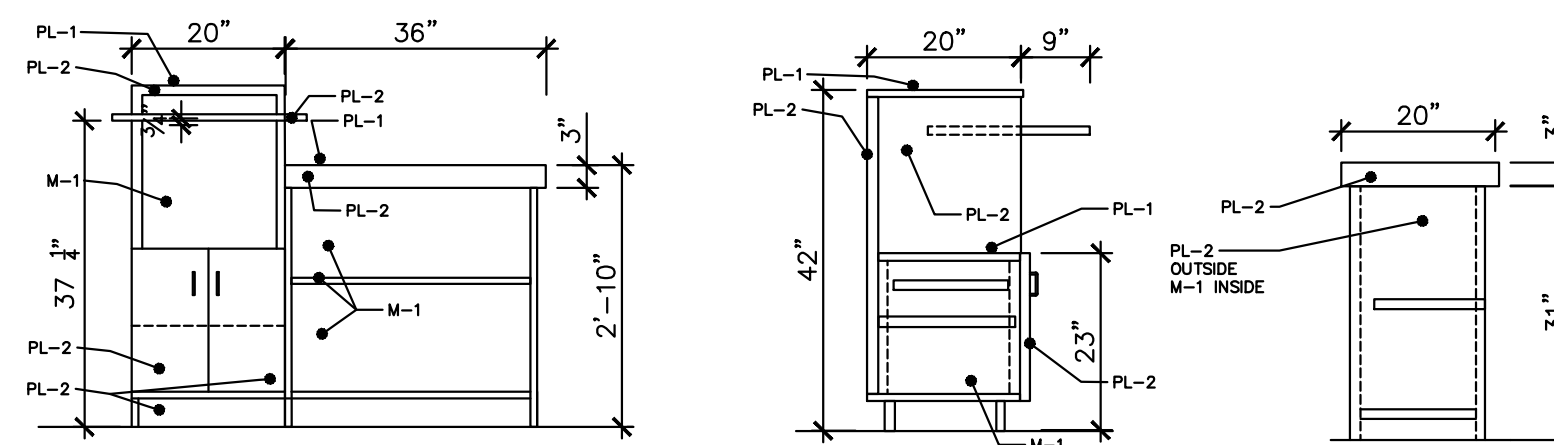


6 DETAIL — SALES AREA — PRINTER CABINETS
SCALE: 1/2" = 1'-0"

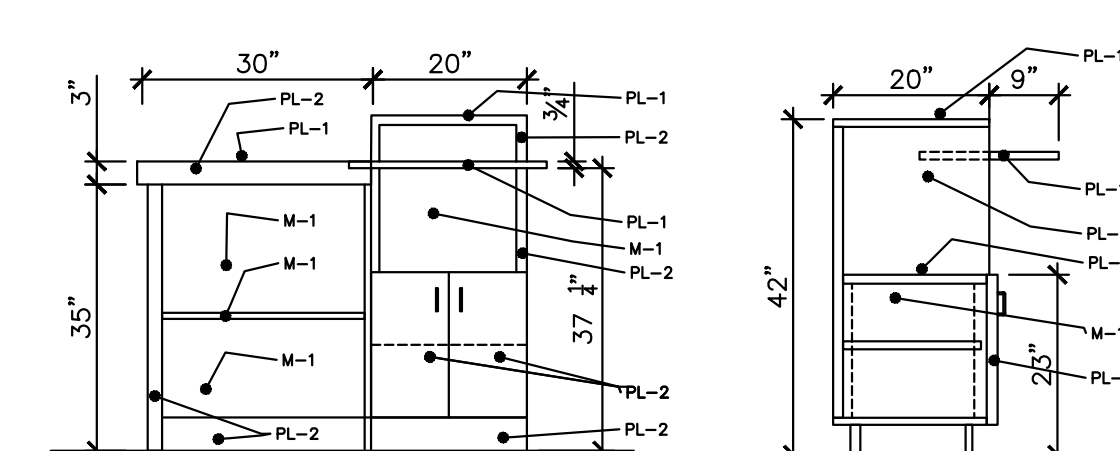


LEFT - NON ADA

RIGHT - ADA COMPLIANT



3 DETAIL — KIOSK 2 — ADA COMPLIANT
SCALE: 1/2" = 1'-0"

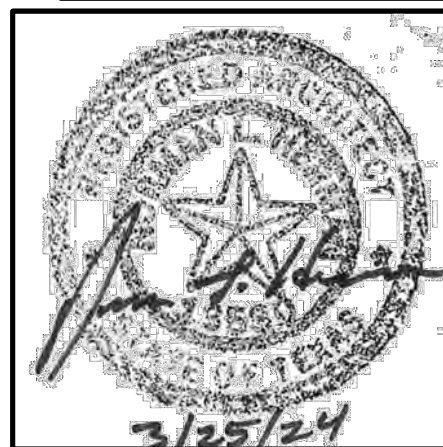


4 DETAIL — KIOSK 1 — NON ADA
SCALE: 1/2" = 1'-0"

PLAM COLORS LEGEND:
PLAM COLORS - WILSON ART:
PL-1 = #4689 NATURAL TIGRUS
PL-2 = #4623 GRAPHITE NEBULA
M-0 = WHITE MELAMINE
M-1 = BLACK MELAMINE

NOTE:
SELECTED CONTRACTOR WILL PROVIDE
COMPLETE NEW DRAWINGS FOR APPROVAL.

BRakes PLUS
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
03.25.24		SUBMITTED TO BLDG. DEPT.



SHEET

A6-2

FURNITURE AND
FIXTURE DETAILS



COMcheck Software Version COMcheckWeb Envelope Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Brakes Plus - Harker Heights Texas
Location: Harker Heights, Texas
Climate Zone: 2a
Project Type: New Construction
Vertical Glazing / Wall Area: 5%

Construction Site:
640 E FM2410
Harker Heights, Texas

Owner/Agent:

Designer/Contractor:
North Herman
ARCODEV Architects PC
45 Spyglass Drive
Littleton, Colorado 80123
303-881-8925
northherman@arcodev.com

Additional Efficiency Package(s)

Credits: 10.0 Required 12.7 Proposed
Reduced lighting power, 12.7 credit

Building Area	Floor Area
1-Service Bays and Inventory (Automotive Facility) : Nonresidential	3873
2-Customer Area (Retail) : Nonresidential	1021

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor
Roof: Insulation Entirely Above Deck, 3-Year-Aged Solar Reflectance Index = 64.00 (e), [Bldg. Use 1 - Service Bays and Inventory]	3872	----	40.0	0.025	0.039
Roof: Insulation Entirely Above Deck, 3-Year-Aged Solar Reflectance Index = 64.00 (e), [Bldg. Use 2 - Customer Area]	1044	----	40.0	0.025	0.039
Floor: Unheated Slab-On-Grade, Vertical 2 ft., [Bldg. Use 1 - Service Bays and Inventory] (c)	245	----	0.0	0.730	0.730
Floor: Unheated Slab-On-Grade, Vertical 2 ft., [Bldg. Use 2 - Customer Area] (c)	69	----	0.0	0.730	0.730
NORTH Ext. Wall: Inventory: Concrete Block, 8in., Partially Grouted, Cells Ins., Light Density, Furring: None (d), [Bldg. Use 1 - Service Bays and Inventory]	507	----	7.0	0.071	0.151
Ext. Wall: Wood-Framed, 24in. o.c., [Bldg. Use 2 - Customer Area]	393	18.0	0.0	0.074	0.064
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID storefront, SHGC 0.25, [Bldg. Use 2 - Customer Area] (b)	45	----	----	0.460	0.450
Ext. Wall: Wood-Framed, 24in. o.c., [Bldg. Use 2 - Customer Area]	116	18.0	0.0	0.074	0.064
EAST Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Ins., Light Density, Furring: None (d), [Bldg. Use 1 - Service Bays and Inventory]	1696	----	7.0	0.071	0.151
Door: Insulated Metal, Garage door 14% glazing, [Bldg. Use 1 - Service Bays and Inventory]	800	----	----	0.350	0.310
SOUTH Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Ins., Light Density, Furring: None (d), [Bldg. Use 1 - Service Bays and Inventory]	699	----	7.0	0.071	0.151
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Service Bays and Inventory]	24	----	----	0.300	0.370
WEST Ext. Wall: Wood-Framed, 24in. o.c., [Bldg. Use 2 - Customer Area]	854	18.0	0.0	0.074	0.064
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID North Sales, SHGC 0.25, [Bldg. Use 2 - Customer Area] (b)	185	----	----	0.460	0.450
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID North Sales, SHGC 0.25, [Bldg. Use 2 - Customer Area] (b)	11	----	----	0.460	0.450
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Ins., Light Density, Furring: None (d), [Bldg. Use 1 - Service Bays and Inventory]	958	----	7.0	0.071	0.151

- (a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.
(d) CMU insulated cells must be filled with a material having a maximum thermal conductivity of 0.44 Btu in./ft²-degrees F. Perlite, vermiculite, polystyrene beads, or spray foam as defined in ASHRAE 2009 Handbook of Fundamentals meet this requirement. Other materials require documentation of thermal conductivity.
(e) High albedo roof requirement options: 1) 3-year aged solar reflectance index \geq 55.0 thermal emittance \geq 0.75, 2) 3-year aged solar reflectance index \geq 64.0, 3) initial year aged solar reflectance \geq 0.70 thermal emittance \geq 0.75, 4) initial year aged solar reflectance index \geq 82.0.

Envelope PASSES: Design 20% better than code

Envelope Compliance Statement

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

Norman L. Herman - Architect
Name - Title
Signature
Date: 5-9-24

BRAKES PLUS EXTERIOR PAINT SPECIFICATIONS

LOCATION	BRAND	COLOR	NUMBER	FINISH	SPECIAL INSTRUCTIONS
CORNER-GUARD	SHERWIN WILLIAMS	ASTISAN TAN	SW75-40		
DOORS	SHERWIN WILLIAMS	ASTISAN TAN	SW75-40		
TRASH ENCLOSURE DOORS	SHERWIN WILLIAMS	ASTISAN TAN	SW75-40		

5 DETAIL - EXTERIOR PAINT SPECIFICATIONS SCALE: N.T.S.

RESTROOM WAINSCOT FINISHES

MAIN COLOR	TWO TOP ROWS
DALTILE (SEMI-GLOSS)	DALTILE (SEMI-GLOSS)
PRICE GROUP 2	PRICE GROUP 3
#0132	#DM-1
URBAN PUTTY #0161	CURRENT
SEMI-GLOSS	SEMI-GLOSS
4 1/4" X 4 1/4"	4 1/4" X 4 1/4"
GROUT: MAYEI BLANCO	GROUT: MAYEI BLANCO

4 RESTROOM FINISHES SCALE: N.T.S.

GENERAL NOTES:

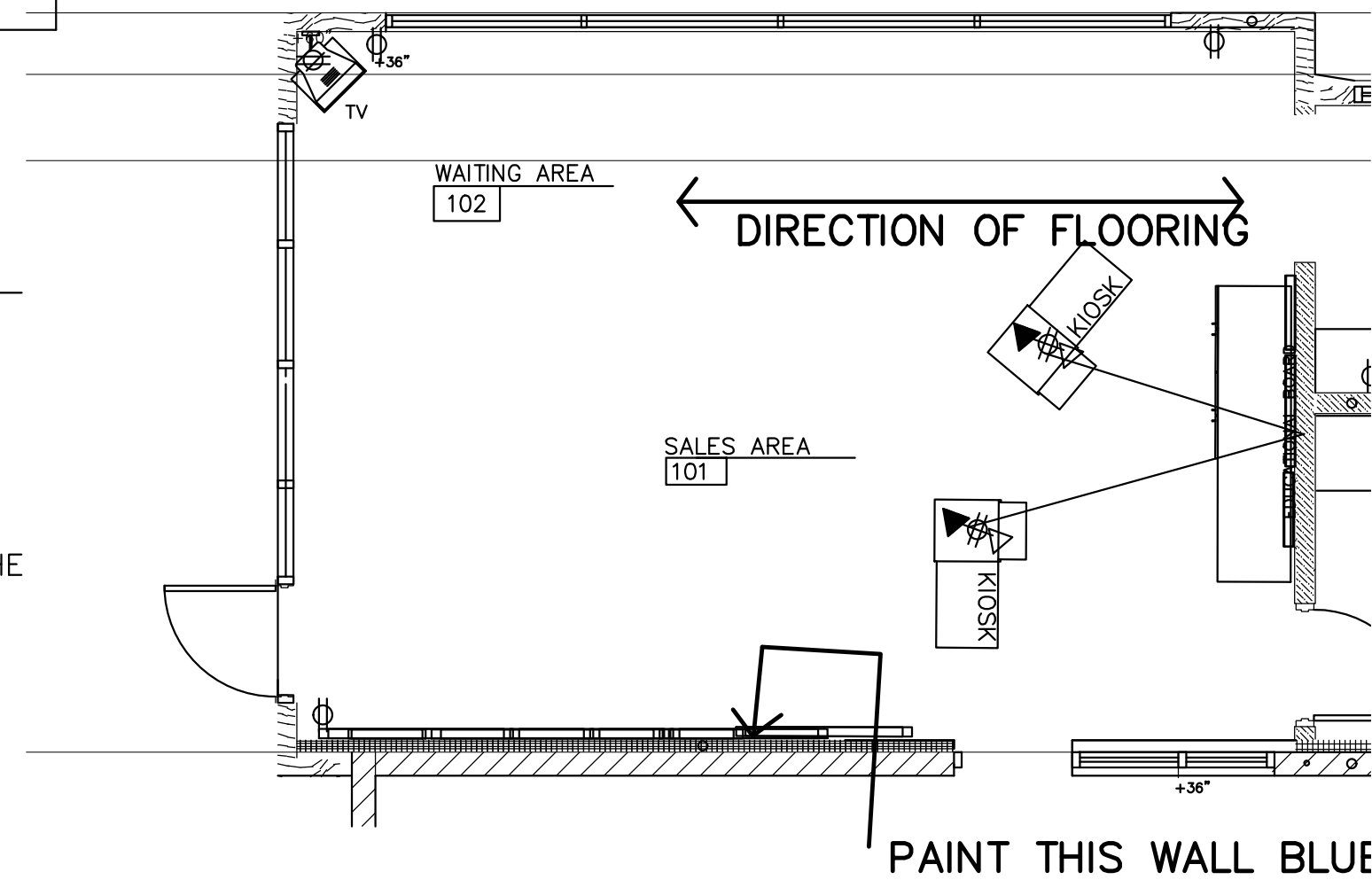
- APPLY THE WALK OFF CARPET (4'X6' DIRECTRLY TO THE CONCRETE SLAB DO NOT APPLY IT OVER THE FLOORING. PROVIDE JOHNSONITE REDUCER AROUND ALL EDGES (STYLE: CTA-09-A1, COLOR: BURNT UMBER)
- ALL FLOORING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR
- PROVIDE 1 EXTRA BOX (32 S.F.) OF ALL FLOORING PRODUCTS FOR ATTIC STOCK
- ALL FLOORING MATERIALS MAY BE PURCHASED FROM EF CONTRACT FLOORING EXCEPT ADHESIVE AND THE TRANSITION STRIPS.....CONTACT KIMBERLY LYNCH AT THE CONTACT INFORMATION SHOWN BELOW.
- RUBBER TRANSITION STRIP HAS A 1-3 WEEK LEAD TIME

NOTE:

ALL INTERIOR FINISHES SHALL COMPLY WITH THE REQUIREMENTS CONTAINED IN TE 2018 IBC CHAPTER 18

Manufacturer (1)	Floor	Supplied by:
	Bolyu/EF Contract Flooring	Bolyu/EF Contract Flooring
Number (1)	Main Floor LVT Style: Woodlands, Color Ironwood LVT direction - Run lengthwise in the wide direction of the room. Regardless of entry location /showroom design	Bolyu/EF Contract Flooring
Color (1)	Ironwood - Item # EFCWL001	Bolyu/EF Contract Flooring
Finish	N/A	
Size (1)	7" x 48" (42 sq ft per box)	Bolyu/EF Contract Flooring
Note (1)	LVT - with Hardwood Plank Pattern Attic Stock - Provide 1 extra Box (32 sq. ft) extra for Attic Stock	
Adhesive (1a)	LVT Adhesive The LVT adhesive, Taylor, RESOLUTE (MS-PLUS* RESILIENT**) Adhesive	Supplied by Installer
Manufacturer (2)	Bolyu/EF Contract Flooring	Bolyu/EF Contract Flooring
Number (2)	Walk-off Carpet Tile - at Doorway Style: Access Carpet Tile, Color: AX302 NOTE: Carpet TO BE GLUED DIRECTLY TO THE CONCRETE SUBSTRATE Provide walk-off carpet as shown in the schedule on sheet A6-3 (AX302 Procure) Provide size of 4' wide x 6' long (comes in 2'x2 tiles).	Bolyu/EF Contract Flooring
Color (2)	AX302 Procure	Bolyu/EF Contract Flooring
Transition	Johnsonite - Rubber Reducer - Style: CTA-09-A1, Color: #63 Burt Umber	Supplied by Installer - Lead Time 1 - 3 weeks
Size (2)	24" x 24", (6.22 sq yds per box)	Bolyu/EF Contract Flooring
Note (2)	Install Quarter Turn	
Adhesive (2a)	Nexus, multipurpose carpet tile adhesive	Bolyu/EF Contract Flooring
Contact Pricing and Questions (All locations, Nationwide): Kimberly Lynch Bolyu / EF Contract 720-404-0644 bolyu@bolyu.com		

3 DETAIL - FLOORING SPECIFICATIONS SCALE: N.T.S.



1 DETAIL - INTERIOR PAINT DETAILS SCALE: N.T.S.

Brakes Plus Interior Paint Specifications

Location	Worldly Gray	Intellectual Gray	Virtual Taupe	Balanced Beige	Safety Red	Brakes Plus Blue
Shop	All walls above red base	Ceiling & Joists	Metal Doors & Frames (Interior of Building)		Lower 4' of walls This area to receive block filler & gloss paint	
Office			Painted Wood Doors and Frames	Walls		
Showroom			Half Wall Drywall Painted Wood Doors and Frames (to office and bathroom and Closet)	Walls		See attached Drawing
Parts Room	Walls	Ceiling & Joists	Metal Door and Frame			
Employee Bath	Walls & Ceiling		Metal Doors & Frames			
Customer Bath			Painted Wood Doors and Frames	Walls & Ceiling		Formula: Promar 200 Deep Base B31W2253 1 Gallon Formula W1 2Y 23+11 B1 1+01 L1 2Y 21+11 R3 55+01
Break Room	Walls	Ceiling				

* Use block fill on all cinder block walls prior to painting (See Finish Schedule Section 3.05)

Brand	Sherwin-Williams	Sherwin-Williams	Sherwin-Williams	Sherwin-Williams	Sherwin-Williams	Sherwin-Williams
Color	Worldly Gray	Intellectual Gray	Virtual Taupe	Balanced Beige	Safety Red	Blue
Number	SW7043	SW7045	SW7039	SW7037		Brakes Plus Custom Color
Product Finish	See Finish Schedule Section 3.05	Dry Fall	See Finish Schedule Section 3.05	See Finish Schedule Section 3.05	See Finish Schedule Section 3.05	

2 DETAIL - INTERIOR PAINT SPECIFICATIONS SCALE: N.T.S.

BRAKES PLUS

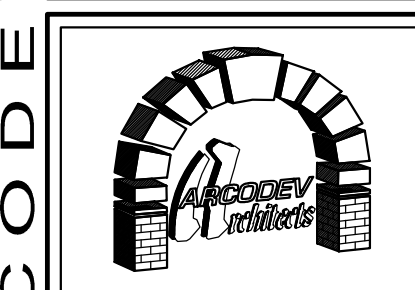
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	03.25.24	SUBMITTED TO BLDG. DEPT.
	06.05.24	RE-SUBMIT TO BLDG. DEPT.
1		

ARCODEV JOB #: --
CLIENT JOB #: --
DRAWN BY: NLH
CHECKED BY: NLH
DATE OF ISSUE: 03.23.24



A6-3

A6-3

MATERIAL FINISHES

GENERAL STRUCTURAL NOTES:

DESIGN CODE:	2021 INTERNATIONAL BUILDING CODE
CONCRETE 28-DAY STRENGTH:	FC = 4,000 PSI
MISCELLANEOUS ROLLED SECTIONS AND PLATES (ANGLES, CHANNELS, PLATES, ETC.)	ASTM A36 (UNLESS NOTED OTHERWISE)
PLAIN BOLTS AND ANCHORS	ASTM A307
ANCHOR RODS	ASTM F1554, GRADE 36 KSI
REINFORCING STEEL	ASTM A615 F _y = 60,000 PSI
WELDED WIRE FABRIC	ASTM A185

MORTAR TYPE S & GROUT 28-DAY COMPRESSIVE STRENGTH = 2,000 PSI (MASONRY CEMENT IS NOT ACCEPTABLE) ASTM C1019

CONCRETE MASONRY UNITS (LIGHTWEIGHT) ASTM C652
NET COMPRESSIVE STRENGTH OF CONCRETE MASONRY UNITS = 2,800 PSI
NET AREA COMPRESSIVE STRENGTH OF MASONRY FM = 2,000 PSI

ALLOWABLE SOIL BEARING CAPACITY: 3,000 PSF (PER SOIL REPORT)

DESIGN LOADS
ROOFS D = 20 PSF
L_r = 20 PSF
S = 5 PSF (GROUND & ROOF SNOW LOAD)

WIND LOADING CRITERIA (2021 IBC & ASCE 7-16)
110 MPH EXPOSURE C

SEISMIC LOADING CRITERIA (2021 IBC & ASCE 7-16)
IMPORTANCE FACTOR = 1.0
MAPPED SPECTRAL RESPONSE S_s = 0.057g, S₁ = 0.038g
SITE CLASS = D, F_a = 1.6, F_v = 2.4
SPECTRAL RESPONSE COEFFICIENTS: SDS = 0.061g, SD1 = 0.06g
SEISMIC DESIGN CATEGORY = A
SEISMIC FORCE RESISTANT SYSTEM = ORDINARY REINFORCED MASONRY SHEAR WALLS & LIGHT FRAMED SHEAR WALLS
RESPONSE MODIFICATION FACTOR (R) = 2.0

B. FOUNDATION WORK:

- THE GEOTECHNICAL REPORT PREPARED BY ECS SOUTHWEST, LLP. (PROJECT NO. 17-6451) DATED JANUARY 16, 2024, IS AVAILABLE AND SHALL BE REVIEWED BY THE CONTRACTOR. SEE SPECIFICATIONS AND GEOTECHNICAL REPORT FOR OVEREXCAVATION RECOMPACTION.
- CONTRACTOR SHALL COORDINATE FOOTING ELEVATIONS WITH FINAL GRADING PLAN TO PROVIDE A MINIMUM OF 1'-6" OF GRADE ABOVE THE BOTTOM OF ALL FOOTINGS.
- SUBSOILS SUPPORTING OR IN DIRECT CONTACT WITH FOOTINGS, SLABS/ON GRADE, OR OTHER FOUNDATION ELEMENTS SHALL BE PROTECTED AGAINST FREEZING CONDITIONS THAT COULD CAUSE MOVEMENT OR OTHER DETRIMENTAL EFFECT TO THE STRUCTURE AS A WHOLE OR TO ANY OF ITS COMPONENT PARTS.
- WHEN WORKING NEAR EXISTING AND/OR NEW CONSTRUCTION, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.
- SLABS ON GRADE SHALL BE SUPPORTED ON SUBGRADE THAT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE SECTION 4.3 "SLAB-ON-GRADE FLOORS" IN THE GEOTECHNICAL REPORT. ANY UNACCEPTABLE UNDISTURBED VIRGIN SOIL OR BACKFILL/GRANULAR FILL, AS DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER, SHALL BE REMOVED AND REPLACED AS REQUIRED BY THE GEOTECHNICAL ENGINEER.

C. CONCRETE:

- FOR REINFORCEMENT DEVELOPMENT LENGTH AND SPLICE LENGTH SEE TYPICAL REINFORCEMENT TABLE ON THIS SHEET.
- PROVIDE CORNER BARS IN WALLS AND FOOTINGS THE SAME SIZE AND NUMBER AS THE CONTINUOUS REINFORCING.
- REINFORCING IN FOOTINGS SHALL BE ACCURATELY PLACED BEFORE PLACING CONCRETE. DO NOT FLOAT REINFORCING INTO FOOTINGS.
- CONCRETE SHALL BE REGULAR WEIGHT (144 PCF) WITH TYPE (II) CEMENT, 3" MAXIMUM AGGREGATE SIZE WITH POTABLE WATER. CONCRETE SHALL CONFORM TO ACI 301. THE MAXIMUM WATER-CEMENT RATIO FOR FOOTINGS, WALLS & SLABS SHALL BE 0.45. PROVIDE 6% AIR ENTRAINMENT IN CONCRETE USED IN FOOTINGS & WALLS. INTERIOR SLABS SHALL HAVE NATURAL ENTRAPPED AIR (3% MAXIMUM).
- MECHANICALLY VIBRATE CONCRETE, EXCEPT THAT SLABS ON GRADE NEED TO BE VIBRATED ONLY AROUND UNDERFLOOR DUCTS AND OTHER ITEMS EMBEDDED IN THE SLAB. EMBEDDED ITEMS INCLUDE ELECTRICAL CONDUITS, MECHANICAL PIPING, AND STEEL ANGLES OR CHANNELS. EMBEDDED ITEMS DOES NOT IMPLY REINFORCING STEEL. ALL OTHER CONCRETE PLACEMENT SHALL BE VIBRATED. CONCRETE SHALL BE VIBRATED IN CONFORMANCE WITH ACI 309. VIBRATE CONCRETE ONLY UNTIL THE CONCRETE IS THOROUGHLY CONSOLIDATED AND THE VOIDS FILLED. INSERT INTERNAL VIBRATORS VERTICALLY TO THE FULL DEPTH OF THE LAYER BEING PLACED AND INTO THE PREVIOUS LAYER IF APPLICABLE. DO NOT DRAG VIBRATORS THROUGH THE CONCRETE. DO NOT FLOW CONCRETE FROM ONE LOCATION TO ANOTHER BY USE OF VIBRATOR.
- DO NOT PLACE PIPES, DUCTS, OR CHASES IN STRUCTURAL CONCRETE WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER. SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR LOCATIONS.
- FLOOR SURFACE TOLERANCE CLASS "B". SEE ACI 301 FOR PROCEDURE OF MEASUREMENT AND CORRECTION.
- CONTROL JOINTS SHALL BE PLACED AT COLUMN-LINE INTERSECTIONS AT A MAXIMUM SPACING INDICATED BELOW AND HAVE A MAXIMUM ASPECT RATIO OF 1.5 TO 1.0 UNLESS OTHERWISE INDICATED. SEE DETAIL - ON DRAWING - FOR CONTROL JOINT REQUIREMENTS.

SLAB THICKNESS	MAX. CONTROL JOINT SPACING
4"	12'-0"
5"	15'-0"

- ALL CONSTRUCTION JOINTS IN CONCRETE WALLS SHALL HAVE A 2" X 4" CONTINUOUS KEYWAY. ALL CONSTRUCTION JOINTS, EXCEPT THOSE DETAILED, SHALL HAVE ARCHITECT/ENGINEER APPROVAL. SEE SPECIFICATIONS FOR OTHER CONSTRUCTION JOINT REQUIREMENTS.
- ALL REINFORCING STEEL SHALL BE DEFORMED NEW BILLETS BARS (#615, GRADE 60), BENT COLD, AND DETAILED, FABRICATED, AND HELD IN PLACE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315 - LATEST EDITION) EXCEPT AS OTHERWISE DETAILED OR SPECIFIED.

11. UNLESS NOTED OTHERWISE ON PLAN SHEETS SLABS ON GRADE SHALL BE:

SLAB THICKNESS	SLAB REINFORCEMENT	SUBBASE
4"	6#6-W1.4W1.4 WWF	SEE GEOTECHNICAL REPORT
5"	6#6-W2.9W2.9 WWF	SEE GEOTECHNICAL REPORT

- ALL REINFORCING IN SLABS AND WALLS SHALL BE CONTINUOUS UNLESS DETAILED OTHERWISE AND LAP SPLICED ONLY IN REGIONS OF LOW STRESS. ALL BARS SHALL HAVE A STANDARD HOOK WHERE A HOOK IS SHOWN, UNLESS DETAILED OTHERWISE.

- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING, UNLESS NOTED OTHERWISE:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
CONCRETE EXPOSED TO EARTH OR WEATHER: 2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS AND WALLS: 1"

D. MASONRY:

- FURNISH AND CONSTRUCT MASONRY IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS FOR MASONRY CONSTRUCTION (ACI 530.1-11/ASCE 6-11/TMS 602-11.)
- LAY MASONRY UNITS IN RUNNING BOND.
- MAXIMUM GROUT LIFT WITHOUT CLEANOUTS 4'-0" IN BLOCK WALLS AND 8" IN GROUTED TWO-WYTHE WALLS.
- IN 8" WALLS, PROVIDE CONTINUOUS FULL HEIGHT VERTICAL REINFORCING IN CENTER OF GROUT AT CENTER OF WALL. TYPICAL REINFORCING SHALL BE 1-#5 AT 2'-8" ON CENTER AND 2-#5 AT CORNERS, INTERSECTIONS, WALL ENDS, DOOR AND WINDOW JAMBS, AND SIDE OF EXPANSION OR CONTROL JOINTS UNLESS NOTED OTHERWISE.
- GROUT CELLS FULL AT ALL ANCHOR AND EMBED LOCATIONS.

- PROVIDE LADDER TYPE #9 JOINT REINFORCING AT 16" ON CENTER VERTICAL SPACING IN ALL CLAY MASONRY AND UNLESS NOTED OTHERWISE.

- SPLICE MASONRY WALL REINFORCING AS SCHEDULED ON 3/5-3.

- PLACE BOND BEAM REINFORCING CONTINUOUS THROUGH EXPANSION CONTROL JOINTS, WRAPPING BARS WITH 1/8 INCH THICK BOND BREAKING TAPE 2'-0" BOTH SIDES OF JOINT. DO NOT SPLICE BOND BEAM REINFORCING WITHIN 6'-0" OF AN EXPANSION OR CONTROL JOINT.

- PROVIDE CONTINUOUS BOND BEAMS AT ALL BEAM BEARING AND TRUSS BEARING ELEVATIONS, AND AT THE TOP OF ALL WALLS.

- SPLICE BOND BEAM REINFORCING AT MASONRY CONTROL/EXPANSION JOINTS AS SHOWN ON MASONRY JOINT DETAIL ON 4/5-3.

- PROVIDE CONTINUOUS WIRE LATH GROUT BARRIERS BELOW BOND BEAMS.

- PROVIDE LINTELS OVER ALL OPENINGS AND RECESSES IN MASONRY WALLS.

- ALL LINTELS SHALL HAVE A MINIMUM BEARING OF 8 INCHES EACH END.

- FOR ALL OPENINGS NOT OTHERWISE DETAILED OR SCHEDULED, MINIMUM LINTELS SHALL BE FOR EACH 4 INCH OF MASONRY WIDTH 1-L 3-1/2 X 3-1/2 X 1/4 FOR SPANS UP TO 4'-0", 1-L 4 X 3-1/2 X 1/4 FOR SPANS UP TO 6'-0" AND 1-L 5 X 3-1/2 X 1/4 FOR SPANS UP TO 8'-0". FOR SPANS LESS THAN 2'-0" PROVIDE A 5/16" PLATE.

- MASONRY CONTROL JOINT SPACING SHALL NOT EXCEED 24'-0".

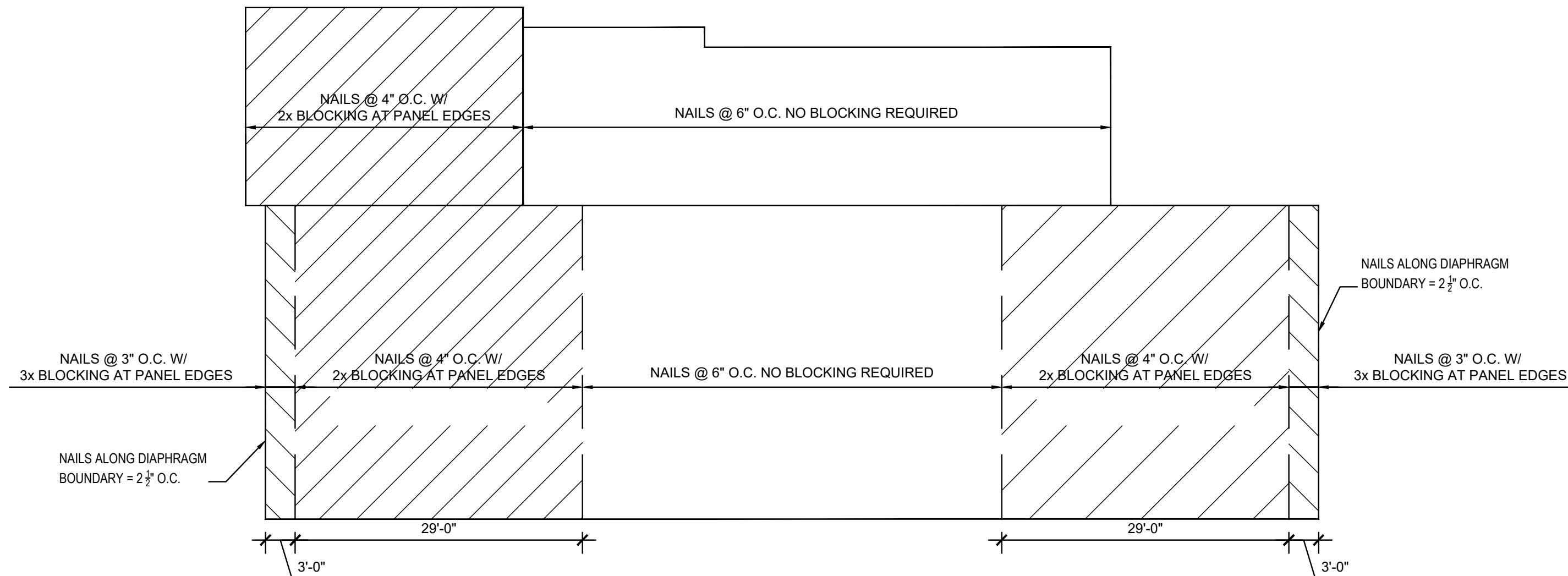
- ALL MASONRY CONSTRUCTION SHALL HAVE SPECIAL INSPECTION PER IBC SECTION 1705.4 AND HAVE LEVEL 2 QUALITY ASSURANCE IN ACCORD WITH ACI530-11 SECTION 1.14. PERIODIC INSPECTION SHALL BE INTERPRETED AS TWO TIMES PER WEEK.

E. WOOD:

- WOOD SHALL COMPLY WITH THE LATEST EDITION OF THE GRADING RULES OF THE WESTERN WOOD PRODUCTS ASSOCIATION OR THE WEST COAST LUMBER INSPECTION BUREAU.
- ALL SAWN LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED GRADING AGENCY.
- SAWN LUMBER SHALL HAVE THE FOLLOWING MINIMUM GRADE UNLESS NOTED OTHERWISE:

TYPE OF USE	MATERIAL AND GRADE
TOP PLATES, ALL OTHER SAWN LUMBER	DOUGLAS FIR NO. 2
POSTS AND BEAMS	DOUGLAS FIR NO. 1

- ALL 2x BEARING WALLS SHALL BE BLOCKED HORIZONTALLY AT 4'-0" O.C. VERT. SPACING FOR ALL WALLS GREATER THAN 9'-0" IN HEIGHT.
- ALL PLYWOOD SHALL BE C-D OR C-C SHEATHING EXTERIOR GRADE CONFORMING TO STANDARD PS0.019.
- PLYWOOD SHALL BE PLACED WITH FACE GRAIN PERPENDICULAR TO SUPPORTS USING A MINIMUM 5-PLY PLYWOOD. PLYWOOD JOINTS SHALL BE STAGGERED.
- PLYWOOD ATTACHMENT SHALL BE DONE USING COMMON NAILS. NAILING SHALL BE AS NOTED ON ROOF FRAMING PLAN.
- ALL SILL PLATES IN CONTACT WITH CONCRETE OR MASONRY SHALL BE TREATED DOUGLAS FIR OR FOUNDATION GRADE REDWOOD.
- BRACE WOOD TRUSSES Laterally at bearing points and intermediate locations as required by manufacturer.
- SEE 3/51-0 FOR ULTIMATE WIND UPLIFT.



2 S1-0 3/4"=1'-0" ROOF DIAPHRAGM NAILING PATTERN

F. STEEL:

- STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS AND OSHA REGULATION 29 CFR PART 1926.
- FABRICATOR SHALL BE AN "APPROVED FABRICATOR" IN ACCORD WITH 2018 IBC SECTION 1704.2.5.2 REGISTRED AND APPROVED BY THE LOCAL BUILDING DEPARTMENT OR BE SUBJECTED TO SPECIAL INSPECTIONS PER SECTION 1704.2.5.
- SHOP PAINT STRUCTURAL STEEL WITH FABRICATOR'S STANDARD LEAD- AND CHROMATE-FREE, NONASPHALTIC, RUST-INHIBITING PRIMER, U.N.O.
- COMPLY WITH AMERICAN WELDING SOCIETY STANDARDS. ALL WELDERS SHALL HAVE VALID CERTIFICATES AND HAVE CURRENT EXPERIENCE IN TYPE OF WELD CALLED FOR.
- WELDING ELECTRODES SHALL BE E70 FOR ALL STEEL, UNLESS OTHERWISE NOTED.

- BOLTED CONNECTIONS SHALL BE SUPPLIED AND INSTALLED PER THE REQUIREMENTS OF RCSC'S "SPECIFICATIONS FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS." ALL HIGH STRENGTH BOLTS SHALL BE MEET ASTM F3125, GRADE A325. SHOP AND FIELD BOLTED CONNECTIONS SHALL BE SLIP-CRITICAL CONNECTIONS, U.N.O.

- ALL BOLTS (HIGH STRENGTH, ANCHOR BOLTS, EXPANSION BOLTS, ADHESIVE ANCHORS, ETC.) SHALL BE INSTALLED W/ STEEL WASHERS.

G. SPECIAL INSPECTION

- IN ACCORD WITH 2018 IBC SECTIONS 1704 & 1705, AS NOTED BELOW, TESTING AND INSPECTION SHALL BE BY AN INDEPENDENT TESTING/INSPECTION FIRM UNDER THE SUPERVISION OF A LICENSED ENGINEER EMPLOYED BY THAT FIRM. THIS ENGINEER SHALL BE DEEMED THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS PERFORMED BY HIS FIRM OR HIS CONSULTANTS. INSPECTORS SHALL BE ICBO CERTIFIED AND APPROVED BY THE BUILDING OFFICIAL.

- THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE BUILDING OFFICIAL AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE INTERNATIONAL BUILDING CODE.

- SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION THE INSPECTIONS CONDUCTED BY THE LOCAL DEPARTMENT OF BUILDING SAFETY AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR HIS AUTHORIZED AGENT FROM REQUESTING THE PERIODIC AND CALLED INSPECTIONS REQUIRED BY SECTION 108.5 AND 108.7 OF THE INTERNATIONAL BUILDING CODE.

- CONCRETE PER SECTION 1705.3 AND TABLE 1705.3.

- ANCHOR RODS INSTALLED IN CONCRETE: PER TABLE 1705.3.

- REINFORCING PER TABLE 1705.3.

- WELDING: PER SECTION 1705.2.1 WITH EXCEPTIONS, PROVIDE INSPECTION OF ALL SHOP WELDING AT CONTRACTORS EXPENSE IF WELDING IS NOT DONE IN AN APPROVED FABRICATORS SHOP.

- STRUCTURAL MASONRY: PER SECTION 1705.4.

- GRADING, EXCAVATION AND FILLING: PER SECTION 1705.6. SEE GEOTECHNICAL REPORT.

- EXPANSION BOLT, SCREW ANCHOR AND ADHESIVE ANCHOR INSTALLATION TO VERIFY INSTALLATION IN ACCORD WITH ICBO REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.

- THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS TO THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS.

- THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE BUILDING OFFICIAL AND TO THE ENGINEER. ALL DISCREPENCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER AND THE BUILDING OFFICIAL.

- THE TESTING/ INSPECTION FIRMS ENGINEER SHALL COMPLETE, SIGN AND SEAL, A FINAL REPORT CERTIFYING THAT TO THE BEST OF HIS KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

- THE SPECIAL INSPECTOR SHALL BE SELECTED AND CREDENTIALS SHALL BE SUBMITTED TO THE CITY PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

H. OTHER:

- UNLESS NOTED OTHERWISE, EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT II EXPANSION ANCHORS OR APPROVED EQUAL. ADHESIVE ANCHORS SHALL BE HILTI STANDARD HAS RODS WITH THE HVA ADHESIVE SYSTEM, THE SIMPSON SET SYSTEM, OR APPROVED EQUAL.
- VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
- VERIFY IN FIELD ALL EXISTING CONDITIONS SHOWN ON DRAWINGS.
- ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WITH APPROPRIATE TRADES. PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
- ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE STAMP (AND SIGNATURE) OF AN ENGINEER REGISTERED IN TEXAS.

TYPICAL REINFORCING NOTES

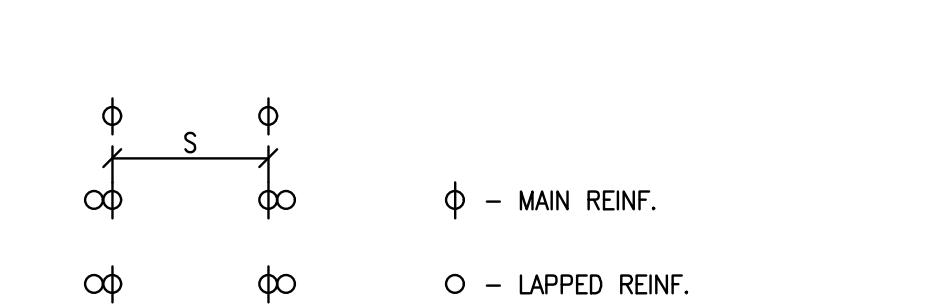
1. REINFORCING BAR DEVELOPMENT LENGTH AND SPLICE LENGTH SHALL BE AS SHOWN IN THIS TABLE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

- THE LENGTHS SHOWN IN THE TABLES ARE BASED ON THE FOLLOWING CONCRETE COVERAGE AND REINFORCING C-C SPACING:
BEAMS OR COLUMNS:
COVER (EQUAL OR MORE) 1.0bd (BAR DIAMETER)
CENTER TO CENTER (C-C) SPACING (EQUAL OR MORE) 2.0bd.
ALL OTHERS:
COVER (EQUAL OR MORE) 1.0bd
CENTER TO CENTER SPACING (EQUAL OR MORE) 3.0bd.

- TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.

- DEVELOPMENT AND SPLICE LENGTH SHOWN SHALL NOT APPLY IF ANY OF THE FOLLOWING CONDITIONS OCCUR:
A) f_c < 2,500 PSI
B) f_y > 60,000 PSI
C) THE COVER OR C-C BAR SPACING IS NOT AS LISTED ABOVE
D) THE REINFORCING STEEL IS EPOXY COATED
E) LIGHT WEIGHT CONCRETE IS USED.

- CENTER ON CENTER SPACING (S) IS DEFINED AS BELOW:



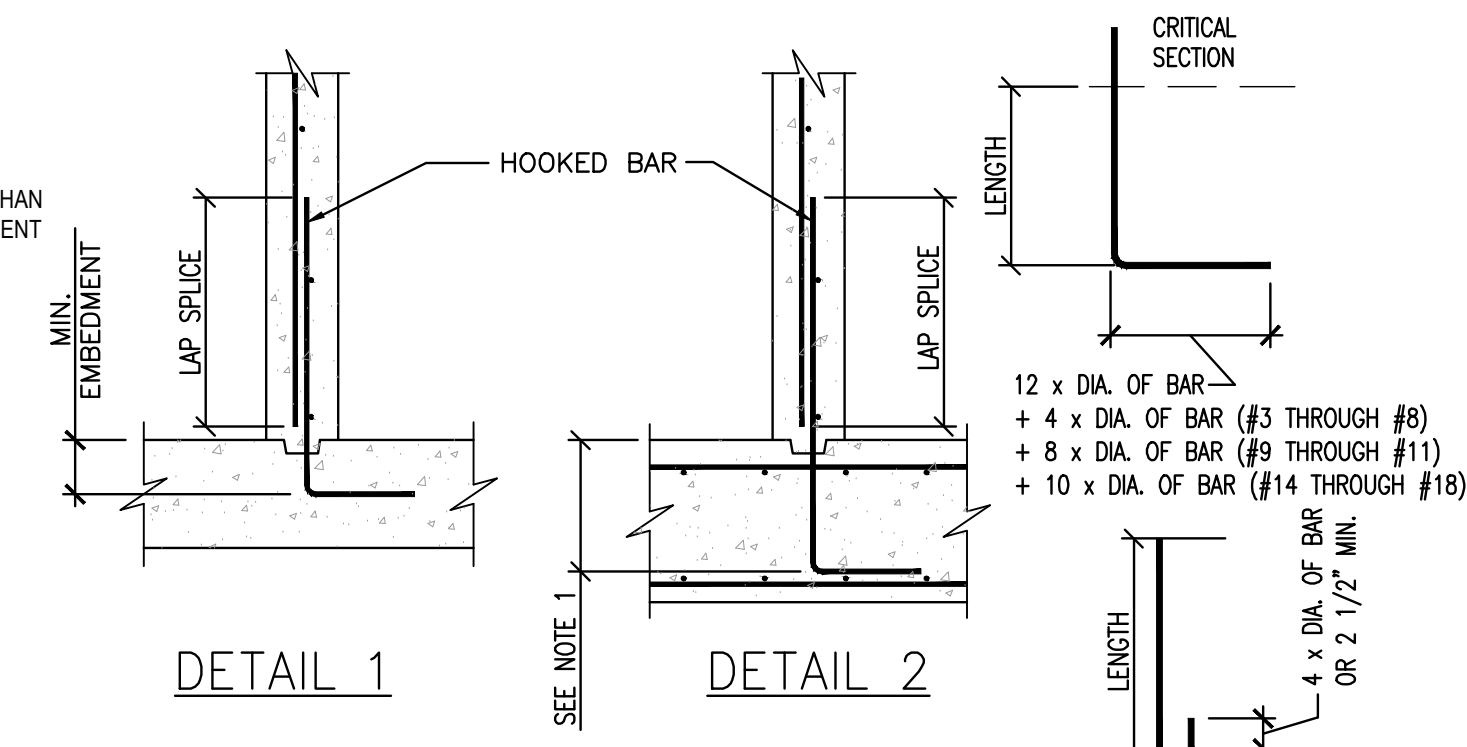
REINFORCING DEVELOPMENT AND SPLICES f'c = 4,000 PSI				
BAR SIZE	DEVELOPMENT LENGTH		SPLICE LENGTH	
	TOP	OTHER	TOP	OTHER
#3	1'-7"	1'-3"	2'-0"	1'-7"
#4	2'-1"	1'-7"	2'-8"	2'-1"
#5	2'-7"	2'-0"	3'-4"	2'-7"
#6	3'-1"	2'-5"	4'-0"	3'-1"
#7	4'-6"	3'-6"	5'-10"	4'-6"
#8	5'-2"	4'-0"	6'-8"	5'-2"
#9	5'-10"	4'-6"	7'-7"	5'-10"
#10	6'-7"	5'-1"	8'-6"	6'-7"
#11	7'-3"	5'-7"	9'-5"	7'-3"

DEVELOPMENT LENGTHS HOOKED BARS (f'c = 4,000 PSI)	
BAR SIZE	LENGTH OR MIN. EMBEDMENT
#3	8"
#4	10"
#5	1'-0"
#6	1'-3"
#7	1'-5"
#8	1'-7"
#9	1'-10"
#10	2'-0"
#11	2'-3"

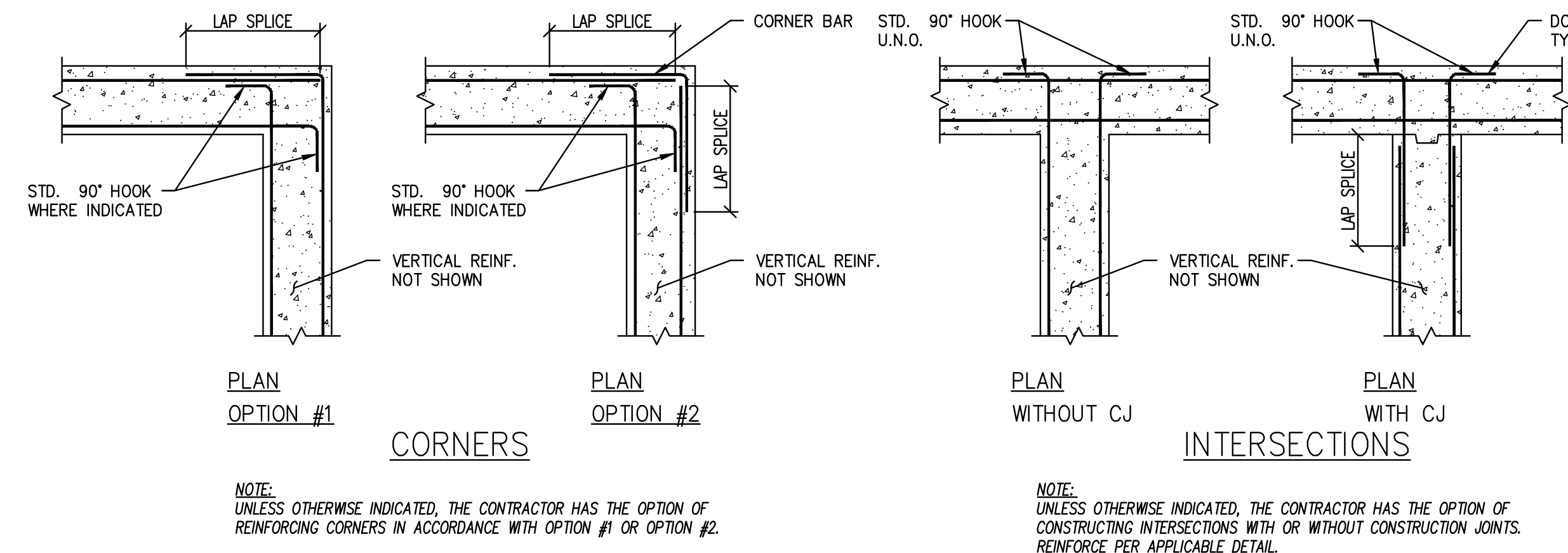
DEVELOPMENT LENGTH NOTES

1. WHERE DRAWINGS ARE DETAILED BIDDING TO DETAIL, EXTENDED EMBEDMENT LENGTH SUCH THAT THE HOOKED BAR CONTACTS THE LAYER OF MAIN REINFORCING SHOWN.

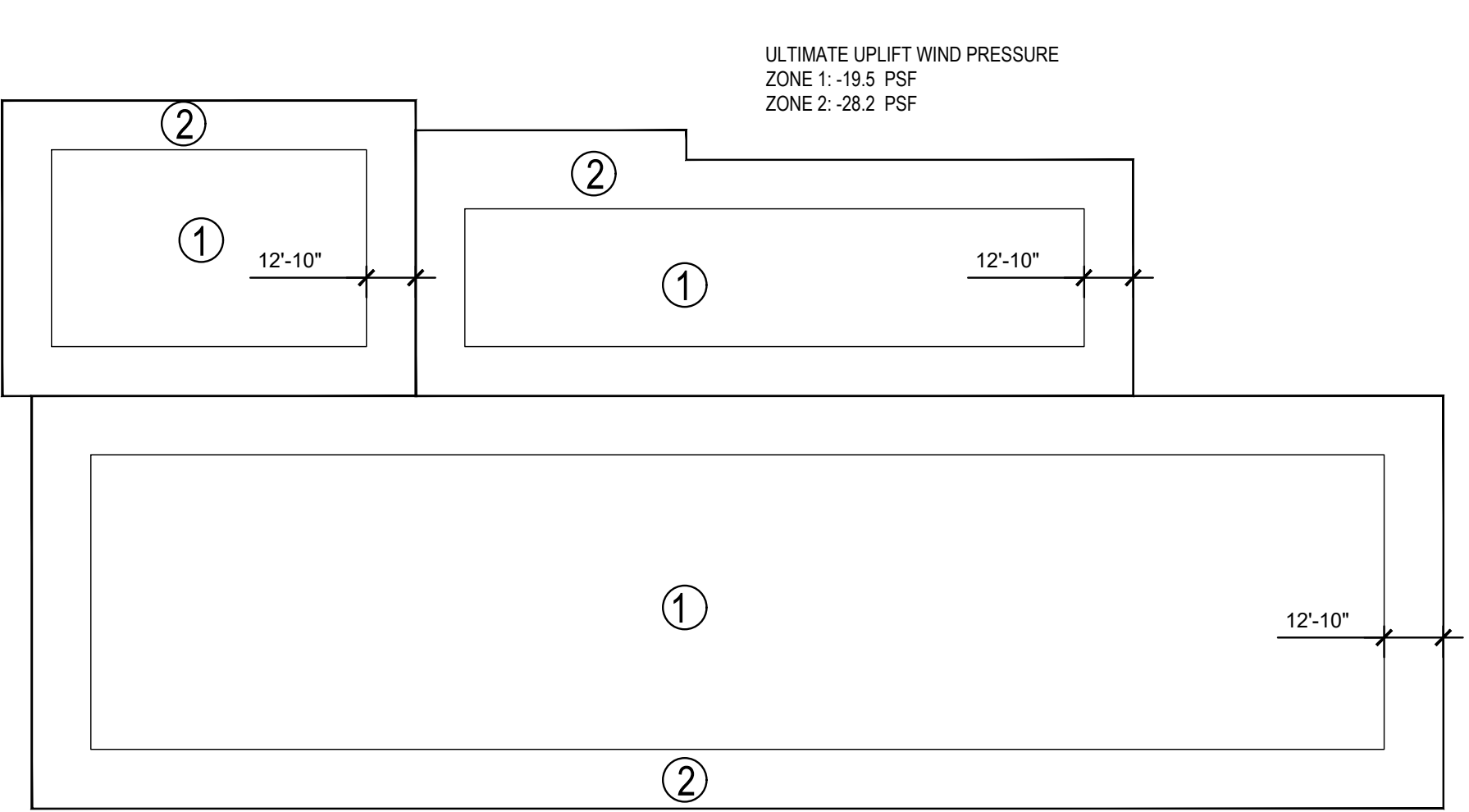
- EMBEDMENT LENGTHS IN CHART ARE TYPICAL EXCEPT AS NOTED IN DETAIL 2, OR AS INDICATED ON DRAWINGS.



CONCRETE REINFORCEMENT COVER			
CONCRETE EXPOSURE	MEMBER	REINFORCEMENT	SPECIFIED COVER
CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND	ALL	ALL	3"
	ALL	#6 TO #18	2"
EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	ALL	#5 AND SMALLER	1 1/2"
	ALL	#14 & #18	1 1/2"
NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	SLABS, JOISTS, & WALLS	#14 & SMALLER	3/4"
	BEAMS, COLUMNS, PEDASTALS, AND TENSION TIES	PRIMARY REINFORCEMENT STIRRUPS, TIES, SPIRALS, AND HOOPS	1 1/2"



1 S1-0 3/4"=1'-0" HORIZONTAL WALL REINFORCEMENT DETAILS



3 S1-0 3/4"=1'-0" ROOF WIND UPLIFT LOADING

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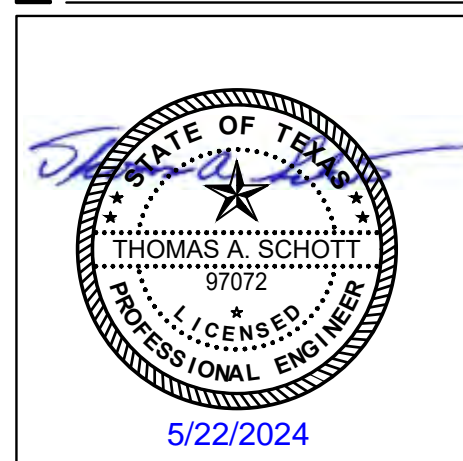
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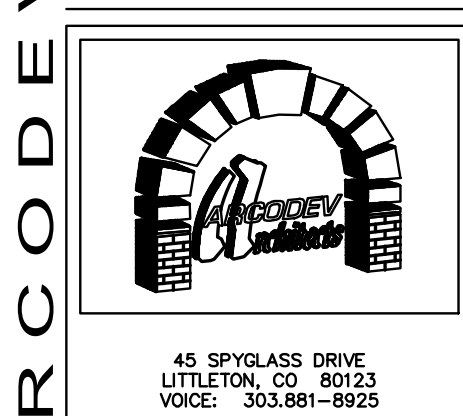
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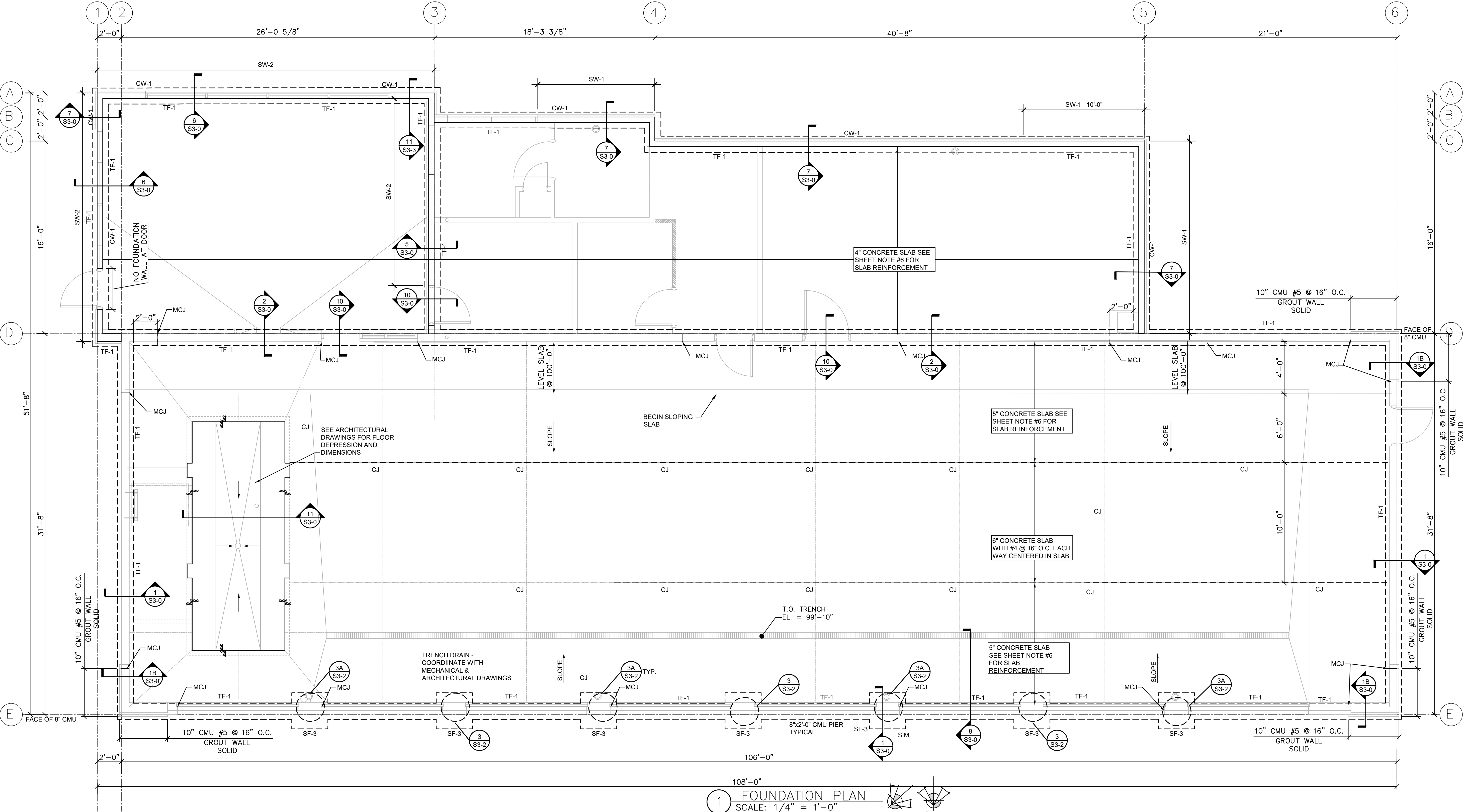
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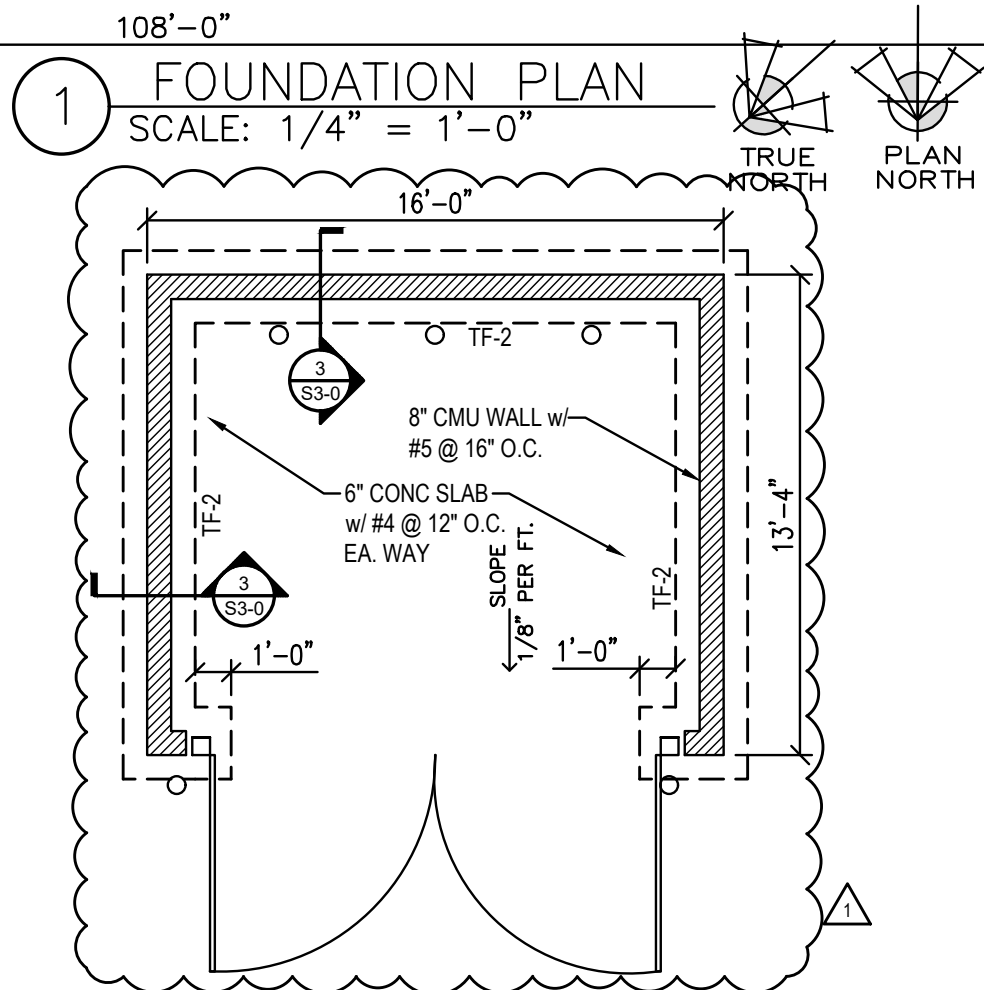
S1-0

GENERAL STRUCTURAL NOTES AND DETAILS



SHEAR WALL SCHEDULE										
MARK	WALL SHEATHING	NAILS, PENETRATION	PANEL EDGE NAILING	FIELD NAILING	SILL BOLTS	STUDS, SILLS & PLATES	ALLOWABLE SHEAR (PLF)	HOLDOWNS	FOUNDATION ANCHOR	END MEMBERS
SW-1	1/2" NOMINAL STRUCTURAL I SHEATHING, ONE SIDE, BLOCKED	10d x 3" 1 1/2" PEN.	6" O.C.	6" O.C.	3/4" DIA. @ 24" O.C.	2x STUDS, 2x SILL, 2x PL	340	HDU8-SDS2.5	7/8" DIA. EMBED 9"	4x OR (3) 2x
SW-2	1/2" NOMINAL STRUCTURAL I SHEATHING, TWO SIDES, BLOCKED	10d x 3" 1 1/2" PEN.	6" O.C.	6" O.C.	3/4" DIA. @ 24" O.C.	2x STUDS, 2x SILL, 2x PL	680	HDU11-SDS2.5	1" DIA. EMBED 12"	6x OR (4) 2x

- NOTE:
- ALL WOOD MEMBERS IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED.
 - NAILING & HARDWARE IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE HOT DIPPED GALVANIZED.
 - WHERE PANELS ARE APPLIED ON BOTH FACES OF WALL AND NAIL SPACING IS LESS THAN 6" O.C. ON EITHER SIDE PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS. STAGGER NAILING AT EACH SIDE OF JOINT.
 - INSTALL HARDWARE IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS.
 - ALL BOLT HOLES SHALL BE 1/8" (MAX) OVERSIZED AT THE CONNECTION OF HOLD DOWNS TO POSTS. INSPECTOR SHALL VERIFY.
 - SEE DETAIL 5/S3-4 FOR TYPICAL SHEAR WALL FRAMING.



FOUNDATION PLAN-TRASH ENCLOSURE
SCALE: 3/16" = 1'-0"

FOUNDATION SCHEDULE		
MARK	SIZE	REINFORCING
TF-1	1'-6" WIDE x 1'-6" DEEP	3- #5 CONT. TOP & BOTT W/ #4 STIRRUPS @ 16" O.C.
TF-2	2'-0" WIDE x 1'-6" DEEP	3- #5 CONT. TOP & BOTT W/ #4 STIRRUPS @ 16" O.C.
SF-3	3'-0" x 3'-0" x 1'-4" DEEP	3- #5 EACH WAY

FOUNDATION WALL SCHEDULE		
MARK	SIZE	REINFORCING
CW-1	6" WIDE x 1'-2" HIGH	2- #5 CONT. & # DOWELS AT 24" O.C.

- SHEET NOTES:**
- INDICATES CMU WALLS WITH #5 VERTICAL BARS @ 2'-8" O.C. CENTERED IN MASONRY WALLS (UNLESS NOTED OTHERWISE). SEE 6/S3-3 FOR MASONRY CONSTRUCTION.
 - SOIL PREPARATION BENEATH BUILDING AND FOUNDATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT FOR SHALLOW FOUNDATION SYSTEM AND SLAB ON GRADE CONSTRUCTION. THIS ACTION SHALL BE OBSERVED BY A REPRESENTATIVE OF THE GEOTECHNICAL FIRM ON A CONTINUOUS BASIS TO ENSURE THAT SOIL PROPERTIES MEET THE REQUIREMENTS IN THE GEOTECHNICAL REPORT.
- CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS FOR MATERIAL AND COMPACTION LISTED IN THE SOIL REPORT
 - CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF FLOOR AND WALL PENETRATIONS AND BLOCK OUT ACCORDINGLY.
 - TOP OF FOOTING ELEVATION SHALL BE 99'-4" UNLESS NOTED OTHERWISE.
 - "MCJ" INDICATES MASONRY CONTROL JOINT LOCATION FOR CONCRETE MASONRY UNITS. SEE 2/S3-3 & 4/S3-3 FOR DETAILS. SEE ARCHITECTURAL DRAWINGS FOR BRICK CONTROL JOINTS.
 - SEE PLAN FOR SHOP AREA SLAB ON GRADE THICKNESS. REINFORCE CONCRETE SLAB WITH 4 LBS PER CUBIC YARD OF "GRACE STRUX 9040" MACRO FIBER REINFORCEMENT ON PREPARED SUBGRADE. OFFICE & CUSTOMER SERVICE AREA SLAB SHALL BE A 4" CONCRETE SLAB ON PREPARED SUBGRADE AND REINFORCED IN THE SAME MANNER. REINFORCEMENT SHOWN ON THE PLANS IS IN ADDITION TO THE MACRO FIBER REINFORCEMENT. TOP OF SLAB SHALL BE 100'-0" UNLESS NOTED OTHERWISE.
 - SW-# INDICATES SHEAR WALL TYPE. SEE SCHEDULE.

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STATE OF TEXAS
L. LICENSED PROFESSIONAL ENGINEER
5/22/2024

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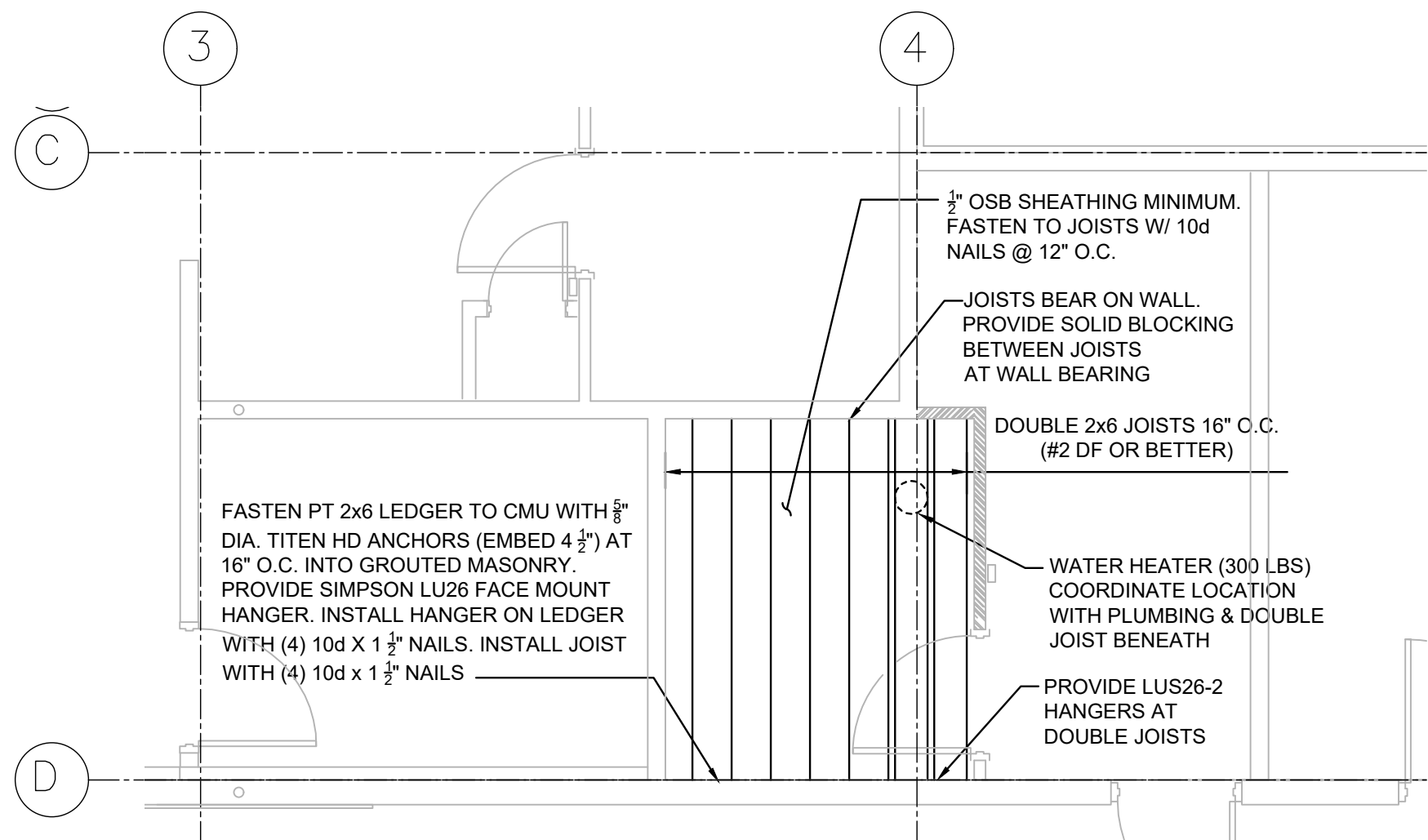
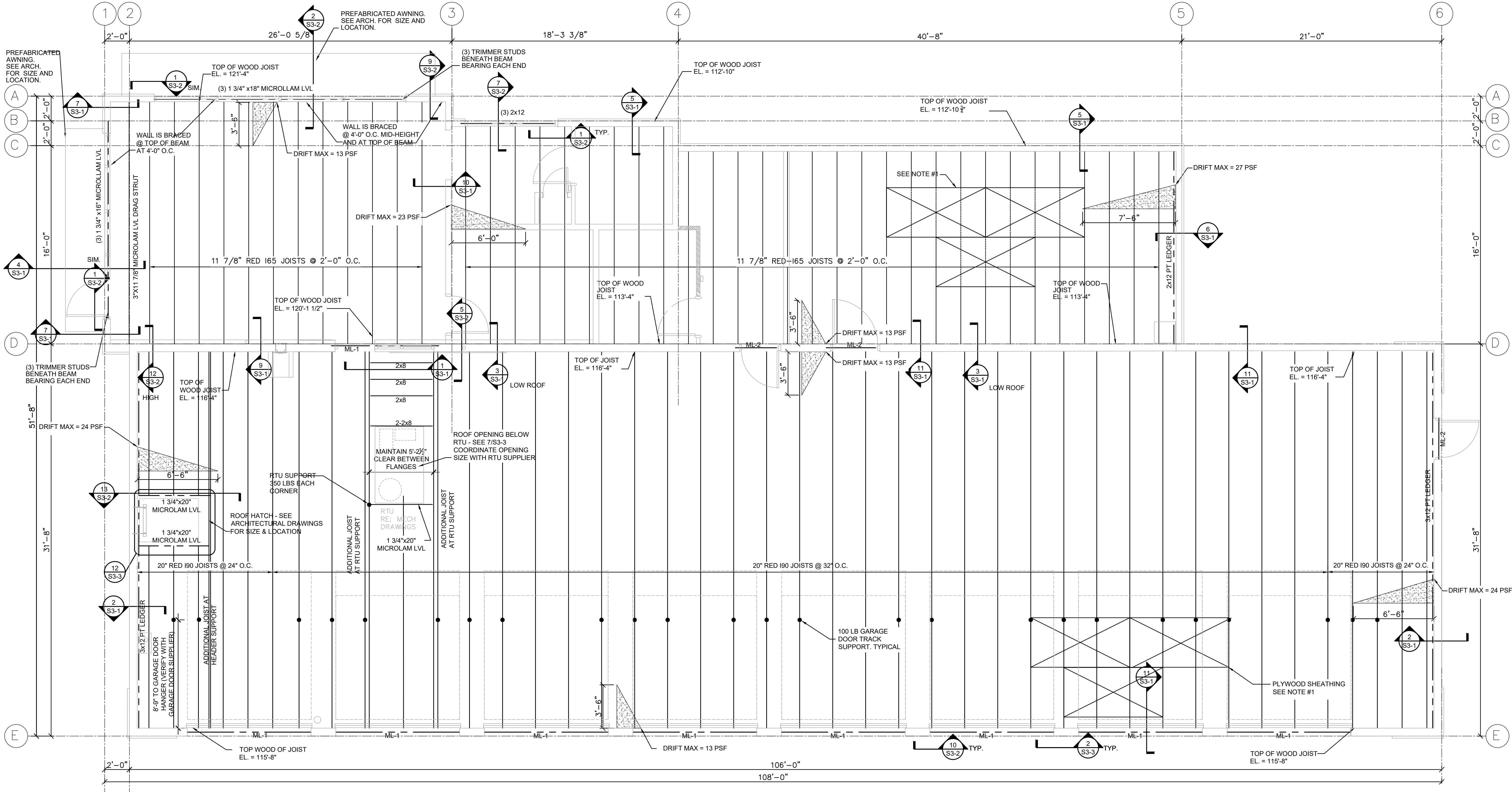
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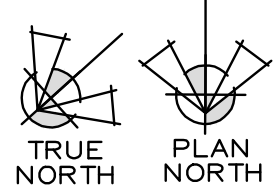
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S2-0

FOUNDATION PLAN



1 ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0"



SHEET NOTES:

- DIAPHRAGM SHALL BE A MINIMUM OF 3/4" PLYWOOD SHEATHING WITH A SPAN RATING OF 48/24, EXTERIOR GRADE AND SHALL BE FASTENED TO STRUCTURE AS FOLLOWS:
 - 10d (0.148" DIA.) NAILS WITH A MINIMUM OF 1 1/2" PENETRATION INTO FRAMING MEMBER
 - SEE 2/S1-0 FOR NAILING PATTERNS
 - FIELD NAILING = 12" O.C.
- ML-# INDICATES MASONRY LINTEL TYPE. SEE DETAIL 11/S3-2.
- UNLESS OTHERWISE DETAILED, CONNECTIONS FOR ITEMS HUNG FROM JOISTS (FANS, HEATERS, GARAGE DOORS, ETC.) SHALL BE DESIGNED AND INSTALLED BY THE GENERAL CONTRACTOR AND THEIR RESPECTIVE TRADES. THIS LOAD SHALL NOT EXCEED 250 LBS PER JOIST.
- ATTACH 2x12 LEDGER PIECES TO CMU WALL W/ (2) 3/4" DIA. ANCHORS @ 24" O.C. EMBED 6" MIN. FASTENERS SUCH AS NAILS, SCREWS, AND ANCHORS SHALL BE HOT DIPPED GALVANIZED WHEN CONNECTING TO OR ANCHORING PRESSURE TREATED LUMBER.
- CORROSION PROTECTION FOR CONNECTORS AND HANGERS WHEN IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE AS FOLLOWS:
 - HARDWARE & HANGERS - ZMAX
 - FASTENERS (NAILS & SCREWS) - GALVANIZED
 - SIMPSON TITEN HD ANCHORS - MECHANICALLY GALVANIZED
- SEE DETAIL 7/S3-3 FOR ROOF OPENINGS & PENETRATIONS.
- WOOD WALLS SHALL BE 2x6 DOUGLAS FIR NO. 2 STUD. STUD SPACING SHALL BE 16" O.C. UNLESS NOTED OTHERWISE.

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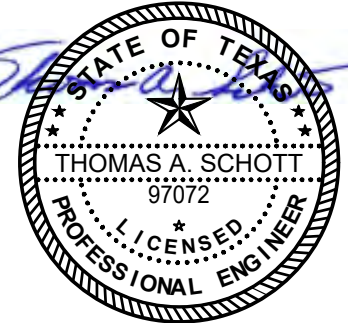


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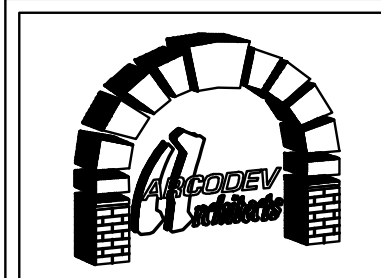
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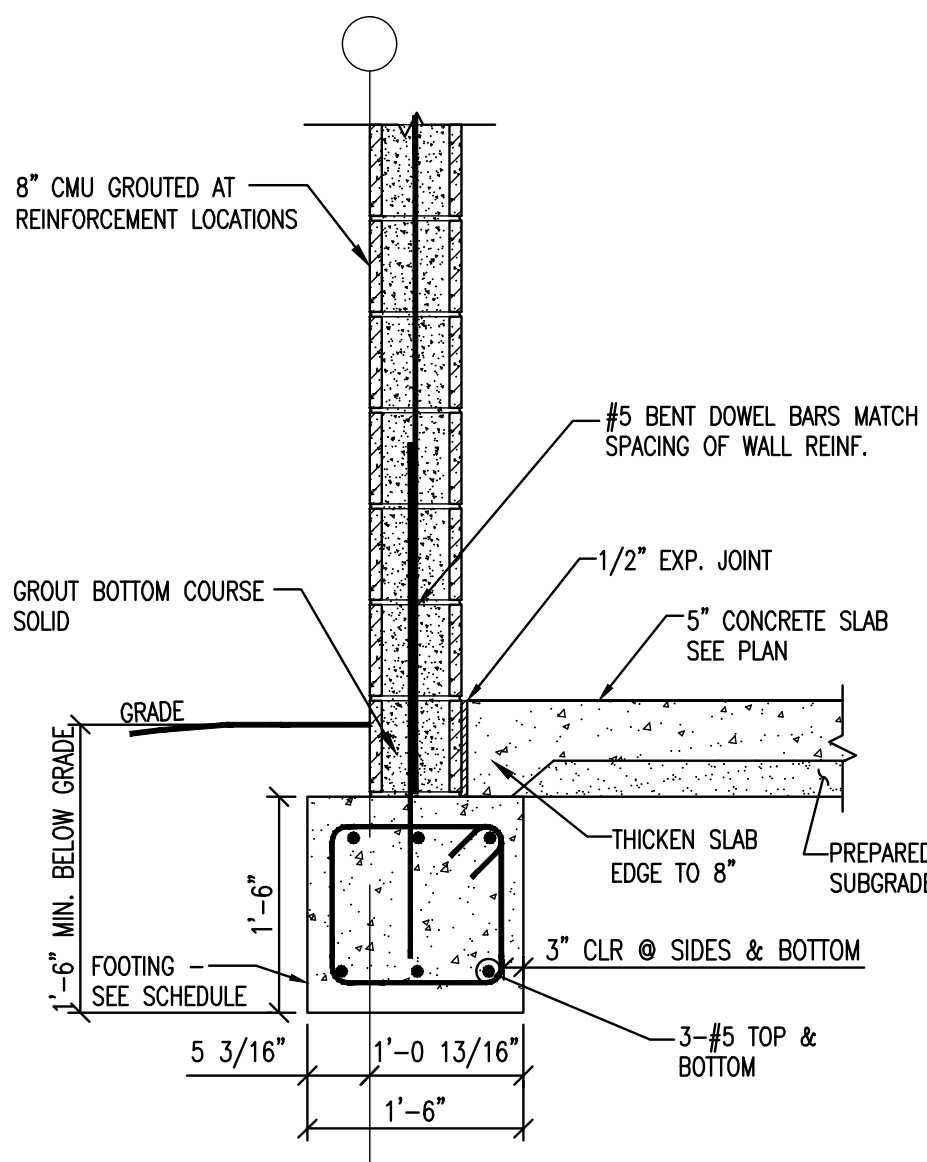


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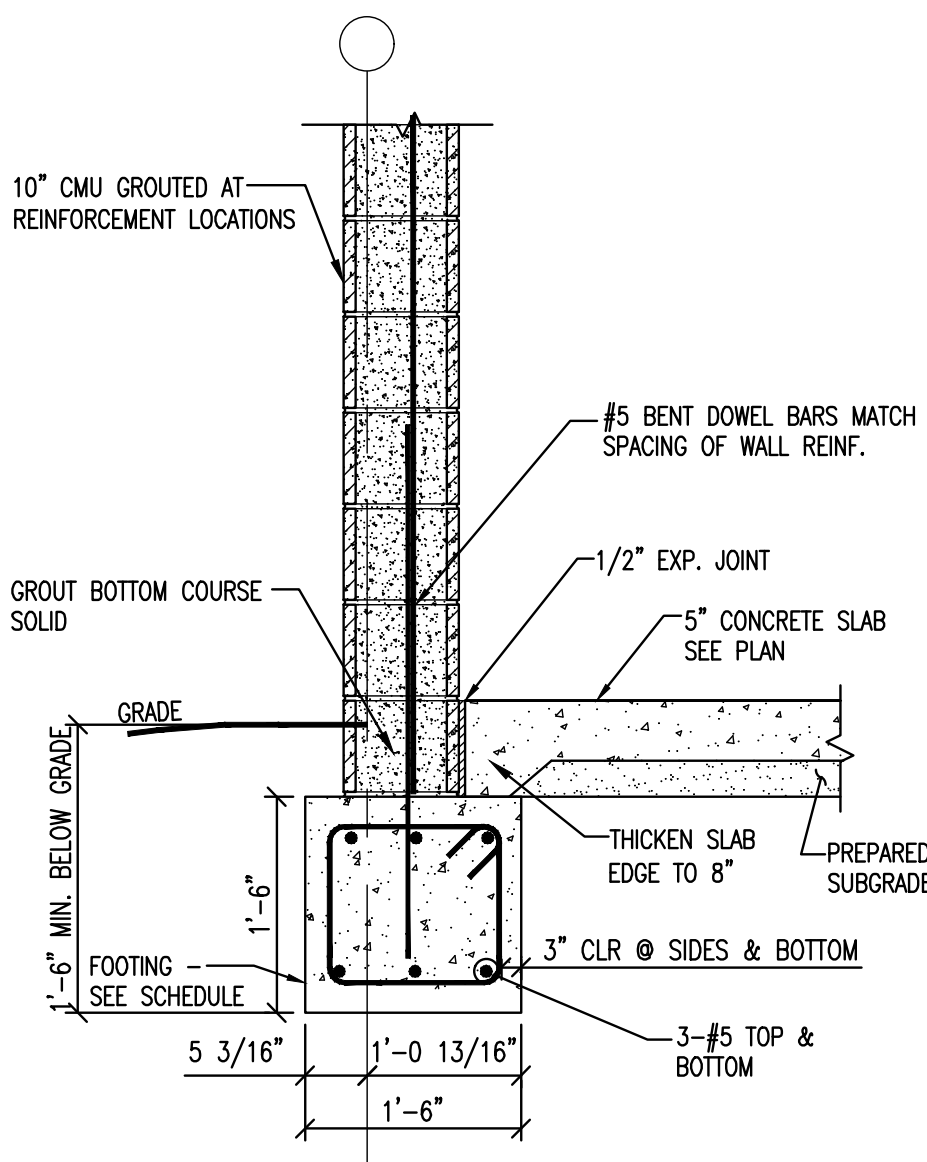
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S2-1

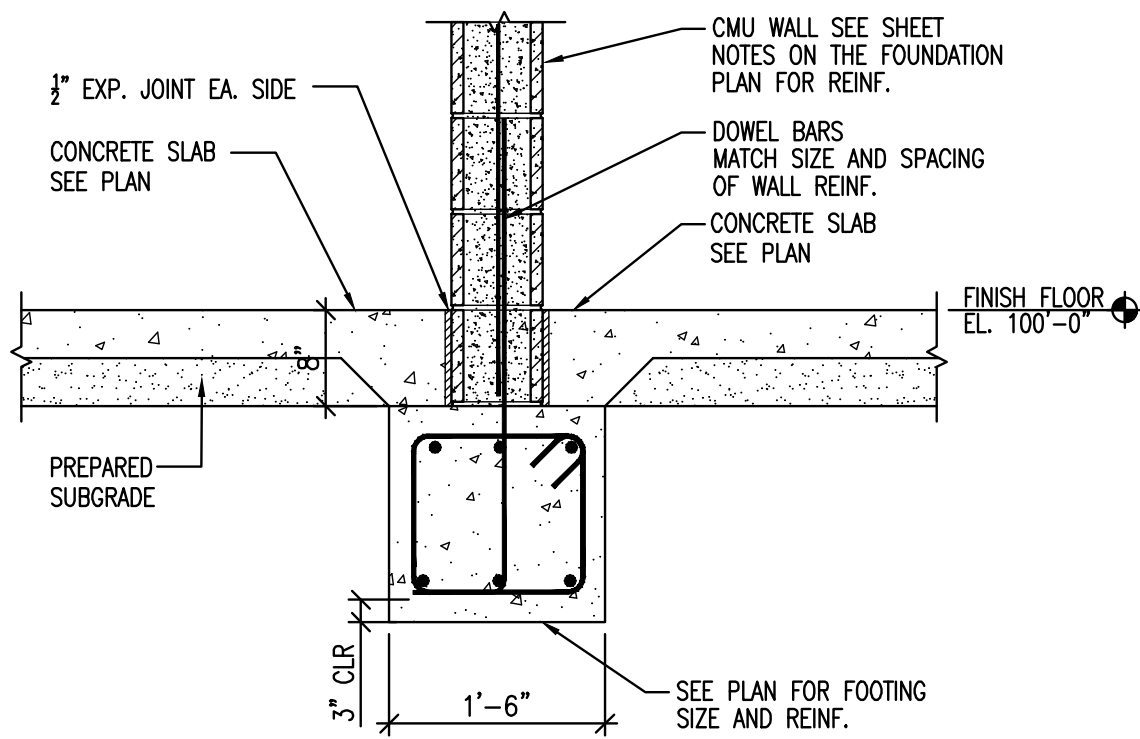
ROOF FRAMING PLAN



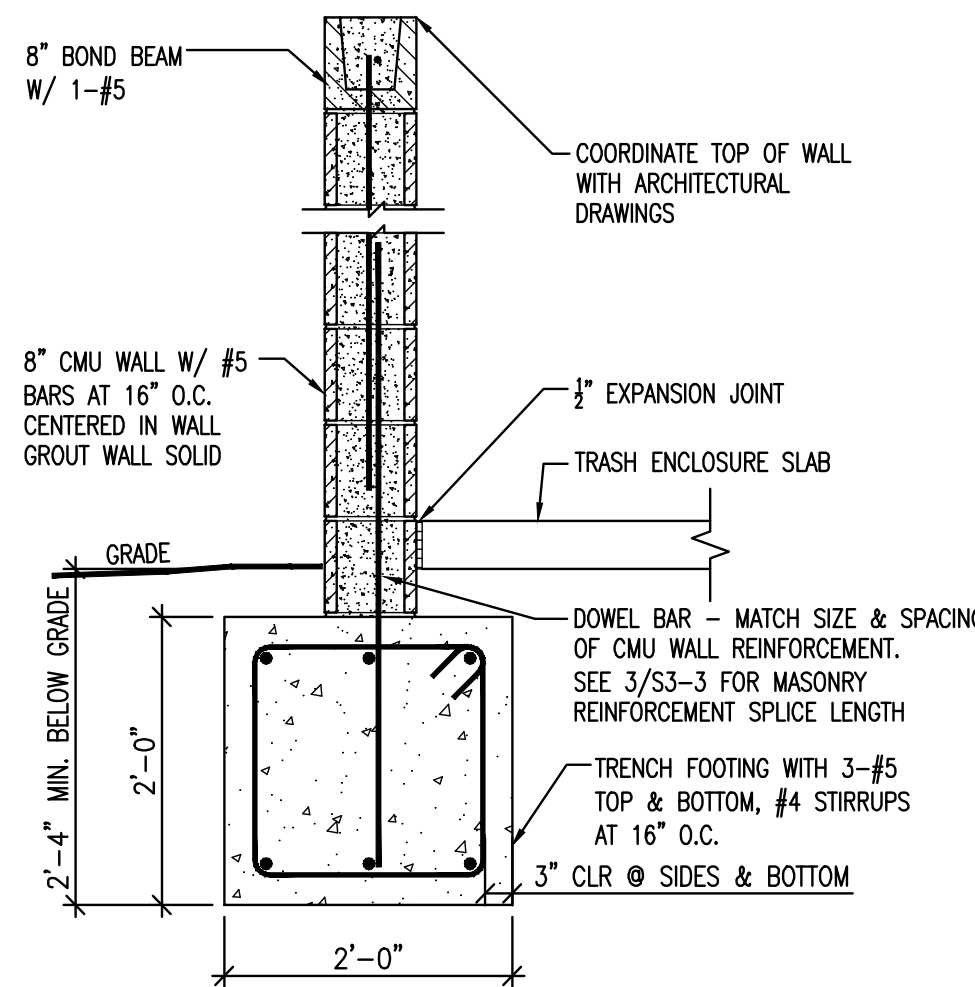
1A - 8" CMU



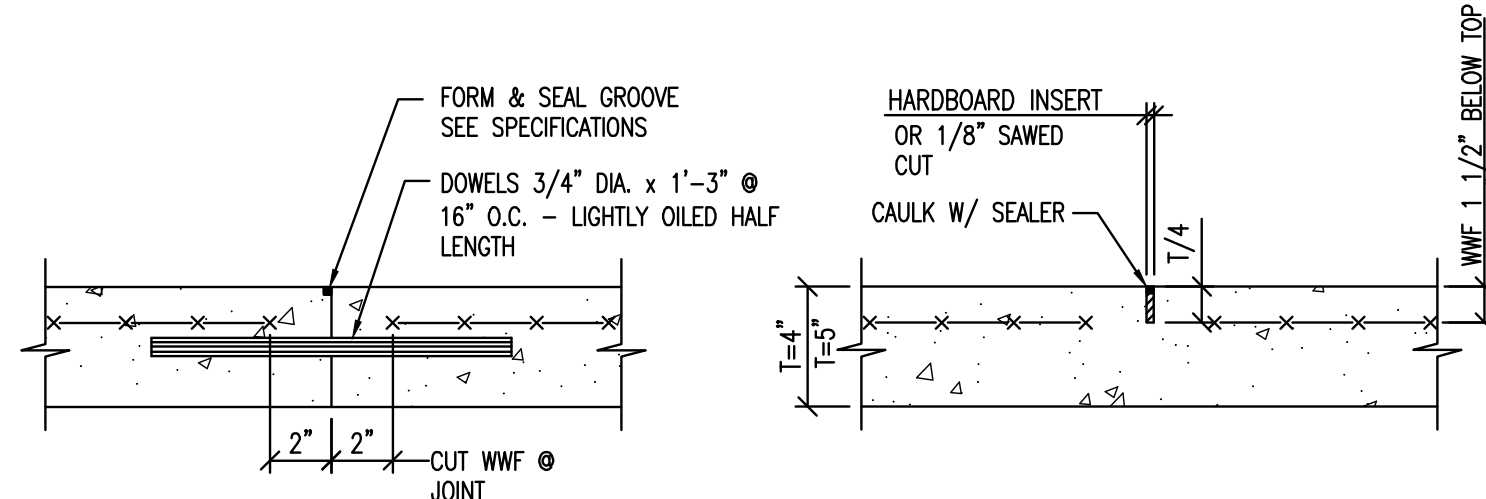
1B - 10" CMU



2 FOOTING
3/4"=1'-0"



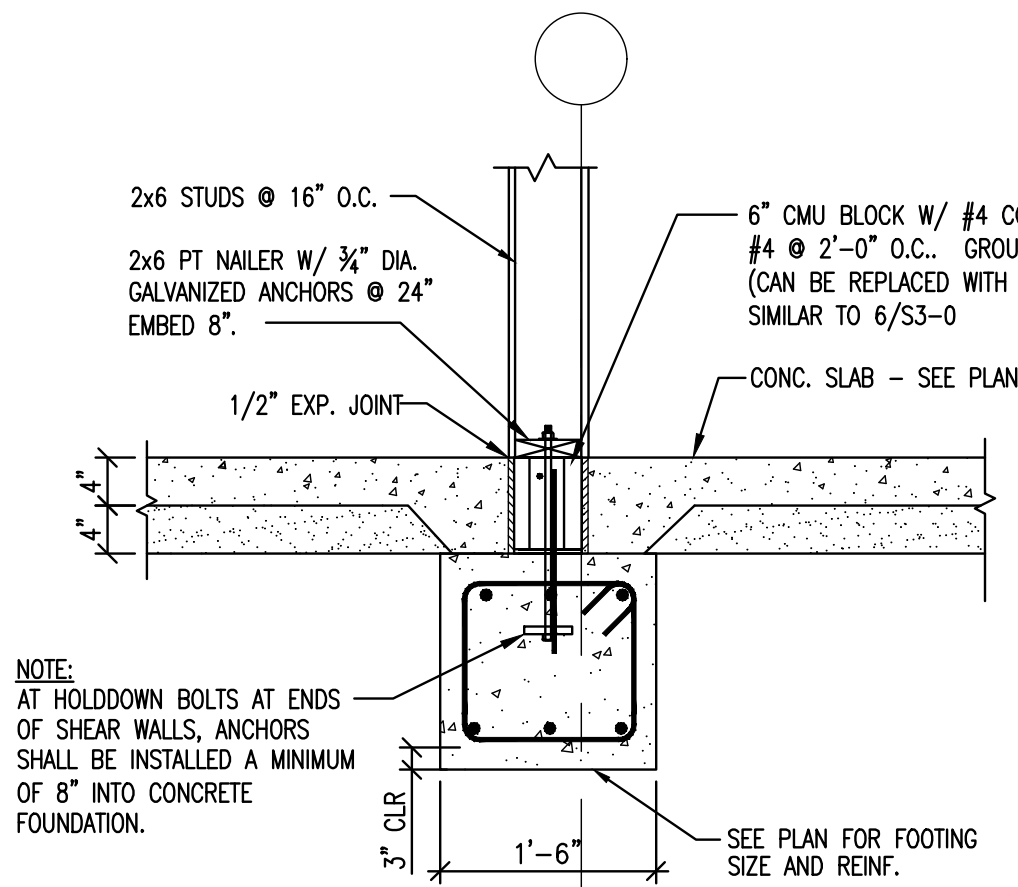
3 TRASH ENCLOSURE WALL SECTION
3/4"=1'-0"



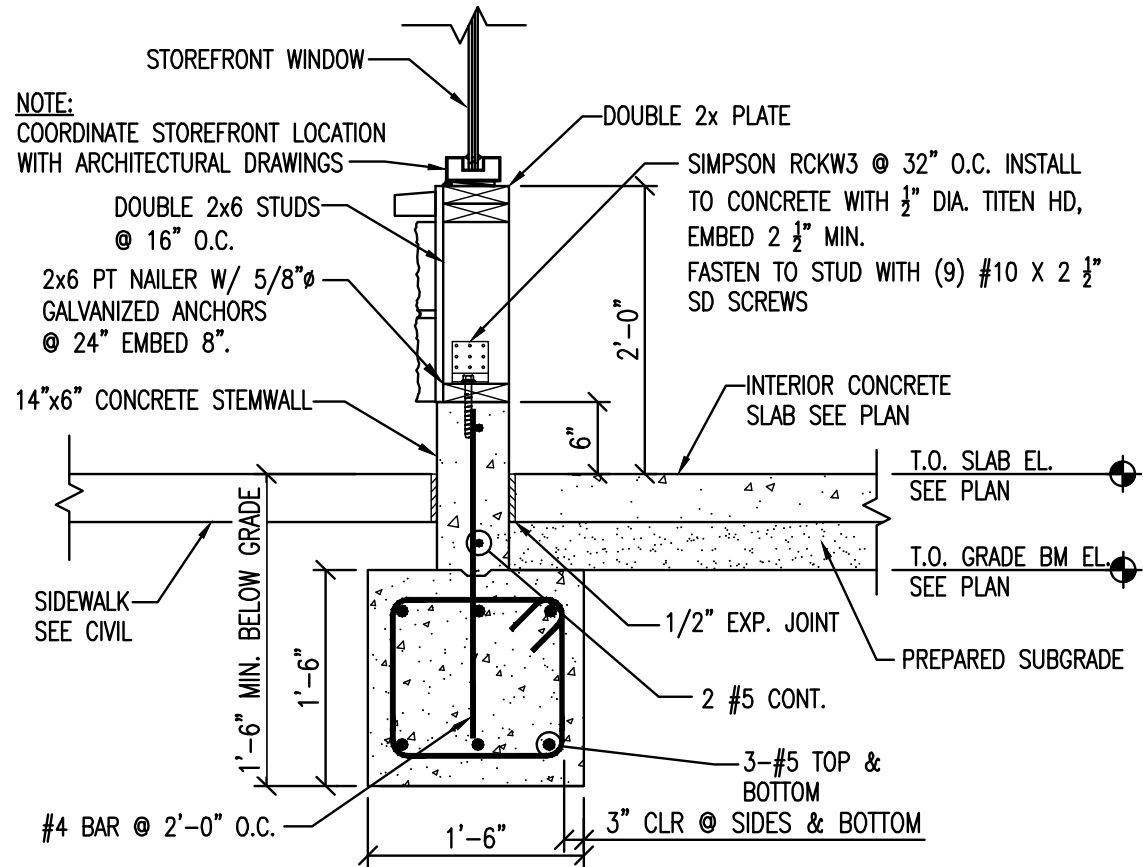
CONSTRUCTION JOINT CONTROL JOINT

- NOTES:
- EPOXY JOINT FILLER TO BE SIKADUR 51 BY SIKKA CORPORATION OR APPROVED EQUAL. MINIMUM AGE OF CONCRETE TO BE 28 DAYS WHEN FILLED.
 - SAW JOINT AS SOON AS SURFACE IS FIRM ENOUGH TO BE TORN OR DAMAGED BY THE BLADE (USUALLY 4 TO 12 HOURS AFTER CONCRETE HARDENS).

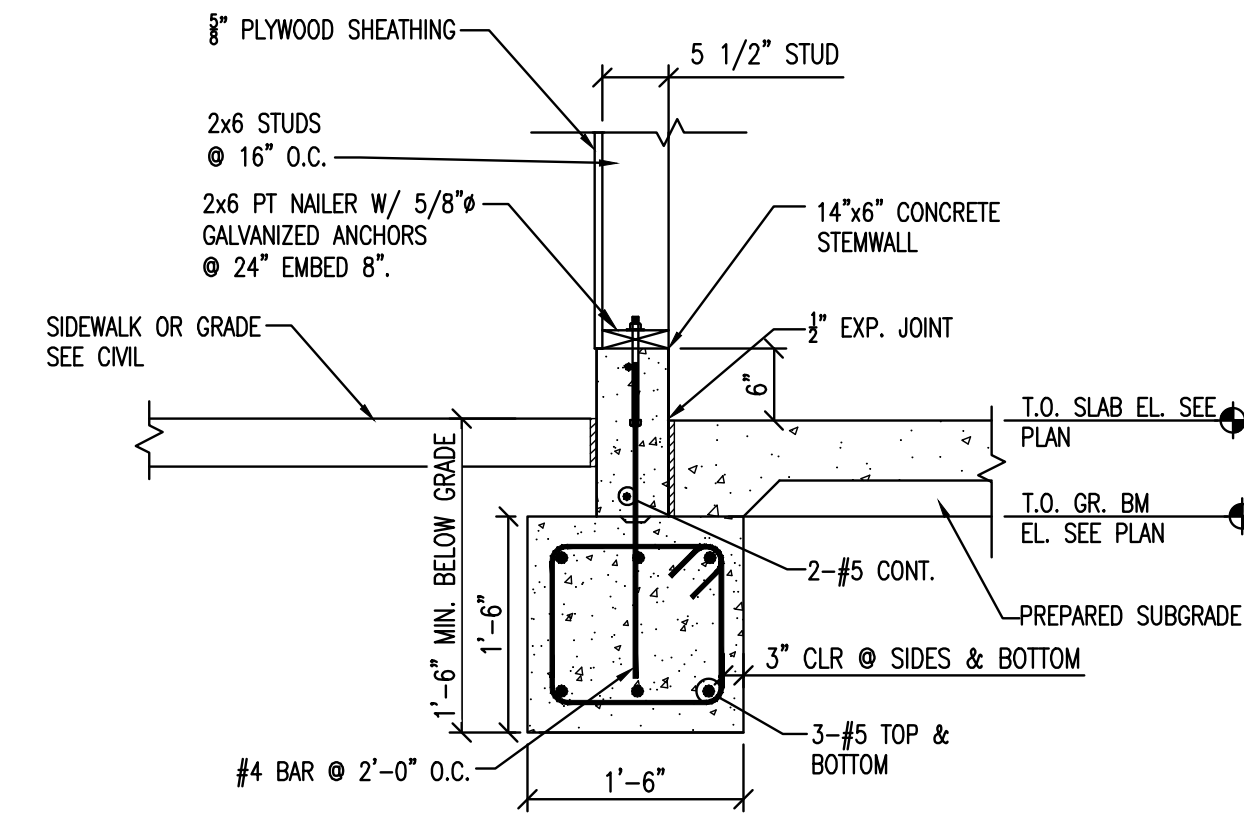
4 4" & 5" CONCRETE SLAB (C.J.) DETAILS
N.T.S.



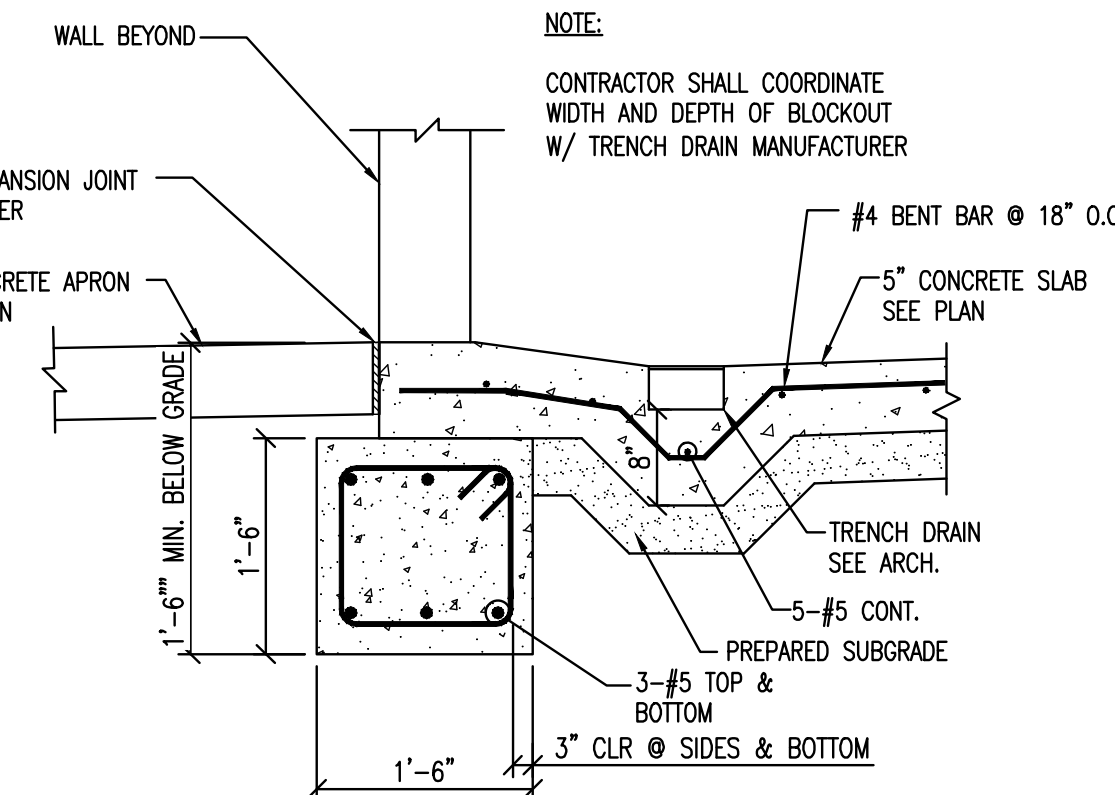
5 FOUNDATION SECTION
3/4"=1'-0"



6 FOOTING @ STOREFRONT
3/4"=1'-0"



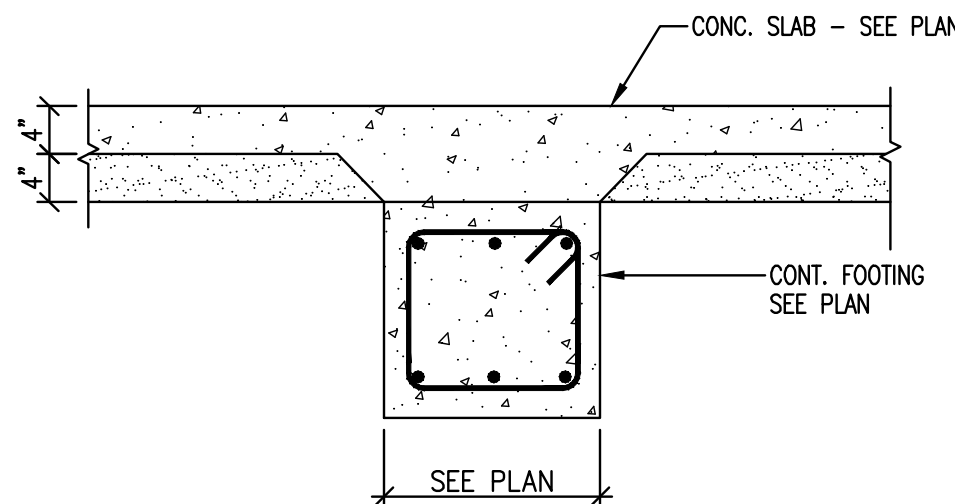
7 FOOTING @ WOOD WALL
3/4"=1'-0"



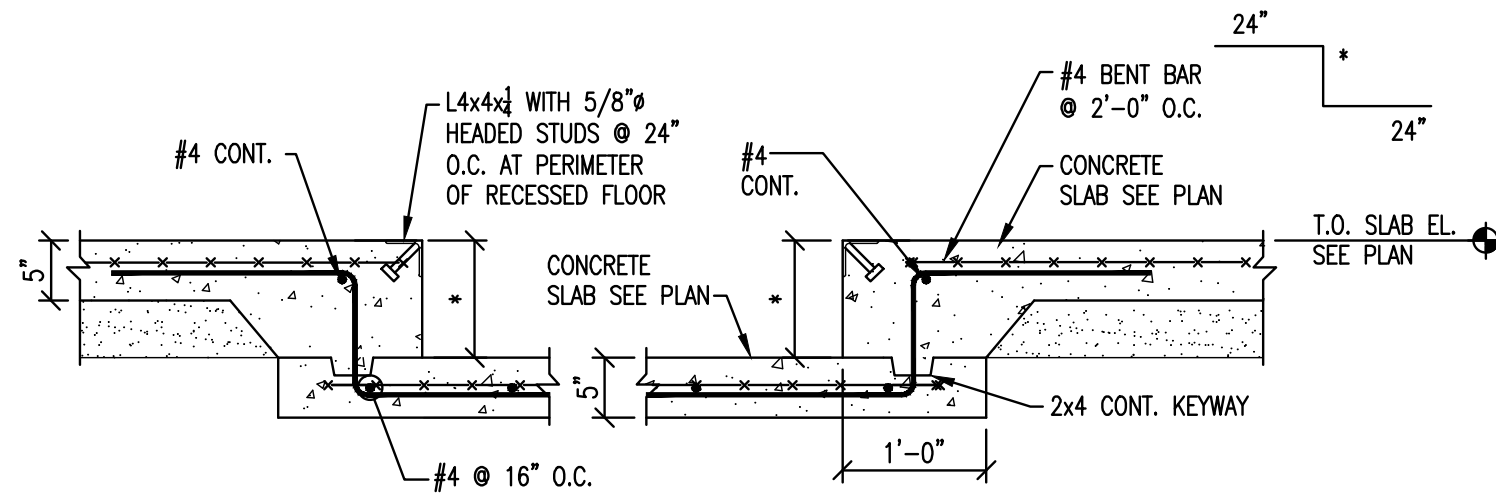
8 FOOTING & TRENCH DRAIN
3/4"=1'-0"

NOT USED

9 LIGHT POLE FOUNDATION
3/4" = 1'-0"



10 FOOTING SECTION
3/4" = 1'-0"



11 DEPRESSED SLAB DETAIL
3/4"=1'-0"

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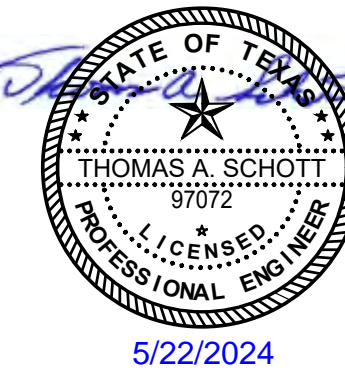
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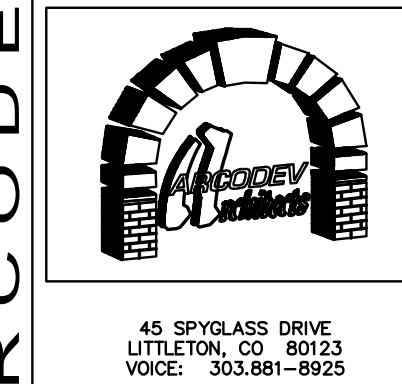
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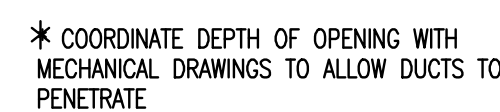
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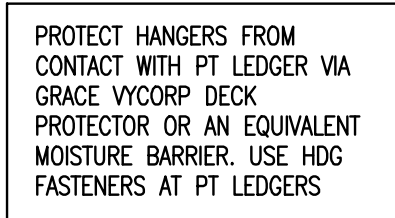
SHEET

S3-0

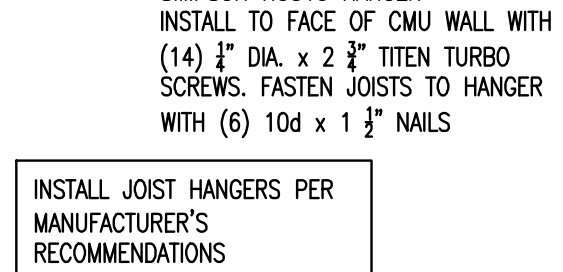
SECTIONS AND DETAILS



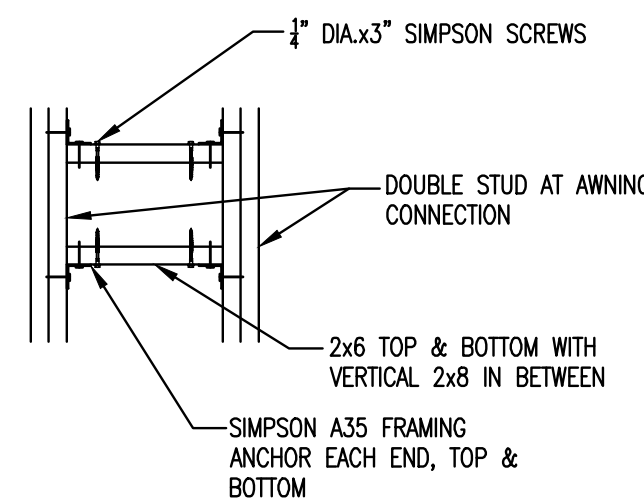
S3-1 $3/4" = 1'-0"$



S3-1 $3/4" = 1'-0"$

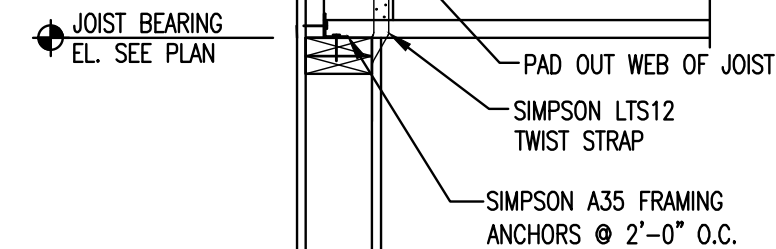


S3-1 $3/4''=1'-0''$

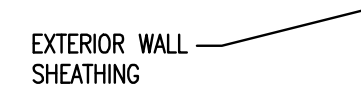


S3-1 $3/4"=1'-0"$

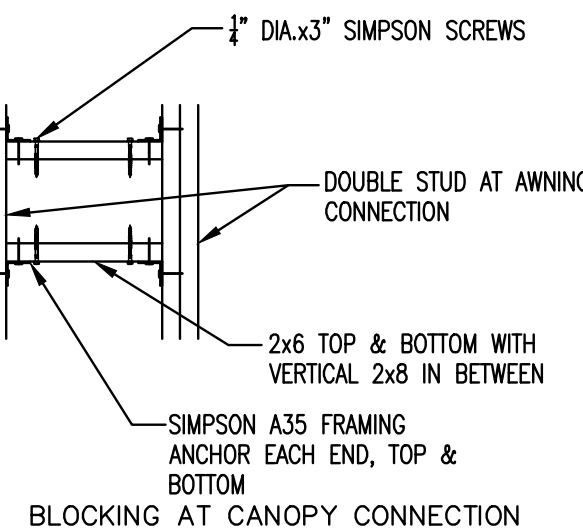
BLOCKING AT CANOPY CONNECTION



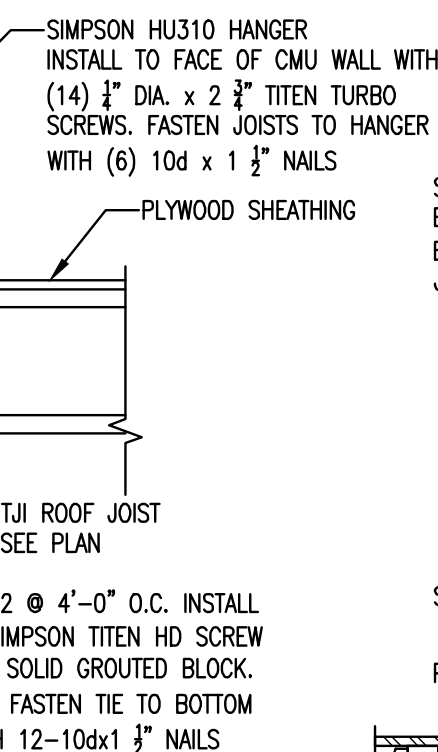
S3-1 $3/4^n = 1 - 0^n$



(S3-1) $3/4'' = 1' - 0''$

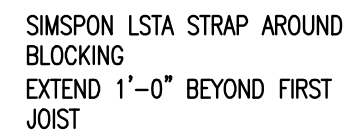


S3-1	$3^n = 1' - 0^n$
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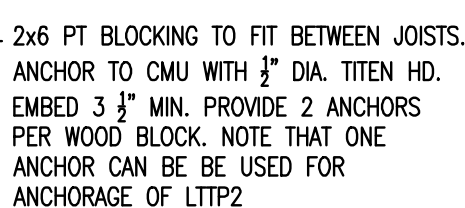


PROTECT HANGERS FROM CONTACT WITH PT LEDGER VIA GRACE VYCORP DECK PROTECTOR OR AN EQUIVALENT MOISTURE BARRIER. USE HDG FASTENERS AT PT LEDGERS

9	FARAI
S3-1	3/4"=1'-0"



10 WALL S
S3-1 $3/4" = 1'-0"$



11 JUL 51
S3-1 3/4"=1'-0"

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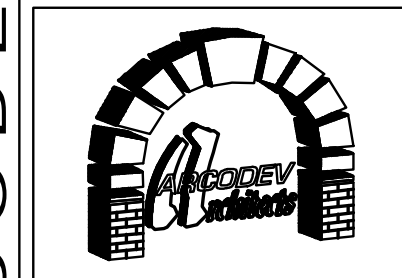
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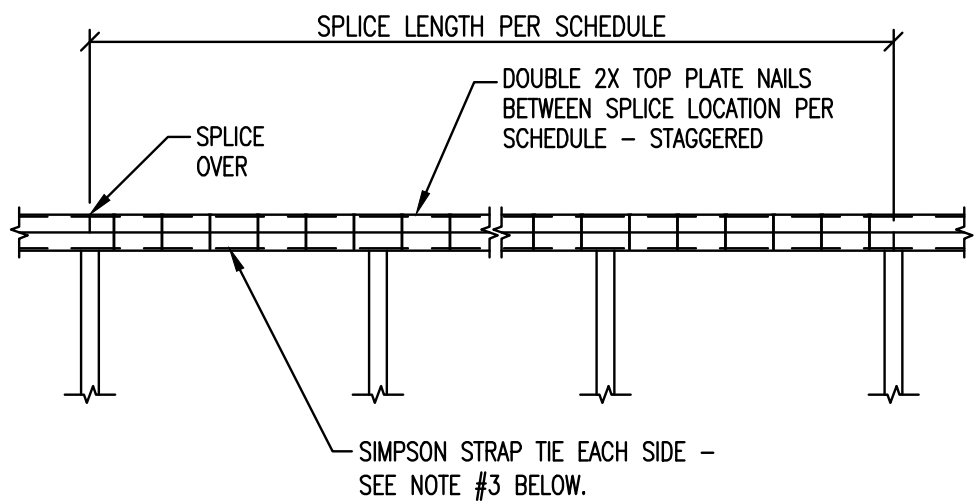
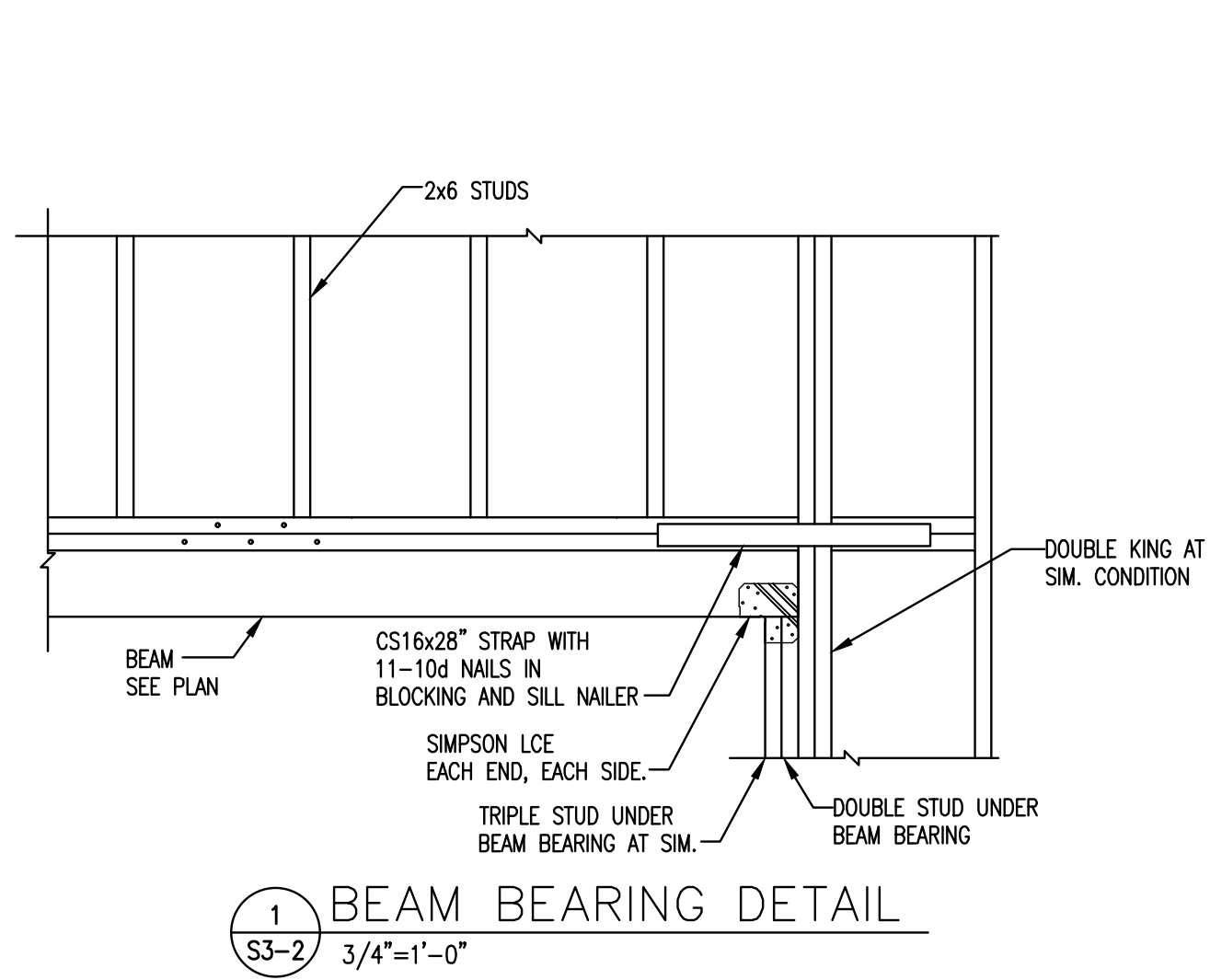


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A SHEET

S3-1

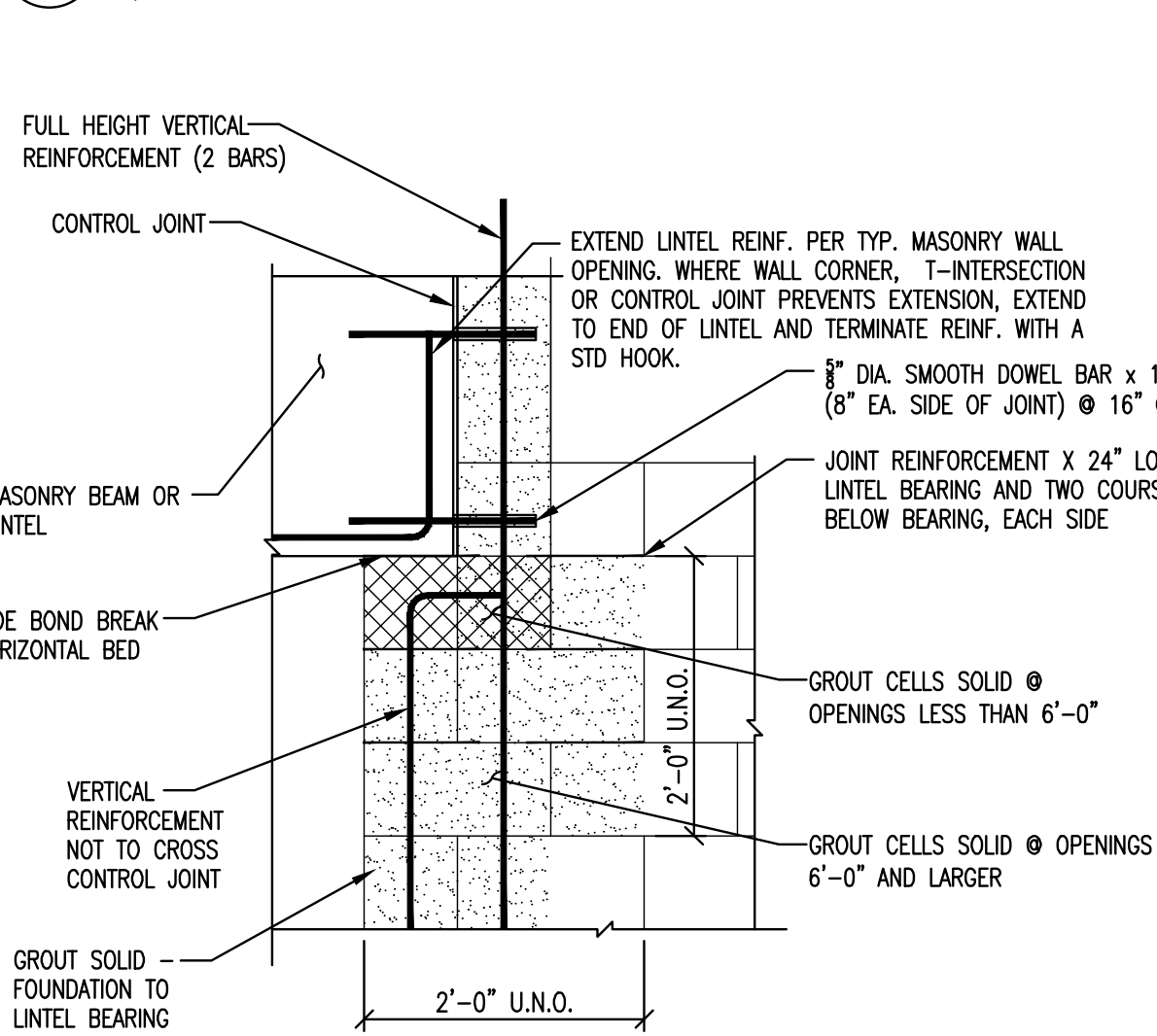
SECTIONS AND DETAILS



LENGTH OF WALL (BETWEEN CORNERS)	SPLICE LENGTH (MINIMUM)	NAILS ALONG SPLICE LENGTH
OVER 30'	4'-0"	18-16d
OVER 20'	2'-8"	10-16d
OVER 10'	1'-4"	6-16d
LESS THAN 10'	1'-4"	4-16d

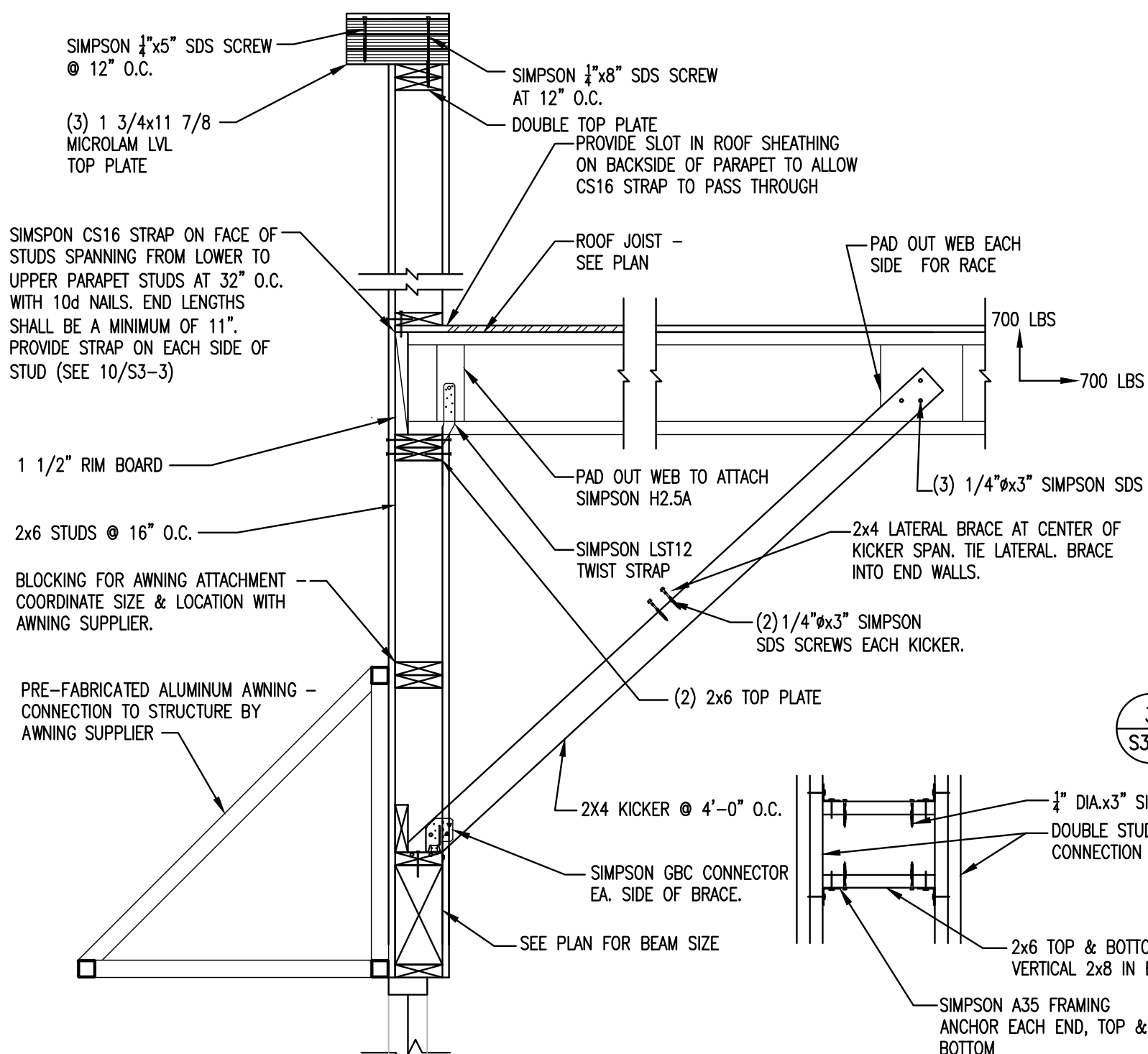
NOTE:
1. DO NOT SPLICE TOP PLATES WITHIN 6'-0" OF ENDS OF WOOD STRUCTURAL PANEL SHEAR WALLS.
2. THIS DETAIL APPLIES TO ALL EXTERIOR WALLS AND INTERIOR WALLS. SIMPSON STRAP TIE NEE NOT BE APPLIED TO INTERIOR WALLS.
3. PROVIDE SIMPSON CNST 14 ON EACH SIDE OF TOP PLATE AT SPLICE LOCATION. EXTEND STRAP 34" BEYOND END OF PLATE SPLICE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

6 CHORD SPLICE



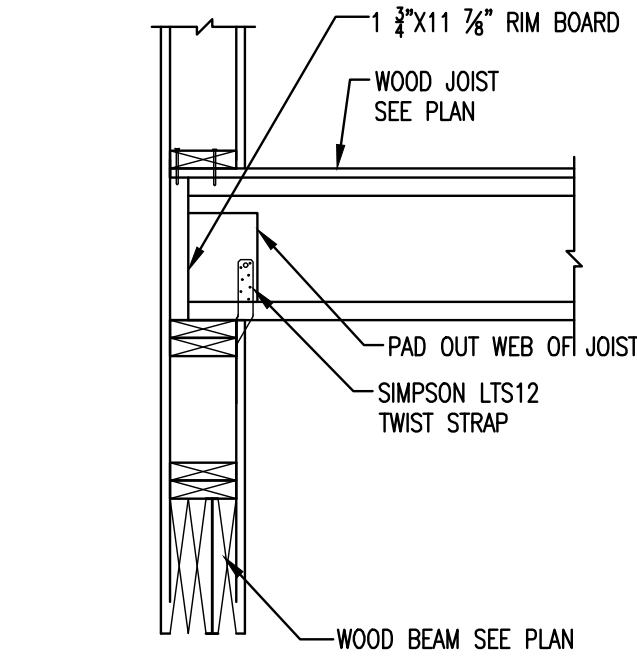
10 TYP. MASONRY BM/ LINTEL BEARING

S3-2 3/4"=1'-0"



2 HIGH PARAPET

S3-2 3/4"=1'-0"



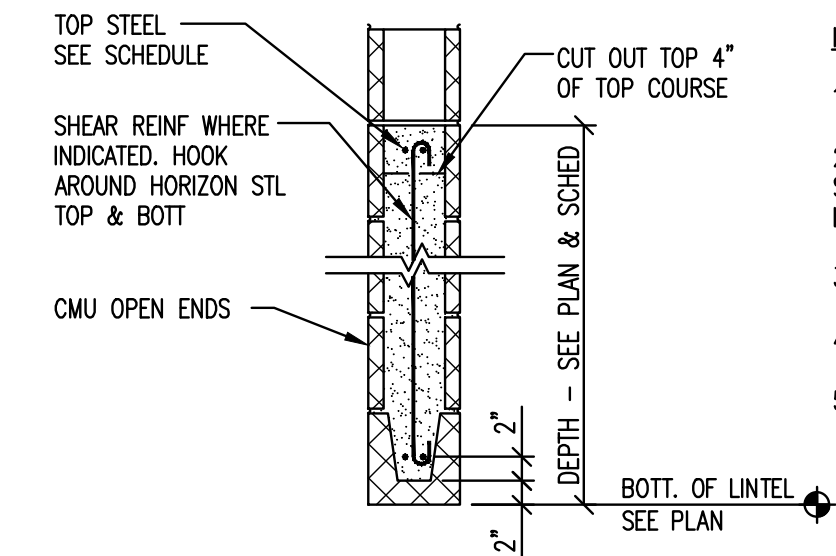
7 FRAMING SECTION

S3-2 3/4"=1'-0"

MARK	DEPTH	BOND BM REINF	SHEAR REINF	REMARKS
ML-1	2'-8"	2-#5 TOP & BOTT	-	8" CMU
ML-2	1'-4"	2-#5 TOP & BOTT	-	8" CMU

NOTE:

- USE LINTEL ML-2 AT ALL OPENINGS LESS THAN 4'-0" WIDE UNLESS NOTED OTHERWISE.
- BOND BEAM REINFORCING SHALL BE CONTINUOUS WITHOUT SPLICES.
- MASONRY LINTELS SHALL BE GROUTED SOLID.



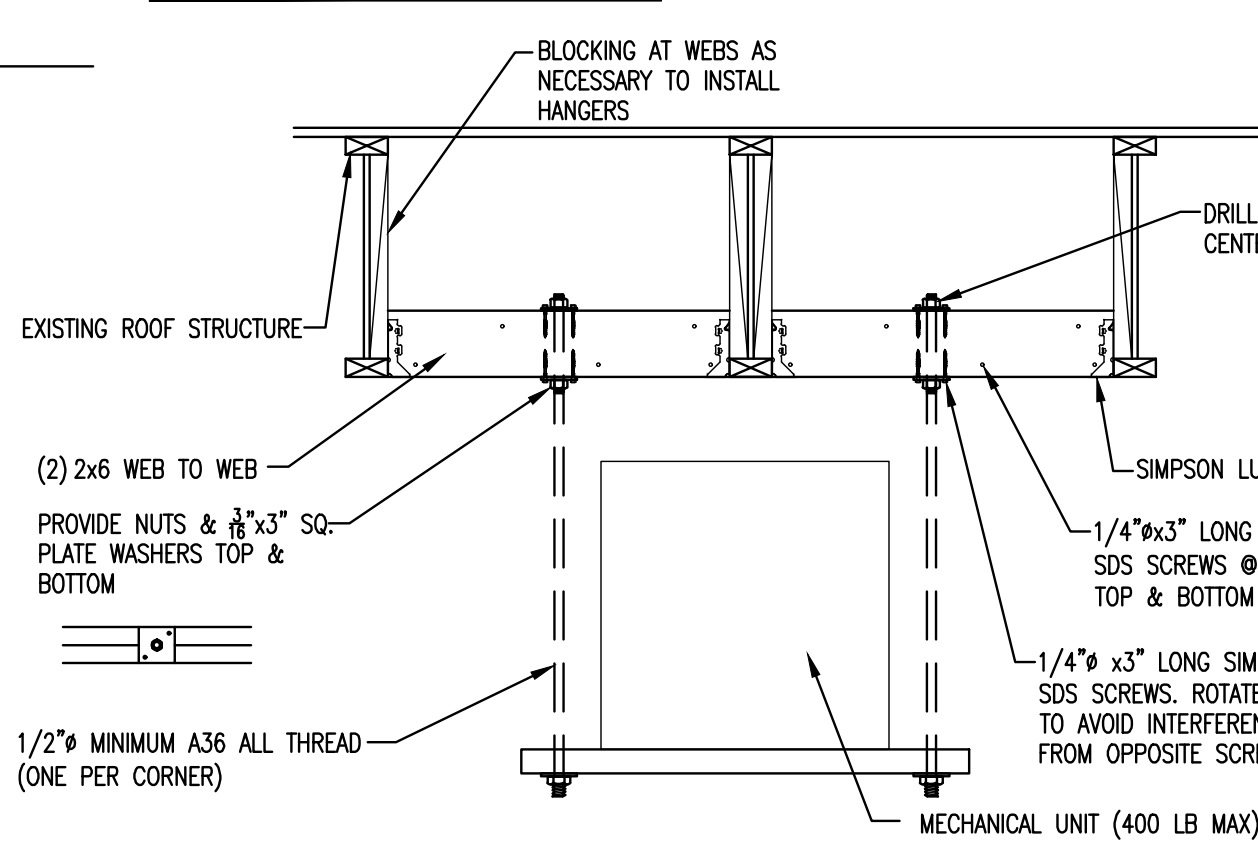
11 TYP. MASONRY BEAM/ LINTEL

S3-2 3/4"=1'-0"

NOTES:

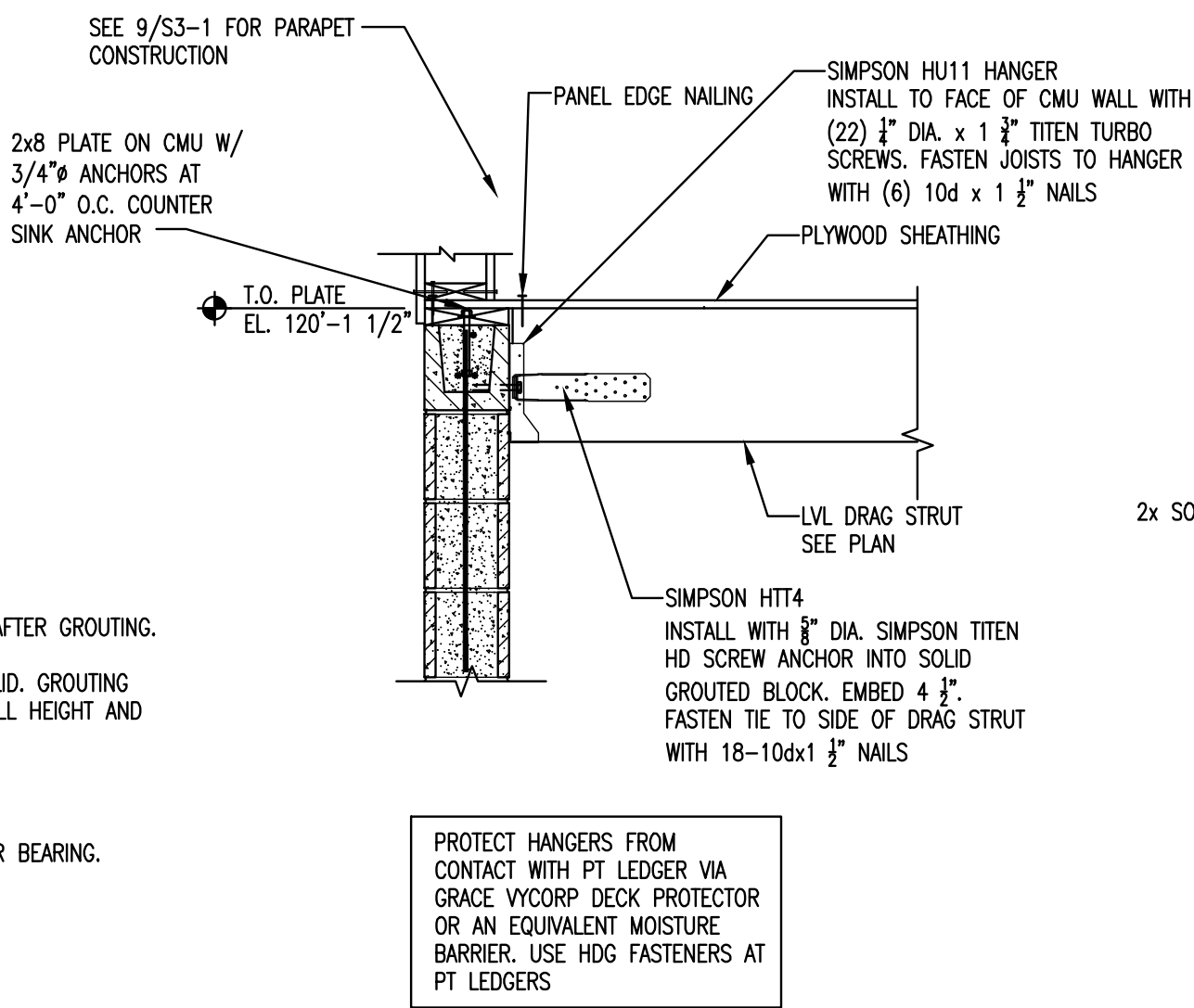
- PROVIDE SHORING UNDER BEAM FOR A MIN. OF 7 DAYS AFTER GROUTING.
- MONOLITHICALLY GROUT BOND BEAM AND ALL CELLS SOLID. GROUTING SHALL HAVE NO VERTICAL OR HORIZONTAL COLD JOINTS FULL HEIGHT AND LENGTH OF LINTEL INCLUDING END BEARINGS.
- MECHANICALLY VIBRATE GROUT.
- SEE TYPICAL MASONRY BEAM/LINTEL BEARING DETAIL FOR BEARING.
- HORIZONTAL REINFORCEMENT SHALL NOT BE SPLICED.

BLOCKING AT CANOPY CONNECTION



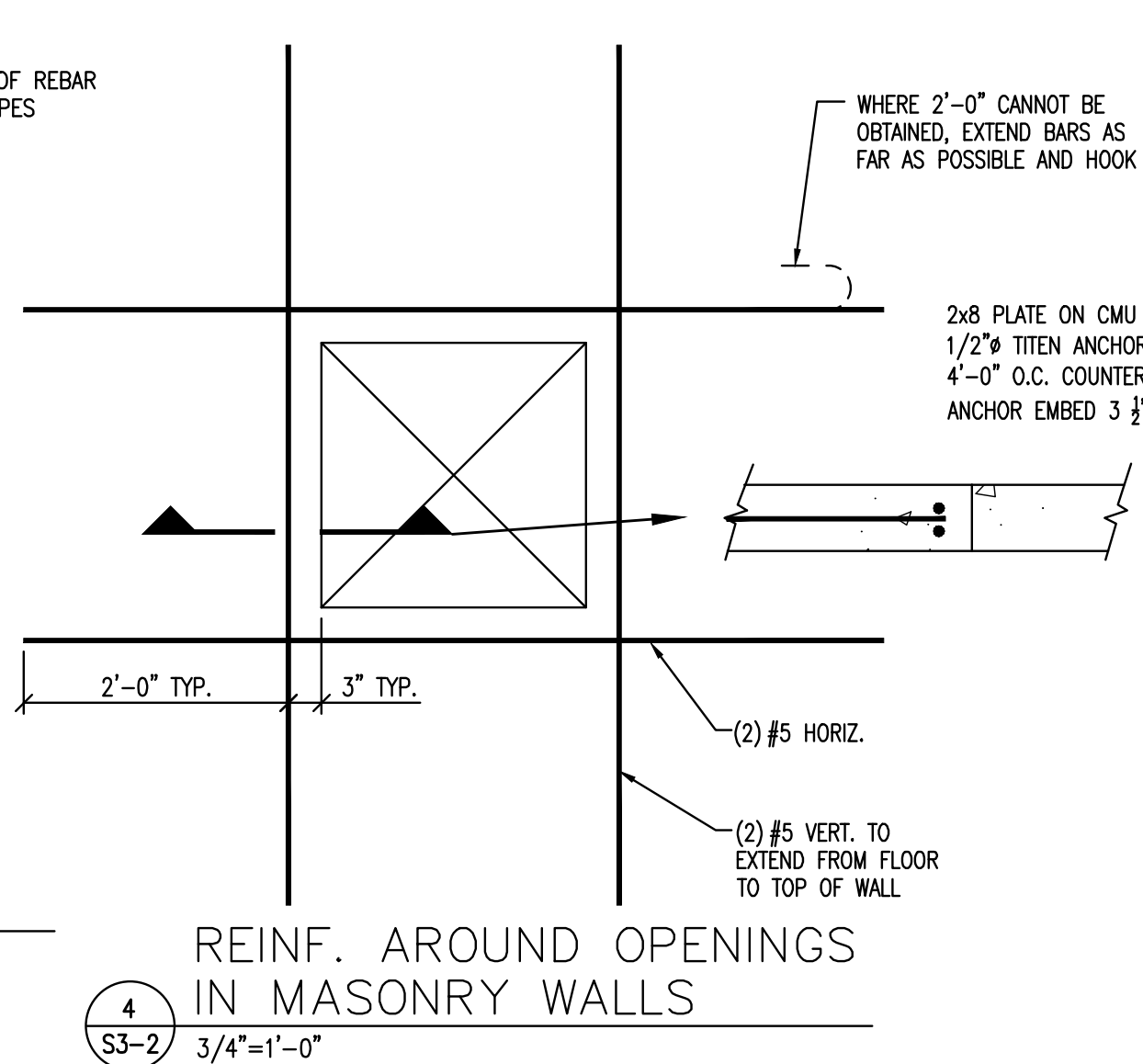
8 FRAMING SECTION

S3-2 3/4"=1'-0"



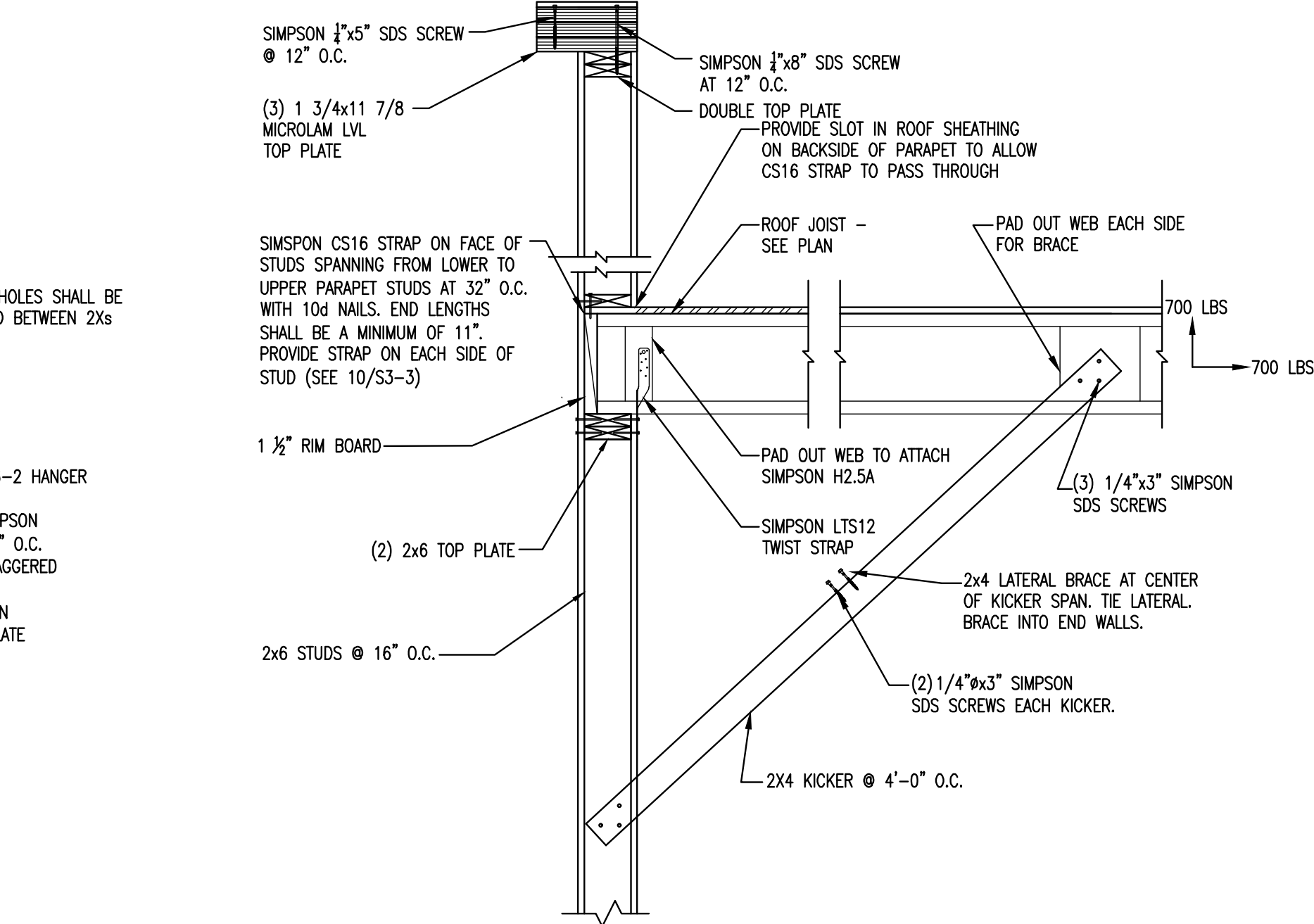
12 PARAPET WALL SECTION

S3-2 3/4"=1'-0"



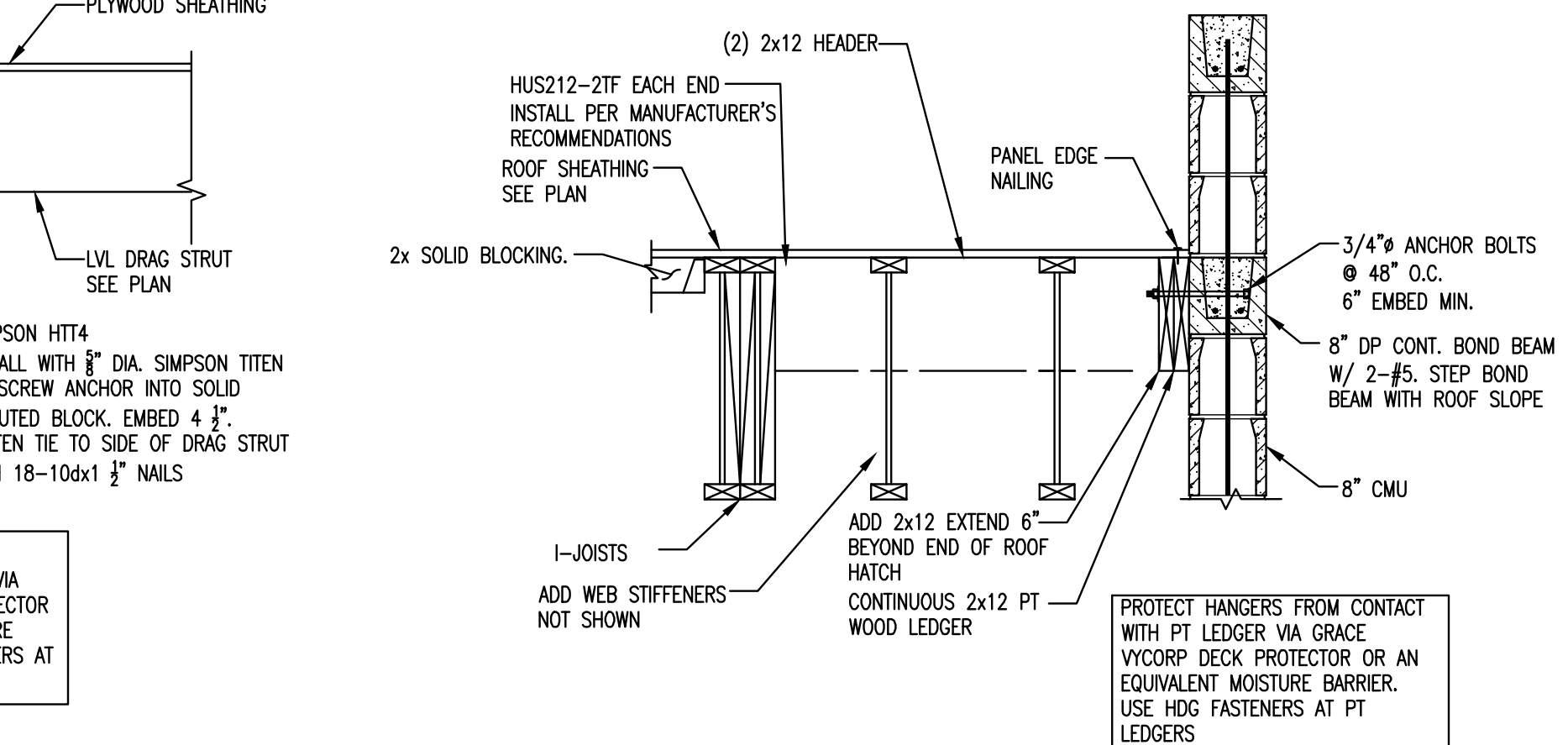
5 PARAPET WALL

S3-2 3/4"=1'-0"



9 WALL SECTION

S3-2 3/4"=1'-0"



13 ROOF OPENING DETAIL

S3-2 3/4"=1'-0"

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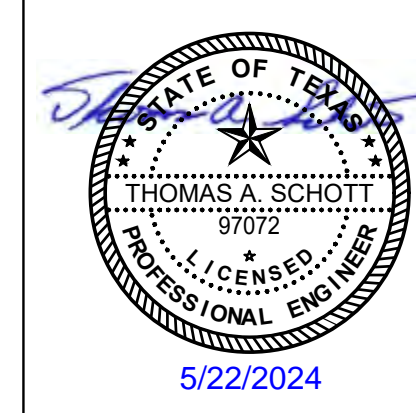
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11811 Fort Street, Suite 104 - Omaha, NE 68164
(402) 343-3967 Fax: (402) 343-3981
NE-C24245

PE # 240226

BRAKES PLUS

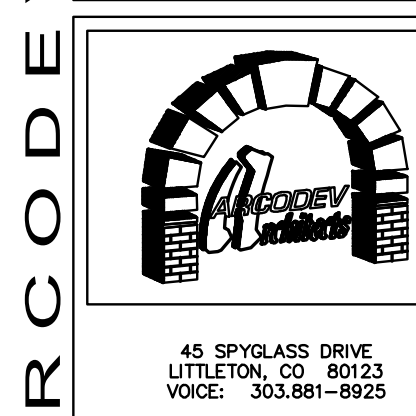
640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ENGINEER OF RECORD

REVISION	DATE	COMMENTS
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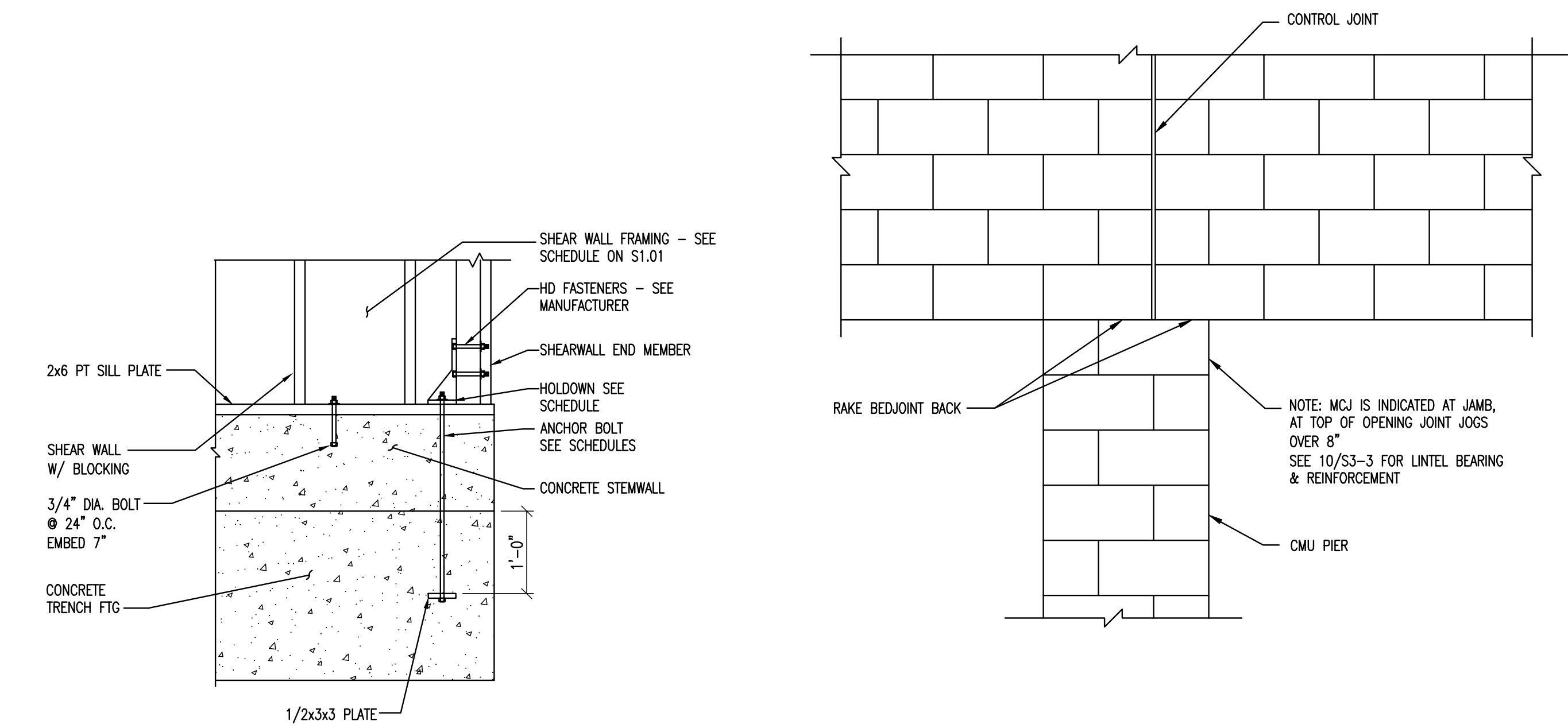
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CLIENT JOB # _____
DRAWN BY: SLM
CHECKED BY: TAS
DATE OF ISSUE: 01.21.24



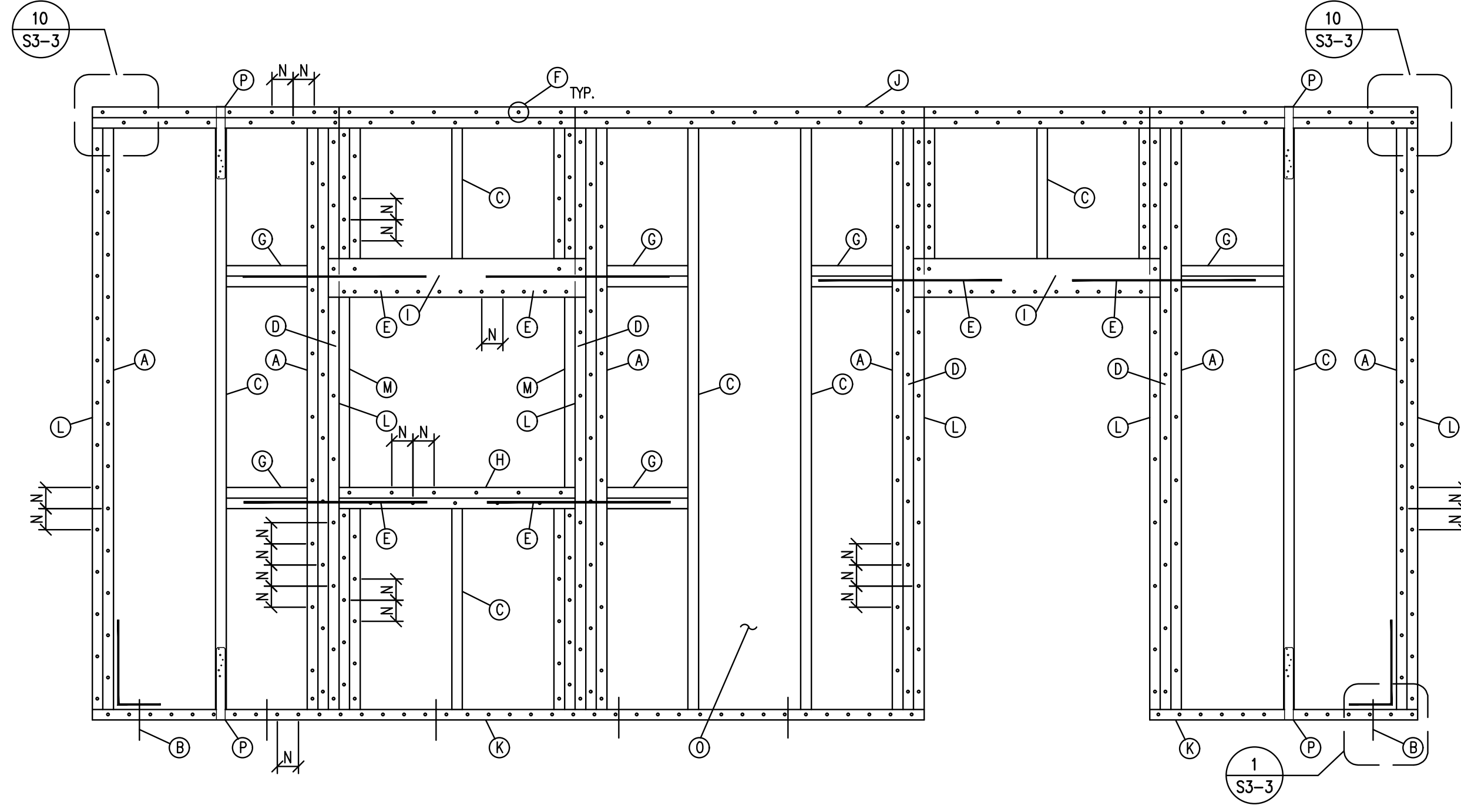
A SHEET

SECTIONS AND DETAILS

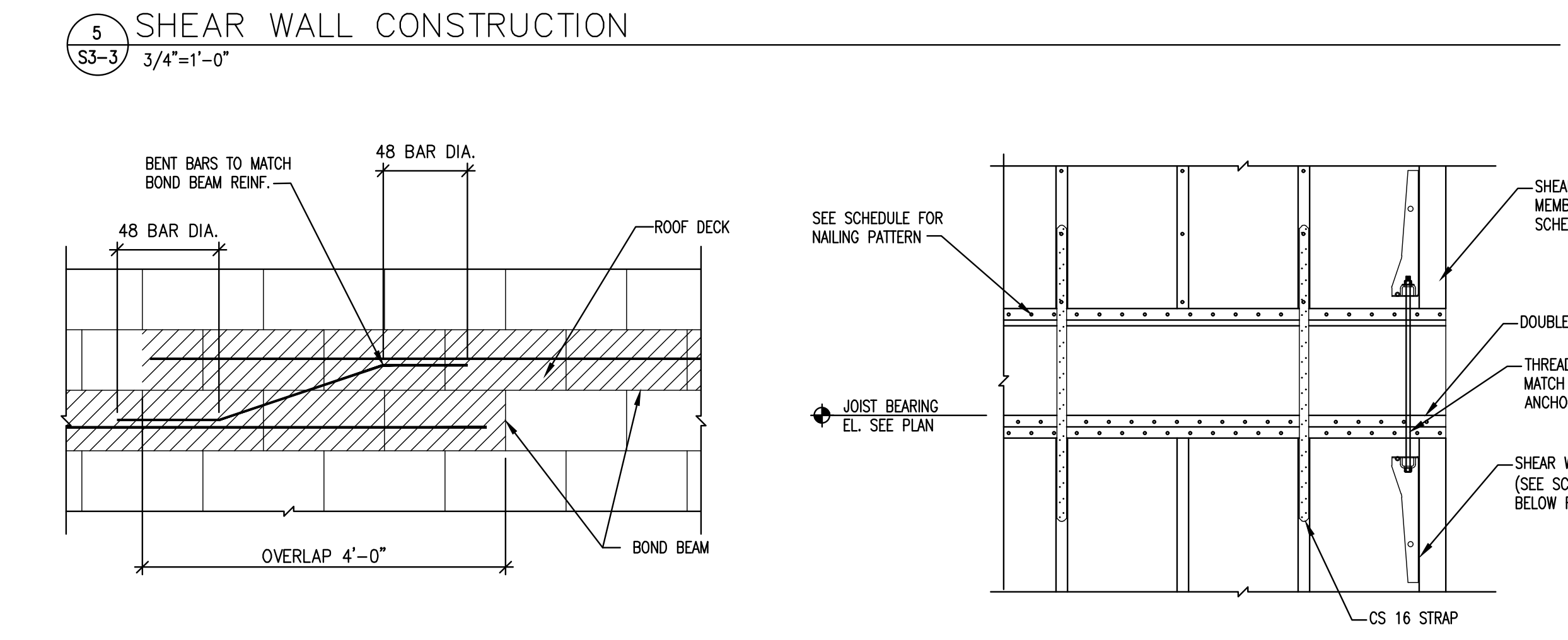
S3-2



1 FOOTING @ COLUMN
S3-3 3/4"=1'-0"

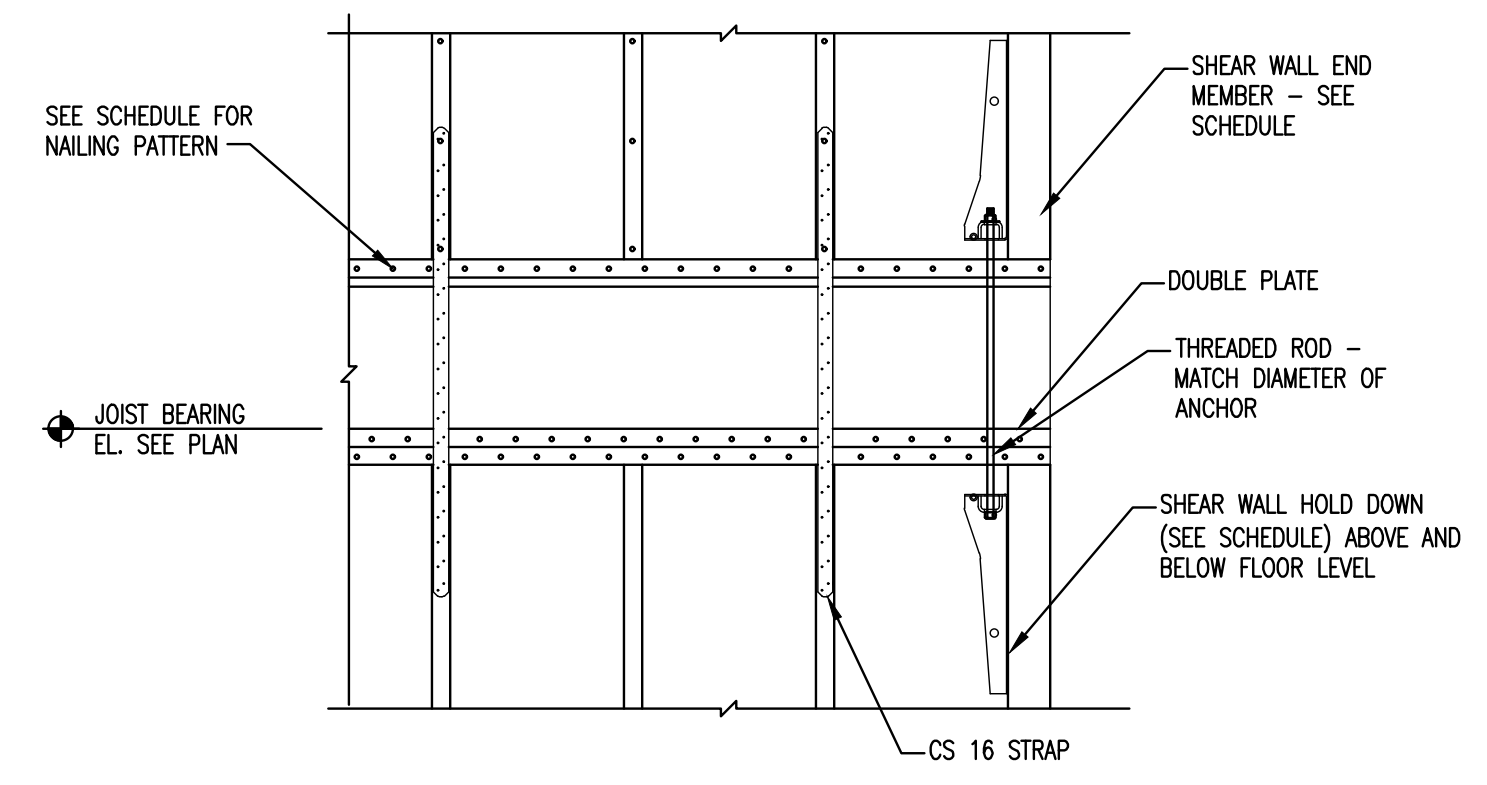
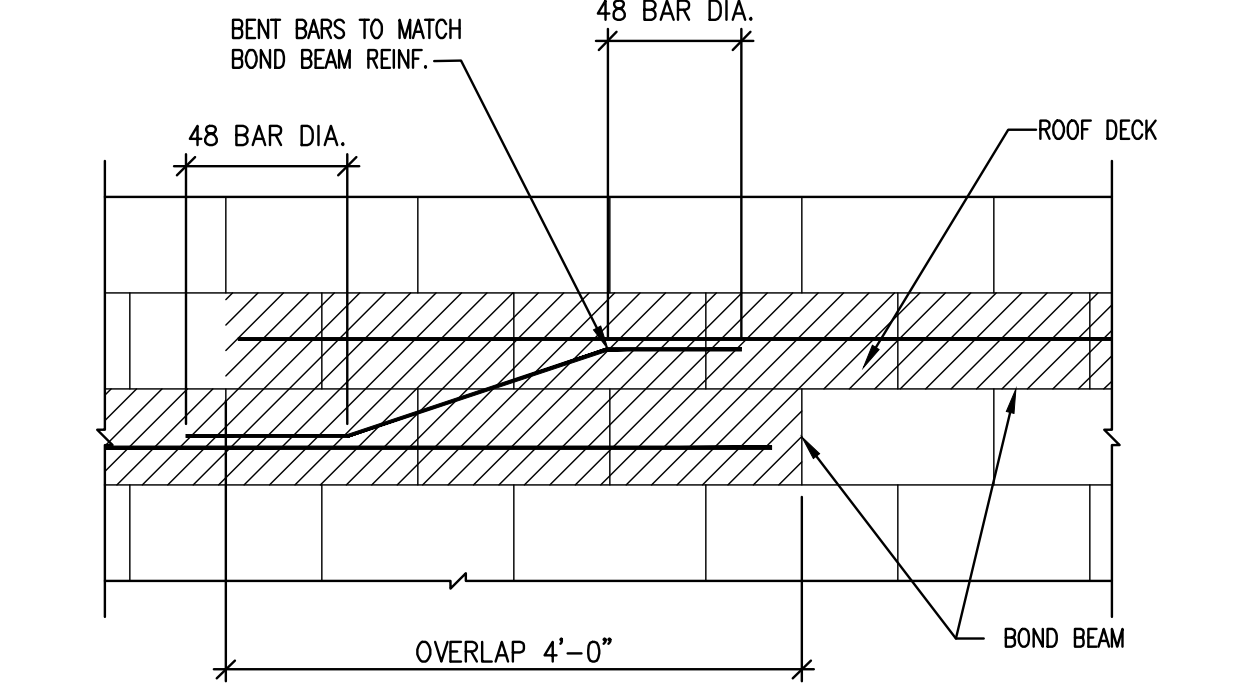


2 CONTROL JOINT @ PIER
S3-3 3/4"=1'-0"



5 SHEAR WALL CONSTRUCTION
S3-3 3/4"=1'-0"

9 BOND BEAM STEP AT SLOPING ROOF
S3.3 3/4"=1'-0"

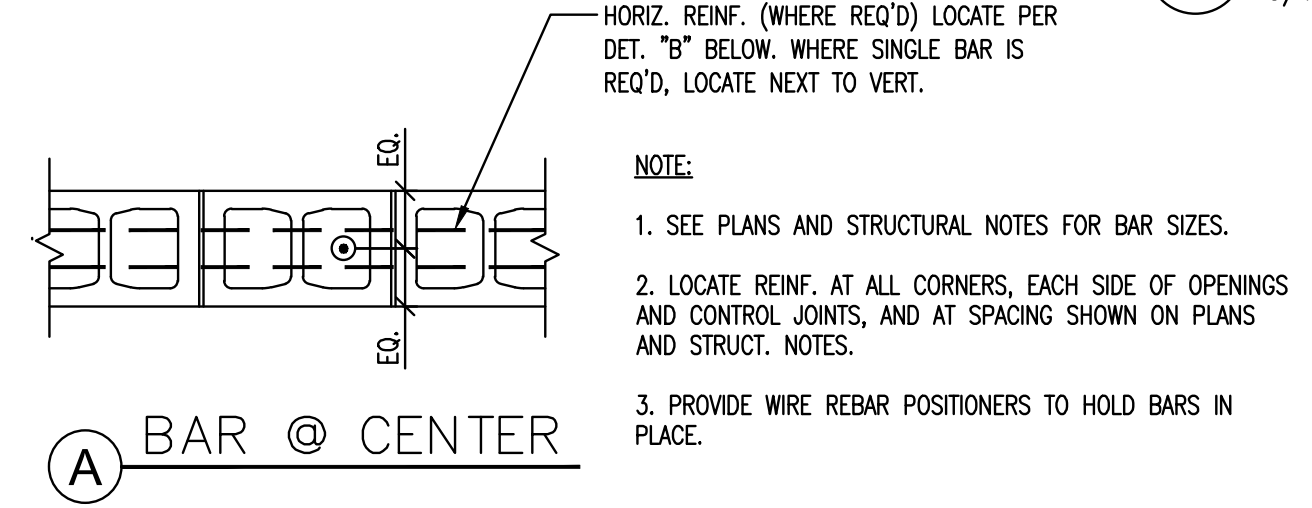
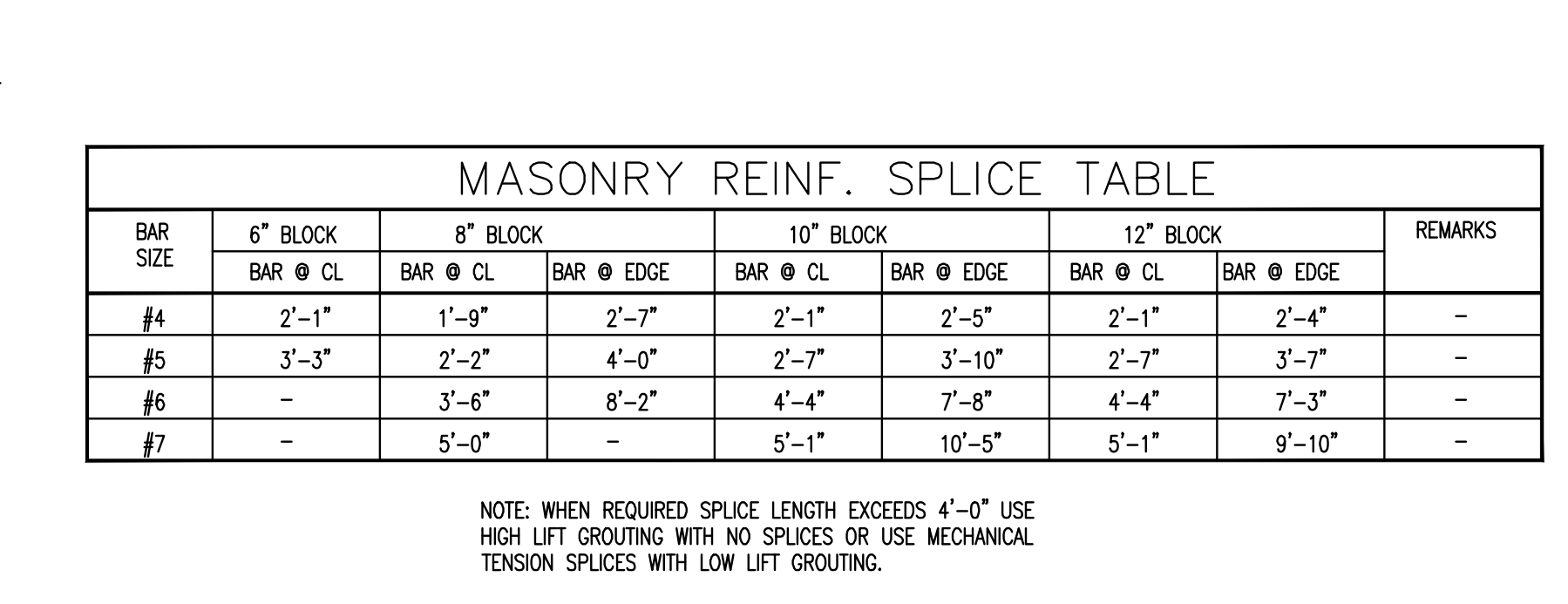


10 TWO LEVEL SHEAR WALL CONNECTION
S3-3 3/4" = 1'-0"

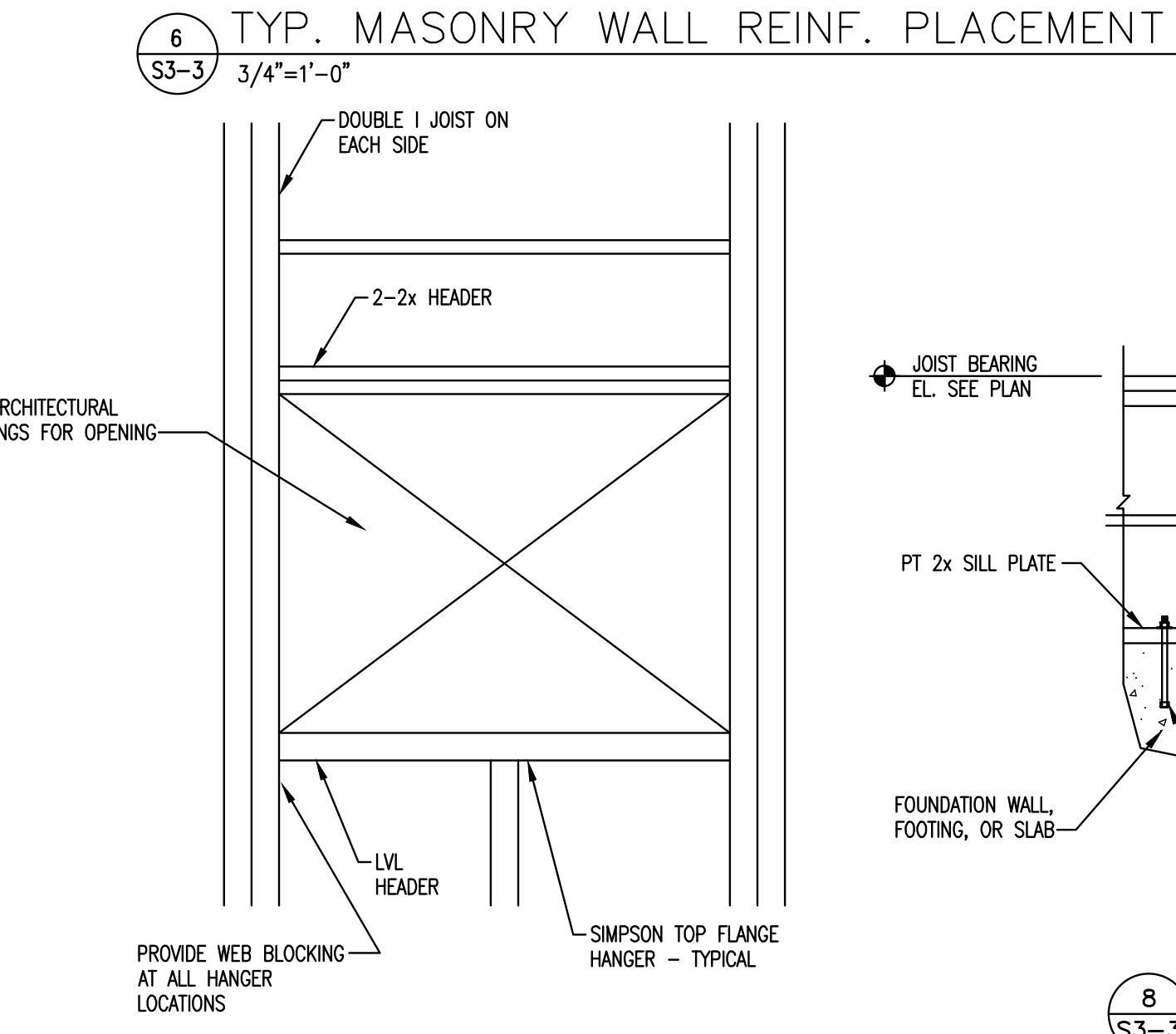
MASONRY REINF. SPLICE TABLE								REMARKS
BAR SIZE	6" BLOCK BAR @ CL	6" BLOCK BAR @ CL	6" BLOCK BAR @ EDGE	10" BLOCK BAR @ CL	10" BLOCK BAR @ EDGE	12" BLOCK BAR @ CL	12" BLOCK BAR @ EDGE	
#4	2'-1"	1'-9"	2'-7"	2'-1"	2'-5"	2'-1"	2'-4"	-
#5	3'-3"	2'-2"	4'-0"	2'-7"	3'-10"	2'-7"	3'-7"	-
#6	-	3'-6"	8'-2"	4'-4"	7'-8"	4'-4"	7'-3"	-
#7	-	5'-0"	-	5'-1"	10'-5"	5'-1"	9'-10"	-

NOTE: WHEN REQUIRED SPLICE LENGTH EXCEEDS 4'-0" USE HIGH LIFT GROUTING WITH NO SPLICES OR USE MECHANICAL TENSION SPLICES WITH LOW LIFT GROUTING.

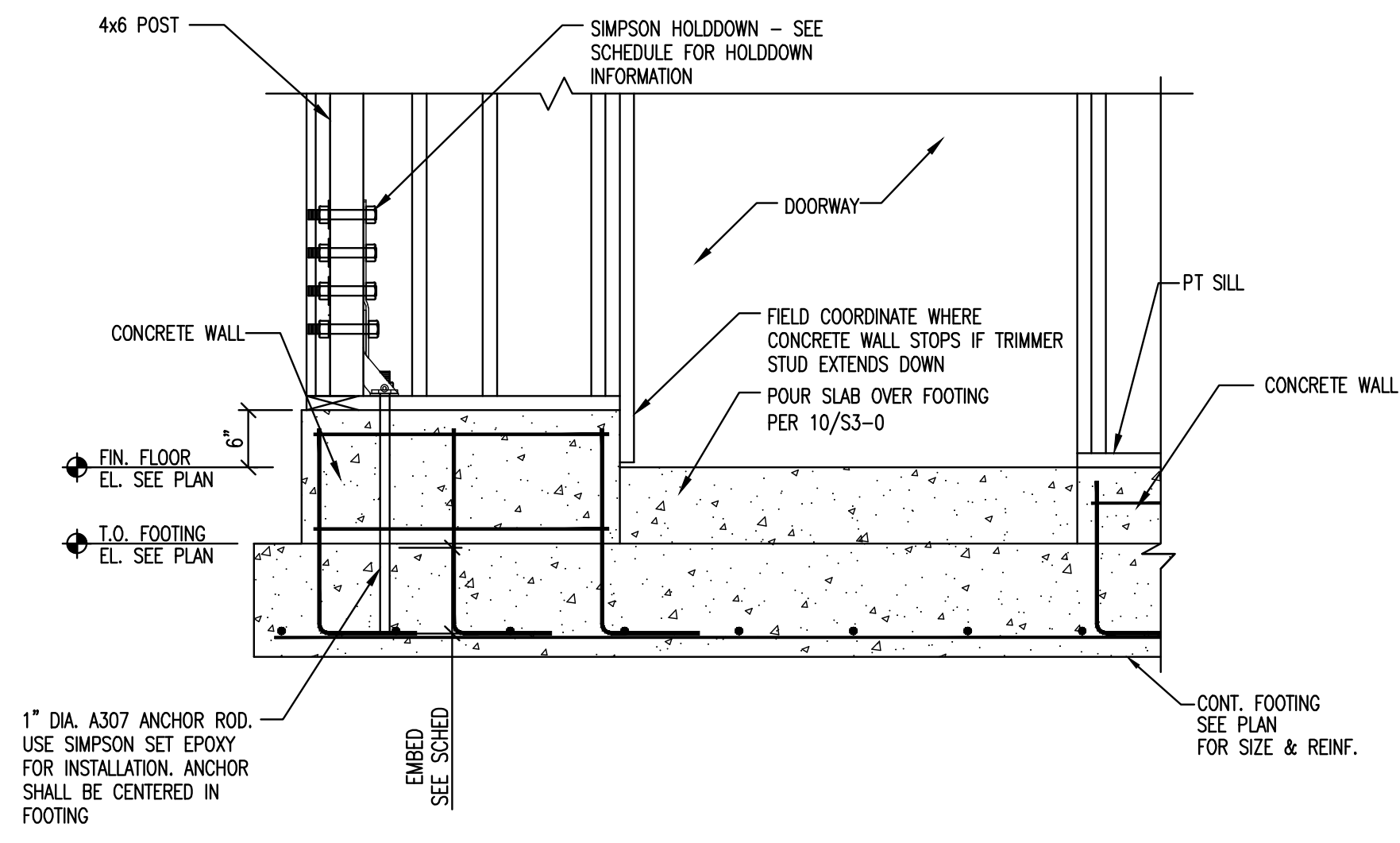
3 MASONRY REINFORCEMENT SPLICE & DEVELOPMENT LENGTH
S3-3 3/4"=1'-0"



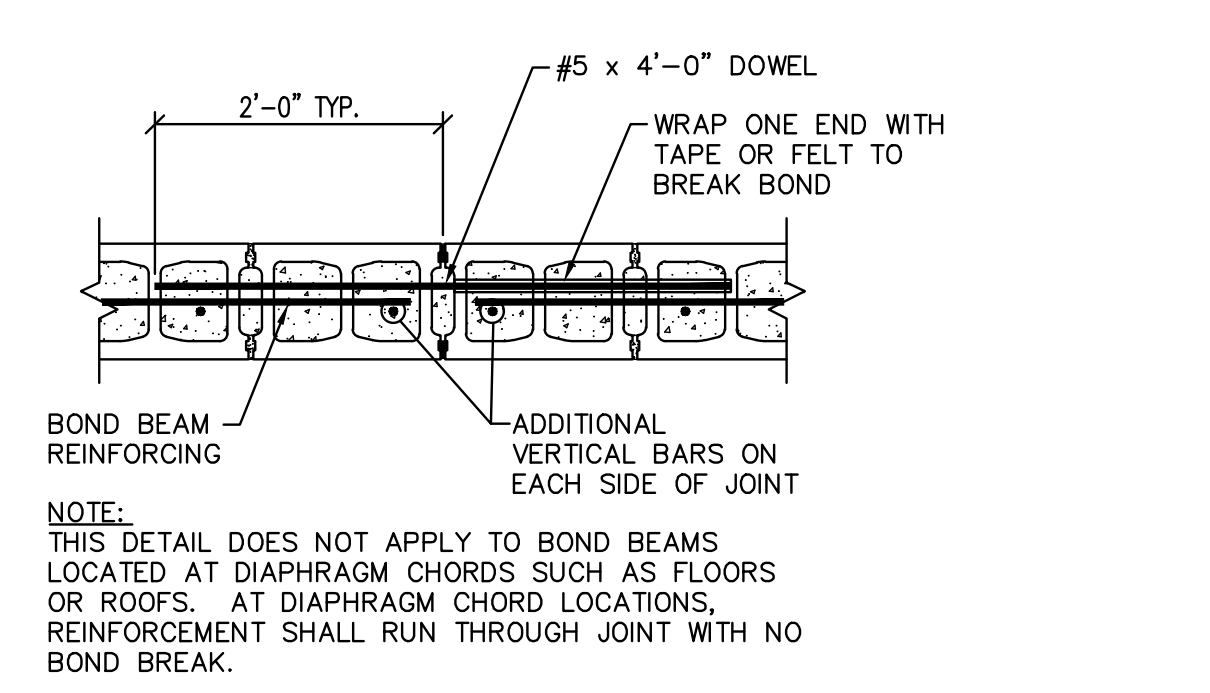
A BAR @ CENTER



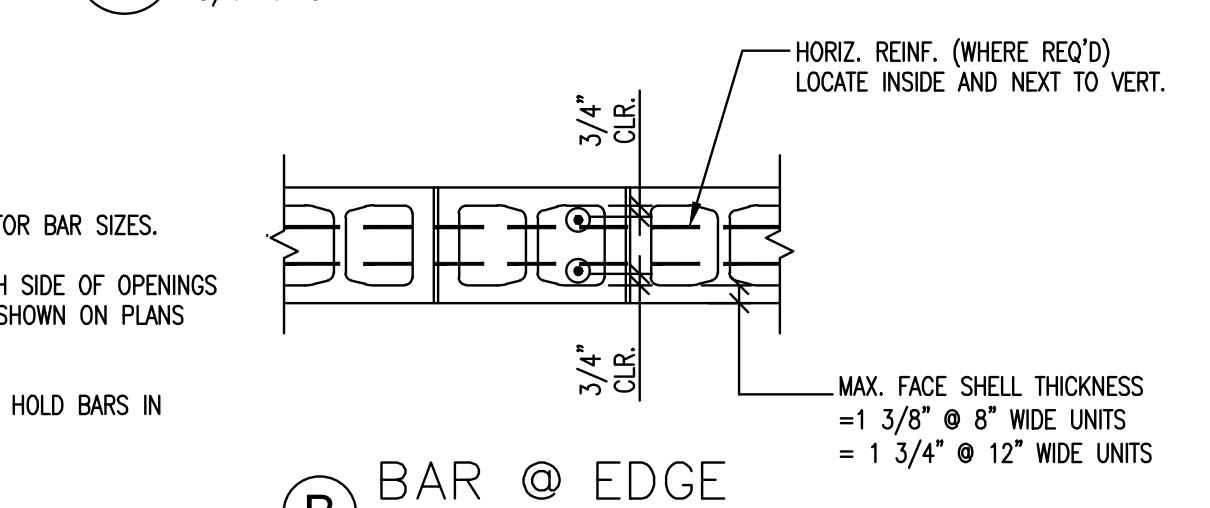
7 WOOD ROOF OPENING PLAN
S3-3 3/4" = 1'-0"



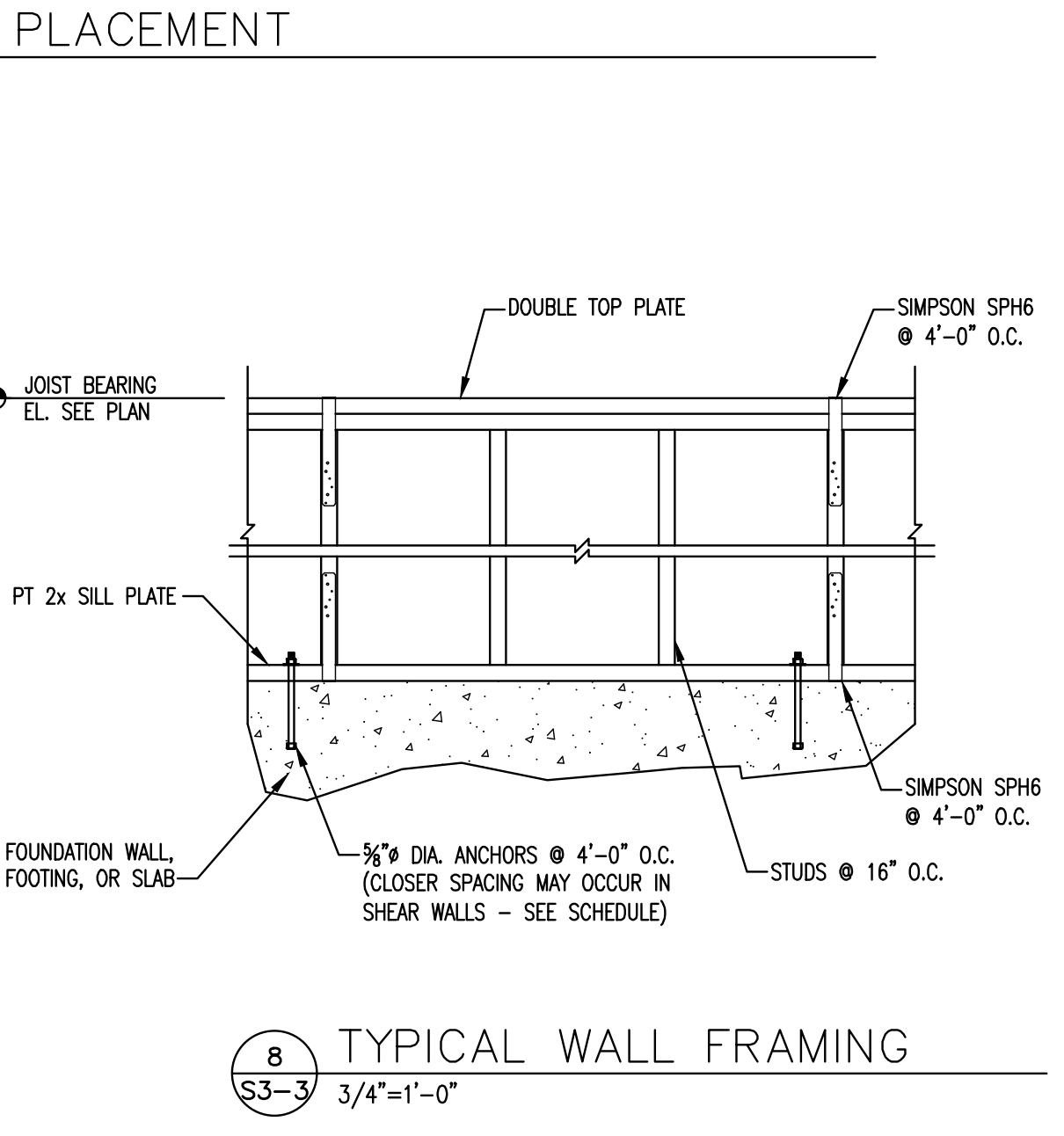
11 FOOTING SECTION
S3-3 NTS



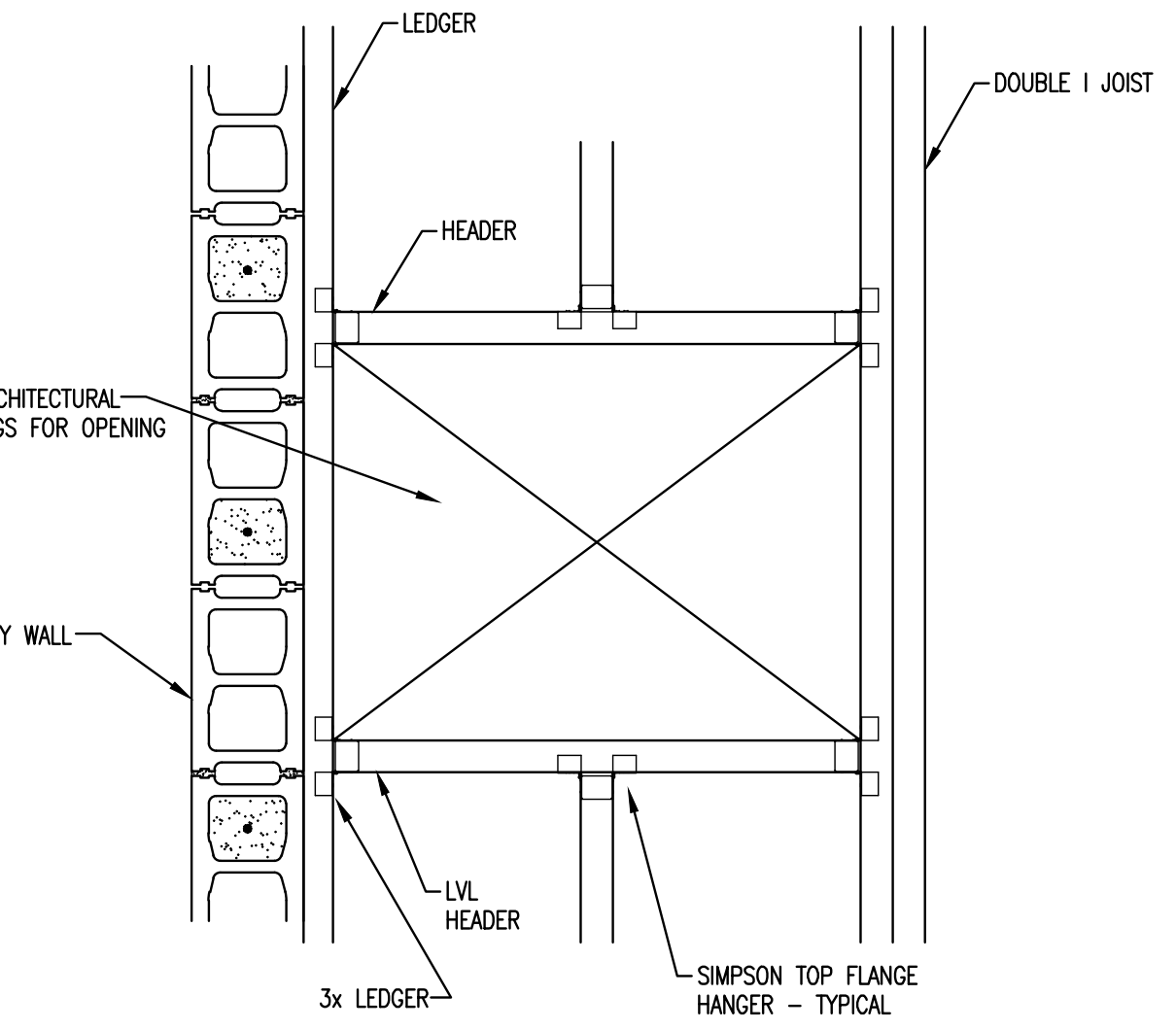
4 MASONRY CONTROL JOINT
S3-3 3/4"=1'-0"



B BAR @ EDGE



8 TYPICAL WALL FRAMING
S3-3 3/4"=1'-0"



12 ROOF ACCESS OPENING
S3-3 3/4" = 1'-0"

TEXAS COMPANY REGISTRATION F-11349

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NE-C24265

PE # 240226

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

STATE OF TEXAS
THOMAS A. SCHOTT
97072
LICENSED PROFESSIONAL ENGINEER
5/22/2024
ENGINEER OF RECORD

REVISION

DATE	COMMENTS
5/20/2024	RESUBMIT TO BLDG. DEPT.

ARC CODE V

ARC CODE V JOB #
CLIENT JOB #
DRAWN BY: SLM
CHECKED BY: TAS
DATE OF ISSUE: 01.21.24

45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

SHEET

S3-3

SECTIONS AND DETAILS

MECHANICAL GENERAL NOTES AND SPECIFICATIONS		
GENERAL CONSTRUCTION NOTES:		
<p>1. DRAWINGS ARE MEANT TO SHOW INTENT ONLY, NOT EXACT DETAIL. THESE DRAWINGS ARE A "BUILDERS SET" AND INTENDED FOR THE USE ON AN EXPERIENCED AND WELL QUALIFIED CONTRACTOR WHO MAY INTERPRET REASONABLE INFORMATION BASED ON EXPERIENCE COMMON IN THE INDUSTRY AND TRADES. QUALITY CONTROL WORK REQUIRED TO VERIFY THE FIELD VERIFY ALL CONDITIONS OF WORK. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER FOR CLARIFICATIONS BEFORE STARTING ANY WORK. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL ERRORS IN HIS WORK, INCLUDING THE LACK OF FIELD VERIFICATION OF EXISTING CONDITIONS.</p> <p>2. THE ARCHITECT AND PROFESSIONAL CONSULTANTS WILL NOT HAVE CONTROL OF AND WILL NOT BE RESPONSIBLE FOR THE CONSTRUCTION, METHODS, ACTIVITIES, SCHEDULE, SAFETY, PROTECTION OR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK ON THIS PROJECT OR FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK ON THIS SITE, NOR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE INTENT OF THE CONTRACT AND OR THESE CONSTRUCTION DOCUMENTS.</p>		
<p>BASIC REQUIREMENTS: MECHANICAL DESIGN SHALL CONFORM TO THE CURRENT ADOPTED INTERNATIONAL MECHANICAL CODE. PROJECT SHALL BE COORDINATED WITH THE EXISTING BUILDING SERVICES AND SHALL INCLUDE ALL ITEMS NECESSARY FOR COMPLETE AND FULL OPERATIONAL TENANT MECHANICAL SYSTEMS. MAKE CONNECTIONS TO AND EXTEND SYSTEMS INSTALLED BY OTHERS AND/OR FURNISHED BY OTHERS. PROVIDE ACCESSORIES AND INCIDENTAL ITEMS AS REQUIRED FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM WHETHER OR NOT SPECIFICALLY SPECIFIED AND/OR SHOWN ON THE PLANS.</p> <p>COORDINATE WITH OTHER TRADES FOR A COORDINATED INSTALLATION WITHIN THE AVAILABLE SPACE. WHERE CROWDED CONDITIONS EXIST, PREPARE COORDINATION DRAWINGS SHOWING ALL TRADE CONFLICTS AND SUBMIT TO ARCHITECT FOR APPROVAL AND DIRECTION PRIOR TO ROUGH-IN AND/OR INSTALLATION.</p> <p>RELOCATION OF OUTLETS AND/OR DEVICES MADE PRIOR TO ROUGH-IN SHALL BE DONE AT NO ADDITIONAL COST.</p> <p>ALL WORK SHALL BE PERFORMED BY PROPERLY LICENSED MECHANICS OR UNDER THEIR DIRECT SUPERVISION. ALL MATERIALS AND EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE APPLICABLE STANDARDS OF UL AND SHALL BEAR THE UL LABEL AS EVIDENCE THAT THE MATERIAL AND/OR EQUIPMENT MEETS THIS REQUIREMENT.</p> <p>INSTALL ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND DETAILS UNLESS OTHERWISE NOTED IN THESE PLANS. IF DISCREPANCIES EXIST CONTACT THE ENGINEER PRIOR TO ORDERING EQUIPMENT AND ROUGH-IN.</p> <p>ALL EQUIPMENT START UP AND TESTING SHALL BE PERFORMED BY THE EQUIPMENT MANUFACTURER TRAINED SERVICE TECHNICIAN.</p>		
<p>THE SUB-CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FAMILIARIZED WITH ALL REQUIREMENTS OF THE CONTRACT PRIOR TO SUBMISSION OF BID. THE SUB-CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY CONFLICTS PRIOR TO BID OR START OF INSTALLATION.</p> <p>THE SUB-CONTRACTOR SHALL ARRANGE FOR ALL INSPECTIONS WHEN THEY BECOME DUE, AND SHALL NOT COVER ANY WORK UNTIL APPROVED BY THE INSPECTION AUTHORITY. ANY AND ALL FEES ASSOCIATED WITH THE MECHANICAL INSPECTIONS SHALL BE PAID FOR BY THE SUB-CONTRACTOR IN ORDER TO DELIVER A COMPLETE AND FINISHED BUILDING, READY FOR OCCUPANCY AND 100% USAGE. THE SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE SUB-CONTRACTOR HAS FAMILIARIZED HIMSELF/HERSELF WITH THE PLANS AND BUILDING SITE. CLAIMS MADE SUBSEQUENT TO THE PROPOSAL FOR MATERIALS AND LABOR BECAUSE OF DIFFICULTIES ENCOUNTERED, WILL NOT BE ALLOWED IF THEY COULD HAVE BEEN FORESEEN HAD PROPER EXAMINATION BEEN MADE. ANY COSTS DUE TO THE LACK OF COOPERATION AMONG TRADES SHALL BE BORNE BY THE SUB-CONTRACTOR.</p> <p>THE INFORMATION PRESENTED ON THESE DRAWINGS IS DIAGRAMMATIC IN NATURE. IT DOES NOT NECESSARILY REPRESENT THE EXISTING CONDITIONS. PROVIDE A COMPLETE WORKING SET OF MATERIALS AND LABOR FOR COMPLETELY FINISHED AND OPERATIONAL SYSTEMS. REFER TO LATEST ARCHITECTURAL DRAWINGS</p>		
FOR: EXACT WALL LOCATIONS, DIMENSIONS, AND PLUMBING FIXTURE LOCATIONS AND REQUIREMENTS.		
<p>SUB-CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY ALTERATIONS REQUIRED BY THE OWNER, ARCHITECT, OR FIELD CONDITIONS.</p> <p>ALL EQUIPMENT SHALL BE NEW, SHALL COMPLY WITH APPLICABLE INDUSTRY STANDARDS, WITH SPECIFICATIONS ON DRAWINGS, AND ENERGY CODE COMPLIANCE CERTIFICATION AS ADOPTED BY THE STATE, AS WELL AS LOCAL JURISDICTIONAL BUILDING DEPARTMENT. SUBMIT DATA FOR APPROVAL PRIOR TO ORDERING EQUIPMENT. SUBMITTAL SHALL INCLUDE ENERGY CODE COMPLIANCE CERTIFICATION.</p> <p>SUB-CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT INCLUDING: FIXTURES SPECIFIED IN EQUIPMENT SCHEDULE ON DRAWINGS FOR REVIEW/APPROVAL (5) DAYS PRIOR TO BID. EQUIPMENT IS NOT TO BE ORDERED WITHOUT SUBMITTAL TO ARCHITECT/OWNER/ENGINEER.</p> <p>ALL SPACE HEATING SUPPLY AIR DUCTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE LATEST S.M.A.C.N.A. DUCT CONSTRUCTION STANDARDS AND BE INSULATED IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL JURISDICTIONAL ENERGY CONSERVATION STANDARDS AND THE LATEST EDITION INTERNATIONAL MECHANICAL CODE.</p> <p>ALL DUCT DIMENSIONS ARE CLEAR INSIDE DIMENSIONS. INCREASE LISTED DUCT SIZE TO ACCOMMODATE LINER.</p> <p>FLEX SHALL NOT EXCEED 8 FT. IN LENGTH AND SHALL BE TYPE "1" FACTORY DUCT. PROVIDE WITH 1 IN. EXTERNAL INSULATION IF MAIN SUPPLY DUCT IS INSULATED.</p> <p>ALL SUPPLY RUN-OUTS TO HAVE MANUALLY ADJUSTABLE VOLUME DAMPERS WITH ABILITY TO LOCK IN PLACE. THIS SUB-CONTRACTOR SHALL INCLUDE IN HIS/HER BID THE COMPLETE COST FOR THE ELECTRICAL CONTRACTOR TO INTERLOCK EXHAUST FANS AS REQUIRED BY EQUIPMENT SCHEDULE. THIS SUB-CONTRACTOR SHALL FIELD VERIFY 10 FT. MINIMUM CLEARANCE BETWEEN FRESH AIR INTAKE AND ALL VENTS OR EXHAUST OUTLETS.</p> <p>WALL THERMOSTATS FOR HEATING/COOLING UNITS TO BE AUTOMATIC CHANGEOVER TYPE AND INSTALLED 48 IN. ABOVE FINISHED FLOOR. HEATING/COOLING UNITS SHALL MAINTAIN MINIMUM OUTSIDE AIR AS SHOWN ON SCHEDULE OR SHOWN IN FRESH AIR CALCULATIONS.</p> <p>ALL FURNACES OR ROOFTOP UNITS SUPPLYING MORE THAN 2000 CFM OF AIR SHALL BE EQUIPPED WITH A SMOKE DETECTOR. IN THE MAIN FURNACE AIR DUCT WHICH WILL SHUT THE POWER OFF TO THE UNIT WHEN SMOKE IS DETECTED. THIS SMOKE DETECTOR SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR AND WIRED BY THE MECHANICAL CONTRACTOR. IN BUILDINGS WHERE FIRE DETECTION OR ALARM SYSTEMS ARE PROVIDED, THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR AND SHALL BE SUPERVISED BY FIRE ALARM SYSTEM. SEE LATEST EDITION INTERNATIONAL MECHANICAL CODE FOR ADDITIONAL REQUIREMENTS. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL REMOTE TEST SWITCH AND INDICATING LIGHT AT CEILING LOCATION NEAR FURNACE/ROOFTOP LOCATION.</p> <p>MECHANICAL CONTRACTOR IS RESPONSIBLE TO HAVE ROOFTOP UNIT MANUFACTURERS TECHNICIAN START ALL ROOFTOP UNITS. PROVIDE WRITTEN REPORT FROM MANUFACTURER FOR START-UP COMMISSIONING.</p>		
DUCTWORK		
<p>A. DUCTWORK SHALL BE GALVANIZED SHEET METAL INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. INSTALL TURNING VANES IN ALL ELBOWS, ALL SPIN-IN FITTINGS AND RUNOUTS TO ALL REGISTERS, RETURN, OR EXHAUST TERMINAL. SHALL BE PROVIDED WITH MANUAL VOLUME DAMPERS.</p> <p>B. ALL DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS. THE DUCT PRESSURE CLASS SHALL BE AS NOTED ON PLANS OR CORRESPONDING TO THE MAXIMUM EQUIPMENT ESP ON EACH SYSTEM. THE DUCTWORK SHALL BE SEALED TIGHT. LEAKAGE MAY NOT EXCEED 10% OF DESIGN AIRFLOW AT DESIGN PRESSURE. FOR SMOKE CONTROL SYSTEMS THE DUCT MUST BE TESTED AT 1.5 TIMES ITS DESIGN PRESSURE AND LEAKAGE MAY NOT EXCEED 5% OF DESIGN AIRFLOW.</p> <p>C. ALL EXPOSED ROOF DUCTWORK SHALL BE SPIRAL DUCT. NO JOISTS OR CONNECTIONS SHALL HAVE</p>		
<p>ANY VISIBLE SEALANT FROM THE EXTERIOR SO THE DUCTWORK HAS A CLEAN AND WORKMAN LIKE APPEARANCE.</p> <p>D. DUCT SIZES GIVEN ARE NET INSIDE FREE AREA.</p> <p>E. EQUIPMENT FLEXIBLE DUCTWORK CONNECTION NOT TO EXCEED 10 INCHES IN LENGTH WITH A MAX. 25 FLARE/50 SMOKE INDEX.</p> <p>F. FLEXIBLE DUCTWORK TO AIR DEVICES SHALL HAVE A MAXIMUM STRETCHED LENGTH OF 6 FEET. SUITABLE FOR RETURN AIR PLENUM.</p> <p>G. ALL EXHAUST TERMINALS MUST BE 3'-0" AWAY FROM IN ELEVATION FROM OPERABLE PORTION OF WINDOW AND DOORS. MC TO OFFSET AS REQUIRED.</p> <p>H. ALL DIRECT VENT VENT TERMINALS MUST BE 4'-0" AWAY IN ELEVATION HORIZONTALLY OR BELOW AND AT LEAST 1'-0" ABOVE ANY OPERABLE PORTION OF A WINDOW OR DOOR. MC TO OFFSET AS REQUIRED.</p>		
INSULATION		
<p>A. ALL INSULATING VALUES ARE TO CONFORM TO THE LATEST VERSION OF THE INTERNATIONAL ENERGY CODE.</p> <p>B. ALL ROUND CONCEALED RIGID SUPPLY DUCTWORK SHALL BE EXTERNALLY WRAPPED WITH NOMINAL 1-1/2" THICK (MINIMUM R-6.0) FIBER GLASS INSULATION WITH FIBER RETARDANT VAPOR BARRIER.</p> <p>C. OUTDOOR AIR INTAKE DUCT SHALL BE EXTERNALLY WRAPPED WITH NOMINAL 1-1/2" THICK (MINIMUM R-12.0) FIBER GLASS INSULATION WITH FIBER RETARDANT VAPOR BARRIER.</p> <p>D. WHEN LOCATED IN UNCONDITIONED SPACES ALL RECTANGULAR DUCTWORK SHALL BE LINED WITH 1" THICK 2 POUND DENSITY MINIMUM R-6.0 FIBER GLASS ACOUSTIC DUCT LINER. ALL DUCTWORK EXPOSED TO OUTDOOR AMBIENT TYPE CONDITIONS (UNCONDITIONED ATTICS, OUTSIDE AIR DUCTS, ETC) SHALL BE EXTERNALLY WRAPPED OR INTERNALLY LINED IN 2 - 2.5" NOMINAL INSULATION (MINIMUM R-12.0). ALL OUTDOOR AIR INTAKE DUCTWORK SHALL HAVE 2 - 2.5" DUCTLINER (MINIMUM R-12.0) AND THE DUCT BE SEALED WEATHERPROOF PER SMACNA GUIDELINES. RECTANGULAR DUCT WORK IN RETURN AIR PLENUM SHALL BE LINED WITH 1/2" THICK 2 POUND DENSITY (MINIMUM R2.1) MAT-LACED ACOUSTIC DUCT LINER.</p>		
AIR INLETS AND OUTLETS		
<p>A. FURNISH AND INSTALL ALL AIR INLETS AND OUTLETS AS SCHEDULED ON THE PLANS.</p> <p>B. OUTLETS SHALL HAVE A WHITE BAKED ENAMEL FINISH TO MATCH CEILING OR WALL.</p>		
EXHAUST FANS		
<p>A. FURNISH AND INSTALL CENTRIFUGAL EXHAUST FANS AS SCHEDULED ON THE PLANS.</p> <p>B. FURNISH AND INSTALL ROOF CURBS AND BACKRAFT DAMPERS.</p> <p>C. FURNISH AND INSTALL UNITS COMPLETE WITH ALL OPERATIONAL AND SAFETY CONTROL NECESSARY FOR PROPER OPERATION.</p>		
ROOFTOP HVAC UNITS		
<p>A. FURNISH AND INSTALL ROOF TOP PACKAGED ELECTRIC A/C UNITS WITH NATURAL GAS HEATING SECTIONS AS SCHEDULED ON THE PLANS. ACCEPTABLE MANUFACTURERS ARE TRANE, CARRIER, CARRIER, OR YORK. ANY SUBSTITUTED MODELS MUST BE EQUAL IN CONTROLS, ACCESSORIES, AND PERFORMANCE TO SCHEDULED MODELS.</p> <p>B. FURNISH AND INSTALL UNITS COMPLETE WITH ALL OPERATIONAL AND SAFETY CONTROLS FOR SATISFACTORY OPERATION. PROVIDE PHASE REVERSAL PROTECTION ON ANY UNITS WITH SCROLL COMPRESSORS.</p> <p>C. FURNISH PROGRAMMABLE SPACE THERMOSTAT WITH NIGHT SETBACK OPERATION OR DIGITAL CONTROL SYSTEM FOR VARY APPLICATIONS AS APPLICABLE. MOUNT AT 44-2 INCHES AFF.</p> <p>D. FURNISH ALL UNITS WITH 100% OUTDOOR AIR ECONOMIZER PACKAGE UNLESS OTHERWISE NOTED.</p> <p>E. FURNISH ALL UNITS WITH 14-INCH ROOF CURBS.</p>		
RADIANT HEATING UNITS		
<p>A. FURNISH AND INSTALL NATURAL GAS FIRED RADIANT HEATING UNITS AND ASSOCIATED ACCESSORIES AS SCHEDULED ON THE PLANS.</p> <p>B. UNITS SHALL BE COMPLETE WITH PLUGS FOR ELECTRICAL CONNECTION, SPACE THERMOSTATS, TUBE EXTENSIONS, FLUES, AND ROOF CAPS AS REQUIRED. UNITS SHALL BE UL AND ASA RATED.</p>		

SYSTEM OR UNIT #	ROOM NAME	ZONE FLOOR AREA (SQ.FT.) Az	OUTDOOR AIRFLOW REQUIRED PER PERSON (CFM/PERSON) Rp	OUTDOOR AIRFLOW REQUIRED PER PERSON (CFM/ PERSON) Rs	ZONE OCCUPANT DENSITY (PP/L1000 SQ.FT.) Vp	ZONE POPULATION (PEOPLE) Pz	BREATHING OUTDOOR AIR FLOW (CFM) Vbz	ZONE AIR DISTRIBUTION EFFECTIVENESS Ez	REQUIRED ZONE OUTDOOR AIR FLOW (CFM) Voz (CFM)
RTU-1	SALES 101	530	7.5	0.12	15	8	134	1	155
	COFFEE 102	75	5	0.06	5	0	5	0.8	6
	OFFICE 103	100	5	0.06	5	1	11	0.8	14
	BREAK 107	114	5	0.06	5	1	12	0.8	15
	INVENTORY 108	500		.12 CFM/SQ.FT.					60
								TOTAL OUTSIDE AIR REQUIRED	240
							TOTAL OUTSIDE AIR PROVIDED	300	

PLAN MARK	MFR	MODEL NO.	LOCATION	STYLE	CFM	ESP (IN)	SONES	WEIGHT LBS	SPD	ELECTRICAL DATA				REMARKS
										VOLT	PH	HP	WATTS	
EF-1	ACME	VQ0150	TOILET	CEILING	75	0.25	1.1	25	1	115	1	-	100	1, 2
EF-2	ACME	VQ0150	TOILET	CEILING	75	0.25	1.1	25	1	115	1	-	100	1, 2
EF-3	GREENHECK	SPE 2H40-6	SIDEWALL SERVICE AREA	WALL	3289	34	23	166	1	115	1	1/2	9.8 AMPS	1, 2
EF-4	ACME	PRN 060	VEHICLE PIT VENT.	ROOF	80	.35	5	100	1	115	1	1/10	-	1, 8

1. SELECTION BASED AT ALTITUDE
2. INTERLOCK WITH LIGHT SWITCH
3. PROVIDE WALL MOUNTED SENSOR CONNECTED BY E.C.
4. PROVIDE VIBRATION ISOLATORS
5. FURNISH WITH WALL COLLAR (# C-20), MOTORIZED DAMPER & WEATHERHOOD

6. CO SENSOR ALARM PER PLANS
7. DAMPERS OPEN AT 50 PPM & FAN ENRGIZES SHUTDOWN OPERATION - REVERSE SEQUENCE
8. PROVIDE STARTER SET BY MC, USED FOR DAMPER MOTOR, THERMOSTAT AND CO SENSOR CONTROL.
9. FAN SHALL RUN CONTINUOUSLY DURING BUSINESS HOURS.

PLAN MARK	MFR	MODEL NO.	LOCATION	STYLE	CFM	ESP (IN)	SPD	ELECTRICAL DATA				REMARKS
								VOLT	PH	HP	WATTS	
F-1	DAYTON	2RDZ9	CEILING/WALL	PROP	7450/3450	25	1	115	1	1/4	-	1 - 5
1. SELECTION BASED AT ALTITUDE												
2. PROVIDE SOFT START												
3. OSCILLATING FAN												
4. STRUCTURAL AND MOUNTING EQ. PER MANUFACTURER												
5. OSCILLATING FAN: MEANT FOR AIR MOVEMENT ONLY												

PLAN MARK	MFR	MODEL NO.	FUEL	INPUT MBTUH	OUTPUT MBTUH	CFM	HP	VOLT	PH	FLUE SIZE (IN)	REMARKS
GUH-1	MODINE	PDP175	NG	175	143	2725	1/2	115	1	5	1, 2

1. REFERS TO MODINE. PERFORMANCE REFERS TO LOCAL ALTITUDE. 82% EFFICIENCY GAS HEATING UNIT.

2. PROVIDE REMOTE TSTAT WITH SUMMER/WINTER SWITCH.

PLAN MARK	MFR	MODEL NO.	CFM	MIN OA CFM	BLWR HP	ESP (IN)	GAS NAT/PROP	HEATING CAPACITY		NET COOLING CAPACITY								REFRIG (R410A / R22)	EFFICIENCY (STD / HI)	SEER/EER RATING	WEIGHT LBS	ELECTRICAL DATA			REMARKS				
								INPUT MBH (SL)	OUTPUT MBH (ALT)	TOTAL MBH	SENS MBH	EADB (F)	EAWB (F)	LADB (F)	LAWB (F)	VOLT	PH					FLA (LG MTR)	MCA	MOCP					
RTU-1	CARRIER	48GCFM06K1A3	1990	300	2	0.40	NG	130	106	63.3	113.4	81%	2	60.53	46.61	79.3	65.6	57.2	55.7	R-410A	STD	16 SEER	900	208	1	31.3	37	50	1 - 5

1. REFERS TO COOLING CAPACITIES BASED ON 95F OADB, 80F EADB, 61F EAWB @ ELEV, AND 100F CONDENSING TEMPERATURE
 2. PROVIDE 14" ROOF CURB, BELT DRIVE, HAIL GUARDS, MICROPROCESSOR CONTROL, OPTIONAL DISCONNECT, AND 100% ECONOMIZER W/ BARO RELIEF.
 3. PROVIDE OPTIONAL CONVENIENCE OUTLET
 4. SEER AND EER RATING ARE RATED AT ARI CONDITIONS AND IN ACCORDANCE WITH DOE TEST PROCEDURES.
 5. PROVIDE 7-DAY, 24 HOUR PROGRAMMABLE THERMOSTAT.
 6. PROVIDE DUCT SMOKE DETECTOR AS REQUIRED.
 CONTRACTOR TO PROVIDE PROPANE OFICIES FOR UNIT TO UTILIZE LPG ON SITE

(D)	DEMO
(E)	EXISTING
(N)	NEW
AAV	AIR ADMITTANCE VALVE
AD	AREA DRAIN
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
B	BOILER
B	BASEBOARD
BF	BOOSTER FAN
BFP	BACKFLOW PREVENTER
BT	BATH TUB
BV	BALL VALVE
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CO	CLEANOUT
COTG	CLEANOUT TO GRADE
CU	CONDENSING UNIT
CV	CHECK VALVE
CUH	CABINET UNIT HEATER
DCW	DOMESTIC COLD WATER
DF	DRINKING FOUNTAIN
DHW	DOMESTIC HOT WATER
DSN	DOWNSPOT NOZZLE
EC	ELECTRICAL CONTRACTOR
ECO	END OF LINE CLEANOUT
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EWC	ELECTRIC WATER COOLER
EW	ELECTRIC WATER HEATER
FURN	FURNACE
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FS	FLOOR SINK
G	GAS
GC	GENERAL CONTRACTOR
GM	GAS METER
QH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPH	GAS UNIT HEATER
GW	GROUSE WASTE
GW	GAS WATER HEATER
HB	HOSE BIB
HP	HEAT PUMP
HX	HEAT EXCHANGER
IM	ICE MAKER BOX
LV	LAVATORY
LAU	LAUNDRY SINK
MAU	MAKE-UP AIR UNIT
MC	MECHANICAL CONTRACTOR
MF	MEASURE FLOW
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NC	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
ORD	OVER FLOW ROOF DRAIN
P	PUMP
PC	PLUMBING CONTRACTOR
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
R	RETURN AIR
RA	RETURN AIR REGISTER
RD	ROOF DRAIN
RH	RADIANT HEATER
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAR	SUPPLY AIR REGISTER
SF	SUPPLY FAN
SFT	SERIES FAN TERMINAL
SH	SHOWER
SK	SINK
SOI	SAND/OIL INTERCEPTOR
SS	SERVICE SINK
T&P	TEMPERATURE & PRESSURE
TD	TRENCH DRAIN
TYR	TYPICAL
UR	URINAL
VAV	VARIABLE AIR VOLUME
VV	VARI TRAC
WB	WASHER BOX
WCO	WALL CLEANOUT
WH	WALL HYDRANT

	PROVIDE TURNING VANES AT ALL CORNER BENDS IN ACCORDANCE WITH S.M.A.C.N.A. LOW VELOCITY DUCT MANUAL.
	TYPICAL DUCT TAKE-OFF WITH MANUAL VOLUME DAMPER. MARK DAMPER POSITION AFTER AIR BALANCE.
	THERMOSTAT SHALL BE MOUNTED PER OWNER'S DIRECTION. DO NOT MOUNT IN DIRECT SUNLIGHT. THERMOSTAT SHALL BE MOUNTED NEAR RETURN AIR DUCT AT 48" AFF.
	MANUAL BALANCING DAMPER - PROVIDE WHERE SHOWN, AT ALL RUN-OUTS TO AIR OUTLETS, AND AT ALL MAIN DUCT SPLITS. DAMPERS SHALL BE "YOUNG REGULATOR CO" MODEL 820 OR EQUAL.
	POINT OF CONNECTION - NEW TO EXISTING
	INDICATES UNDERCUT DOOR FOR RETURN AIR
	SUPPLY UP
	SUPPLY DOWN
	RETURN UP
	RETURN DOWN
	EXHAUST UP
	EXHAUST DN
	FLEXIBLE DUCT
	DEMO
	MANUAL VOLUME DAMPER
	CEILING SUPPLY DIFFUSERS SEE SCHEDULES
	CEILING RETURN AIR REGISTER SEE SCHEDULES
	SIDEWALL SUPPLY/RETURN REGISTER, SEE SCHEDULES
	FIRE DAMPER
	SMOKE DAMPER
	FIRE SMOKE DAMPER
	EQUIPMENT TAG
	(POC) POINT OF CONNECTION
	ROOFTOP UNIT
	FURNACE
	CONDENSING UNIT
	PARALLEL FAN POWERED VAV BOX
	VAV/WT BOX

JURISDICTION:	HARKER HEIGHTS TX
MECHANICAL CODE:	2021 IMC
ENERGY CODE:	2021 IECC
LOCAL ADDENDUMS:	YES
WINTER DESIGN DB:	12 F
SUMMER DESIGN TEMP DB / WB	105/79 F
INDOOR HEATING SET POINT:	72 F
INDOOR COOLING SET POINT:	75 F
ROOF R-VALUE:	R40 (VERIFY)
WALL R-VALUE:	R19
ELEVATION:	597 FT
BUILDING TOTAL AREA:	4897 SQ.FT.

SHEET #	SHEET TITLE
M0.1	MECHANICAL SPECS, SCHEDULES AND LEGEND
M0.2	SEQUENCE OF OPERATION
M1.1	MECHANICAL PLAN
M1.2	MECHANICAL ROOF PLAN
M2.1	MECHANICAL DETAILS
M3.0	MECHANICAL COMCHECK
M3.1	MECHANICAL COMCHECK

THE MECHANICAL CONTRACTOR SHALL EMPLOY THE SERVICES OF AN INDEPENDENT TEST AND BALANCE CONTRACTOR TO BALANCE THE HVAC SYSTEMS IN ACCORDANCE WITH THE DRAWINGS.

HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH THE LATEST NEBB PROCEDURAL STANDARDS. THE BALANCING CONTRACTOR SHALL HAVE AT LEAST (3) THREE YEARS OF EXPERIENCE IN TESTING AND BALANCING.

THE BALANCING REPORT SHALL CONTAIN ALL INFORMATION REQUIRED BY NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING. THE REPORT SHALL INCLUDE, BUT MAY NOT BE LIMITED TO THE FOLLOWING:

A COMPLETE LIST OF BALANCING INSTRUMENTS AND THEIR LATEST CALIBRATION DATES IS TO BE INCLUDED IN THE FINAL REPORT.

BLOWER: MOTOR HP, VOLTAGE, AMPERAGE (NAMEPLATE AND ACTUAL)
RPM, BELT MAKE/MODEL, SHEAVE MAKE/MODEL.

UNIT: MAKE/MODEL/SERIAL NUMBER, FILTER TYPE/SIZE/QUANTITY,
FINAL BALANCED DAMPER POSITIONS.

AIR INLETS AND OUTLETS: DESIGN/PRELIMINARY/FINAL CFM'S
(EXCLUDES RETURN GRILLES).

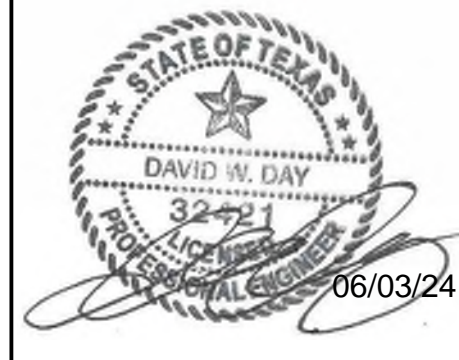
ALL MANUAL SINGLE BLADE DAMPERS SHALL BE SECURED IN THEIR FINAL BALANCED POSITIONS WITH A SHEET METAL SCREW THRU THE DAMPER HANDLE.

ALL COMPONENTS SHALL BE BALANCED TO WITHIN +/- 10% OF DESIGN CFM REQUIREMENTS.

PROJ # 241088

102 Poncho St.
P.O. Box 1640 Anahuac, TX 77514
Telephone 713-927-4470

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	02/28/24	PERMIT
A	06/03/24	CITY COMMENTS

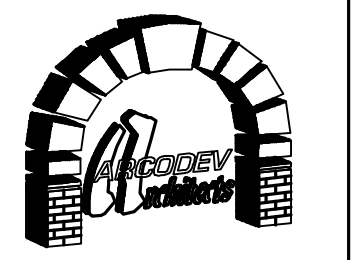
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CLIENTJOB #: _____

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CHECKED BY: LRP

DATE OF ISSUE: 06/03/24

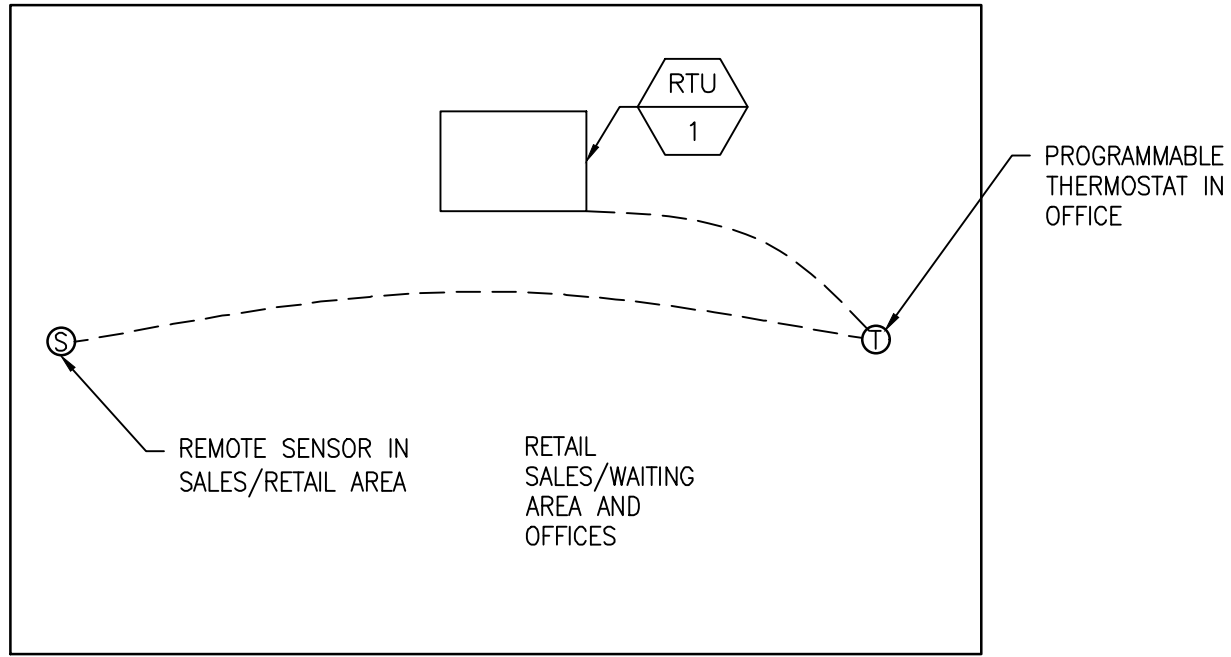


45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881-8925

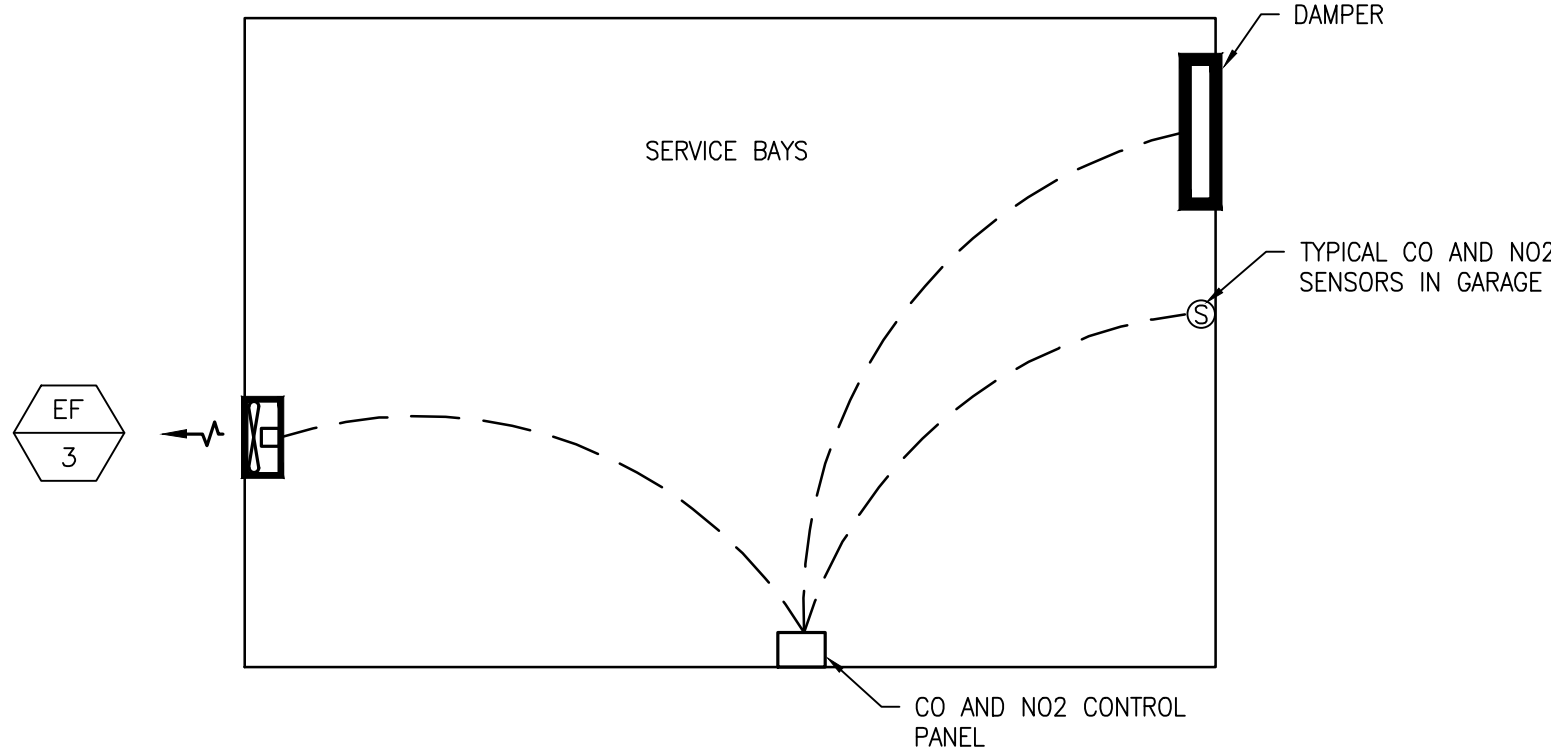
SHEET

MO.1

MECHANICAL SPECS, SCHEDULES AND LEGEND



OFFICE/RETAIL SALES ROOFTOP UNIT
NOT TO SCALE



SEQUENCE OF OPERATION FOR SERVICE BAYS:

EF-3 SHALL REMAIN OFF AND L-1 SHALL REMAIN CLOSED UNLESS A CALL FOR CARBON MONOXIDE OR NITROGEN DIOXIDE VENTING IS INITIATED.

VENTILATION SHALL BE INITIATED ACCORDING TO THE FOLLOWING SCHEDULE:

STAGE 1: LOW ALARM (25 PPM CO) (0.5 PPM NO2), MOTORIZED DAMPER FOR INTAKE LOUVER SHALL OPEN.

STAGE 2: MEDIUM ALARM (75 PPM CO) (1 PPM NO2), MOTORIZED DAMPER SHALL BE FULLY OPEN AND EXHAUST FAN SHALL BE ENERGIZED.

THE FAN SHALL OPERATE WHEN CARBON MONOXIDE LEVELS FALL BELOW 25 PPM OR NITROGEN DIOXIDE LEVELS FALL BELOW 0.5 PPM. EF SHALL TIME OFF AND L-1 SHALL CLOSE.

GARAGE TRANSFER FANS SHALL REMAIN ON CONSTANT DUTY.

GARAGE GAS DETECTION SPECIFICATIONS

- A. THE GARAGE GAS DETECTION SYSTEM SHALL HAVE A DEDICATED MICROPROCESSOR-BASED CONTROLLER THAT SHALL MONITOR AND CONTROL THE GARAGE GAS DETECTION SYSTEM IN A STAND-ALONE MODE OR AS A PART OF THE BUILDING AUTOMATION SYSTEM. THE CONTROLLER SHALL HAVE A LOCAL DISPLAY.
- B. THE SYSTEM SHALL CONSIST OF EXHAUST FANS, NATURAL MAKEUP AIR AND MULTIPLE GAS DETECTION SENSORS LOCATED PER SUPPLIER REQUIREMENTS AND RECOMMENDATIONS. THE PLANS ARE ONLY A GUIDE, ALL REQUIRED SENSOR LOCATIONS SHALL BE INCLUDED IN THE BID.
- C. THE SENSORS SHALL BE ONE OF THE FOLLOWING TYPES:
1. MACURCO CM21A
 2. VULCAIN Q2
 3. VERIS G SERIES
 4. MSA Z GUARD
- EACH SENSOR SHALL HAVE AN INTEGRAL ALARM LIGHT FOR 25, 50 AND 200 PPM CO AS A MINIMUM. AS AN ALTERNATE, A SERIES OF LIGHTS SHALL BE MOUNTED AT EACH SENSOR FOR THIS PURPOSE.
- D. THE CONTROLLER SHALL MONITOR THE FAN STATUS AND IF THE FAN FAILS TO START AN AUDIBLE ALARM SHALL BE SOUNDED IN THE GARAGE TO ANNUNCIATE THE FAILURE. THE FAILURE SHALL AUTOMATICALLY RESET WHEN FAN STATUS IS ESTABLISHED.
- E. THE SYSTEM SHALL MONITOR ALL OF THE GAS DETECTION SENSORS IN THE GARAGE AND DETERMINE THE MAXIMUM VALUE OF ALL OF THE SENSORS. IF THE MAXIMUM VALUE EXCEEDS THE MINIMUM SETPOINT (THRESHOLD 1) (ADJ.) THE EXHAUST FANS SHALL OPERATE. WHEN THE MAXIMUM VALUE DROPS BELOW 80% OF MINIMUM SETPOINT (THRESHOLD 1) (ADJ.) THE FAN SHALL BE DISABLED. SYSTEM TO EXHAUST A MINIMUM OF 0.75 CFM/SQFT AT HIGH SPEED.
- F. IF ANY SENSOR FAILS THE FAN SHALL OPERATE CONTINUOUSLY AND THE AUDIBLE ALARM SHALL BE SOUNDED. IF ANY SENSOR READING RISES ABOVE 200 PPM CO OR 2.0 PPM NO2, THE AUDIBLE ALARM SHALL BE SOUNDED.
- G. POINTS LIST:
1. AIP CARBON MONOXIDE SENSORS (AS REQUIRED)
 2. AIP NITROGEN DIOXIDE SENSORS (AS REQUIRED)
 3. AOP FAN ANALOG SPEED REQUEST
 4. BIP FAN STATUS
 5. BOP ALARM LIGHT, HORN WITH SILENCE BUTTON
 6. ALM FAN FAILURE
 7. STPT FAN ENABLE LEVEL
 8. STPT FAN DISABLE LEVEL

END

SERVICE BAY EXHAUST FAN/INTAKE LOUVER
NOT TO SCALE

BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

ARCHITECT OF RECORD

REVISION	DATE	COMMENTS	
		PERMIT	CITY COMMENTS
1	02/28/24		
2	06/03/24		
3			
4			
5			
6			
7			
8			

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DATE OF ISSUE: 06/03/24

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LITTLETON, CO 80123
VOICE: 303.881.8825

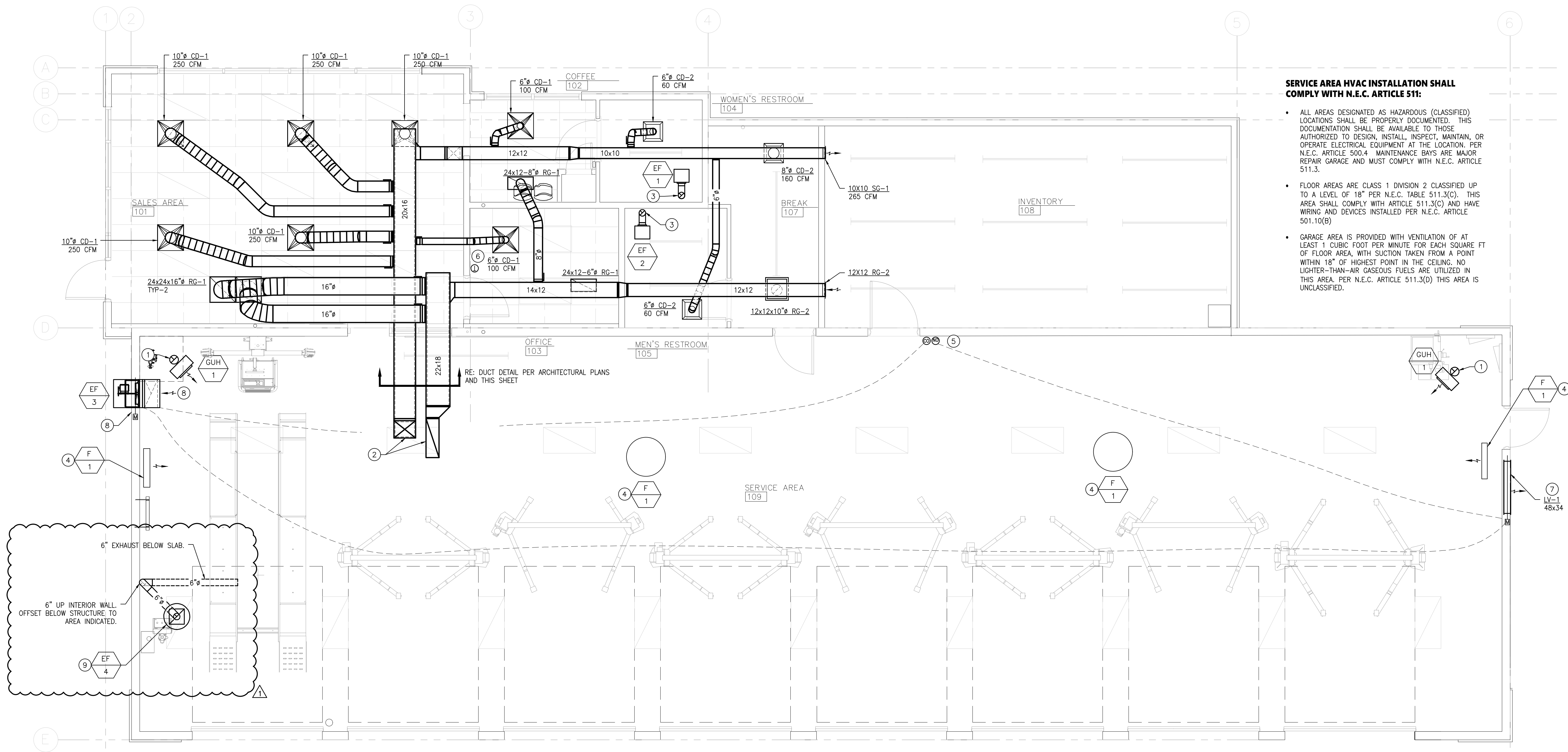
MO.2

MECHANICAL SEQUENCE
OF OPERATIONS

PROJ # 241088

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102 Poncho St.
P.O. Box 1640 Anahuac, TX 77514
Telephone 713-927-4470

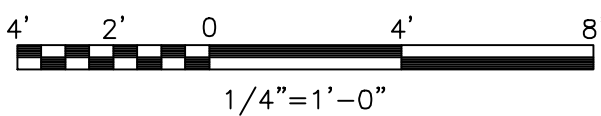


SERVICE AREA HVAC INSTALLATION SHALL COMPLY WITH N.E.C. ARTICLE 511:

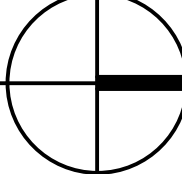
- ALL AREAS DESIGNATED AS HAZARDOUS (CLASSIFIED) LOCATIONS SHALL BE PROPERLY DOCUMENTED. THIS DOCUMENTATION SHALL BE AVAILABLE TO THOSE AUTHORIZED TO DESIGN, INSTALL, INSPECT, MAINTAIN, OR OPERATE ELECTRICAL EQUIPMENT AT THE LOCATION. PER N.E.C. ARTICLE 500.4 MAINTENANCE BAYS ARE MAJOR REPAIR GARAGE AND MUST COMPLY WITH N.E.C. ARTICLE 511.3.
- FLOOR AREAS ARE CLASS 1 DIVISION 2 CLASSIFIED UP TO A LEVEL OF 18" PER N.E.C. TABLE 511.3(C). THIS AREA SHALL COMPLY WITH ARTICLE 511.3(C) AND HAVE WIRING AND DEVICES INSTALLED PER N.E.C. ARTICLE 501.10(B).
- GARAGE AREA IS PROVIDED WITH VENTILATION OF AT LEAST 1 CUBIC FOOT PER MINUTE FOR EACH SQUARE FT OF FLOOR AREA, WITH SUCTION TAKEN FROM A POINT WITHIN 18" OF HIGHEST POINT IN THE CEILING. NO LIGHTER-THAN-AIR GASEOUS FUELS ARE UTILIZED IN THIS AREA. PER N.E.C. ARTICLE 511.3(D) THIS AREA IS UNCLASSIFIED.

MECHANICAL PLAN

M1.1



NORTH



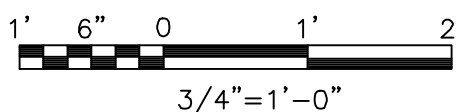
DRAWING NOTES:

- FLUE/COMBUSTION AIR INTAKE UP THRU ROOF, PROVIDE WITH MANUFACTURER APPROVED INTAKE CAP TERMINATION.
- FULL SIZE SA/RA DUCT DOWN FROM RTU. PROVIDE TRANSITIONS AS REQUIRED TO ACCOMMODATE DUCT SIZE AS INDICATED. PROVIDE FLEXIBLE CONNECTIONS AS REQUIRED.
- EXHAUST DUCT UP THRU ROOF TO APPROVED CAP OR GOOSENECK TERMINATION. SIZE AS INDICATED
- FANS SHALL BE EITHER WALL OR CEILING MOUNTED AT 10'-0" AFF. REFERENCE ARCHITECTURAL PLANS FOR FINAL LOCATION. COORDINATE WITH OTHER HVAC/SHOP EQUIPMENT. SEE OWNER FOR EXACT LOCATION.
- CONTROL WIRE FROM CO/NOX SENSORS BACK TO DETECTION SYSTEMS CONTROL PANEL. LOCATE AND INSTALL THE SENSORS BASED ON MANUFACTURERS INSTALLATION INSTRUCTIONS. COORDINATE FINAL LOCATION FOR CONTROL PANEL(S). PROVIDE 7-DAY, 24 HOUR PROGRAMMABLE THERMOSTAT WITH SPACE SENSOR. THERMOSTAT AND SENSOR LOCATIONS ON WALL TO BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
- PROVIDE 7-DAY PROGRAMMABLE T-STAT WITH SPACE SENSOR. BOTH SENSOR AND THERMOSTAT LOCATION SHALL BE COORDINATED WITH BUILDING OWNER.
- COORDINATE EXTERIOR WALL LOUVER AND EXHAUST FAN WALL OPENING SIZES AND LOCATIONS PER ARCHITECTURAL PLANS FOR EXACT LOCATION AND ELEVATION.
- PROVIDE 30x12 EXHAUST DUCT FROM EF-3, ROUTE UP INTERIOR WALL TO MIN. 18"BELOW STRUCTURE. PROVIDE HARDWARE MESH SCREEN AT OPENING. COORDINATE OPENINGS W/ ARCH PLANS AND OWNER.
- VEHICLE PIT EXHAUST FAN ON ROOF. MAINTAIN 10'-0" CLEARANCE FROM OUTSIDE AIR INTAKE.

FROM OUTSIDE AIR
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Telephone 713-927-4470

2 DUCTWORK DETAIL

M1.1



BRAKES PLUS

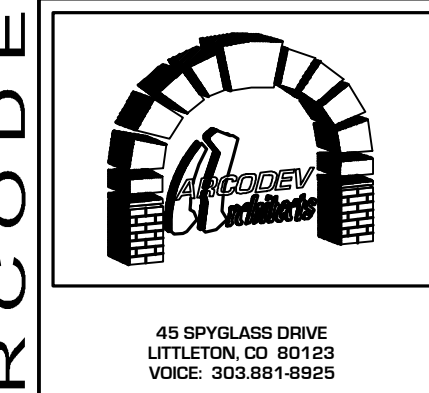
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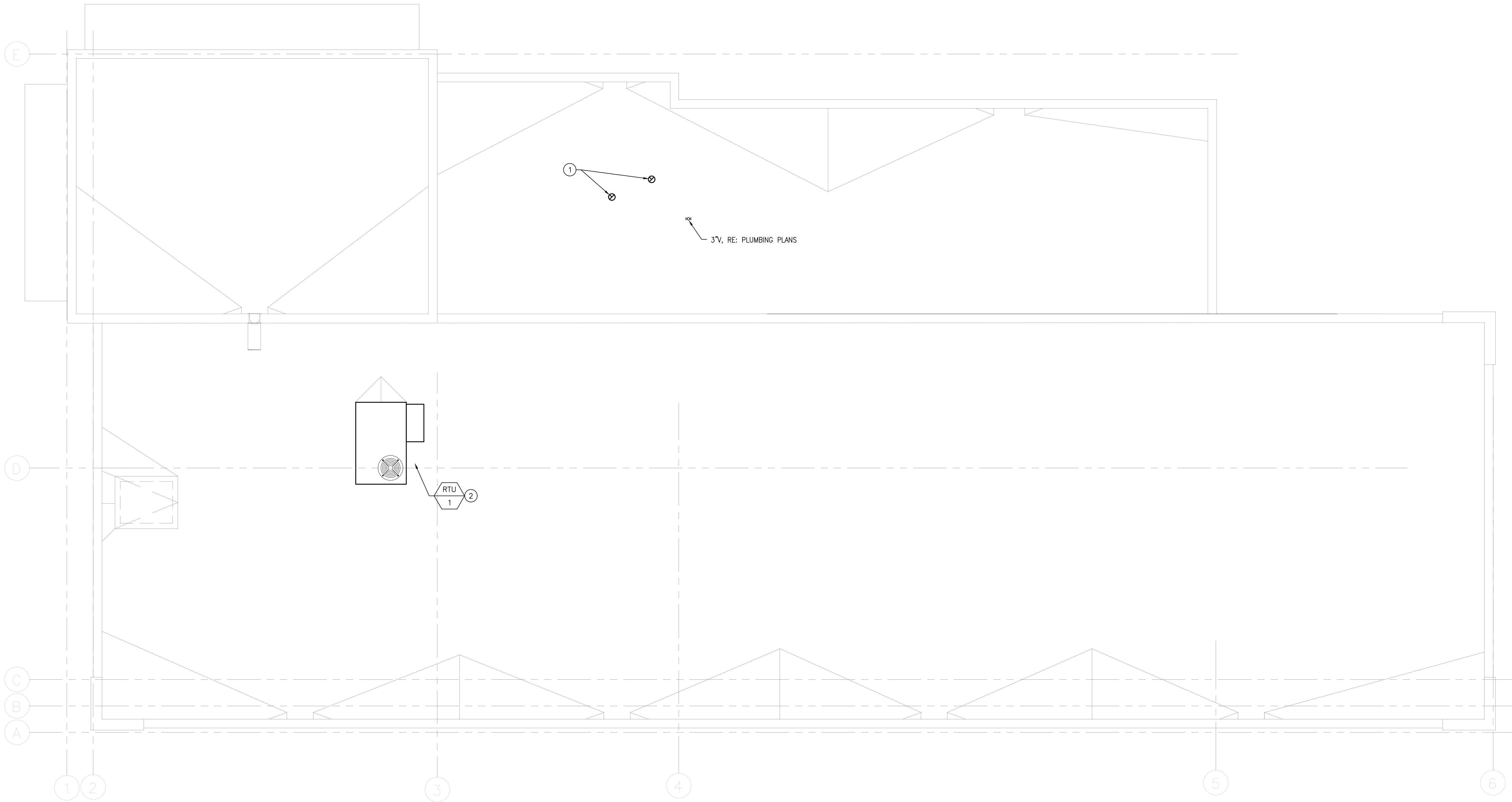
REVISION	DATE	COMMENTS	
		PERMIT	CITY COMMENTS
1	02/28/24		
	06/03/24		

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DRAWN BY: JRG
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DATE OF ISSUE: 06/03/24



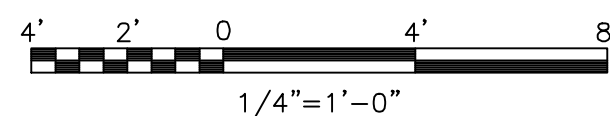
SHEET

M1.1
MECHANICAL PLAN



1 MECHANICAL ROOF PLAN

M1.2



DRAWING NOTES:

- ① EXHAUST DUCT FROM RESTROOM BELOW. TERMINATE WITH APPROVED CAP.
② NEW ROOFTOP UNIT: MAINTAIN 10'-0" FROM OUTSIDE AIR INTAKE.

PROJ # 241088

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BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



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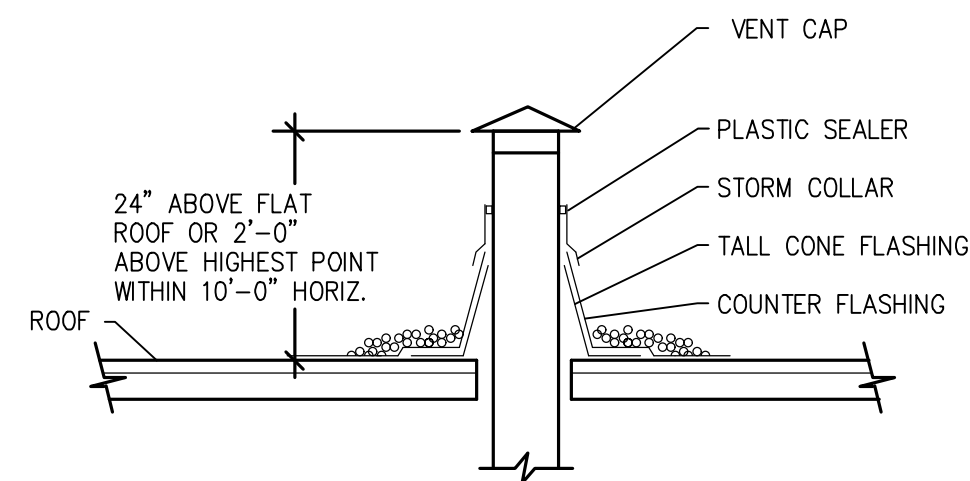


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LITTLETON, CO 80123
VOICE: 303.881.6925

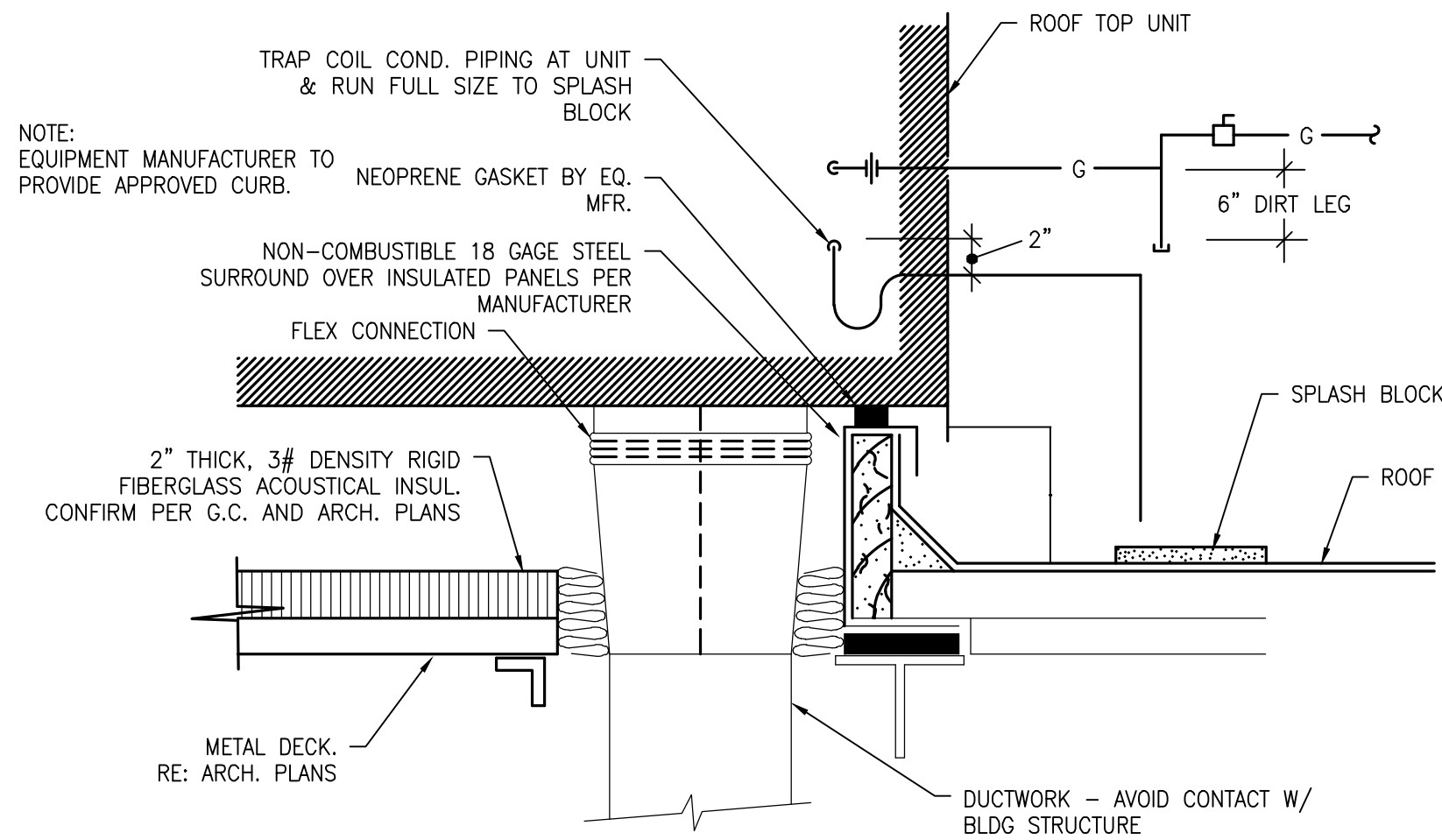
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M1.2

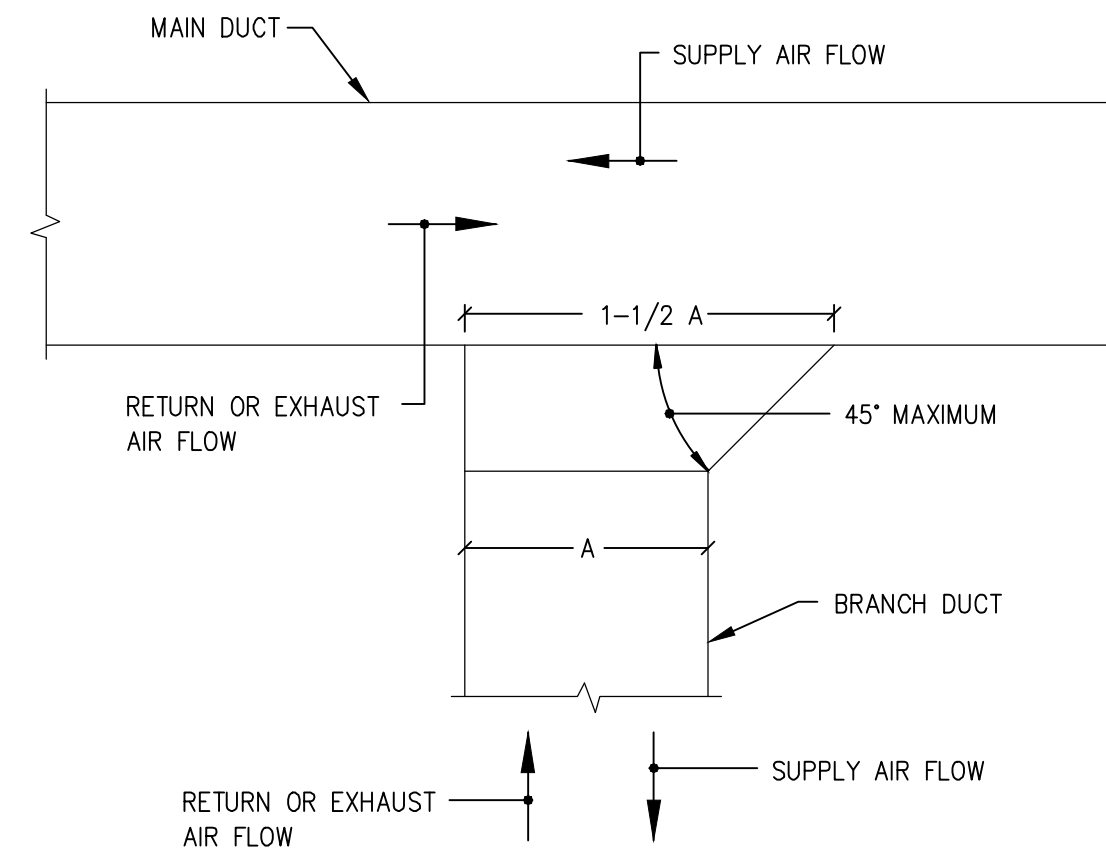
MECHANICAL ROOF PLAN



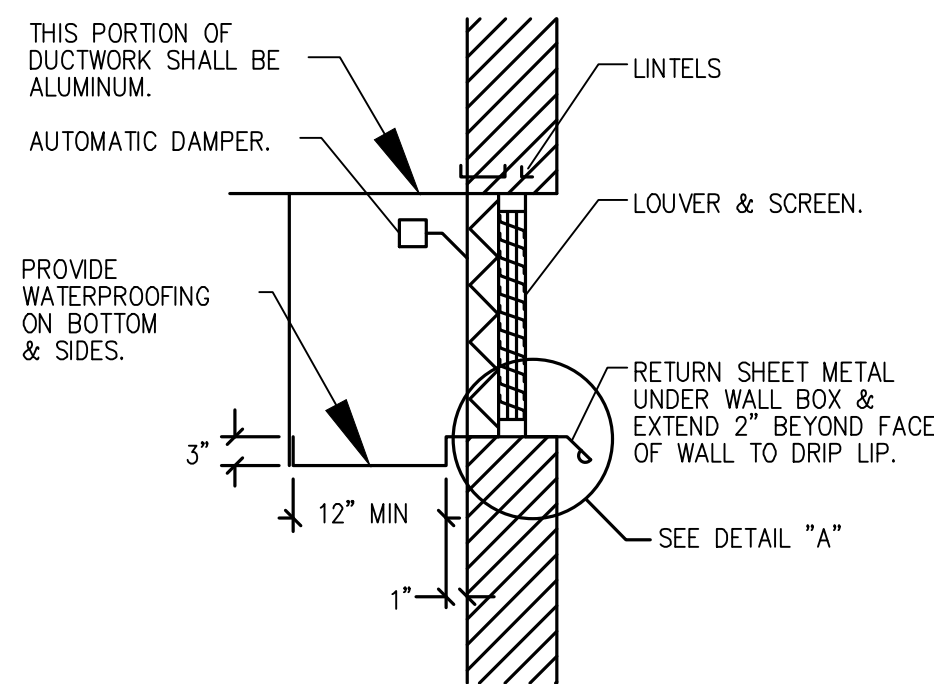
EXHAUST FAN DUCT THRU ROOF DETAIL
NOT TO SCALE



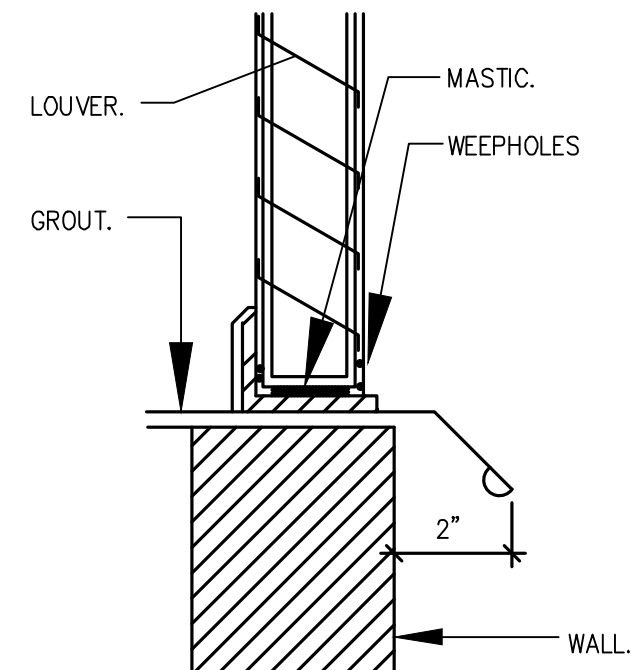
ROOFTOP UNIT INSTALLATION DETAIL
NOT TO SCALE



DUCT TAKE-OFF DETAIL
NOT TO SCALE

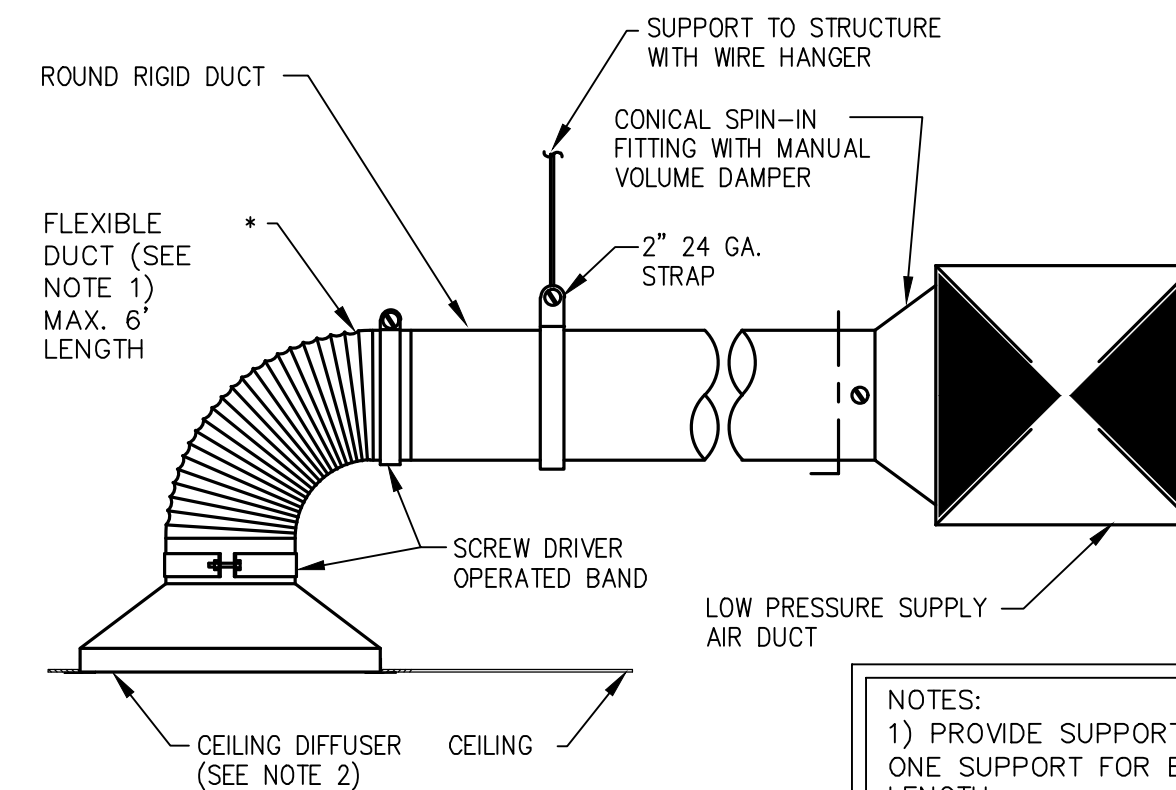


NOTE:
REFER TO MFR'S INSTURCTIONS
FOR SPECIFIC MOUNTING DETAILS.
COORDINATE WITH
ARCHITECTURAL REQUIREMENTS.



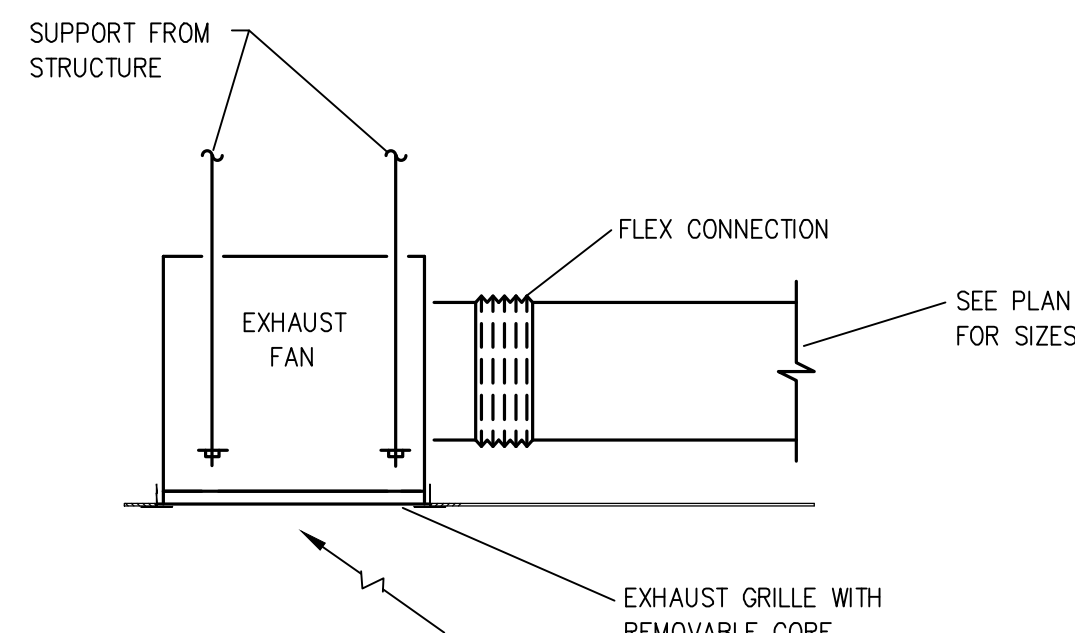
DETAIL A
NOT TO SCALE

WATERTIGHT LOUVER CONNECTION DETAIL
NOT TO SCALE



NOTES:
1) PROVIDE SUPPORT MINIMUM OF
ONE SUPPORT FOR EACH 3'-0" OF
LENGTH
2) SUPPORT DIFFUSER
INDEPENDENT FROM DUCTWORK
WITH WIRE HANGERS WHEN
REQUIRED BY LOCAL CODE.

AIR DEVICE DETAIL
NOT TO SCALE



CEILING EXHAUST FAN DETAIL
NOT TO SCALE

BRAKES PLUS

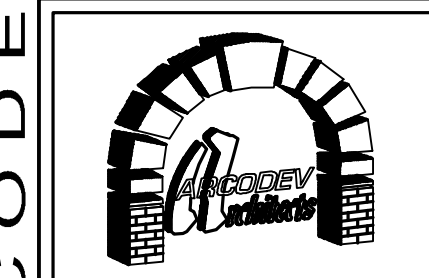
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HARKER HEIGHTS, TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	02/28/24	PERMIT
	06/03/24	CITY COMMENTS

ARCODEV JOB #:
CLIENT JOB #:
DRAWN BY: JRG
CHECKED BY: LRP
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45 SPYGLASS DRIVE
LITTLETON, CO 80123
VOICE: 303.881.8828

SHEET

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P.O. Box 1640 Anahuac, TX 77514
Telephone 713-927-4470

M2.1
MECHANICAL DETAILS

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.13.2	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature above 50F and outdoor temperature above 40F.	<input type="checkbox"/> Complies	
C403.13.3 [FO9]		<input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COMcheck software
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical and service water heating systems and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 [PR9]	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:

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Brakes Plus HARKER HEIGHTS
Location: Harker Heights, Texas
Climate Zone: 2a
Project Type: New Construction

Construction Site: 640 EAST FM210
HARKER HEIGHTS, Texas
Owner/Agent: Brakes Plus
Designer/Contractor: Loren Priest
EE LLC Engineering
12005 Antelope Trail
Parker 80138
3037481189
loren@eeparker.com

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Mechanical Systems List

Quantity System Type & Description

- RTU-1 (Single Zone):
Heating: 1 each - Duct Furnace, Gas, Capacity = 130 kBtu/h
Proposed Efficiency = 80.00% Ec, Required Efficiency: 80.00 % Ec
Cooling: 1 each - Single Package DX Unit, Capacity = 60 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 14.00 SEER2, Required Efficiency = 13.40 SEER2
Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00
Fan System: RTU-1 -- Compliance (Motor nameplate HP and fan efficiency method) : Fails: RTU1 : FAILS: Fan energy index must be 1.00 or higher

Fans:
RTU1 Supply, Constant Volume, 1995 CFM, 2.0 motor nameplate hp, 0.00 fan energy index , fan exception: Single fan <= 5HP
- GUH-1 (Single Zone w/ Perimeter System):
Heating: 2 each - Radiant Heater, Gas, Capacity = 175 kBtu/h
No minimum efficiency requirement applies
- EW-1:
Electric Storage Water Heater, Capacity: 30 gallons w/ Circulation Pump
No minimum efficiency requirement applies

Mechanical Compliance Statement

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

Name - Title _____ Signature _____ Date _____

Project Title: Brakes Plus HARKER HEIGHTS
Data filename: _____
Report date: 02/27/24
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1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: Brakes Plus HARKER HEIGHTS
Data filename: _____
Report date: 02/27/24
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1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: Brakes Plus HARKER HEIGHTS
Data filename: _____
Report date: 02/27/24
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-5.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.1 [ME65]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	<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.
C403.8.3 [ME117]	Fans have a fan energy index (FEI) >= 1.00. Variable volume fans will have an FEI >= 0.95.	<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 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.6 [ME143]	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.9 [ME144]	Large diameter fans where installed shall be tested and labeled in accordance with AMCA 230.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.3 [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.
C403.5.5 [ME113]	Fault detection and diagnostics installed with air-cooled unitary DX units or VRF units having economizers.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.2 [ME59]	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 ft2 and >15 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 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% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6]	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	
C404.6.1, C404.6.2 [PL5]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7]	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	
C404.6.1, C404.6.1.1 [PL8]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

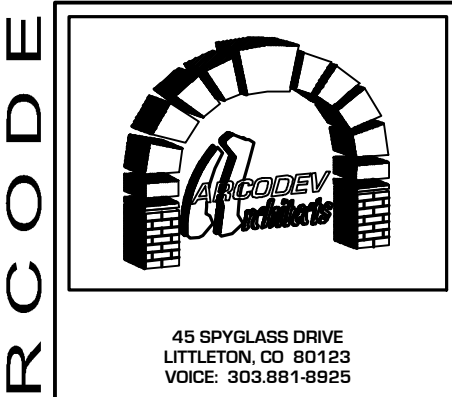
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Data filename: _____
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ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	02/28/24	PERMIT
	06/03/24	CITY COMMENTS

ARCDEV JOB #: _____
CLIENT JOB #: _____
DRAWN BY: JRC
CHECKED BY: LRP
DATE OF ISSUE: 06/03/24



A SHEET

DAVID W DAY , P.E.
102 Poncho St.
P.O. Box 1640 Anahuac, TX 77514
Telephone 713-927-4470

M3.0
MECHANICAL COMCHECK

PROJ # 241088

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26]²	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	
C405.8 [EL27]²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.9.1, C405.9.2 [EL28]²	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	
C405.10 [EL29]²	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	
C405.1.1 [EL30]²	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.11.1, C405.11.2 [EL31]²	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	<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)

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Medium Impact (Tier 2)

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Low Impact (Tier 3)

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.11.3 [ME141]²	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.11.3.1 and refrigeration compressor systems that comply with C403.11.3.2.	<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)

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Medium Impact (Tier 2)

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Low Impact (Tier 3)

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.6 [ME141]²	HVAC systems serving guestrooms in Group R-3 buildings with > 10 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 [ME17]²	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]²	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy 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	
C403.5, C403.5.1, C403.5.2 [ME62]²	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3, C403.5.3.3 [ME124]²	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3.4 [ME125]²	System capable of relieving excess outdoor air during air economizer operation to prevent over pressurizing the building. The relief air outlet located to avoid recirculation into the building.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3.5 [ME126]²	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1 [ME63]²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45°F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60°F and cooling setpoint >= 80°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.3.3 [ME35]²	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.2.1 [ME53]²	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	

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Low Impact (Tier 3)

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.1.1 [FI57]²	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.1 [FI28]²	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	
C408.2.3.1 [FI31]²	HVAC equipment, systems and system-to-system relationships have 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	
C408.2.3.2 [FI10]²	HVAC and service water heating 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	
C408.2.3.3 [FI32]²	Economizers have 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	
C408.2.4 [FI29]²	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 [FI7]²	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	
C408.2.5.1 [FI43]²	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	
C408.2.5.2 [FI30]²	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)

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Medium Impact (Tier 2)

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Low Impact (Tier 3)

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8]²	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	
C403.3.1 [FI27]²	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	
C403.4.1 [FI47]²	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1.2 [FI38]²	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	
C403.4.1.3 [FI20]²	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.2 [FI39]²	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	
C403.4.2.1, C403.4.2.2 [FI40]²	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	
C403.4.2.3 [FI41]²	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.3 [FI11]²	Heat traps installed on supply and discharge piping of non-circulating systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.4 [FI25]²	All piping insulated in accordance with section details and Table C403.12.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.1 [FI12]²	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

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High Impact (Tier 1)

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BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS

STATE OF TEXAS

DAVID W. DAY

32-921

06/03/24

ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	02/28/24	PERMIT
	06/03/24	CITY COMMENTS

ARCODEV JOB #:
CLIENT JOB #:
DRAWN BY: JRC
CHECKED BY: LRP
DATE OF ISSUE: 06/03/24

ARCODEV

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M3.1
MECHANICAL COMCHECK

PROJ # 241088

PLUMBING GENERAL NOTES AND SPECIFICATIONS		
<p>GENERAL CONSTRUCTION NOTES:</p> <p>1. DRAWINGS ARE MEANT TO SHOW INTENT ONLY, NOT EXACT DETAIL. THESE DRAWINGS ARE A "BUILDERS SET" AND INTENDED FOR THE USE ON AN EXPERIENCED AND WELL QUALIFIED CONTRACTOR WHO MAY INTERPRET REASONABLE INFORMATION BASED ON EXPERIENCE COMMON IN THE INDUSTRY AND TRADES. QUALITY LEVEL IS A REQUIRED STANDARD. DO NOT SCALE DRAWINGS. FIELD VERIFY ALL CONDITIONS OF WORK AND REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER FOR CLARIFICATIONS BEFORE STARTING ANY WORK. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL ERRORS IN HIS WORK, INCLUDING THE LACK OF FIELD VERIFICATION OF EXISTING CONDITIONS.</p> <p>2. THE ARCHITECT AND PROFESSIONAL CONSULTANTS WILL NOT HAVE CONTROL OF AND WILL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, OR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK ON THIS PROJECT OR FOR THE WORK OF ANY SUBCONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK ON THIS SITE, NOR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE INTENT OF THE CONTRACT AND OR THESE CONSTRUCTION DOCUMENTS.</p> <p>BASIC REQUIREMENTS:</p> <p>PLUMBING DESIGN SHALL CONFORM TO THE CURRENT INTERNATIONAL PLUMBING CODE. PROJECT SHALL BE COORDINATED WITH THE EXISTING BUILDING SERVICES AND SHALL INCLUDE ALL ITEMS NECESSARY FOR COMPLETE AND FULLY OPERATIONAL TENANT PLUMBING SYSTEMS. MAKE CONNECTIONS TO AND EXTEND SYSTEMS INSTALLED BY OTHERS AND/OR FURNISHED BY OTHERS. PROVIDE ACCESSORIES AND INCIDENTAL ITEMS AS REQUIRED FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM WHETHER OR NOT SPECIFICALLY SPECIFIED AND/OR SHOWN ON THE PLANS.</p> <p>DO NOT SCALE FROM THESE DRAWINGS. REFER TO ARCHITECTURAL OR CIVIL DRAWINGS BY OTHERS FOR DIMENSIONS AND FOR ESTIMATING DISTANCES. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS RELATING TO THE JOB WHETHER OR NOT INDICATED ON THESE DRAWINGS.</p> <p>ANY SCALE, DIMENSION OR QUANTITIES SHOWN ON THE DRAWINGS ARE FOR ENGINEERING CALCULATION PURPOSES ONLY. THE PLUMBING CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ESTIMATING AND DETERMINING ALL DISTANCES AND QUANTITIES RELATED TO THE PROJECT. REFER TO ARCHITECTURAL OR CIVIL DRAWINGS BY OTHERS AND VERIFY EXISTING CONDITIONS ON SITE FOR ALL ESTIMATING PURPOSES.</p> <p>COORDINATE WITH OTHER TRADES FOR A COORDINATED INSTALLATION WITHIN THE AVAILABLE SPACE. WHEN PREPARED FOR CONSTRUCTION, CONTRACTOR SHALL PREPARE DRAWINGS SHOWING ALL TRADE CONFLICTS AND SUBMIT TO ARCHITECT FOR APPROVAL AND DIRECTION PRIOR TO ROUGH-IN AND/OR INSTALLATION. RELOCATION OF OUTLETS AND/OR DEVICES MADE PRIOR TO ROUGH-IN SHALL BE DONE AT NO ADDITIONAL COST.</p> <p>ALL WORK SHALL BE PERFORMED BY PROPERLY LICENSED PLUMBERS OR UNDER THEIR DIRECT SUPERVISION. ALL MATERIALS AND EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE APPLICABLE STANDARDS OF UL AND SHALL BEAR THE UL LABEL AS EVIDENCE THAT THE MATERIAL AND/OR EQUIPMENT MEETS THIS REQUIREMENT.</p> <p>INSTALL ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND DETAILS UNLESS OTHERWISE NOTED IN THESE PLANS. IF ANY DISCREPANCIES EXIST CONTACT THE ENGINEER PRIOR TO ORDERING EQUIPMENT AND ROUGH-IN.</p> <p>ALL EQUIPMENT START UP AND TESTING SHALL BE PERFORMED BY THE EQUIPMENT MANUFACTURER TRAINED SERVICE TECHNICIAN. SUBMIT MANUFACTURER'S LITERATURE (SHOP DRAWINGS) FOR MATERIALS AND EQUIPMENT. SUBMITTAL SHALL INCLUDE EQUIPMENT PERFORMANCE DATA AT ELEVATION AND/OR LOCAL CONDITIONS. EQUIPMENT CUTSHEETS OR CATALOG COPIES ARE NOT ACCEPTABLE. SUBMITTAL SHALL BEAR THE APPROVAL OF THE GENERAL CONTRACTOR FOR COMPLIANCE WITH COORDINATION AND THESE SPECIFICATIONS PRIOR TO SUBMITTAL TO ARCHITECT AND/OR HIS AGENCIES. ANY EQUIPMENT SUBSTITUTED FOR WHAT IS SCHEDULED SHALL BE EQUAL TO THAT SCHEDULED IN CONTROLS, ACCESSORIES, AND PERFORMANCE REGARDLESS OF MANUFACTURER.</p> <p>FIELD LABEL ALL PLUMBING EQUIPMENT AND PIPING AS INDICATED ON THE PLANS PER PLUMBING AND LOCAL CODE REQUIREMENTS. INDICATE DIRECTION OF FLOW ON PIPING.</p> <p>TAG ALL VALVES WITH CONSECUTIVE NUMBERING ON PERMANENT HARD PLASTIC OR METAL TAB AND PROVIDE SCHEDULE LISTING ITEMS, AREA SERVED, SIZE AND VALVE TYPE. SUBMIT FINAL VALVE SCHEDULE FOR REVIEW.</p>		
<p>PROVIDE EXPANSION LOOPS, SWING JOINTS, OR MECHANICAL EXPANSION COMPENSATING DEVICES AS REQUIRED TO ACCOUNT FOR THERMAL EXPANSION OF ALL PIPING SYSTEMS. EXPANSION SYSTEM SIZING SHALL BE IN ACCORDANCE WITH MATERIALS DATA SHEETS AND MANUFACTURER RECOMMENDATIONS.</p> <p>INSTALL ALL EQUIPMENT PER MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS. IF PLAN DIFFERS FROM THESE INSTRUCTIONS THEN NOTIFY ENGINEER PRIOR TO ROUGH-IN. MANUFACTURERS INSTRUCTIONS SHALL PREVAIL. SPECIAL ATTENTION MUST BE PAID TO GAS FIED EQUIPMENT FLUE/CA LENGTHS, SIZES, AND MATERIAL.</p> <p>BASIC MATERIALS</p> <p>PLUMBING CONTRACTOR TO PROVIDE PLUMBING SYSTEM CONTROLS, CONTROLLERS, CONTROL TRANSFORMER, DISCONNECTS, STARTERS, CONTROL WIRING, ASSOCIATED CONTROL POWER WIRING, AND ALL WORK NECESSARY FOR A COMPLETE AND OPERATIONAL PLUMBING SYSTEM. ALL ELECTRICAL ITEMS SHALL BE COORDINATED WITH ELECTRICAL DRAWINGS AND ELECTRICAL SUB-CONTRACTOR FOR INSTALLATION.</p> <p>PROVIDE SUPPLEMENTAL STEEL AND SUPPORTS AS REQUIRED FOR INSTALLATION OF PLUMBING MATERIALS, EQUIPMENT, AND APPARATUS.</p> <p>ALL WORK IN FINISHED AREAS SHALL BE CONCEALED UNLESS SPECIFICALLY NOTED AS EXPOSED ON THE PLANS. PRIOR TO THE INSTALLATION OF ANY EXPOSED WORK THIS CONTRACTOR SHALL VERIFY AND OBTAIN ARCHITECTURAL APPROVAL OF LOCATION AND EXTENT.</p> <p>PROVIDE PRESSURE REDUCING VALVE ASSEMBLY AT BUILDING WATER SERVICE ENTRY WHERE PRESSURE EXCEEDS 65 PSI. PRESSURE REDUCING VALVE TO BE SET TO 65 PSI.</p> <p>PROVIDE SANITARY SEWER SYSTEM CLEANOUTS AS REQUIRED BY LOCAL CODES. PROVIDE BRANCH SHUT-OFF VALVES ON ALL WATER LINES EXTENDING FROM MAINS. THE CONTRACTOR SHALL LOCATE AND FURNISH FOR INSTALLATION BY OTHERS, ALL ACCESS PANELS AS REQUIRED FOR ACCESS TO VALVES, MOTORS, ETC. AND THE PROPER SERVICING OF EQUIPMENT AND LINES INSTALLED UNDER THIS CONTRACT.</p> <p>PIPING</p> <p>SANITARY, VENT, AND STORM PIPING ABOVE GRADE SHALL BE CAST IRON NO-HUB PIPE AND FITTINGS, MANUFACTURED TO CISPI 310 BEARING THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND BE LISTED BY NSF INTERNATIONAL. COUPLINGS FOR JOINING CAST IRON VENT AND STORM PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NSF INTERNATIONAL. TO THE CISPI 310 STANDARD. IF HEAVY DUTY COUPLINGS ARE REQUIRED: HUSKY 2000, CLAMP ALL 80, OR MISSION 80 COUPLINGS WITH CONSIDERATION TO USE: HUSKY 4000 OR CLAMP ALL 125. INSTALLATION IN COMPLIANCE TO CISPI HANDBOOK.</p> <p>SANITARY, VENT, AND STORM PIPING BELOW GRADE SHALL BE SOLID CORE PVC SCHEDULE 40 OR 80 PIPE AND SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED PVC DWV FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED PVC DWV FITTINGS SHALL CONFORM TO ASTM F 1866. PIPE AND FITTINGS SHALL BE MANUFACTURED AS A SYSTEM MANUFACTURED IN THE PRODUCT OF ONE MANUFACTURER. PIPE AND FITTINGS SHALL BE MANUFACTURED IN THE UNITED STATES. ALL SYSTEMS SHALL UTILIZE A SEPARATE WASTE AND VENT SYSTEM. PIPE AND FITTINGS SHALL CONFORM TO NSF INTERNATIONAL STANDARD 14. INSTALLATION SHALL COMPLY WITH THE LATEST INSTALLATION INSTRUCTIONS PUBLISHED BY MANUFACTURER AND SHALL CONFORM TO ALL APPLICABLE PLUMBING, BUILDING, AND FIRE CODE REQUIREMENTS. BURIED PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D 2321 AND ASTM F 1668. SOLVENT CEMENT JOINTS SHALL BE MADE IN A TWO STEP PROCESS WITH PRIMER CONFORMING TO ASTM F 656 AND SOLVENT CEMENT CONFORMING TO ASTM D 2564. THE SYSTEM SHALL BE PROTECTED FROM CHEMICAL AGENTS, FIRE STOPPING MATERIALS, THREAD SEALANT, PLASTICIZED VINYL PRODUCTS, OR OTHER AGGRESSIVE CHEMICAL AGENTS NOT COMPATIBLE WITH PVC COMPOUNDS. SYSTEMS SHALL BE HYDROSTATICALLY TESTED AFTER INSTALLATION.</p> <p>3. DOMESTIC WATER PIPING ABOVE GRADE: ASTM B 88, TYPE L COPPER WITH SOLDERED OR MECHANICALLY CRIMPED JOINTS (PRO PRESS)</p> <p>4. DOMESTIC WATER PIPING ABOVE GRADE: SWEET WELDED COPPER TUBE AND FITTINGS PER ASTM D 2846.</p> <p>5. DOMESTIC WATER PIPING ABOVE GRADE: UPONOR AQUAPEX PIPING WITH PROPEX FITTINGS FOR ALL BRANCH CONNECTIONS AND TERMINATIONS (OR REHAU EQUIVALENT). DCW TO BE BLUE PIPE, DHW TO BE RED PIPE, AND DHWR TO BE CLEAR PIPE.</p> <p>6. DOMESTIC WATER PIPING BELOW GRADE SHALL BE TYPE K COPPER WITH SILVER SOLDERED JOINTS.</p> <p>7. CONDENSATE DRAIN PIPING SHALL BE TYPE M COPPER WITH SOLDERED JOINTS, OR CPVC IF ALLOWED BY LOCAL AUTHORITY HAVING JURISDICTION.</p>		
<p>8. ANY PIPING SYSTEM LOCATED IN A RETURN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NO MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.</p> <p>9. FIRE STOP ALL PIPING MATERIALS PASSING THROUGH FIRE RATED STRUCTURES OR FIRE RATED ASSEMBLIES IN ACCORDANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION. USE CURRENTLY LISTED U.L. CLASSIFIED PRODUCTS, TESTED BY ASTM E814. USE FOR ALL APPLICABLE PIPE PENETRATIONS THROUGH FIRE RATED FLOORS, WALLS, OR FLOOR CEILING ASSEMBLIES IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.</p> <p>10. COMPRESSED AIR PIPING: 1" AND SMALLER: TYPE K OR L (TYPE A OR B), COPPER TUBE; WROUGHT-COPPER FITTINGS; COPPER PRESSURE-SEAL-JOINT FITTINGS; COPPER-PUSH FITTINGS; AND BRAZED JOINTS.</p> <p>11. COMPRESSED AIR PIPING: 2" DOWN TO 1-1/4" SHALL BE : TYPE K OR L (TYPE A OR B), COPPER TUBE; WROUGHT-COPPER FITTINGS; COPPER PRESSURE-SEAL-JOINT FITTINGS; AND BRAZED JOINTS.</p> <p>12. COMPRESSED AIR PIPING: 2-1/2" TO 4" SHALL BE TYPE K OR L (TYPE A OR B), COPPER TUBE; WROUGHT-COPPER FITTINGS; COPPER PRESSURE-SEAL-JOINT FITTINGS; AND BRAZED JOINTS.</p> <p>13. COMPRESSED AIR DRINK PIPING SHALL BE TYPE M (TYPE C) COPPER TUBE; WROUGHT-COPPER FITTINGS, AND BRAZED OR SOLDERED JOINTS.</p> <p>INSULATION</p> <p>1. WATER PIPING IN UNCONDITIONED SPACE AND EXTERIOR WALLS SHALL BE 2" FIBERGLASS INSULATION.</p> <p>2. HOT WATER PIPING 2" OR LESS SHALL BE 1-INCH FIBERGLASS INSULATION. HOT WATER PIPING GREATER THAN 2-INCHES SHALL BE 1 1/2" FIBERGLASS INSULATION. RUNOUTS, NOT EXCEEDING 12 FEET, UP TO 2-INCHES SHALL BE 1/2-INCH THICK FIBER GLASS INSULATION WITH AN ALL-SERVICE JACKET.</p> <p>3. STORM DRAIN PIPING ABOVE GRADE SHALL BE 1/2-INCH THICK FIBER GLASS INSULATION WITH AN ALL-SERVICE JACKET.</p> <p>4. HORIZONTAL SANITARY AND STORM PIPING EXPOSED TO OUTDOOR TYPE AMBIENT CONDITIONS INCLUDING COVERED PARKING AND CRAWL SPACES SHALL BE HEAT-TRACED AND INSULATED WITH 1-INCH FIBERGLASS INSULATION.</p> <p>5. VERTICAL SANITARY AND STORM PIPING EXPOSED TO OUTDOOR TYPE AMBIENT CONDITIONS INCLUDING COVERED PARKING AND CRAWL SPACES SHALL BE INSULATED WITH 1-INCH FIBERGLASS INSULATION.</p> <p>6. CONDENSATE DRAIN PIPING SHALL BE 1/2-INCH THICK INSULATION WITH AN ALL-SERVICE JACKET.</p> <p>7. COLD WATER DISTRIBUTION PIPING SHALL NOT BE INSULATED UNLESS OTHERWISE NOTED.</p> <p>8. COLD OR HOT WATER PIPING IN A WALL OR CEILING OR FLOOR THAT IS ADJACENT TO AN UNCONDITIONED SPACE SHALL HAVE 1-INCH THICK INSULATION. THE PIPING SHALL ALSO BE INSTALLED TO THE WARM SIDE OF THE BUILDING INSULATION.</p> <p>9. HOT WATER PIPING LESS THAN 1-1/2" SHALL BE 1-INCH FIBERGLASS INSULATION. HOT WATER PIPING 1-1/2 TO 4" SHALL BE 1 1/2" FIBERGLASS INSULATION.</p> <p>PLUMBING EQUIPMENT/FIXTURES</p> <ul style="list-style-type: none"> • FURNISH AND INSTALL PLUMBING FIXTURES AS SCHEDULED ON THE PLANS. • PROVIDE CHROME PLATED ANGLE STOPS AND ESCUTCHEON PLATES ON ALL EXPOSED FIXTURE RUNOUTS • PROVIDE INSULATION AND ROUGH IN AS REQUIRED FOR COMPLIANCE WITH ADA REQUIREMENTS. • PROVIDE ALL ACCESSORIES AND SPECIALTY ITEMS AS REQUIRED FOR A COMPLETE FIXTURE INSTALLATION. <p>REDUCED PRESSURE BACKFLOW PREVENTER</p> <p>FURNISH AND INSTALL LEADFREE REDUCED PRESSURE BACKFLOW PREVENTER FOR THE PRIMARY DOMESTIC COLD WATER SERVICE IN ACCORDANCE WITH STATE, LOCAL, AND JURISDICTIONAL WATER DISTRICT REQUIREMENTS.</p> <p>FURNISH AND INSTALL REDUCED PRESSURE BACKFLOW PREVENTER FOR MECHANICAL EQUIPMENT REQUIRED OF THIS OR OTHER SECTIONS OF THESE SPECIFICATIONS.</p> <p>ELECTRIC WATER HEATERS</p> <p>FURNISH AND INSTALL A GLASS LINED ELECTRIC WATER HEATER AS SCHEDULED ON THE PLANS.</p> <p>FURNISH HEATER WHICH ARE UL LABELED AND MEET THE REQUIREMENTS OF LOCAL MUNICIPALITIES.</p> <p>WATER HEATER LOCATED IN CEILING SHALL BE PROVIDED WITH 2 1/2" DRAIN PAN. TERMINATE DRAIN TO NEAREST FLOOR DRAIN, FLOOR SINK OR LAV TRAP.</p>		

ABBREVIATIONS		PLUMBING LEGEND	
(D)	DEMO	—CND—	CONDENSATE
(E)	EXISTING	—DCW—	DOMESTIC COLD WATER
(N)	NEW	—120—	DOMESTIC HOT WATER
AAV	AIR ADMITTANCE VALVE	—120R—	DOMESTIC HOT WATER RECIRC
AD	AREA DRAIN	—GW—	GREASE WASTE
AFF	ABOVE FINISH FLOOR	—G—	GAS
AHU	AIR HANDLING UNIT	—RD—	ROOF DRAIN
B	BOILER	—ORD—	OVERFLOW ROOF DRAIN
BB	BASEBOARD	—SOI—	SAND OIL
BF	BOOSTER FAN	—SS—	SANITARY SEWER
BFP	BACKFLOW PREVENTER	—V—	VENT
BT	BATH TUB	—(A)XX—	TYPICAL PIPE ABOVE/ON ROOF
BV	BALL VALVE	—(B)XX—	TYPICAL PIPE BELOW/UNDERGROUND
CD	CONDENSATE DRAIN	—(E)XX—	TYPICAL PIPE EXISTING
CFM	CUBIC FEET PER MINUTE		
CH	CHILLER		
CO	CLEANOUT		
COTG	CLEANOUT TO GRADE		
CU	CONDENSING UNIT		
CV	CHECK VALVE		
CUH	CABINET UNIT HEATER		
DCW	DOMESTIC COLD WATER		
DF	DRINKING FOUNTAIN		
DHW	DOMESTIC HOT WATER		
DSN	DOWN SPOUT NOZZLE		
EC	ELECTRICAL CONTRACTOR		
ED	END OF LINE CLEANOUT		
EDH	ELECTRIC DUCT HEATER		
EF	EXHAUST FAN		
EW	ELECTRIC WATER COOLER		
EWB	ELECTRIC WATER HEATER		
FURN	FURNACE		
FCO	FLOOR CLEANOUT		
FCU	FAN COIL UNIT		
FD	FLOOR DRAIN		
FS	FLOOR SINK		
G	GAS		
GC	GENERAL CONTRACTOR		
GM	GAS METER		
GPH	GALLONS PER HOUR		
GPM	GALLONS PER MINUTE		
GUH	GAS UNIT HEATER		
GW	GREASE WASTE		
GWH	GAS WATER HEATER		
HOB	HOSE BIB		
HP	HEAT PUMP		
HX	HEAT EXCHANGER		
IM	ICE MAKER BOX		
LAV	LAVATORY		
LS	LAUNDRY SINK		
MAU	MAKE-UP AIR UNIT		
MC	MECHANICAL CONTRACTOR		
MF	MEASURE FLOW		
NC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NT	NOT TO SCALE		
OA	OUTSIDE AIR		
ORD	OVER FLOW ROOF DRAIN		
P	PUMP		
PC	PLUMBING CONTRACTOR		
PRV	PRESSURE REDUCING VALVE		
PSI	POUNDS PER SQUARE INCH		
RA	RETURN AIR		
RAR	RETURN AIR REGISTER		
RD	ROOF DRAIN		
RTU	RADIANT HEATER		
RTU	ROOF TOP UNIT		
SA	SUPPLY AIR		
SAR	SUPPLY AIR REGISTER		
SF	SUPPLY FAN		
SFT	SERIES FAN TERMINAL		
SH	SHOWER		
SK	SINK		
SOI	SAND/OIL INTERCEPTOR		
SS	SERVICE SINK		
T&P	TEMPERATURE & PRESSURE		
TD	TRENCH DRAIN		
TP	TYPICAL		
UR	URINAL		
VAV	VARIABLE AIR VOLUME		
VVT	VARI TRAC		
WB	WASHER BOX		
WCO	WALL CLEANOUT		
WH	WALL HYDRANT		

1. ALL ITEMS CONNECTING TO POTABLE WATER SHALL MEET THE LEAD FREE STANDARD OF .25% OR LESS LEAD.
2. PLUMBING PLANS REFERENCE FINISHED FLOOR TO FINISHED FLOOR ABOVE. SANITARY SHOWN IS FOR FIXTURES ABOVE UNLESS NOTED OTHERWISE.
3. FIELD VERIFY ALL ROUTING OF PLUMBING LINES WITH OTHER TRADES. FIELD ADJUST ROUTING ACCORDINGLY TO MAKE SYSTEM WORK WITH OTHER TRADES.
4. PROVIDE WATTS MMV ASSEI070 MIXING VALVE AT ALL PUBLIC FIXTURES AS REQUIRED PER LOCAL CODE.
5. PC TO PROVIDE VACUUM BREAKERS AT LOCATIONS WHERE HOSES AND NOZZLES ARE USE, I.E. JANITOR SINKS, BEAUTY SINKS, KITCHEN SPRAYERS, DISHWASHERS, AND BATHS.
6. ALL DRAINAGE LINES 2-1/2" AND UNDER TO BE SLOPED AT MINIMUM 1/4" PER FOOT, AND 3" AND OVER TO BE SLOPED AT MINIMUM 1/8" PER FOOT UNLESS NOTED OTHERWISE.
7. START TRENCHING FOR NEW SANITARY LINE AT FURTHEST FIXTURE (HIGHEST POINT IN SYSTEM) FROM CIVIL CONNECTION POINT TO BUILDING.
8. FIELD ROUTE ALL CONDENSATE LINES, T&P VALVES, AND DRAIN VALVES FROM MECHANICAL AND PLUMBING EQUIPMENT TO SANITARY SEWER RECEPTOR OR STORM/GRADE PER LOCAL CODE AND JURISDICTION.

TAG	ADA	DESCRIPTION	CONNECTIONS	FIXTURE	MODEL NAME	MODEL #	FLOW RATE	DIMENSIONS	MOUNTING	RIM HEIGHT	FINISH	MISC.	REMARKS
			DOW DHW WASTE VENT	MANUFACTURER									
WC-1	YES	WATER CLOSET-TANK	1/2" 3"	2"	AMER. STND.	CADET PRO	21AA-104	1.28 GPF	12" RJ.2-1/8" TRAP	FLOOR	16-1/2"	VITREOUS CHINA	ELONGATED
		OPEN FRONT LESS COVER			AMER. STND.	HEAVY DUTY	5901.110		ELONGATED			PLASTIC	STAINLESS HINGES
LAV-1	YES	WALL HUNG	1/2" 1/2" 1-1/2" 2"	AMER. STND.	LUCERNE	0356.XXX	20-2"x18-1/4"		WALL HANGER	31" TO 34" TO RIM	VITREOUS CHINA	FRONT OVERFLOW SINGLE HOLE, 4" CENTERS	6W, WB
	YES	FAUCET		MOEN	CHATEAU	L64621	0.5 GPM		DECK MOUNT	4" CENTERS	POLISHED CHROME	-	PS
SS-1	YES	SERVICE SINK	3"	2"	ELKAY	SERV-2322-OX	2.0 GPM	14-1/2"x22-1/2"	FLOORWALL	36"	2" STAINLESS STEEL		
	YES	FAUCET		CHICAGO FAUCET	MECHANICAL	540-LDL12ABCP	2.2 GPM		DECK MOUNT	8" CENTERS	CHROME PLATES	ADJ. ARM, HOT/COLD PADDLE	
		MANUAL FOOT PEDAL VALVE	1/2" 1/2"		ZURN	285500-XL			FLOOR	-	CHROME		**
TD-1	-	TRENCH DRAIN	- - 4"	-	ZURN	2886	-	80"-0" LENGTH	FLOOR	-	W/ DGE (TRAFFIC RATED) GRATES	-	
WB-1	-	WALL BOX	1/2" -	-	SIoux CHIEF	596	-	696-IF FRAME	WALL	-	-	RECESSED WALL BOX	W/ WATER HAMMER ARRESTOR
	N	INTERIOR WALL HYDRANT	3/4" -	N	WOODFORD	MODEL 101	-	VARIES W/ WALL DEPTH	INTERIOR ONLY	24" AFG	INTERIOR USE ONLY	W/ BACKFLOW PROTECTION	
EW-1	Y	B/LVELE	1/2" - 2"	2"	ELKAY	EZH20	36" WIDE		ADA	STAINLESS STEEL	BARRIER ONLY	W/ BOTTLE FILLER	6W, 7
		WALL HANGER			ZURN	Z1222		FLOOR		DURA COATED	CARRIER FREE		IF REQUIRED
RD-1	-	ROOF DRAIN	- - -	-	ZURN	Z100	15" DIA	ROOF/EXTERIOR	-	DURA COATED CAST IRON	FLASH CLAMP/GRAVEL GUARD		
ORD-1	-	OVERFLOW ROOF DRAIN	- - -	-	ZURN	Z100	15" DIA	ROOF/EXTERIOR	-	DURA COATED CAST IRON	FLASH CLAMP/GRAVEL GUARD		
DSN-1	-	DOWNSPOUT NOZZLE	- - -	-	ZURN	Z199	-		EXTERIOR	-	-	NICKEL BRONZE	-
AD-1	-	AREA DRAIN	- - -	-	ZURN	Z-507-P	-	7" ROUND	FLOOR	-	CAST IRON BODY	-	
FD-1	-	FLOOR DRAIN	- - -	-	ZURN	Z-550-P	-	5-1/2" ROUND	FLOOR	-	NICKEL BRONZE FINISH, STAINLESS STRAINER	W/ TRAP PRIMER CONNECTION	

ALTERNATE MFG: AMERICAN STANDARD, CRANE, DELTA, ELKAY, HAWS, HALSEY TAYLOR, J.R.SMITH, KOHLER, LASCO, MOEN, SIOUX CHIEF, STING RAY, SYMMONS, TOTO, WADE, ZURN

BS-BASKET STRAINER	GS-GRID STRAINER	WB-WALL BRACKET
DS-DOME STRAINER	PS-POP UP STRAINER	TP-ASSE 1018 OR 1044 TRAP PRIMER
EC-ENAMEL COATING	SS-STAINLESS STEEL	6W-6" WALL REQ.

****NOTE: PROVIDE 1/2"DCW/DHW DOWN WALL TO FOOT PEDAL CONNECTIONS AS PER MANUFACUTERS INSTRUCTIONS**

PROJECT: BRAKES PLUS - HIGHLAND VILLAGE, TEXAS												
BUILDING: 1												
DATE: 1/6/2023												
FIXTURE TOTAL	FIXTURE TYPE	OCC.	SUPPLY TYPE	WATER FIXTURE UNITS					WASTE FIXTURES UNITS		REMARKS	
				COLD WATER	COLD TOTAL	HOT WATER	HOT TOTAL	COLD & HOT	COMBINED TOTAL	FIXTURE VALUES		TOTAL VALUES
2	HOSE BIBBS	PRIVATE	1/2" VALVE	1.00	2.0		0.0	1.00	2.0		0.0	
1	DRINKING FOUNTAIN	OFFICES	3/8" VALVE	0.25	0.3		0.0	0.25	0.3		0.5	
2	LAVATORY	PUBLIC	FAUCET	1.50	3.0	1.50	3.0	2.00	4.0		1.00	2.0
1	SERVICE SINK	OFFICES	FAUCET	2.25	2.3	2.25	2.3	3.00	3.0		2.00	2.0
2	WATER CLOSET	PUBLIC	FLUSH TANK	5.00	10.0		0.0	5.00	10.0		4.00	8.0
TOTAL FIXT. UNITS					17.50		5.25		19.25		12.50	TOTAL FIXTURE UNITS
			GPM						20		4"	BUILDING MAIN SIZE
			PIPE SIZE						1"		1/8"	BUILDING MAIN SLOPE
	WATER SERVICE LINE SIZE	FT/SEC	PSI/100FT	NOTES								
TAP & METER	3/4"											
BFP & BLDG MAIN	1"	6.00	9.00									

PLAN MARK	MANUFACTURER	MODEL NO.	TANK GALLONS	ELECTRICAL			GPH RISE (F)	REMARKS	
				VOLT	PH	KW			
EW-H-1	STATE	PCE-30-10MSA	30	120	1	1.5	8	70	1

1. PROVIDE 2 1/2" DEEP DRAIN PAN. ROUTE 3/4" DRAIN TO LAV TRAP OR FLOOR DRAIN

PLAN MARK	MANUFACTURER	MODEL NO.	GPM	HEAD (FT)	RPM	HP	ELECTRICAL		REMARKS
							VOLT	PHASE	
CP-1	TACO	008	10	10	3250	1/25	120	1	1

1. CONNECT TO RETURN LINE TEMPERATURE SENSOR

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	REMARKS
ABS	4	10	B
PVC	4	10	B
COPPER OR COPPER ALLOY	12	10	
COPPER 1-1/4" AND SMALLER	6	10	
COPPER 1-1/2" AND LARGER	10	10	
CROSS LINK PE (PEX)	2.67" (32")	10	B
CAST IRON	5	15	A
STAINLESS STEEL	10	10	B

A. THE MAXIMUM HORIZONTAL SPACING OF CAST IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10 FOOT LENGTHS OF PIPE ARE INSTALLED.

B. MIDSTORY GUIDE SHALL BE INSTALLED FOR SIZES 2 INCHES AND SMALLER TO PREVENT PIPE MOVEMENT

MINIMUM PIPE INSULATION THICKNESS (in inches) a, c		INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (inches)				
FLUID OPERATING TEMPERATURE RANGE AND USAGE (F)		CONDUCTIVITY Btu · in./[h · ft ² · °F]b	MEAN RATING TEMPERATURE °F	<1	1 to <1/2	1/2 to <4	4 to <8	≥ 8
> 350		0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350		0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250		0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200		0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140		0.21 - 0.23	100	1.0	1.0	1.5	1.5	1.5
40 - 60		0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40		0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5

For SI: 1 inch = 25.4 mm, °C = [(°F - 32)/1.8]

a. For piping smaller than 1-1/2" and located in partitions within conditioned spaces, reduction of these thicknesses by 1" shall be permitted (before thickness adjustment required in footnote b) but not to a thickness less than 1 inch.

b. For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows

$$T = r\{(1 + t/r)K/k - 1\}$$

where:

T = minimum insulation thickness

t = insulation thickness listed in the table for applicable fluid temperature and pipe size.

K = conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu · in/h · ft² · °F) and

c. For direct buried heating and hot water system piping, reduction of these thickness by 1-1/2" (38mm) shall be permitted (before thickness adjustment required in footnote b but not to thicknesses less than 1 inch (25 mm)).

SHEET #	SHEET TITLE
P0.1	PLUMBING SPECS, SCHEDULES & LEGEND
P1.0	UNDERGROUND PLUMBING PLAN
P1.1	PIPING PLAN
P2.1	PLUMBING ROOF PLAN
P3.1	PLUMBING DETAILS
P4.0	PLUMBING ISOMETRICS

PROJ # 24108E

102 Poncho St.

P.O. Box 1640 Anahuac, TX 77514
Telephone 713-927-4470

640 EAST FM 2410
HARKER HEIGHTS TEXAS



ARCHITECT OF RECORD

REVISION	DATE	COMMENTS
	02/28/24	PERMIT
A	06/03/24	CITY COMMENTS

ARCODEV JOB #: -

CLIENTJOB #:

DRAWN BY: JRC

CHECKED BY: LRP

DATE OF ISSUE: 06/03/24

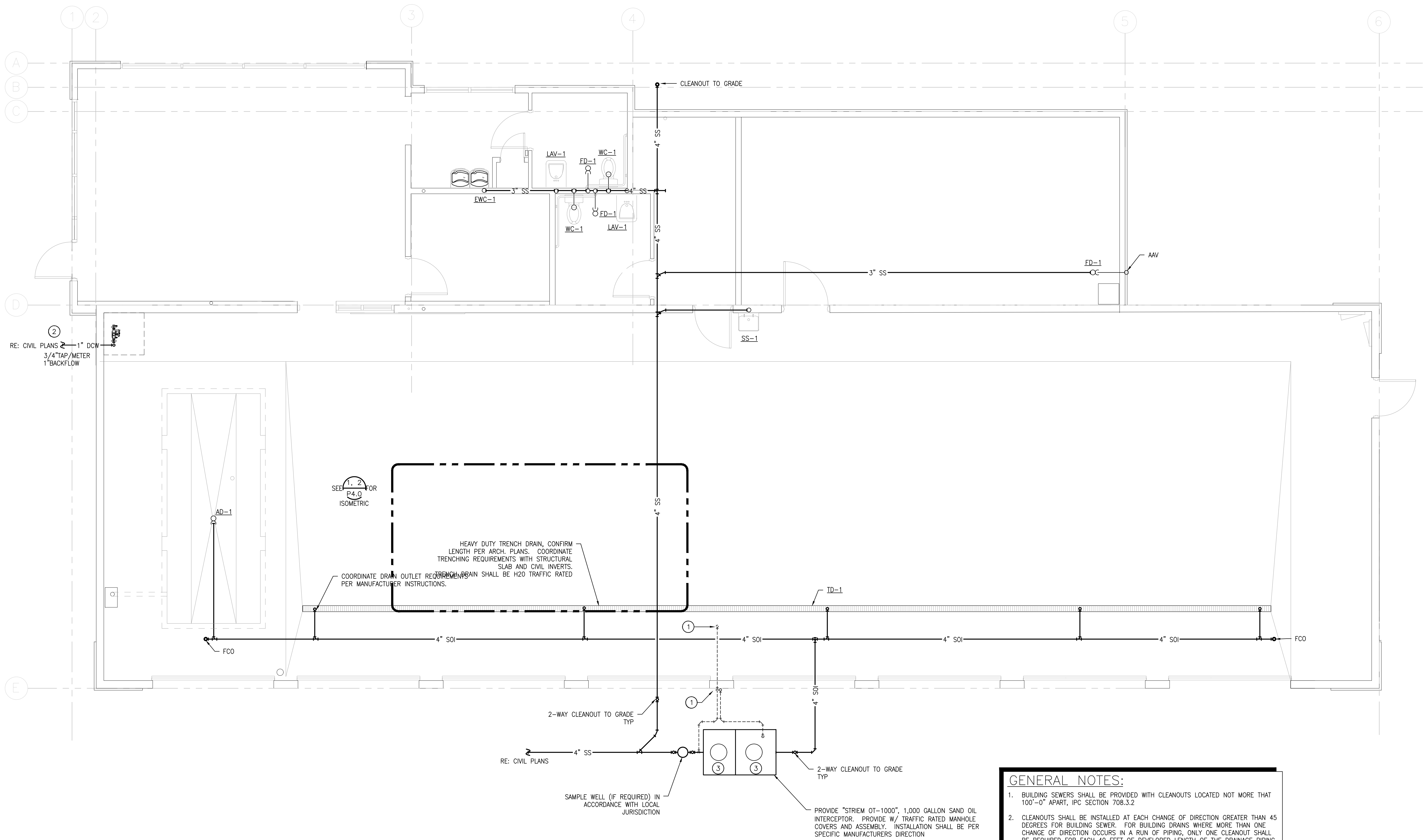


45 SPYGLASS DRIVE
LITTLETON, CO 8012
VOICE: 303.881-892

SHEET

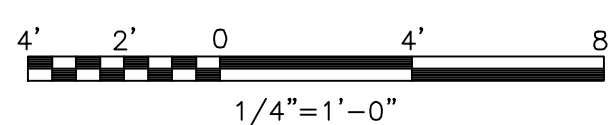
PO.1

PLUMBING SPECS, SCHEDULES AND LEGEND



1 UNDERGROUND PLUMBING PLAN

P1.0



GENERAL NOTES:

- BUILDING SEWERS SHALL BE PROVIDED WITH CLEANOUTS LOCATED NOT MORE THAT 100'-0" APART, IPC SECTION 708.3.2
- CLEANOUTS SHALL BE INSTALLED AT EACH CHANGE OF DIRECTION GREATER THAN 45 DEGREES FOR BUILDING SEWER. FOR BUILDING DRAINS WHERE MORE THAN ONE CHANGE OF DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF THE DRAINAGE PIPING, IPC SECTION 708.3.3
- REFER AND COORDINATE W/ CIVIL PLANS FOR SANITARY, GAS AND WATER EXIT/ENTRY LOCATIONS.
- PROVIDE TRAP PRIMERS ON ALL FLOOR DRAINS, RE: DETAIL ON SHEET P3.1

DRAWING NOTES:

- (2). 2" VENT UP THROUGH SLAB, COMBINE INTO (1) 3" V, ROUTE AS INDICATED. TERMINATE 3" V TO 3" VTR.
- 1" DOMESTIC WATER TAP/METER ON SITE UPSIZE TO A 1" DCW AFTER METER, TO A 1" BACKFLOW IN BUILDING. COORDINATE PER CIVIL PLANS.
- H2O TRAFFIC RATED MANHOLE ASSEMBLY, ACCESS COVERS, MANHOLE RING EXTENTIONS AS REQUIRED FOR DEPTH OF INTERCEPTOR.

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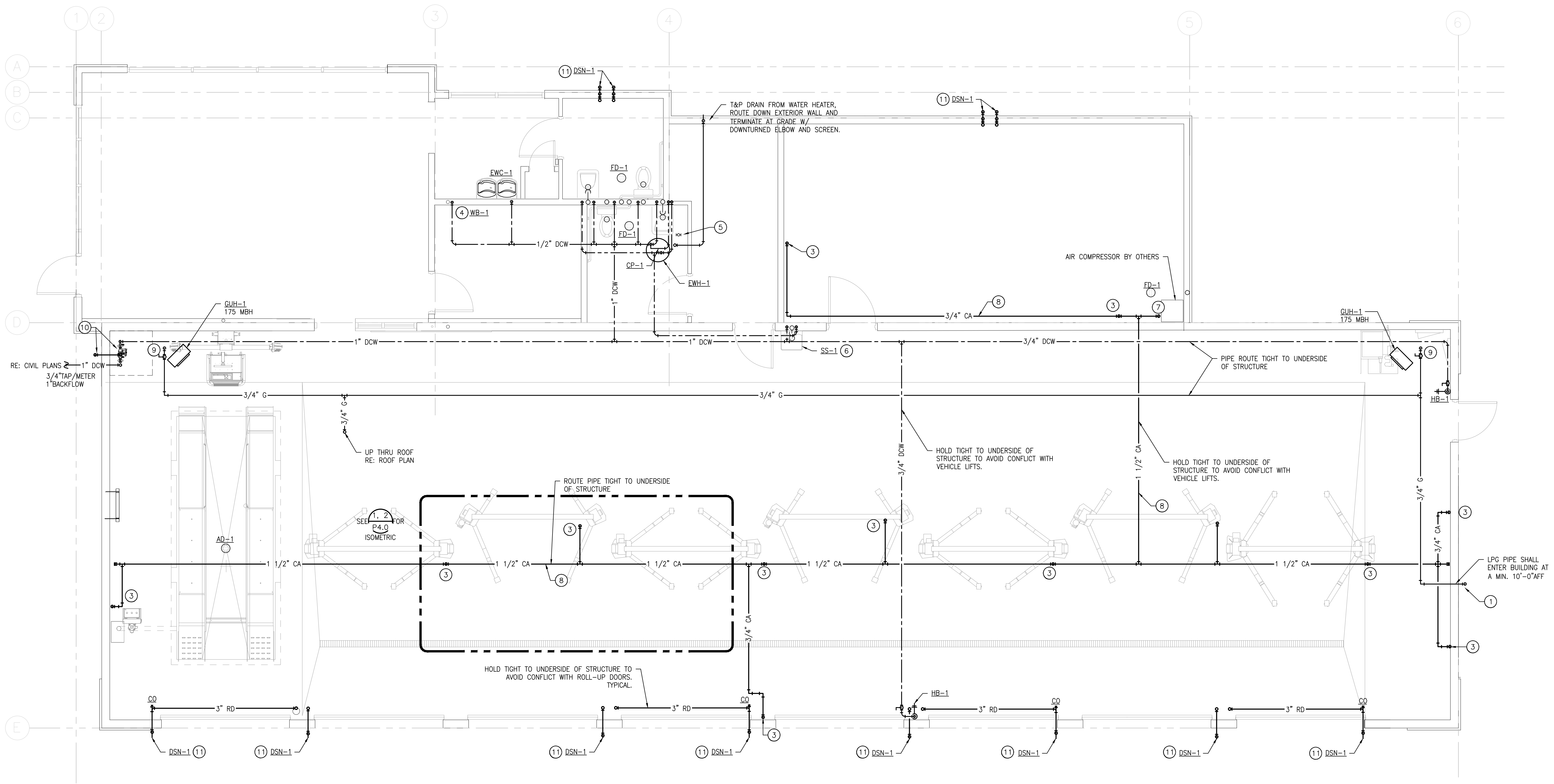


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SHEET

P1.0

UNDERGROUND
PLUMBING PLAN



DRAWING NOTES:

- 1) LPG REGULATOR - SIZING BASED ON 175'-0" AT 2 PSI PRESSURE. TOTAL CONNECTED PROPANE LOAD = 480 MBH.
- 2) 3/4" G UP THRU ROOF FOR RTU-1, 130 MBH
- 3) 3/4" CA DROP, TERMINATE PER DETAIL. CONFIRM HEIGHT REQUIREMENT WITH EQUIPMENT SERVED. CONTRACTOR TO VERIFY SIZE IS ADEQUATE FOR EQUIPMENT USE.
- 4) 1/2" DCW DN IN WALL TO RECESSED WALL OUTLET VALVE BOX, PROVIDE W/ INLINE BACKFLOW PREVENTER. ROUGH-IN FOR COFFEE MAKER.
- 5) 3" V UP TO 3" VTR.
- 6) 3/4" DCW/DHW DN AT WALL, OFFSET 1/2" DCW/DHW TO FAUCET AND 1/2" DCW/DHW TO FOOT PEDALS.
- 7) COMPRESSED AIR MAIN FROM COMPRESSOR OUTLET. INSTALL PER MANUFACTURERS INSTRUCTIONS. PROVIDE ONE DISCONNECT AT AIR COMPRESSOR.

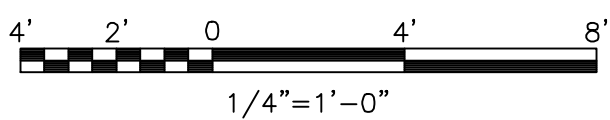
- 8) SLOPE COMPRESSED AIR DOWN IN DIRECTION OF SLOPE AT 1/8" PER FOOT, TYPICAL.
- 9) TERMINATE W/ SHUT-OFF VALVE AND DIRT LEG. FINAL CONNECTIONS SHALL BE PER MANUFACTURERS INSTRUCTIONS FOR PROPANE GAS.
- 10) 1" LEADFREE DOMESTIC WATER BACKFLOW DEVICE, FEBCO LF825Y OR EQUAL. RELIEF DRAIN PIPING FROM AIR GAP FITTING TO TERMINATE OUTDOORS. DISCHARGE MIN 6" AFG, TURN DOWN TO FINISHED GRADE. TERMINATION SHALL INCLUDE STAINLESS STEEL INSECT SCREEN.
- 11) 3" RD/ORD FROM ABOVE TO NEAREST PILASTER AND DOWN. EXTEND TO EXTERIOR WALL, TERMINATE W/ DSN-1 AT MIN 12" AFG.

GENERAL NOTES:

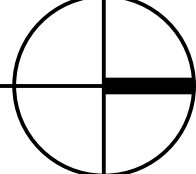
1. PROVIDE TRAP PRIMERS ON ALL FLOOR DRAINS, RE: DETAIL ON SHEET P3.1
2. PAINT ALL EXPOSED GAS PIPING TO MATCH, PER ARCH. PLANS.

1 PLUMBING PLAN

P1.1



NORTH



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BRAKES PLUS

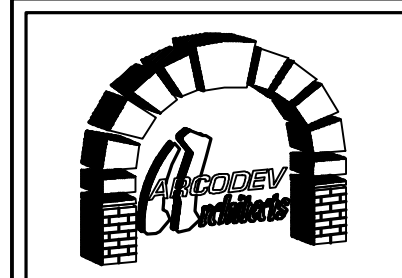
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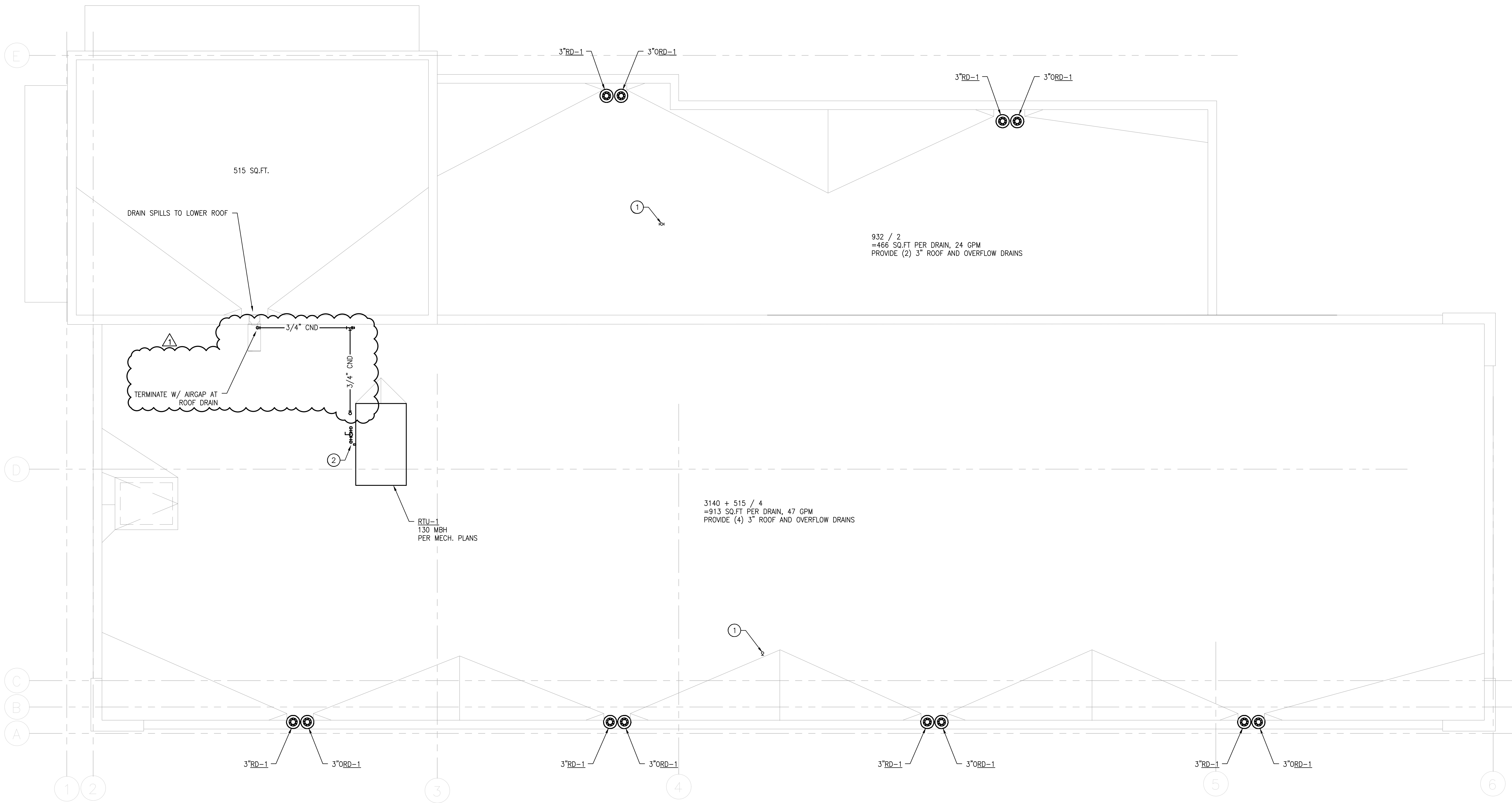
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SHEET

P1.1

PLUMBING PLAN

PROJ # 241088



1 PLUMBING ROOF PLAN
P2.1

4' 2' 0 4' 8'
1/4"=1'-0"

NORTH

- DRAWING NOTES:**
- ① 3" PLUMBING VENT UP THRU ROOF FROM BELOW, RE: PLUMBING PLANS.
- ② GAS PIPING UP FROM BELOW, ROUTE AND TERMINATE W/ SHUT-OFF VALVE AND DIRT LEG AT ROOFTOP UNIT. FINAL CONNECTIONS SHALL BE PER MANUFACTURERS INSTRUCTIONS FOR PROPANE GAS.

PROJ # 241088

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	06/03/24		

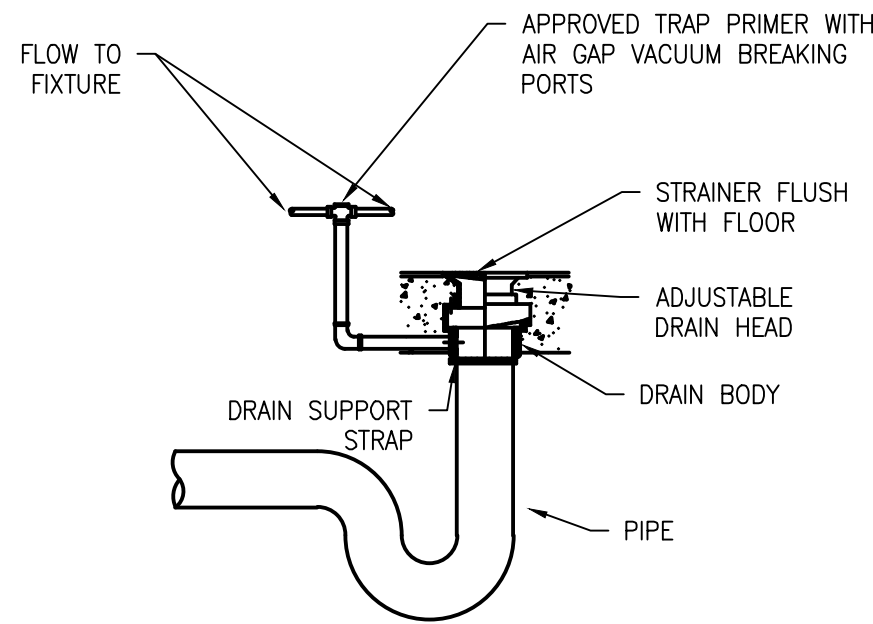
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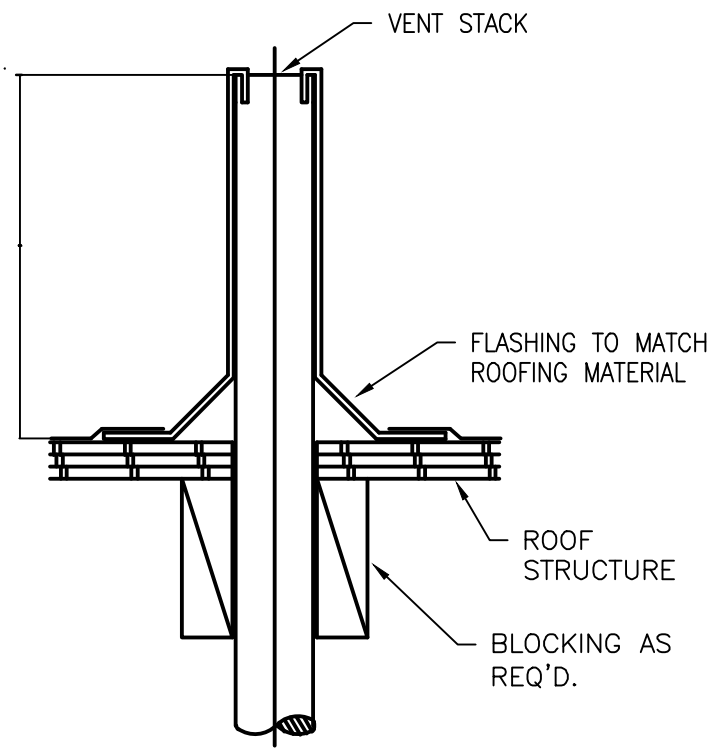
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P2.1
PLUMBING ROOF PLAN



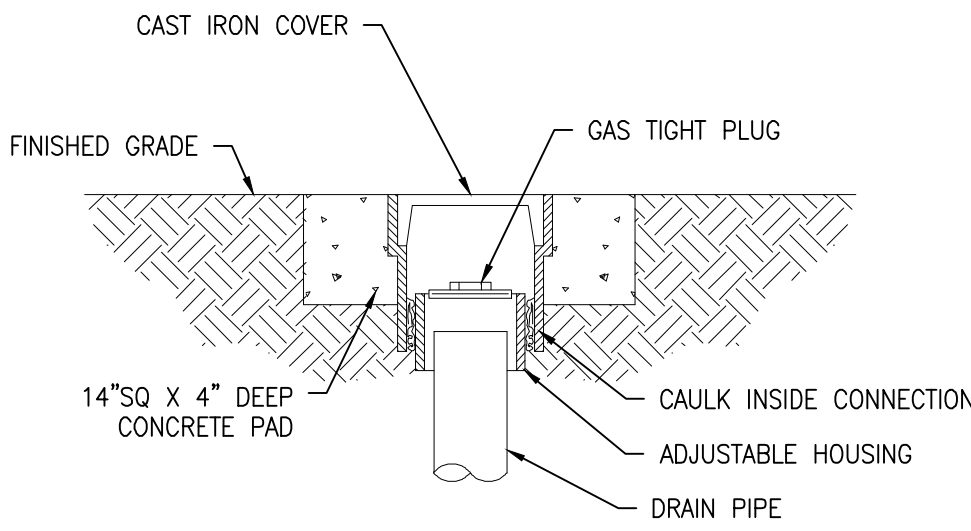
FLOOR DRAIN W/
TRAP PRIMER DETAIL

NOT TO SCALE



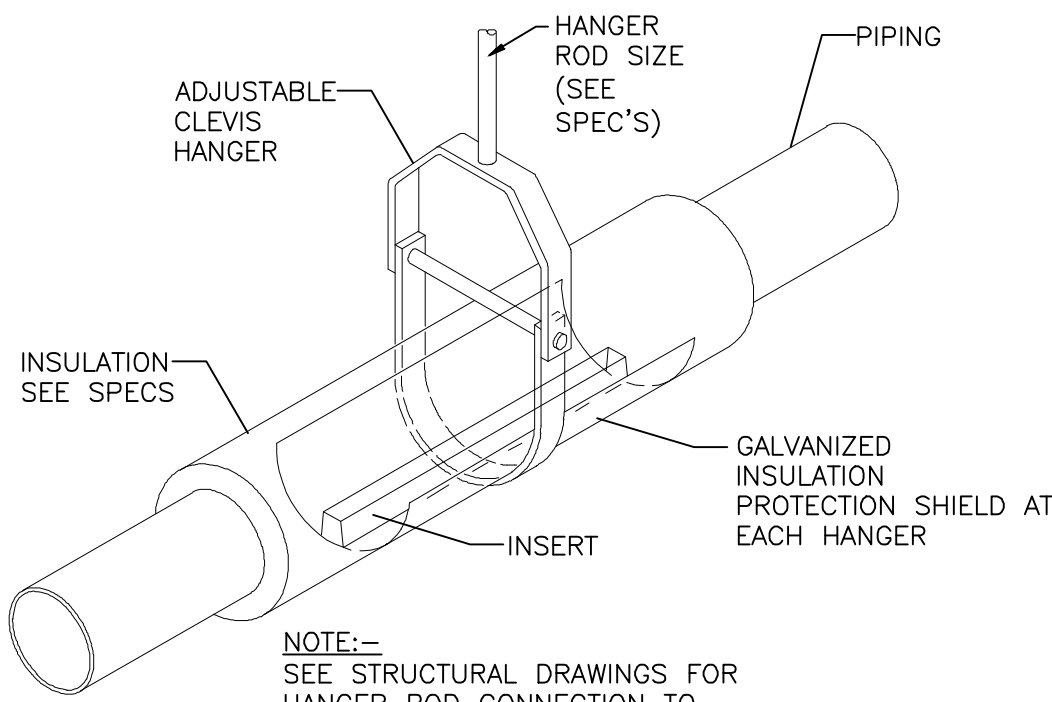
PIPE THRU ROOF DETAIL

NOT TO SCALE



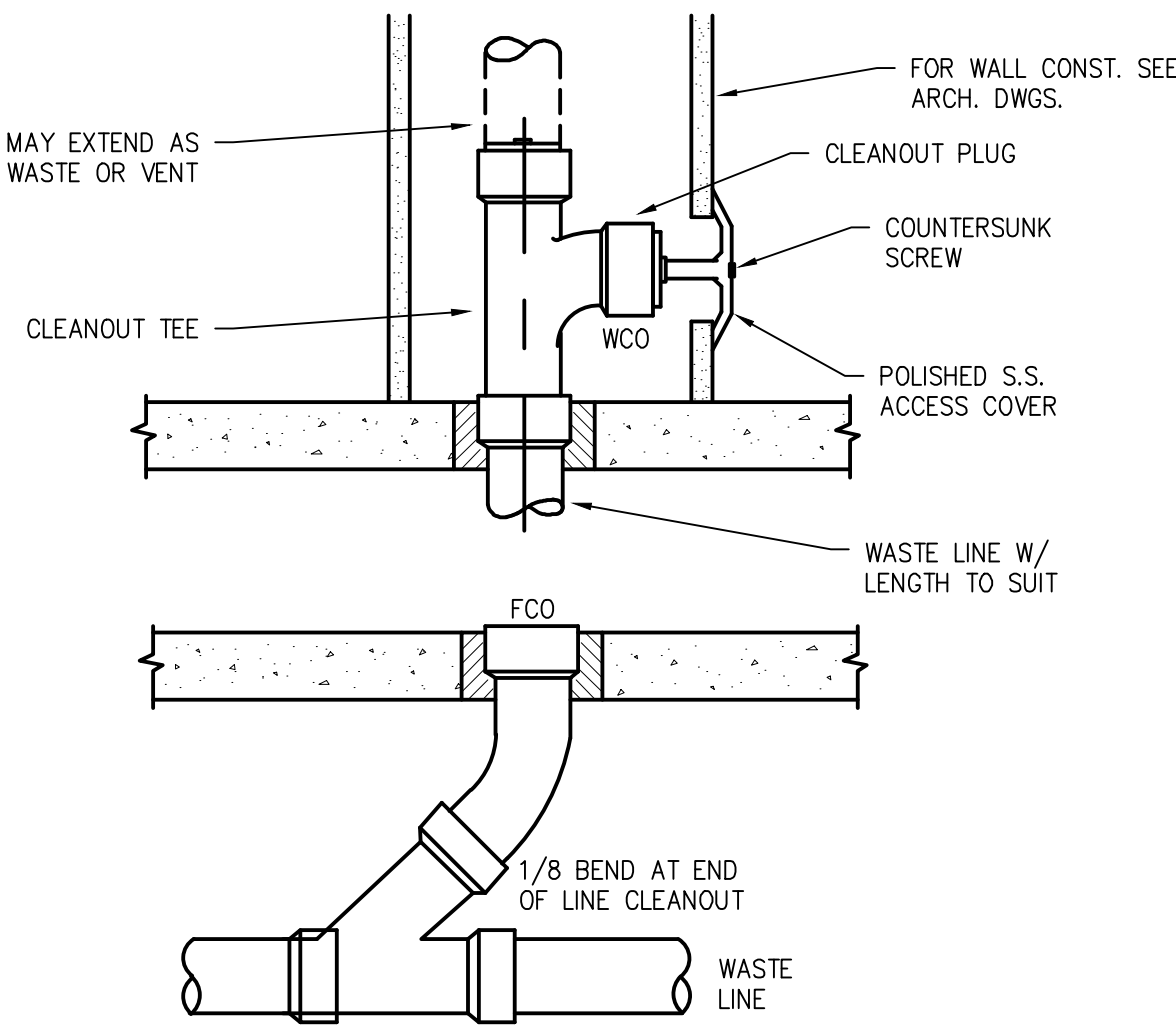
OUTSIDE CLEANOUT TO GRADE

NOT TO SCALE



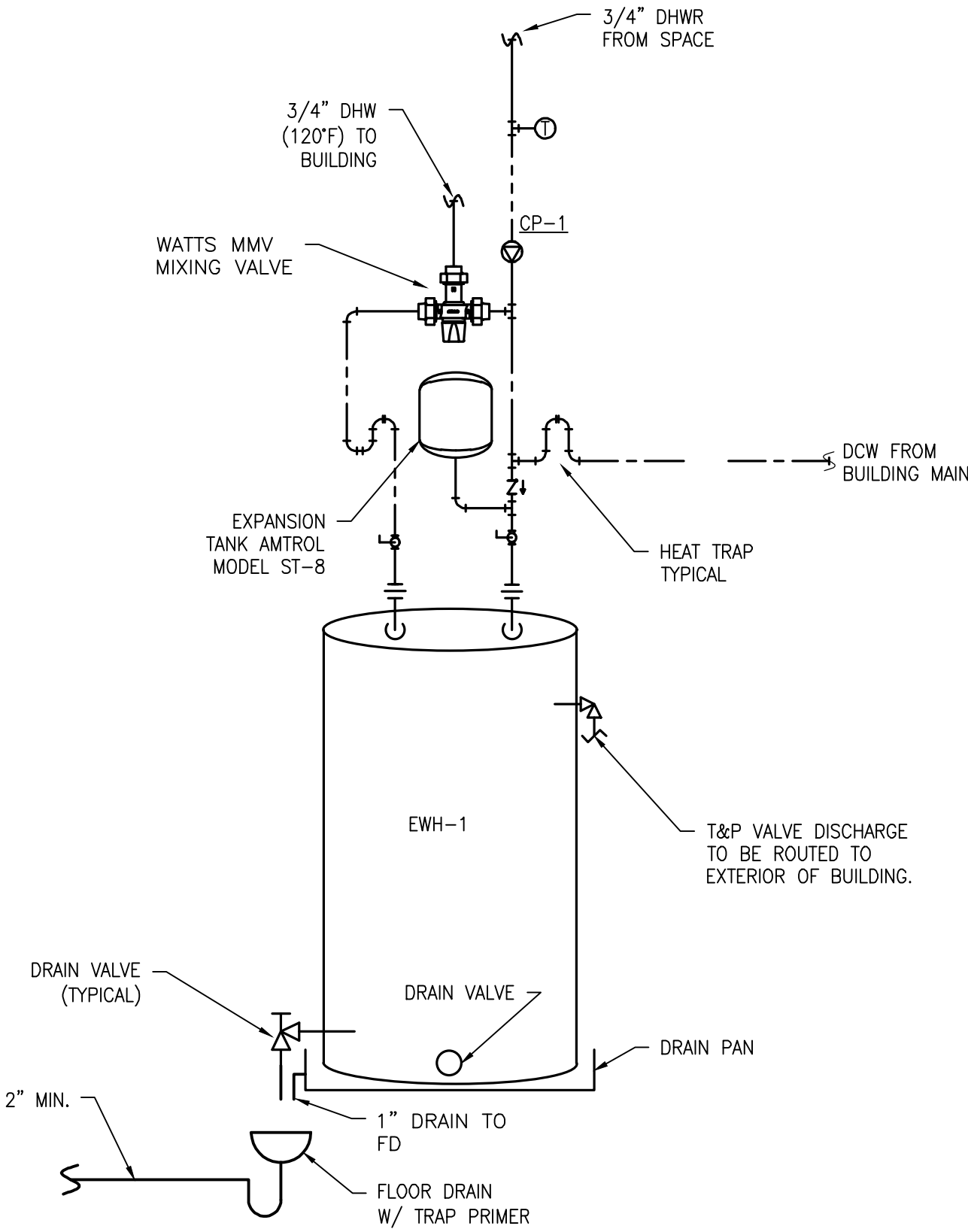
PIPE HANGER AND INSULATION DETAIL

NOT TO SCALE



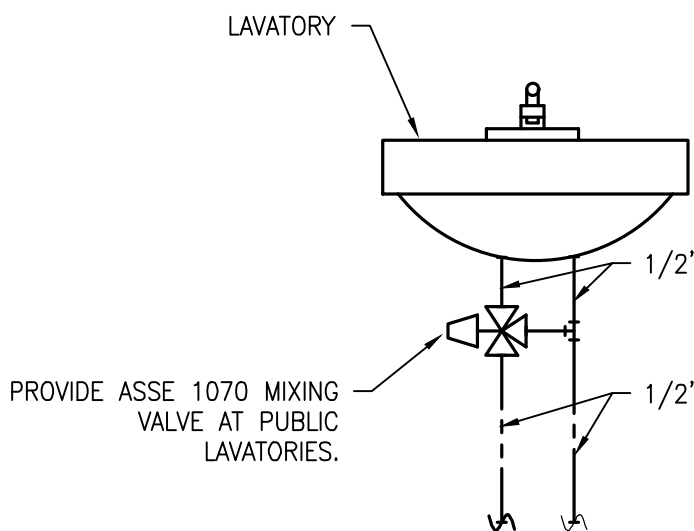
CLEANOUT DETAILS

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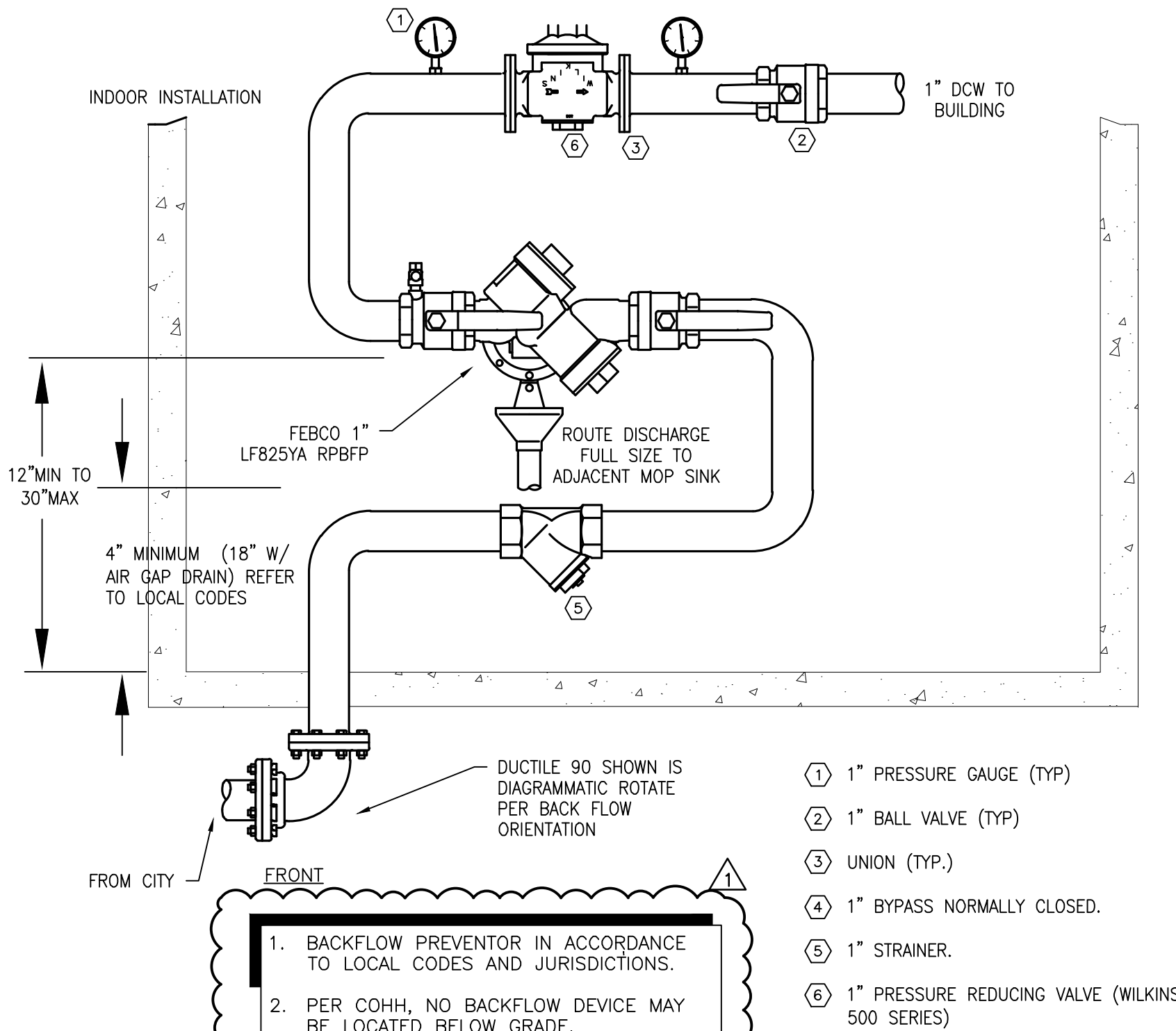
ELECTRIC WATER HEATER DETAIL

NOT TO SCALE



THERMOSTATIC MIXING VALVE DETAIL

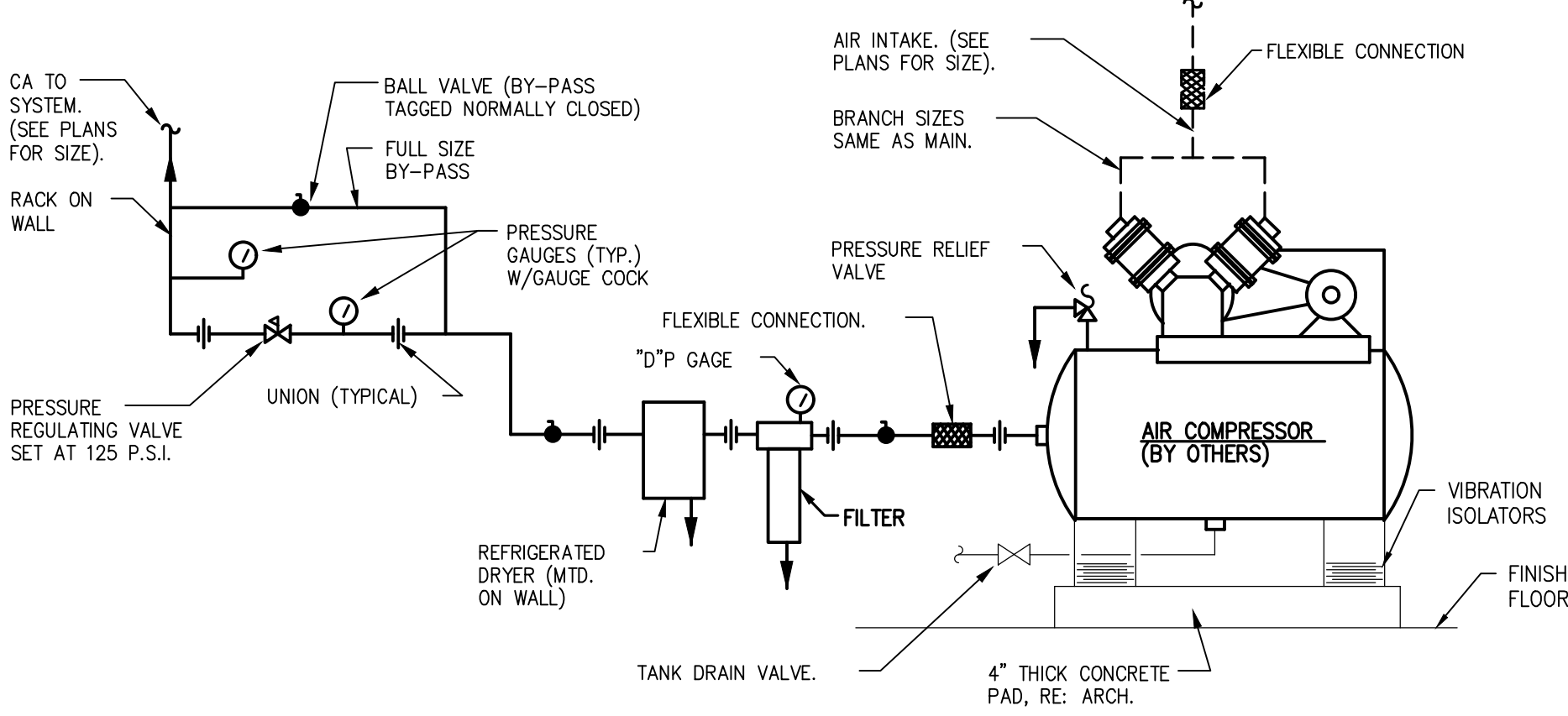
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DOMESTIC WATER ENTRY
BACKFLOW DETAIL

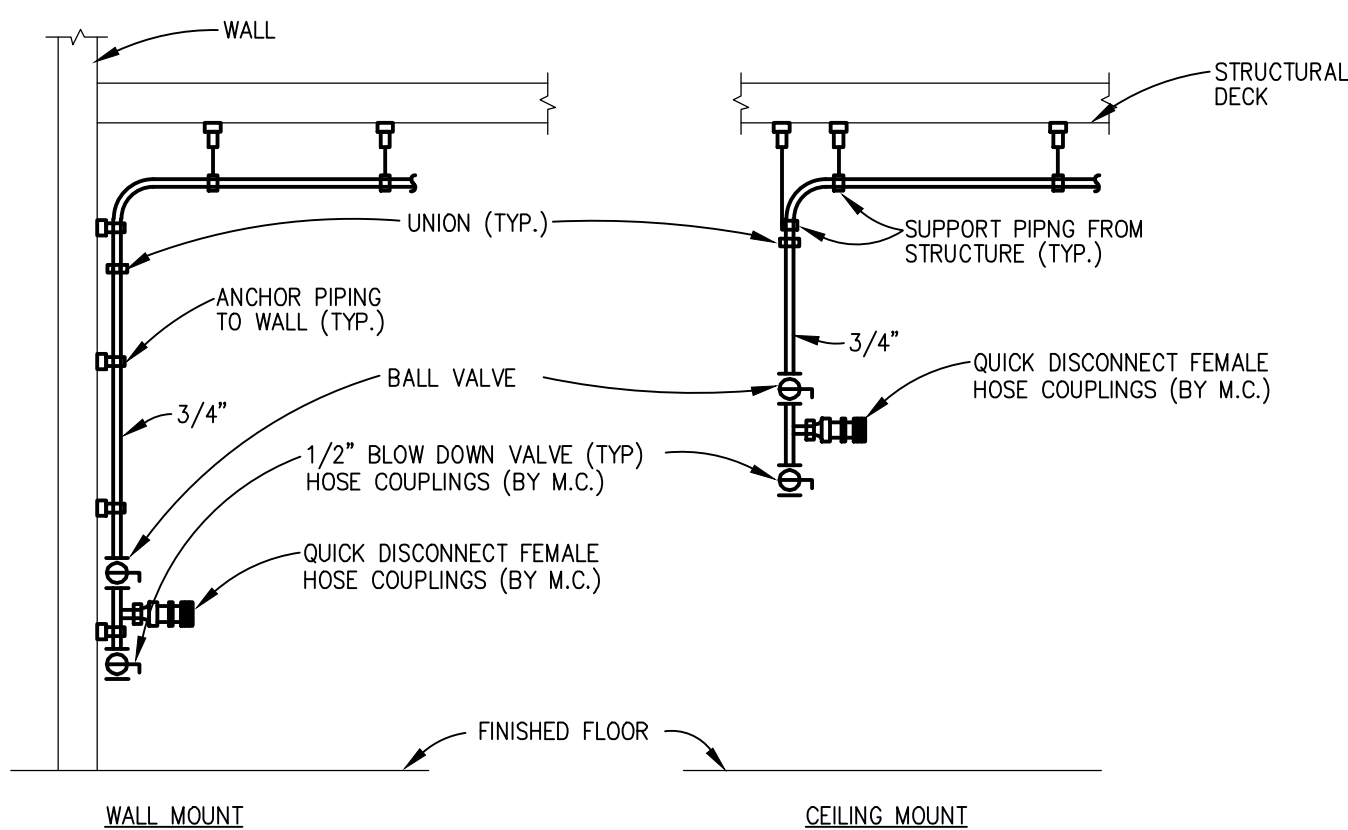
NOT TO SCALE

NOTE: EXTEND ALL DRAINS, FULL SIZE TO DISCHARGE ABOVE FLOOR SINK.



AIR COMPRESSOR PIPING DETAIL

NOT TO SCALE



COMPRESSED AIR CONNECTION DETAILS

NOT TO SCALE

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HARKER HEIGHTS, TEXAS



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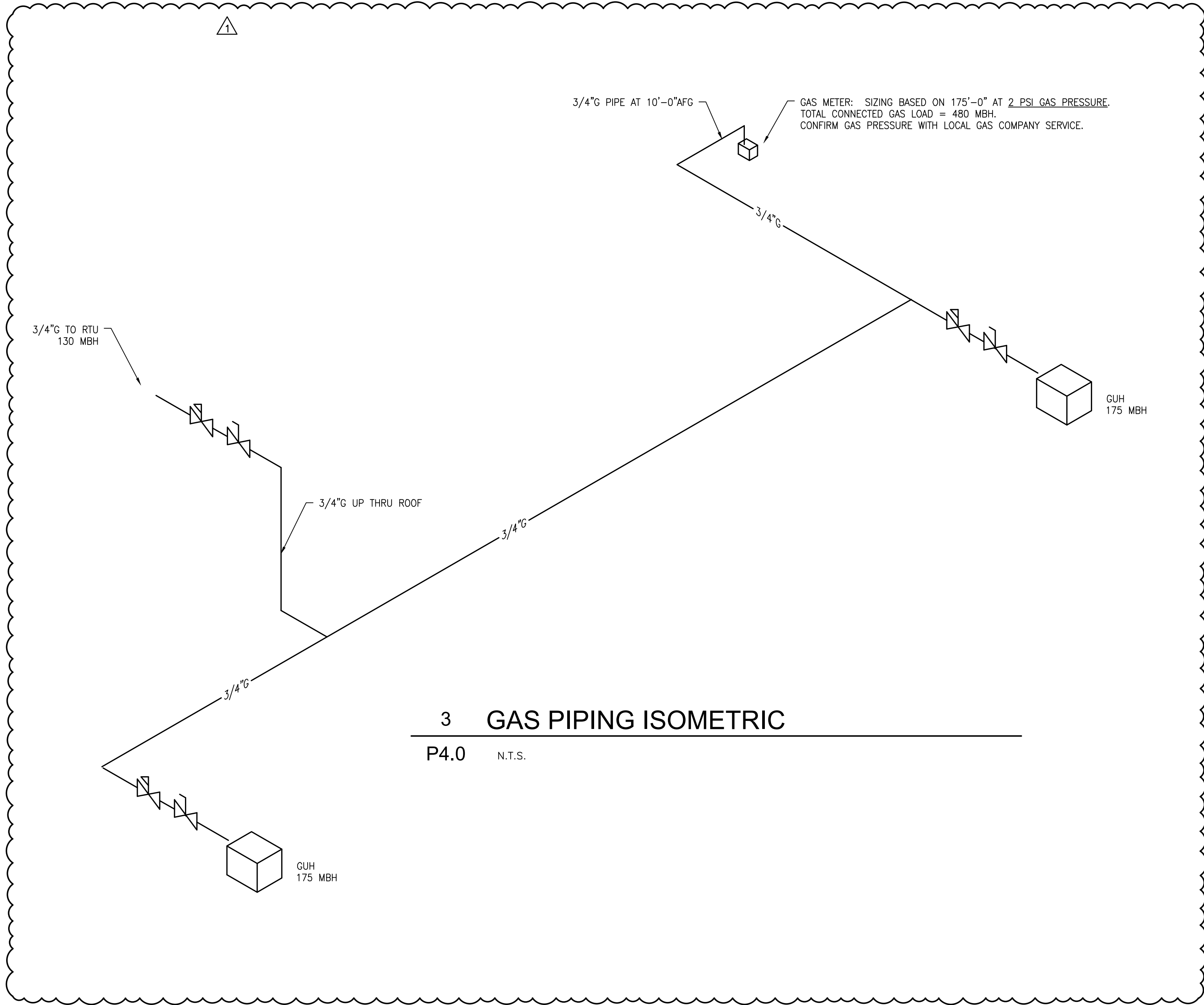
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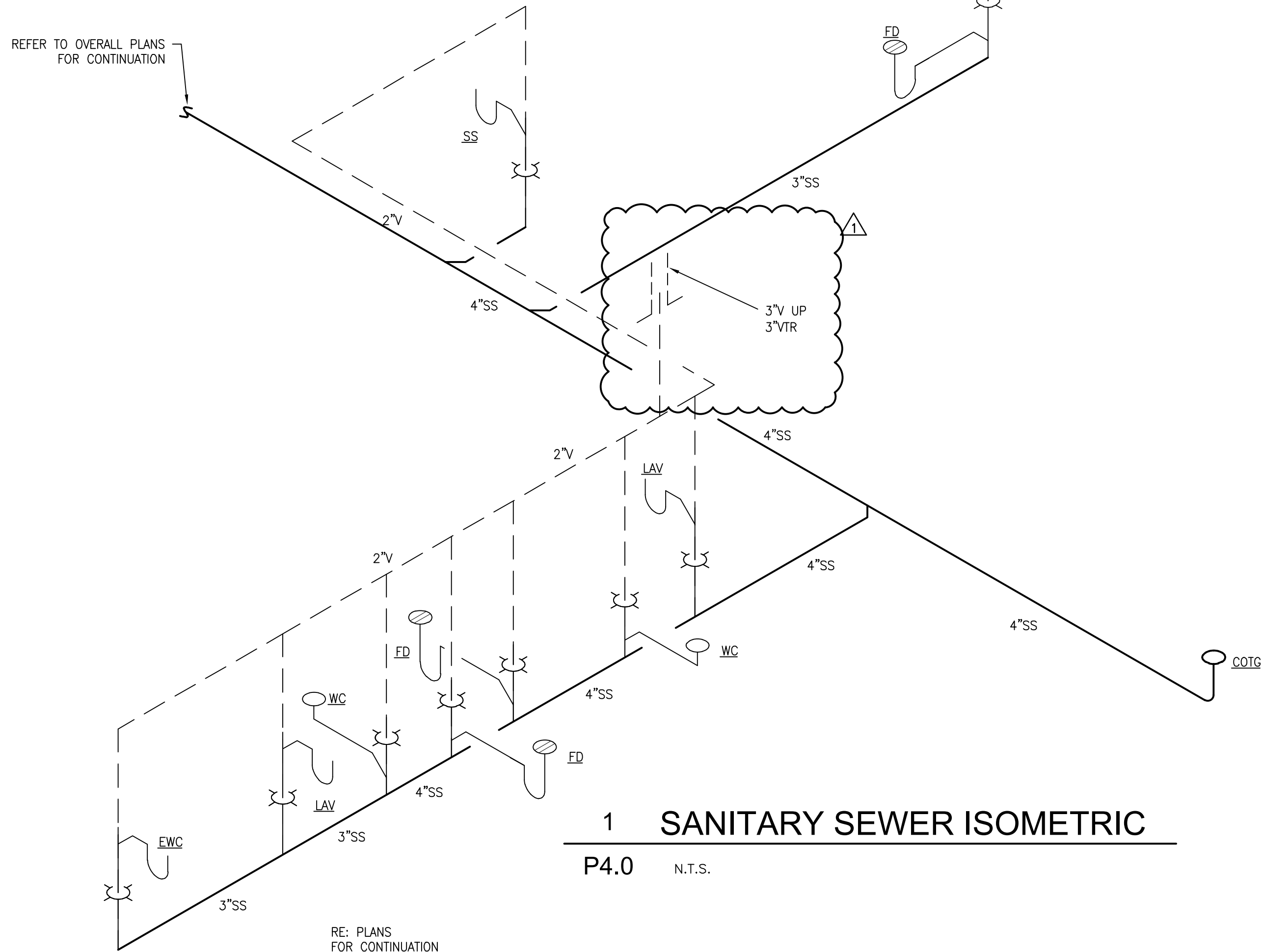
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P3.1

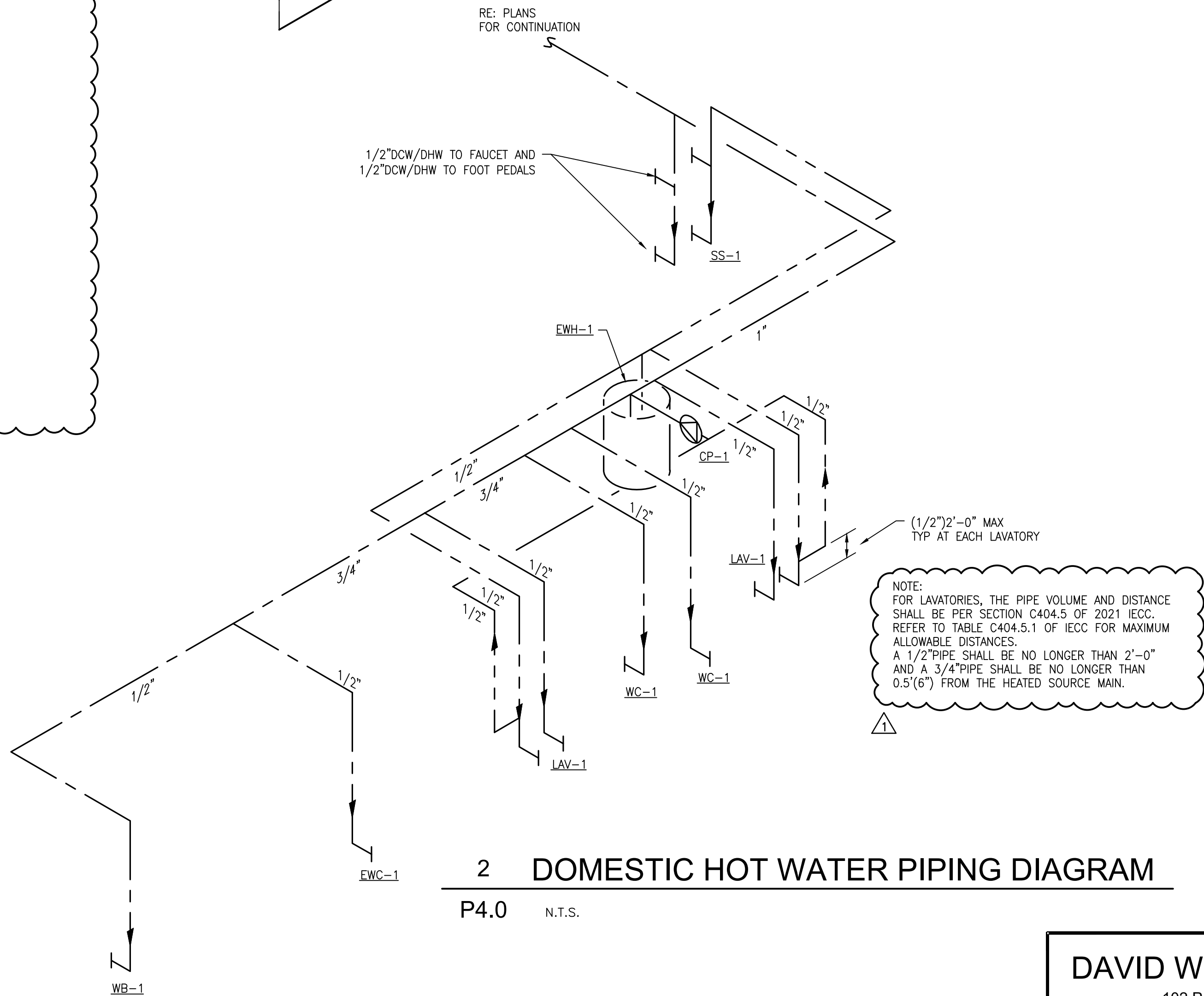
PLUMBING DETAILS



3 GAS PIPING ISOMETRIC
P4.0 N.T.S.



1 SANITARY SEWER ISOMETRIC
P4.0 N.T.S.



2 DOMESTIC HOT WATER PIPING DIAGRAM
P4.0 N.T.S.

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SHEET

P4.0

PLUMBING ISOMETRICS

PROJ # 241088

ELECTRICAL GENERAL NOTES

1. DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
2. FINAL CONNECTIONS & ROUGH-IN REQUIREMENTS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
3. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL AND OTHER DRAWINGS PRIOR TO BID.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED. CONTRACTOR SHALL REPORT DISCREPANCIES TO THE ARCHITECT AND INCLUDE IN HIS BID ALL COSTS REQUIRED TO MAKE HIS WORK MEET EXISTING CONDITIONS.
5. PROPOSED SUBSTITUTIONS OF ELECTRICAL EQUIPMENT OR REQUEST FOR "OR EQUAL" OR "APPROVED EQUAL" LISTING SHALL BE SUBMITTED TO ARCHITECT NOT LESS THAN TEN (10) WORKING DAYS PRIOR TO BID.
6. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT.
7. WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST ADOPTED EDITIONS OF LOCAL, STATE, AND NATIONAL CODES AND ORDINANCES.
8. PROVIDE PERMITS AND INSPECTIONS REQUIRED.
9. PROVIDE RECORD DRAWINGS TO ARCHITECT. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
10. VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
11. SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.
12. WIRE SHALL BE COPPER, 75 DEGREE C RATED FOR GENERAL USE. FOR HID FIXTURES AND WIRING WITHIN 3 INCHES OF FLUORESCENT BALLASTS, WIRE SHALL BE COPPER, MINIMUM 90 DEGREE C RATED. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREE C AMBIENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
14. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS OR EQUIPMENT.
15. SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION. LIGHTS, SWITCHES, RECEPTACLES, MOTORS, ETC., SHALL BE CONNECTED AND OPERABLE.
16. VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING AND RACEWAY SYSTEMS PRIOR TO TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION SUPPORTS, SERVICE FEEDERS (CONDUIT AND/OR WIRE), PULLBOXES, TRANSFORMER PADS, SAWCUTTING AND PATCHING, CONCRETE/PAVING, ETC., REQUIRED. BACKFILL TRENCHES TO 90% COMPACTION AND PATCH TO MATCH EXISTING. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS.
17. PROVIDE MAINTENANCE RECEPTACLE WITHIN 25'-0" OF ALL MECHANICAL OR MOTORIZED EQUIPMENT.




















18. SEE MECHANICAL DRAWINGS FOR LOCATION OF MECHANICAL EQUIPMENT. PROVIDE SERVICE TO AND CONNECT EQUIPMENT AS REQUIRED. PROVIDE FUSES OR HACR-TYPE CIRCUIT BREAKERS FOR ALL AIR CONDITIONING EQUIPMENT SIZED IN ACCORDANCE WITH MANUFACTURER'S NAMEPLATE.
19. PROVIDE ENGRAVED NAMEPLATES ON PANELBOARDS, DISCONNECT SWITCHES, ETC. INDICATING EQUIPMENT DESIGNATION (OR DESIGNATION OF EQUIPMENT SERVED) AND VOLTAGE. NAMEPLATES TO BE MECHANICALLY FASTENED.
20. PANEL DIRECTORIES SHALL BE TYPED AND INSTALLED UNDER CLEAR PLASTIC COVERS.
21. ALL WIRING SHALL BE INSTALLED IN LISTED METALLIC RACEWAYS. RACEWAYS IN SLAB-ON-GRADE OR BELOW GRADE SHALL BE SCHEDULE 40 PVC. TRANSITIONS FROM BELOW TO ABOVE GRADE SHALL BE WITH RIGID STEEL ELBOWS WITH P.V.C. JACKET OR APPROVED EQUAL PROTECTION.
22. EMT, NON-METALLIC AND FLEXIBLE METAL CONDUITS SHALL HAVE A CODE SIZED COPPER GROUNDING CONDUCTOR. INCREASE CONDUIT SIZE AS REQUIRED.
23. FIRE ALARM, SOUND, TELEPHONE, COMPUTER, AND SIMILAR SYSTEMS CONDUITS LARGER THAN 1" SHALL HAVE LONG RADIUS SWEEPS (12 TIMES THE DIAMETER).
24. ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY U.L.
25. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C.
26. RECEPTACLES INSTALLED OUTSIDE, ON THE BUILDING EXTERIOR OR ROOF, WITHIN 6' OF A SINK OR WATER COOLER CONNECTION, VENDING MACHINES, AND KITCHEN AREAS SHALL BE GFCI TYPE OR PROTECTED BY GFCI CIRCUIT BREAKER PER NEC 511.12.
27. ALL NEW EQUIPMENT SUCH AS SWITCHBOARDS, DISTRIBUTION PANELS, DISCONNECT SWITCHES, TRANSFORMERS, AND PANELBOARDS SHALL BE BY THE SAME MANUFACTURER.
28. ELECTRICAL CONTRACTOR SHALL SUBMIT 5 COPIES OF ALL ELECTRICAL EQUIPMENT AND LIGHT FIXTURES TO ENGINEER VIA GENERAL CONTRACTOR FOR APPROVAL PRIOR TO ORDERING.
29. ELECTRICAL CONTRACTOR TO PROVIDE FINAL CONNECTION OF OWNER FURNISHED EQUIPMENT. VERIFY EXACT REQUIREMENTS PRIOR TO ROUGH-IN.
30. HANDLE TIES SHALL BE PROVIDED FOR ALL MULTI-WIRED BRANCH CIRCUITS UNLESS INDIVIDUAL NEUTRAL CONDUCTORS ARE PROVIDED PER NEC 210.4(B).
31. FURNISH ALL MECHANICAL EQUIPMENT WITH FUSIBLE DISCONNECTS. THESE DISCONNECTS SHALL BE EQUIPED WITH CLASS "R" FUSES.

ALL ELECTRICAL WORK SHALL COMPLY WITH 2023 N.E.C. REQUIREMENTS AND ALL CoHH AMENDMENTS.

ELECTRICAL SHEET INDEX

					SHEET NO.	SHEET DESCRIPTION
					E0.1	ELECTRICAL COVER SHEET
					ES1.1	ELECTRICAL SITE PLAN
					E1.1	ELECTRICAL LIGHTING PLAN
					E2.1	ELECTRICAL POWER PLAN
					E3.1	ELECTRICAL ROOF PLAN
					E4.1	ELECTRICAL ONE LINE DIAGRAM
					E5.1	LIGHTING COMPLIANCE CERTIFICATES

ELECTRICAL LEGEND

-  DUPLEX OUTLET
-  DEDICATED DUPLEX OUTLET
-  AUTOCLAVE RECEPTACLE
-  FOUR-PLEX OUTLET
-  220-VOLT OUTLET
-  FLOOR OUTLET
-  TELEPHONE JACK
-  TELEPHONE JACK +60"
-  DATA JACK
-  PLUGMODE
-  ABOVE COUNTER
-  LIGHT SWITCH @ 56" AFF
-  THREE-WAY LIGHT SWITCH @56' AFF
-  TELEPHONE BACKBOARD W/ OUTLET
-  ELECTRICAL PANEL
-  TIME CLOCK
-  SIGN OUTLET
-  JUNCTION BOX
-  THERMOSTAT

VERIFY ELECTRICAL REQUIREMENTS WITH OWNER PRIOR TO INSTALLATION

DAVID W DAY , P.E.
102 Poncho St.
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Telephone 713-927-4470

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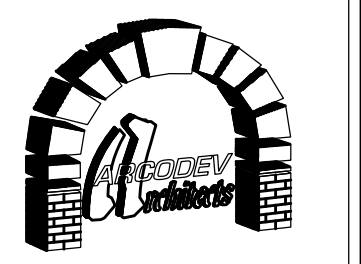
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REVISION	DATE	COMMENTS	
		SUBMITTED TO BLDG. DEPT.	CITY COMMENTS
1	06.03.24		

ARCDEV JOB #: -
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CHECKED BY: LRP
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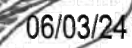
E0.1

ELECTRICAL
COVER SHEET



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HARKER HEIGHTS, TEXAS



COMMENTS

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1	03.23.24	SUBMITTED TO BLDG. DEPT.
	06.03.24	CITY COMMENTS

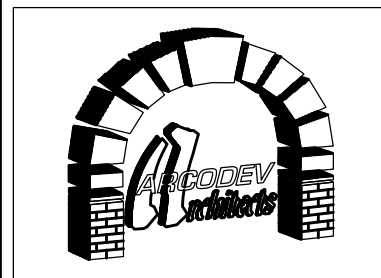
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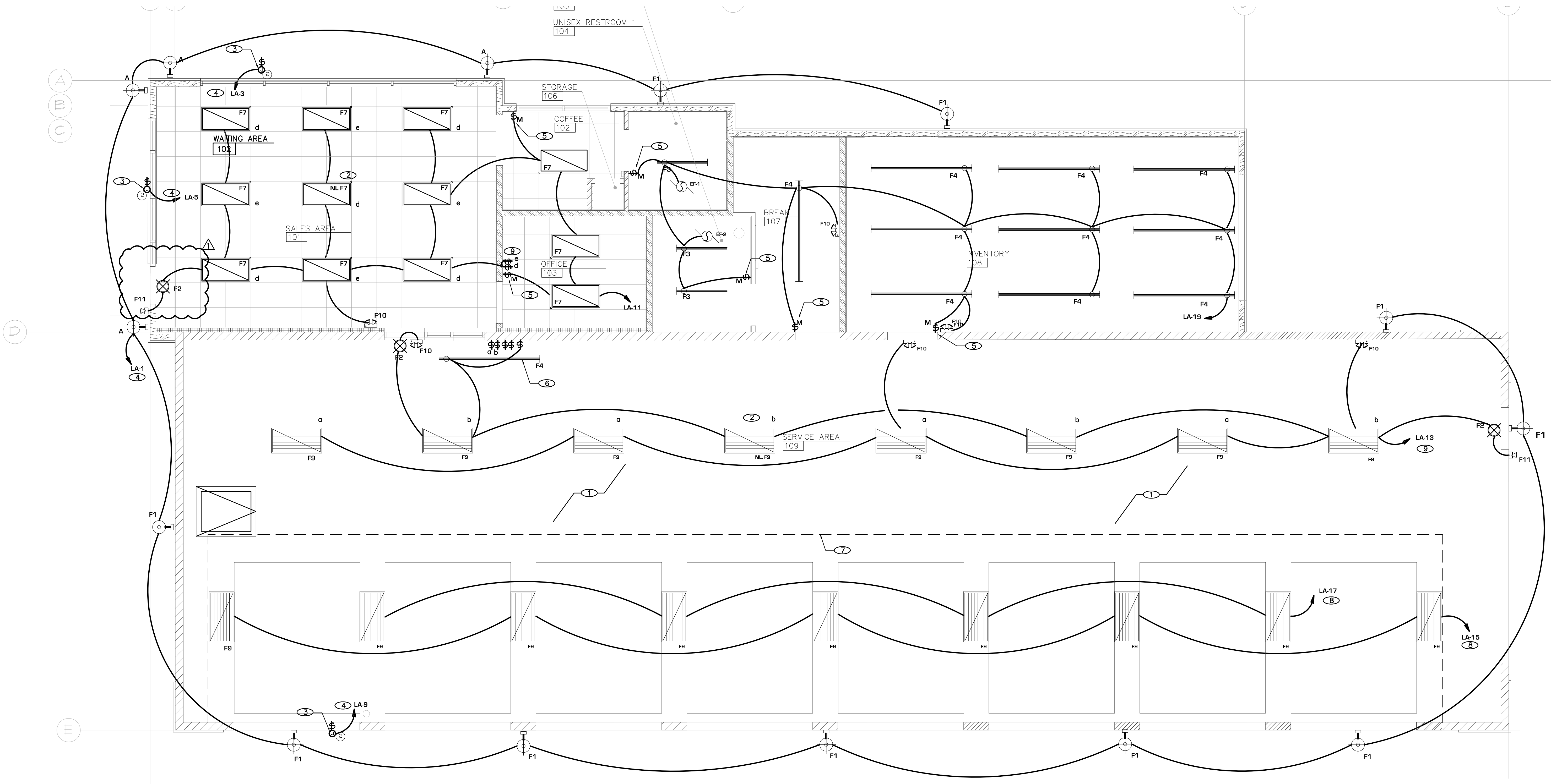
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ES1.1

ELECTRICAL SITE PLAN



1 ELECTRICAL LIGHTING PLAN
SCALE: 1/4" = 1'-0"

LIGHTING GENERAL NOTES

- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR LUMINAIRE LOCATIONS.
- COORDINATE LUMINAIRE LOCATION WITH MECHANICAL PIPING, DUCTWORK, ETC. TO AVOID CONFLICTS.
- ALL CONDUIT SHALL BE INSTALLED CONCEALED IN FINISHED AREAS UNLESS OTHERWISE NOTED.
- EACH MULTIWIRED BRANCH CIRCUIT SHALL BE PROVIDED WITH A SEPARATE NEUTRAL FOR EACH BRANCH CIRCUIT.
- CONNECT EXTERIOR LUMINAIRES WITH MINIMUM #10 AWG CONDUCTOR.
- FUNCTIONAL TESTING OF THE LIGHTING SYSTEM SHALL COMPLY WITH SECTION C408.3.1 OF THE 2021 IECC.

LIGHTING DETAIL NOTES

- MOUNT TYPE 'F9' LUMINAIRE LOCATED IN GARAGE AREA CHAIN HUNG FROM STRUCTURE AT 12'-0" A.F.F.
- MOUNT TYPE 'F9' LUMINAIRE LOCATED BETWEEN OVERHEAD DOORS AT 2" BELOW OVERHEAD GRILLE GUIDES.
- NIGHT LIGHT UNSWITCHED FIXTURE. CONNECT AHEAD OF LOCAL SWITCHING OR LIGHT CONTROLS.
- JUNCTION BOX / DISCONNECTING MEANS FOR CONNECTION TO OWNER PROVIDED ILLUMINATED BUILDING SIGNAGE. COORDINATE EXACT LOCATION WITH SIGN CONTRACTOR PRIOR TO ROUGH-IN.
- LUMINAIRE OR SIGN BRANCH CIRCUIT CONTROLLED THROUGH PHOTOCELL ON/TIMECLOCK OFF.
- PROVIDED OCCUPANCY SENSOR ON/OFF SWITCH FOR CONTROL OF LIGHTING WITHIN THIS ROOM. SWITCH TO BE MANUFACTURED BY WATT STOPPER #LMPW-100. OCCUPANCY SENSORS SHALL BE INSTALLED IN ALL AREAS REQUIRED BY 2021 IECC.
- CENTER FIXTURE OVER SERVICE MANAGER'S DESK.

- DASHED LINE INDICATES DAYLIGHT ZONE.
- CIRCUIT SWITCHED VIA DAYLIGHT PHOTOCELL SENSORS (DAYLIGHT RESPONSIVE CONTROLS) CONFIGURED TO COMPLETELY SHUT OFF ALL CONTROLLED LIGHT FIXTURES, IN ACCORDANCE WITH SECTION C405.2.3 OF THE 2021 IECC.
- PROVIDED BI-LEVEL SWITCHING LIGHT-REDUCTION CONTROLS, IN ACCORDANCE WITH SECTION C405.2.3.1 OF THE 2021 IECC.

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BRAKES PLUS

640 EAST FM 2410
HARKER HEIGHTS, TEXAS



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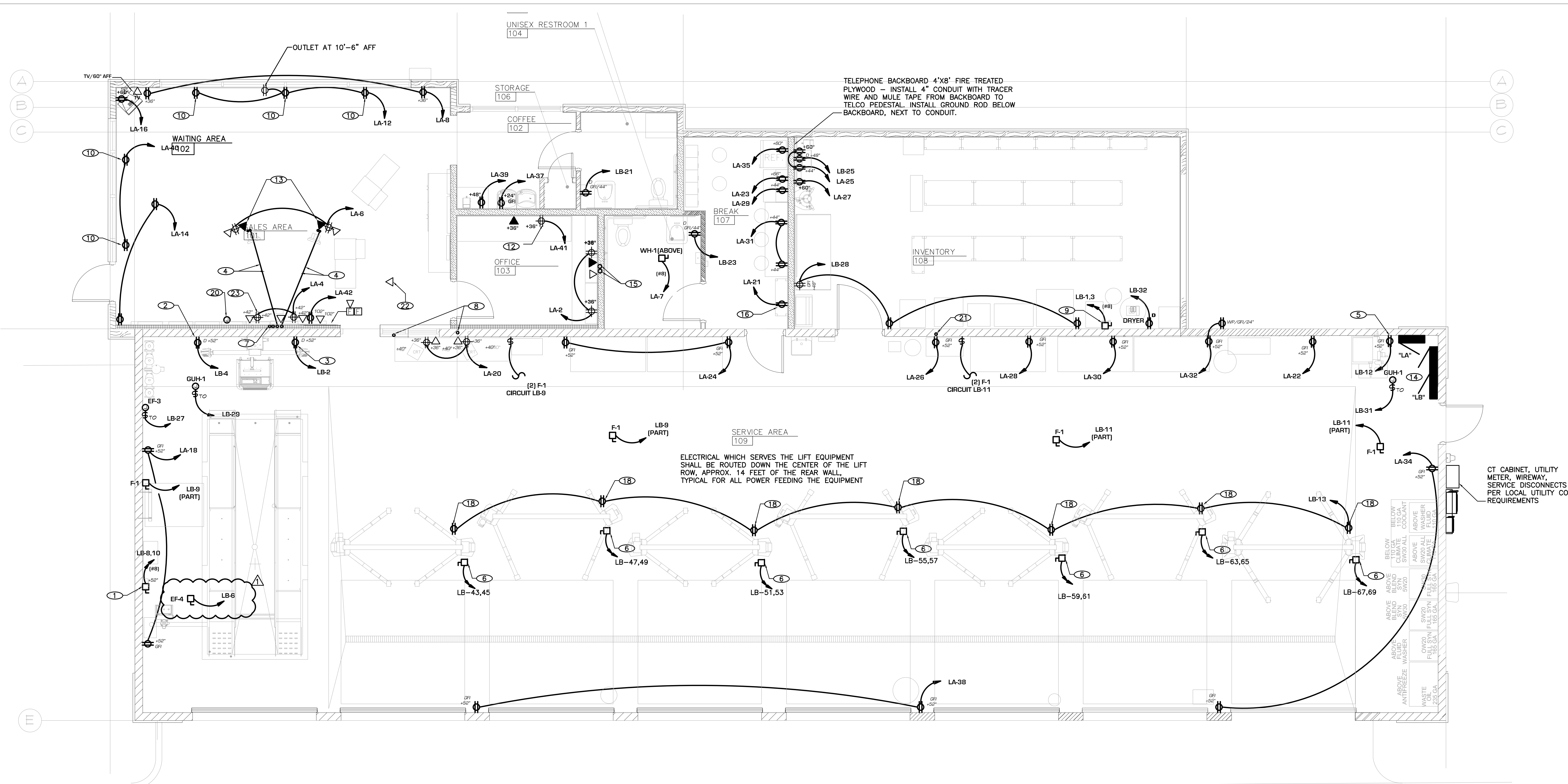
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SHEET

E1.1

ELECTRICAL
LIGHTING PLAN



1 ELECTRICAL POWER PLAN
SCALE: 1/4" = 1'-0"

POWER GENERAL NOTES

- REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHT AND/OR LOCATION OF DEVICES PRIOR TO ROUGH-IN.
- COORDINATE REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
- MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT.
- ALL CONDUIT SHALL BE INSTALLED CONCEALED IN FINISHED AREAS UNLESS OTHERWISE NOTED.
- EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A SEPARATE NEUTRAL FOR EACH BRANCH CIRCUIT.
- COORDINATE REQUIREMENTS AND LOCATIONS OF OWNER SUPPLIED EQUIPMENT WITH OWNER AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
- PROVIDE GFCI PROTECTION FOR ALL 125V, 15-20A RECEPTACLES INSTALLED IN THE SERVICE BAY AREAS WHERE DIAGNOSTIC EQUIPMENT, POWER TOOLS, OR LIGHTING EQUIPMENT IS USED PER N.E.C. ARTICLE 511.12.

8. ELECTRICAL INSTALLATION SHALL COMPLY WITH N.E.C. ARTICLE 511:

- ALL AREAS DESIGNATED AS HAZARDOUS (CLASSIFIED) LOCATIONS SHALL BE PROPERLY DOCUMENTED. THIS DOCUMENTATION SHALL BE AVAILABLE TO THOSE AUTHORIZED TO DESIGN, INSTALL, INSPECT, MAINTAIN, OR OPERATE ELECTRICAL EQUIPMENT AT THE LOCATION. PER N.E.C. ARTICLE 500.4, MAINTENANCE BAYS ARE MAJOR REPAIR GARAGE AND MUST COMPLY WITH N.E.C. ARTICLE 511.3.
- FLOOR AREAS ARE CLASS 1 DIVISION 2 CLASSIFIED UP TO A LEVEL OF 18" PER N.E.C. TABLE 511.3(C). THIS AREA SHALL COMPLY WITH ARTICLE 511.3(C) AND HAVE WIRING AND DEVICES INSTALLED PER N.E.C. ARTICLE 501.10(B)
- GARAGE AREA IS PROVIDED WITH VENTILATION OF AT LEAST 1 CUBIC FOOT PER MINUTE FOR EACH SQUARE FT OF FLOOR AREA, WITH SUCTION TAKEN FROM A POINT WITHIN 18" OF HIGHEST POINT IN THE CEILING. NO LIGHTER-THAN-AIR GASEOUS FUELS ARE UTILIZED IN THIS AREA. PER N.E.C. ARTICLE 511.3(D) THIS AREA IS UNCLASSIFIED.

- AT LEAST 50% OF ALL NEW 120V, 15 AND 20 AMP RECEPTACLES INSTALLED IN ENCLOSED OFFICES, CONFERENCE ROOMS, ROOMS USED PRIMARILY FOR COPY OR PRINT FUNCTIONS, BREAKROOMS, CLASSROOMS, AND INDIVIDUAL WORKSTATIONS SHALL HAVE AUTOMATIC RECEPTACLE CONTROL, COMPLYING WITH 2021 IECC C405.11.1. THESE RECEPTACLES SHALL BE SPLIT CONTROLLED RECEPTACLES WITH THE TOP RECEPTACLE CONTROLLED BY AN OCCUPANT SENSOR CONTROL THAT SHALL TURN OFF RECEPTACLES WITHIN 20 MINUTES OF OCCUPANTS LEAVING A SPACE.

POWER DETAIL NOTES

- ALIGNMENT RACK. PROVIDE 40A/2P DISCONNECT SWITCH AS REQUIRED FOR CONNECTION TO EQUIPMENT. CONNECT TO BRANCH BREAKER AS INDICATED VIA 2#8, 1#10G - 1" C.
- ALIGNMENT MACHINE. PROVIDE 20 AMP, 120 VOLT GFI DUPLEX RECEPTACLE AS REQUIRED FOR CONNECTION TO EQUIPMENT. CONNECT TO BRANCH BREAKER AS INDICATED VIA 2#12, 1#12G - 1/2" C.
- ALIGNMENT SENSORS. PROVIDE 20 AMP, 120 VOLT GFI DUPLEX RECEPTACLE AS REQUIRED FOR CONNECTION TO EQUIPMENT. CONNECT TO BRANCH BREAKER AS INDICATED VIA 2#12, 1#12G - 1/2" C.
- PROVIDE (2) 1" ELECTRICAL CONDUITS FROM JUST ABOVE CEILING, THROUGH THE WALL, AND UNDER FLOOR SLAB TO EACH KIOSK. CONDUIT #1 (FOR POWER) SHALL BE 7'-0" FROM REAR WALL AND 2'-6" FROM CENTERLINE OF FRONT DOOR. CONDUIT #2 (FOR DATA) WILL BE JUST TO THE OUTSIDE OF CONDUIT #1 AND SLIGHTLY BACK TO ALLOW FOR ANGLE MOUNTING OF KIOSK.
- BRAKE LATHE. PROVIDE 20 AMP, 120 VOLT GFI DUPLEX RECEPTACLE AS REQUIRED FOR CONNECTION TO EQUIPMENT. CONNECT TO BRANCH BREAKER AS INDICATED VIA 2#12, 1#12G - 1/2" C.
- PROVIDE POWER FOR LIFTS, 208V, 1PH, 25A CIRCUIT, 17FLA. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.
- PROVIDE TWO 1" EMPTY CONDUITS WITH PULL STRINGS FROM THE PRINTER DESK WALL BOX TO THE CEILING PLENUM.
- PROVIDE TWO 1" EMPTY CONDUITS WITH PULL STRINGS AT THE SERVICE MANAGER'S DESK FROM THE WALL BOX UP TO THE CEILING PLENUM.
- AIR COMPRESSOR. PROVIDE (1) 60A/2P DISCONNECT SWITCH AS REQUIRED FOR CONNECTION TO EACH MOTOR. CONNECT TO BRANCH BREAKER AS INDICATED VIA 2#8, 1#10G - 3/4" C.
- PROVIDE FLUSH MOUNTED DUPLEX RECEPTACLE LOCATED IN CEILING FOR SHOW WINDOW RECEPTACLES.
- INTERLOCK EF-3 WITH LV-1
- PROVIDE FOUR-PLEX RECEPTACLE FOR CONNECTION TO OWNER SUPPLIED COMPUTER SERVER. COORDINATE LOCATION AND MOUNTING HEIGHT WITH OWNER PRIOR TO ROUGH-IN.
- COORDINATE LOCATION OF DUPLEX RECEPTACLE AND DATA OUTLET IN MILLWORK PRIOR TO ROUGH-IN.
- MAINTAIN NEC REQUIRED CLEARANCES AT PANELS.
- PROVIDE 1" EMPTY CONDUIT WITH PULL STRING IN MANAGER'S OFFICE AT EACH WORK STATION FROM THE WALL BOX TO THE CEILING PLENUM.
- PROVIDE DUPLEX RECEPTACLE FOR CONNECTION TO IRRIGATION CONTROLLER. COORDINATE EXACT LOCATION WITH LANDSCAPE CONTRACTOR.
- WEATHERPROOF RECEPTACLE PROVIDED WITH ROOF TOP UNIT, E.C. TO INSTALL.
- GFI DUPLEX RECEPTACLE PROVIDED WITH LIFT. CONNECT 120 VOLT RECEPTACLE TO BRANCH CIRCUIT SERVING LIFT.
- PROVIDE 1" EMPTY CONDUIT WITH PULL STRING FROM COMPUTER STATION LOCATION WALL BOX TO THE CEILING PLENUM.
- ALARM PAD - PROVIDE 3/4" EMPTY CONDUIT STUBBED ABOVE CEILING. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.
- PROVIDE 1" EMPTY CONDUIT WITH PULL STRING FROM TECH PERSON COMPUTER LOCATION WALL BOX TO THE CEILING PLENUM.
- DATA OUTLET ABOVE CEILING FOR WIRELESS ROUTER. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.
- DUPLEX RECEPTACLE AND DATA OUTLET FOR MENU TV. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.

CT CABINET, UTILITY METER, WIREWAY, SERVICE DISCONNECTS PER LOCAL UTILITY CO REQUIREMENTS

BRAKES PLUS
640 EAST FM 2410
HARKER HEIGHTS, TEXAS

06/03/24

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SHEET

E2.1

ELECTRICAL
POWER PLAN

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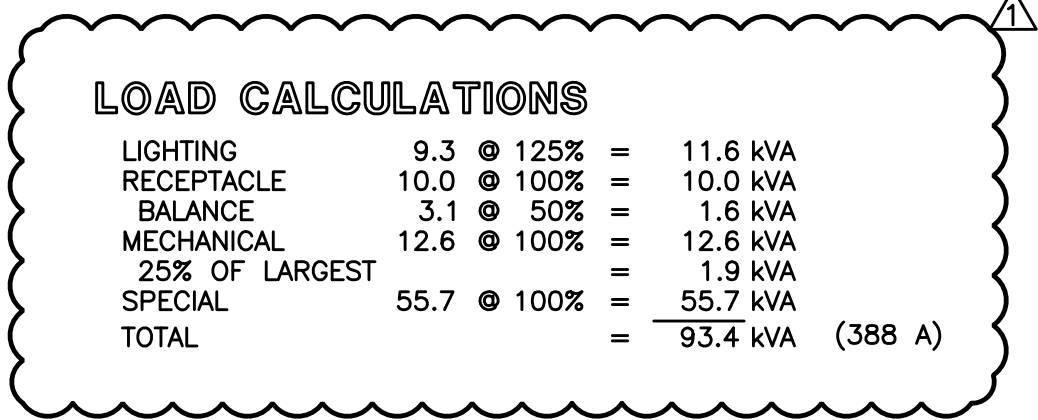
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ELECTRICAL
ROOF PLAN

DESIGNATION	DESCRIPTION	LOAD				VOLTAGE	PHASE	DISCONNECT SIZE	FUSE SIZE	FEEDER SIZE	REMARKS
		HP	KVA	FLA	MCA						
RTU-1	ROOF TOP UNIT			31.3	37.0	240	1	60A/2P	50A FRN-R	(2#6, 1#10G, 1-1/4"C)	
EF-1	EXHAUST FAN		100W			120	1	SMT0	-	(2#12, 1#12G, 3/4"C)	
EF-2	EXHAUST FAN		100W			120	1	SMT0	-	(2#12, 1#12G, 3/4"C)	
EF-3	EXHAUST FAN	1/2	1176W	9.8		120	1	SMT0	-	(2#12, 1#12G, 3/4"C)	
F-1	AIR CIRCULATION FAN	1/4	696W	5.8		120	1	30A/1P	9A FRN-R	(2#12, 1#12G, 3/4"C)	
IR-1	GAS RADIANT TUBE HEATER			5.0		120	1	SMT0	-	(2#12, 1#12G, 3/4"C)	
FWH-1	WATER HEATER		1.5KW			120	1	-	-	(2#12, 1#12G, 3/4"C)	
EF-4	EXHAUST FAN	1/10				120	1	SMT0	-	(2#12, 1#12G, 3/4"C)	

REMARKS

- UNIT FURNISHED WITH INTEGRAL DISCONNECT.
- PROVIDE MOTOR RATED SWITCH WITH THERMAL OVERLOAD.

[illegible]

POINT TO POINT METHOD FOR SHORT CIRCUIT CALCULATIONS ILLUSTRATED IN
BUSSMAN MANUFACTURING PUBLICATION FORM SPD90.

SERVICE: 120/240 V., 1-PHASE, 3W

AVAILABLE SHORT CIRCUIT CURRENT FROM UTILITY = 29,762 A.

FIND FACTOR $f = 2.0 \times (\text{length in feet}) \times (\text{short circuit current})$
(constant from Table C) \times (line-to-line voltage)

$$f = \frac{2.0 \times 100 \times 29,762}{3 \times 20,868 \times 240} = 0.198$$

FIND FACTOR $M = \frac{1}{1 + f}$ $M = 0.8347$

SHORT CIRCUIT CURRENT AT CT/MAIN = $M \times \text{AVAILABLE S.C. CURRENT}$
 $I = 24,841 \text{ A.}$

LENGTH IN FEET = 20 $f = \frac{2.0 \times 20 \times 24,841}{1 \times 12,122 \times 240} = 0.342$

FACTOR $M = 0.7454$

SHORT CIRCUIT CURRENT AT PANEL "LA" = 18,517 A.

LENGTH IN FEET = 24 $f = \frac{2.0 \times 24 \times 24,841}{2 \times 12,122 \times 240} = 0.205$

FACTOR $M = 0.83$

SHORT CIRCUIT CURRENT AT PANEL "LB" = 20,616 A.

1. ELECTRICAL CONTRACTOR TO LABEL THE SERVICE ENTRANCE WITH THE AVAILABLE FAULT CURRENT AND THE DATE IT WAS CALCULATED AS REQUIRED BY N.E.C. ARTICLE 100.24

MFG.	AS APPROVED		LIGHT	7.9	KVA @ 125% =	9.8	KVA
TYPE	PANELBOARD		RECEPT	11.7	KVA @ 100% =	11.7	KVA
LUG LOC.	TOP		SPECIAL		KVA @ 100% =		KVA
AMPS.	200A, MLO		25% LARGEST MOTOR				
VOLTAGE	120/240V, 1ph, 3W		MCHL	6.3	KVA @ 100% =	6.3	KVA
MOUNTING	SURFACE		SPARE				
BRACING	22,000 A.I.C.		TOTAL			27.0	KVA

EXTERIOR LIGHTING	404	1	1	2	720	OFFICE RECEPITS
EXTERIOR SIGN	1200	3	5	14	800	SALES AREA COUNTER RECEPTS
EXTERIOR SIGN	1200	5	7	18	1100	SALES AREA KIOSK RECEPITS
EWH-1	1500	7	9	18	360	SALES AREA RECEPITS
EXTERIOR SIGN	1200	9	11	18		SPARE
SALES, COFFEE, OFFICE LIGHTING	1228	11	12	12	1800	SHOW WINDOW RECEPITS
SERVICE AREA LIGHTING	544	13	14	14	360	SALES AREA RECEPITS
SERVICE AREA LIGHTING	650	15	16	15	500	TELEVISION
SERVICE AREA LIGHTING	528	17	17	18	360	SERVICE AREA RECEPITS
INVENTORY, BREAK, RESTROOM LTG	1012	19	20	20	500	GARAGE A/C RECEPITS
IRRIGATION CONTROLS	500	21	21	22	540	GARAGE RECEPT
BREAK RM	180	23	23	24	360	GARAGE RECEPT
BURGULAR ALARM	400	25	25	26	200	COMPUTER
TELEPHONE SYSTEM	400	27	27	28	500	BENCH RECEPT
MICROWAVE	900	29	30	30	180	GARAGE RECEPT
BREAK RECEPITS	360	31	32	32	360	GARAGE RECEPT
SPARE		33	33	34	500	SERVICE AREA RECEPITS
REFRIGERATOR	1200	35	35	36		SPARE
RECEIPT - WATER FOUNTAIN	370	37	37	38	360	GARAGE RECEPT
COFFEE UNIT	1000	39	40	40	1200	SHOW WINDOW RECEPITS
OFFICE RECEPITS	360	41	42	42	300	MENU TV

A phase =	11,526 VA	B phase =	14,420 VA	Total =	25,946 VA
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AS APPROVED						LIGHT = 1.2 kVA @ 125% = 1.5 kVA	
MFG. TYPE PANELBOARD 2-SERVICE						RECEPT. 1.4 kVA @ 100% = 1.4 kVA	
LUG LOC. TOP						MECH. 12.6 kVA @ 100% = 12.6 kVA	
AMP. 400A MLO						SPECIAL 25% LARGEST MOTOR 44.4 kVA @ 100% = 44.4 kVA	
VOLTAGE 120/240V, 1ph, 3W						SPARE --- kVA	
MOUNTING SURFACE						TOTAL 66.8 kVA	
BRACING 22,000 A.I.C.							
AIR COMPRESSOR		3360	1	7	1-2	1800	ALIGNMENT SENSORS
---		3360	3	4	2	1800	ALIGNMENT MACHINE
SPARE			5	7	6	200	EF-4
SPARE			7	7	1	9120	ALIGNMENT RACK
AIR CIRCULATION FANS		1392	9	7	10	3120	
AIR CIRCULATION FANS		1392	11	7	12	1800	BRAKE LATHE
SHOP EQUIPMENT RECEP.TS		1440	13	7	14		SPARE
SPARE			15	7	16		SPARE
SPARE			17	7	18	3755	RTU-1
ROOF RECEPT		180	19	7	20	3755	---
RECEPT - RESTROOM		180	21	7	22		SPARE
RECEPT - RESTROOM		180	23	7	24		SPARE
RECEPT - INVENTORY		180	25	7	26		SPARE
EF-3		1130	27	7	28	720	INVENTORY RECEP.TS
IR-1		500	29	7	30	1200	MONUMENT SIGN
IR-1		500	31	7	32	1000	DRYER
SPARE			33	7	34		SPARE
SPARE			35	7	36		SPARE
SPARE			37	7	38		SPARE
SPARE			39	7	40		SPARE
SPARE			41	7	42		SPARE
SECTION TWO							
LIFT		2040	43	7	44		SPACE
---		2040	45	7	46		SPACE
LIFT		2040	47	7	48		SPACE
---		2040	49	7	50		SPACE
LIFT		2040	51	7	52		SPACE
---		2040	53	7	54		SPACE
LIFT		2040	55	7	56		SPACE
---		2040	57	7	58		SPACE
LIFT		2040	59	7	60		SPACE
---		2040	61	7	62		SPACE
LIFT		2040	63	7	64		SPACE
---		2040	65	7	66		SPACE
LIFT		2040	67	7	68		SPACE
---		2040	69	7	70		SPACE
SPACE			71	7	72		SPACE
SPACE			73	7	74		SPACE
SPACE			75	7	76		SPACE
SPACE			77	7	78		SPACE
SPACE			79	7	80		SPACE
SPACE			81	7	82		SPACE
SPACE			83	7	84		SPACE


A phase = 31407 VA
B phase = 33217 VA
Total = 64624 VA

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E4.1

ELECTRICAL ON LINE DIAGRAM

