

2023 SAFEROOM ADDITION

MACARTHUR EARLY CHILDHOOD CENTER

235 W. GRANT STREET, MACOMB, IL 61455

FOR

MACOMB CUSD #185

323 W. WASHINGTON STREET, MACOMB, IL 61455

BID DOCUMENTS

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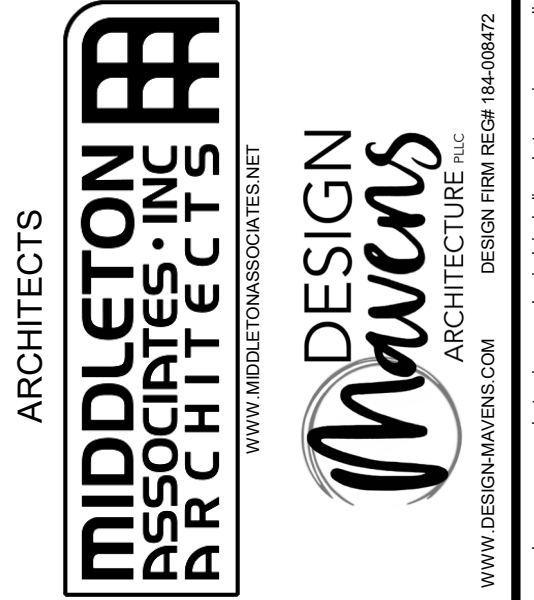
SITE LOCATION MAP



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I hereby certify that these Plans and Specifications for the safe Room Addition to MacArthur Early Childhood Center are to the best of my Knowledge in compliance with Health Life Safety Code 180, IBC 2018 and to the extent of the work included in compliance with Illinois Accessibility Code, 71 Illinois Administrative Code. It is the intent that all new work is Asbestos Free and PCB free.



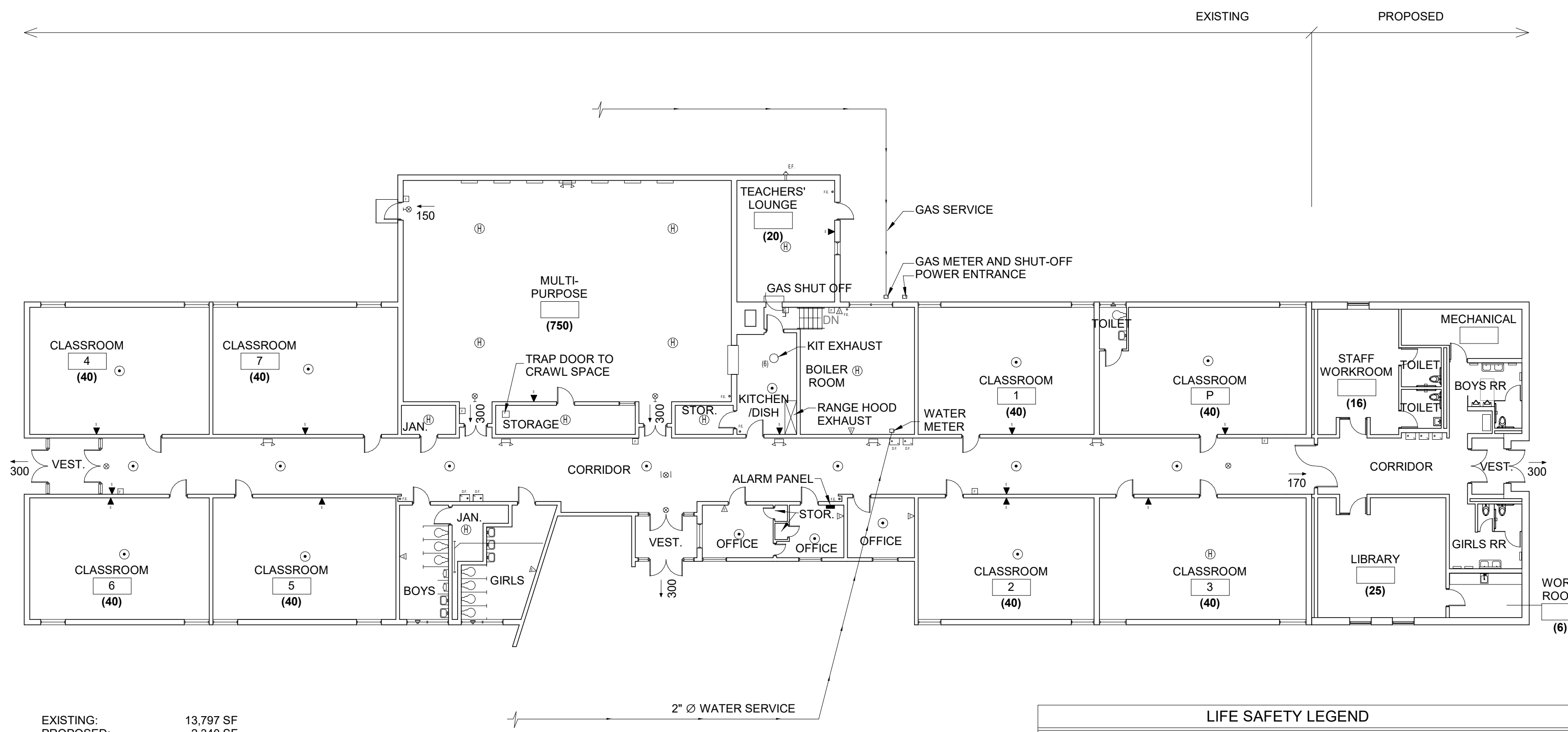
Russell Middleton

COVER SHEET

2023 SAFEROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
235 W. GRANT STREET, MACOMB, IL 61455
MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

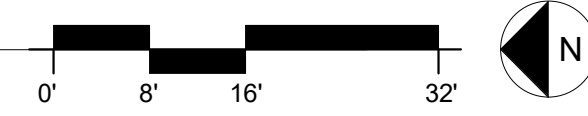
REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
ISSUED DATE June 1, 2023
SHEET
G100



EXISTING: 13,797 SF
 PROPOSED: 2,340 SF
 TOTAL: 16,137 SF

1 SAFETY REFERENCE PLAN
 1/16" = 1'-0"



LIFE SAFETY LEGEND			
TV	TELEVISION	STROBE	STROBE
BELL	BELL	FH	FIRE HORN & STROBE
GS	GAS SHUT OFF VALVE	FHL	FIRE HORN LOCATION
MD	MOTION DETECTOR	SR	SHEET REFERENCE NOTE
INT	INTERCOM	EL	EXISTING EXIT-LIGHT
ISWB	INTERCOM SPEAKER W/ CALL BUTTON	ESD	EXISTING SMOKE DETECTOR
ISWPC	INTERCOM SPEAKER W/ PULL CHORD	EHD	EXISTING HEAT DETECTOR
FAB	FIRE ALARM BREAKGLASS / HORN / STROBE	EFE	EXISTING FIRE EXTINGUISHER
FALB	FIRE ALARM BREAKGLASS / HORN LOCATION	EL	EMERGENCY LIGHT
FABS	FIRE ALARM BREAKGLASS STATION	BWS	BOILER/ WATER HEATER STACK
R	ROOM NAME OF ROOM LINE 1	S	SPRINKLER
N	NAME OF ROOM LINE 2	300	EXIT CAPACITY
101	ROOM NUMBER	1	SURVEY ITEM NUMBER
30	RECOMMENDED MAXIMUM OCCUPANCY		

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SAFETY REFERENCE PLAN

2023 SAFE ROOM ADDITION
 MACARTHUR EARLY CHILDHOOD CENTER
 235 W. GRANT STREET, MACOMB, IL 61455

MACOMB CUSD #185
 323 W. WASHINGTON STREET, MACOMB, IL 61455

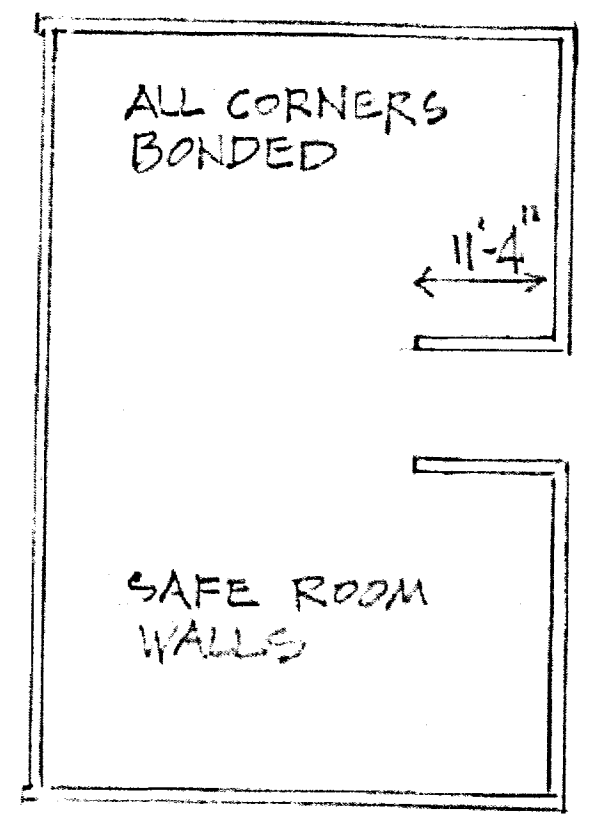
REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
 ISSUED DATE
 SHEET
A101
 OF SHEETS

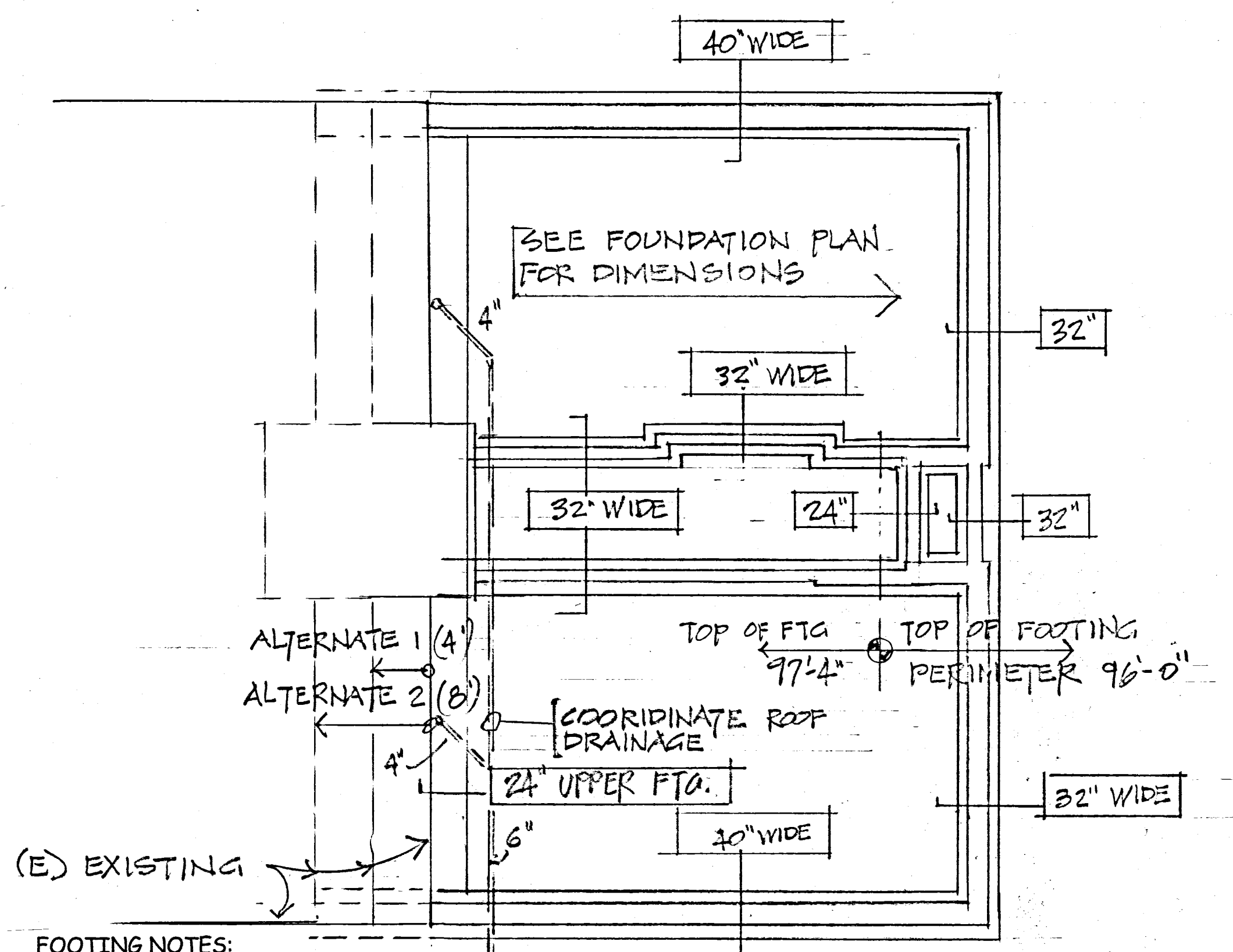
BID DOCUMENTS

REVISIONS		
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- Safe room perimeter foundation walls:
- Where occurs, brick ledge 4" CMU wall
 - Interior wythe to be 10" fully grouted with #3 vertical (1) at 8" or (2) at 16" spacing, contractor's option.
 - This extends top roof deck, see details
 - North end wall is 8", grouting and reinforcing similar.
 - Horizontal reinforcing to be hot dip galvanized, ladder style with tie wires such as H&B Lox All #270 with adjustable eye wire with ties. Place in alternate horizontal course
 - North end 8" wall is just hot dip galvanized ladder reinforcing such as H&B ladder #220, no ties.
 - H&B listed as design standard, similar 9 gauge HDG products by other manufacturers such as Dur-O-Wal or Wire Bond are acceptable.
 - Safe room walls are to be fully bonded corners and intersections, other interior walls may be tied in with the typical HDG, 1/2" x 16 ga. Mesh ties of proper width to match the wall or multiple narrower ones.

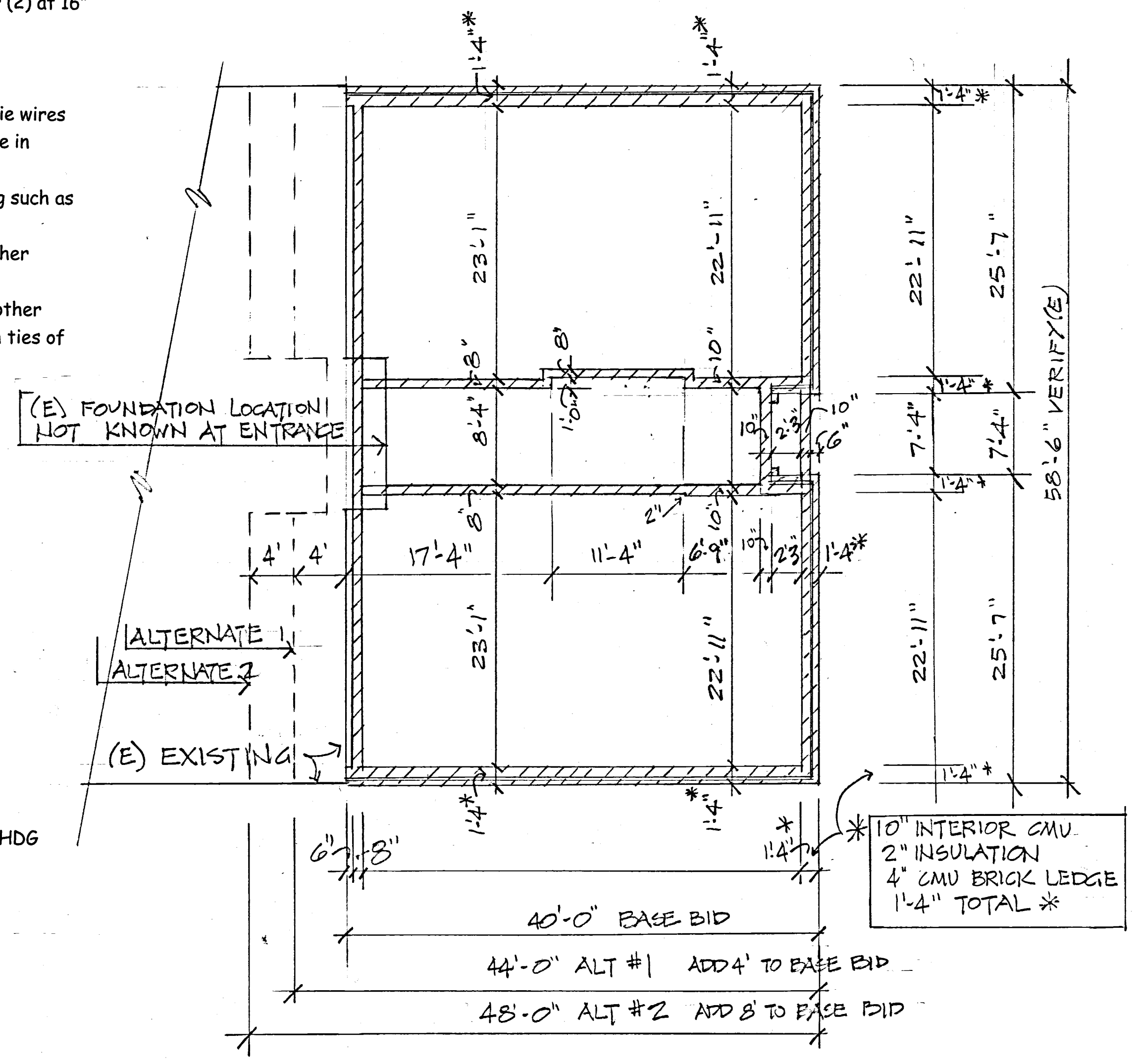


Other CMU walls are width as dimensioned, and are to have ladder style HDG horizontal reinforcing in alternate courses, tie intersections.

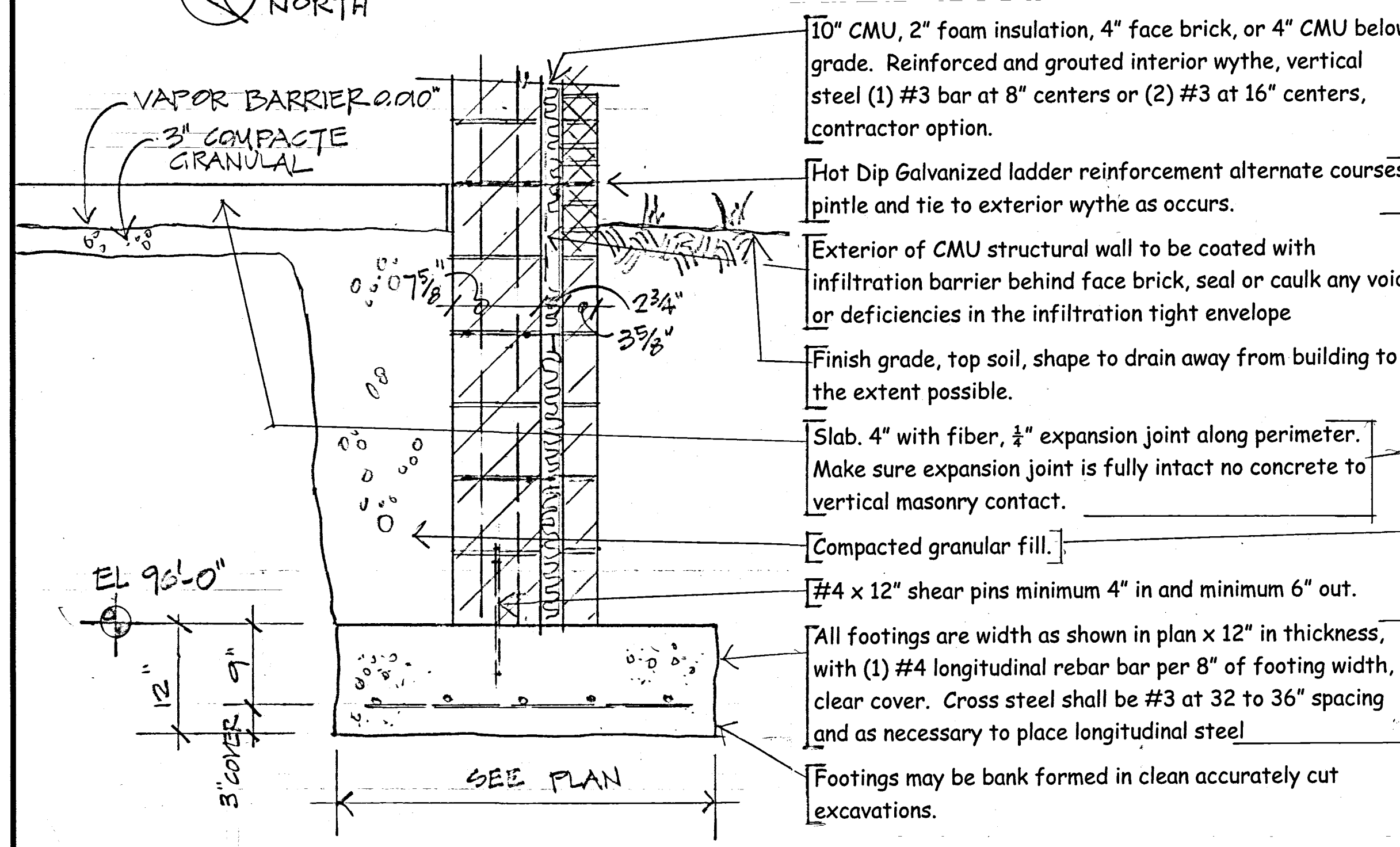


FOOTING NOTES:
 All footings are width as shown and 12" in thickness, with (1) #4 longitudinal rebar per 8" of footing width. Cross steel shall be #3 at 32 to 36" spacing and as necessary to place longitudinal steel
 Footings may be bank formed as long as they are reasonably accurate in width.
 Footings shall be placed on reasonably clean undisturbed earth, that is, no excessive loose dirt crumbles or clods, or they shall be compacted prior to placing steel and pouring.
 Place concrete promptly after excavation to minimize side cave ins, exposure to collection of water or other undesirable occurrences. Do not pour footing into collected water or subgrade excessively softened by standing water.

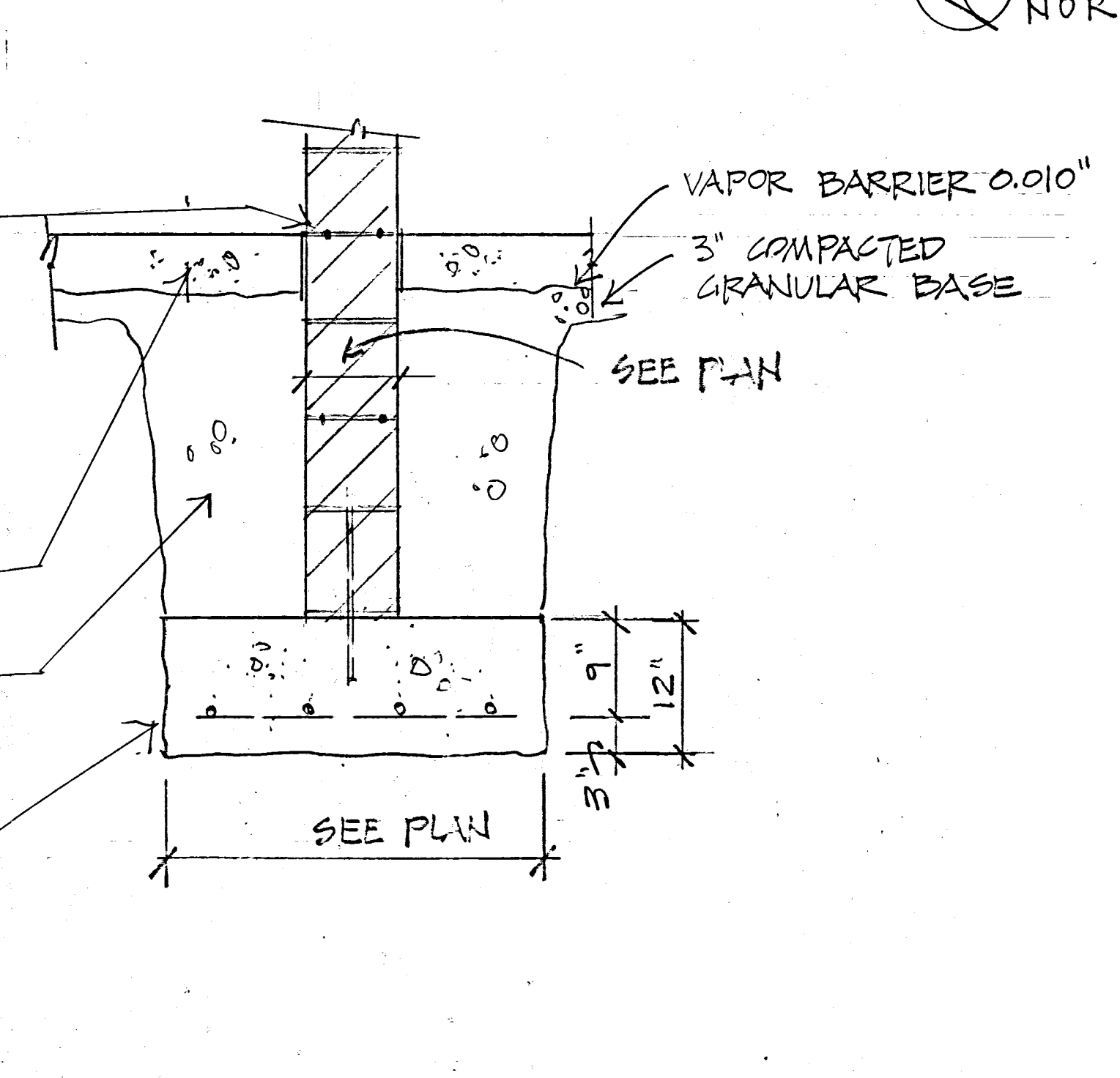
FOOTING PLAN 9' 4' 8' 16' 1/8" = 1:0"



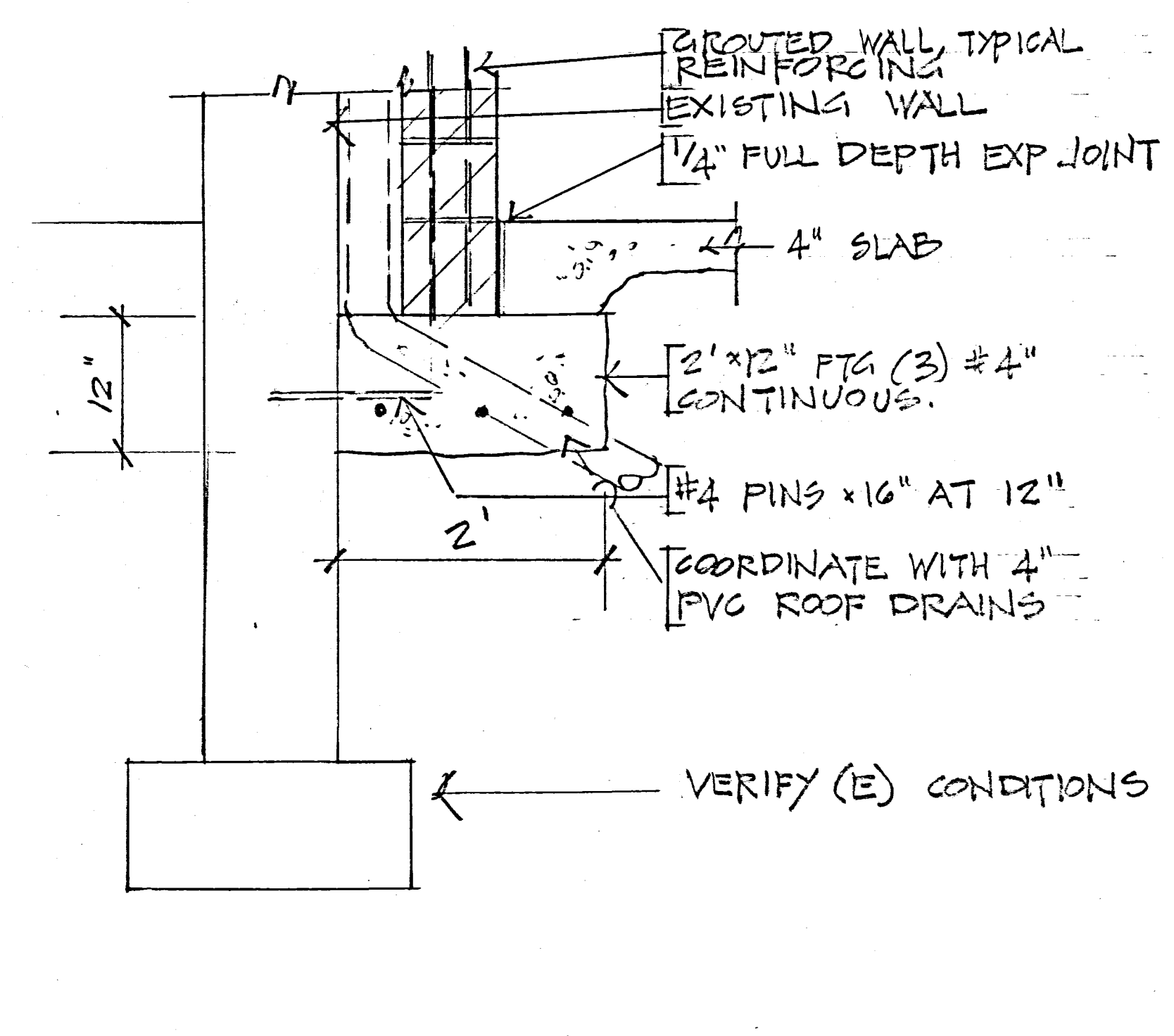
FOUNDATION PLAN 9' 4' 8' 16' 1/8" = 1:0"



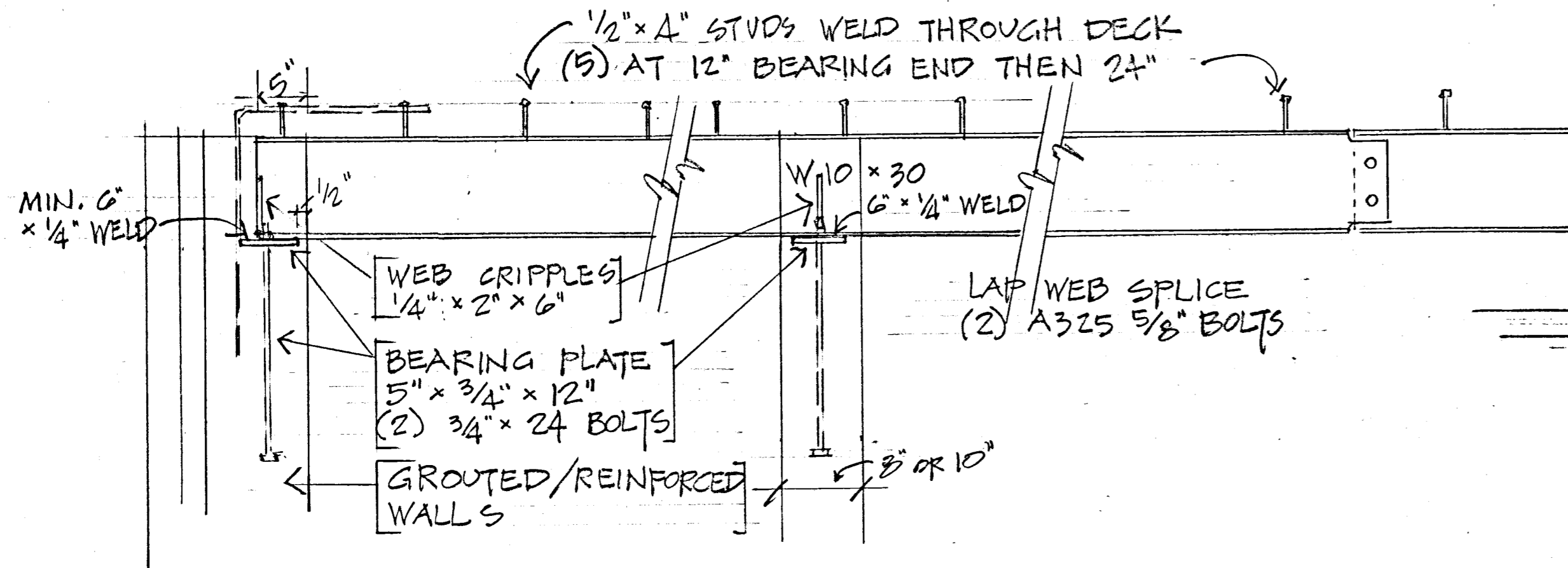
PERIMETER FOUNDATION DETAIL



INTERIOR FOUNDATION DETAIL



FOUNDATION ALONG EXISTING

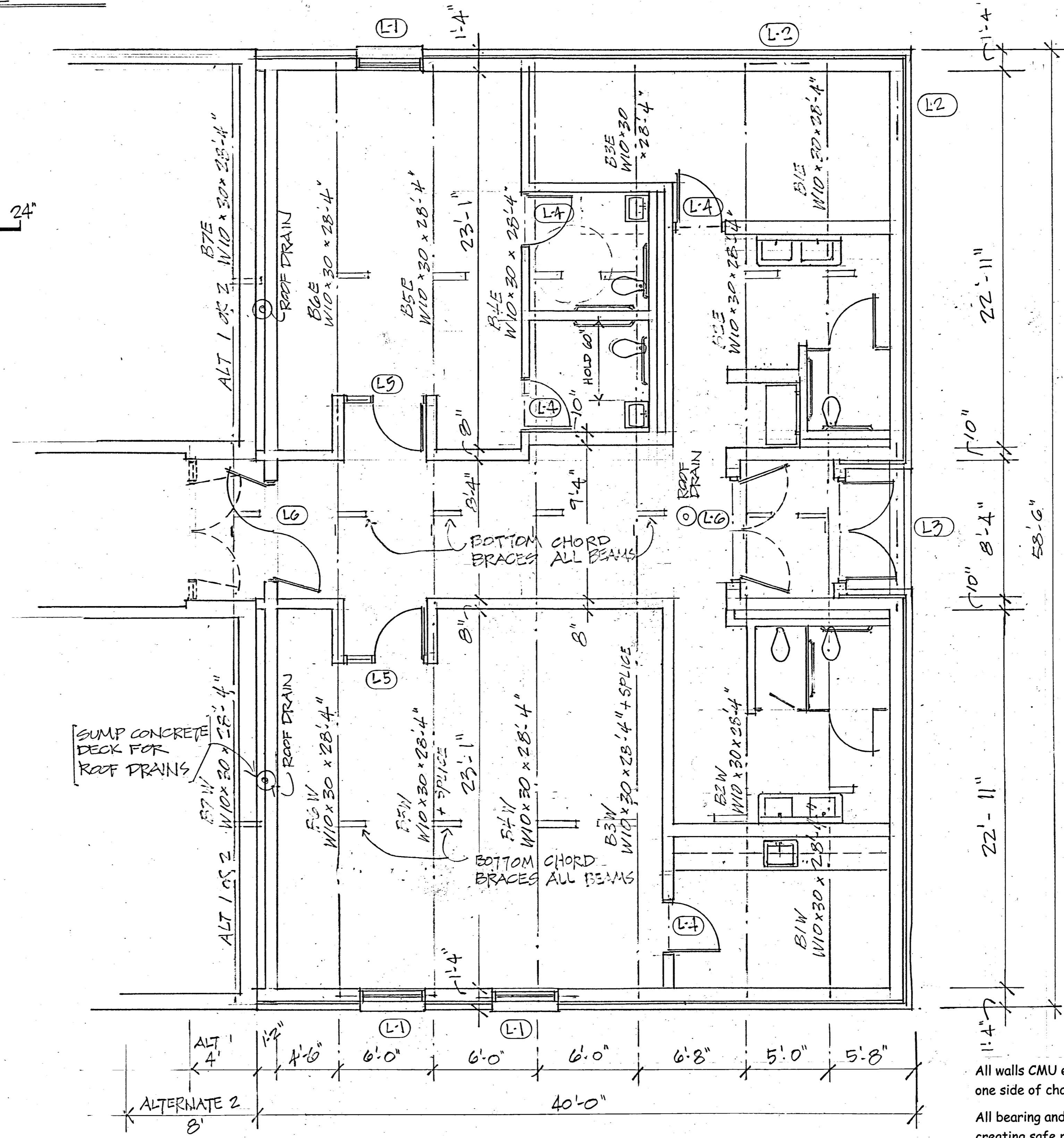


TYPICAL BEAM DETAIL 1"=1' 0 6" 12" 24"

6" Concrete deck (to contain vapor lock admixture to allow roofing operations without delay after 28 days) over 1 1/2" Type B 18 gauge acoustical decking. (Acoustical decking is to give excess moisture vapor a path out). Concrete reinforcing #4 at 12" spacings both ways. #4 'L' x 24" x 24" rebars at 16" out of bearing walls into slab. Note to detailers: May want to split decking over interior walls to facilitate installation with 'L' rebars in place, verify with contractor.
 Top surface of decking to be smooth float, suitable for applying roof system, coordinate with plumber and roofer for roof drains and sump out as appropriate.

LINTEL SCHEDULE			
MARK	DESCRIPTION	ELEVATION	FINISH
L-1	BOND BEAM x 6'-8" (4) #5 BARS L 3 1/2 x 3 1/2 x 1/4" x 5'-4" BRICK	107'-4"	✓ HOT DIP GALV
L-2	SAME AS L-1 VERIFY LOUVER OPENING	VERIFY	HDR
L-3	(2) L'S WELD BACK TO BACK 15" x 5" x 5/16" x 9'-0" (1) L 5" x 3 1/2" x 5/16" x 8'-4"	109'-4" 108'-11" +/-	PRIMED HOT DIP GALV
L-4	BOND BEAM, (2) #5 BARS	107'-4"	✓
L-5	BOND BEAM, (3) #5 BARS	107'-4"	✓
L-6	BOND BEAM (4) #5 BARS x 9'-4"	107'-4"	✓
L-M	MECHANICAL OPENS, BOND BEAM OR 1/4" PLATE	VERIFY	✓

MISCELLANEOUS STEEL		
MARK	DESCRIPTION	FINISH
BRACES	BASE BID 18 LOCATIONS ALT BIDS 3 LOCATIONS 2" x 5/16" BAR BOTTOM CHORD TO DECK EITHER SIDE OF BEAM NEAR MID SPAN WELD 3/45° ±	PRIMED



All walls CMU extend to deck except one side of chase plumbing walls.
 All bearing and perimeter walls creating safe room perimeter and/or support to be grouted and reinforced with #3 vertical bars at 8" or (2) #3 bars vertical at 16", Horizontal 9ga. HDG ladder reinforcing alternate CMU courses, with pintle and tie face brick anchors with seismic clips and #9 wire in brick joint.

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ROOF STRUCTURAL
 2023 SAFEROOM ADDITION
 MACARTHUR EARLY CHILDHOOD CENTER
 235 W. GRANT STREET, MACOMB, IL 61455
 MACOMB CUSD #185
 323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
 ISSUED DATE June 1 2023
 SHEET
 5-2
 OF 20 SHEETS

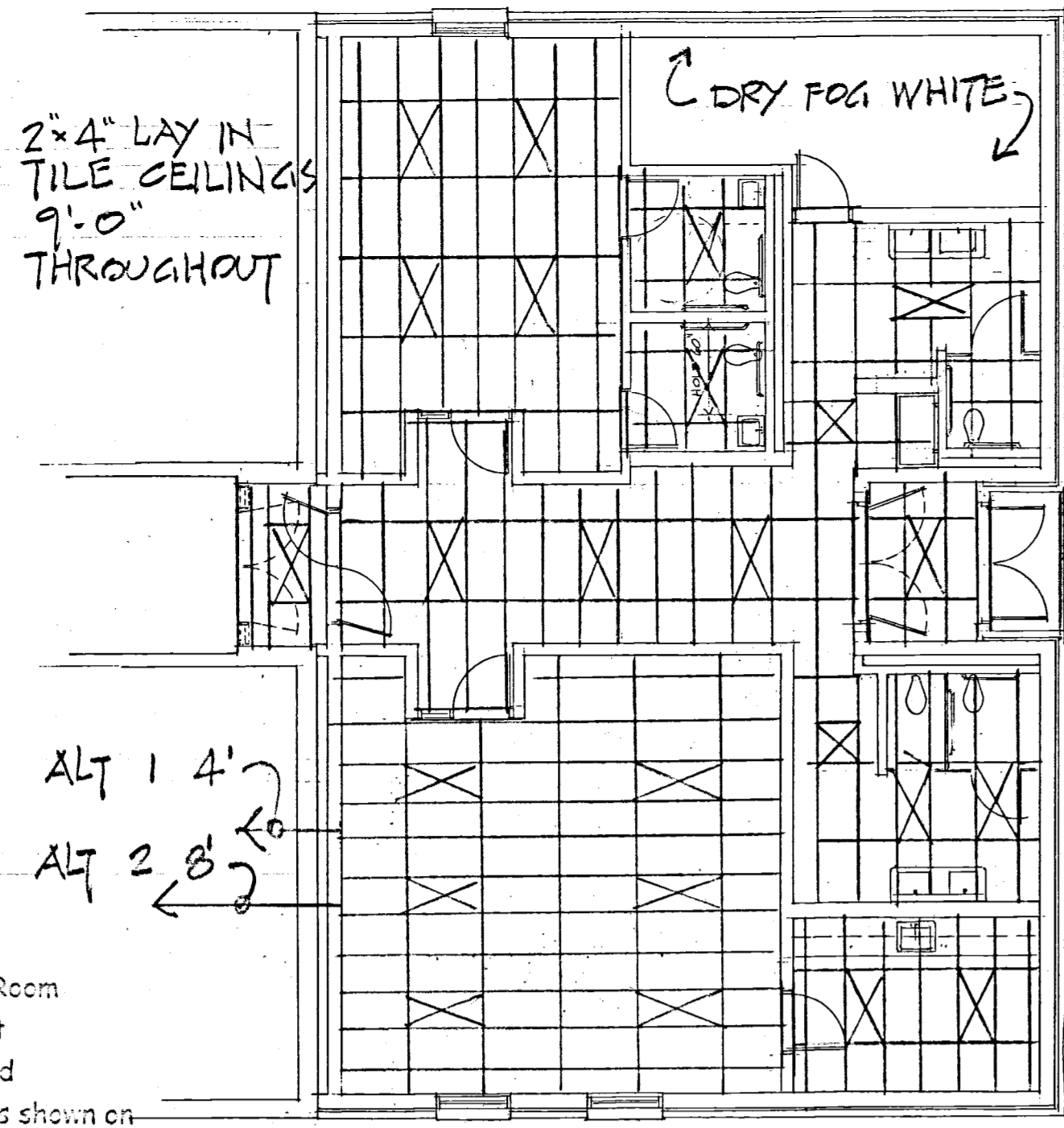
BID DOCUMENTS

ROOM FINISH SCHEDULE

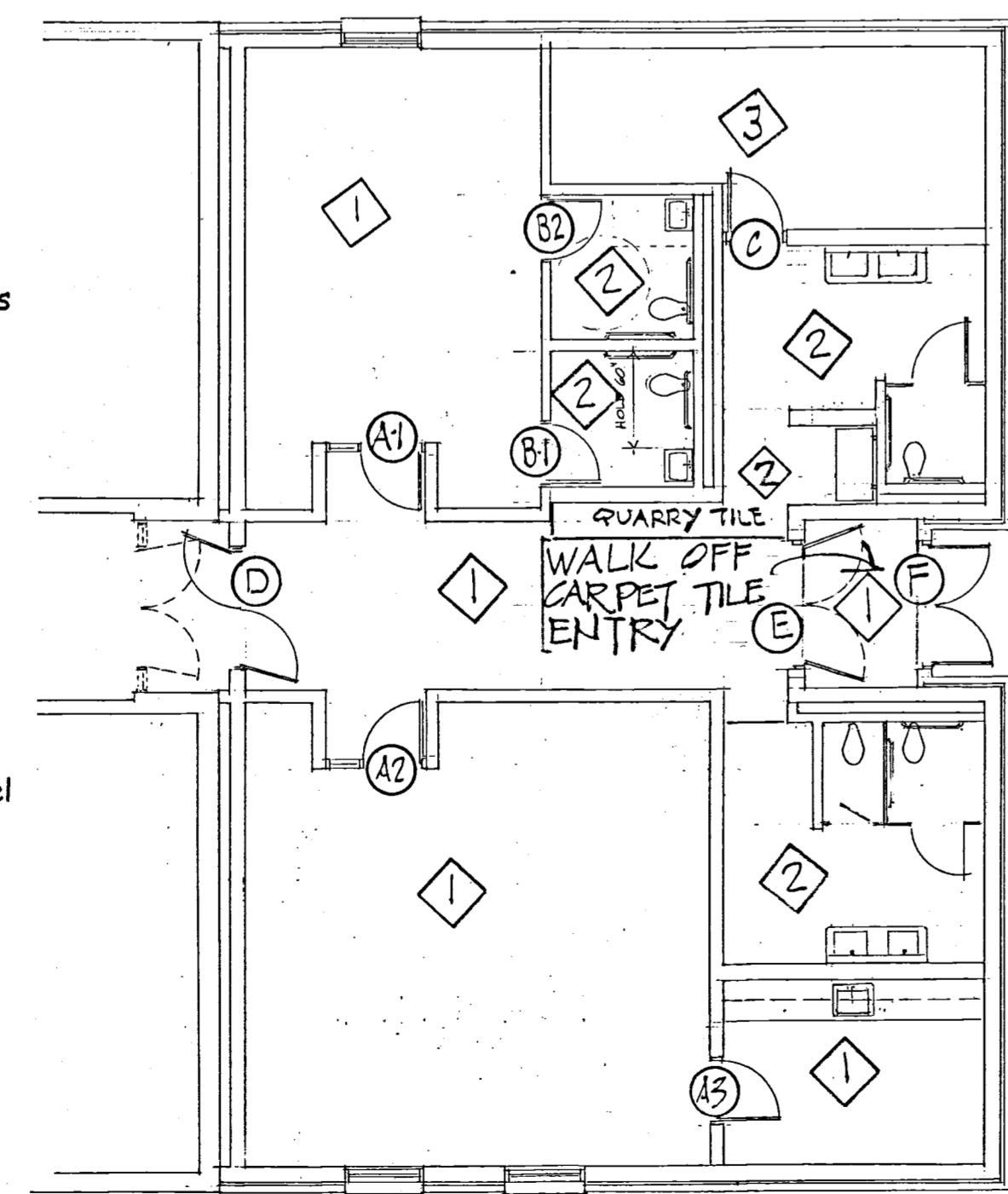
- 1. Floor Resilient tile, 12" x 12"
Base 4" cove rubber
Walls block filler and minimum (2) coat DTM
Hollow metal work prime and (2) coats
DTM accent color
Wood doors factory finished
Ceiling Lay In Tile
- 2. Floor Quarry Tile, (Recess Concrete floor)
Base Quarry tile
Walls block filler and minimum (2) coat DTM
Hollow metal work prime and (2) coats
DTM accent color
Wood doors factory finished
Ceiling Lay In Tile
- 3. Floor Sealed concrete
Base 4" cove rubber
Walls block filler and minimum (2) coat DTM
Hollow metal work prime and (2) coats
DTM accent color

DOOR SCHEDULE

- A. Three openings, Staff Workroom, Library, library work Room
 - 3'-0" x 7'-0" Solid Core Wood door with 6"x24" light
 - Hollow metal frame 5.5" throat 3'-4" x 7'-4", 4" head
 - Frames A-1 and A-2 have side lights with mid rail as shown on plans, 10" bottom rail on side light.
 - (3) heavy duty ball bearing hinges
 - Lever Classroom lockset ANSI F82, Key to the building
 - Closer with thumb turn style hold open
 - Kick Plate 8" x 2" less than door width
 - Wall stop
- B. Two openings, Staff Rest Rooms
 - 3'-0" x 7'-0" Solid Core Wood door flush
 - Hollow metal frame 5.5" throat 3'-4" x 7'-4", 4" head
 - (3) heavy duty ball bearing hinges
 - Lever privacy lockset ANSI F76
 - Closer with thumb turn style hold open
 - Kick Plate 8" x 2" less than door width
 - Wall stop
- C. One opening Mechanical Room
 - Hollow Metal door Flush, 16 gauge 60 minute rated.
 - Hollow metal frame 5.5" throat 3'-4" x 7'-4", 4" head
 - (3) heavy duty ball bearing hinges
 - Lever Store room lockset ANSI F86
 - Closer with no hold open
 - Kick Plate 8" x 2" less than door width
 - Wall stop
- D. One opening Corridor safe room door
 - Pair 3'-0" x 7'-0" double egress 14 gauge, with 12 gauge styles and 14 gauge internal stiffeners (storm equivalent construction FEMA label not required)
 - 4"x12", 3/8" Lexan light
 - Hollow metal frame 5.5" throat, 12 gauge,
 - (6) Tee anchors per jamb, grouted jambs
 - (2) Exit Devices vertical rod, up and down
 - Floor and head strikes
 - Closers with thumb turn style adjustable hold open arm.
- E. One opening, Corridor to exit safe room door
 - Pair 3'-0" x 7'-0", 14 gauge, with 12 gauge styles and 14 gauge internal stiffeners (storm equivalent construction FEMA label not required)
 - 4"x12", 3/8" Lexan light
 - Hollow metal frame 5.5" throat, 12 gauge,
 - (6) Tee anchors per jamb, grouted jambs
 - (2) Exit Devices vertical rod, up and down
 - Floor and head strikes
 - Closers with thumb turn style adjustable hold open arm.
- F. Aluminum FRP exit pair, dark Bronze, See Aluminum Door Specification Section 08 1140/3.2. A-1, Keyed removable mullion, rim exit sets.

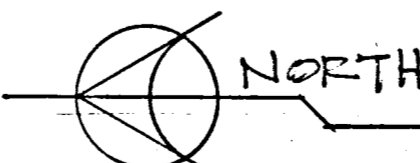
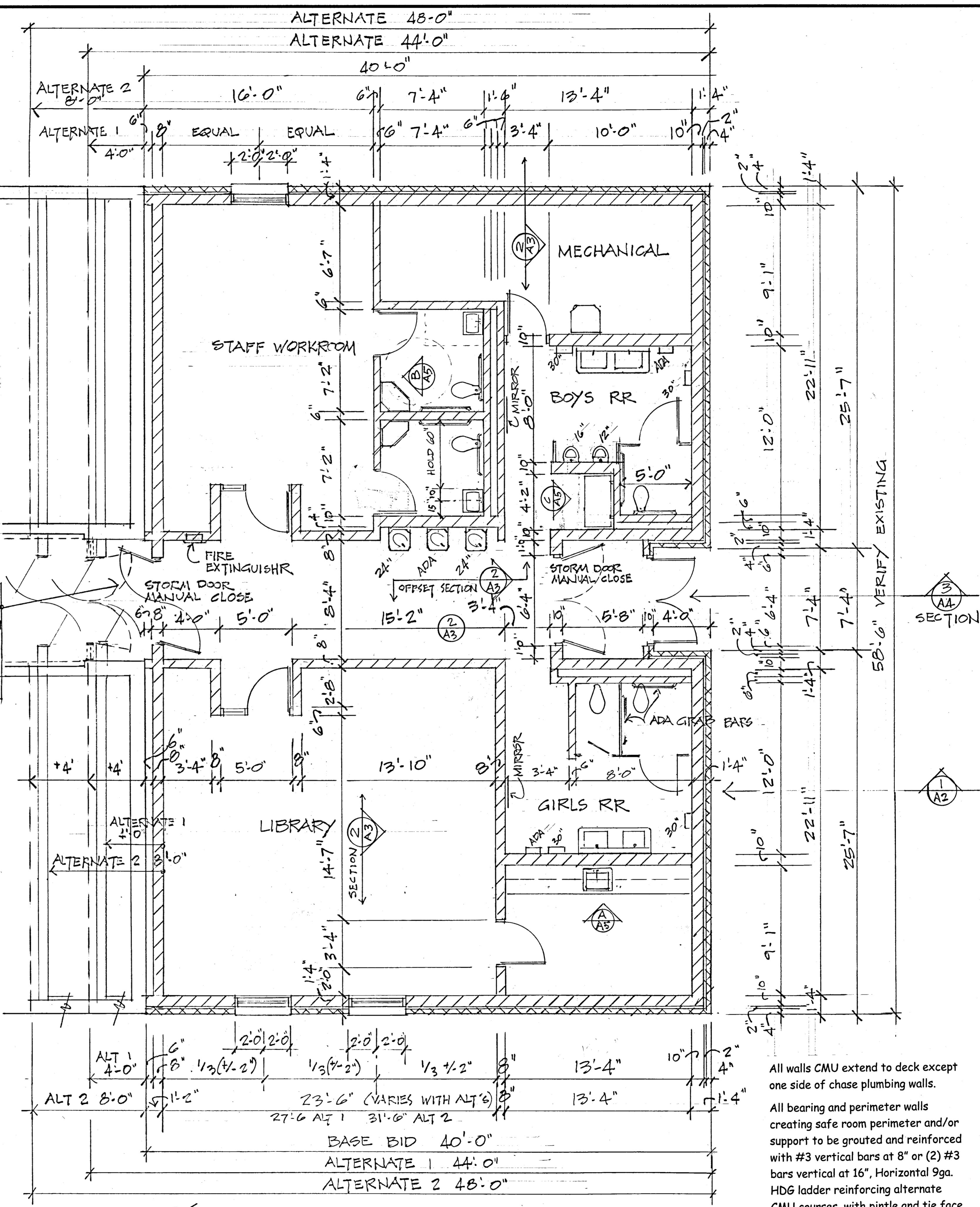


REFLECTED CEILING PLAN



FINISH & DOOR SCHEDULE

The existing aluminum south exit doors shall remain in place, operable and unblocked during construction until such time the addition is enclosed and new exterior doors and windows installed. This exit shall remain accessible as an emergency exit of last resort in the event of an occurrence blocking other ways of exit for this end of the existing facility. Provide signage, "Emergency use only, caution construction area"



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

All walls CMU extend to deck except one side of chase plumbing walls.
All bearing and perimeter walls creating safe room perimeter and/or support to be grouted and reinforced with #3 vertical bars at 8" or (2) #3 bars vertical at 16", Horizontal 9ga. HDG ladder reinforcing alternate CMU courses, with pintle and tie face brick anchors with seismic clips and #9 wire in brick joint.

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PLANS & FINISH SCHEDULES

2023 SAFEROOM ADDITION
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MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
ISSUED DATE
SHEET **A-1**
OF 20 SHEETS

Existing Roof is under warranty and all tie in materials shall be warranty compliant, Firestone 20 year, adhered, 12/31/09 -12/30/29 FBPCO #GB8688, Warranty #RO 031931

Tie new roof into existing EPDM Roof, double seam tape and top seam tape, provide crickets and/or saddle(s) on (E) roof to direct water to new roof drains.

Sump out concrete deck and insulation to receive roof drain below the existing roof. This may require steel form decking to be coped also.

Typical at all perimeter safe room walls provide #4 x 24" x 24" L' bar wall into deck at 16" spacing.

Roof system, adhered EPDM, over 1/8" taper fiberglass scrim rigid urethane, over two layers of 2" fiberglass scrim rigid urethane board, always offset joints 6" minimum, 1/2 sheet preferred. Foam adhesive 120 MPH rated, Dens Glass Cap

Seal concrete deck with vapor locking system such as BoneDry moisture vapor mitigating product, 07 2600

6" Concrete deck over 1 1/2" Type B 18 gauge acoustical decking. Acoustical decking is to give excess moisture vapor a path out.

Typical at all perimeter safe room walls provide #4 x 24"x24" L' bar wall to deck at 16" spacing.

Existing roof decking is wood, with wood perimeter blocking, verify exact conditions

Existing roof edge may remain, remove gutter, then install taper urethane insulate crickets and/or saddle(s) as appropriate to surface drain properly into the new roof drains. Note, during construction, provision will need to be made to drain water out from between existing and new wall and not trap excess moisture.

Existing CMU and face brick wall

6" space for roof storm drains

3" perforated tile, for temporary drain between wall space, contractor option, tile may remain but repair the openings in the face brick. OR temporary smaller gutter at the roof line, Contractor to provide accommodation.

EXISTING FLOOR 100'-0"

See Foundation plan for foundations.

Strip 8" of top soil, remove excess from site, compacted granular fill not less than 4" and as needed to meet slab base requirements. Compact sub base prior to placing granular fill, small roller or vibrating plate compactor.

THICKENED SLAB 8" x 24" UNDER NON BEARING CMU WALLS

MIDSPAN BOTTOM FLANGE BRACE 2" x 5/16" BAR - 1" x 3/16" WELD BOTH SIDES BEAM 1/2" WEDGE BOLT DECK

[LAY IN TILE CEILING]

[HOPE PARTITIONS SPEC 10 2113]

Wall assembly, Face Brick, 2" polystyrene insulation, 10" CMU, #3 rebars at 8" centers or (2) at 16" centers, fully grout the wall. Ladder type joint reinforcement at 16" spacing, pintle and tie with seismic clips and #9 wire in brick bed joint.

Coat CMU with infiltration barrier specification 07 9100

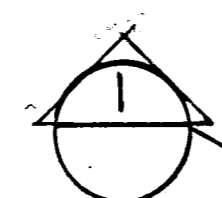
FINISH GRADE

Floor slab, 5" concrete, W1.4xW1.4 (6x6 10/10) WWF over 10mil vapor, barrier tape or roll and stable seams, over minimum 4" compacted granular fill over compacted undisturbed earth.

Depress slab for quarry tile restroom floors

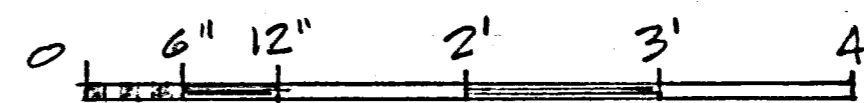
All backfill under floors and sidewalks compacted granular

See foundation plan for foundation requirements.



WALL SECTIONS LOOKING EAST

SCALE 1" = 1'-0"



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DESIGN Mavers ARCHITECTURE, INC.

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SECTION LOOKING EAST

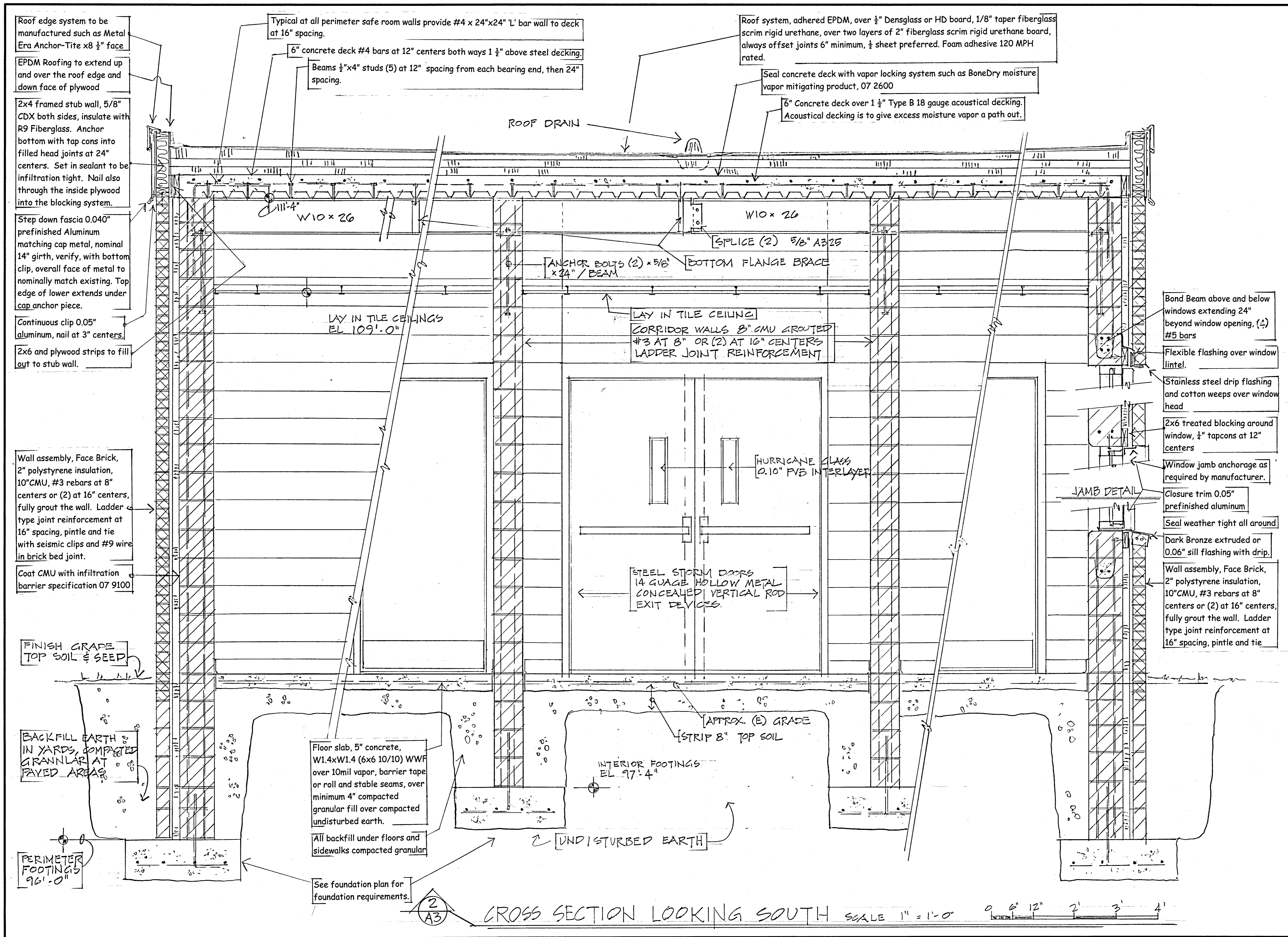
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ISSUED DATE JUNE 1, 2023

SHEET
A2
OF 20 SHEETS

BID DOCUMENTS



Roof edge system to be manufactured such as Metal Era Anchor-Tite x8 1/2" face

EPDM Roofing to extend up and over the roof edge and down face of plywood

2x4 framed stub wall, 5/8" CDX both sides, insulate with R9 Fiberglass. Anchor bottom with tap cons into filled head joints at 24" centers. Set in sealant to be infiltration tight. Nail also through the inside plywood into the blocking system.

Step down fascia 0.040" prefinished Aluminum matching cap metal, nominal 14" girth, verify, with bottom clip, overall face of metal to nominally match existing. Top edge of lower extends under cap anchor piece.

Continuous clip 0.05" aluminum, nail at 3" centers.

2x6 and plywood strips to fill out to stub wall.

Wall assembly, Face Brick, 2" polystyrene insulation, 10" CMU, #3 rebars at 8" centers or (2) at 16" centers, fully grout the wall. Ladder type joint reinforcement at 16" spacing, pintle and tie with seismic clips and #9 wire in brick bed joint.

Coat CMU with infiltration barrier specification 07 9100

FINISH GRADE TOP SOIL & SEED

BACKFILL EARTH IN YARDS, COMPACTED GRANULAR AT PAVED AREAS

PERIMETER FOOTINGS 96'-0"

Typical at all perimeter safe room walls provide #4 x 24"x24" 'L' bar wall to deck at 16" spacing.

6" concrete deck #4 bars at 12" centers both ways 1 1/2" above steel decking.

Beams 1/2"x4" studs (5) at 12" spacing from each bearing end, then 24" spacing.

Roof system, adhered EPDM, over 1/2" Densglass or HD board, 1/8" taper fiberglass scrim rigid urethane, over two layers of 2" fiberglass scrim rigid urethane board, always offset joints 6" minimum, 1/2 sheet preferred. Foam adhesive 120 MPH rated.

Seal concrete deck with vapor locking system such as BoneDry moisture vapor mitigating product, 07 2600

6" Concrete deck over 1 1/2" Type B 18 gauge acoustical decking. Acoustical decking is to give excess moisture vapor a path out.

Floor slab, 5" concrete, W1.4xW1.4 (6x6 10/10) WWF over 10mil vapor, barrier tape or roll and stable seams, over minimum 4" compacted granular fill over compacted undisturbed earth.

All backfill under floors and sidewalks compacted granular

See foundation plan for foundation requirements.

CROSS SECTION LOOKING SOUTH SCALE 1" = 1'-0" 0' 6" 12" 2' 3' 4'

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CROSS SECTION 2

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 SHEET
A-3
 OF 20 SHEETS

Existing Roof is under warranty and all tie in materials shall be warranty compliant, Firestone 20 year, adhered EPDM Warranty period 12/31/09 - 12/30/29 FBPCO #GB8688, Warranty #RO 031931

Existing roof decking is wood, with wood perimeter blocking, verify exact conditions

Tie new roof into existing EPDM Roof, double seam tape and top seam tape, provide crickets and/or saddle(s) on (E) roof to direct water to new roof drains.

Sump out concrete deck and insulation to receive roof drain below the existing roof. This may require steel form decking to be coped also.

Typical at all perimeter safe room walls provide #4 x 24" x 24" L bar wall into deck at 16" spacing.

Roof system, adhered EPDM, over 1/2" Densglass or HD board, 1/8" taper fiberglass scrim rigid urethane, over two layers of 2" fiberglass scrim rigid urethane board, always offset joints 6" minimum, 1/2 sheet preferred. Foam adhesive 120 MPH rated.

Seal concrete deck with vapor locking system such as BoneDry moisture vapor mitigating product, 07 2600

6" Concrete deck over 1 1/2" Type B 18 gauge acoustical decking. Acoustical decking is to give excess moisture vapor a path out. Concrete reinforcing #4 at 12' spacings both ways

Roof edge system to be manufactured such as Metal Era Anchor-Tite x8 1/2" face

EPDM Roofing to extend up and over the roof edge and down face of plywood

2x4 framed stub wall, 5/8" CDX both sides, insulate with R9 Fiberglass. Anchor bottom with top cons into filled head joints at 24" centers. Set in sealant to be infiltration tight. Nail also through the inside plywood into the blocking system.

Step down fascia 0.040" minimum prefinished Aluminum matching cap metal, nominal 14" girth, verify, with bottom clip, overall face of metal to nominally match existing. Top edge of lower extends under cap anchor piece. Continuous clip 0.05" aluminum, nail at 3" centers.

Flexible flashing over lintel with Stainless steel drip flashing and cotton weeps

EIFS soffit, see specification 07 4200

Existing roof edge may remain, remove gutter, then install taper urethane insulation crickets and/or saddle(s) as appropriate to surface drain properly into the new roof drains. Note, during construction, provision will need to be made to drain water out from between existing and new wall and not trap excess moisture.

Existing wall over door to remain, face with 5/8" gyp board and patch and repair jambs where the frame is removed. Neatly cover with painted Metal trim if necessary.

Paint brick door inset area with corridor walls.

New safe room steel door dual egress style.

Demo and remove the existing stoop and associated sidewalk out to parking lot.

Floor slab, 5" concrete, W1.4xW1.4 (6x6 10/10) WWF over 10mil vapor barrier tape or roll and stable seams, over minimum 4" compacted granular fill over compacted undisturbed earth.

BEAMS WITH MIDSPAN BOTTOM FLANGE SUPPORTS

LAY IN TILE CEILING

GROUTED STORM WALL #3 AT 8" OR (2) #3 AT 16"

BOND BEAM - (4) #5

HEAVY GAUGE HOLLOW METAL DOOR

WALK OFF CARPET

Coat CMU with infiltration barrier specification 07 9100 into door inset.

Aluminum Entrance, Dark Bronze with FRP doors.

Exterior slab, 5" concrete, W1.4xW1.4 (6x6 10/10) over minimum 4" compacted granular fill over compacted undisturbed earth. Extended edge and perimeter of stoop to have 6" x16" apron

Extend the north wall foundation across under the corridor.

See Foundation plan for foundations. It is anticipated an extended foundation supports the extended stoop out near walk, if encountered simply remove the top as needed to facilitate new floor slab, and any underground MEP as needed.

Approximate existing grade
Strip 8" of top soil, remove excess from site, compacted granular fill not less than 4" and as needed to meet slab base requirements. Compact sub base prior to placing granular fill, small roller or vibrating plate compactor.

Floor slab, 5" concrete, W1.4xW1.4 (6x6 10/10) WWF over 10mil vapor barrier tape or roll and stable seams, over minimum 4" compacted granular fill over compacted undisturbed earth.

All backfill under floors and sidewalks compacted granular over compacted subgrade.

All backfill under floors and sidewalks compacted granular

See foundation plan for foundation requirements.

See foundation plan for foundation requirements.

MIDDLETON ASSOCIATES ARCHITECTS
ARCHITECTS
DESIGN MAVERS ARCHITECTURE
MEP ENGINEER

CIVIL ENGINEER
MEP ENGINEER
MMAE ENGINEERS

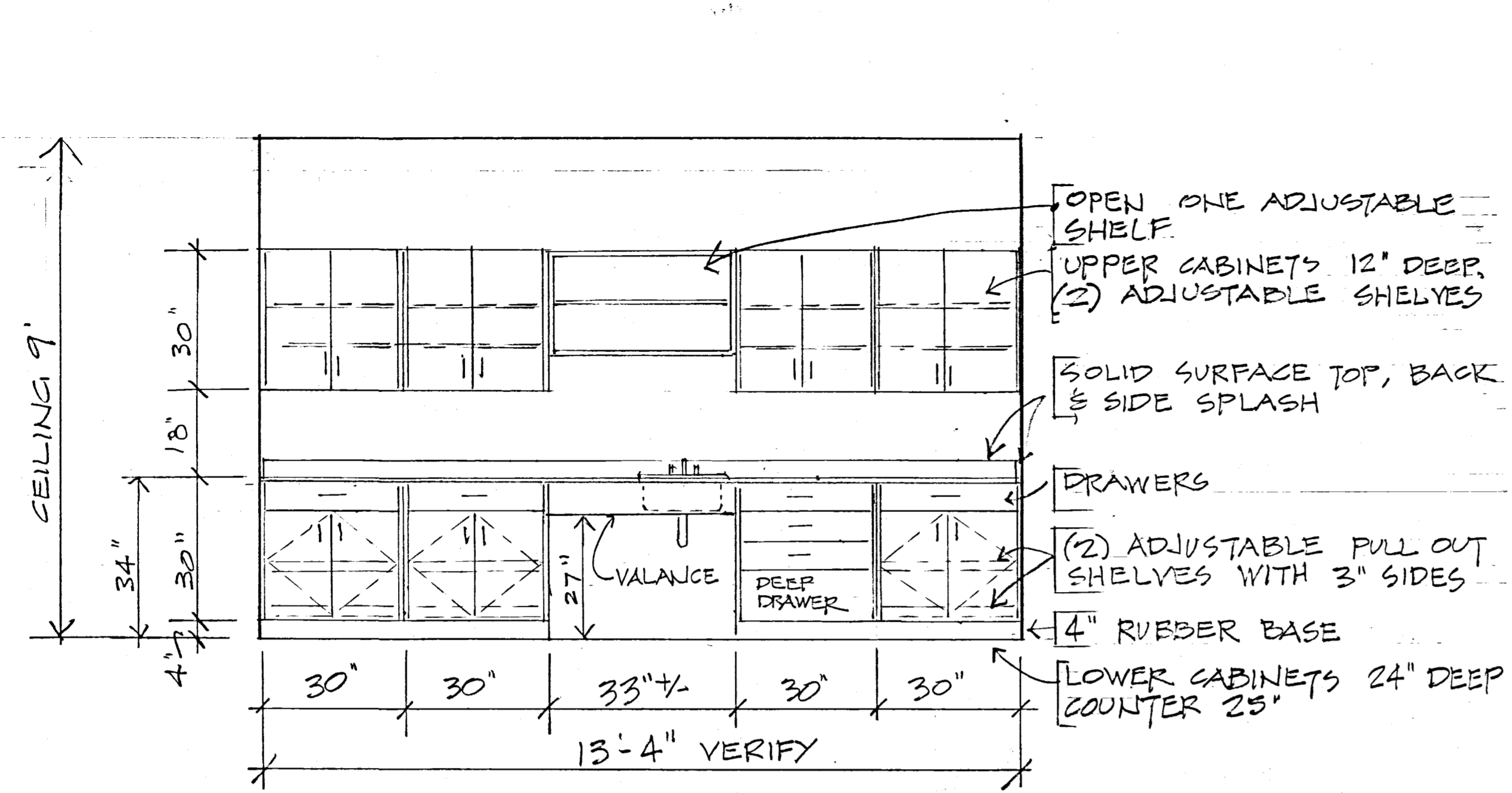
DETAIL SECTION 3
2023 SAFEROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
235 W. GRANT STREET, MACOMB, IL 61455
MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

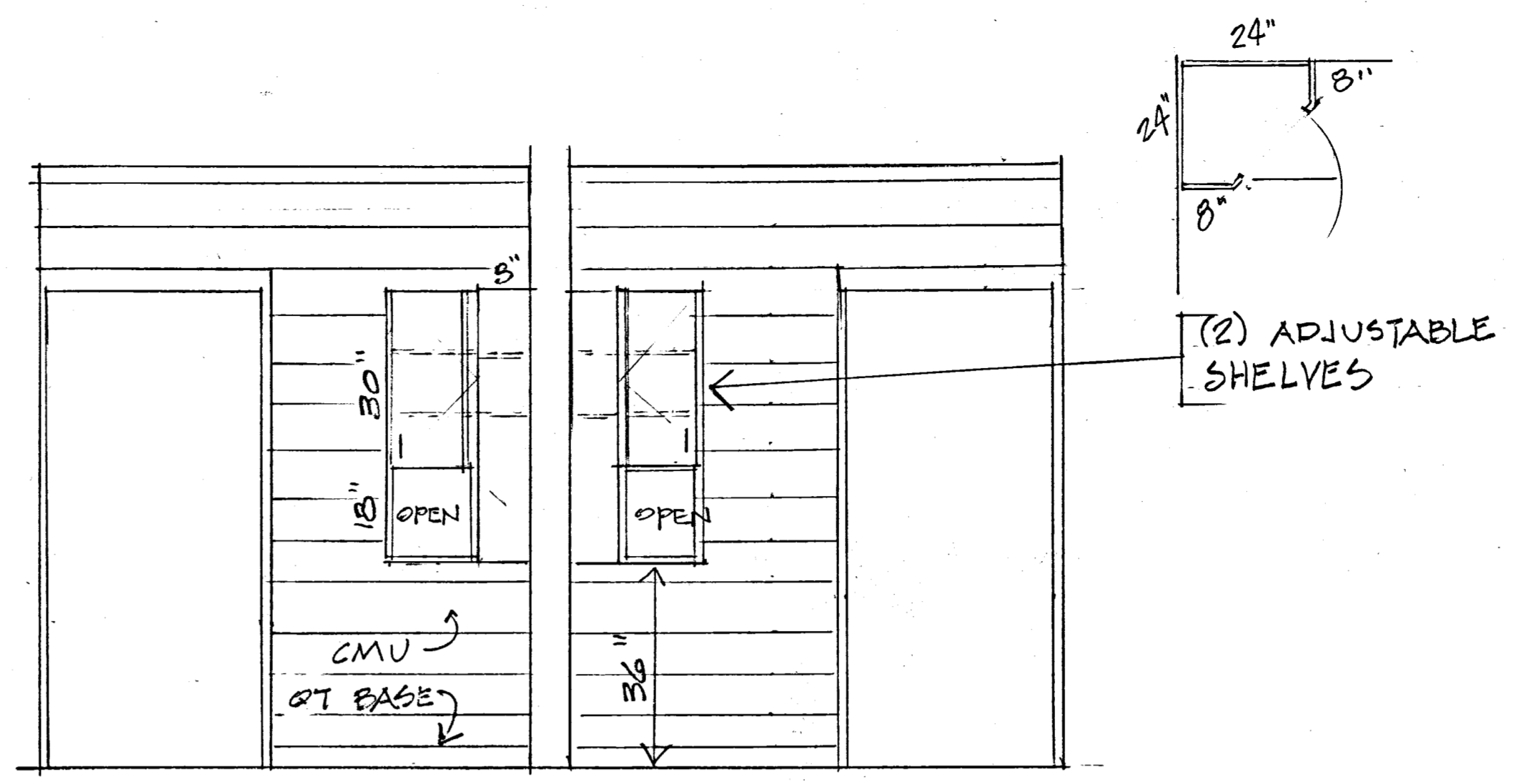
PROJECT # 25920221
ISSUED DATE JUNE 1, 2023
SHEET
A4
OF 20 SHEETS

BID DOCUMENTS

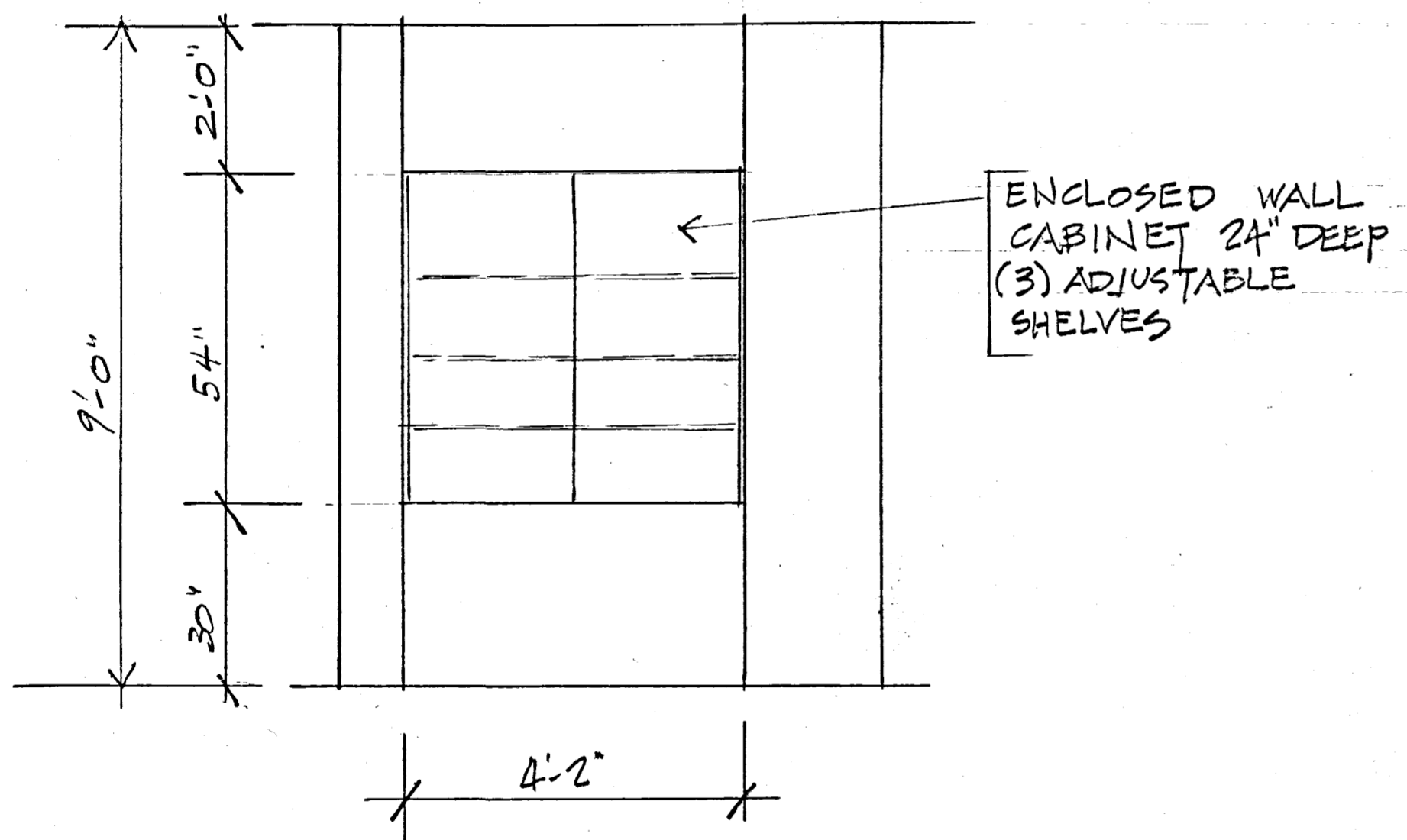
3/44 CORRIDOR SECTION LOOKING EAST SCALE 1"=1'-0" 0 6" 12" 2' 3' 4'



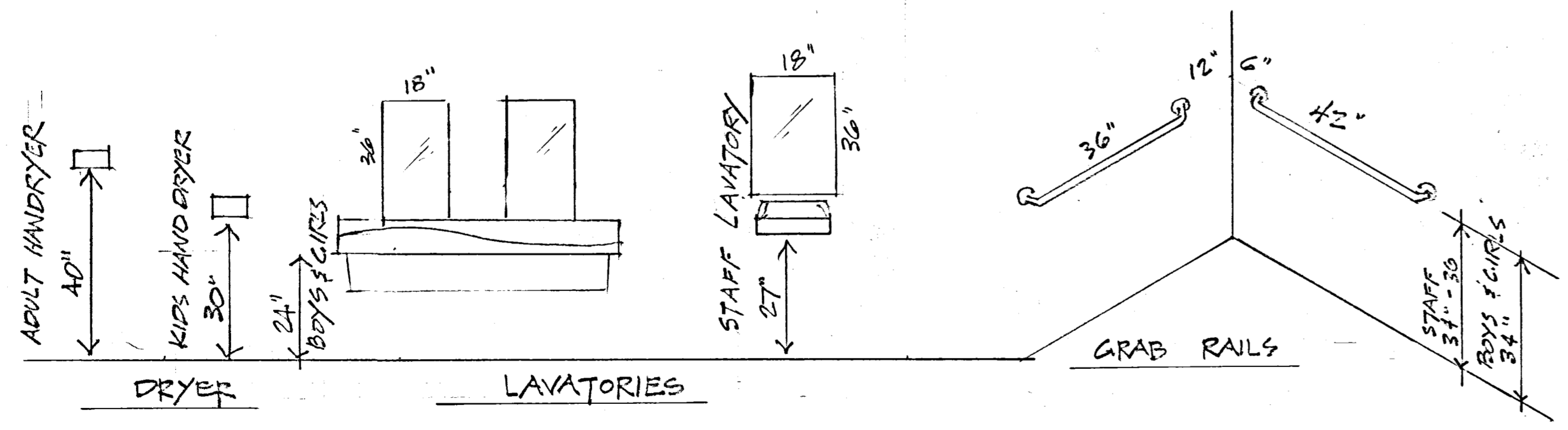
WORK ROOM CASEWORK



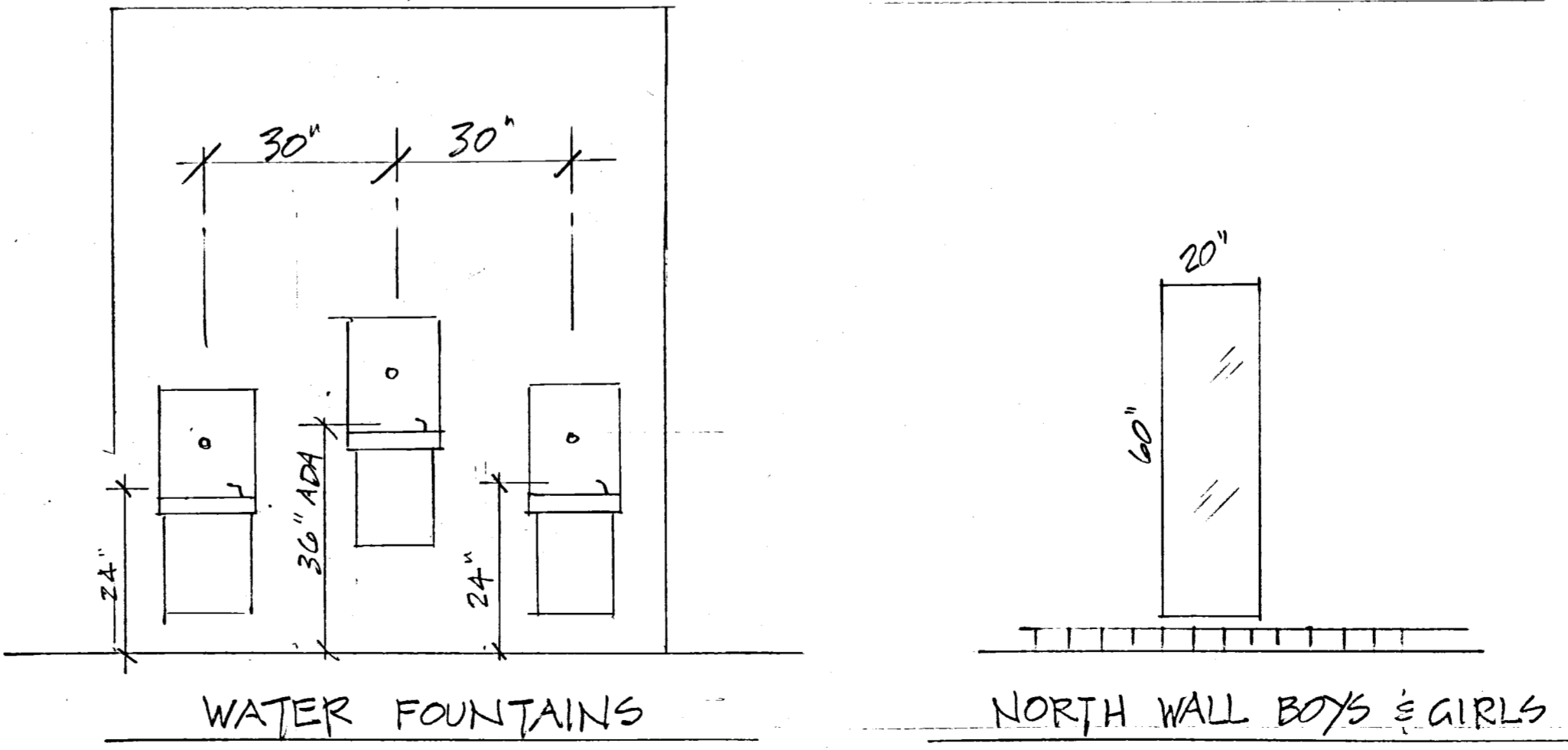
STAFF RESTROOMS - CASEWORK



STORAGE CASEWORK BOYS RR.

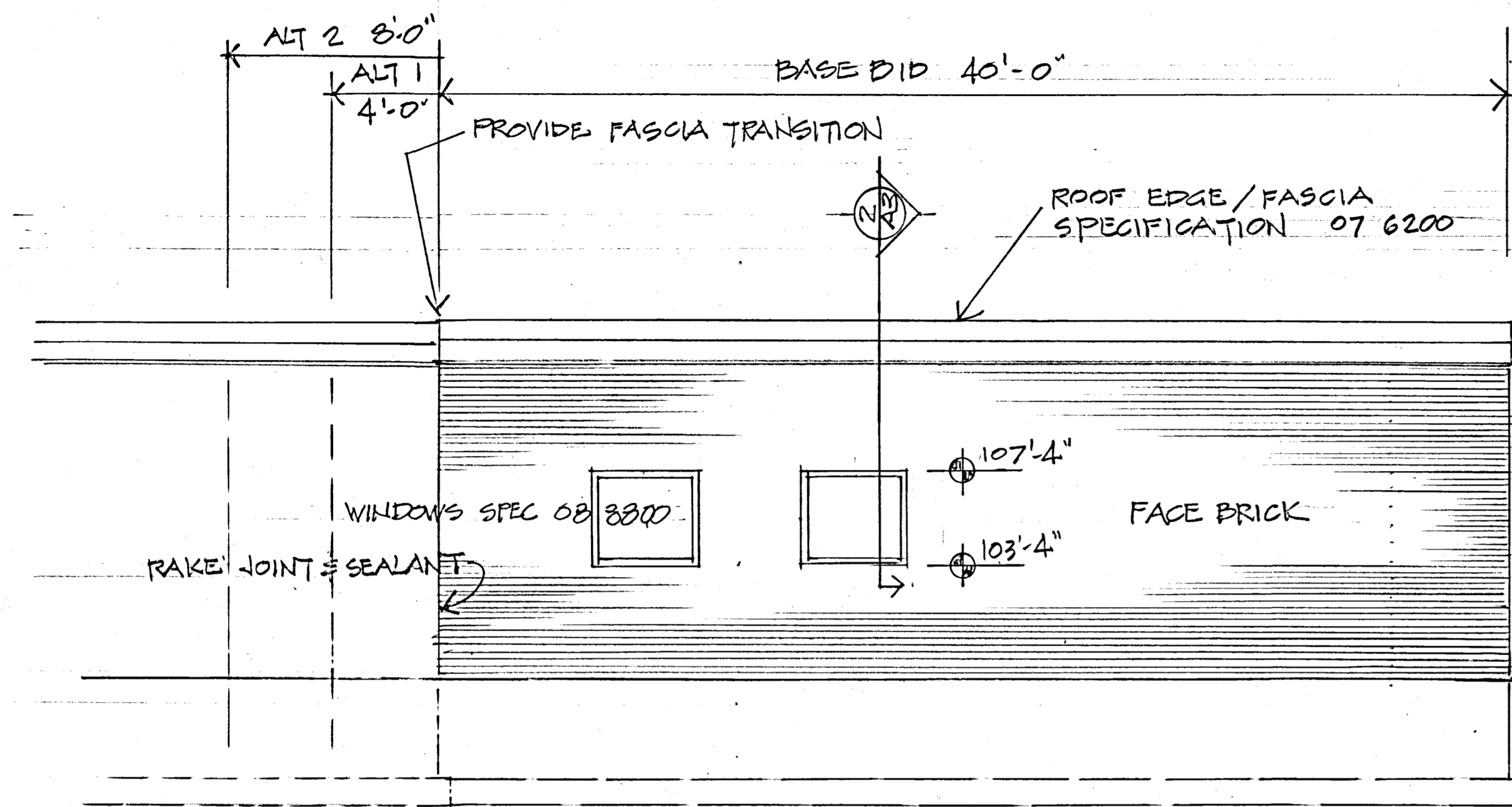


TOILET ACCESSORIES

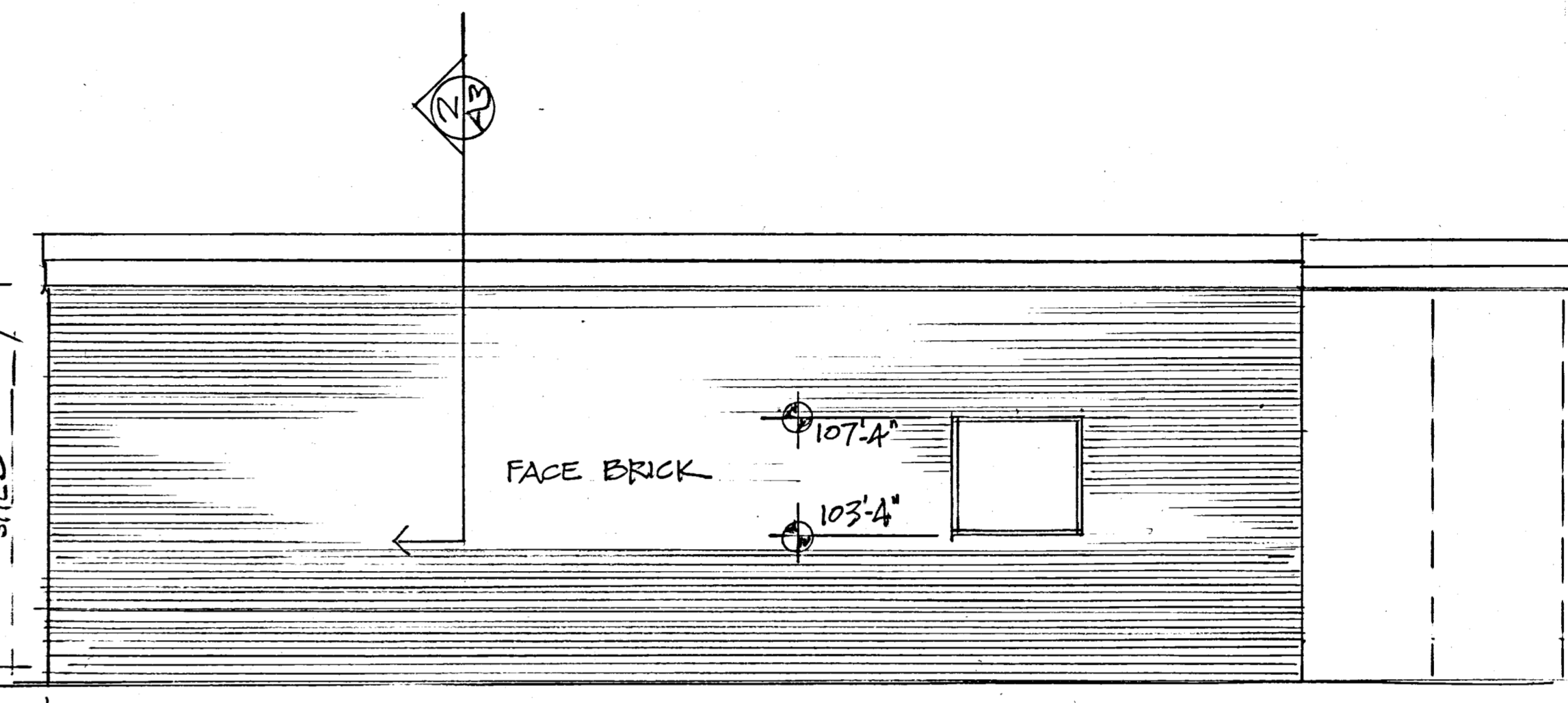


WATER FOUNTAINS

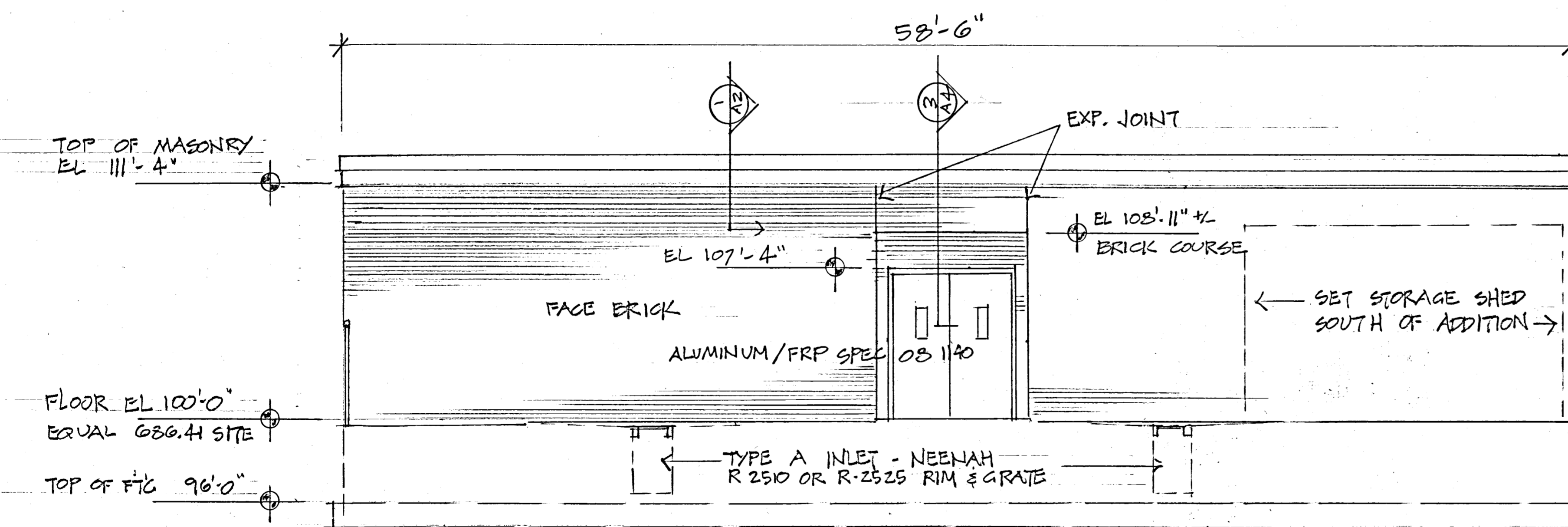
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#	DATE	DESCRIPTION



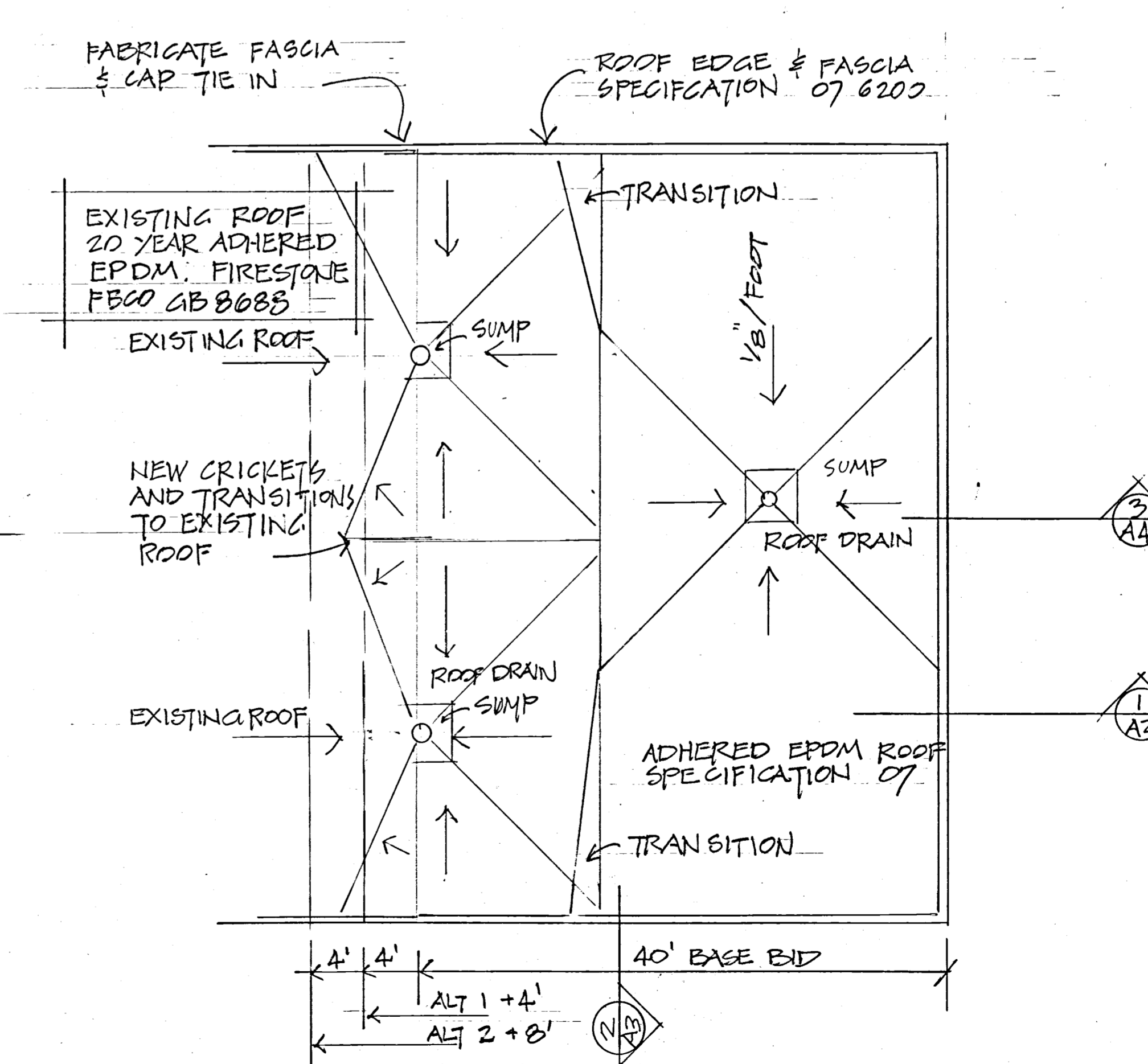
WEST ELEVATION



EAST ELEVATION 1/4" = 1'



SOUTH ELEVATION 1/4" = 1'



ROOF PLAN 1/8" = 1'

ARCHITECTS
MIDDLETON
 ASSOCIATES, INC.
 ARCHITECTS

DESIGN
MANNERS
 ARCHITECTURE, INC.

WWW.MIDDLETONASSOCIATES.NET
 WWW.MANNERSARCHITECTURE.COM
 DESIGN FIRM REG. #1404472

CIVIL ENGINEER

MEP ENGINEER
MMEZA
 ENGINEERS

WWW.MMEZAENGINEERS.COM

EXTERIOR ELEVATIONS & ROOF

2023 SAFEROOM ADDITION
 MACARTHUR EARLY CHILDHOOD CENTER
 235 W. GRANT STREET, MACOMB, IL 61455
 MACOMB CUSD #185
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REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
 ISSUED DATE JUNE 1, 2023
 SHEET
A-6
 OF 20 SHEETS

2/6/2023 2:35:36 PM Autodesk Docs://230008 Macomb ECC Safe Room Addn/230008 Macomb Safe Room_R22.rvt

DIVISION 22 & 23

SECTION 220000 & 230000: GENERAL MECHANICAL REQUIREMENTS

PART I - GENERAL:

- THE GENERAL CONDITIONS OF THE CONTRACTS, AS ISSUED IN THE SPECIFICATION DOCUMENT, SHALL BE PART OF THIS CONTRACT.
- THE ARTICLES CONTAINED IN THIS DIVISION AND THE ARCHITECTURAL SPECIFICATIONS MAY AMEND, MODIFY, SUPERSEDE, VOID OR SUPPLEMENT THE ARTICLES OF THE GENERAL CONDITIONS NOTED IN PARAGRAPH (1) ABOVE, AND SHALL TAKE PRECEDENCE OVER THE PROVISIONS OF THE GENERAL CONDITIONS IN (1).
- REFER TO THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS WHICH ARE HEREBY MADE PART OF THE CONTRACT.
- PROVIDE ALL WORK AND MATERIALS AS REQUIRED HEREIN AND ON THE DRAWINGS IN FULL ACCORDANCE WITH NATIONAL, STATE, AND LOCAL CODES, ORDINANCES AND/OR REGULATIONS HAVING JURISDICTION OVER THIS WORK.
- THE CONTRACTOR SHALL TAKE OUT ALL NECESSARY PERMITS, LICENSES AND CERTIFICATES AND PAY ALL FEES CONNECTED THEREWITH.
- CONTRACTOR SHALL INCLUDE ALL TAP FEES AND OTHER UTILITY INSTALLATION COSTS REQUIRED TO BRING UTILITIES TO THE BUILDING
- BIDDERS SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS SURROUNDING THE WORK SO THAT ANY DISCREPANCIES BETWEEN THE PLANS AND THE SITE ARE INCLUDED IN THE BID.
- DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS UNLESS SPECIFICALLY DIMENSIONED. COORDINATE ALL PIPING RUNS WITH THE WORK OF OTHER CONTRACTORS.
- ALL WORK SHALL BE COORDINATED WITH WORK OF OTHER TRADES PRIOR TO INSTALLATION TO AVOID INTERFERENCES. SUBMISSION OF SHOP DRAWINGS WITH THE COMMENCEMENT OF THE INSTALLATION WORK IMPLIES THAT THIS SATISFACTORY COORDINATION HAS TAKEN PLACE. THEREAFTER, ANY COSTS FOR MODIFICATION DUE TO INTERFERENCES SHALL BE BORNE BY THE CONTRACTOR.
- SUBMIT SHOP DRAWINGS FOR SUCH EQUIPMENT AND MATERIAL AS THE ENGINEER MAY REQUIRE FOR HIS REVIEW. ENGINEER'S REVIEW MUST TAKE PLACE BEFORE CONSTRUCTION BEGINS.
- CONTRACTOR SHALL SUBMIT REQUESTS FOR SUBSTITUTIONS IN WRITING TO THE ENGINEER.
- "RECORD" DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR IF INSTALLATION DEVIATES FROM THE ORIGINAL LAYOUT.
- THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF (1) YEAR AFTER THE FINAL ACCEPTANCE BY THE ARCHITECT, AND HE SHALL REPLACE AT HIS OWN COST ANY DEFECTIVE MATERIALS, EQUIPMENT OR WORKMANSHIP WHICH SHALL PROVE TO BE DEFECTIVE WITHIN THE GUARANTEED PERIOD.
- THE CONTRACTOR SHALL MAINTAIN A CAREFUL AND COMPLETE RECORD OF ALL ITEMS INSTALLED INCLUDING EXACT SIZES AND LOCATIONS AND UPON COMPLETION OF HIS WORK TURN OVER TO THE OWNER, A COMPLETE SET OF "AS-BUILT" REPRODUCIBLE DRAWINGS OF HIS WORK.
- THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED TO INSTALL ANY PORTION OF THIS WORK. PATCH WITH NEW MATERIALS OF THE SAME TYPE THAT WAS REMOVED. REFINISH PATCHED SURFACE TO MATCH EXISTING ADJACENT SURFACES.
- THE ENTIRE INSTALLATION SHALL BE PERFORMED BY LICENSED CONTRACTORS.
- VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.
- REFER TO EQUIPMENT SPECIFICATIONS FOR ROUGH-IN REQUIREMENTS.
- COORDINATE MECHANICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
- VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
- ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
- COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED.
- SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF MECHANICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE BUILDING.

PART II - MATERIALS - NOT APPLICABLE:

PART III - EXECUTION:

- WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.
- INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES.
- INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO AN ACCESSIBLE LOCATION.
- INSTALL ACCESS PANEL OR DOORS WHERE UNITS ARE CONCEALED BEHIND FINISHED SURFACES.
- INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.
- AT THE COMPLETION OF THE WORK, THIS CONTRACTOR SHALL REMOVE ALL RUBBISH, DIRT AND STAINS CAUSED BY HIS WORK AND SHALL THOROUGHLY CLEAN ALL EQUIPMENT, FIXTURES, PIPING, ETC.
- TOUCH UP OR REFINISH THE FACTORY FINISH OR EQUIPMENT MARRED DURING SHIPMENT OR INSTALLATION.

SECTION 220100: PLUMBING

PART I - GENERAL:

- UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT FOR THE INSTALLATION OF A COMPLETE OPERATING PLUMBING SYSTEM INCLUDING: HOT AND COLD WATER SYSTEMS, CONNECTION TO SANITARY SEWER SYSTEMS, PLUMBING FIXTURES, MISCELLANEOUS PLUMBING AND INSULATION.
- THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED TO INSTALL ANY PORTION OF THIS WORK. PATCH NEW MATERIALS OF THE SAME TYPE THAT WAS REMOVED. REFINISH PATCHED SURFACE TO MATCH EXISTING ADJACENT SURFACES.
- ALL EXISTING WASTE, VENT, AND WATER PIPING IN WALLS TO BE DEMOLISHED, AS SHOWN ON PLUMBING PLANS, SHALL BE REMOVED WHETHER OR NOT SPECIFICALLY SHOWN. PIPING SHALL BE REMOVED BACK TO THE NEAREST REMAINING MAIN OR VALVE AND CAPPED, UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE PIPES TO BE REMOVED PENETRATE FLOORS, WALLS OR OTHER FINISHED SURFACES, THEY SHALL BE REMOVED PAST THE FINISHED SURFACES TO ALLOW FOR PATCHING THE SURFACE ON BOTH SIDES (IF APPLICABLE).

PART II - MATERIALS:

- UNDERGROUND SANITARY SEWER AND STORM DRAIN PIPING: PVC PLASTIC DWV PIPE, PVC SOCKET-TYPE DRAIN, WASTE AND VENT PIPE PATTERN FITTINGS WITH SOLVENT-CEMENTED JOINTS.
- ABOVE GROUND SANITARY SEWER, STORM DRAIN AND VENT PIPING: PVC PLASTIC DWV PIPE, PVC SOCKET-TYPE DRAIN, WASTE AND VENT PIPE PATTERN FITTINGS WITH SOLVENT-CEMENTED JOINTS. INSULATE STORM DRAIN WITH 1/2" CELLULAR FOAM INSULATION.
- UNDERGROUND WATER PIPING 2½" AND LARGER: SCHEDULE 40 PVC PLASTIC WATER PIPE AND FITTINGS WITH SOLVENT CEMENTED JOINTS.
- UNDERGROUND WATER PIPING 2" AND SMALLER: TYPE "K" SOFT COPPER TUBE, CAST-COPPER ALLOY SOLDER-JOINT PRESSURE FITTINGS AND SOLDERED JOINTS WITH ALLOY Sn95 SOLDER.
- ABOVE GROUND WATER PIPING 2½" AND LARGER: FLANGED DUCTILE-IRON PIPE, FLANGED DUCTILE-IRON OR GRAY-IRON FITTINGS AND FLANGED JOINTS.
- ABOVE GROUND WATER PIPING, 2" AND SMALLER: TYPE "L" HARD COPPER TUBE WITH WROUGHT COPPER OR CAST-COPPER FITTINGS AND SOLDERED JOINTS WITH ALLOY Sn95 SOLDER.
- GAS PIPING: ASTM A53, TYPE E, ELECTRIC-RESISTANCE WELDED OR TYPE S, SEAMLESS, GRADE B, SCHEDULE 40 BLACK STEEL. ASME B16.3 CLASS 150 MALLEABLE IRON FITTINGS, STANDARD PATTERN WITH THREADS CONFORMING TO ASME B1.20.1
- INSULATE DOMESTIC HOT AND COLD WATER PIPING WITH 1" FIBERGLASS WITH ALL-PURPOSE JACKET; SEAL ALL JOINTS. INSULATE FITTINGS WITH MITERED SEGMENTS AND VAPOR SEALS. INSULATE HOT AND COLD WATER AND DRAINAGE PIPES ON PLUMBING FIXTURES DESIGNATED AT HANDICAPPED WITH PRE-FORMED INSULATION KITS AS INDICATED.
- PLUMBING FIXTURES: REFER TO PLUMBING FIXTURE SCHEDULE ON DRAWINGS FOR LIST OF PLUMBING FIXTURES.
- MEDICAL GAS AND REFRIGERANT PIPING: ASTM888, "ACR" HARD-DRAWN TEMPERED COPPER TUBE, CLEANED FOR MEDICAL GAS USE, PURGED, AND WITH ENDS SEALED. ASME B16.22, WROUGHT-COPPER FITTINGS WITH BRAZED SOLDER-JOINTS. AWS A5.8 COPPER-PHOSPHORUS BRAZING FILLER MATERIALS. INSULATE REFRIGERANT SUCTION LINE WITH ½" THICK CELLULAR FOAM INSULATION.
- SPRINKLER PIPING: ASTM A120 SEAMLESS BLACK STEEL PIPE. ANSI B16.4, CLASS 125 THREADED CAST-IRON FITTINGS. PIPING AND INSTALLATION TO COMFORM WITH REQUIREMENTS OF NFPA13.

PART III - EXECUTION:

- TEST ALL PLUMBING PIPES AS REQUIRED BY STATE, CITY OF LOCAL CODES AND ORDINANCES.
- DISINFECT THE ENTIRE WATER SUPPLY SYSTEM, FILLING WITH A SOLUTION OF 50 PPM CHLORINE AND ALLOW TO STAND FOR A MINIMUM OF 6 HOURS BEFORE FLUSHING AND RETURNING TO SERVICE.

SECTION 230100: HVAC EQUIPMENT AND SYSTEMS

PART I - GENERAL:

- UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT FOR THE INSTALLATION OF A COMPLETE AND ACCEPTABLE OPERATING HEATING AND AIR CONDITIONING SYSTEM.
- HVAC CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMISSION OF BID AND FULLY ACQUAINT HIMSELF WITH ALL OF THE EXISTING CONDITIONS RELATED TO HIS WORK AND SHALL INCLUDE (UNLESS NOTED OTHERWISE) IN HIS BASE BID ALL WORK REQUIRED DUE TO CONFLICTS AND/OR DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS TO ACHIEVE INTENDED DESIGN.
- THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED TO INSTALL ANY PORTION OF THIS WORK. PATCH NEW MATERIALS OF THE SAME TYPE THAT WAS REMOVED. REFINISH PATCHED SURFACE TO MATCH EXISTING ADJACENT SURFACES.
- DUCTWORK SHOWN ON PLANS TO BE DEMOLISHED SHALL BE REMOVED AND DISPOSED OF. DUCTWORK SHALL BE REMOVED BACK TO MAIN TRUNK, UNLESS OTHERWISE NOTED ON DRAWINGS. DUCT TAPS TO TRUNK DUCTS SHALL BE CAPPED WITH SHEET METAL CAPS AND SEALED. WHERE DUCTS TO BE REMOVED PENETRATE FLOORS, WALLS OR OTHER FINISHED SURFACES, THEY SHALL BE REMOVED PAST THE FINISHED SURFACES TO ALLOW FOR PATCHING THE SURFACE ON BOTH SIDES (IF APPLICABLE).
- PROVIDE THE FOLLOWING EQUIPMENT WITH WARRANTIES IN ADDITION TO THE GENERAL ONE-YEAR WARRANTY PROVIDED IN SECTION 220000 & 230000.

AIR CONDITIONING COMPRESSORS: 5 YEARS
HEAT EXCHANGERS: 25 YEARS
WATER HEATER TANKS: 10 YEARS

PART II - MATERIALS:

- DUCTWORK: CONSTRUCT ALL DUCTS OF THE GAUGE SHEET METAL FOR INDICATED SIZES IN ACCORDANCE WITH APPROPRIATE SMACNA STANDARDS. EXTEND DUCTWORK SUBSTANTIALLY AS SHOWN ON THESE DRAWINGS. PROVIDE TURNING VANES IN ALL ELBOWS. INSTALL ADJUSTABLE QUADRANT DAMPERS IN ALL BRANCH DUCTS. SEAL ALL DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS. BETWEEN 1" AND 2" W.G. - SEAL CLASS "B"; LESS THAN 1" - SEAL CLASS "C". FLEXIBLE DUCTS USED FOR RUN-OUTS TO DIFFUSER, WHERE INDICATED, SHALL NOT EXCEED 6'-0" IN LENGTH.
- DUCTWORK INSULATION: SUPPLY, RETURN, OUTSIDE (FRESH) AND EXHAUST AIR DUCTWORK SHALL BE WRAPPED WITH 1-1/2" THICK, 0.75 PCF DUCT WRAP W/ FSK JACKET.
- PROVIDE AND INSTALL THE AIR OUTLET DEVICES INDICATED ON THE PLANS, DIFFUSER, REGISTER AND GRILLE COLOR TO MATCH THAT OF THE CEILING GRID. REFER TO DIFFUSER, REGISTER, AND GRILLE SCHEDULE AND PLANS FOR SIZES, MANUFACTURER, MODEL # AND CFM REQUIREMENTS.
- FURNISH AND INSTALL EXHAUST FANS OF THE TYPE SCHEDULED AND WHERE INDICATED ON THE PLANS. REFER TO EXHAUST FAN SCHEDULE FOR SPECIFICATIONS.

PART III - EXECUTION:

- WHEN THE WORK HAS BEEN COMPLETED, BALANCE THE AIR DELIVERIES FROM EACH DIFFUSER AND REGISTER IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE DIFFUSER MANUFACTURER, SETTING DAMPERS, CONTROLS AND/OR OTHER VOLUME CONTROL DEVICE IN SUCH A MANNER AS TO PRODUCE THE AIR VOLUME DELIVERIES SHOWN ON THE DRAWINGS.

SECTION 230200: CONTROLS

PART I - GENERAL:

- ALL CONTROL AND INTERLOCK WIRING SHALL BE DONE BY ECSI PEORIA OFFICE UNDER THIS CONTRACT. CONTACT JEVANS@ECSI-ALC.COM. PROVIDE WIRING DIAGRAM AND SUBMIT TO ENGINEER FOR APPROVAL.

PART II - MATERIALS:

- CONTRACTOR SHALL PROVIDE AND INSTALL ELECTRONIC, PROGRAMMABLE THERMOSTATS WHERE INDICATED ON THE PLANS. MOUNT THERMOSTATS AT 48" A.F.F TO CENTER.
- WHERE INDICATED, PROVIDE SMOKE DETECTOR WIRED TO AUTOMATICALLY SHUT DOWN THE UNIT WHEN ACTIVATED. INSTALL THE RETURN AIR DUCT IN ACCORDANCE WITH LOCAL CODE.

PART III - EXECUTION:

- CONTRACTOR SHALL SET PROGRAMMABLE THERMOSTATS TO OPERATE IN DAY HEATING AND COOLING AND NIGHT SETBACK MODES. CONTRACTOR SHALL VERIFY THAT FRESH BATTERIES ARE PROVIDED AND INSTALLED.
- AFTER COMPLETION OF THE CONTROL SYSTEM INSTALLATION, THE CONTRACTOR SHALL REGULATE AND ADJUST ALL THERMOSTATS, DAMPER MOTORS, ETC. AND PLACE IN COMPLETE OPERATING CONDITION. COMPLETE OPERATING INSTRUCTIONS SHALL BE GIVEN TO THE OWNER'S REPRESENTATIVE. THESE INSTRUCTIONS SHALL TAKE PLACE AFTER ALL SYSTEMS HAVE BEEN CHECKED OUT AND ARE PROPERLY OPERATING.

DIVISION 26

SECTION 260000: GENERAL ELECTRICAL REQUIREMENTS

PART I - GENERAL:

- THE GENERAL CONDITIONS OF THE CONTRACTS, CURRENT EDITION PUBLISHED IN STANDARD FORM BY AMERICAN INSTITUTE OF ARCHITECTS, SHALL BE PART OF THIS CONTRACT.
- THE ARTICLES CONTAINED IN THIS DIVISION AND THE ARCHITECTURAL SPECIFICATIONS MAY AMEND, MODIFY, SUPERSEDE, VOID OR SUPPLEMENT THE ARTICLES OF THE GENERAL CONDITIONS NOTED IN PARAGRAPH (1) ABOVE, AND SHALL TAKE PRECEDENCE OVER THE PROVISIONS OF THE GENERAL CONDITIONS IN (1).
- REFER TO THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS WHICH ARE HEREBY MADE PART OF THE CONTRACT.
- PROVIDE ALL WORK AND MATERIALS AS REQUIRED HEREIN AND ON THE DRAWINGS IN FULL ACCORDANCE WITH NATIONAL, STATE, AND LOCAL CODES, ORDINANCES AND/OR REGULATIONS HAVING JURISDICTION OVER THIS WORK.
- THE CONTRACTOR SHALL TAKE OUT ALL NECESSARY PERMITS, LICENSES AND CERTIFICATES AND PAY ALL FEES CONNECTED THEREWITH.
- CONTRACTOR SHALL INCLUDE ALL TAP FEES AND OTHER UTILITY INSTALLATION COSTS REQUIRED TO BRING UTILITIES TO THE BUILDING
- BIDDERS SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS SURROUNDING THE WORK SO THAT ANY DISCREPANCIES BETWEEN THE PLANS AND THE SITE ARE INCLUDED IN THE BID.
- DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS UNLESS SPECIFICALLY DIMENSIONED. COORDINATE ALL PIPING RUNS WITH THE WORK OF OTHER CONTRACTORS.
- ALL WORK SHALL BE COORDINATED WITH WORK OF OTHER TRADES PRIOR TO INSTALLATION TO AVOID INTERFERENCES. SUBMISSION OF SHOP DRAWINGS WITH THE COMMENCEMENT OF THE INSTALLATION WORK IMPLIES THAT THIS SATISFACTORY COORDINATION HAS TAKEN PLACE. THEREAFTER, ANY COSTS FOR MODIFICATION DUE TO INTERFERENCES SHALL BE BORNE BY THE CONTRACTOR.
- SUBMIT SHOP DRAWINGS FOR SUCH EQUIPMENT AND MATERIAL AS THE ENGINEER MAY REQUIRE FOR HIS REVIEW. ENGINEER'S REVIEW MUST TAKE PLACE BEFORE CONSTRUCTION BEGINS.
- CONTRACTOR SHALL SUBMIT REQUESTS FOR SUBSTITUTIONS IN WRITING TO THE ENGINEER.
- "RECORD" DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR IF INSTALLATION DEVIATES FROM THE ORIGINAL LAYOUT.
- THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF (1) YEAR AFTER THE FINAL ACCEPTANCE BY THE ARCHITECT, AND HE SHALL REPLACE AT HIS OWN COST ANY DEFECTIVE MATERIALS, EQUIPMENT OR WORKMANSHIP WHICH SHALL PROVE TO BE DEFECTIVE WITHIN THE GUARANTEED PERIOD.
- THE CONTRACTOR SHALL MAINTAIN A CAREFUL AND COMPLETE RECORD OF ALL ITEMS INSTALLED INCLUDING EXACT SIZES AND LOCATIONS AND UPON COMPLETION OF HIS WORK TURN OVER TO THE OWNER, A COMPLETE SET OF "AS-BUILT" REPRODUCIBLE DRAWINGS ON MYLAR OF HIS WORK.
- THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED TO INSTALL ANY PORTION OF THIS WORK. PATCH WITH NEW MATERIALS OF THE SAME TYPE THAT WAS REMOVED. REFINISH PATCHED SURFACE TO MATCH EXISTING ADJACENT SURFACES.
- THE ENTIRE INSTALLATION SHALL BE PERFORMED BY LICENSED CONTRACTORS.
- NO INTERRUPTION OF BUILDING FUNCTIONS OR ELECTRIC SERVICE SHALL BE PERMITTED WITHOUT APPROVAL OF THE OWNER.
- ELECTRICAL WORK SHALL NOT INTERFERE WITH CLEARANCES REQUIRED FOR GENERAL AND MECHANICAL CONSTRUCTION. SHOULD ELECTRICAL WORK BE INSTALLED AND THAT WORK INTERFERES WITH THE WORK OF THE OTHER CONTRACTORS, SUCH WORK SHALL BE CHANGED AT NO ADDITIONAL COST TO THE OWNER.
- VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.
- REFER TO EQUIPMENT SPECIFICATIONS FOR ROUGH-IN REQUIREMENTS.
- COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
- VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
- ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR ELECTRICAL INSTALLATIONS.
- COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED.
- SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE BUILDING.
- WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.
- COORDINATE CONNECTION OF ELECTRICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE.
- ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES, WIRE AND/OR CONDUIT IN WALLS TO BE DEMOLISHED, AS SHOWN ON ARCHITECTURAL PLANS, SHALL BE REMOVED WHETHER OR NOT SPECIFICALLY SHOWN. CONDUIT AND WIRING SHALL BE REMOVED BACK TO THE NEAREST REMAINING JUNCTION BOX OR PANEL. KEEP EXISTING CIRCUITS IN OPERATION WHERE POSSIBLE.

PART II - MATERIALS - NOT APPLICABLE:

- PART III - EXECUTION: 1. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, TO GREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO THE ARCHITECT.
- INSTALL SYSTEMS, MATERIALS AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES.
- INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING AND MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.
- INSTALL ACCESS PANEL OR DOORS WHERE UNITS ARE CONCEALED BEHIND FINISHED SURFACES.
- INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.
- AT THE COMPLETION OF THE WORK, THIS CONTRACTOR SHALL REMOVE ALL RUBBISH, DIRT AND STAINS CAUSED BY HIS WORK AND SHALL THOROUGHLY CLEAN ALL EQUIPMENT, FIXTURES, PIPING, ETC.
- TOUCH UP OR REFINISH THE FACTORY FINISH OR EQUIPMENT MARRED DURING SHIPMENT OR INSTALLATION.

SECTION 260100: ELECTRICAL EQUIPMENT AND MATERIALS

PART I - GENERAL - NOT APPLICABLE:

PART II - MATERIALS:

- ALL ELECTRICAL EQUIPMENT SHALL BE SPECIFICATION GRADE AND UL APPROVED UNLESS SPECIFIED OTHERWISE.
- WIRING DEVICES SHALL MEET NEMA PERFORMANCE STANDARDS WD-2 AND WD-6, ANSI AND UL 498 AND COMPLY WITH FEDERAL SPECIFICATION WC-596. MINIMUM SIZE OF OUTLET BOXES SHALL BE 4" TRADE.
- ALL CONDUCTORS SHALL BE COPPER, 600-VOLT, THHN; #12 MINIMUM SIZE. ALUMINUM WIRE SHALL NOT BE PERMITTED.
- CONDUIT AND TUBING: RIGID STEEL CONDUIT: ANSI C80.1. ELECTRICAL METALLIC TUBING AND FITTINGS: ANSI C80.3 WITH SET-SCREW OR COMPRESSION-TYPE FITTINGS. FLEXIBLE METAL CONDUIT: ZINC-COATED STEEL. LIQUDTIGHT FLEXIBLE METAL CONDUIT: FLEXIBLE STEEL CONDUIT WITH PVC JACKET. FITTINGS: NEMA FB 1, COMPATIBLE WITH CONDUIT/TUBING MATERIALS. ELECTRICAL NONMETALLIC TUBING (ENT): NEMA TC 13. RIGID NONMETALLIC CONDUIT (RNC): NEMA TC 2, SCHEDULE 40 PVC. PVC CONDUIT AND TUBING FITTINGS: NEMA TC 3; MATCH TO CONDUIT OR CONDUIT/TUBING TYPE AND MATERIAL.
- PANELBOARDS SHALL HAVE BUS RATING AND A.I.C. RATING GREATER THAN FAULT CURRENT VALUE AT POINT OF APPLICATION.
- CIRCUIT BREAKERS USED FOR LIGHT SWITCHING SHALL BE UL LISTED "SWITCHING DUTY BREAKERS".
- SWITCHES AND RECEPTACLES SHALL BE HUBBELL, LEVITON OR EAGLE WITH HUBBELL NUMBERS USED TO SPECIFY TYPES REQUIRED. SWITCHES SHALL BE IVORY COLOR, 20 AMP 120/277 VOLT A.C. RATED-SINGLE POLE SWITCHES SHALL BE #1221 AND 3-WAY SWITCHES SHALL BE #1223. RECEPTACLES SHALL BE IVORY COLOR 20 AMP GROUNDING TYPE #5362. WALL PLATES SHALL BE IVORY COLORED. (UNLESS OTHERWISE NOTED.)
- FUSES SHALL BE BUSSMAN "LOW-PEAK" DUAL ELEMENT, CLASS RK1.
- LIGHT FIXTURES: REFER TO LIGHT FIXTURE SCHEDULE FOR LIST OF LIGHT FIXTURES.

PART III - EXECUTION:

- GROUNDING SHALL COMPLY WITH THE CODE AND REQUIREMENTS OF THE POWER COMPANY SERVING.
- ALL ITEMS OF ELECTRICAL EQUIPMENT ASSOCIATED WITH THE CONTROL OF ELECTRICAL APPARATUS SHALL BE IDENTIFIED WITH ENGRAVED PHENOLIC NAMEPLATES.
- AT THE COMPLETION OF THE WORK, THIS CONTRACTOR SHALL REMOVE ALL RUBBISH, DIRT AND STAINS CAUSED BY HIS WORK AND SHALL THOROUGHLY CLEAN ALL EQUIPMENT, FIXTURES, PIPING, ETC.
- ALL 120V 20A LIGHTING AND RECEPTACLE CIRCUITS REQUIRING MORE THAN 100' OF CONDUCTORS (ONE-WAY) SHALL BE #10 CONDUCTORS.
- ALL ELECTRICAL WIRING MUST BE RUN IN CONDUIT APPLIED AS FOLLOWS:
A. MINIMUM CONDUIT SIZE: 1/2"
B. UNDERGROUND, RIGID NON-METALLIC CONDUIT AND FITTINGS.
C. EXTERIOR AND INTERIOR WHERE EXPOSED TO DAMAGE: RIGID METALLIC CONDUIT AND FITTINGS.
D. INTERIOR EXCEPT AS OTHERWISE NOTED: ELECTRICAL METALLIC TUBING AND FITTINGS.
E. EXTERIOR CONNECTION TO VIBRATING EQUIPMENT: LIQUIDTIGHT FLEXIBLE METAL CONDUIT AND FITTINGS.
F. INTERIOR CONNECTION TO VIBRATING EQUIPMENT AND LIGHT FIXTURES: FLEXIBLE METAL CONDUIT AND FITTINGS.
- NO CONDUITS ARE TO BE RUN IN OR SUPPORTED BY DUCTWORK. A PULL WIRE SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
- ALL CONDUITS THROUGH ROOF SHALL PENETRATE ROOF USING PROPER APPROVED ROOF FLASHING.
- FLEXIBLE CONDUIT CAN ONLY BE USED FOR SHORT FINAL CONNECTIONS TO INTERIOR LIGHTING FIXTURES AND EQUIPMENT.
- ALL ELECTRICAL EQUIPMENT AND CONDUIT EXPOSED TO WEATHER SHALL BE WEATHERPROOF.
- PROVIDE TYPEDWRITTEN INDEX CARDS FOR ALL PANELS.
- PROVIDE ALL ELECTRICAL PANELS, DISCONNECT SWITCHES AND TIME CLOCKS WITH 1/2" LAMINATED PLASTIC NAMEPLATE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BALANCING ALL BRANCH CIRCUITS AMONG THE PHASES OF THE SYSTEM.
- TELEPHONE AND DATA OUTLETS SHALL INCLUDE SINGLE-GANG BOX WITH 3/4" EMPTY CONDUIT ROUTED TO ABOVE ACCESSIBLE CEILING. FACE PLATES, WIRING AND CONNECTIONS BY OTHERS
- BEFORE COVERING OR CONCEALMENT, THE CONTRACTOR SHALL TEST HIS WIRING SYSTEMS AS REQUIRED BY APPLICABLE CODES OR REGULATIONS OR WHERE NONE SUCH EXIST, AS REQUIRED BY THE ARCHITECT.
- INSTALL DEVICES AT THE FOLLOWING CENTER LINE HEIGHTS UNLESS OTHERWISE INDICATED:
RECEPTACLES - 18" A.F.F.
SWITCHES - 48" A.F.F.
WALL PHONES - 60" A.F.F.
PHONE/DATA - 18" A.F.F.
DEVICES ABOVE COUNTERTOPS - 6" ABOVE COUNTERTOP OR AS OTHERWISE INDICATED.

ARCHITECTS

MIDDLETON ASSOCIATES ARCHITECTS

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DESIGN Movers

ARCHITECTURE LLC.

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DESIGN FIRM REG# 18-009872

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203 EASTLAND DRIVE

JEFFERSON CITY, MISSOURI 6501

Phone: 572-636-2116

Design Firm Registration #B4007987-0002

SPECIFICATIONS

2023 SAFE ROOM ADDITION

2027

MACARTHUR EARLY CHILDHOOD CENTER

235 W. GRANT STREET, MACOMB, IL 61456

MACOMB CUSD #185

323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221

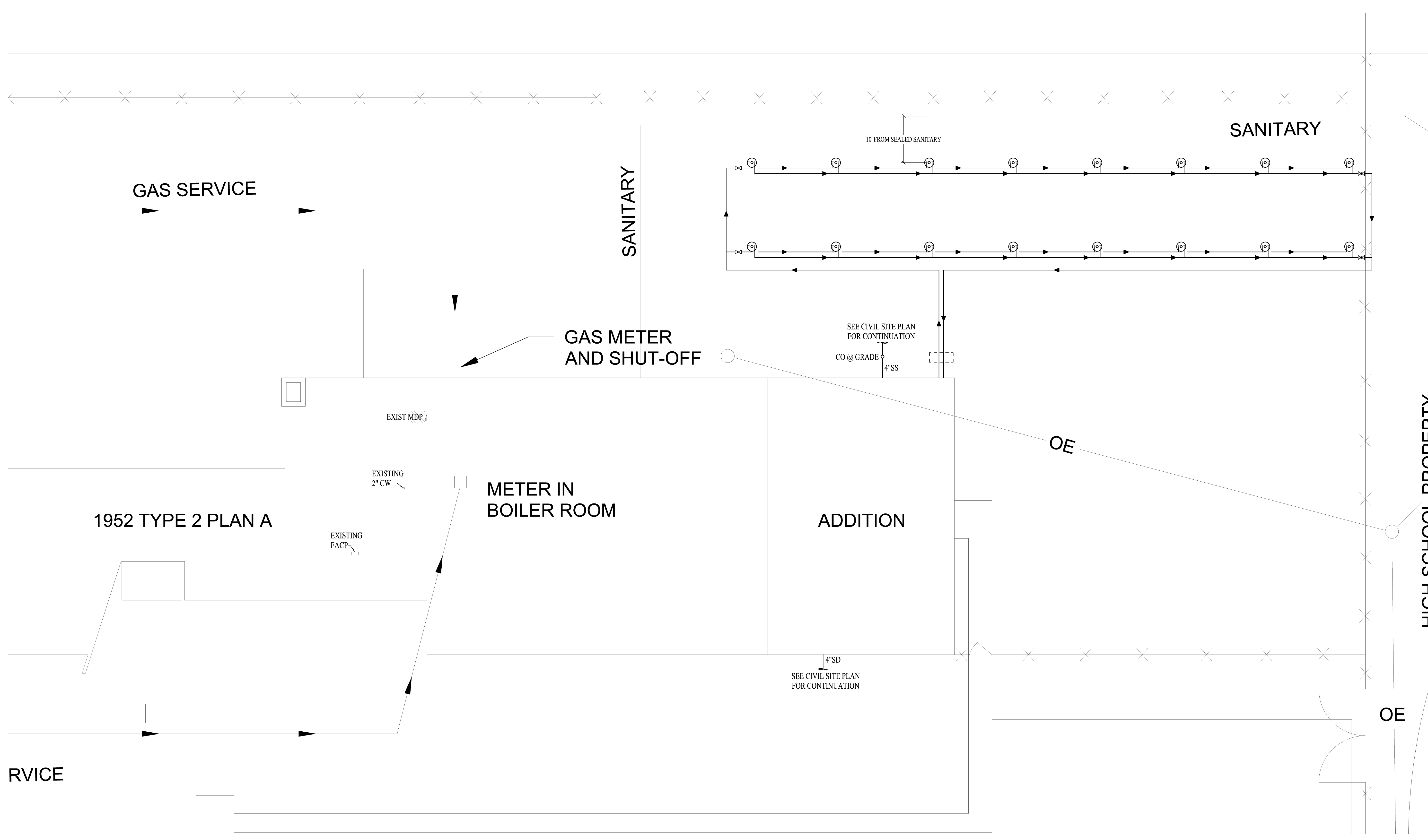
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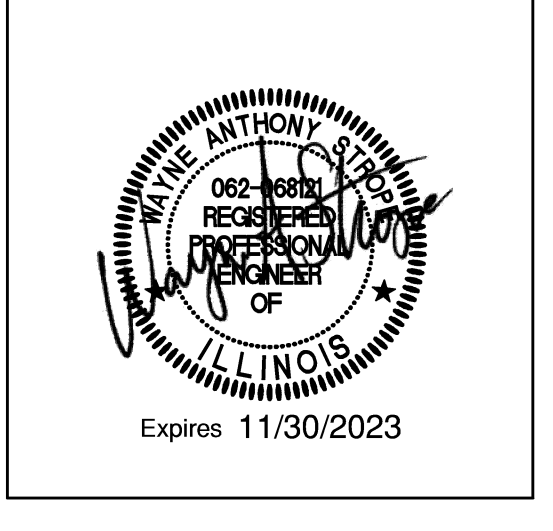
BID DOCUMENTS



01 BOREFIELD SITE LAYOUT
SCALE: 1"=10'-0"

ARCHITECTS
MIDDLETON ASSOCIATES ARCHITECTS
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Design Mawens ARCHITECTURE LLC.
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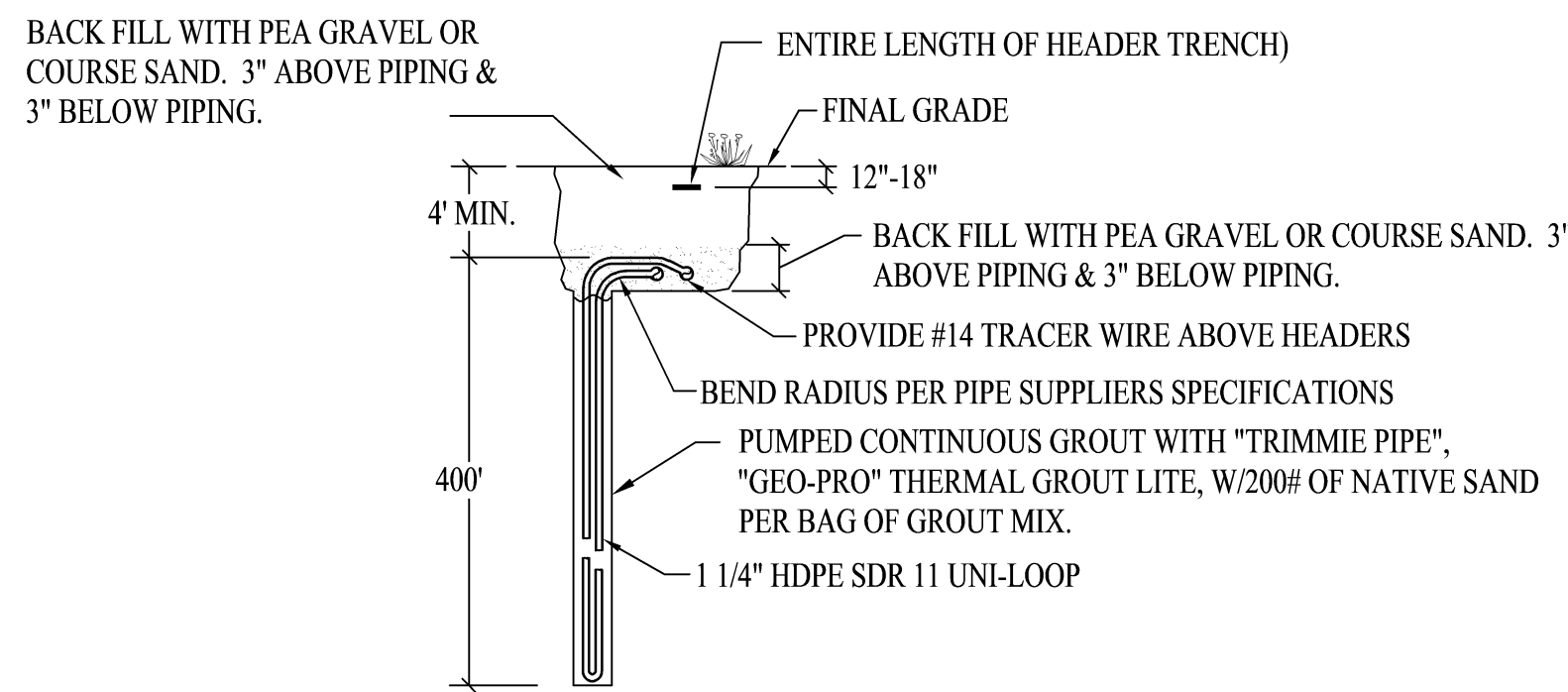
MEP ENGINEER
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 203 EASTLAND DRIVE
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 Design Firm Registration #184.007987-0002



BOREFIELD SITE LAYOUT
 2023 SAFE ROOM ADDITION
 MACARTHUR EARLY CHILDHOOD CENTER
 235 W. GRANT STREET, MACOMB, IL 61455
 MACOMB CUSD #185
 323 W. WASHINGTON STREET, MACOMB, IL 61455

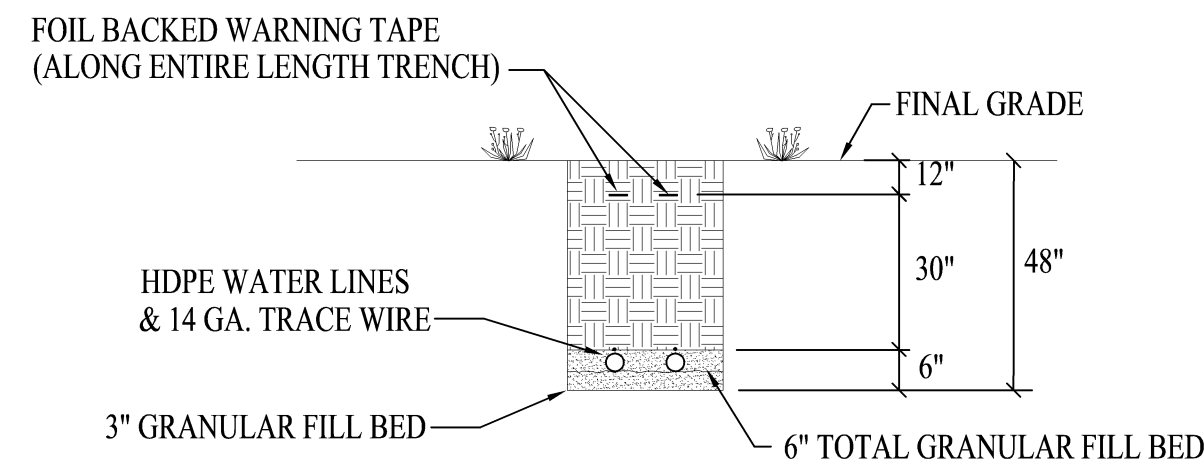
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PROJECT # 25920221
 ISSUED DATE
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 OF SHEETS



02 VERTICAL U-BEND WELL DETAIL

SCALE: NONE

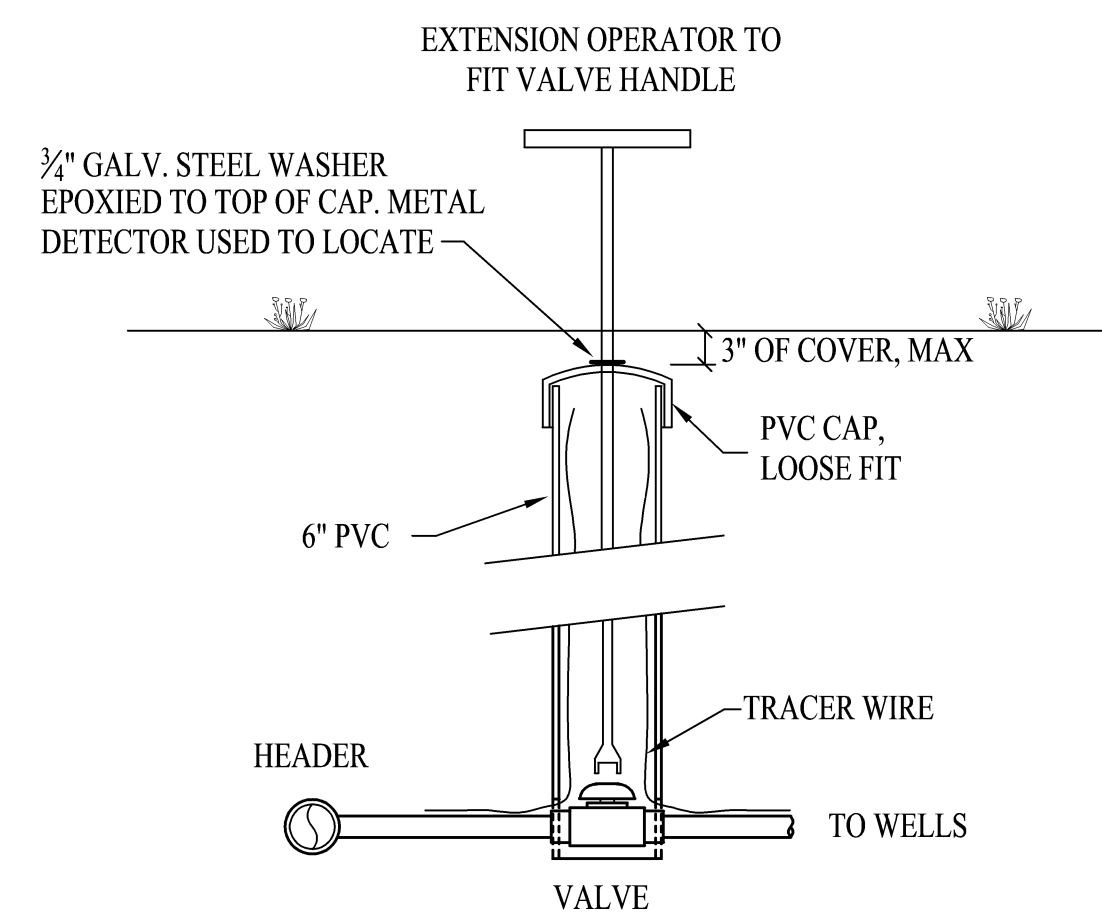


NOTE:

ALL NON-METAL LINES TO BE TRACED WITH 14 GA. WIRE (TYPICAL), TERMINATE WIRE AT ACCESSIBLE VALVE PIT.

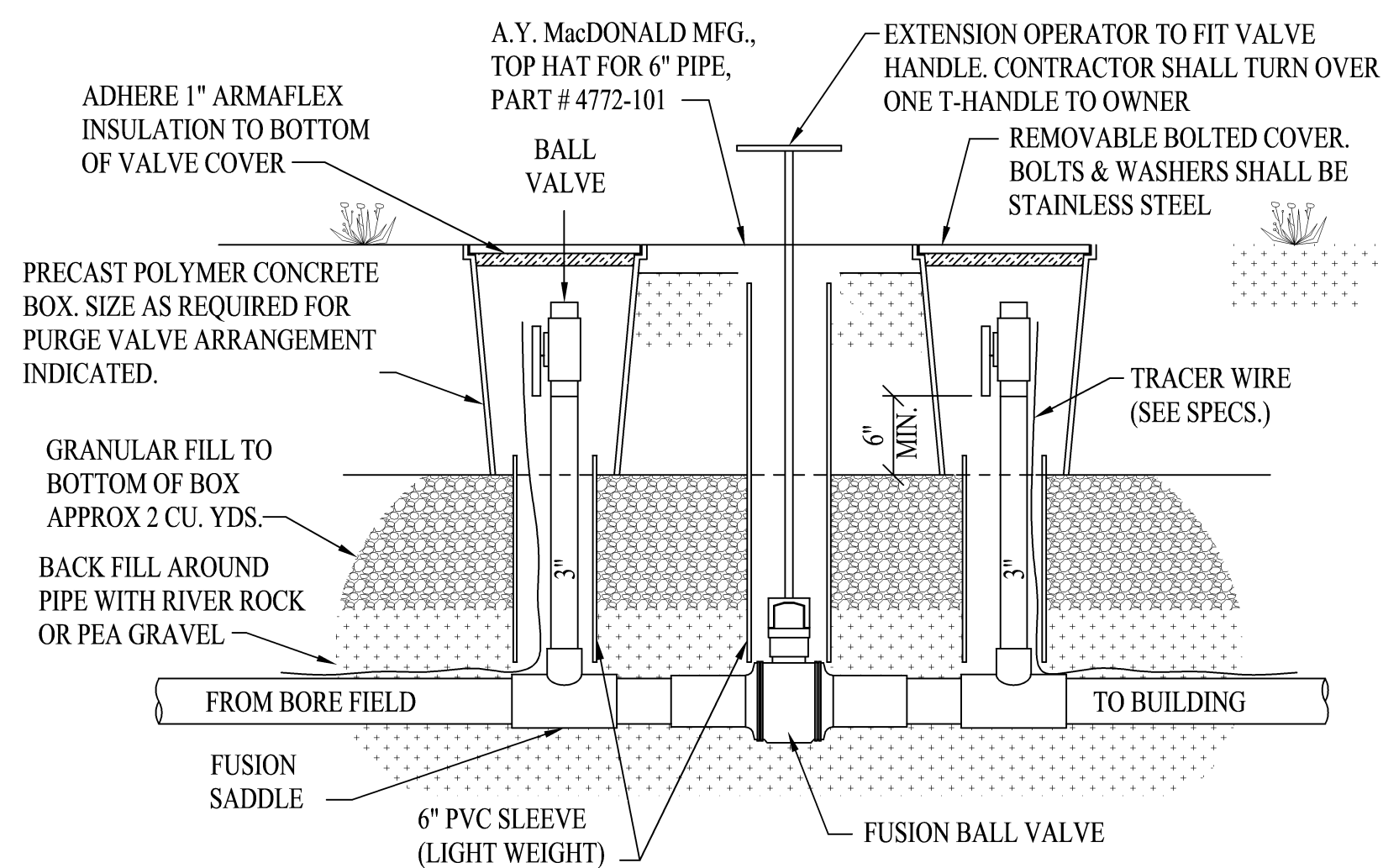
03 SECTION DETAIL

SCALE: NONE



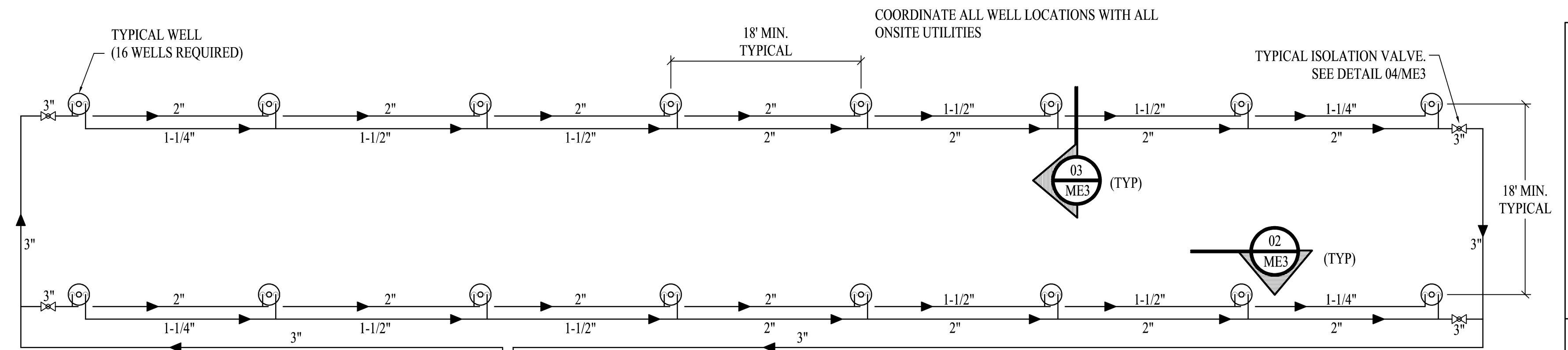
04 WELL FIELD ISOLATION VALVE DETAIL

SCALE: NONE



05 PURGE VALVE PIT DETAIL

SCALE: NONE

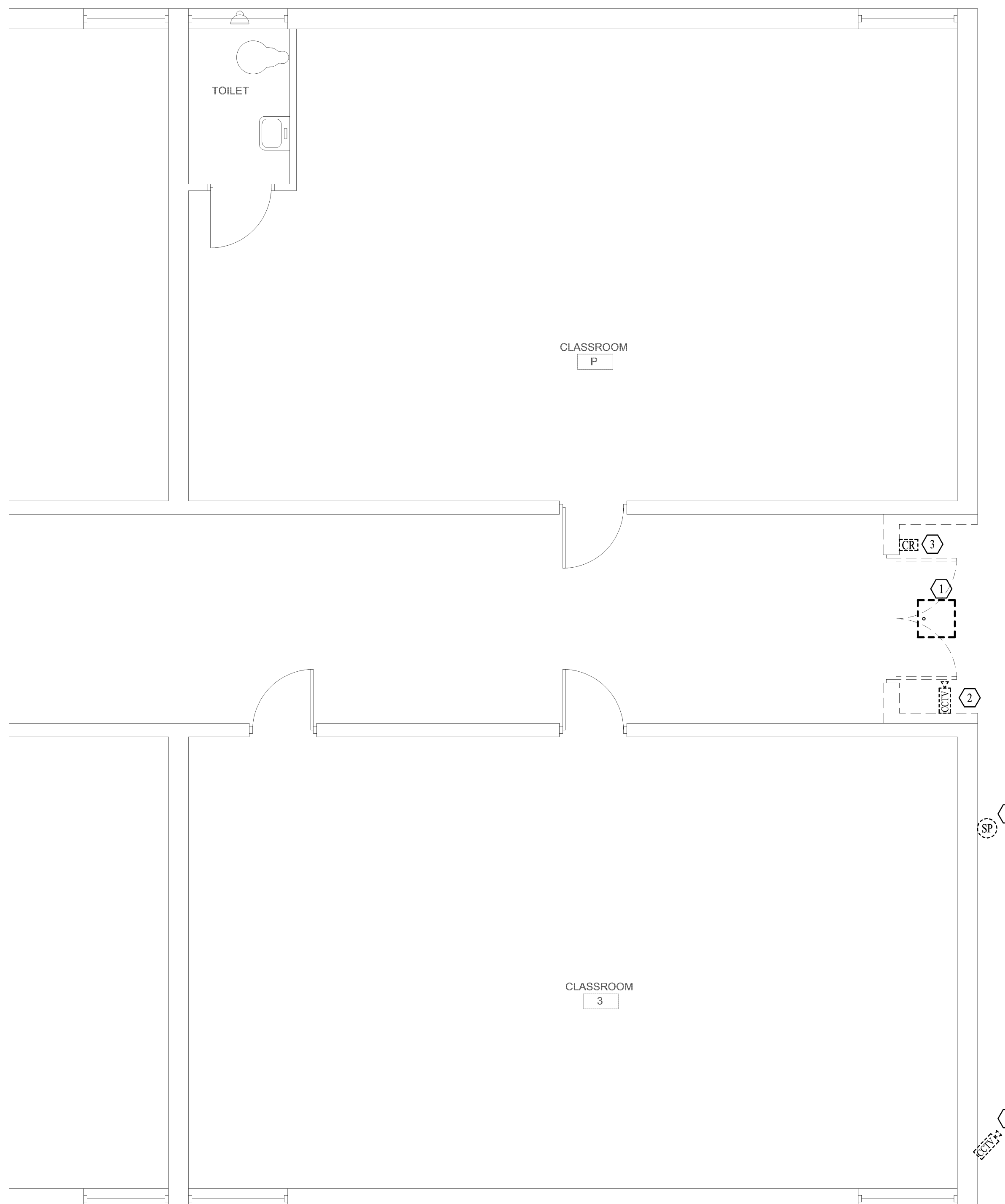


Purge Circuits	1.00
Calc Purge Volume	72.25 gpm
Purge Head	20.20 Ft
Purge Valve Size	1.50
System Flow	80 GPM
Loopfield Design PD	13.0 FT
Well field volume	158 ft ³
Glycol Mat	223 Gallons

PURGE VALVE PIT
SEE DETAIL 05/ME3

01 BOREFIELD LAYOUT

SCALE: NTS



GENERAL NOTES:

1. DRAWINGS (PLANS, DETAILS AND SCHEMATICS) ARE DIAGRAMMATIC IN NATURE AND INDICATE GENERAL LOCATION AND ARRANGEMENT OF NEW AND EXISTING MAJOR EQUIPMENT AND PIPING SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS AND DIMENSIONS OF ALL EQUIPMENT, PIPING AND PIPING COMPONENTS. CONTRACTOR IS ALSO RESPONSIBLE FOR FINAL TIE-IN POINT LOCATIONS BETWEEN NEW AND EXISTING PIPING SYSTEMS EQUIPMENT AND UTILITIES.

2. UNLESS OTHERWISE NOTED EXISTING SHOWN IN FADE-AWAY PEN. NEW, RELOCATED OR DEMOLITION ITEMS SHOWN IN DARK HEAVY PEN.

3. MATERIAL EXPOSED WITHIN THE RETURN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPMENT INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

NOTES:

- ① REMOVE EXISTING LIGHT FIXTURE. MAINTAIN CIRCUIT AS REQUIRED FOR REMAINING EXISTING LIGHTING.
- ② REMOVE AND RELOCATE EXISTING SECURITY CAMERAS AND SPEAKERS TO SOUTH ENTRANCE OF NEW ADDITION. EXTEND WIRING AS REQUIRED TO MAKE NEW CONNECTIONS AT RELOCATED DEVICES.
- ③ REMOVE EXISTING ACCESS CONTROL CARD READER.

06 MEP DEMOLITION FLOOR PLAN

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

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PROJECT # 25920221

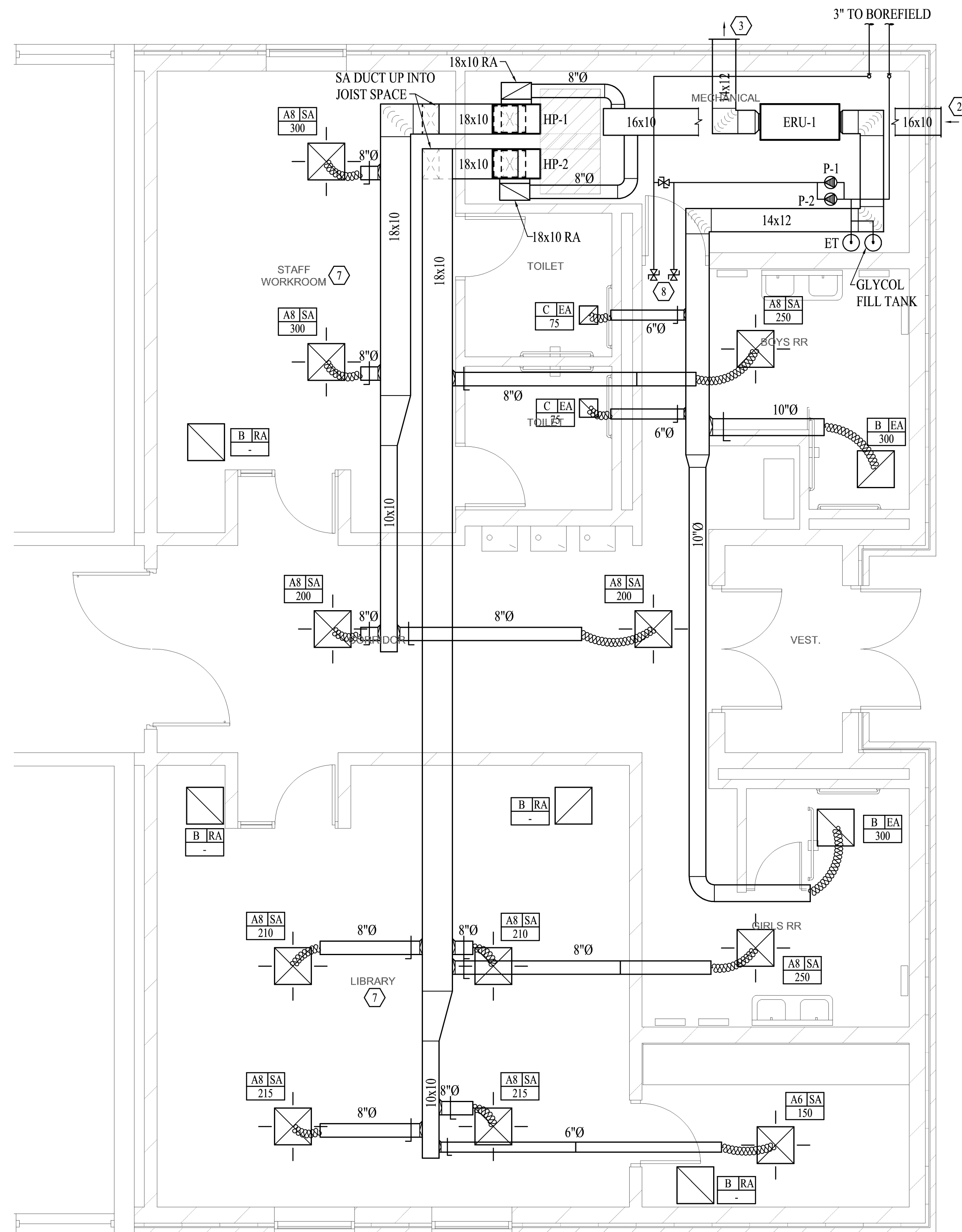
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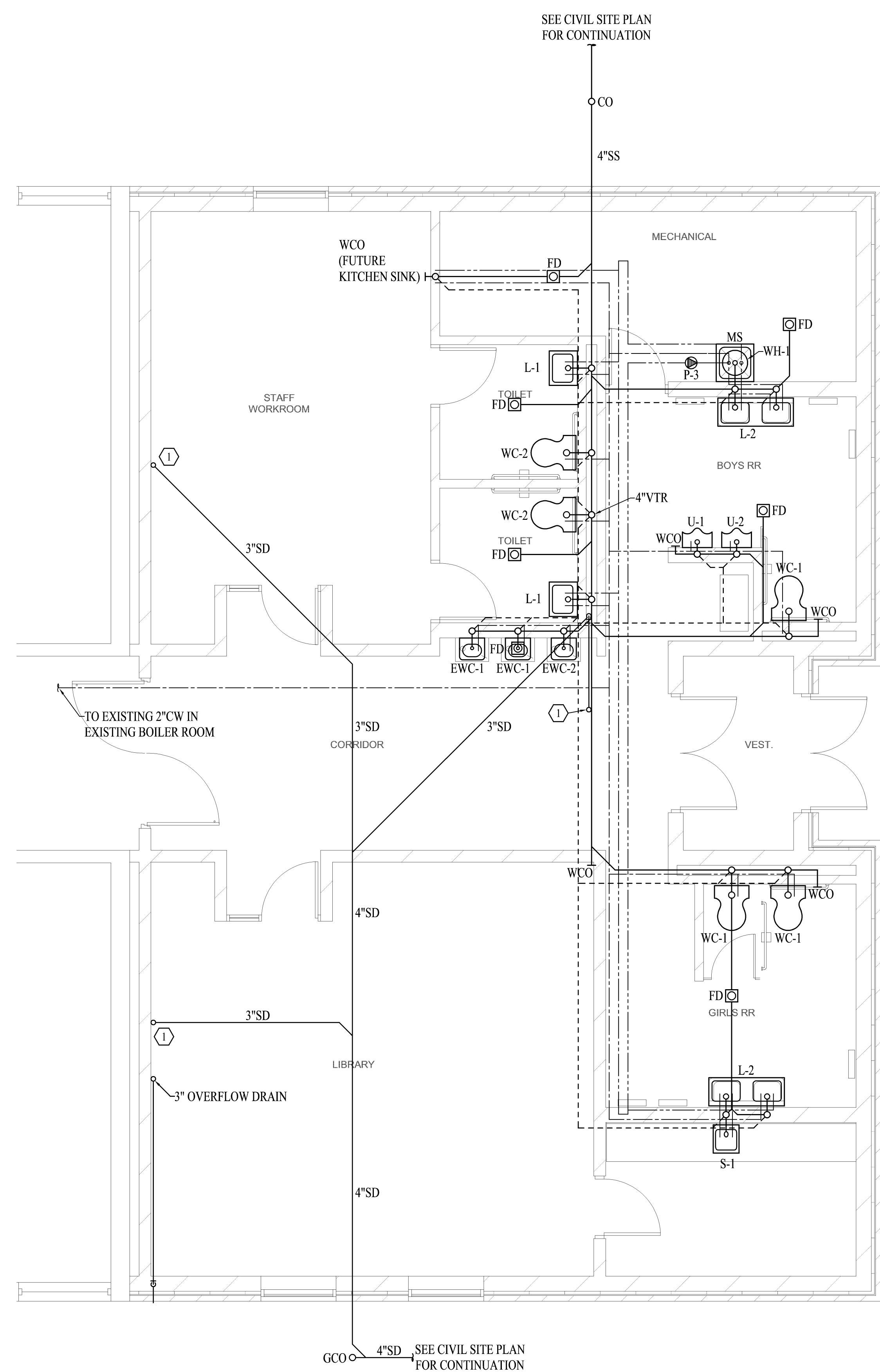
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OF SHEETS

BID DOCUMENTS



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



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

- GENERAL NOTES:**
- DRAWINGS (PLANS, DETAILS AND SCHEMATICS ARE DIAGRAMMATIC IN NATURE AND INDICATE GENERAL LOCATION AND ARRANGEMENT OF NEW AND EXISTING MAJOR EQUIPMENT AND PIPING SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS AND DIMENSIONS OF ALL EQUIPMENT, PIPING AND PIPING COMPONENTS. CONTRACTOR IS ALSO RESPONSIBLE FOR FINAL TIE-IN POINT LOCATIONS BETWEEN NEW AND EXISTING PIPING SYSTEMS EQUIPMENT AND UTILITIES.
 - UNLESS OTHERWISE NOTED EXISTING SHOWN IN FADE-AWAY PEN. NEW, RELOCATED OR DEMOLITION ITEMS SHOWN IN DARK HEAVY PEN.
 - MATERIAL EXPOSED WITHIN THE RETURN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPMENT INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

- NOTES:**
- 3" DOWN FROM ROOF DRAIN.
 - 18"x12" RUSKIN MODEL ELF6375DXD HURRICANE PROOF OA LOUVER. PROVIDE COLOR SELECTION CHART FOR ARCHITECT TO SELECT LOUVER COLOR.
 - 18"x12" RUSKIN MODEL ELF6375DXD HURRICANE PROOF EA LOUVER. PROVIDE COLOR SELECTION CHART FOR ARCHITECT TO SELECT LOUVER COLOR.
 - 3" FUTURE BUTTERFLY VALVES W/ BLIND FLANGES.
 - 3" BUTTERFLY BYPASS VALVE TO BE LEFT IN OPEN POSITION.
 - SEE ONE PIPE LOOP SCHEMATIC DIAGRAM FOR HEAT PUMP LOOP PIPING DETAILS.
 - IF ALTERNATE #2 IS ACCEPTED MOVE DIFFUSERS TO CENTER IN SPACE AND BALANCE TO HIGHER CFM.
 - VALVES FOR FUTURE EXPANSION OF GEOTHERMAL HVAC SYSTEM.

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DESIGN Mawers ARCHITECTURE LLC
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Design Firm Registration #84007987-0002

Professional Engineer Seal for Anthony J. Mawers, State of Illinois, No. 062-66817, Expires 11/30/2023.

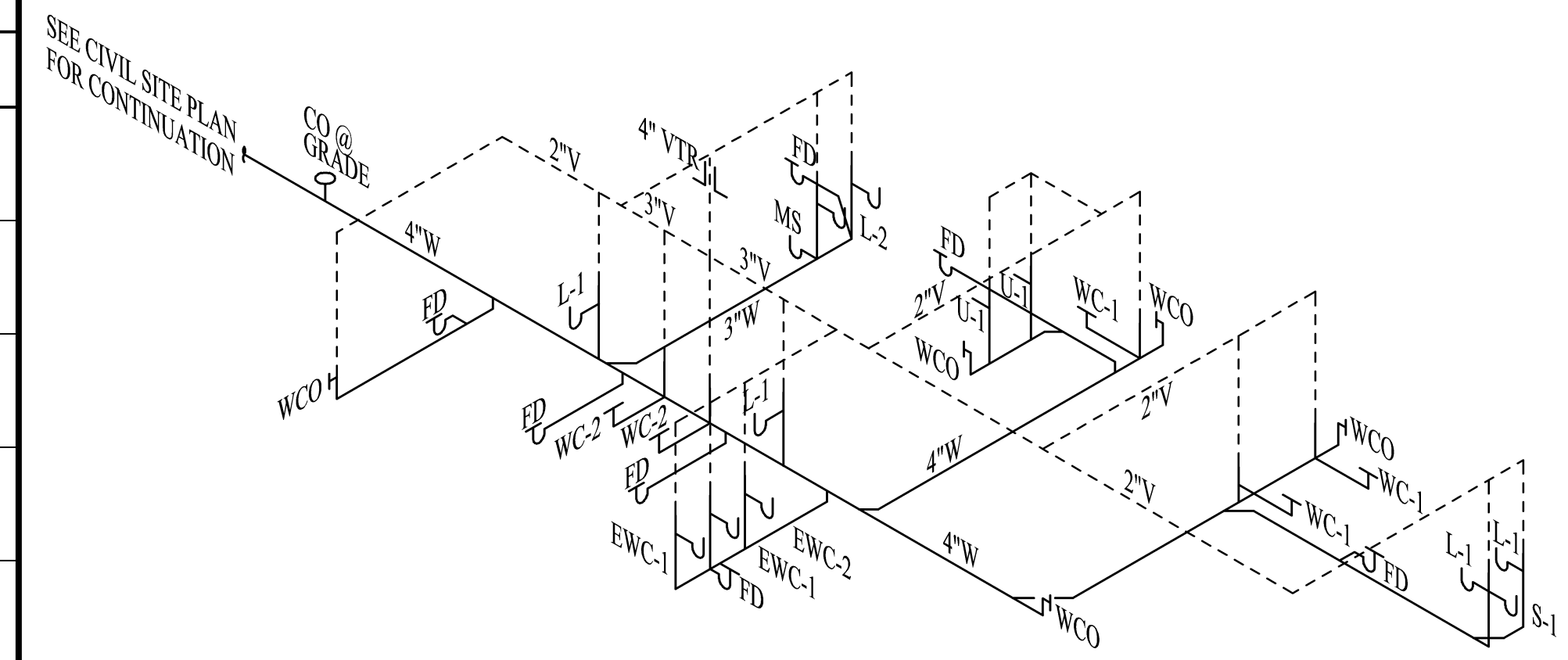
HVAC / PLUMBING RENOVATION FLOOR PLANS
2023 SAFE ROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
235 W. GRANT STREET, MACOMB, IL 61455
MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
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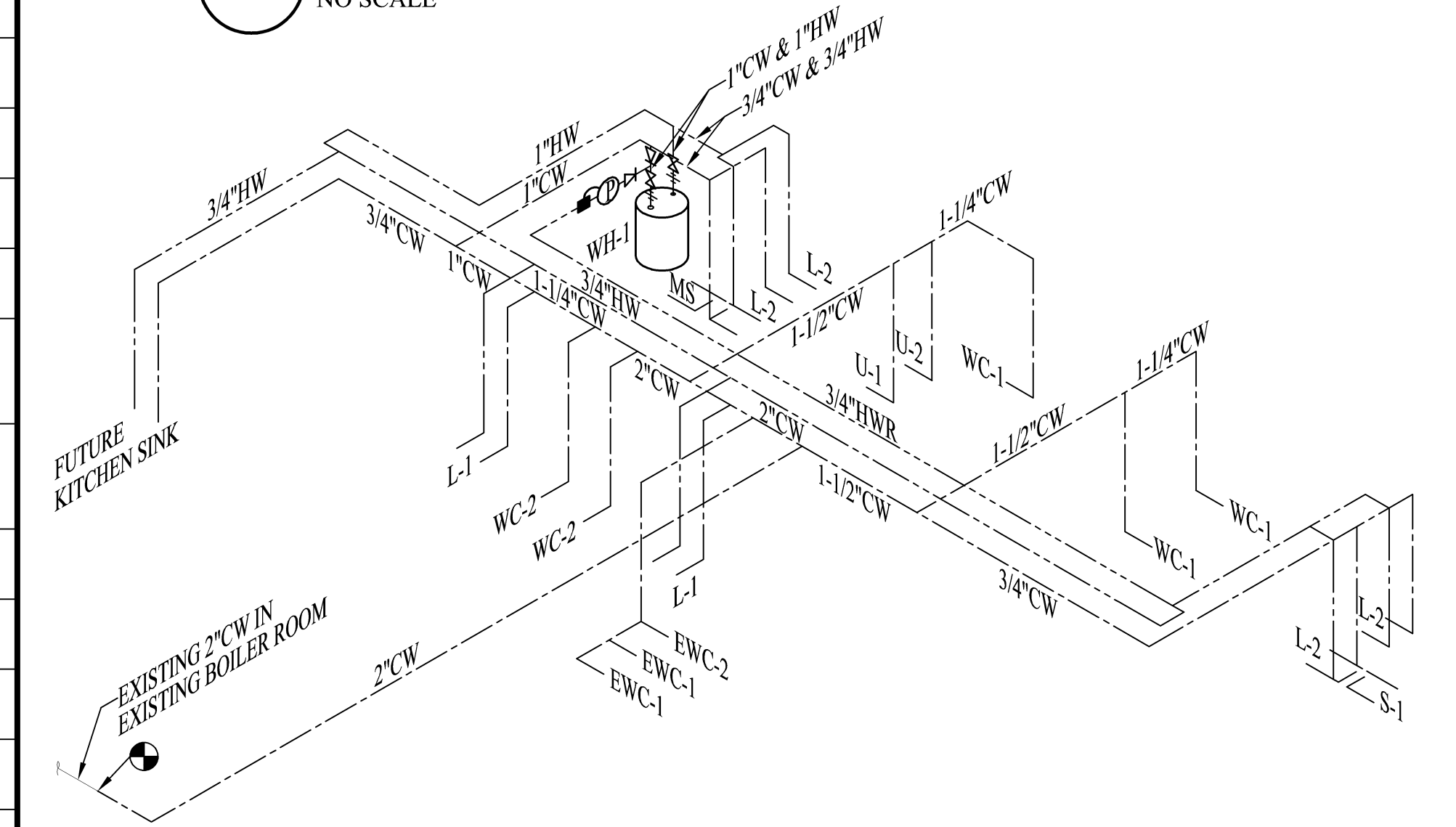
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MECHANICAL SYMBOL SCHEDULE	
ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS	
⊙	TIE TO EXISTING (CONNECTION POINT)
---	WASTE PIPING
----	VENT PIPING
----	DOMESTIC COLD WATER PIPING
----	DOMESTIC HOT WATER SUPPLY PIPING
----	DOMESTIC HOT WATER RETURN
—G—	NATURAL GAS
—CHS—	CHILLED WATER SUPPLY
—CHR—	CHILLED WATER RETURN
—HWS—	HOT WATER SUPPLY
—HWR—	HOT WATER RETURN
—CWS—	CONDENSER WATER SUPPLY
—CWR—	CONDENSER WATER RETURN
—HCS—	HOT/CHILLED SUPPLY
—HCR—	HOT/CHILLED RETURN
—RS—	REFRIGERANT SUCTION
—RL—	REFRIGERANT LIQUID
—RD—	REFRIGERANT DISCHARGE (HOT GAS)
—RDB—	REFRIGERANT DISCHARGE (HOT GAS) BYPASS
—LPS—	LOW PRESSURE STEAM
—LPR—	LOW PRESSURE STEAM CONDENSATE
—MPS—	MEDIUM PRESSURE STEAM
—MPR—	MEDIUM PRESSURE STEAM CONDENSATE
—HPS—	HIGH PRESSURE STEAM
—HPR—	HIGH PRESSURE STEAM CONDENSATE
—FOS—	FUEL OIL SUPPLY
—FOR—	FUEL OIL RETURN
—D—	DRAIN LINE
—U—	UNION - FLANGE - STRAINER
—G—	GATE VALVE - CHECK VALVE
—B—	BALL VALVE - PLUG COCK
—C—	CALIBRATED BALANCING VALVE W/ PORTS
—R—	TRIPLE DUTY VALVE - PRESSURE REDUCING REGULATING VALVE
—F—	BUTTERFLY VALVE - THREE WAY CONTROL VALVE
—P—	PRESSURE RELIEF VALVE
—S—	SOLENOID VALVE - GAUGE VALVE
—G—	PRESSURE GAUGE
—T—	THERMOMETER (BULB OR DIAL TYPE)
—P—	PUMP
—S—	STEAM TRAP
—T—	TEST PORT - PETES PLUG
—M—	MANUAL VOLUME DAMPER (VD)
—M—	MOTORIZED DAMPER
—F—	FIRE DAMPER (FD)
—S—	SMOKE DAMPER (SD)
—S—	SMOKE FIRE DAMPER (SFD)
—T—	THERMOSTAT - HUMIDISTAT (ZONE SUBSCRIPT)
—C—	CO ₂ SENSOR
—TC—	TEMPERATURE CONTROL
—T—	TEMPERATURE SENSOR
—S—	SPRINKLER HEADS (PENDANT MOUNTED-PENDANT MOUNTED-SIDEWALL-UPRIGHT MOUNTED)
—A—	COMPRESSED AIR
—O—	OXYGEN
—N—	NITROGEN
—NO—	NITROUS OXIDE
—V—	VACUUM
—V—	VACUUM OUTLETS - AIR OUTLETS - OXYGEN OUTLETS
—CV—	CENTRAL VACUUM PLUG-IN STATION
—V—	MEDICAL GAS ZONE SHUT-OFF

PLUMBING FIXTURE SCHEDULE			
MARK	MANUFACTURER MODEL #	DESCRIPTION	
WC-1	AM. STD. 2858.016 KOHLER K-96053	STANDARD 1.6 GAL. FLUSH VALVE, BOTTOM OUTLET WATER CLOSET, ELONGATED BOWL, CHURCH 9500C OPEN FRONT SEAT W/O COVER, SLOAN ROYAL 111 FLUSH VALVE. COLOR: WHITE. NO SUBSTITUTIONS ON FLUSH VALVE.	
WC-2	AM. STD. 2857.016 KOHLER K-96057	ACCESSIBLE 1.6 GAL. FLUSH VALVE, BOTTOM OUTLET WATER CLOSET, ELONGATED BOWL, CHURCH 9500C OPEN FRONT SEAT W/O COVER, SLOAN ROYAL 111 FLUSH VALVE. COLOR: WHITE. NO SUBSTITUTIONS ON FLUSH VALVE.	
U-1	AM. STD. 6501.511 KOHLER K-4991-ET	STANDARD URINAL 1.0 GAL. FLUSH, 14" EXTENDED RIM, 3/4" TOP SPUD, SLOAN ROYAL 186-1 FLUSH VALVE. MOUNT RIM @ 16" A.F.F. W/ JOSAM 17800 SERIES CARRIER. COLOR: WHITE. NO SUBSTITUTIONS ON FLUSH VALVE.	
U-2	AM. STD. 6501.511 KOHLER K-4991-ET	ACCESSIBLE URINAL 1.0 GAL. FLUSH, 14" EXTENDED RIM, 3/4" TOP SPUD, SLOAN ROYAL 186-1 FLUSH VALVE. MOUNT RIM @ 12" A.F.F. W/ JOSAM 17800 SERIES CARRIER. COLOR: WHITE. NO SUBSTITUTIONS ON FLUSH VALVE.	
L-1	AM. STD. 0476.028 KOHLER K-2196-4	ACCESSIBLE 20" x 17" COUNTER-MOUNT CENTERSET LAVATORY, SELF-RIMMING, FAUCET F-1, OFFSET GRID DRAIN, P-TRAP, SPEEDWAY R1912AC SUPPLIES & STOPS, TRUEBRO103WH INSULATION KIT. PROVIDE WITH THERMOSTATIC MIXING VALVE ON HOT WATER.	
L-2	BRADLEY FL-2H	SOLID SURFACE, BATTERY POWERED TWO STATION HAND WASHING SINK W/ SENSING FAUCET, SOAP DISPENSER, AND THERMOSTATIC MIXING VALVE. MOUNT SINK WITH LOWER BOWL WHEEL CHAIR CLEARANCE OF 24" AFF.	
S-1	ELKAY LR-2219 JUST SL-1921-A-GR	22" x 19" SINGLE-BOWL SINK, SELF-RIMMING, 18 GA. STAINLESS STEEL, STAINLESS STEEL DRAIN WITH STOPPER, 3 HOLE, F-2 FAUCET, P-TRAP, SUPPLIES AND STOPS.	
MS	FIAT MSB-2424 WILLIAMS MTB-2424	24" X 24" X10" MOLDED STONE MOP SINK, STAINLESS STEEL DOME STRAINER, CAST BRASS DRAIN, MOP HANGER, STAINLESS STEEL WALL BACKSPLASH, FAUCET F-3, HOSE AND BRACKET.	
F-1	MOEN 8948 CHICAGO 895-317	CENTERSET CHROME GOOSENECK FAUCET WITH WRIST BLADE HANDLES.	
F-2	MOEN 8793 CHICAGO 1201A	FAUCET F-5, TWO HANDLE DECK-MOUNT, SWING SPOUT WITH AERATOR, CHROME-PLATED BRASS BODY.	
F-3	MOEN 8124 CHICAGO 782-VB	SERVICE SINK FAUCET WITH VACUUM BREAKER, 3/4" HOSE THREAD OUTLET, PAIL HOOK AND WALL MOUNTED BRACE.	
EWC-1	ELKAY LZS8WSLK	BARRIER FREE WATER COOLER WITH FRONT AND SIDE PUSH BARS, NO LEAD, 8 GPH OF 50°F WATER FLOW, 120 VOLT, BOTTLE FILLER. MANUFACTURER'S STANDARD COLOR. MOUNT SPOUT AT 24" A.F.F.	
EWC-2	ELKAY LZS8WSLK	BARRIER FREE WATER COOLER WITH FRONT AND SIDE PUSH BARS, NO LEAD, 8 GPH OF 50°F WATER FLOW, 120 VOLT, BOTTLE FILLER. MANUFACTURER'S STANDARD COLOR. MOUNT SPOUT AT 36" A.F.F.	
FD	JOSAM 30000-A ZURN Z-415	3" CAST IRON FLOOR DRAIN WITH BOTTOM OUTLET, INVERTIBLE MEMBRANE CLAMP, ADJUSTABLE COLLAR AND 6" ROUND POLISHED NICKEL-BRONZE STRAINER.	
RD	JOSAM 21500 ZURN Z-100	ROOF DRAIN WITH 4" OUTLET, 15" DIA. POLYPROPYLENE DOME, ADJUSTABLE EXTENSION, ROOF SUMP RECEIVER AND DECK CLAMP ASSEMBLY.	
OFD	JOSAM 21500 ZURN Z-100	ROOF DRAIN WITH 4" OUTLET, 15" DIA. POLYPROPYLENE DOME, ADJUSTABLE EXTENSION, ROOF SUMP RECEIVER AND DECK CLAMP ASSEMBLY WITH 2" OVERFLOW DAM RING.	
WH-1	AO SMITH EICT-20	20 GALLON ELECTRIC WATER HEATER, 2500 WATT, 120 VOLT ELEMENT. MOUNT ON STAND HUNG OFF WALL ABOVE MOP SINK.	
SEE ARCH PLAN FOR MOUNTING HEIGHTS FOR YOUTH ADA FIXTURES			



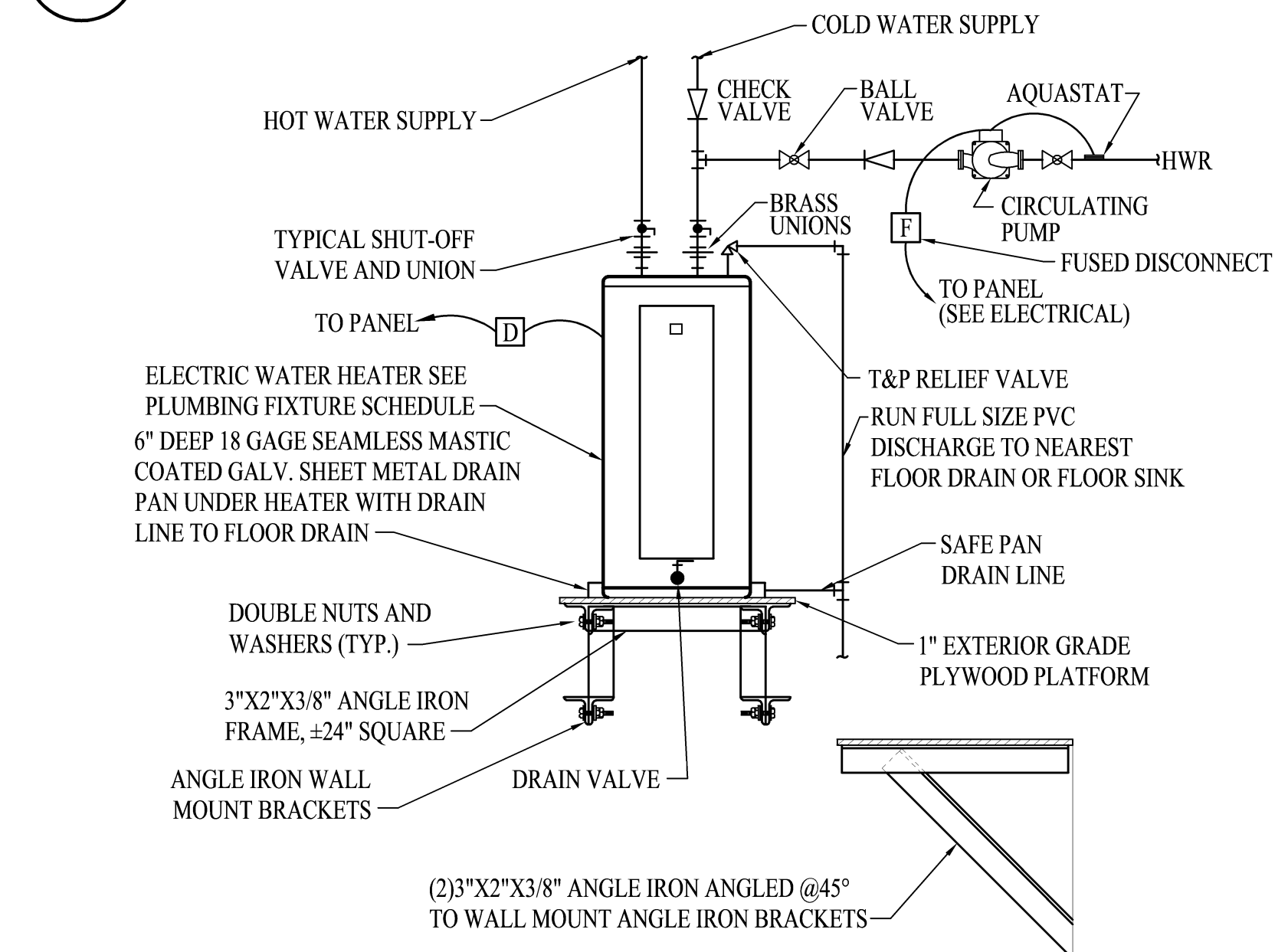
01 WASTE/VENT RISER DIAGRAM
NO SCALE



02 HOT/COLD WATER RISER DIAGRAM
NO SCALE

FIXTURE	WATER		WASTE	VENT
	COLD	HOT		
LAVATORY	1/2"	1/2"	1 1/2"	1 1/4"
WATER CLOSET	1 1/4"	--	4"	2"
URINAL	3/4"	--	2"	1 1/4"
MOP SINK	1/2"	1/2"	3"	1 1/2"
HAND SINK	1/2"	1/2"	2"	1 1/4"
HAIR SINK	1/2"	1/2"	2"	1 1/4"
SHOWER	1/2"	1/2"	3"	1 1/2"
FLOOR DRAIN	--	--	3"	2"
EWC	1/2"	--	1 1/2"	1 1/4"

* WASTE PIPING BELOW SLAB TO BE A MINIMUM OF 2"



03 PLATFORM MOUNTED ELECTRIC WATER HEATER DETAIL
NO SCALE (UP TO 40 GALLONS)

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Phone: 572-698-2116
Design Firm Registration #8A007987-0002

REGISTERED PROFESSIONAL ENGINEER
STATE OF ILLINOIS
EXPIRES 11/30/2023

PLUMBING RISER DIAGRAMS
2023 SAFE ROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
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M2.1
OF SHEETS
BID DOCUMENTS

GENERAL NOTES:

1. PIPE FLUSHING AND CLEANING PROCEDURE:

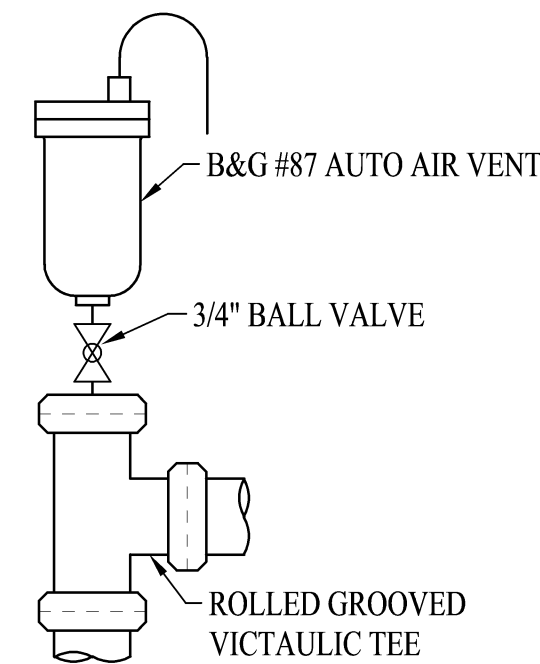
THE CLOSED LOOP SYSTEM WATER PIPING MUST BE THOROUGHLY CLEANED AND FLUSHED TO REMOVE DIRT, CHIPS, AND OTHER FOREIGN MATERIALS PRIOR TO CONNECTING THE HEAT PUMPS TO PIPING SYSTEM. COUPLE THE HEAT PUMP SUPPLY & RETURN PIPING CROSS CONNECTIONS AND FILL LOOP WITH A SOLUTION CONSISTING OF 1% TO 2% OF LIQUID TRISODIUM PHOSPHATE DETERGENT AND FRESH CLEAN WATER. REPAIR LEAKS AS REQUIRED. USE VALVES TO BYPASS HEAT REJECTOR AND SUPPLEMENTARY WATER HEATER (WHERE APPLICABLE). FLUSH SYSTEM FOR A MINIMUM OF TWO HOURS MONITORING SYSTEM BLOW DOWN UNTIL WATER RUNS CLEAR. ONCE CLEAN, STOP THE PUMP AND CLEAN ALL SYSTEM STRAINERS. REMOVE TEMPORARY CROSS CONNECTION AND CONNECT LOOP SUPPLY AND RETURN PIPING TO HEAT PUMP UNITS.

ANTI-FREEZE SOLUTION BY INTERIOR BUILDING CONTRACTOR (FOR INTERIOR & EXTERIOR PIPING):

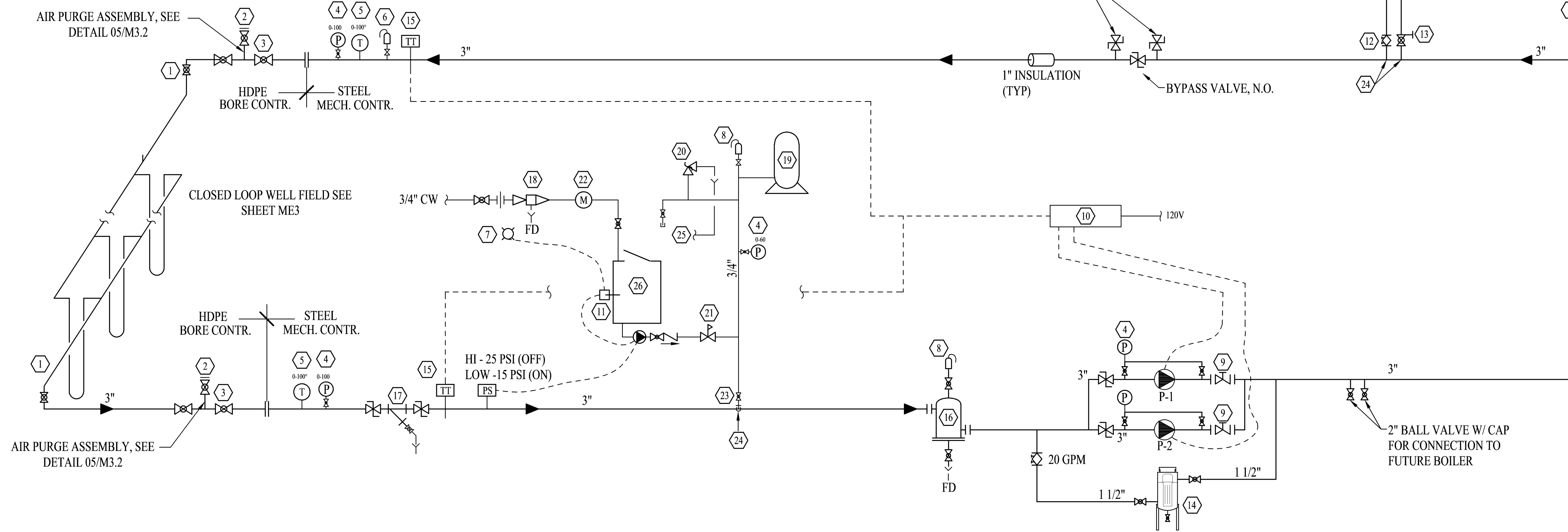
2. AFTER COMPLETION OF THE PIPE FLUSHING AND CLEANING PROCEDURES SPECIFIED ABOVE, SYSTEM SHALL BE FILLED WITH A SOLUTION OF 20% PROPYLENE GLYCOL AND 80% WATER BY VOLUME. PROPYLENE GLYCOL SHALL BE DOWFROST HD PHOSPHATE-BASED INDUSTRIALLY INHIBITED HEAT TRANSFER FLUID OR APPROVED EQUAL. DESIGN FREEZING POINT OF MIXED SOLUTION SHALL BE APPROX. 19.0 DEG. F. USING A HAND HELD OPTIC REFRACTOMETER INSTRUMENT, THE CONTRACTOR SHALL TEST, ADJUST AND RECORD FINAL FREEZING POINT OF MIXED SOLUTION OF PROPYLENE GLYCOL. SUBMIT "FREEZING POINT OF SOLUTION" TEST RESULTS TO ENGINEER FOR REVIEW AND APPROVAL.

CHEMICAL TREATMENT:

a. GENERAL: CHEMICALS SHALL BE SPECIALLY FORMULATED TO PREVENT ACCUMULATION OF SCALE AND CORROSION IN CLOSED LOOP PIPING SYSTEMS AND CONNECTED EQUIPMENT. CHEMICAL FORMULATION DEVELOPED SHALL BE BASED ON A LABORATORY ANALYSIS OF THE SYSTEM MAKE-UP WATER SUPPLY CHEMISTRY.
 b. CORROSION INHIBITOR: PROVIDE SODIUM NITRITE/BORATE, MOLYBDATE-BASED INHIBITOR OR OTHER APPROVED PROPRIETARY FORMULATION SUITABLE FOR WATER MAKE-UP QUALITY AND QUANTITY REQUIRED. INHIBITOR FORMULATION SHALL INCLUDE ADEQUATE BUFFER TO MAINTAIN A SYSTEM pH RANGE OF 8.0 TO 10.5. INTRODUCE INHIBITOR COMPOUNDS INTO SYSTEM MANUALLY THROUGH THE BY-PASS TYPE SHOT FEEDER/FILTER ASSEMBLY PROVIDED IN THE SYSTEM.
 c. CORROSION INHIBITOR PERFORMANCE: INHIBITOR PROVIDED SHALL PROTECT VARIOUS WETTED MATERIALS OF CONSTRUCTION INCLUDING FERROUS, RED & YELLOW METALS & MAINTAIN THE SYSTEM ESSENTIALLY FREE OF SCALE, CORROSION AND FOULING. CORROSION RATES OF THE FOLLOWING METALS SHALL NOT EXCEED THE PENETRATION SPECIFIED IN MILS/YEAR: FERROUS, 0-2.0; BRASS, 0-1.0; COPPER, 0-1.0 INHIBITOR SHALL REMAIN STABLE THROUGH THE SYSTEM OPERATING TEMPERATURE RANGE. HEAT EXCHANGE FOULING AND CAPACITY REDUCTION SHALL NOT EXCEED THAT ALLOWED BY A FOULING FACTOR OF 0.0005.



02 AIR VENT AT RISER DETAIL
NO SCALE



NOTES:

- 1 LINE SIZE POLY VALVE FOR CIRCUIT ISOLATION. SEE 04/M3.2.
- 2 DURING STARTUP, CONTRACTOR TO TEMPORARILY INSTALL B&G MODEL 107A AIR VENT ON RISE TO ASSURE ALL AIR IS REMOVED FROM SYSTEM.
- 3 CONTRACTOR TO PURGE BUILDING AND WELL FIELD PIPING SYSTEMS WITH EXTERNAL PUMP AND SEPARATION TANK ASSEMBLY PRIOR TO SYSTEM OPERATION. SEE PURGE AND FILL INSTRUCTIONS ABOVE.
- 4 4 -1/2" DIAL PRESSURE GAUGE WITH 1/2" BALL GAUGE VALVE. PROVIDE PSI DIAL RANGE AS INDICATED BY PRESSURE GAUGE SYMBOL IN DIAGRAM. TRERICE MODEL NO. 620B345FSL250, OR EQUAL.
- 5 4 -1/2" DIAL TYPE "UNIVERSAL ANGLE" THERMOMETER WITH SEPARATE WELL. PROVIDE °F TEMPERATURE DIAL RANGE AS INDICATED BY THERMOMETER SYMBOL IN DIAGRAM. TRERICE MODEL NO. V80742B31, OR EQUAL.
- 6 B&G AUTOMATIC AIR VENT MODEL NO. 87 OR APPROVED EQUAL. SEE DETAIL 02/M3.1. INSTALL AT HIGH POINTS IN SYSTEM.
- 7 LOW SYSTEM VOLUME ALARM LIGHT.
- 8 B&G AUTOMATIC AIR VENT MODEL NO. 87 OR APPROVED EQUAL. SEE DETAIL 02 THIS DRAWING.
- 9 LINE SIZE, TRI DUTY VALVE. SET FLOW WITH BOTH PUMPS RUNNING IN PARALLEL AT 60 HZ. SEE PUMP SCHEDULE FOR FLOW REQUIREMENTS.
- 10 ELECTRONIC LOOP WATER CONTROLLER. SEE SEQUENCE OF OPERATION ON THIS DRAWING.
- 11 LOW LEVEL FLOAT SWITCH. INTERLOCK WITH SYSTEM FILL PUMP TO SHUT PUMP OFF AS WELL AS ACTIVATING ALARM LIGHT.
- 12 LINE SIZE, B&G CIRCUIT SETTERS, OR EQUAL BY ARMSTRONG. SEE PLANS FOR LINE SIZES AND BALANCING INFORMATION.
- 13 BALL VALVE WITH "PETES PLUG" PRESSURE & TEMPERATURE TEST PORT WITH 1/8" Ø SIZE PROBE ACCEPTANCE PORT.
- 14 FIVE (5) GALLON CHEMICAL BYPASS FEEDER AND FILTER ASSEMBLY. NEPTUNE DBFC-5 OR EQUAL.
- 15 ELECTRONIC TEMP TRANSDUCER IN WELL, 0-110F, CONNECTED TO BUILDING AUTOMATION SYSTEM.
- 16 B&G ROLAIRTROL MODEL R-2.5 OR APPROVED EQUAL AIR SEPARATOR WITH STRAINER AND BALL VALVE BLOW DOWN VALVE.
- 17 LINED SIZED STEAM STRAINER (30 MESH OR LESS) REMOVE STRAINER START-UP SCREEN AFTER SYSTEM IS UP AND RUNNING FOR ONE MONTH.
- 18 3/4" REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER ASSEMBLY. WATTS NO. 009-QT, OR EQUAL.
- 19 AMTROL 200-L VERTICAL EXPANSION TANK.
- 20 PRESSURE RELIEF VALVE SET @ 80 PSIG.
- 21 3/4" PRESSURE REDUCING VALVE, B&G MODEL NO. B7-12 S ET @ 30 PSIG.
- 22 BADGER "RECORDALL" RCDL-25, LOW FLOW, ODOMETER TYPE, METER.
- 23 3/4" BALL VALVE. NOTE: TAG VALVES WITH THE FOLLOWING INSTRUCTIONS "THIS VALVE SHALL REMAIN IN THE OPEN POSITION WHENEVER SYSTEM IS OPERATING".
- 24 CONNECT TO SIDE OF 3" HORIZONTAL MAIN. (TYPICAL OF ALL CONNECTIONS TO THE MAINS.)
- 25 ROUTE FULL SIZE PRESSURE RELIEF PIPING TO NEAREST FLOOR DRAIN.
- 26 ARMSTRONG GLA-S-LP-1 AUTO-FILL UNIT. 53 GALLON STORAGE CAPACITY. FILL WITH 20% PROP GLYCOL AND DE-IONIZED WATER.
- 27 WATER FLOW SWITCH

01 CLOSED WELL / SINGLE PIPE LOOP - SCHEMATIC DIAGRAM
NO SCALE

WATER TO AIR HEAT PUMP OPERATION

STAGE 1: PUMPS SHALL BE EQUIPPED WITH VARIABLE SPEED ECM MOTORS CONTROLLED BY THE DIFFERENTIAL TEMPERATURE ACROSS THE BORE FIELD. THE LEAD PUMP SHALL OPERATE AT ALL TIMES AND SHALL SPEED UP OR SLOW DOWN AS REQUIRED TO MAINTAIN THE DIFFERENTIAL TEMPERATURE ACROSS THE BORE FIELD AT 12 DEG F IN THE SUMMER AND 6 DEG F IN THE WINTER. THE LEAD PUMP SHALL OPERATE AT A MINIMUM SPEED OF 20 %. THE CONTROLLER SHALL ALTERNATE P-1 AND P-2 OPERATION EVERY 750 HOURS (ADJUSTABLE) TO PROVIDE EQUAL RUN TIME.

STAGE 2: WHEN THE LEAD PUMP IS OPERATING AT 100% AND CANNOT MAINTAIN THE SPECIFIED DIFFERENTIAL TEMPERATURE ACROSS THE BORE FIELD, THE SECOND PUMP SHALL BE ENERGIZED AND BOTH PUMPS SHALL OPERATE IN PARALLEL AT THE SAME SPEED TO MAINTAIN THE SPECIFIED TEMPERATURE DIFFERENTIAL ACROSS THE BORE FIELD. WITH BOTH PUMPS OPERATING AND IF THE OPERATING SPEED OF THE PUMPS DROPS TO 50%, THEN THE SECOND PUMP SHALL BE DE-ENERGIZED AND THE FIRST PUMP SHALL MODULATE AS DESCRIBED IN STAGE 1 ABOVE.

STAGE 3: WHEN THE LOOP TEMPERATURE RETURNING TO THE BORE FIELD DROPS TO 42F OR EXCEEDS 90F BOTH PUMPS SHALL BE PLACED IN OPERATION AT FULL SPEED UNTIL THE RETURN WATER TEMPERATURE RISES TO 45F OR DROPS TO 85F.

SAFETIES

PUMP FAILURE- IF THE LEAD PUMP FAILS, A PUMP FAILURE AUDIBLE AND VISUAL ALARM (LOCATE ALARM SIGNALS IN MAIN OFFICE) SHALL BE ACTIVATED AND THE OTHER PUMP SHALL START.

PUMP FAILURE- IF BOTH PUMPS FAIL, A PUMP FAILURE AUDIBLE AND VISUAL ALARM SHALL BE COMMUNICATED TO THE BAS AND AN AUDIO VISUAL ALARM SHALL BE ACTIVATED.

LOW SYSTEM PRESSURE - IF LOW SYSTEM PRESSURE IS DETECTED AN AUDIBLE AND VISIBLE ALARM (LOCATED IN THE OFFICE) SHALL BE ACTIVATED.

LOW TEMPERATURE ALARM - IF THE TEMPERATURE SENSOR COMING BACK FROM THE BORE FIELD INDICATES A TEMPERATURE LESS THAN 40 DEG F THE AUDIBLE AND VISUAL ALARM SHALL BE ACTIVATED.

HIGH TEMPERATURE ALARM - IF THE TEMPERATURE SENSOR COMING BACK FROM THE BORE FIELD INDICATES A TEMPERATURE GREATER THAN 95 DEG F THE AUDIBLE AND VISUAL ALARM SHALL BE ACTIVATED.

ENERGY RECOVERY UNIT OPERATION

THE ENERGY RECOVERY UNIT SHALL OPERATE TO PULL EXHAUST FROM THE SPACE TO PRETREAT THE REQUIRED OUTSIDE VENTILATION AIR FOR THE SPACES. FACTORY INSTALLED CONTROLS SHALL CONTROL THE ERU OPERATION INCLUDING THE WHEEL ROTATION, ECONOMIZER FUNCTION AND STOP/JOG DEFROST. THE UNIT SHALL RUN AT ALL OCCUPIED TIMES AND REMAIN OFF AT ALL UNOCCUPIED TIMES. OCCUPANCY SHALL BE AS SCHEDULED BY THE BAS.

WATER TO AIR HEAT PUMP OPERATION

THE WATER TO AIR HEAT PUMP UNITS SHALL OPERATE BASED ON A LOCAL COMMUNICATING BACNET THERMOSTAT AND BACNET CONTROLS IN THE HEAT PUMP TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. THE HEAT PUMP UNIT FAN SHALL RUN WHEN THE UNIT CALLS FOR HEATING, COOLING, OR DEHUMIDIFICATION. THE CONTROLS SHALL MODULATE THE REVERSING VALVE TO HEATING OR COOLING AS REQUIRED, AND SHALL ENERGIZE THE INDIVIDUAL UNIT CIRCULATING PUMP WHENEVER THE COMPRESSOR IS COMMANDED ON. THE HEAT PUMP UNITS ARE PROVIDED WITH HOT GAS REHEAT COILS TO MAINTAIN SPACE RELATIVE HUMIDITY AT 65% (ADJUSTABLE) BASED ON THE THERMOSTATS INTEGRAL HUMIDISTAT. UNIT OCCUPIED/UNOCCUPIED MODE SHALL BE DETERMINED BY THE SCHEDULE IN THE BAS. IN UNOCCUPIED MODE THE UNIT SHALL BE SET BACK A MAXIMUM OF TWO DEGREES FROM SETPOINT.

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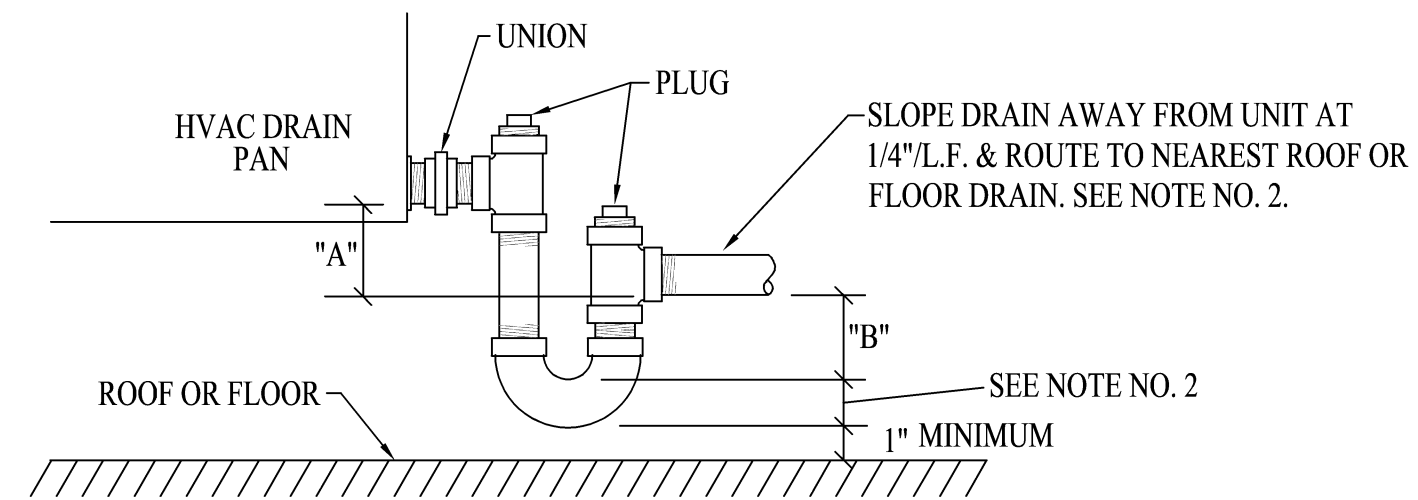
STATE OF MISSOURI
 PROFESSIONAL ENGINEER
 LICENSE NO. 062-86801
 EXPIRES 11/30/2023

SCHEMATIC DIAGRAM
 2023 SAFE ROOM ADDITION
 MACARTHUR EARLY CHILDHOOD CENTER
 235 W. GRANT STREET, MACOMB, IL 61455
 MACOMB CUSD #185
 323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

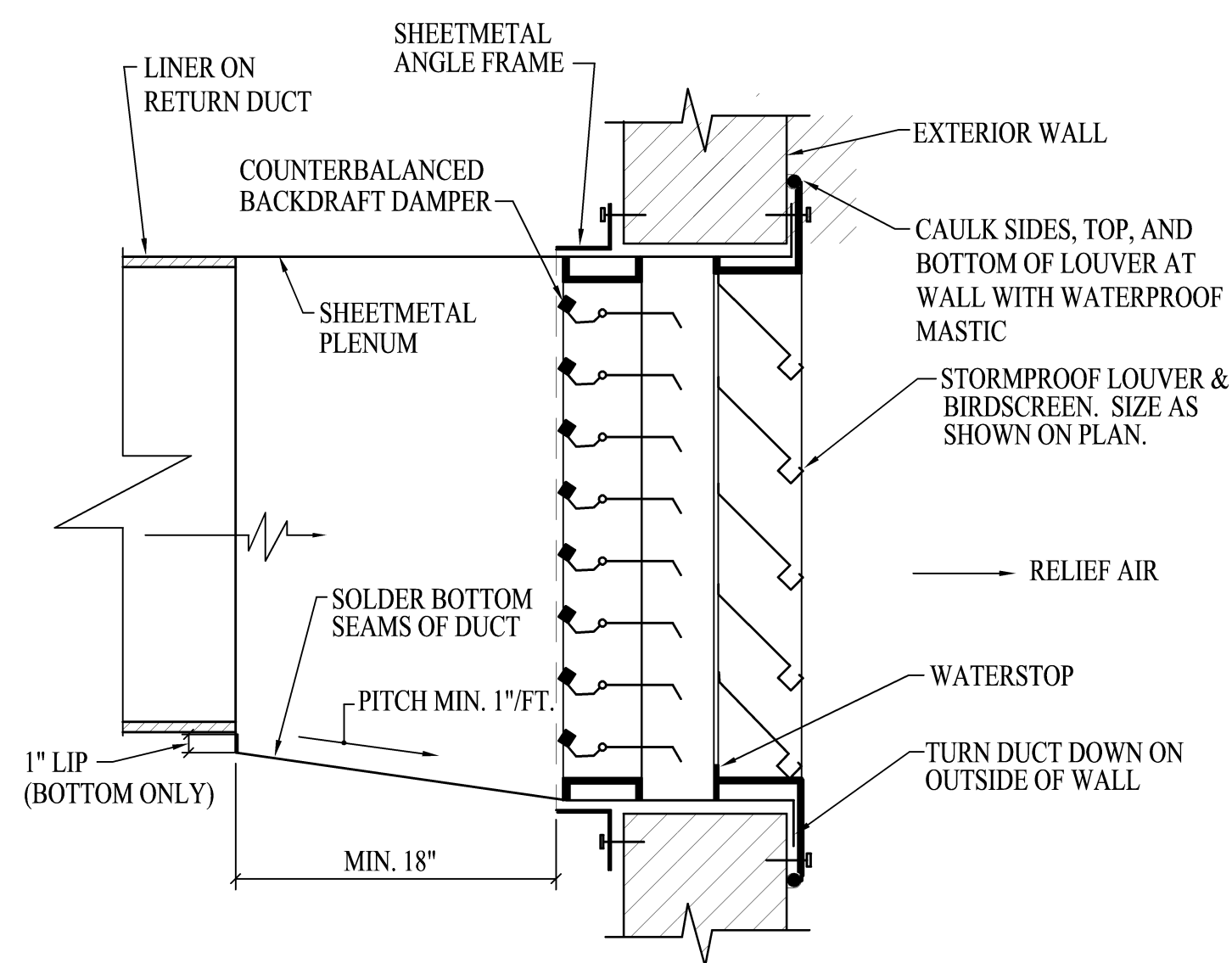
PROJECT # 25920221
 ISSUED DATE
 SHEET
M2.2
 OF SHEETS

	DIM. "A"	DIM. "B"
BLOW THRU COIL	1"	FAN DISCHARGE STATIC PRESSURE + 1"
DRAW THRU COIL	FAN SUCTION STATIC PRESSURE + 1"	2 1/2"

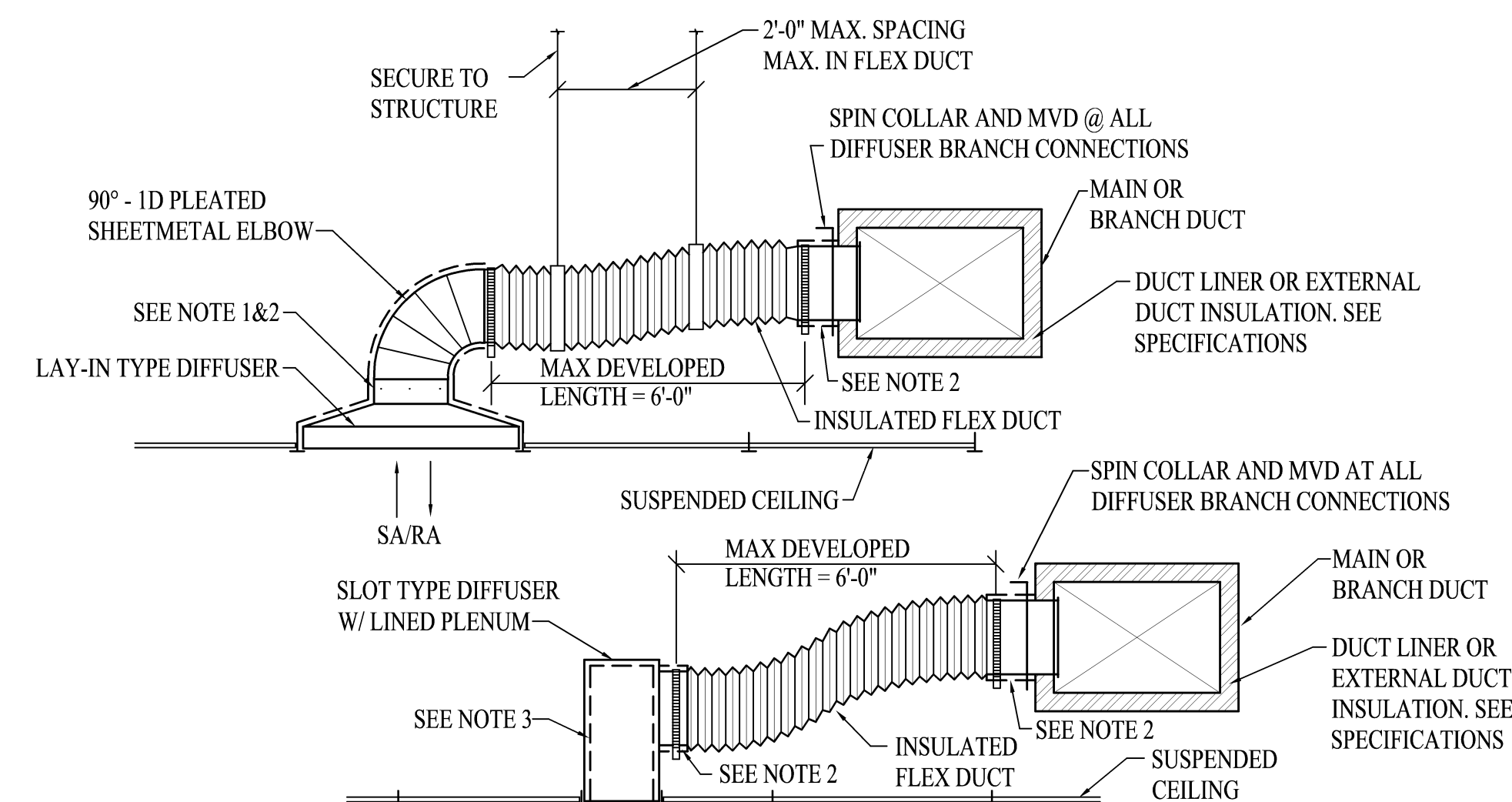


- NOTES:
- "A" OR "B" DIMENSION SHALL NOT BE LESS THAN 1".
 - DRAIN PIPING SHALL BE SIZED PER MFR'S INSTRUCTIONS.
 - INSTALL TRAP & DRAIN AT ALL CONDENSATE DRAIN PAN CONNECTIONS PROVIDED WITH UNIT.
 - ELEVATE HVAC UNIT AS NECESSARY TO PROVIDE REQUIRED TRAP SEAL DEPTH, DRAIN LINE SLOPE & TRAP CLEARANCE ABOVE ROOF OR FLOOR.
 - VERIFY MAXIMUM ESTIMATED FAN SUCTION (NEGATIVE) STATIC PRESSURE CONDITION WITH UNIT MANUFACTURER PRIOR TO UNIT INSTALLATION. COORDINATE UNIT INSTALLATION ELEVATION AS REQUIRED FOR PROPER TRAP SEAL DEPTH AND DRAIN LINE INSTALLATION.

06 HVAC CONDENSATE DRAIN / TRAP DETAIL
NO SCALE

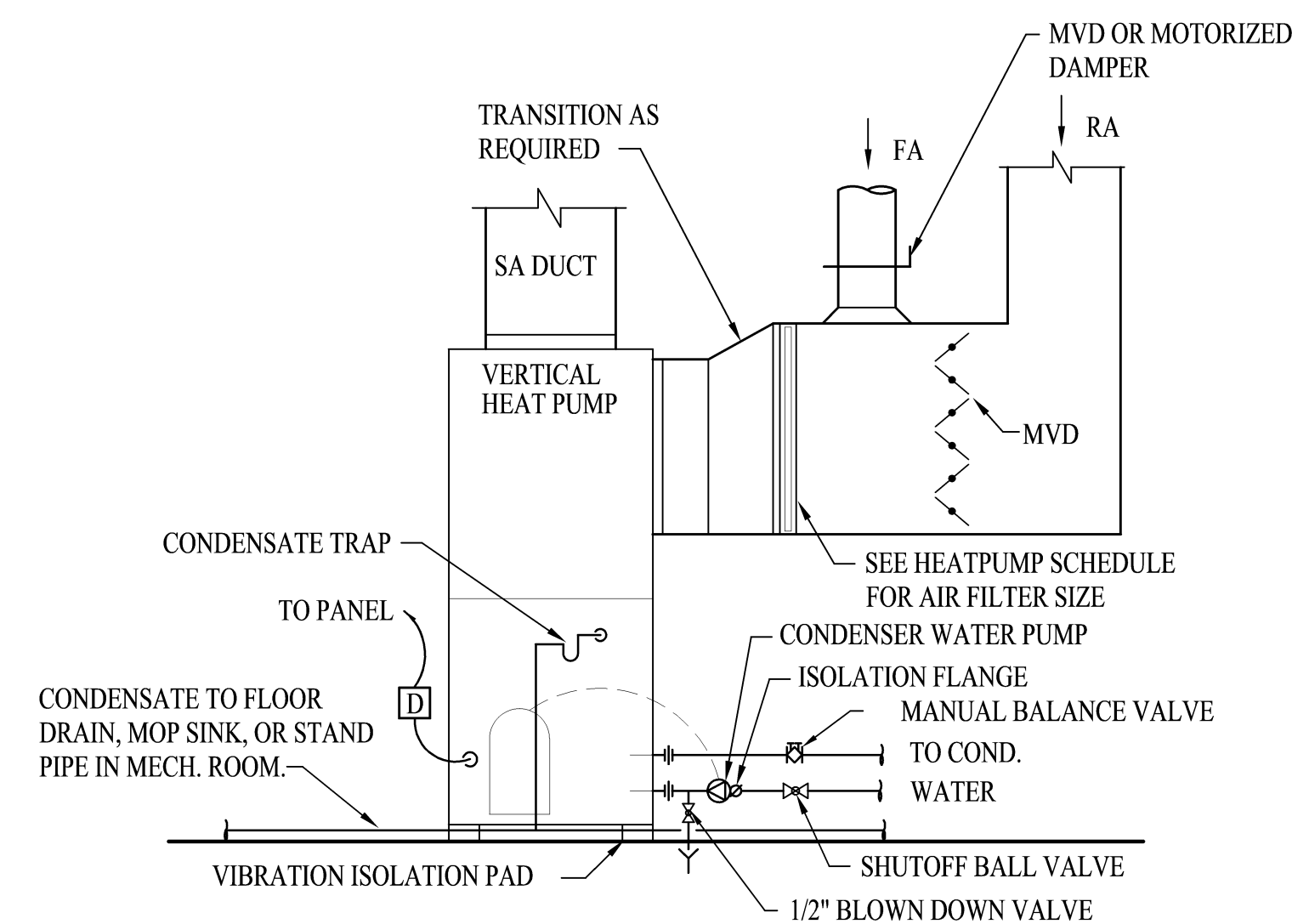


04 RELIEF LOUVER DETAIL
NO SCALE

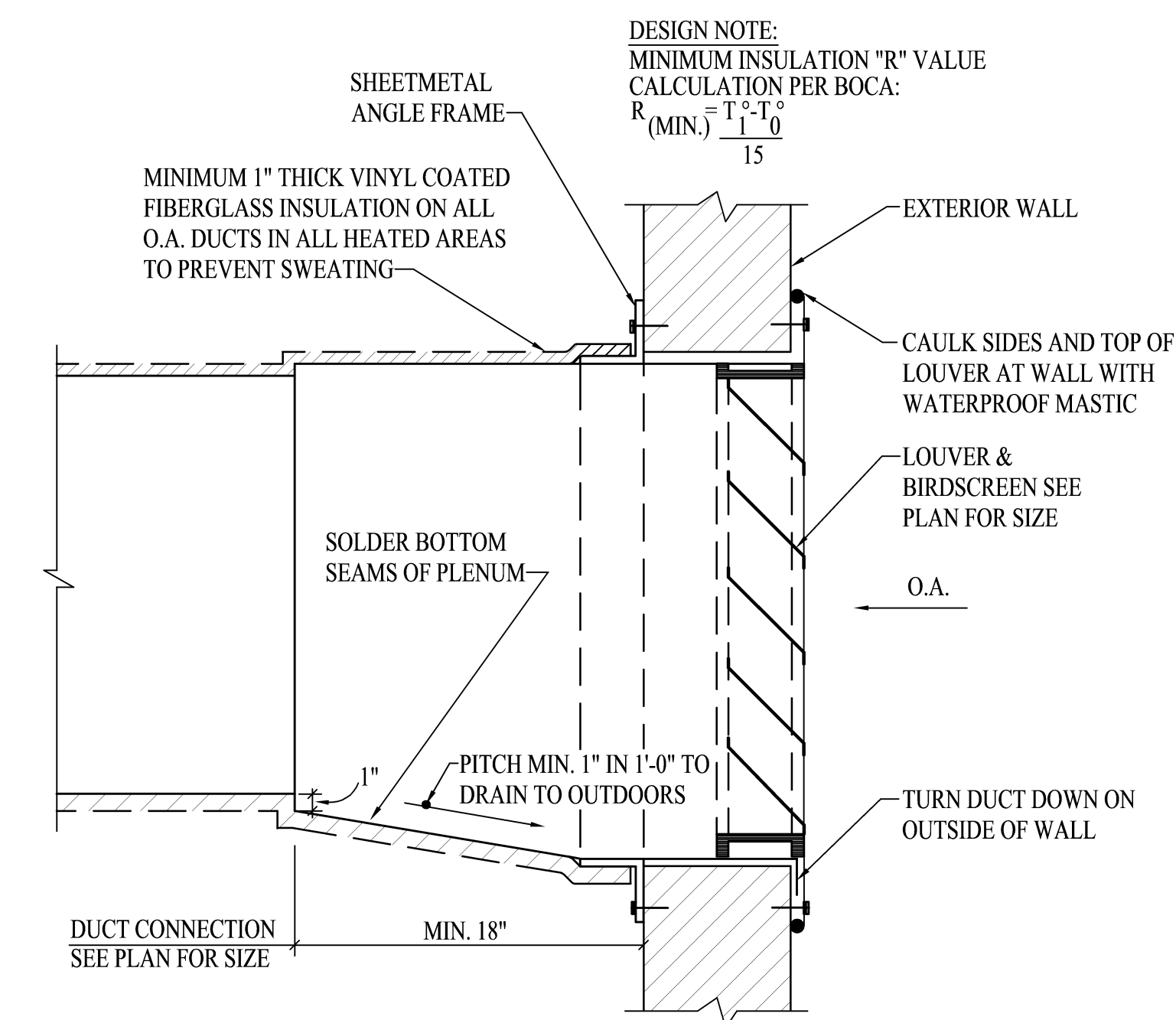


- NOTES:
- PROVIDE SHEET METAL REDUCING ADAPTER FITTINGS AT DIFFUSER CONNECTIONS WHERE FLEX DUCT SERVING DIFFUSER IS INDICATED ON CONNECTION SIZE SCHEDULE AS A LARGER DUCT. REDUCER AND INCREASER FITTING INCLUDED ANGLE OF EXPANSION OR CONTRACTION FITTINGS SHALL NOT EXCEED 15°.
 - INSTALL 2" x 1 1/2" PCF FIBERGLASS EXTERNAL DUCT WRAP INSULATION WITH VAPOR BARRIER ON SHEET METAL ELBOWS, SPIN COLLARS & PLENUM CONNECTIONS WHERE EXPOSED IN CEILING PLENUM OR ATTIC SPACES.
 - SLOT TYPE DIFFUSER PLENUM SHALL HAVE DUCT LINER OR EXTERNALLY INSULATED.

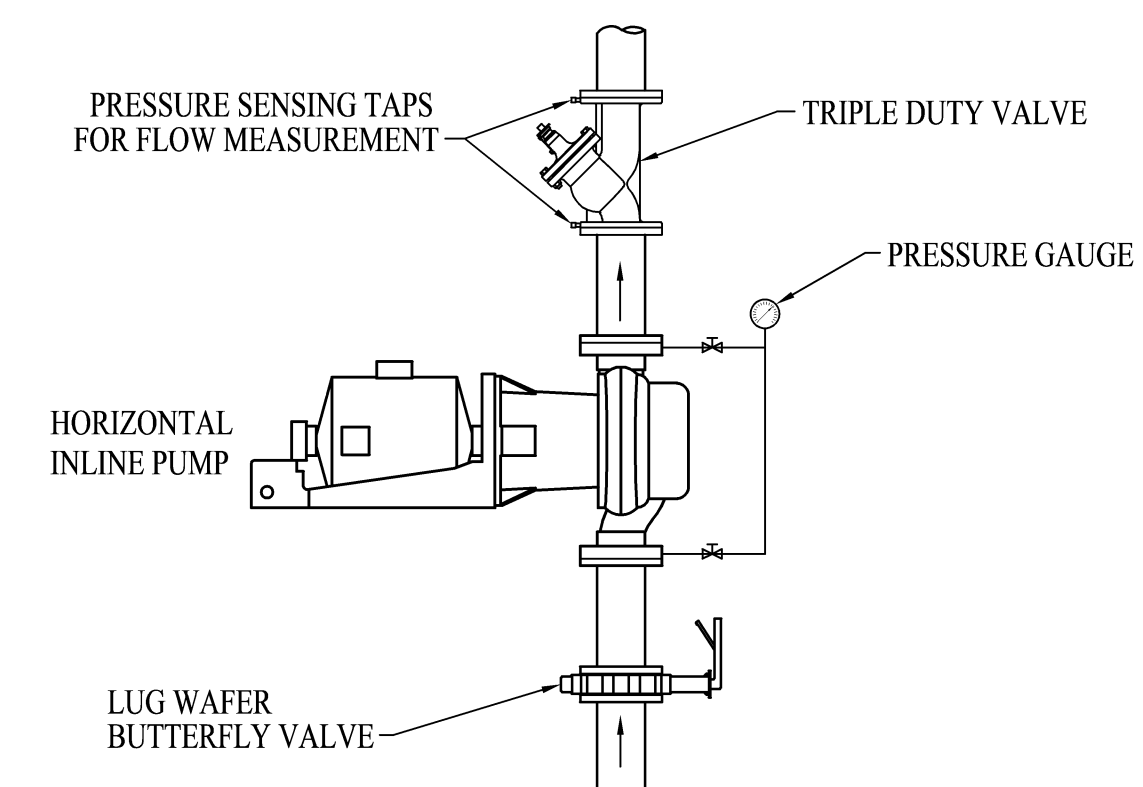
01 TYPICAL SA/RA OUTLET & INLET CONNECTION
NO SCALE



05 VERTICAL HEAT PUMP DETAIL
NO SCALE



02 O.A. LOUVER/PLENUM DETAIL
NO SCALE



03 HORIZONTAL INLINE PUMP DETAIL
NO SCALE

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STATE OF ILLINOIS
Expires 11/30/2023

MECHANICAL DETAILS
2023 SAFE ROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
235 W. GRANT STREET, MACOMB, IL 61455
MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221
ISSUED DATE
SHEET
M2.3
OF SHEETS
BID DOCUMENTS

HEAT PUMP SCHEDULE																										
MARK	MANUFACTURER	MODEL NUMBER	CONFIGURATION POS. / ORIN.	S.A. (CFM)	ESP (IN W.C.)	PLENUM DISCHARGE	COOLING				HEATING			WATER FLOW (GPM)	H.P. (FT)	PUMP HEAD (FT)	GRUNDFOS PUMP MODEL	WATER PIPING SIZE	FILTER		ELECTRICAL			MARK	NOTES	
							CAPACITY (MBH)	EWT	EER	CAP. TOTAL (BTH)	EWT (°F)	COP	QTY						SIZE	VOLTS	Ø	MCA (AMPS)	MAX FUSE			
																										TOTAL
HP-1	WATER FURNACE	NBH038	HORIZONTAL	1250	0.50	NA	39.25	29.0	85	16.3	31.8	45	4.4	7.0	4.9	13.0	UP 26-64F	1-1/4	1	20x37	208	1	23.2	35	HP-1	1,2,3,4,5,6,7,8,9,10,11,12,13
HP-2	WATER FURNACE	NBH038	HORIZONTAL	1250	0.50	NA	39.25	29.0	85	16.3	31.8	45	4.4	7.0	4.9	13.0	UP 26-64F	1-1/4	1	20x37	208	1	23.2	35	HP-2	1,2,3,4,5,6,7,8,9,10,11,12,13
HP-1A	WATER FURNACE	NBH049	HORIZONTAL	1550	0.50	NA	50.85	33.3	85	16.7	43.4	45	4.1	9.0	5.3	14.0	UP 26-64F	1-1/4	2	20x20/20x22	208	3	21.5	35	HP-1A	1,2,3,4,5,6,7,8,9,10,11,12,13
HP-2A	WATER FURNACE	NBH049	HORIZONTAL	1550	0.50	NA	50.85	33.3	85	16.7	43.4	45	4.1	9.0	5.3	14.0	UP 26-64F	1-1/4	2	20x20/20x22	208	3	21.5	35	HP-2A	1,2,3,4,5,6,7,8,9,10,11,12,13

NOTES:

- RATINGS ARE BASED ON (COOLING) 80/67; (HEATING) 68.
- HEATPUMPS TO BE PROVIDED WITH FACTORY WIRED AND INSTALLED CIRCULATORS.
- WET ROTOR CIRCULATORS CAN BE INSTALLED IN BORTH VERTICAL AND HORIZONTAL LINES. THE PUMP SHALL BE INSTALLED WITH MOTOR SHAFT POSITIONED HORIZONTALLY. UNDER NO CIRCUMSTANCES SHOULD THE PUMP BE INSTALLED WITH THE SHAFT VERTICAL OR WHERE THE SHAFT FALLS BELOW THE HORIZONTAL PLANE. FOR FURTHER INFORMATION ON THE WET ROTOR CIRCULATORS, SEE INSTRUCTIONS THAT CAME WITH THEM
- PROVIDE ALL UNITS WITH 2" MERV 8 FILTERS.
- INSTALLING CONTRACTOR SHALL PROVIDE 5 YEAR LABOR WARRANTY FOR UNIT COMPRESSOR AND REFRIGERANT SYSTEM.
- PROVIDE FACTORY INSTALLED DISCONNECT SWITCH
- ECM MOTOR
- PROVIDE AS TWO SPEED HEAT PUMPS
- PROVIDE WITH 2-STAGE BACNET THERMOSTAT WITH TEMPERATURE CONTROL AND HUMIDITY CONTROL FOR FIELD INSTALLATION.
- PROVIDE WITH HOT GAS REHEAT DEHUMIDIFICATION CONTROLLED BY SPACE HUMIDISTAT.
- BALL VALVES SHALL BE FULL PORT AND INSTALLED SO THAT HEATPUMP CAN BE REMOVED WHEN VALVES ARE SHUT.
- BALANCE VALVES SHALL BE SELECTED FOR A MAX PRESSURE DROP OF 5' AT INDICATED OPERATING FLOW RATES.
- HP-1A AND HP-2A SHALL REPLACE HP-1 AND HP-2 IF THE ALTERNATE #2 TO INCREASE THE BUILDING SIZE BY 8' IS ACCEPTED.

AIR OUTLET/INLET DEVICE SCHEDULE									
FLEX DUCT SIZE					SYMBOL LEGEND				
CFM RANGE		FLEXIBLE DUCT SIZE			A - MARK		DUTY:		
0-100		6"Ø			10 - NECK Ø"		SA - SUPPLY AIR		
101-200		8"Ø					RA - RETURN AIR		
201-400		10"Ø					EA - EXHAUST AIR		
401-600		12"Ø					TA - TRANSFER AIR		
601-900		14"Ø					250 - AIR FLOW RATE (CFM)		
MARK	MANUFACTURER	MODEL #	SLOTS #	SIZE	FACE SIZE	THROW	NECK SIZE	DUTY	REMARKS
A	PRICE	SCD	-	-	24X24	4-WAY	NOTE 1	SA	
B	PRICE	520	-	-	12X12	2-WAY	10X10	RA/EA	NOTE 2
C	PRICE	520	-	-	24X24	-	22X22	RA/EA	NOTE 2

NOTES:

- SEE PLANS FOR NECK SIZES.
- 22.5 DEGREE BLADES WITH OB DAMPER.

PIPING MATERIAL SCHEDULE																		
PIPING						FITTINGS			OPERATING		FIELD TEST			INSULATION				
SYSTEM	SIZE	MATERIAL	SCH	ASTM	JOINTS	MAT.	SCH	JOINTS	PRESS (PSI)	TEMP (°F)	PRESS (PSI)	TYPE	TIME	THICKNESS	JACKET	TYPE		
DOMESTIC HOT/COLD WATER	<=2"	CP	L	B 88	SJ	CP	L	SJ	65	45-140	150	PNEU	1 HR	1"	--	FG		
DOMESTIC HOT/COLD WATER	>2"	CP	L	B 88	S	CP	L	B	65	45-140	150	PNEU	1 HR	1"	--	FG		
STORM & SANITARY ABOVE GROUND (PLASTIC)	ALL	PVC	DWV	D 2665	SW	PVC	DWV	SW	N/A	N/A	10 FT	HYDRO	1 HR	--	--	--		
STORM & SANITARY UNDERGROUND (PLASTIC)	ALL	PVC	DWV	D 2665	SW	PVC	DWV	SW	N/A	N/A	10 FT	HYDRO	1 HR	--	--	--		
VENT (PLASTIC)	ALL	PVC	DWV	D 2665	SW	PVC	DWV	SW	N/A	N/A	10 FT	HYDRO	1 HR	--	--	--		
MAKE-UP WATER	ALL	CP	L	B 88	SJ	CP	L	SJ	65	45-65	150	PNEU	1 HR	1"	--	FG		
HEAT PUMP LOOP INTERIOR (CLOSED)	<=2"	CP	L	B 88	SJ	CP	L	SJ	65	45-140	150	PNEU	1 HR	1"	--	FG		
HEAT PUMP LOOP INTERIOR (CLOSED)	>2"	BLK	10	A 135	VIC	DI	150#	VIC	65	45-65	150	PNEU	1 HR	1"	--	FG		
HEAT PUMP LOOP EXTERIOR/UNDERGROUND (CLOSED)	ALL	HDPE	SDR 11	D 3350	F	HDPE	SDR-11	F	65	40-180	150	PNEU	1 HR	--	--	--		
HVAC CONDENSATE DRAIN PIPING	ALL	CP	L	B 88	SJ	CP	L	SJ	N/A	N/A	150	PNEU	1 HR	1"	--	FG		

PIPING MATERIAL LEGEND

- ACR - COPPER (CLEAN AND CAPPED)
- BLK - BLACK STEEL PIPE
- CI - CAST IRON
- CP - COPPER
- ERW - ELECTRIC RESISTANCE WELD BLACK STEEL
- GLV - GALVANIZED
- HDPE - HIGH DENSITY POLYETHYLENE
- PVC - POLYVINYL CHLORIDE
- SL - SEAMLESS STEEL
- SS - STAINLESS STEEL

FITTING MATERIAL LEGEND

- CI - CAST IRON
- CS - CARBON STEEL
- DI - DUCTILE IRON
- FS - 2000 # FORGED STEEL
- STD - STANDARD CS WELD
- XS - EXTRA STRONG

JOINING METHOD LEGEND

- BS - BELL & SPIGOT
- CW - CONTINUOUS WELD
- F - FUSED
- LC - LEAD CAULKING
- MJ - MECHANICAL JOINT
- NH - NO-HUB
- S - BRAZED JOINT - SILVER BRAZING ALLOY
- SJ - SOLDER JOINT 95-5 TIN-ANTIMONY
- SW - SOLVENT WELD
- VIC-VICTAULIC WITH ROLLED GROOVE
- THRD - THREADED
- WELD - WELDED

INSULATION TYPE LEGEND

- FG - FIBERGLASS
- ARM - ARMAFLEX
- ASI - ALL SERVICE JACKET
- PVC - PVC JACKET
- A - ALUMINUM JACKET
- *2" INSULATION FOR PIPING > 5"
- **2" INSULATION FOR PIPING >1-1/4"
- ***3" INSULATION FOR PIPING > 5"
- ****INSULATE HORIZONTAL STORM ONLY
- *****3-1/2" INSULATION FOR PIPING >1-1/4"
- *****4-1/2" INSULATION FOR PIPING >5"

ENERGY RECOVERY UNIT SCHEDULE												
MARK	MANUFACTURER	MODEL NO.	SUPPLY FAN			EXHAUST FAN			EFFECTIVENESS %	ELECTRICAL		
			CFM	E.S.P. "H2O	HP	CFM	E.S.P. "H2O	HP		VOLTS	Ø	MCA AMPS
ERU-1	GREENHECK	MC-10-VG-FM	600	0.5	0.5	600	1	0.50	85	120	1	21.1

NOTES:

- PROVIDE WITH A GRAVITY BACKDRAFT DAMPER ON EXHAUST AND MOTORIZED OA DAMPER.
- PROVIDE WITH "AQ FLOW" AIRFLOW MONITORING STATION AND FACTORY INSTALLED DISCONNECT SWITCH.
- PROVIDE WITH STOP/JOG ECONOMIZER AND FROST PROTECTION.

PUMP SCHEDULE												
MARK	MANUFACTURER	MODEL	GPM	HEAD FT. H2O	EFF. %	MOTOR		ELECTRICAL			REMARKS	
						HP	RPM	VOLTS	Ø	MCA		
P-1	B&G	ECOCIRC XL 65-130	50	30	52	1.0	2538	208	1	4.4		
P-2	B&G	ECOCIRC XL 65-130	50	30	52	1.0	2538	208	1	4.4		

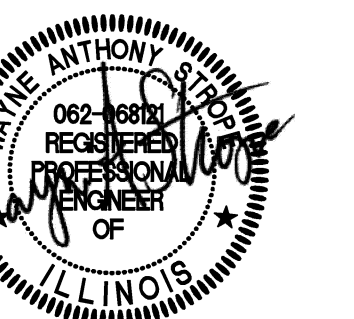
NOTES:

- ECM MOTOR CIRC PUMPS WITH INTEGRAL CONTROLLER.
- PUMPS P-1 AND P-2 ARE SIZED TO OPERATE IN PARALLEL TO PRODUCE 100 GPM @ 30' HEAD.
- EQUIVALENT PUMPS BY TACO OR GRUNDFOS ARE ACCEPTABLE ALTERNATES.



MMEEA ENGINEERS

MD MO ENGINEERING ALLIANCE, INC
203 EASTLAND DRIVE
JEFFERSON CITY, MISSOURI 65001
Phone: 572-608-2116
Design Firm Registration #8A007987-0002



Expires 11/30/2023

MECHANICAL SCHEDULES

2023 SAFE ROOM ADDITION
MACARTHUR EARLY CHILDHOOD CENTER
235 W. GRANT STREET, MACOMB, IL 61455
MACOMB CUSD #185
323 W. WASHINGTON STREET, MACOMB, IL 61455

REVISIONS		
#	DATE	DESCRIPTION

PROJECT # 25920221

ISSUED DATE

SHEET

M3.1
OF SHEETS

BID DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

GENERAL NOTES:

- DRAWINGS (PLANS, DETAILS AND SCHEMATICS ARE DIAGRAMMATIC IN NATURE AND INDICATE GENERAL LOCATION AND ARRANGEMENT OF NEW AND EXISTING MAJOR EQUIPMENT AND PIPING SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS AND DIMENSIONS OF ALL EQUIPMENT, PIPING AND PIPING COMPONENTS. CONTRACTOR IS ALSO RESPONSIBLE FOR FINAL TIE-IN POINT LOCATIONS BETWEEN NEW AND EXISTING PIPING SYSTEMS EQUIPMENT AND UTILITIES.
- UNLESS OTHERWISE NOTED EXISTING SHOWN IN FADE-AWAY PEN. NEW, RELOCATED OR DEMOLITION ITEMS SHOWN IN DARK HEAVY PEN.
- MATERIAL EXPOSED WITHIN THE RETURN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPMENT INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

NOTES:

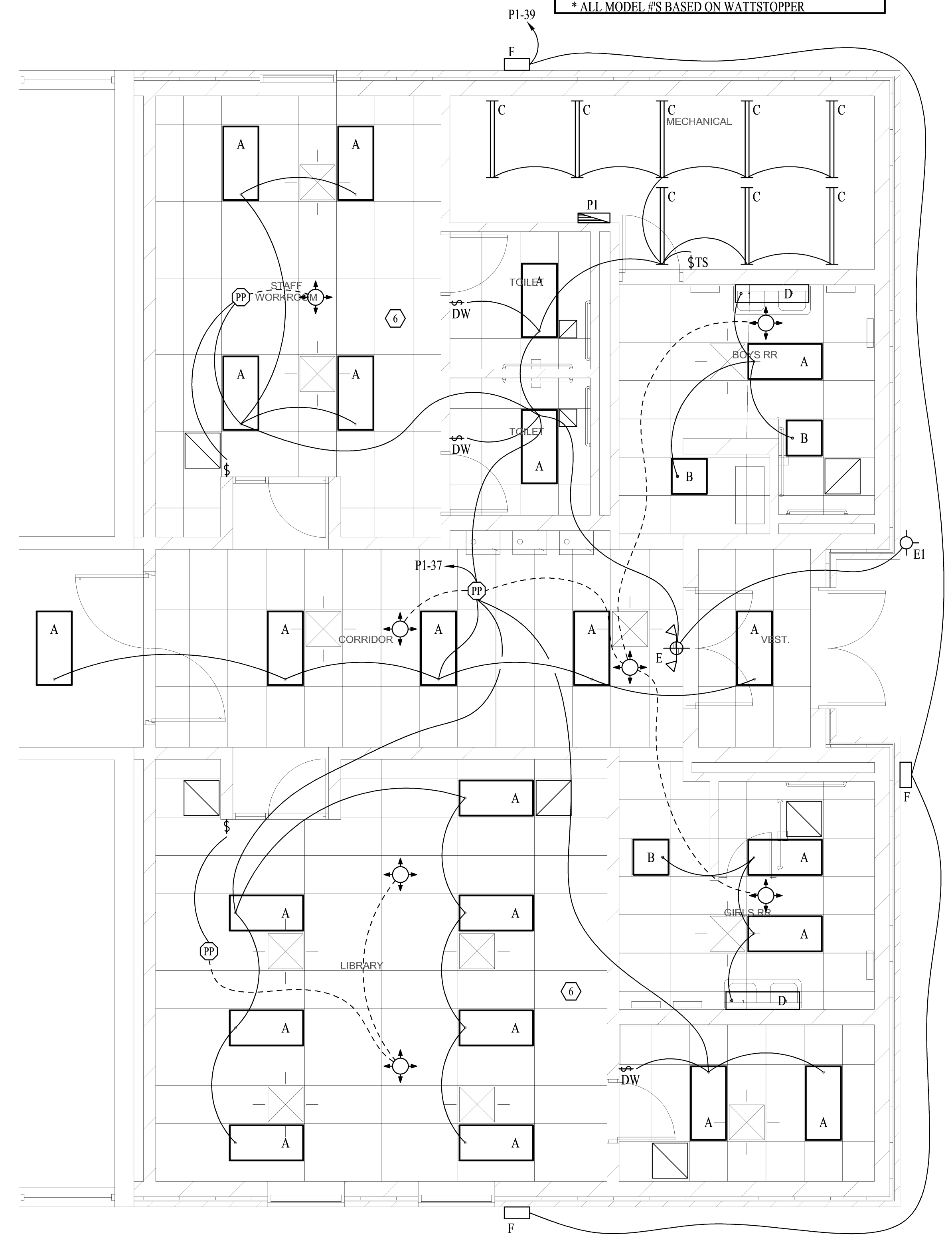
- ADA MOUNTING HEIGHT. SEE ARCH PLAN.
- 28" MOUNTING HEIGHT. SEE ARCH PLAN.
- 2 # 8 THHN, #10 CU GRD, 3/4" C BACK TO A 35A, 2P BRKR. IF ALTERNATE #2 IS ACCEPTED TO INCREASE BUILDING SIZE, WIRE SIZE BECOMES 3 # 8 THHN, #10 CU GRD, 3/4" C BACK TO A 35A, 3P BRKR.
- 2 #12 THHN, #12 CU GRD, 3/4" C BACK TO A 20A, 2P BRKR.
- 2 #10 THHN, #10 CU GRD, 3/4" C BACK TO A 30A, 1P BRKR.
- RELOCATED SECURITY CAMERAS AND SPEAKER.
- ADD 2 TYPE A LIGHT FIXTURES IN STAFF WORKROOM, 1 TYPE A LIGHT FIXTURE IN THE CORRIDOR, AND 4 TYPE A LIGHT FIXTURES IN LIBRARY FOR ALTERNATE #2.

CONNECT NEW FIRE ALARM DEVICES TO EXISTING SIMPLEX 4010ES FIRE ALARM (TYP).

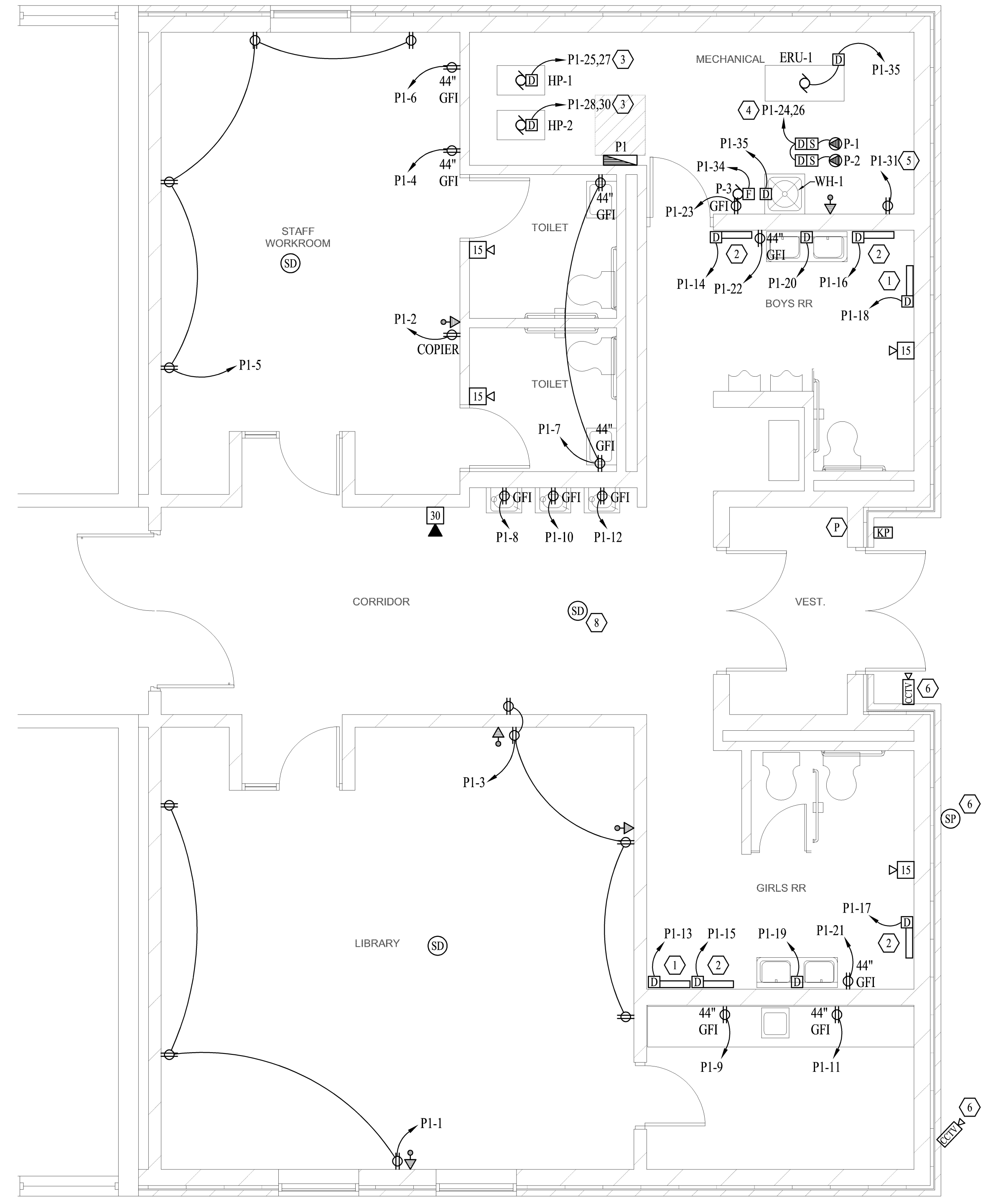
OCCUPANCY SENSOR SCHEDULE

§TS	TS-400	DT-300 SERIES
PP	POWER PACK (BZ-100)	

* ALL MODEL #'S BASED ON WATTSTOPPER



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



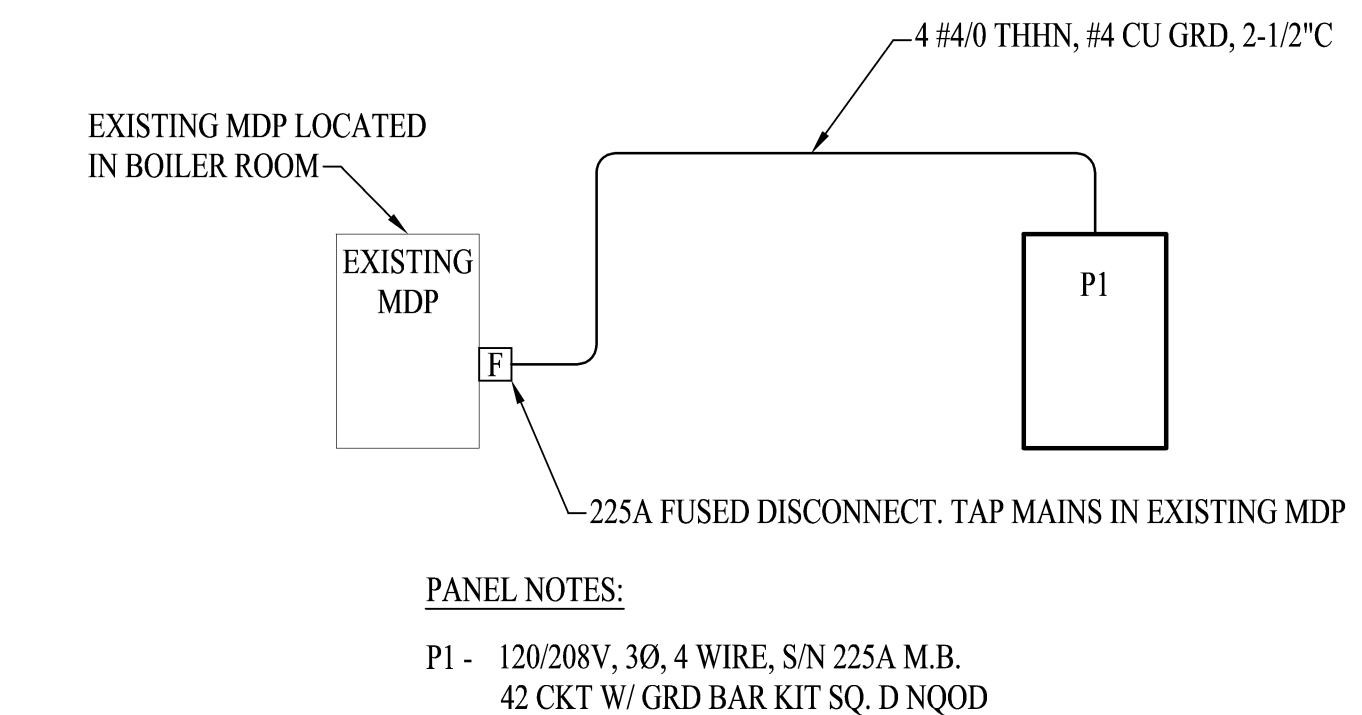
02 POWER RENOVATION FLOOR PLAN
 SCALE: 1/4"=1'-0"

ELECTRICAL SYMBOL SCHEDULE	
ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS	
	HOME RUN CIRCUIT TO PANEL P1, BREAKER SPACES 12,14 EACH ARROW INDICATES ONE CIRCUIT SHORT HATCH MARKS INDICATE # OF PHASE CONDUCTORS LONG HATCH MARKS INDICATE # OF NEUTRAL CONDUCTORS NO HATCH MARKS INDICATE TWO CONDUCTORS ADDITIONALLY, EVERY CIRCUIT TO INCLUDE CODE SIZED GROUND
	TIE TO EXISTING
	RECEPTACLE OUTLET (SINGLEPLEX - DUPLEX - QUADRUPLEX)
	CRITICAL RECEPTACLE OUTLET (SINGLEPLEX - DUPLEX - QUADRUPLEX)
	FLOOR DUPLEX RECEPTACLE - FLOOR QUADRUPLEX RECEPTACLE
	FLOOR SPECIAL POWER - SPECIAL POWER
	GROUND FAULT CIRCUIT INTERRUPT - WEATHER PROOF *HARD-WIRED WALL MOUNTED CLOCK
	JUNCTION BOX - PULL BOX - JUNCTION BOX ABOVE CEILING
	CONTACTOR - DISCONNECT - STARTER - FUSED DISCONNECT
	ELECTRIC MOTOR
	ELECTRIC PANEL
	WALL SWITCH SINGLE POLE (THREE POLE - TIMER SWITCH - DIMMER SWITCH)
	LIGHT FIXTURE (CEILING MOUNTED - WALL MOUNTED)
	FLUORESCENT LIGHT FIXTURE (ENCLOSED - STRIP)
	BATTERY PACK WITH EMERGENCY LIGHTS - EMERGENCY EXIT SIGN
	EMERGENCY EXIT WITH DUAL EMERGENCY LIGHTS
	LIGHT FIXTURES WITH EMERGENCY BATTERY PACK
	*J-BOX WITH BLANK FACE PLATE
	* FAX - FLOOR PHONE - WALL MOUNTED PHONE
	* COMPUTER DATA - FLOOR RECESSED COMPUTER DATA - DATA & COMMUNICATION
	INTERCOM
	SPEAKER
	CABLE TV
	CLOSED CIRCUIT TELEVISION
	MAGNETIC DOOR HOLDER
	END OF LINE RESISTER
	FLOW SWITCH
	AUDIO VISUAL ALARM (NUMBER INDICATES CANDELA POWER)
	VISUAL ALARM (NUMBER INDICATES CANDELA POWER)
	AUDIO ALARM
	MANUAL PULL STATION
	TAMPER SWITCH
	DUCT MOUNTED SMOKE DETECTOR - HEAT DETECTOR - SMOKE DETECTOR
	FIRE ALARM CONTROL PANEL - TELEPHONE DIALER
	CONTROL ZAM
	PUSH BUTTON
	WATER FLOW INDICATOR
	INTERLOCK RELAY
	OVERHEAD DOOR CONTACT
	DOOR CONTACT
	GLASS BREAKAGE CONTACT
	MAGNETIC DOOR LOCK
	MONITOR
	ACCESS CONTROL SYSTEM
	SECURITY CONTROL PANEL
	DIMMING MODULE (# INDICATES CIRCUIT KILOWATTS)
	CARD READER - KEY PAD
	VIDEO CASSETTE RECORDER
	REQUEST TO EXIT
	MOTION DETECTOR - TIME & ATTENDANCE READER
	NURSE CALL STAFF REGISTRY STATION
	NURSE CALL ZONE INDICATOR STATION IN CEILING
	NURSE CALL BATHROOM STATION WITH PULL CORD
	NURSE CALL DOME LIGHT
	NURSE CALL DUTY STATION
	NURSE CALL STAFF STATION
	NURSE CALL MASTER
	NURSE CALL PATIENT STATION
	CODE BLUE
	TELEMETRY ANTENNA
	TELEMETRY CHIME
* MINIMUM 3/4" CONDUIT WITH JUNCTION BOX AND PULL STRING.	

LIGHT FIXTURE SCHEDULE						
MARK	MANUFACTURER & MODEL NUMBER	TYPE	LAMPS		MOUNTING	REMARKS
			#	PHILIPS DESIGNATION		
A	METALUX 24AC-LD5-44-UNV	LED	-	-	RECESSED	
B	METALUX 22AC-LD5-23-UNV	LED	-	-	RECESSED	
C	METALUX 4SNLED-LD5-30SL-LN-UNV-L840-CD1-U	LED	-	-	CHAIN	NOTE 1
D	METALUX 4BCLED-8SL-F-UNV-GL-L840-CD-1	LED	-	-	WALL	
E	SURELITE LPXC25R3	LED	-	-	CEILING	
E1	SURELITE SRP25WH	LED	-	-	WALL	
F	LUMARK WPSQLED-65-UNV-PC	LED	-	-	WALL	

NOTES:
1. PROVIDE WITH 36" CHAIN HANGING KIT. MOUNT @ 8' A.F.F.

PANEL DESIGNATION: P1									
PANEL DESCRIPTION: 208 VOLTS, 3Ø 4W, S/N 225A MLO, 42 CIRCUIT, WGRD, BAR KIT, SQ D NQDD									
CIRC #	CIRCUIT DESCRIPTION	BRKR AMPS	BRKR POLES	WATTS PER PHASE			BRKR POLES	BRKR AMPS	CIRCUIT DESCRIPTION
				A	B	C			
1	LIBRARY N. OUTLETS	20	1	618					
3	LIBRARY S. OUTLETS	20	1	180	360			1	20
5	STAFF N. OUTLET	20	1		180	720		1	20
7	RR GFIS	20	1	360				1	20
9	LIBRARY GFI	20	1	500				1	20
11	LIBRARY GFI	20	1			180		1	20
13	GIRLS RR HAND DRYER	20	1	950				1	20
15	GIRLS RR HAND DRYER	20	1	950	950			1	20
17	GIRLS RR HAND DRYER	20	1	950		950		1	20
19	GIRLS RR SINK	20	1	180		950		1	20
21	GIRLS RR GFI	20	1	180		180		1	20
23	MECH. GFI	20	1			180		2	20
25	HP-1 / HP-1A	35	2	1204		915		2	35
27	*					1204			
29	SPACE FOR ALT HP-1A					1204			
31	GLYCOL OUTLET	20	1	250					
33	ERU-1	30	1			255		1	20
35	WH-1	30	1			250			
37	LIGHTING	20	1						
39	EXTERIOR LIGHTING	20	1			192			
41									
TOTAL VOLT-AMPS (VA) PER PHASE:				6279	8932	8279			
TOTAL CONNECTED LOAD (VA):				23490					
DIVERSITY (VA):									
SIMULTANEOUS LOAD (VA):				23490					
TOTAL AMPS				65					



01 ELECTRIC RISER DIAGRAM
NO SCALE

ARCHITECTS
MIDDLETON ASSOCIATES ARCHITECTS
WWW.MIDDLETONASSOCIATES.NET

DESIGN
Mawens ARCHITECTURE LLC
WWW.DESIGNMAWENS.COM

MEP ENGINEER
MMEA ENGINEERS
MD MO ENGINEERING ALLIANCE, INC
203 EASTLAND DRIVE
JEFFERSON CITY, MISSOURI 65001
Phone: 572-606-2116
Design Firm Registration #84,007,987-0002

ILLINOIS PROFESSIONAL ENGINEERING BOARD
REGISTRATION NO. 062-16801
EXPIRES 11/30/2023

ELECTRICAL DETAILS / SCHEDULES

2023 SAFE ROOM ADDITION
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