

ARCHITECTURAL NOTES

GENERAL

All work must comply with state and local codes, based on the City of Steamboat Springs Community Development Code, the 2015 International Building Code, the International Plumbing Code, the International Mechanical Code, the Energy Conservation Code and the International Electric code. The contractor shall comply with all laws, ordinances, rules and regulations of any public authority bearing on the performance of the work, including O.S.H.A.

Location of the utilities (electrical, telephone, cable TV, gas, water, sewer) shall be verified before construction begins.

All on site construction safety and construction means and methods are the responsibility of the contractor. There is no implication of the construction safety requirements or building methods contained in these drawings.

Actual site conditions may require that some of the components of the work should be done differently than shown on these drawings. All dimensions and conditions to be verified by the contractor prior to construction. Verify changes with the designer and engineer.

These drawings represent a simplified builder's set of plans. Additional detailing may be required of the engineer during construction.

Any variation which requires a physical change from these plans must be brought to the attention of the designer and engineer in order to maintain the design intent of the project.

All work connected with this project by any trade involved shall be of the highest quality attainable in accordance with the professional practice of the trade.

DIMENSIONS

All interior and exterior dimensions are to face of stud or face of concrete, U.N.O.

All exterior walls are nominal 2x6 stud construction, U.N.O. All interior walls are nominal 2x4 stud construction, U.N.O.

Do not scale drawings.

The water closet stool shall be located in a clear space of not less than 30" in width. The clear space in front of the water closet stool shall be not less than 21".

Crawl space access shall be provided w/ min. 18"x24" through the floor & min. 16"x24" through the wall.

Minimum clear ceiling height is 7'-6" for habitable space & hallways & 6'-8" for bathrooms, laundry rooms & stairs. Exceptions apply for sloped ceilings and basements per IBC 1003.2

If any discrepancies are found in these drawings notify engineer and/or designer immediately.

STAIRWAYS:

Stairs shall have a minimum 48" clear width on stairs per Routt County resolution to IBC 1011.2. The surface of stairs shall be slip resistant. Minimum vertical headroom is 6'-8" from the nosing. Maximum riser height is 7", and minimum tread depth is 11".

Landings shall be provided at the top and bottom of each stairway with a length no less than the width of the stairway served. Landings are not required at the top of interior stairs provided that a door does not swing over the stairs.

Handrails shall be provided on at least one side of each continuous stair flight with four or more risers, and shall be 42" tall, measured vertically from the sloped plane of the tread nosings. Handrails shall comply with section IBC Section 1014.

Open sides of stairways, landings, ramps, balconies and porches which are more than 30" above grade shall be protected by a guardrail. All guardrails must be 36" above finished floor and shall allow no more than a 4" diameter sphere to pass through any portion of the railing per IBC 1015.

Walls and ceilings of enclosed usable space under stairs requires 1/2" gypsum wallboard. The door to access such spaces need not be rated.

ROOF ASSEMBLIES

Unvented roof assemblies shall comply with section IBC 1203.3 and shall be completely within the thermal envelope. The roof shall dry to the inside, thus Class I vapor retarder shall NOT be installed on the ceiling. If air-impermeable insulation is used, it shall be Class II vapor retarder, min. R-49, and be applied directly to the underside of sheathing. If air-permeable insulation is used in the cavity, it shall be min. R-19 applied to underside of sheathing & shall be accompanied by min. R-30 continuous rigid board insulation above the sheathing. Alternatively, R-30 air-impermeable insulation can be applied to the underside of sheathing, w/ min. R-19 air-permeable beneath.

Provide Grace 'Ice and water shield', or equivalent product, from the edge of roof overhangs to the ridge.

Asphalt shingles shall comply with Chapter 15 & require double underlayment when applied on 2:12 to 4:12 roof pitches. Standing seam metal roofing shall have min. ¼:12 slope.

Attic access shall be provided if attic is more than 30" tall (measured from top of ceiling framing to underside of roof framing members for more than 30 sq. ft. Access shall have a rough-framed opening of min. 22"x30" with min. 30" clear headroom.

MECHANICAL/ENERGY SYSTEMS:

Mechanical equipment rooms must comply with IBC Chapter 13 & 14 & manufacturers instructions.

Appliances shall be installed with clearances from unprotected combustible materials per manufactures instructions

Appliances with ignition sources located in garages or connected to garages with an opening shall be elevated such that the source of ignition is min. 18" above the garage floor per M1307.3

A level service space of min 30"x30" shall be provided on all sides of an appliance where access is required.

Appliances in rooms shall have a door access & min. 24" wide passageway or wide enough to remove largest appliance per M1305.1.2. Min. 30"x22" clear access or dimensions large enough to remove the largest appliance shall be provided to attics or crawlspaces per M1305.1.3 & M1305.1.4.

Appliances in attic spaces and crawlspaces where entry is made only for service of utilities, plastic foam insulation shall be protected against ignition with min. ½" gypsum board per IBC section 2603.4.1.6

THERMAL ENVELOPE NOTES

THE BUILDING ENVELOPE SHALL BE DURABLY SEALED TO LIMIT INFILTRATION. THE SEALING METHODS BETWEEN DISSIMILAR MATERIALS SHALL ALLOW FOR DIFFERENTIAL EXPANSION AND CONTRACTION. THE FOLLOWING SHALL BE CAULKED, GASKETED, WEATHER-STRIPPED, OR OTHERWISE SEALED WITH A BARRIER MATERIAL, SUITABLE FILM, OR SOLID MATERIAL:

1. ALL JOINTS, SEAMS, AND PENETRATIONS
2. SITE-BUILT WINDOWS, DOORS, & SKYLIGHTS
3. OPENINGS BETWEEN WINDOW & DOOR ASSEMBLIES
4. UTILITY PENETRATIONS
5. DROPPED CEILINGS & CHASES ADJACENT TO THE THERMAL ENVELOPE
6. KNEE WALLS
7. WALLS & CEILING SEPARATING A GARAGE FROM CONDITIONED SPACES
8. BEHIND TUBS & SHOWERS OF EXTERIOR WALLS
9. BEHIND FIREPLACE INSERTS
10. ANY OTHER SOURCE OF INFILTRATION

WINDOWS, SKYLIGHTS, & SLIDING DOORS SHALL HAVE AN AIR INFILTRATION RATE OF NO MORE THAN 0.3 cfm PER SQUARE FOOT. SWINGING DOORS SHALL HAVE AN AIR INFILTRATION RATE OF NO MORE THAN 0.5 cfm PER SQUARE FOOT.

RECESSED LUMINARIES INSTALLED IN THE BUILDING THERMAL ENVELOPE SHALL BE SEALED TO LIMIT AIR LEAKAGE BETWEEN CONDITIONED & UNCONDITIONED SPACES BY BEING:

- 1. IC RATED & LABELED WITH ENCLOSURES THAT ARE SEALED OR GASKETED TO PREVENT AIR LEAKAGE TO THE CEILING CAVITY OR UNCONDITIONED SPACE

ABOVE GRADE FRAME WALLS, FLOORS, & CEILINGS NOT VENTILATED TO ALLOW MOISTURE TO ESCAPE SHALL BE PROTECTED WITH LATEX PAINT OR 6 MIL. POLY OVERLAPPED & TAPERED AT ALL JOINTS. THE VAPOR RETARDER SHALL BE INSTALLED ON THE WARM-IN-WINTER SIDE OF THE THERMAL ENVELOPE.

SHEET SCHEDULE

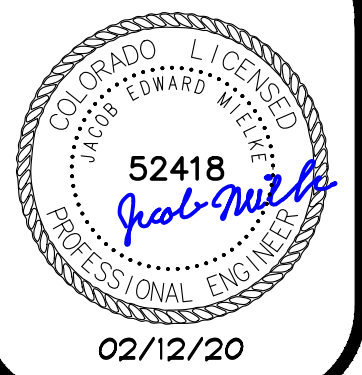
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TWIN ENVIRO ADDITION

2015 IBC CODE STUDY	
Re: 2015 IBC, 2015 IEBC, CITY OF S.S. COMMUNITY DEVELOPMENT CODE	
USE & OCCUPANCY CLASSIFICATION (CH. 3)	TYPE OF CONSTRUCTION/ REQUIRED AREAS & HEIGHTS (CH. 5 & 6)
<p>OCCUPANCY: B - BUSINESS</p> <p>CONFERENCE ROOM IS 360 SQ. FT. - PER IBC SECTION 303.1.2 EXCEPTION 2, THIS ROOM IS LESS THAN 750 SQ. FT. AND THEREFORE IS CLASSIFIED AS B OCCUPANCY</p> <p>ZONING: AF - AGRICULTURE AND FORESTRY</p> <p>NO STORIES: 1 w/ CRAWLSPACE</p>	<p>TYPE V-B, NON-SPRINKLERED</p> <p>ALLOWED BUILDING AREA PER IBC TABLE 506.2: B, 9,000 SQ. FT.</p> <p>ALLOWED NUMBER OF STORIES PER IBC TABLE 504.4: (2) STORIES</p> <p>SPRINKLERS NOT REQUIRED PER IBC 903.2</p>
GROSS AREAS	FIRE RATED ASSEMBLIES (CH. 7)
<p>EXISTING AREA: = 1656</p> <p>ADDITION AREA: = 1597</p>	<p>NO FIRE SEPARATION/FIRE BARRIER REQUIRED</p>
<p>TOTAL AREA: = 3253 TOTAL</p> <p>SIZE OF LOT: = 164.27 ACRES</p>	OCCUPANT LOAD/EGRESS (CH. 10)
	<p>PER IBC TABLE 1004.1.2: BUSINESS AREAS (100) GROSS</p> <p>CALCULATED OCCUPANT LOADS: 3253 SQ. FT. / 100 = 32 OCCUPANTS</p> <p>REQUIRED EXITS PER OCCUPANT LOADS (IBC, 1006.2.1): MIN. (1) EXIT FROM B, 1ST STORY & MAX. 49 OCCUPANTS & 75FT. TRAVEL DISTANCE</p>
	ACCESSIBILITY (CH. 11)
	<p>ALL LOWER LEVEL SHALL BE FULLY ACCESSIBLE</p>

COMMERCIAL ENERGY CODE STANDARDS													
Re: 2015 International Energy Conservation Code Table C402.1.3 °													
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS - R-VALUE METHOD													
Climate Zone 7	Roofs			Walls Above Grade				Walls Below Grade	Floors		Slab-on-Grade Floors		Opaque Doors
	Insulation entirely above deck	Metal buildings ^a	Attic & other	Mass	Metal Building	Metal Framed	Wood Framed & Other	Below grade wall ^f	Mass ^a	Joists/ Framing	Unheated Slabs	Heated Slabs	Non-Swinging
Group R	R-35ci	R-30 + R-11LS	R-49	R-15.2ci	R-13 + R-19.5ci	R-13 + R-15.6ci	R-13+R-7.5ci or R-20+R-3.8ci	R-10ci	R-16.7ci	R-30 ^f	R-15 for 24in. below	R-20 for 48in. below	R-4.75
All other	R-35ci	R-30 + R-11LS	R-49	R-15.2ci	R-13 + R-13ci	R-13 + R-7.5ci	R-13+R-7.5ci or R-20+R-3.8ci	R-10ci	R-15ci	R-30 ^f	R-15 for 24in. below	R-20 for 24in. below	R-4.75
ci = Continuous Insulation, NR = No requirement, LS = Linear System.													
a	Assembly descriptions can be found in ANSI/ASHREA/IESNA Appendix A												
b	Where using R-Value compliance method, a thermal spacer block shall be provided, otherwise use the U-Factor compliance method in Table C402.1.4												
c	R-5.7ci is allowed to be substituted with concrete block walls complying with ASTM C90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches on center or less horizontally, with ungrouted cores filled with materials having a maximum thermal conductivity of 0.44 Btu-in/h-°F												
d	Where heated slabs are placed below grade, below grade walls shall comply with the exterior insulation requirements for heated slabs.												
e	"Mass Floors" shall include floors weighing not less than: 1. 35 pounds per square foot of surface area¼ or 2. 25 pounds per square foot of floor surface area where the material weight is not more than 120 pounds per cubic foot.												
f	Steel floor joist systems shall be insulated to R-38.												

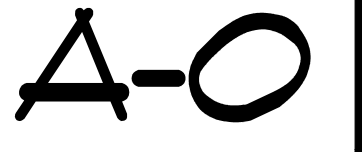


TWIN ENVIRO ADDITION

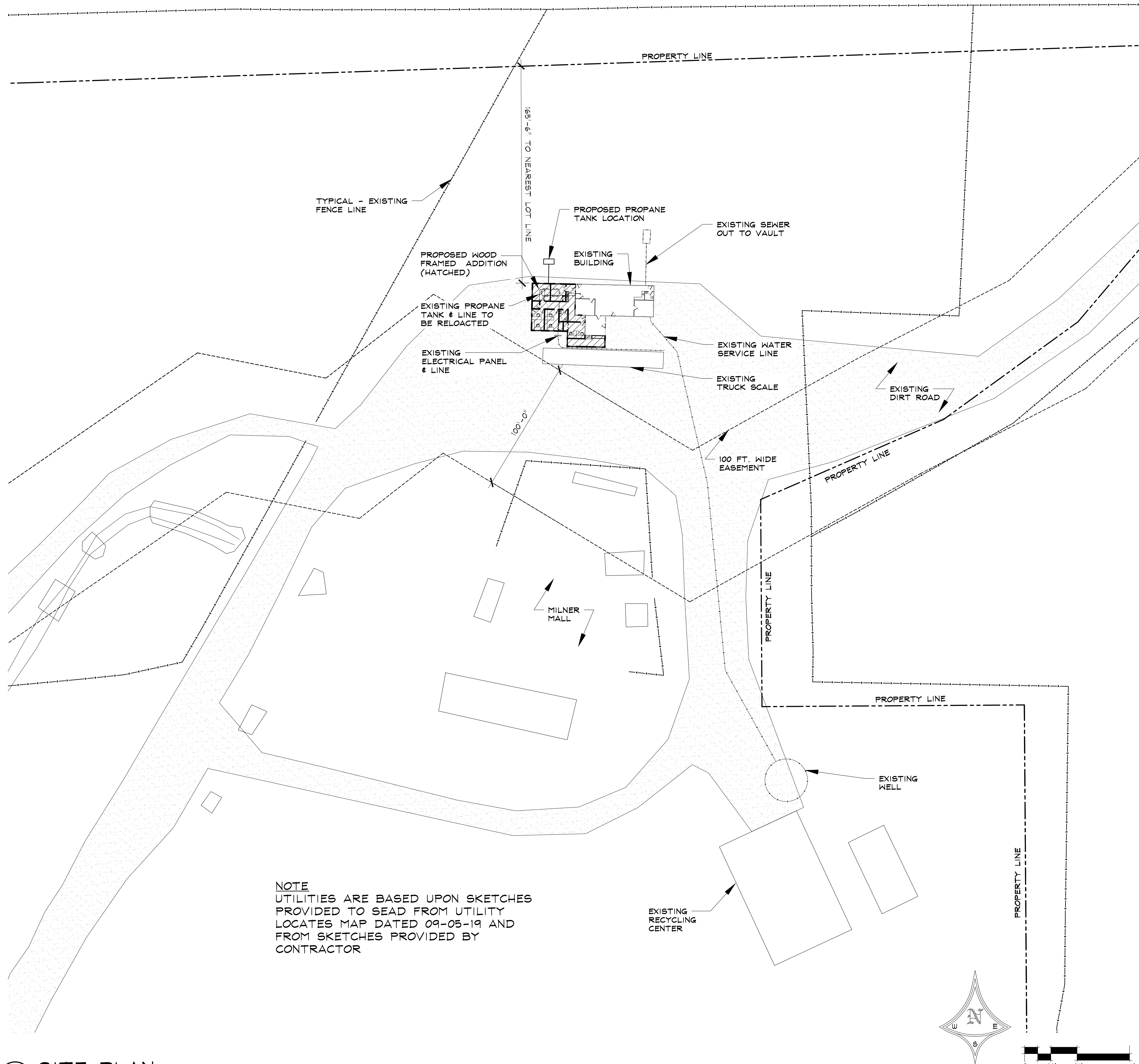
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DESIGN DEVELOPMENT	08 . 09 . 19
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REVIEWED BY: JEM
PROJECT # 19052

COVER SHEET



SHEET 1 of 12

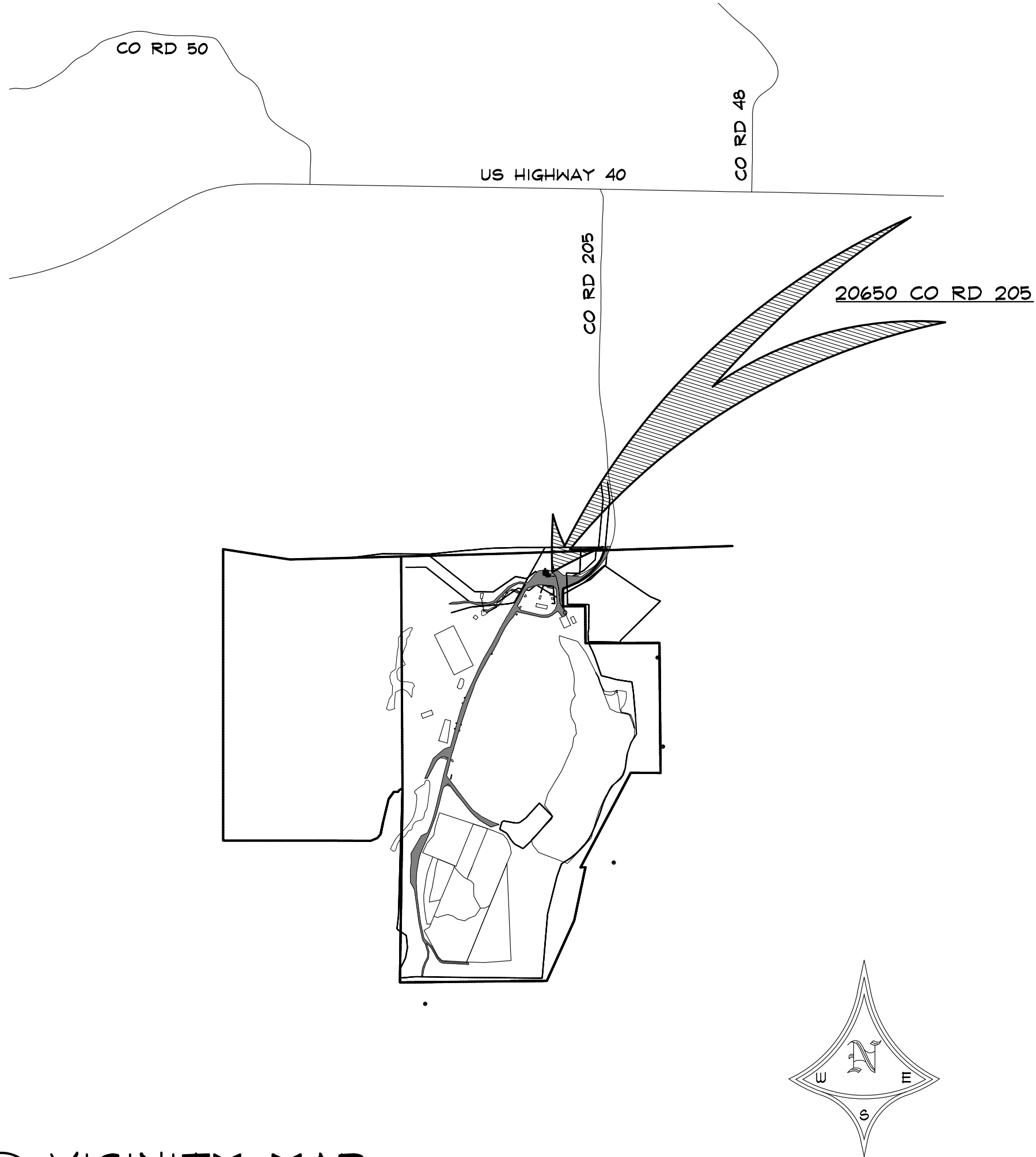


2 SITE PLAN

NOT A CERTIFIED PLAT - BASED ON SURVEY BY EMERALD MOUNTAIN SURVEYS, INC. DATED: 10.17.2019

LEGAL DESCRIPTION

SECTIONS 16 & 21, T6N, R86W,
ROUTT COUNTY, COLORADO



1 VICINITY MAP



TWIN ENVIRO ADDITION

20650 CO RD 205
MILNER, COLORADO
AN ADDITION FOR:
TWIN ENVIRO

ISSUE DATES

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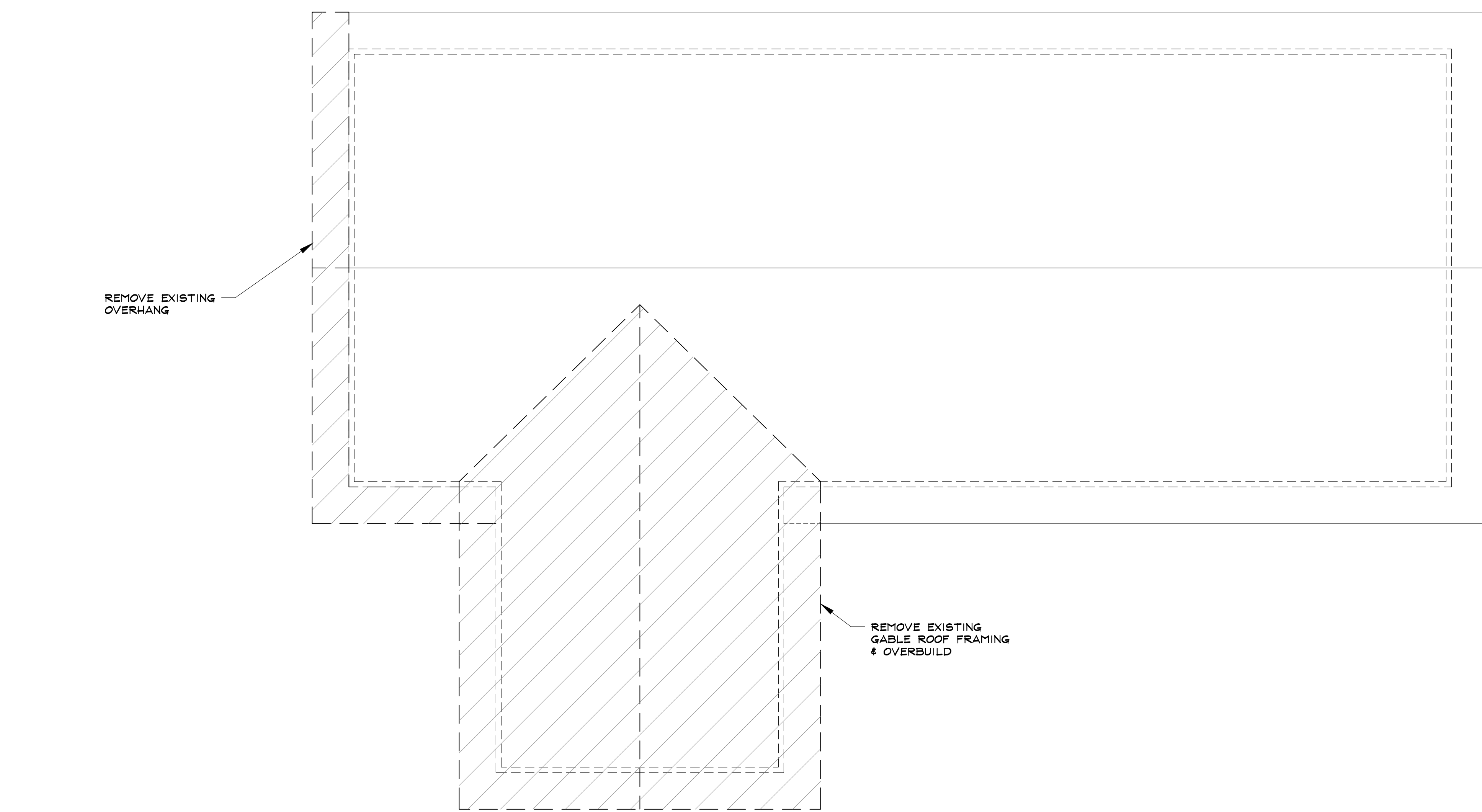
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REVIEWED BY: JEM
PROJECT # 19052

SITE & UTILITY
PLAN, VICINITY
MAP & CODE STUDY

C-1

SHEET 2 of 12

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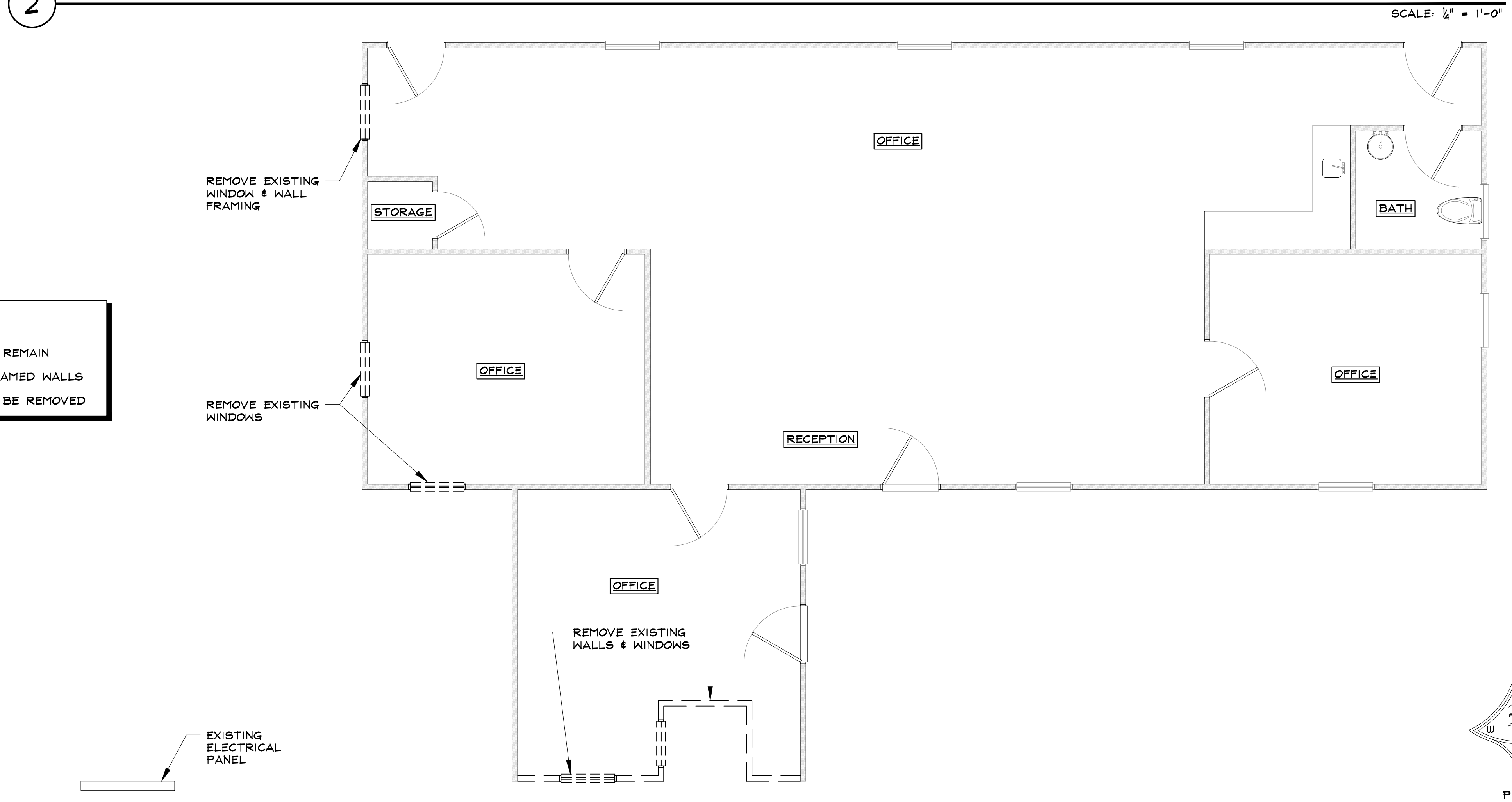


2 ROOF AS-BUILT/DEMO PLAN

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

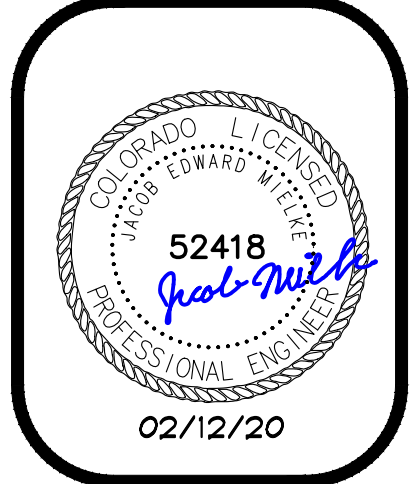
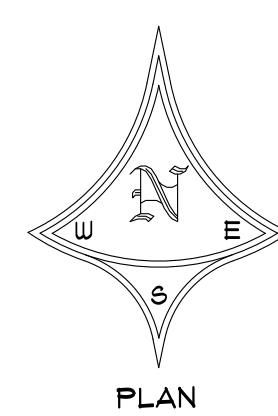
WALL KEY

- EXISTING WALLS TO REMAIN
- PROPOSED WOOD FRAMED WALLS
- EXISTING WALLS TO BE REMOVED



1 MAIN LEVEL AS-BUILT/DEMO PLAN

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



SEAD

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TWIN ENVIRO ADDITION

20650 CO RD 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

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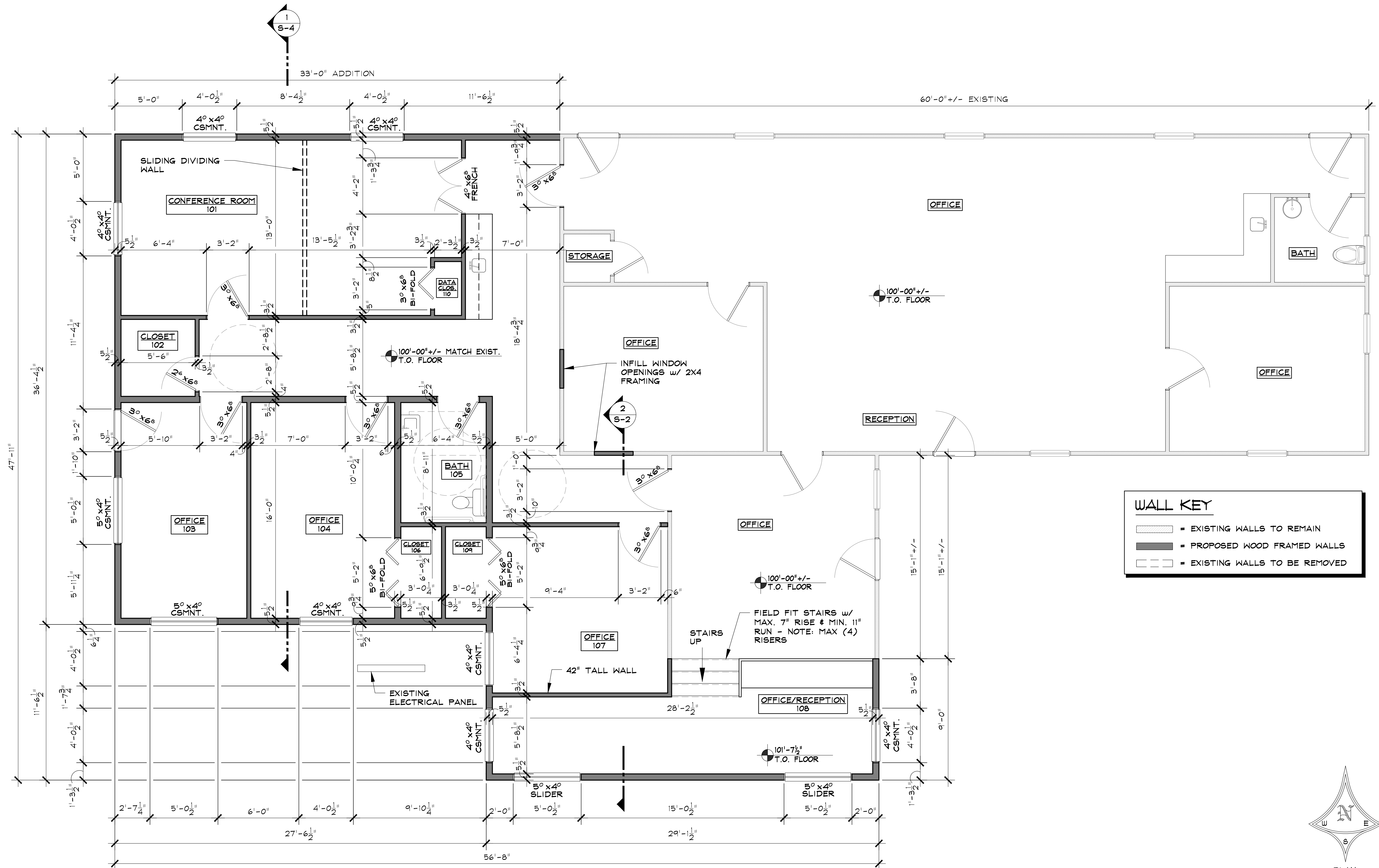
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REVIEWED BY: JEM
PROJECT # 19052

MAIN LEVEL & ROOF
AS-BUILT/DEMO
PLAN

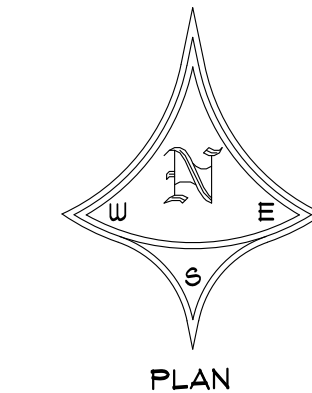
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SHEET 3 of 12

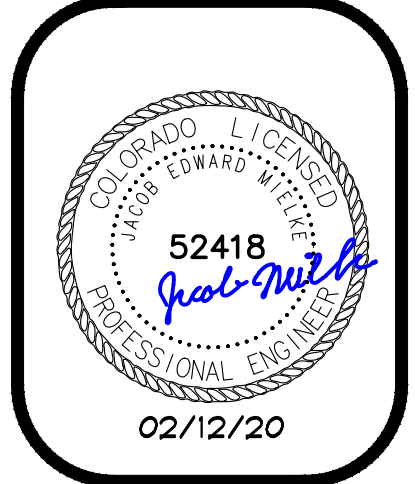
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1 PROPOSED MAIN LEVEL PLAN
1597 SQ. FT. ADDITION



WALL KEY	
	EXISTING WALLS TO REMAIN
	PROPOSED WOOD FRAMED WALLS
	EXISTING WALLS TO BE REMOVED



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PROPOSED MAIN LEVEL PLAN

A-2

SHEET 4 of 12

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



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TWIN ENVIRO ADDITION

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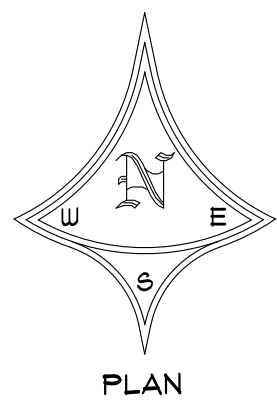
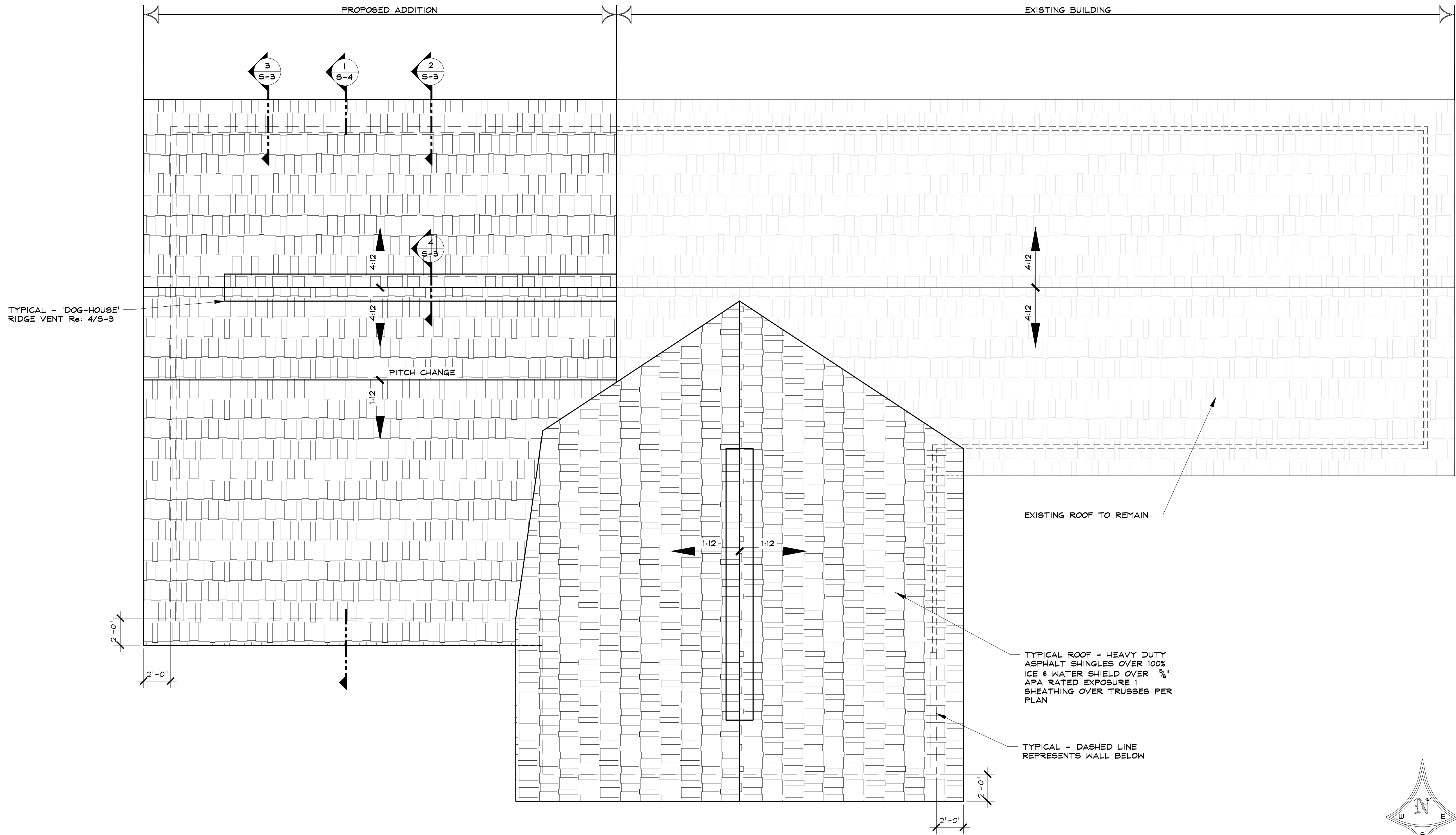
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PROPOSED ROOF PLAN

A-3

SHEET 5 of 12



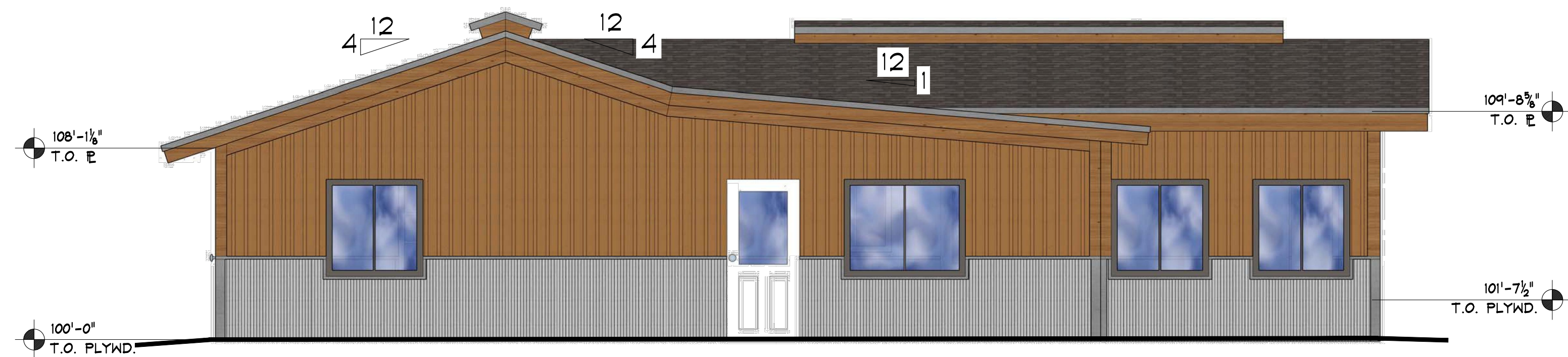
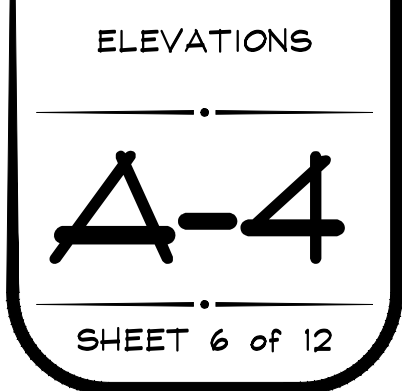
1 PROPOSED ROOF PLAN

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



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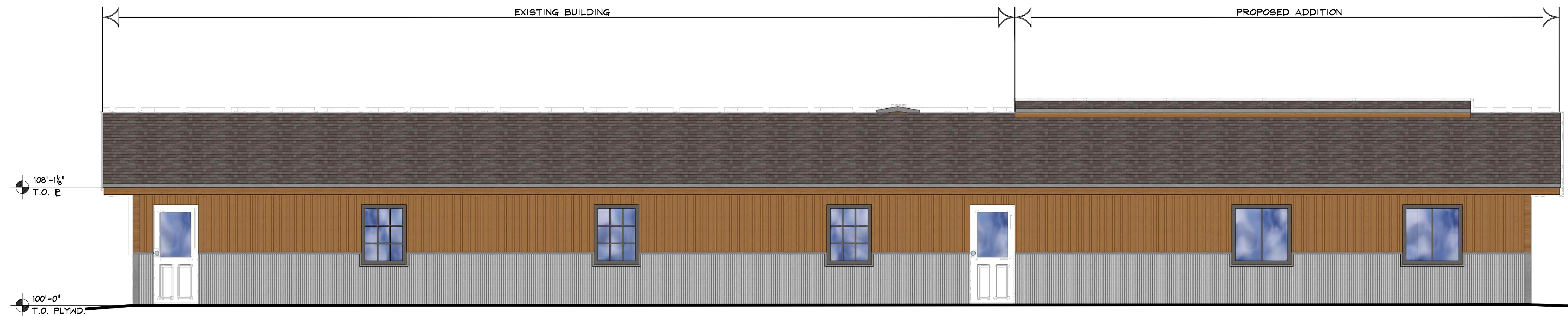
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3 WEST ELEVATION
Re: 1/A-4 FOR TYPICAL NOTES

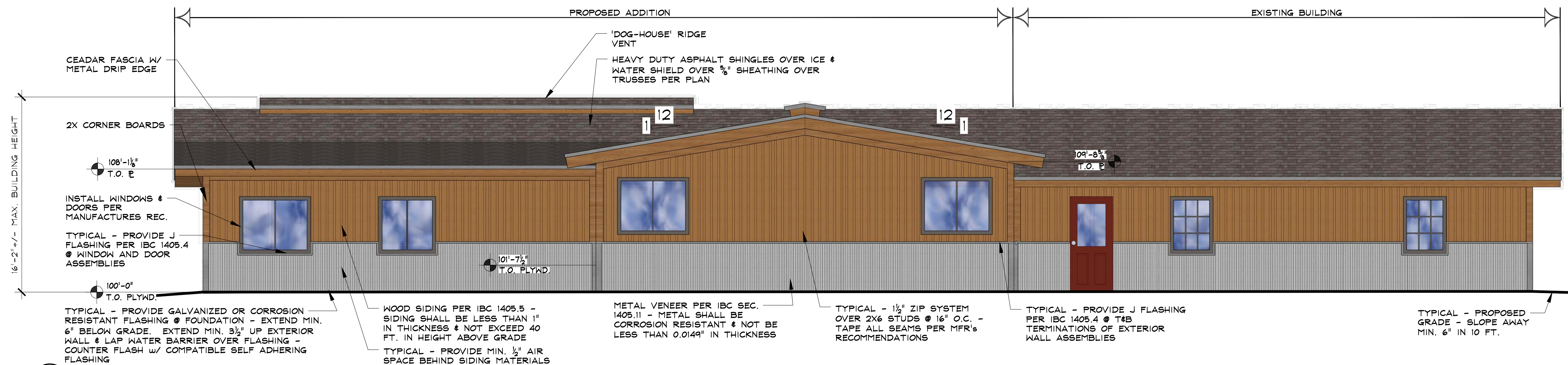
SCALE: 1/4" = 1'-0"

NOTE:
EAST ELEVATION WILL REMAIN UNCHANGED



2 NORTH ELEVATION
Re: 1/A-4 FOR TYPICAL NOTES

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



1 SOUTH ELEVATION
NOTES THIS ELEVATION TYPICAL
FINAL DOOR & WINDOW SIZES TO BE DETERMINED BY OWNER & CONTRACTOR

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

CLEARANCE: -PASS-THROUGH KITCHENS SHALL HAVE MIN. 40" CLEARANCE BETWEEN ALL OBSTRUCTIONS
-U-SHAPED KITCHENS SHALL HAVE MIN. 60" CLEARANCE BETWEEN ALL OBSTRUCTIONS
(EXCEPTION: SPACES THAT DO NOT CONTAIN A COOK TOP OR RANGE DO NOT NEED TO COMPLY WITH CLEARANCES)

WORK SURFACE: DINING AND WORKING SURFACES SHALL BE MIN. 28" AND MAX. 34" ABOVE THE FLOOR
(EXCEPTION: SPACES THAT DO NOT CONTAIN A COOK TOP OR RANGE DO NOT NEED TO COMPLY WITH WORK SURFACE REQ.'s)

STORAGE: -AT LEAST 50% OF SHELVES & OPERABLE PARTS IN CABINETS & SHALL HAVE CLEAR FLOOR SPACE & BE WITHIN REACH RANGES

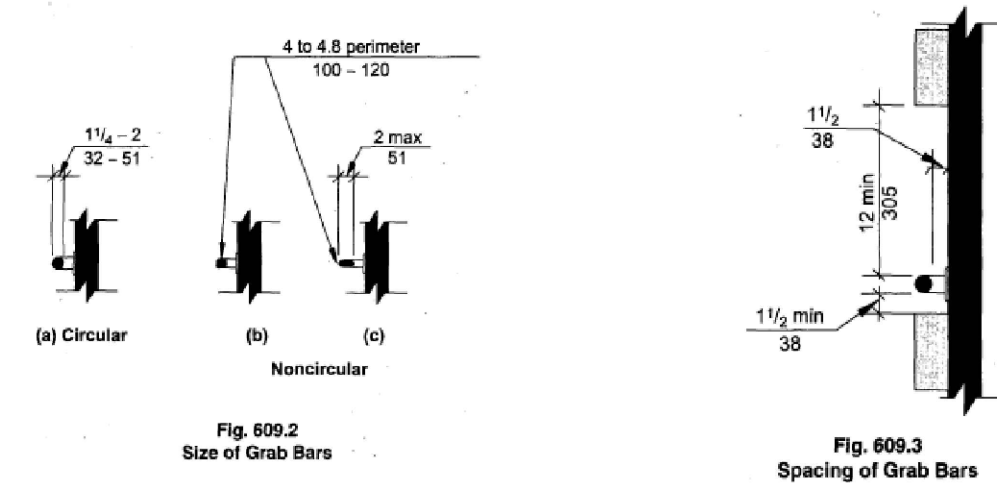
APPLIANCES: -ALL OPERABLE APPLIANCE CONTROLS SHALL BE PLACED WITHIN REACH RANGES
- APPLIANCES OTHER THAN APPLIANCE DOORS AND DOOR LATCHING DEVICES SHALL BE OPERABLE WITH ONE HAND, SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST

DISHWASHER: -"A CLEAR FLOOR SPACE, POSITIONED ADJACENT TO THE DISHWASHER DOOR SHALL BE PROVIDED. THE DISHWASHER DOOR IN THE OPEN POSITION SHALL NOT OBSTRUCT THE CLEAR FLOOR SPACE FOR THE DISHWASHER OR AN ADJACENT SINK" (ANSI, 804.6.3)

RANGE OR COOKTOP: -A CLEAR FLOOR SPACE SHALL BE POSITIONED FOR A PARALLEL APPROACH & THE CONTROLS SHALL LOCATED WHERE REACHING ACROSS BURNERS IS NOT REQUIRED.

OVEN: -SIDE-HINGED & BOTTOM-HINGED DOORS SHALL HAVE A WORK SURFACE ADJACENT TO ONE SIDE OF THE DOOR - OVEN CONTROLS SHALL BE LOCATED ON FRONT PANELS

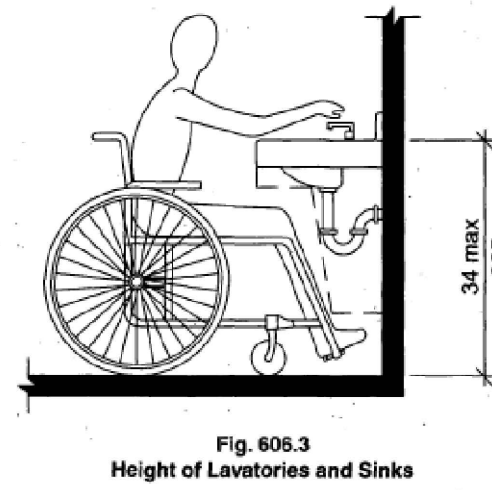
REFRIGERATOR/FREEZER: -"COMBINATION REFRIGERATORS AND FREEZERS SHALL HAVE AT LEAST 50% OF THE FREEZER COMPARTMENT SHELVES, INCLUDING THE BOTTOM OF THE FREEZER, 54" MAX. ABOVE THE FLOOR WHEN THE SHELVES ARE INSTALLED AT THE MAXIMUM HEIGHTS POSSIBLE IN THE COMPARTMENT. A CLEAR FLOOR SPACE, POSITIONED FOR A PARALLEL APPROACH TO THE SPACE DEDICATED TO A REFRIGERATOR/FREEZER SHALL BE PROVIDED. THE CENTERLINE OF THE CLEAR FLOOR SPACE SHALL BE OFFSET 24" MAXIMUM FROM THE CENTERLINE OF THE DEDICATED SPACE" (ANSI, 804.6.6)



609 GRAB BARS

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
REFER TO CLEAR FLOOR SPACE STANDARDS
REFER TO KNEE & TOE CLEARANCE STANDARDS

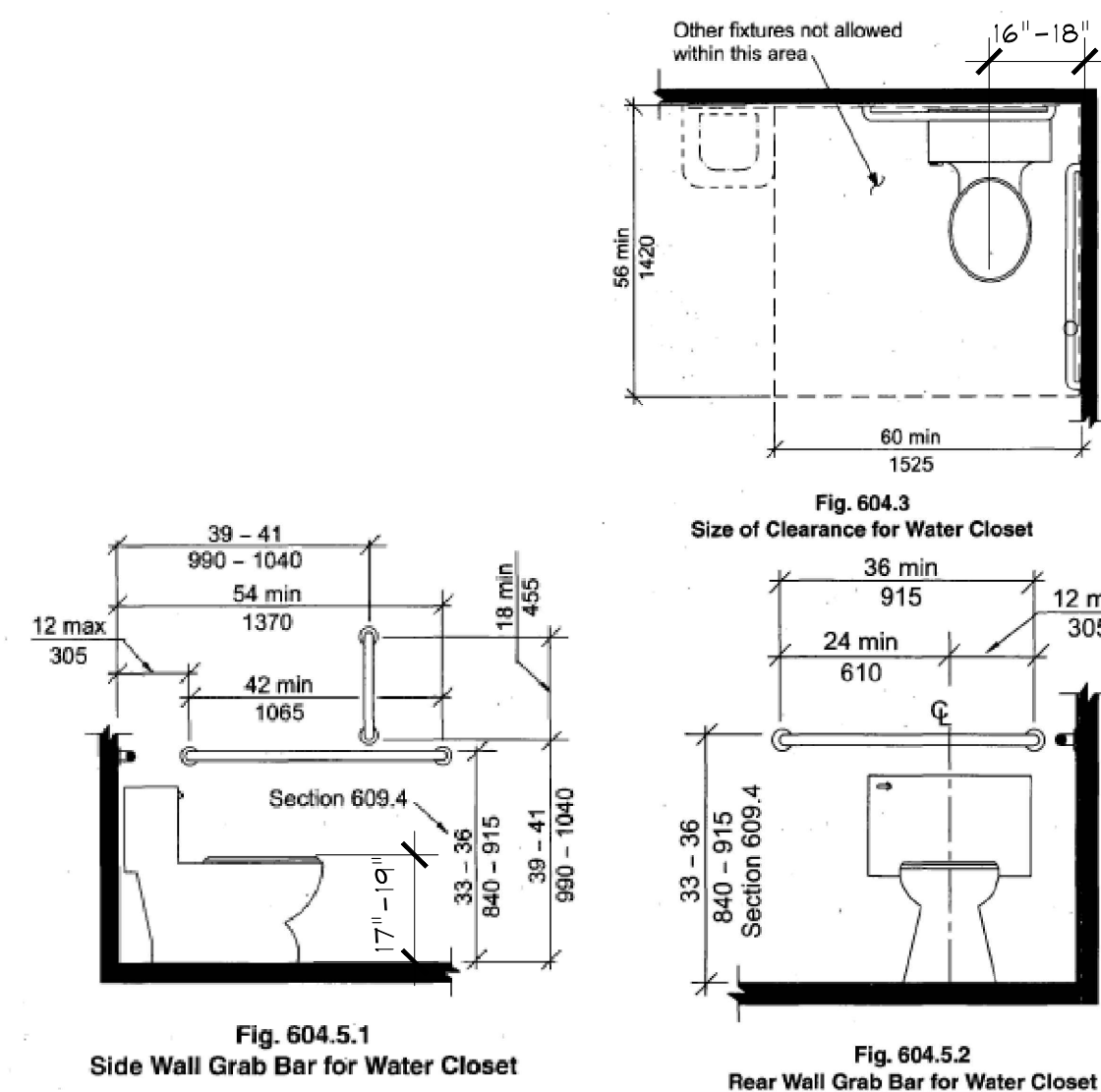
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606 PUBLIC LAVATORY

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
REFER TO CLEAR FLOOR SPACE STANDARDS
NOTE: A PARALLEL APPROACH IS PERMITTED FOR KITCHEN SINKS WHERE A COOK TOP OR RANGE IS NOT PROVIDED

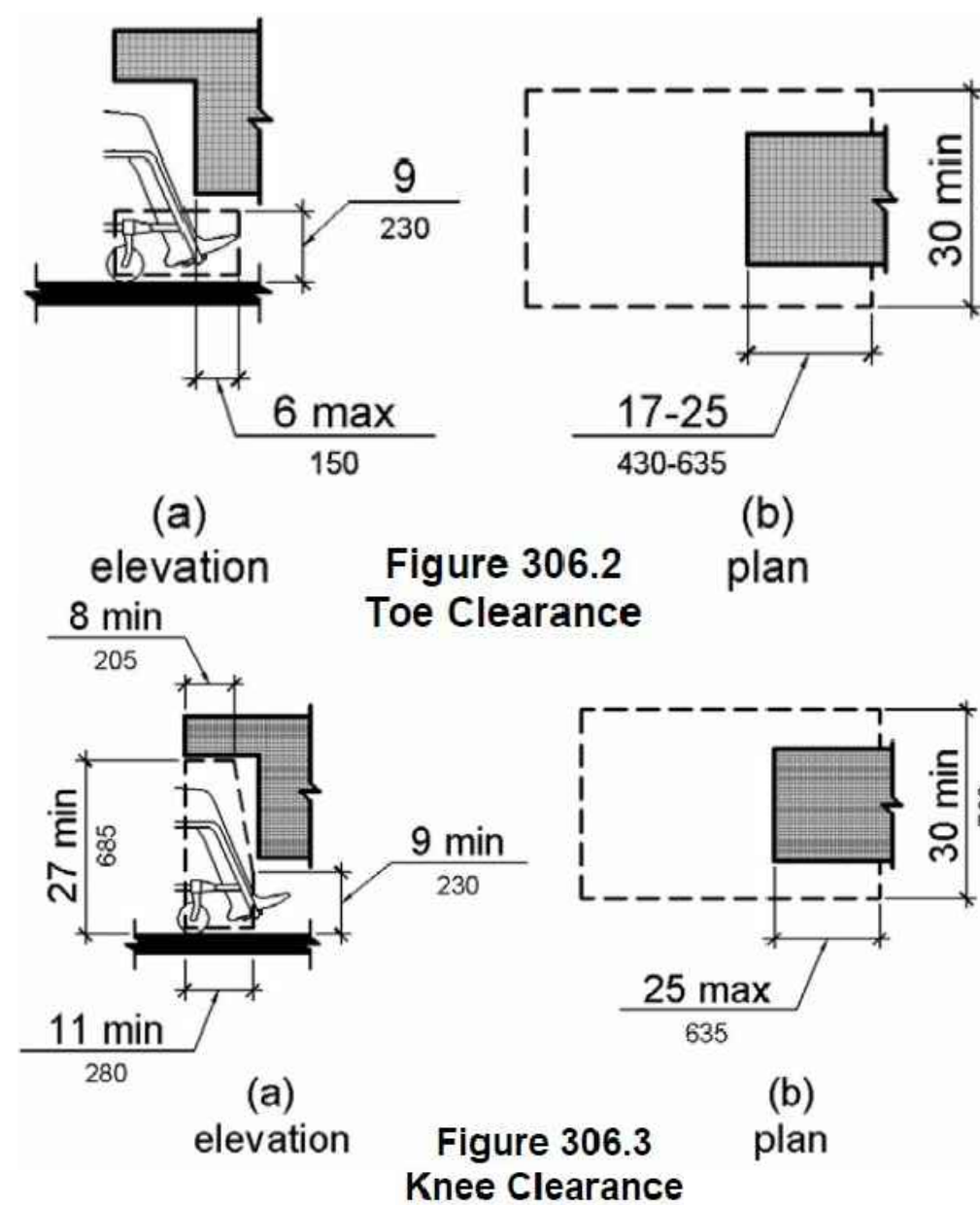
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604 PUBLIC WATER CLOSET STANDARDS

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

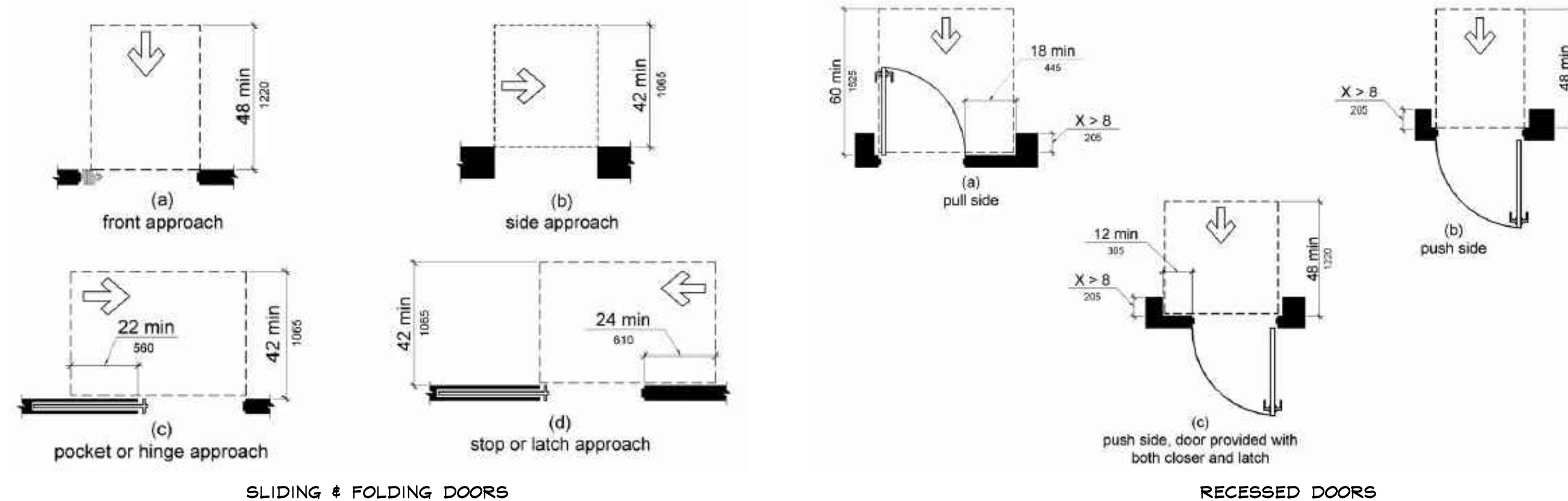
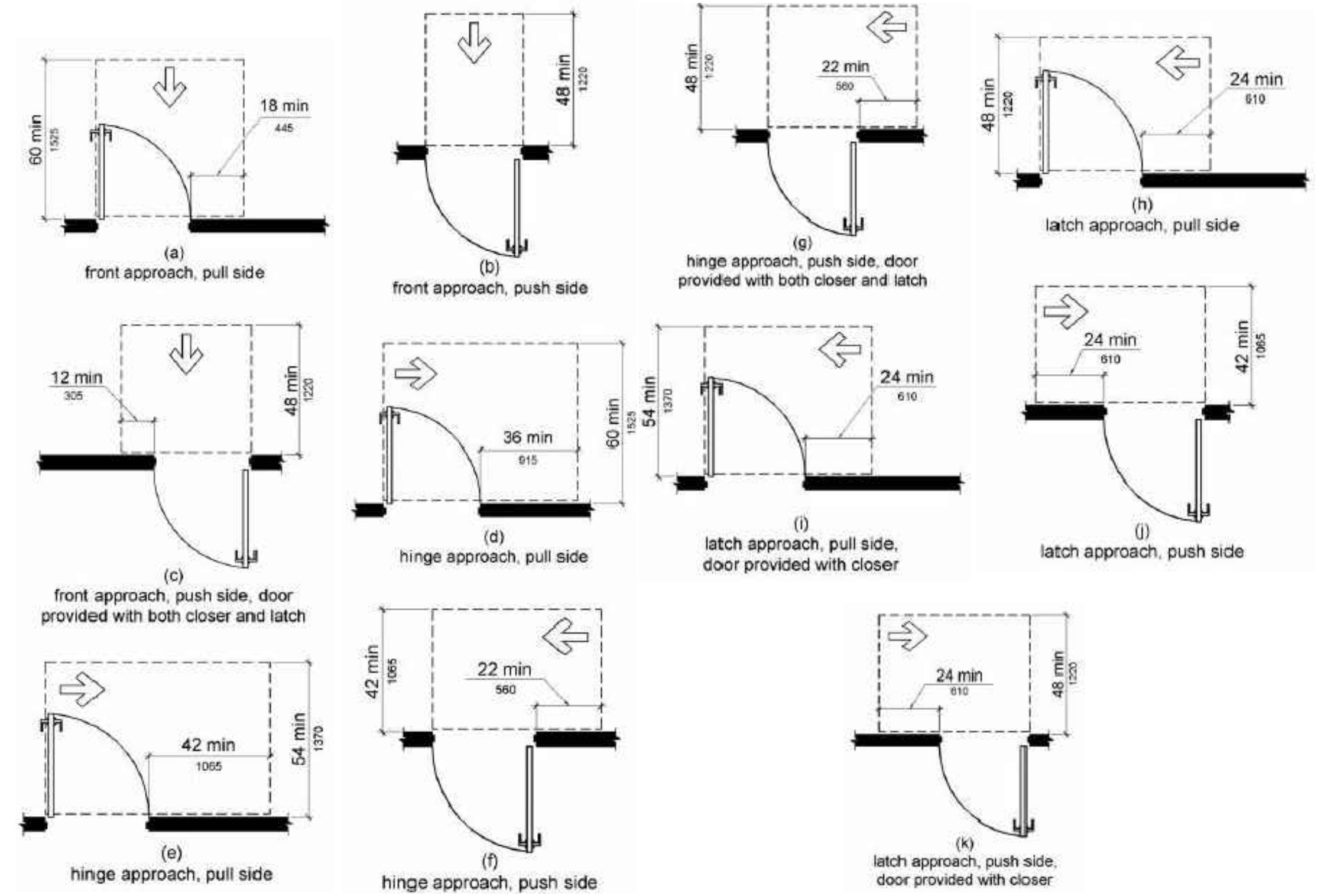
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306 KNEE & TOE CLEARANCE

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
REQUIRED WHEN SPACE BENEATH AN ELEMENT IS INCLUDED AS CLEAR FLOOR SPACE, CLEARANCE OR TURNING SPACE

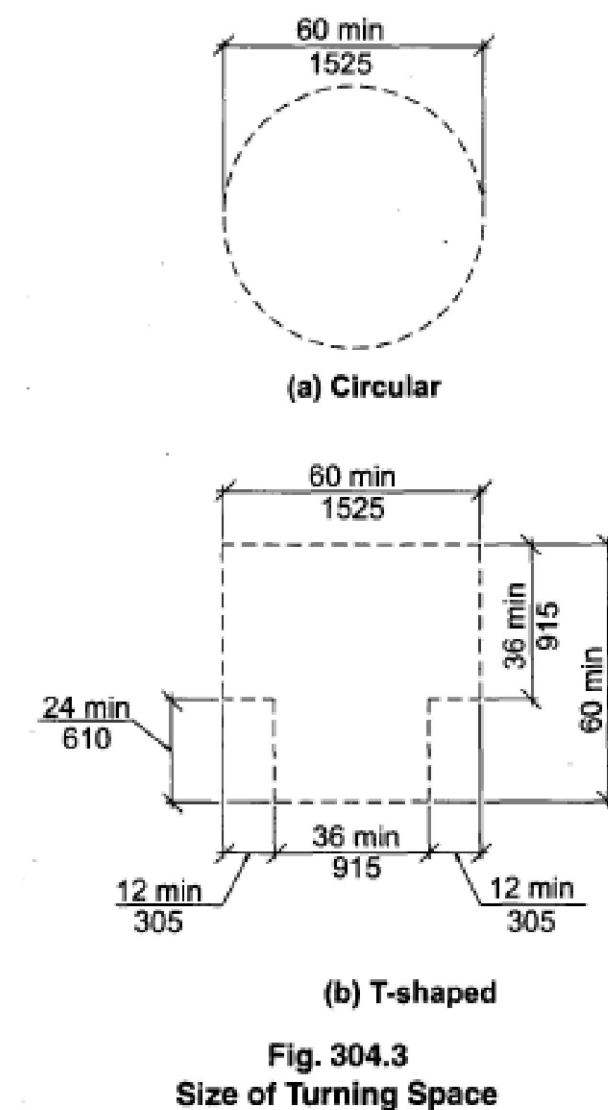
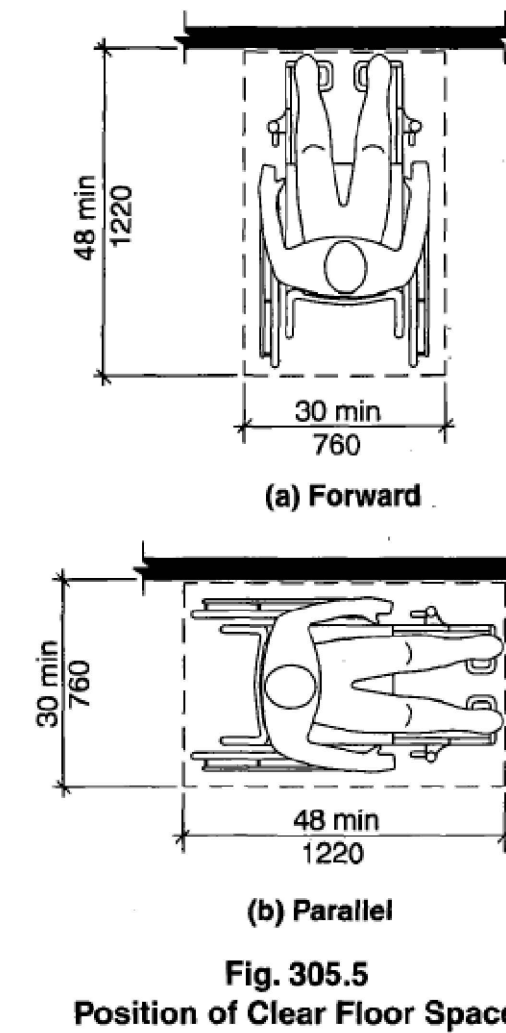
SCALE: NTS



404 TYPICAL ADA DOOR SWINGS

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
REFER TO CLEAR FLOOR SPACE STANDARDS
REFER TO KNEE & TOE CLEARANCE STANDARDS
MIN. CLEAR WIDTH OF DOOR OPENING IS 32" DOORS IN SERIES NEED MIN. 48" CLEAR PLUS WIDTH OF DOORS SWINGING INTO SPACE

SCALE: N.T.S.



304 TURNING SPACE SPACE

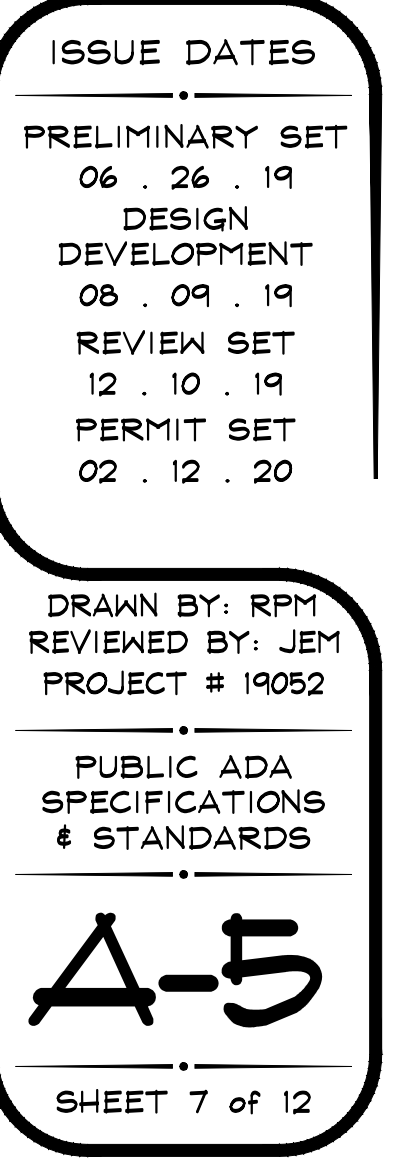
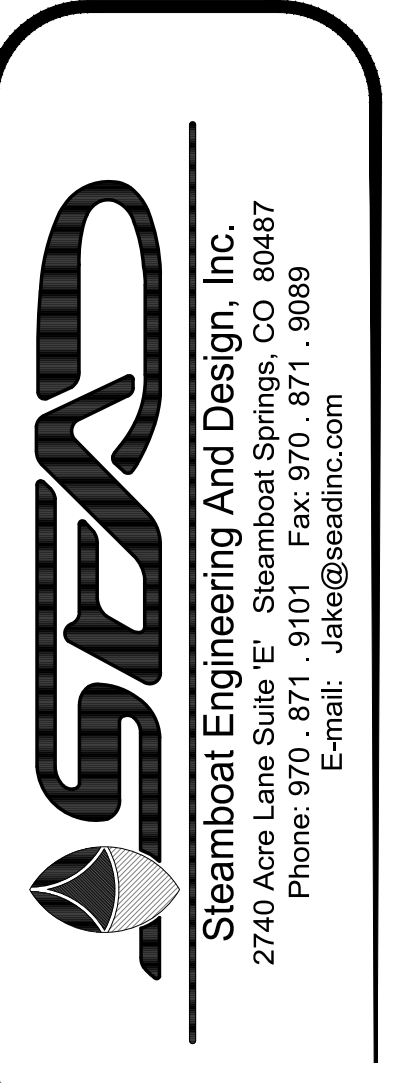
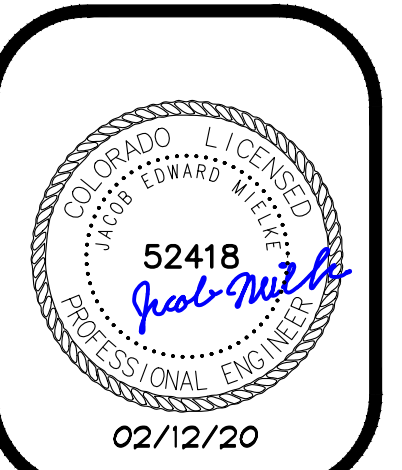
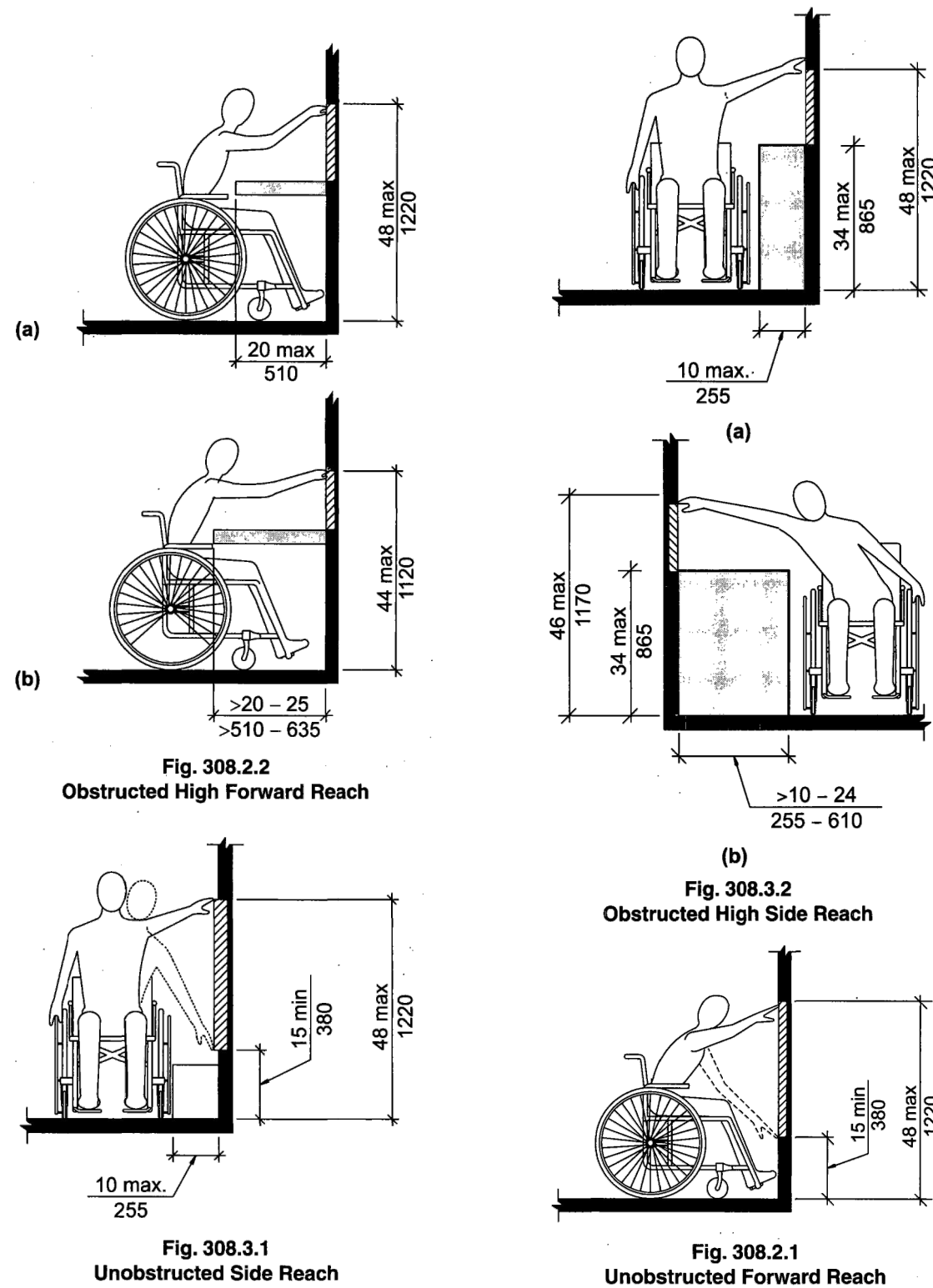
PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
SPACES SHALL BE LOCATED ON SLOPE LESS THAN 1:48 DOORS ARE PERMITTED TO SWING INTO TURNING SPACES, U.N.O.

SCALE: NTS

308 REACH RANGES

PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

SCALE: NTS



Applicable Codes and Standards:

- A. 2015 International Building Code (including all local adoptions)
- B. 2015 International Residential code (including all local adoptions)
- C. City of Steamboat Springs Community Development Code
- D. "Minimum Design Loads for Buildings and Other Structures" - ASCE 7-10
- E. "Building Code Requirements for Structural Concrete" - ACI318
- F. "Steel Construction Manual" - AISC fourteenth edition
- G. "National Design Specification for Wood Construction" - ANSI/AF&PA-NDS 2015

A. Roofs: 100 psf Ground, 70 psf Roof
B. Floors: 50 psf
D. Wind: 120 mph, Exposure B
E. Seismic Design: Category B, Soil Type D

A. Design of continuous and individual footings is based on a maximum allowable soil bearing pressure of 2,000 psf dead load plus full live load and a minimum dead load of 500 psf placed on the natural undisturbed soils below frost depth. Refer to soils report No. 19-1048 by Western Slope Geotech, Inc.

B. Per the soils report, expansive soils were encountered at proposed construction site. The owner is aware of the problem associated with expansive soils and has approved the use of the proposed foundation system.

C. Site must be over excavated by a minimum of 3 feet and footings placed on structural backfill per the soils report.

- A. Structural concrete shall be Type I, and have a minimum 28 day strength of 3,000 psi. Exterior concrete slabs shall be Type I and have a minimum 28 day strength of 4,000 psi. All concrete shall have a min 6% (+/- 1.5%) entrained air for durability and a max. 4" (+/- 1") slump. The maximum aggregate size shall be 3/4". Concrete shall not be placed on frozen ground and shall be protected from freezing for a minimum of 7 days after curing. The methods and specifications set forth in ACI 306R-88 shall be followed to prevent frost damage.
- B. All concrete work shall conform to the requirements of ACI318 and 301, latest edition.
- C. All exposed edges shall have a 3/4" chamfer.
- D. Reinforcing bars shall conform to ASTM spec. A615-79 and shall be Grade 60.
- E. At splices, lap bars a minimum of 38 diameters. At corners and intersections, make sure the continuous bars are staggered. At column bars: Around openings in walls or slabs, provide (2) #5 bars extending a minimum of 2 feet beyond the edge of the opening. Continuous top bars in walls shall be spliced at mid-span. Continuous bottom bars in walls shall be spliced at supports.
- F. Concrete cover shall conform to ACI 318-08, 7.7. Unless a greater cover is required, concrete cast against earth shall have 3in. min. cover, concrete exposed to earth or weather shall have 2in. min. cover for No. 6 bars & greater, & 1 1/2in. min. cover for No. 5 bars & smaller. Concrete not exposed to weather shall have 3/4" min. cover for No. 10 bars & smaller.
- G. Welded wire fabric shall conform to ASTM 185 and shall be lapped one full mesh at splices and tied together.
- H. Concrete shall be adequately consolidated/vibrated during placement to ensure it is thoroughly placed around all reinforcing steel and embedded fixtures.

I. Unless noted otherwise, slabs, footings and walls shall not have any horizontal "cold joints" or construction joints that shall be detailed or revised by the Engineer of Record.

J. Interior concrete slab finish shall be steel trowel finished and exterior concrete slabs shall be broom finished.

A. Unless noted otherwise, all 2" lumber shall be Douglas Fir S4S No. 2 and better. All solid timber beams and posts shall be DF-L No. 1 or better.

B. Unless noted otherwise, minimum nailing shall be provided as specified in Table No. 2304.10.1, "Fastening Schedule", of the 2015 IBC or Table No. R602.3(1), "Fastening Schedule", of the 2015 IRC.

C. Floor sheathing shall be APA rated with exterior glue and graded in accordance with APA standards. Panel identification and thickness shall be as noted on the drawings. Wall sheathing shall be 1/2" Zip R-6 R-Sheathing and shall be fastened with 0.131" shank nails with 3" edge spacing and 6" field spacing in accordance with the manufacturer's specifications, U.N.O. All wall fasteners shall have minimum 1/2" penetration into the supporting framing members.

D. Where light gauge framing anchors are shown or required, they shall be Simpson "Strong Tie" (or equal approved by ICBO). They shall be installed with the number and type of fasteners recommended by the manufacturer to develop the rated capacity.

E. Laminated Veneer Lumber shall be of such stress grade to provide an allowable bending stress of 2,600 psi, allowable shear stress parallel to the glue line of 285 psi and a modulus of elasticity of 1,900,000 psi.

F. Glue laminated timber shall be stress grade marked 24F-V4, unless noted otherwise.

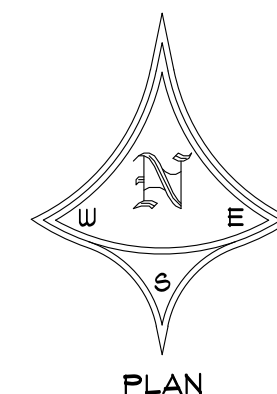
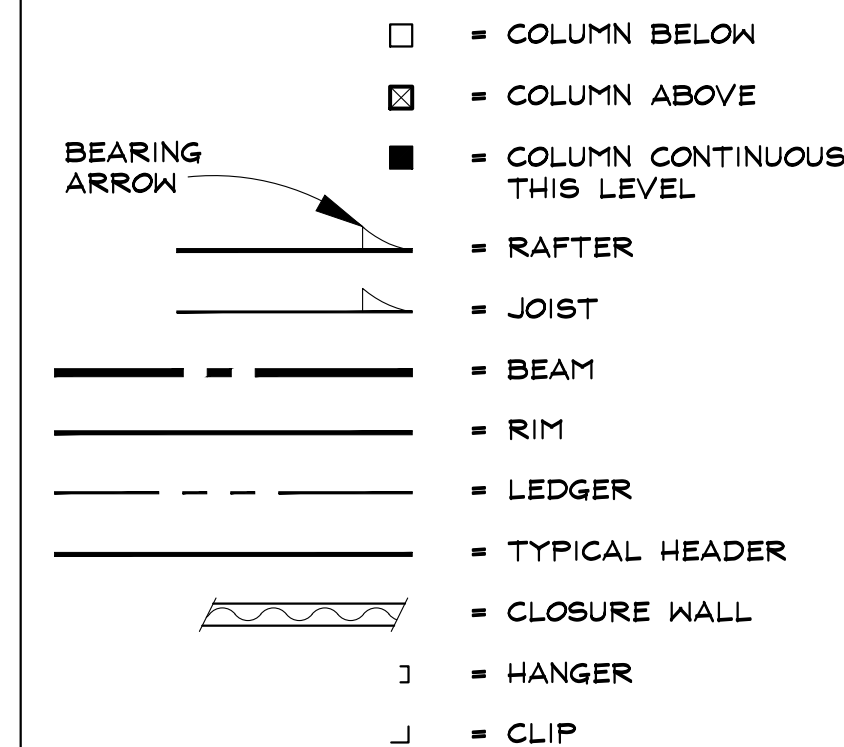
G. Roof and floor trusses shall be designed by a Colorado Registered Professional Engineer to support the full live load and dead loads of the roof, ceiling, and any other superimposed loads. Calculations and shop drawings, including member sizes, lumber species, and grade, and calculations data for connector capacities and truss design, shall be submitted to the Architect or Engineer for review and approval prior to fabrication.

H. Floor joists shall be plant fabricated I series with LVL or solid wood flanges and plywood or OSB webs, and shall carry ICBO approval for a complete section. Joists shall be designed to carry full live and dead loads of the roof(s), floor(s), and any superimposed loads.

I. Roof overframing shall be 2x6 rafters @ 24" O.C. w/ 2x6 studs @ 24" O.C. to stack over rafters or purlins below.

- A. Structural steel shall be detailed and fabricated in accordance with the latest version of the AISC Manual of Steel Construction.
- B. All bolts, including anchor bolts, shall conform to ASTM spec. A307.
- C. Structural steel rolled W shapes shall be ASTM A50. Plates and angles, shall be ASTM A36.
- D. Expansion bolts called for on the drawings shall be Simpson "Neg-All", "Strong-Bolt 2" or approved wedge type anchors with the following minimum embeddings: 3/4" diameter bolts - 3 $\frac{1}{2}$ " 5/8" diameter bolts - 2 $\frac{3}{4}$ ", 1/2" diameter bolts - 2 $\frac{1}{4}$ ".
- E. All epoxy shall be Simpson "Set-XP" and shall be installed per the "Anchoring and fastening Systems For Concrete and Masonry" Simpson catalog #C-SAS-2012 by a qualified personnel.
- F. All welds shall be inspected by the Engineer.
- G. Fillet welds indicated on the plans shall be of E70xx electrodes and shall be the minimum size specified in the AISC Manual of Steel Construction, Table J2.4.
- H. All welds shall be performed by a certified welder.

A. The contractor shall thoroughly inspect and survey the existing structure to verify dimensions, elevations, framing, etc., which may affect the work shown on the drawings and report any variations or discrepancies to the Engineer.



① TYPICAL - ELEVATION @ TOP OF CONCRETE WALL INDICATED THUS: ELEV ✓
TYPICAL - ELEVATION @ TOP OF CONCRETE FOOTING INDICATED THUS: (ELEV) ✓
TYPICAL - COLUMNS THAT BEGIN THIS LEVEL ARE INDICATED ON PLAN

FOOTING SCHEDULE

MARK	SIZE	REINFORCING	REFERENCE
(A)	3'-2"x3'-2"x0'-11" INTEGRATED INTO CONTINUOUS WALL FTG.	(4) #4 BARS EACH WAY, CENTERED	5/S-1.1
(B)	4'-4"x4'-4"x0'-11"	(5) #4 BARS EACH WAY, CENTERED	6/S-1.1
(C)	3'-2"x3'-2"x0'-11"	(4) #4 BARS EACH WAY, CENTERED	6/S-1.1 SIMILAR

TWIN ENVIRO ADDITION

20650 CO Rd 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

ISSUE DATES

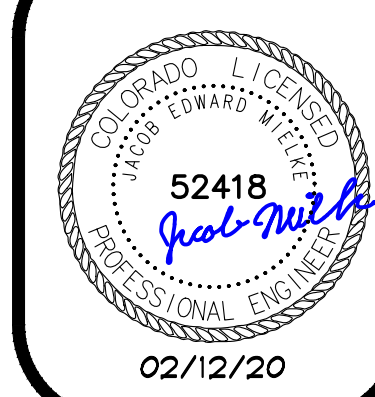
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06 . 26 . 19
DESIGN
DEVELOPMENT
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REVIEW SET
12 . 10 . 19
PERMIT SET
02 . 12 . 20

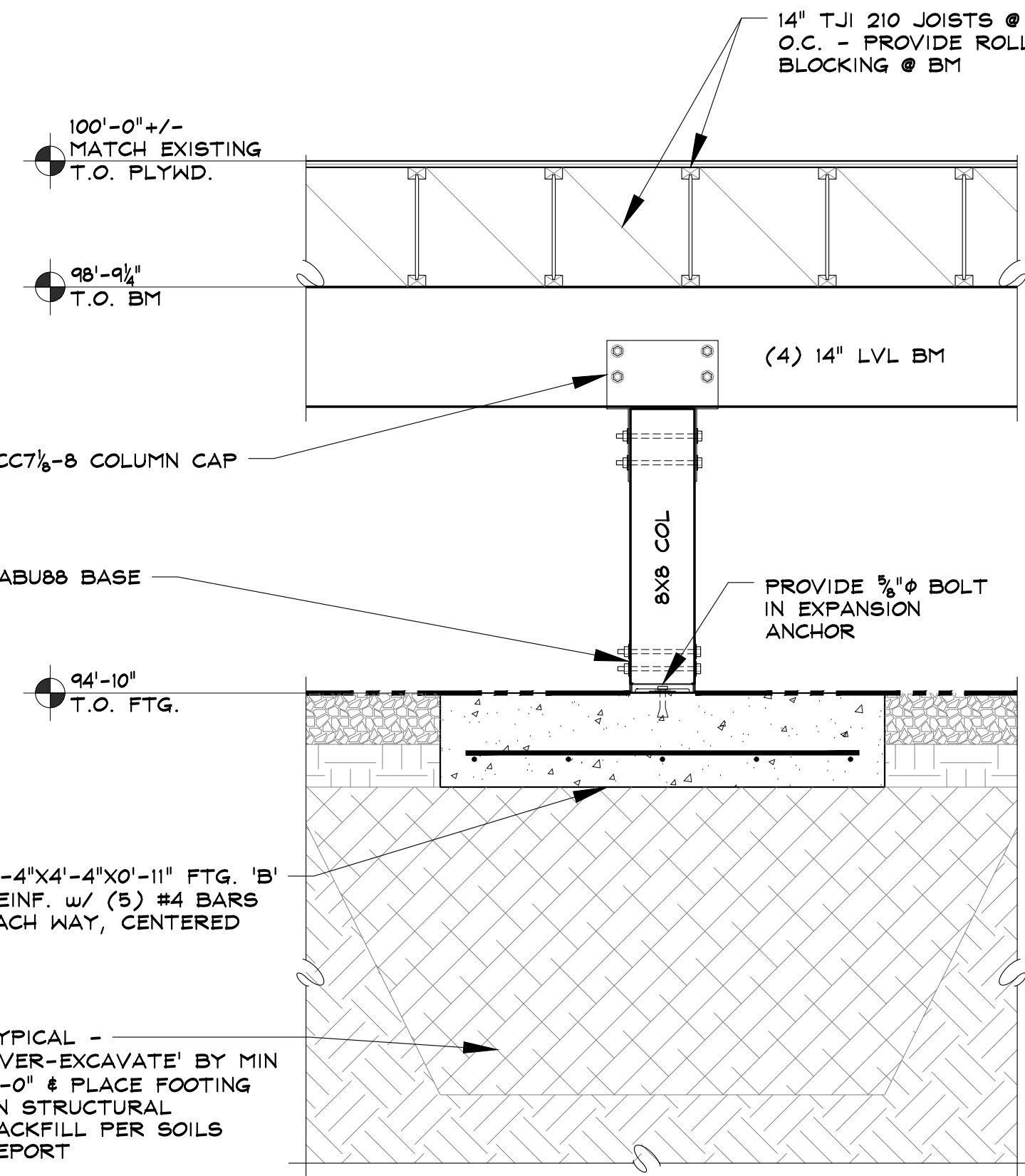
DRAWN BY: RPM
REVIEWED BY: JEM
PROJECT # 19052

FOUNDATION PLAN
& STRUCTURAL
NOTES

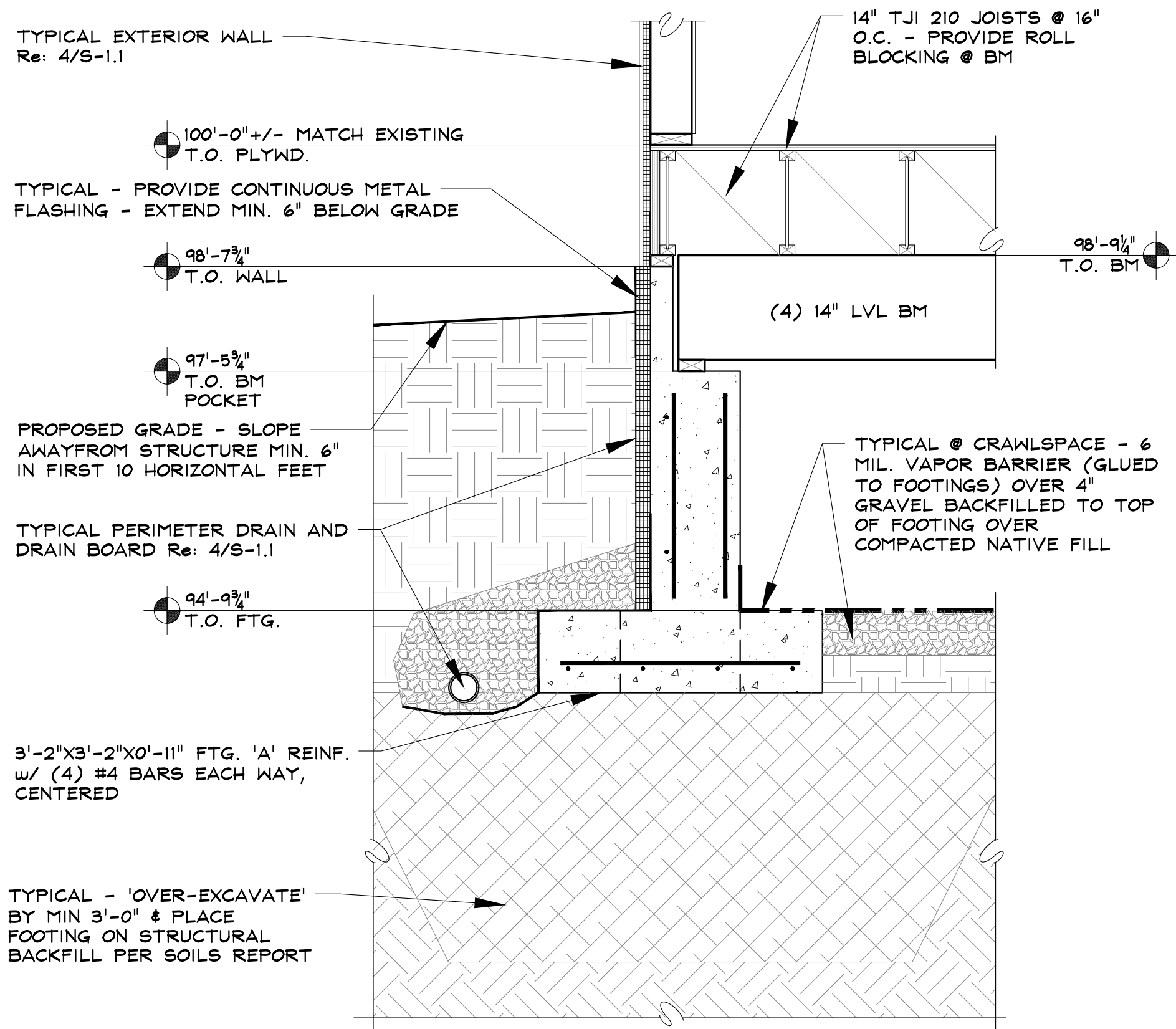
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SHEET 8 of 12

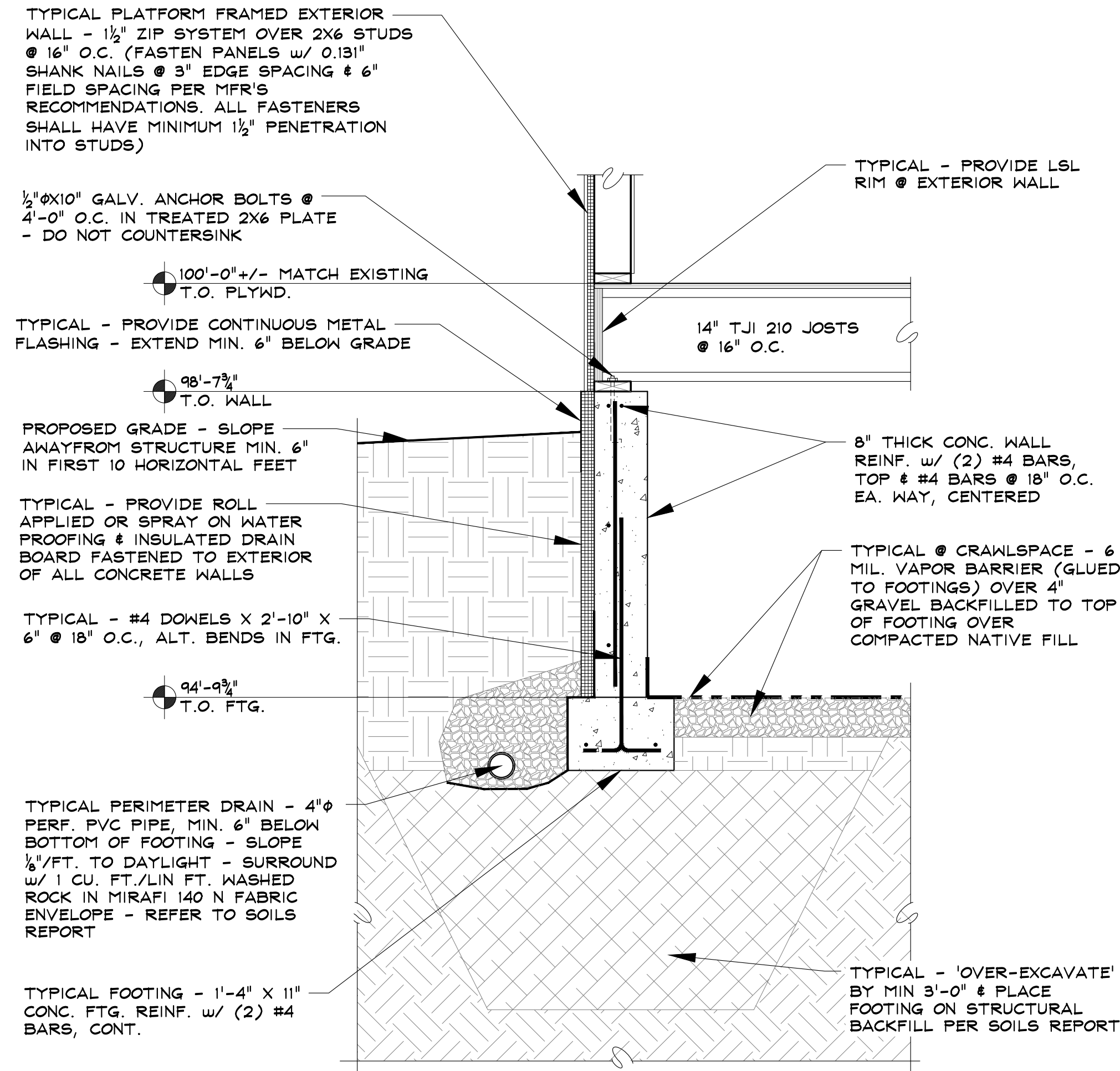




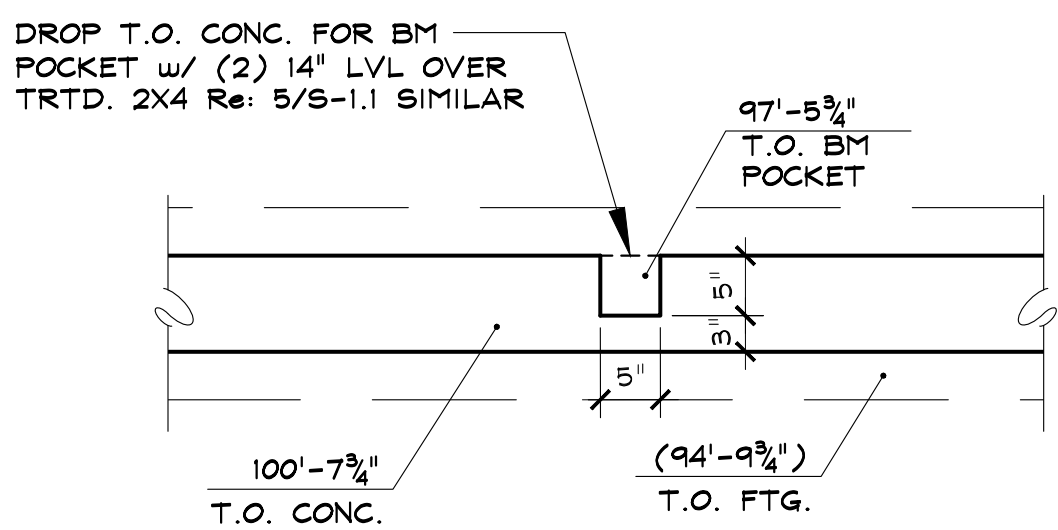
6 FOOTING 'B' SECTION SCALE: 3/4" = 1'-0"



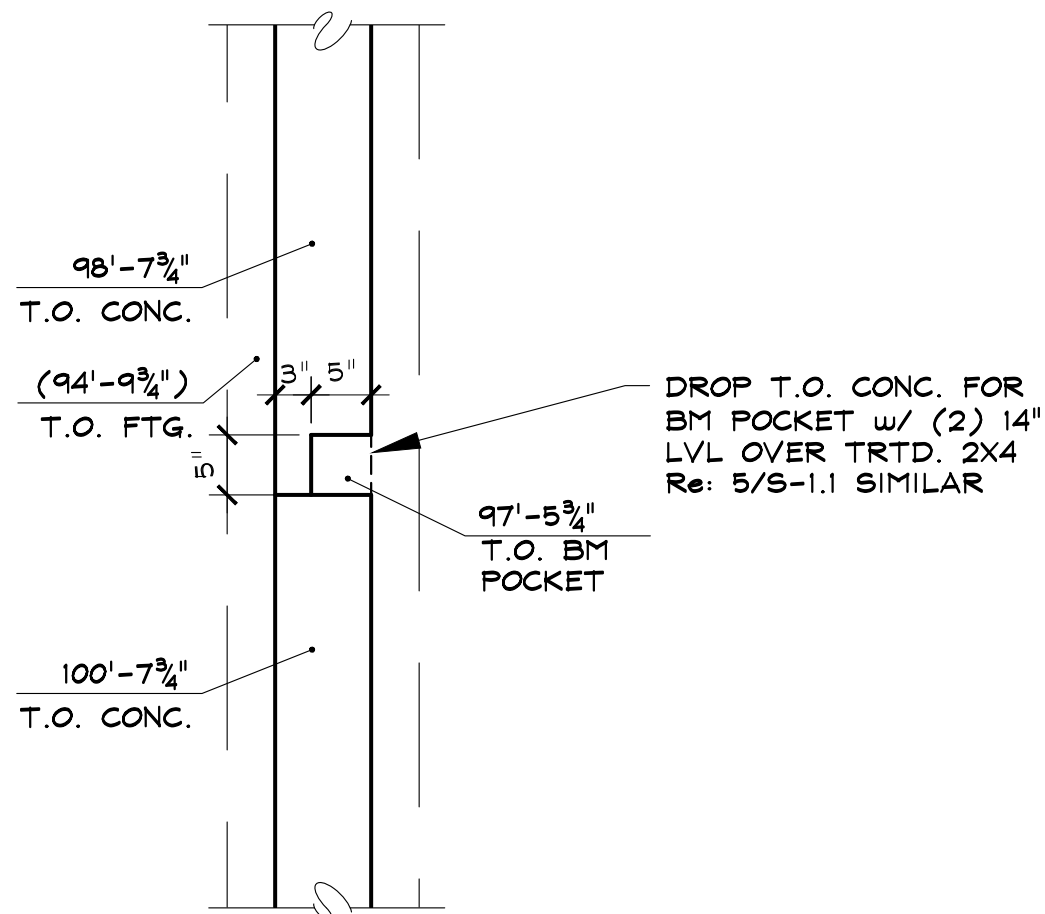
5 FOOTING 'A' SECTION SCALE: 3/4" = 1'-0"



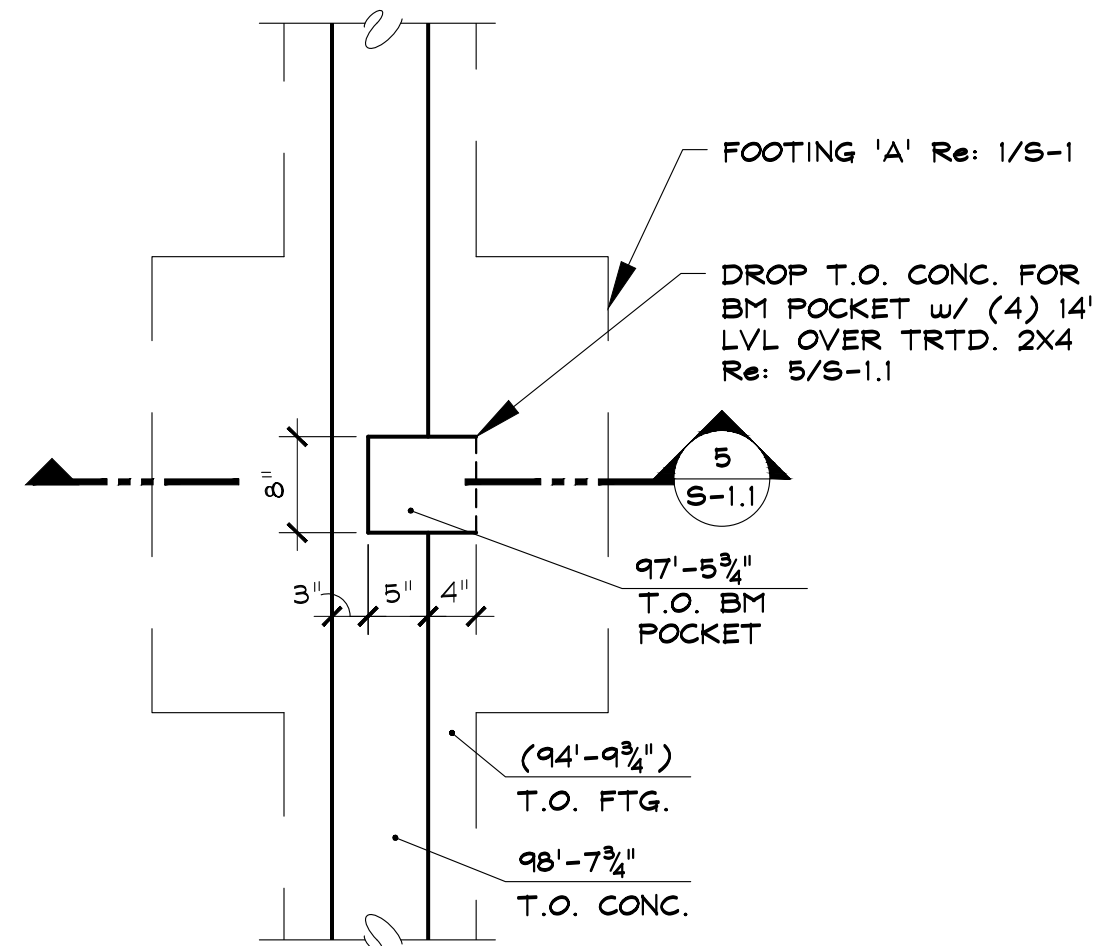
4 TYPICAL WALL SECTION SCALE: 3/4" = 1'-0"



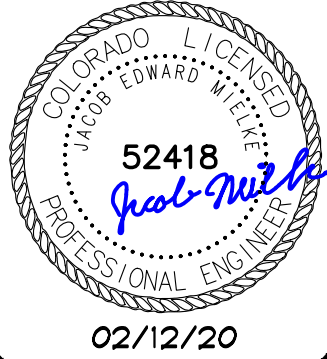
3 BEAM POCKET DETAIL SCALE: 3/4" = 1'-0"



2 BEAM POCKET DETAIL SCALE: 3/4" = 1'-0"



1 BEAM POCKET DETAIL SCALE: 3/4" = 1'-0"



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E-mail: Jake@seadinc.com

TWIN ENVIRO ADDITION
20650 CO RD 205
MILNER, COLORADO
AN ADDITION FOR:
TWIN ENVIRO

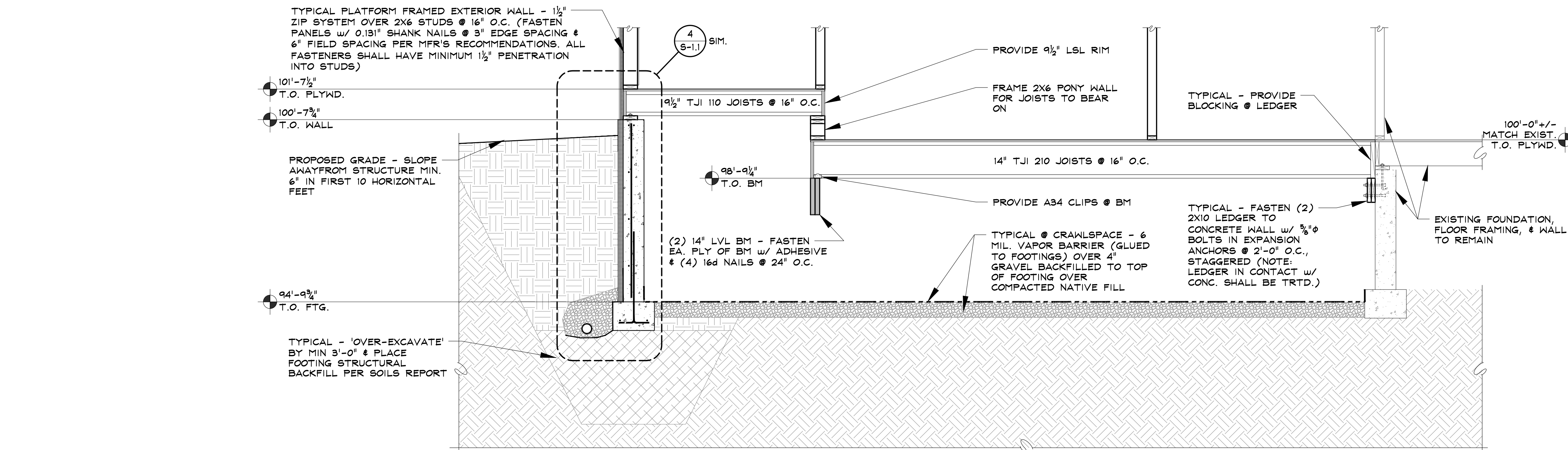
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DESIGN DEVELOPMENT	08 . 09 . 19
REVIEW SET	12 . 10 . 19
PERMIT SET	02 . 12 . 20

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REVIEWED BY: JEM
PROJECT # 19052

FOUNDATION SECTIONS

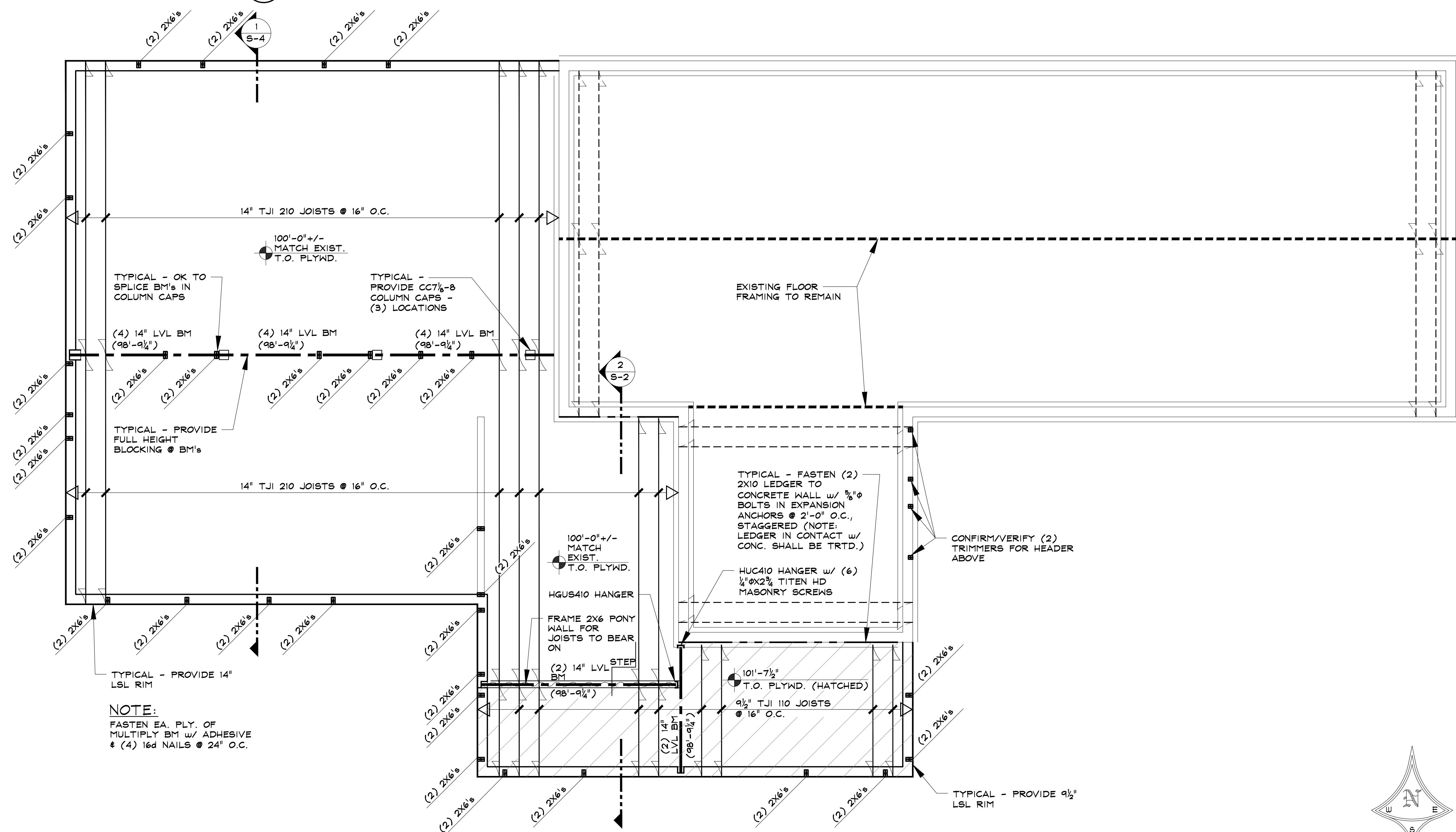
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SHEET 9 of 12

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2 MAIN LEVEL FRAMING SECTION

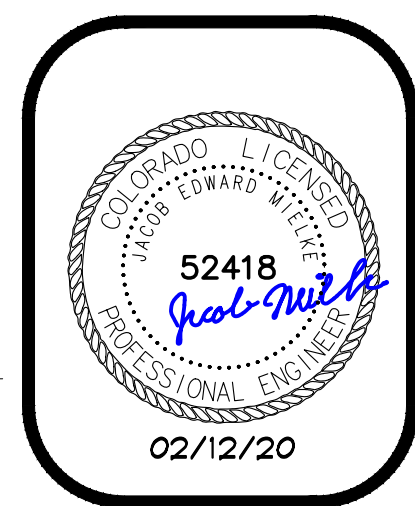
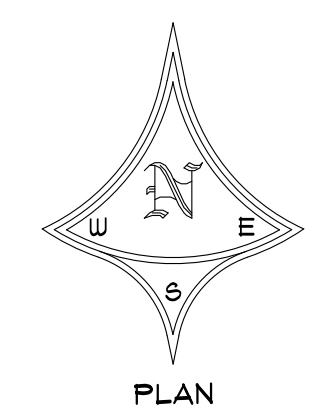
SCALE: ½" = 1'-0"



1 MAIN LEVEL FRAMING PLAN

TYPICAL - ¾" APA RATED EXPOSURE 1 T&G STURD-I-FLOOR SHEATHING
TYPICAL - ELEVATION @ TOP OF BEAM INDICATED THUS: (ELEV.)
TYPICAL - COLUMNS THAT BEGIN THIS LEVEL ARE INDICATED ON PLAN

SCALE: ¼" = 1'-0"



SEAD

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TWIN ENVIRO ADDITION

20650 CO Rd 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

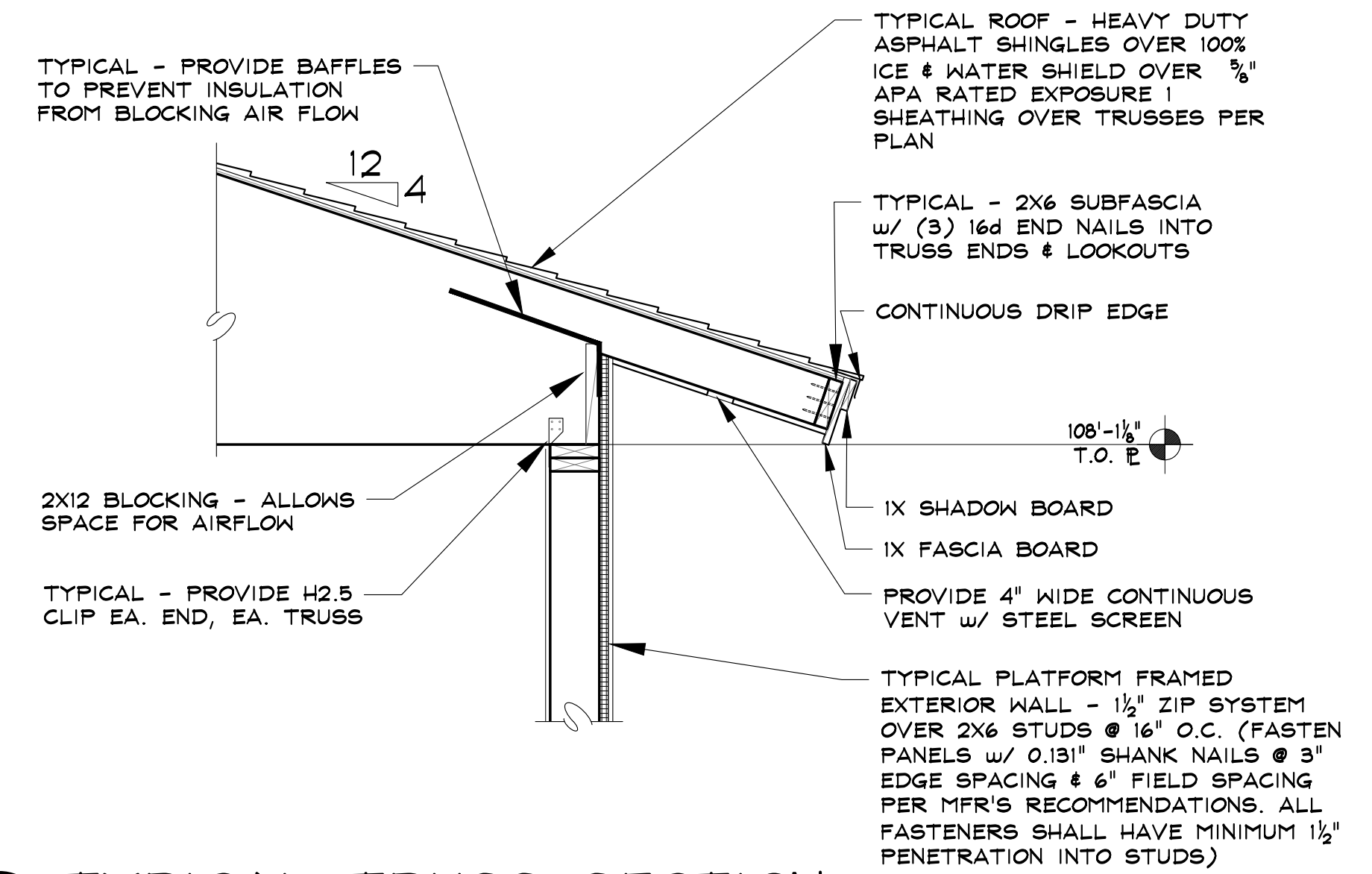
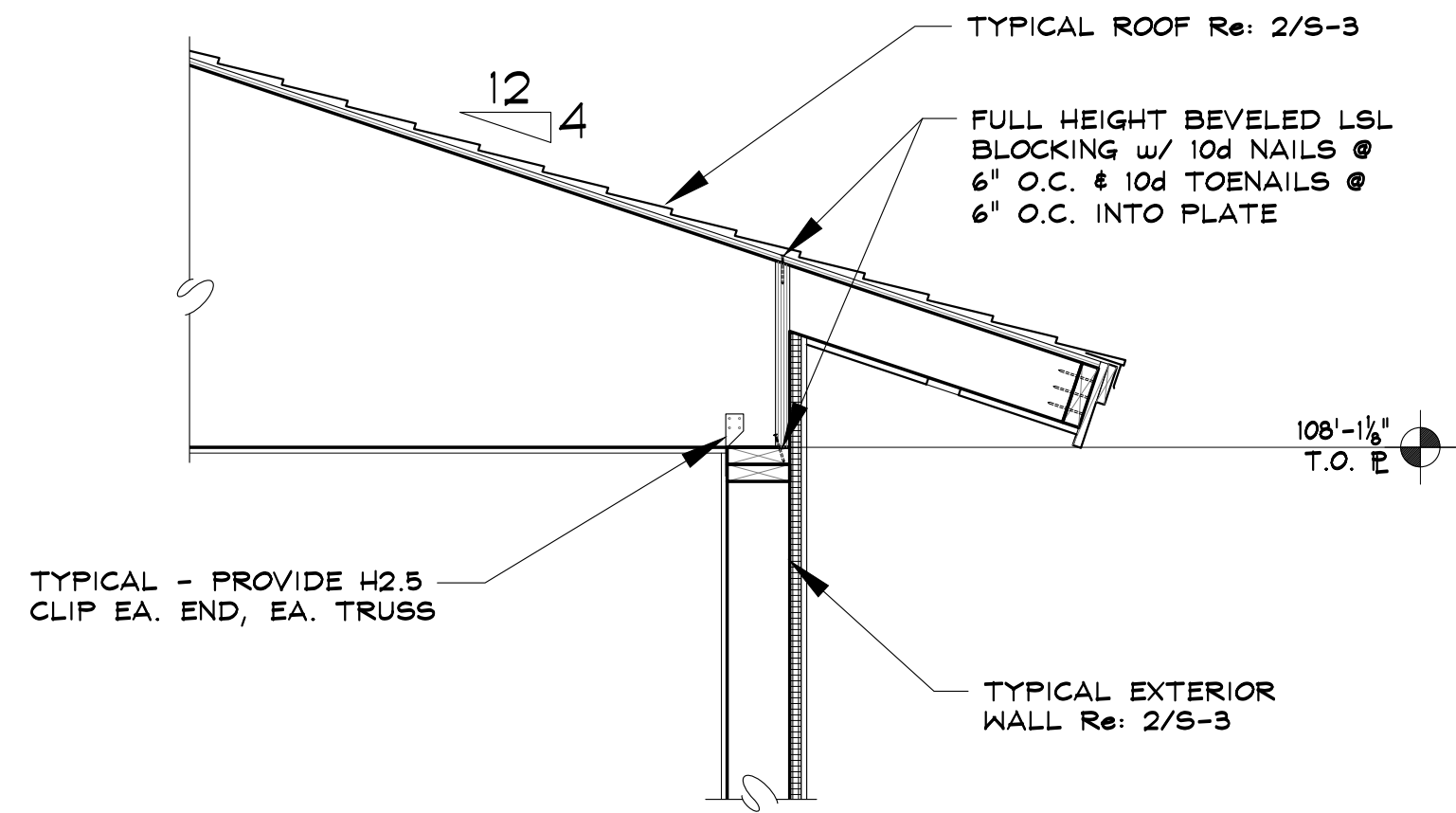
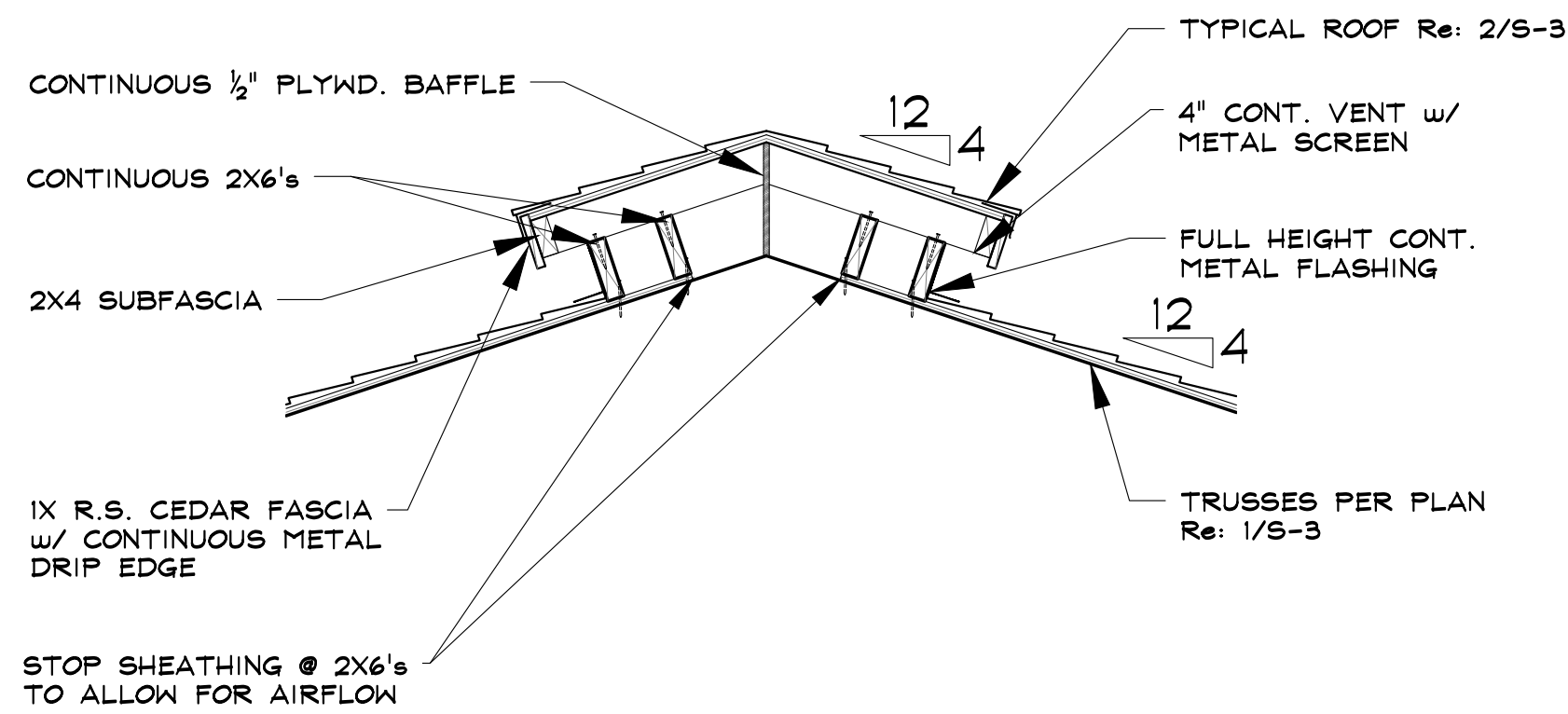
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REVIEWED BY: JEM
PROJECT # 19052

MAIN LEVEL FRAMING PLAN

S-2

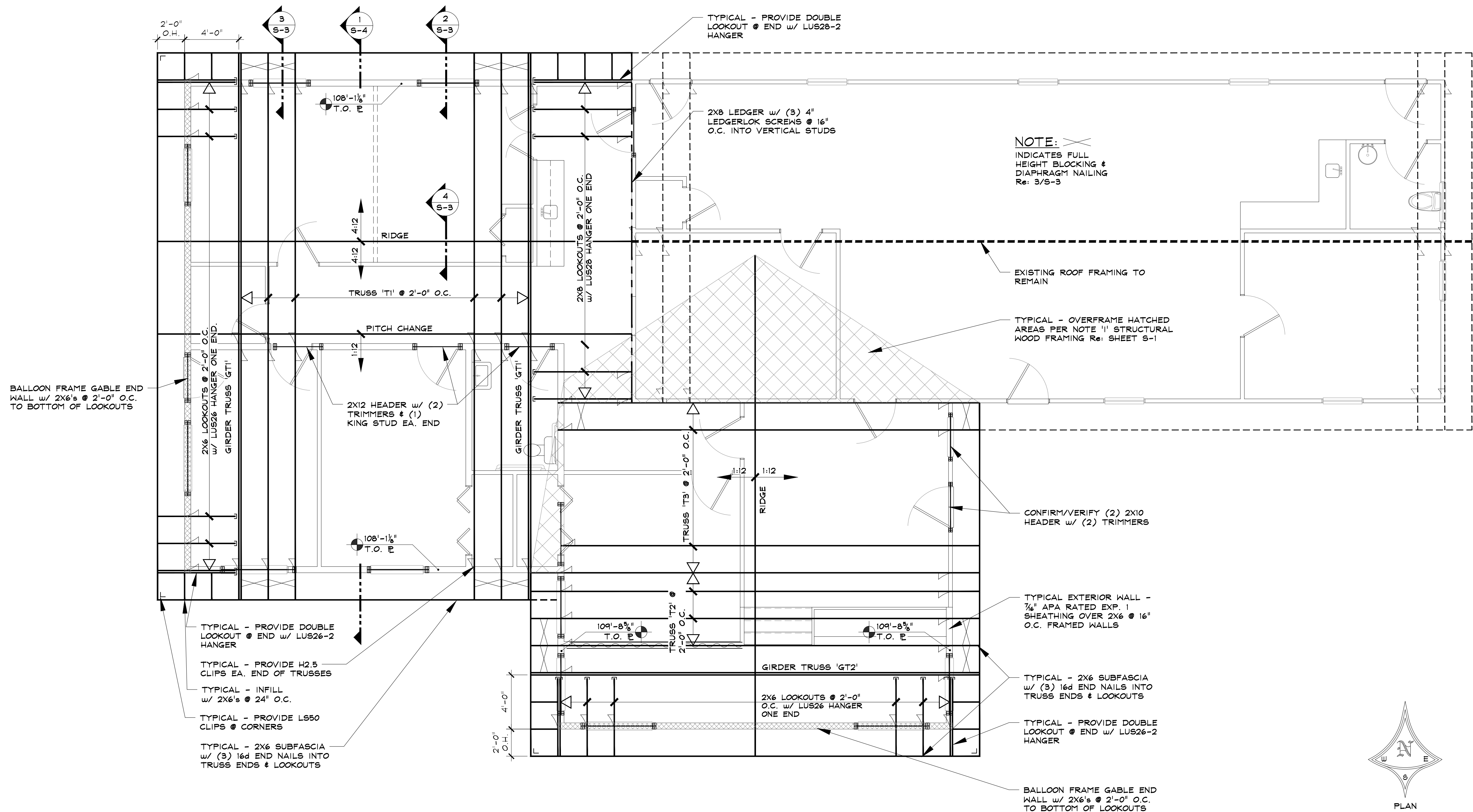
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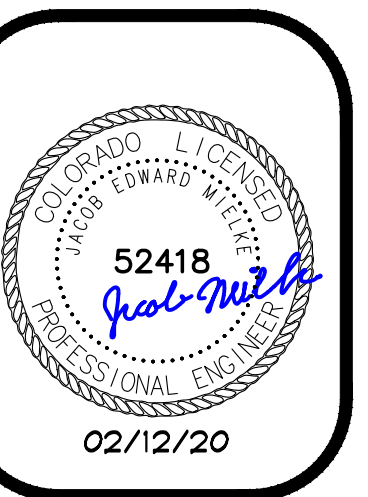
4 TYPICAL 'DOG-HOUSE' RIDGE VENT SCALE: 3/4" = 1'-0"

3 TRUSS w/ DIAPHRAGM BLOCKING SCALE: 3/4" = 1'-0"

2 TYPICAL TRUSS SECTION SCALE: 3/4" = 1'-0"



1 ROOF FRAMING PLAN
TYPICAL - 5/8" APA RATED EXPOSURE 1 40/20 SHEATHING
TYPICAL - ELEVATION @ TOP OF BEAMS INDICATED THUS: (ELEV.)
TYPICAL HEADER THIS PLAN - (2) 2X10's w/ (2) TRIMMER & (1) KING STUD EA. END, U.N.O.
Re: 2/S-4 FOR MANUFACTURED TRUSS SCHEMATICS



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TWIN ENVIRO ADDITION
20650 CO Rd 205
MILNER, COLORADO
AN ADDITION FOR:
TWIN ENVIRO

ISSUE DATES

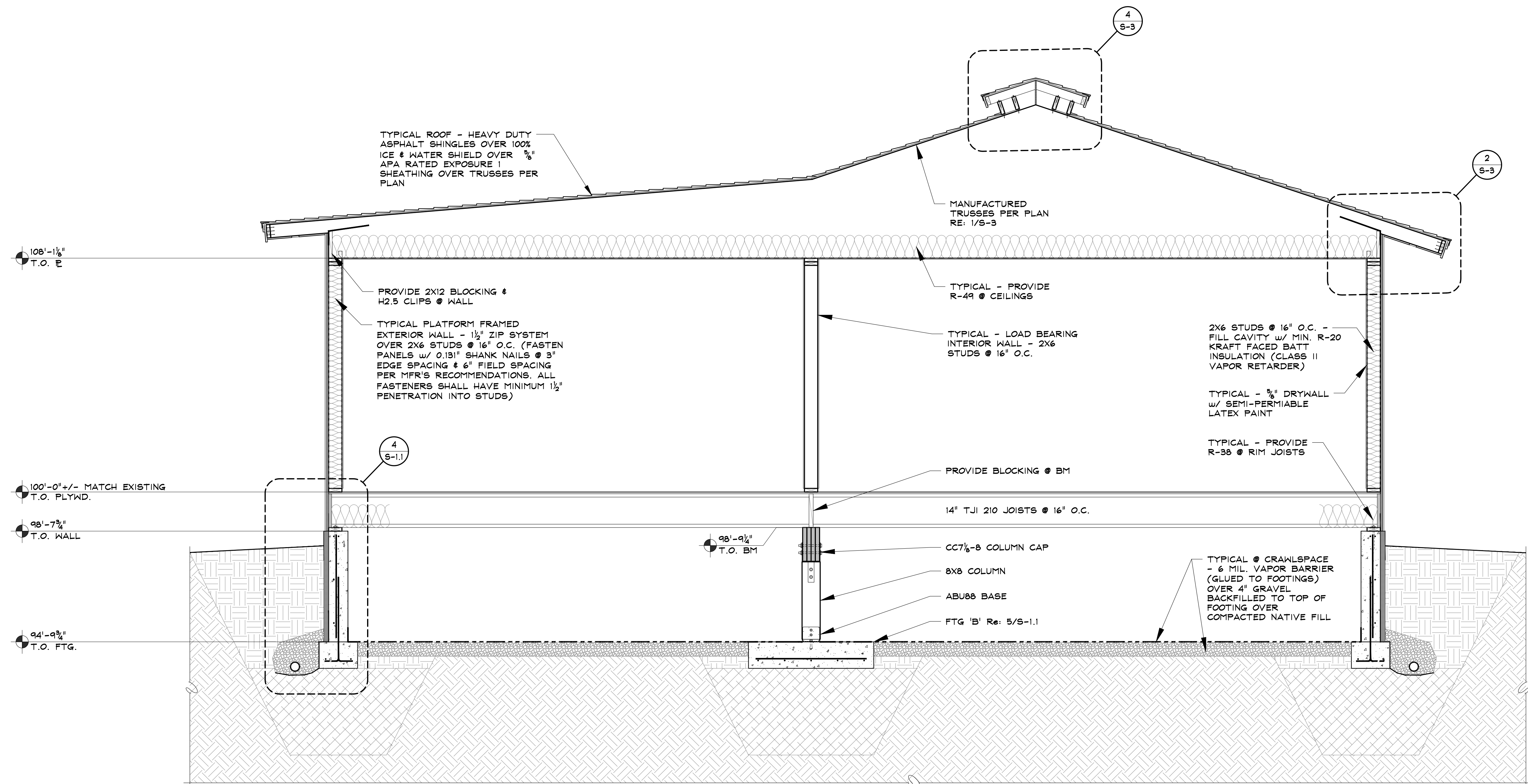
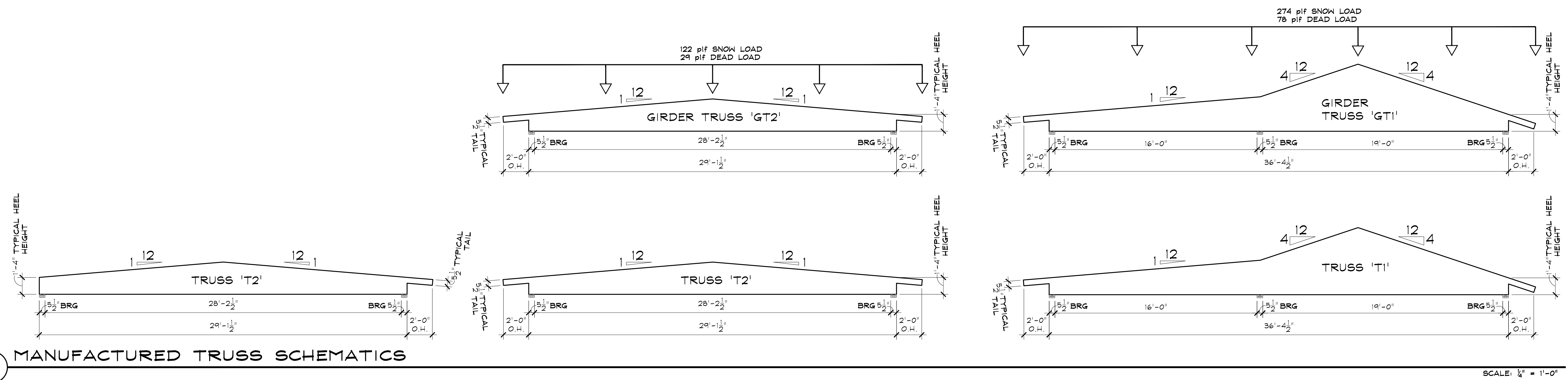
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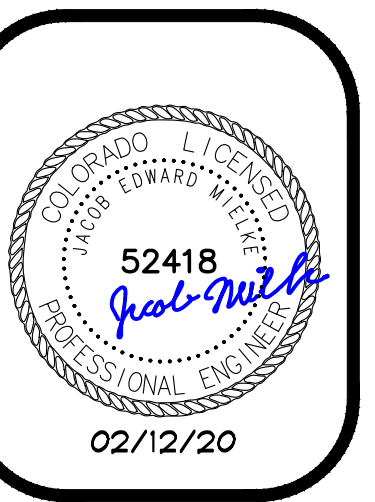
ROOF FRAMING
PLAN & SECTIONS

S-3

SHEET 11 of 12



SCALE: $\frac{1}{2}'' = 1'-0''$



TWIN ENVIRONMENT ADDITION

ISSUE DATES

DRAWN BY: RPM
REVIEWED BY: JEM
PROJECT # 19052

3-4

MECHANICAL GENERAL NOTES	
1.	DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH.
2.	ALL WORK SHALL CONFORM WITH ALL APPLICABLE BUILDINGS CODES, FIRE CODES, AND ALL AUTHORITIES HAVING JURISDICTION.
3.	THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR FOR SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS, AND PERFORMANCE.
4.	DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT, ARRANGEMENT, AND GENERAL EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS SHOP DRAWINGS. WHERE ALTERNATIVE ROUTING, OFFSETS, AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL OTHER TRADES, THIS CONTRACTOR SHALL FIELD COORDINATE WITH ALL OTHER TRADES, AND SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
5.	CONTRACTOR SHALL CLOSELY COORDINATE NEW MECHANICAL WORK WITH ALL NEW AND EXISTING MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL, AND STRUCTURAL MEMBERS. RELOCATE EXISTING MECHANICAL, PLUMBING AND FIRE PROTECTION WORK AS REQUIRED TO ACCOMMODATE ALL NEW WORK (ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM, LOW VOLTAGE, AV, ETC.
6.	ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION UNLESS SPECIFICALLY DIRECTED OTHERWISE.
7.	COORDINATE ALL DIFFUSER AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, FIRE PROTECTION AND ELECTRICAL DRAWINGS.
8.	INSTALL CONDENSATE DRAINS FOR ALL COOLING COILS WITH TRAP DEPTH EQUAL TO 1.5 TIMES THE UNIT'S TOTAL STATIC PRESSURE. DISCHARGE CONDENSATE TO FLOOR SINK/FLOOR DRAIN UNLESS NOTED OTHERWISE.
9.	ALL ROOF WORK SHALL BE PER THE ROOFING MANUFACTURE'S INSTALLATION INSTRUCTIONS TO MAINTAIN THE EXISTING ROOF WARRANTY.
10.	CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION AND INSTALLING SLEEVES, INSERTS AND SUPPORTS AS REQUIRED FOR THIS SCOPE OF WORK AND/OR CORE DRILL REQUIREMENTS. COORDINATE WITH GENERAL CONTRACTOR AND STRUCTURAL ENGINEER AS REQUIRED.
11.	CONTRACTOR SHALL FIELD VERIFY ALL MECHANICAL ITEMS PRIOR TO SUBMITTING A BID.
12.	PROVIDE ACCESS PANELS IN HARD CEILINGS FOR ACCESS TO ALL MECHANICAL EQUIPMENT, FIRE DAMPERS, FIRE/SMOKE DAMPERS, ISOLATION VALVES, ETC. THIS SHALL INCLUDE ALL NEW MECHANICAL ITEMS REQUIRING ACCESS.
13.	PROVIDE REDLINE MARKUPS OF ANY FIELD CHANGES OR MODIFICATIONS ON THE CONSTRUCTION DOCUMENTS. REDLINE DRAWINGS SHALL BE REQUIRED WHETHER COORDINATION DRAWINGS ARE REQUIRED OR NOT.
14.	THE MECHANICAL DIAGRAMS SHALL BE INCORPORATED INTO THE ASSOCIATED WORK AND PROVIDE GENERAL GUIDANCE AS TO THE INSTALLATION INTENT WHETHER REFERENCED TO OR NOT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY COMPONENTS FOR A COMPLETE INSTALLATION, AND INSURE THAT ALL INSTALLATIONS ARE IN ACCORDANCE WITH THE EQUIPMENT'S MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
15.	COORDINATE AND VERIFY ACTUAL APPROVED EQUIPMENT DIMENSIONS PRIOR TO POURING CONCRETE EQUIPMENT PADS.
16.	WHERE PIPING AND/OR DUCTWORK IS TO BE REMOVED TO A POINT, IT SHALL BE CAPPED OFF AND PROTECTED (WHERE APPLICABLE) FOR CONNECTION TO NEW WORK. INSULATION ON EXISTING PIPING AND DUCTWORK SHALL BE REPAIRED EQUAL TO NEW CONDITION.
17.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND PATCHING OF DAMAGED ARCHITECTURAL COMPONENTS TO REMAIN DURING THE REMOVAL OF THE DESIGNATED SYSTEMS. COORDINATE REPAIR WITH ARCHITECT.
18.	THE OWNER RESERVES FIRST CHOICE TO KEEP EXISTING EQUIPMENT AND MATERIALS. COORDINATE WITH OWNER AND DELIVER DESIGNATED EQUIPMENT AND MATERIALS REMOVED UNDER THIS CONTRACT TO OWNERS DESIGNATED STORAGE AREA.
19.	THE LOCATION AND CONDITION OF THE EXISTING PROPERTY AND MECHANICAL SYSTEMS WERE TAKEN FROM PREVIOUS CONSTRUCTION DRAWINGS, OBSERVED FIELD CONDITIONS, AND ASSUMED FIELD CONDITIONS. CERTAIN ASSUMPTIONS MAY BE MADE REGARDING EXISTING CONDITIONS BECAUSE THE ASSUMPTION MAY NOT BE VERIFIED WITHOUT DESTROYING THE EXISTING SPACE. CONTRACTOR SHALL VERIFY EXISTING SYSTEMS PRIOR TO SUBMITTING FINAL BIDS, FABRICATION, OR SUBMITTALS.

MECHANICAL LEGEND					
ALL SYMBOLS IN LEGEND MAY NOT BE USED ON THIS PROJECT.					
ABBREVIATIONS					
AD	ACCESS DOOR	FLA	FULL LOAD AMPS	P	PUMP
AFF	ABOVE FINISH FLOOR	FPM	FEET PER MINUTE	PCF	POUND PER CUBIC FOOT
AFMS	AIR FLOW MEASURING STATION	FPS	FEET PER SECOND	PD	PRESSURE DROP
AFUE	ANNUAL FUEL UTILIZATION	FT	FEET	PH	PHASE
	EFFICIENCY	GAL	GALLONS	PPM	PARTS PER MILLION
AHU (AH)	AIR HANDLING UNIT	GPH	GALLONS PER HOUR	PRV	PRESSURE REDUCING VALVE
AP	ACCESS PANEL	GPM	GALLONS PER MINUTE	PSI	POUND PER SQUARE INCH
BAS	BUILDING AUTOMATION SYSTEM	HD	HEAD	PSIA	POUND PER SQUARE INCH ABS.
BOD	BOTTOM OF DUCT	HP	HORSE POWER	PSIG	POUND PER SQUARE INCH GAUGE
BOP	BOTTOM OF PIPE	HR	HOUR	RA	RETURN AIR
BHP	BRAKE HORSE POWER	HZ	HERTZ	RH	RELATIVE HUMIDITY
BMS	BUILDING MANAGEMENT SYSTEM	IN	INCH	RPM	REVOLUTIONS PER MINUTE
BTU	BRITISH THERMAL UNIT	I.E.	INVERT ELEVATION	RTU	ROOFTOP UNIT
CFH	CUBIC FEET PER HOUR	KW	KILOWATT	SEER	SEASONAL ENERGY EFFICIENCY
CFM	CUBIC FEET PER MINUTE	KWH	KILOWATT-HOUR		RATIO
CO	CARBON MONOXIDE	LAT	LEAVING AIR TEMPERATURE	SA	SUPPLY AIR
CO2	CARBON DIOXIDE	LBS	POUNDS	SP	STATIC PRESSURE
COP	COEFFICIENT OF PERFORMANCE	LF	LINEAR FEET	SQ FT	SQUARE FEET
CU	CONDENSING UNIT	LWT	LEAVING WATER TEMPERATURE	TAB	TESTING AND BALANCING
CV	CONSTANT VOLUME	MAT	MIXED AIR TEMPERATURE	TDH	TOTAL DEVELOPED HEAD
CWP	CONDENSER WATER PUMP	MBH	1000 BRITISH THERMAL UNITS PER HOUR	TEL	TOTAL EQUIVALENT LENGTH
DB	DRY BULB TEMPERATURE			TSP	TOTAL STATIC PRESSURE
dB	DECIBEL	MCA	MINIMUM CIRCUIT AMPS	TYP	TYPICAL
DDC	DIRECT DIGITAL CONTROL	MERV	MINIMUM EFFICIENCY REPORTING VALUE	UNO	UNLESS NOTED OTHERWISE
DN	DOWN			UV	ULTRA VIOLET
DP	DIFFERENTIAL PRESSURE	MOCP	MAXIMUM OVER CURRENT PROTECTION	V	VOLT
DS	DUCT SUMP	NA	NOT APPLICABLE	VAV	VARIABLE AIR VOLUME
DX	DIRECT EXPANSION	NC	NORMALLY CLOSED	VD	VOLUME DAMPER (MANUAL)
(E)	EXISTING	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	VFD	VARIABLE FREQUENCY DRIVE
EA	EXHAUST AIR			VTR	VENT THRU ROOF
EAT	ENTERING AIR TEMPERATURE	NIC	NOT IN CONTRACT	WB	WET BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO	NO	NORMALLY OPEN	WC	WATER COLUMN
EFF	EFFICIENCY	NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE	WPD	WATER PRESSURE DROP
ESP	EXTERNAL STATIC PRESSURE	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED	(N)	NEW
ET	EXPANSION TANK			(E)	EXISTING
EWI	ENTERING WATER TEMPERATURE			(F)	FUTURE
*F	DEGREES FAHRENHEIT	OA	OUTSIDE AIR	(REL)	RELOCATED
FCU (FC)	FAN COIL UNIT				
SYMBOLS AND DESCRIPTIONS					
	EQUIPMENT DESIGNATION.		TERMINAL UNIT TAG		
	EXISTING DUCTWORK / PIPING TO REMAIN		REHEAT DESIGNATION		
	EXISTING DUCTWORK / PIPING TO BE REMOVED.		BOX DESIGNATION		
	SECTION REFERENCE NUMBER.		AHU OR MAU DESIGNATION		
	SECTION SHEET NUMBER		WORK NOTE DESIGNATION.		
			POINT OF CONNECTION.		
			HUMIDITY SENSOR		
			TEMPERATURE TRANSMITTER		
			CARBON DIOXIDE SENSOR.		
			OCCUPANCY SENSOR.		
SHEET METAL FITTINGS AND EQUIPMENT					
	SUPPLY AIR DIFFUSER		DUCT TRANSITION		
	RETURN AIR GRILLE		DUCT TRANSITION		
	EXHAUST AIR GRILLE		SQUARE TO ROUND DUCT TRANSITION		
	LINEAR SLOT DIFFUSER		AIRFLOW - SUPPLY		
	SUPPLY DUCT UP		AIRFLOW - RETURN OR EXHAUST		
	SUPPLY DUCT DOWN		MANUAL VOLUME DAMPER		
	RETURN DUCT UP		MANUAL VOLUME DAMPER WITH REMOTE OPERATION		
	RETURN DUCT DOWN		COMBINATION FIRE/SMOKE DAMPER.		
	EXHAUST DUCT UP		FIRE DAMPER.		
	EXHAUST DUCT DOWN		SMOKE DAMPER.		
			MOTORIZED CONTROL DAMPER		
PIPING DESIGNATIONS AND FITTINGS					
	HEATING WATER SUPPLY		ISOLATION VALVE		
	HEATING WATER RETURN		CHECK VALVE		
	HEAT RECOVERY SUPPLY		PLUG VALVE		
	HEAT RECOVERY RETURN		DYNAMIC VALVE		
	CHILLED WATER SUPPLY		TWO-WAY CONTROL VALVE		
	CHILLED WATER RETURN		THREE-WAY CONTROL VALVE		
	CONDENSER WATER SUPPLY		BALANCING VALVE		
	CONDENSER WATER RETURN		PRESSURE REDUCING VALVE		
	LOW PRESSURE STEAM		STRAINER		
	STEAM (CONDENSATE) RETURN		TEST PORT, UNION		
	REFRIGERANT LIQUID		THERMOMETER, PRESSURE GAUGE		
	REFRIGERANT SUCTION		WELL, MANUAL AIR VENT		
	REFRIGERANT HOT GAS		PIPE DOWN AND PIPE TEE DOWN		
	CONDENSATE DRAIN		PIPE UP AND PIPE TEE UP		
	PUMPED CONDENSATE DRAIN		PIPE CAP, BLIND FLANGE		
	RADIANT HEATING		PIPE ANCHOR, ALIGNMENT GUIDE		
	SNOWMELT				
	ARROW IN LINE INDICATES DIRECTION OF FLOW				
PIPING NOTATION					
XXX = GPM OF FLOW FOR PIPING					

MECHANICAL DRAWING INDEX					
SHEET NUMBER	SHEET TITLE	ISSUED FOR PERMIT			
		01/16/2020			
		ISSUED FOR PERMIT			
		ISSUED FOR REFERENCE ONLY			
		ISSUED FOR PERMIT			
		ISSUED FOR REFERENCE ONLY			
M0.0	MECHANICAL INDEX, LEGEND AND NOTES				
M0.1	MECHANICAL SCHEDULES				
M0.2	MECHANICAL SPECIFICATIONS				
M0.3	MECHANICAL DIAGRAMS				
M1.0	CRAWLSPACE PLAN - MECHANICAL				
M1.1	MAIN FLOOR PLAN - MECHANICAL				
TOTAL:		6			

DESIGN DATA				
LOCATION:	MILNER, CO ALTITUDE: 6730 FT DENSITY RATIO: 0.781			
ASHRAE CLIMATE ZONE:	7			
OUTDOOR CONDITIONS:	SUMMER	DESIGN DB =	88 °F	
	WINTER	COINCIDENT WB = DESIGN DB =	62 °F -21 °F	
INDOOR CONDITIONS:	SUMMER	DESIGN DB =	75 °F	
	WINTER	DESIGN DB =	70 °F	
CODES:	2015 INTERNATIONAL BUILDING CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2015 IECC ALL APPLICABLE LOCAL AMENDMENTS			
VENTILATION:	PER ASHRAE 62.1 AND 2015 IMC.			
ENVELOPE CHARACTERISTICS:	REFERENCE ARCHITECTURAL PLANS.			

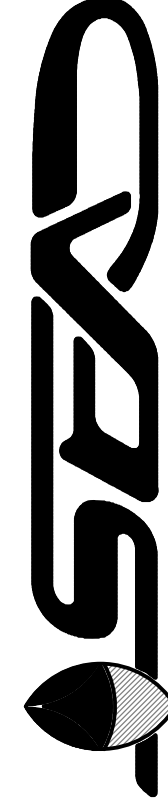
TWIN ENVIRO ADDITION

2065 CO ROAD 205

MILNER, COLORADO

AN ADDITION FOR:

TWIN ENVIRO



Steamboat Engineering And Design, Inc.

2740 Acre Lane Suite 1E Steamboat Springs, CO 80487

Phone: 970. 871. 9101 Fax: 970. 871. 9089

E-mail: jake@seadinc.com

ISSUE DATES

PRELIMINARY SET
06 . 26 . 19
DESIGN DEVELOPMENT
08 . 09 . 19
REVIEW SET
12 . 10 . 19

DRAWN BY: RPM
REVIEWED BY: JEM
PROJECT # 19052

MECHANICAL
INDEX, LEGEND
AND NOTES

M0.0



1039 MAIN STREET
UNIT G
WINDSOR, CO 80550
(970) 460-7400
G2CE.COM
G2CE #2019092

FAN SCHEDULE																				
TAG	MANUF.	MODEL	LOCATION	SERVICE	FAN DATA						MOTOR DATA					SOUND POWER DATA	OPER. WEIGHT (LBS)	NOTES	ACCESSORIES	TAG
					AIR QTY. (CFM)	ESP ("W.C.)	FEG	TYPE	RPM	MOUNT	DRIVE	HP	VOLTS/ø	VFD	E- POWER					
EF-1	COOK	GC-1'28	TOILET ROOM	TOILET ROOM	70	0.125	NA	CENTRIFUGAL	750	CEILING	DIRECT	25 WATT	120/1	N	N	0.9	20	A	1, 2	EF-1
NOTES: A) INTERLOCK OPERATION WITH LIGHTS.									ACCESSORIES: 1) FACTORY PROVIDED DISCONNECT SWITCH MOUNTED OUTSIDE OF FAN HOUSING, 2) FAN SPEED CONTROLLER.											

DIFFUSER, GRILLE AND REGISTER SCHEDULE

TAG	MANUF	MODEL	SYSTEM	SIZE	DESCRIPTION	CONSTRUCTION	OBD	FINISH	NOTES
A	HART & COOLEY	411	SUPPLY	VARIES	WELDED DIFFUSION VANES, MULTI-ANGLE FIN SETTING, FOOT-PERATED DIAL CONTROL	STEEL	Y	1, 2	A, B, C, D
B	HART & COOLEY	265	RETURN	VARIES	RIGID, SMOOTH SURFACE, 75% FREE AREA	STEEL	N	1, 2	A, B, C, D
FINISHES: 1) FACTORY FINISH STANDARD OFF WHITE. 2) DIFFUSER TO BE FIELD PAINTED, COLOR TO BE DETERMINED BY ARCHITECT.					NOTES: A) SEE DRAWINGS FOR NECK SIZE AND AIR QUANTITY. B) PROVIDE FRAME COMPATIBLE WITH CEILING TYPE. C) REFERENCE ARCHITECTURAL PLANS FOR FINAL DIFFUSER LOCATIONS. D) PROVIDE SQUARE-TO-ROUND TRANSITION AT DIFFUSER CONNECTION AS REQUIRED.				

FURNACE / COOLING COIL SCHEDULE

TAG	MANUF.	MODEL	SERVICE	CONFIGURATION	HEATING		COOLING COIL SIZE (NOMIAL TONS)	AIR QUANTITIES			ELECTRICAL DATA			WEIGHT (LBS)	NOTES
					INPUT (MBH)	EFFICIENCY		SUPPLY AIR (CFM)	ESP ("WC)	OUTSIDE AIR (CFM)	VOLTAGE / PHASE	MCA	MOCP		
F-1/ CC-1	CARRIER	FUR: - 59SC5B040E14 COIL: - CAPMP2414	CONFERENCE ROOM	HORIZONTAL	40	95%	2.0	600	0.5	130	120/1	9.7	15	200	1, 2, 3, 4
F-2/ CC-2	CARRIER	FUR: -59SC5060E14 COIL: - CNPVP3614	OFFICES	HORIZONTAL	60	95%	3.0	1100	0.5	100	120/1	9.8	15	225	1, 2, 3, 4
NOTES: 1) PROVIDE WITH WALL MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT. 2) PROVIDE WITH CONCENTRIC VENT KIT FOR DIRECT VENTING OF COMBUSTION AND FLUE. 3) PROVIDE CONDENSATE DRAIN PIPE TO NEAREST FLOOR DRAIN/FLOOR SINK. 4) FUEL - LP GAS. PROVIDE GAS CONVERSION COMPONENTS.															

SPLIT CONDENSING UNIT SCHEDULE

TAG	MANUF.	MODEL	LOCATION	SERVICE	AMBIENT TEMP	NOMINAL COOLING CAPACITY (MBH)	SEER	ELECTRICAL DATA			WEIGHT (LBS)	NOTES
								VOLTAGE / PHASE	MCA	MOCP		
CU-1	CARRIER	24ABB324	GRADE	CC-1	100 F	24.0	13	208/1	14.3	25	150	1, 2, 3
CU-2	CARRIER	24ABB336	GRADE	CC-2	100 F	36.0	13	208/1	18.1	30	175	1, 2, 3
NOTES: 1) PROVIDE WITH INSULATED REFRIGERANT LINE SETS INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. 2) HAIL GUARD. 3) LIQUID LINE SOLENOID VALVE AND SIGHT GLASS.												



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TWIN ENVIRO ADDITION

2065 CO ROAD 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

ISSUE DATES

PRELIMINARY SET
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PROJECT # 19052

MECHANICAL
SCHEDULES

M0.1

MECHANICAL DUCT SYSTEM NOTES						
1. DUCT SIZES AS INDICATED ON THE DRAWINGS ARE OUTSIDE SHEET METAL DIMENSIONS. WHERE DUCT LINER IS USED THE DUCTWORK DIMENSIONS ACCOMMODATE THE DUCT LINER.						
2. CONTRACTOR SHALL CONSTRUCT AND INSTALL DUCTWORK PER SMACNA STANDARDS.						
3. EXHAUST DUCTWORK CONNECTED TO COMMERCIAL OR RESIDENTIAL DRYERS SHALL HAVE A SMOOTH INTERIOR FINISH. DUCTS SHALL NOT BE JOINED WITH SCREWS OR SIMILAR FASTENERS THAT PROTRUDE INTO THE INSIDE OF THE DUCT.						
4. BRANCH DUCT CONNECTIONS TO DIFFUSERS SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE.						
5. SPIN-IN FITTINGS TO DIFFUSERS SHALL BE CONICAL TYPE (EXCEPT LOCATIONS WHERE LISTED DUCT HEIGHT DOES NOT ACCOMMODATE).						
6. DAMPERS: SINGLE BLADE TYPE VOLUME DAMPERS SHALL BE INSTALLED AT ALL DIFFUSER TAKEOFFS AND WHERE REQUIRED FOR PROPER BALANCING. HANDLE SHALL BE VISIBLE THROUGH INSULATION.						
7. REMOTE DAMPERS: PROVIDE A REMOTE DAMPER ACTUATOR FOR LOCATIONS WHERE DAMPERS ARE NOT ACCESSIBLE. WHERE REMOTE DAMPER ACTUATORS ARE PROVIDED, COORDINATE LOCATION OF REMOTE DAMPER ESCUTCHEON PLATE AND COVER WITH ARCHITECT.						
8. PROVIDE A MINIMUM 12" LONG RED RIBBON LOCATOR ON VOLUME DAMPER VALVE HANDLES.						
9. PROVIDE ACCESS DOOR IN DUCTWORK UPSTREAM OF EACH DUCT-MOUNTED COIL, HUMIDIFIER, SMOKE DETECTOR, AND COMBINATION FIRE/SMOKE DAMPER.						
10. SPIRAL EXPOSED DUCTWORK SHALL BE GALVANIZED SHEET STEEL SPIRAL. PROVIDE MILL PHOSPHATIZED FINISH THAT IS FREE FROM VISUAL IMPERFECTIONS, INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DENTS AND DISCOLORATIONS, INCLUDING THOSE THAT WOULD IMPAIR PAINTING.						
11. RECTANGULAR DUCT TURNS/ELBOWS: ALL 90 DEGREE ELBOWS SHALL BE LONG RADIUS ELBOWS OR SHALL HAVE TURNING VANES CONSISTING OF SINGLE BLADE DUCT VANES WITH 2-1/2 INCH BLADE SPACING.						
12. INSULATED FLEXIBLE DUCT MAY BE USED FOR THE CONNECTION TO SUPPLY AIR OUTLETS/DIFFUSERS PROVIDED THE FLEXIBLE CONNECTION DOES NOT EXCEED 6 LINEAR FEET IN LENGTH. INSTALL DUCTS FULLY EXTENDED. DO NOT INSTALL IN THE COMPRESSED STATE OR USE EXCESS LENGTH.						
DUCT SCHEDULE						
	MATERIAL	PRESSURE CLASS	MINIMUM SMACNA SEAL CLASS	SMACNA LEAKAGE CLASS FOR RECT.	SMACNA LEAKAGE CLASS FOR ROUND	DUCT SYSTEM NOTES
SUPPLY AND RETURN DUCTS						
UPSTREAM AND DOWNSTREAM OF FANS WITH LESS THAN 2" ESP	GALVANIZED STEEL	4-INCH WG	B	24	12	ALL EXTERIOR DUCTWORK TO BE SEAL CLASS A
EXHAUST DUCTS						
UPSTREAM AND DOWNSTREAM OF FANS WITH LESS THAN 2" ESP	GALVANIZED STEEL	2-INCH WG	B	24	12	
COMMERCIAL OR RESIDENTIAL DRYER EXHAUST	STAINLESS STEEL OR ALUMINUM	-	-	-	-	#3
INSULATION SCHEDULE						
	SYSTEM	LINER/WRAP	THICKNESS (IN)	DENSITY (LBS/FT3)	MINIMUM R-VALUE	NOTES
RECTANGULAR DUCTWORK UPSTREAM AND DOWNSTREAM OF FURNACES	SUPPLY	LINER	1"	1.5	R-4.2	
	RETURN	LINER	1"	1.5	R-4.2	
DUCTWORK IN UNCONDITIONED SPACE (VENTILATED ATTIC, BTWN ROOF, CRAWLSPACE AND INSULATED CEILING)	SUPPLY	WRAP	2"	0.75	R-6	WITH FSK FACING
	RETURN	WRAP	2"	0.75	R-6	WITH FSK FACING
DUCTWORK IN UNVENTILATED ATTIC (NO RA PLENUM)	SUPPLY	WRAP	2"	0.75	R-6	WITH FSK FACING
	RETURN	WRAP	2"	0.75	R-6	WITH FSK FACING
EXPOSED SPIRAL DUCT	SUPPLY/ RETURN	NONE	N/A	N/A	N/A	UNLESS NOTED ON PLANS
ALL OTHER SUPPLY DUCTWORK	SUPPLY	WRAP	1.5"	0.75	R-4.2	WITH FSK FACING
UNTREATED OUTSIDE AIR DUCT (ENCLOSED)	SUPPLY	WRAP	1.5"	0.75	R-4.2	WITH FSK FACING
	RETURN	WRAP	1.5"	0.75	R-4.2	WITH FSK FACING
TRANSFER DUCTS (AT FULL HEIGHT WALLS, RETURN BOOTIS, ETC.)	RETURN	LINER	1"	1.5	R-4.2	
ALL OTHER RETURN DUCTWORK WITHIN RA PLENUM	RETURN	NONE	N/A	N/A	N/A	
ALL EXHAUST DUCTWORK	EXHAUST	NONE	N/A	N/A	N/A	

MECHANICAL SPECIFICATIONS			
1. GENERAL	1.6.1 STORE AND PROTECT FROM DAMAGE EQUIPMENT AND MATERIALS DELIVERED TO JOB SITE. COVER WITH WATERPROOF, TEAR RESISTANT, HEAVY TARP OR POLYETHYLENE PLASTIC AS REQUIRED TO PROTECT FROM PLASTER, DIRT, PAINT, WATER, OR PHYSICAL DAMAGE. EQUIPMENT AND MATERIAL THAT HAS BEEN DAMAGED BY CONSTRUCTION ACTIVITIES WILL BE REJECTED, AND MECHANICAL CONTRACTOR IS OBLIGATED TO FURNISH NEW EQUIPMENT AND MATERIAL OF A LIKE KIND AS APPROVED BY OWNER.	1.6.2 KEEP PREMISES ROOM CLEAN FROM FOREIGN MATERIAL CREATED DURING WORK PERFORMED UNDER THIS CONTRACT. PIPING, EQUIPMENT, ETC., SHALL HAVE A NEAT AND CLEAN APPEARANCE AT THE TERMINATION OF THE WORK.	1.6.3 PLUG OR CAP OPEN ENDS OF DUCTWORK AND PIPING SYSTEMS WHILE STORED OR INSTALLED DURING CONSTRUCTION WHEN NOT IN USE TO PREVENT THE ENTRANCE OF DEBRIS INTO THE SYSTEMS.
1.1 MECHANICAL GENERAL REQUIREMENTS:	1.6.4 KEEP THE MANUFACTURER PROVIDED PROTECTIVE COVERINGS ON FLOOR DRAINS, FLOOR SINKS, AND TRENCH DRAINS DURING CONSTRUCTION. REMOVE COVERINGS AT THE TERMINATION OF THE WORK AND POLISH EXPOSED SURFACES.	1.7 OPERATION AND MAINTENANCE INSTRUCTIONS:	1.7.1 COLLECT AND COMPILE A COMPLETE BROCHURE OF FIXTURES, MATERIALS, AND EQUIPMENT FURNISHED AND INSTALLED ON THIS PROJECT. INCLUDE OPERATIONAL AND MAINTENANCE INSTRUCTIONS, MANUFACTURER'S CATALOG SHEETS, WIRING DIAGRAMS, PARTS LISTS, APPROVED SHOP DRAWINGS, AND DESCRIPTIVE LITERATURE FURNISHED BY THE MANUFACTURER. INCLUDE AN INSIDE COVER SHEET THAT LISTS THE PROJECT NAME, DATE, OWNER, ARCHITECT, ENGINEER, GENERAL CONTRACTOR, SUBCONTRACTOR, AND AN INDEX OF CONTENTS.
1.1.1 PROVIDE ALL ITEMS FOR COMPLETE AND SUCCESSFUL OPERATION OF ALL MECHANICAL SYSTEMS.	1.7.2 SUBMIT COPIES OF LITERATURE BOUND IN APPROVED BINDERS TO THE ARCHITECT AND OWNER AT THE TERMINATION OF THE WORK. PAPER CLIPS, STAPLES, RUBBER BANDS, AND MAILING ENVELOPES ARE NOT CONSIDERED APPROVED BINDERS. FINAL APPROVAL OF MECHANICAL AND PLUMBING SYSTEMS WILL BE WITHHELD UNTIL THIS EQUIPMENT BROCHURE IS DEEMED COMPLETE BY THE ARCHITECT, ENGINEER, AND OWNER.	1.8 WARRANTIES:	1.8.1 WARRANT EACH SYSTEM AND EACH ELEMENT THEREOF AGAINST ALL DEFECTS DUE TO FAULTY WORKMANSHIP, DESIGN OR MATERIAL FOR A PERIOD OF 12 MONTHS FROM DATE OF SUBSTANTIAL COMPLETION. UNLESS SPECIFIC ITEMS ARE NOTED TO CARRY A LONGER WARRANTY IN THE CONSTRUCTION DOCUMENTS OR MANUFACTURER'S STANDARD WARRANTY EXCEEDS 12 MONTHS. REMEDY ALL DEFECTS, OCCURRING WITHIN THE WARRANTY PERIOD(S), AS STATED IN THE GENERAL CONDITIONS AND DIVISION 1.
1.1.2 DEMONSTRATE THE OPERATION OF ALL SYSTEMS FOR THE OWNER AT A TIME AS DIRECTED BY THE OWNER.	1.8.2 WARRANTIES SHALL INCLUDE LABOR AND MATERIAL. MAKE REPAIRS OR REPLACEMENTS WITHOUT ANY ADDITIONAL COSTS TO THE OWNER.	1.9 CUTTING AND PATCHING:	1.9.1 PERFORM CUTTING OF WALLS, FLOORS, CEILINGS, ETC. AS REQUIRED TO INSTALL WORK UNDER THIS SECTION. OBTAIN PERMISSION FROM THE ARCHITECT PRIOR TO CUTTING. DO NOT CUT OR DISTURB STRUCTURAL MEMBERS WITHOUT PRIOR APPROVAL FROM THE ARCHITECT. CUT HOLES AS SMALL AS POSSIBLE. GENERAL CONTRACTOR SHALL PATCH WALLS, FLOORS, ETC. AS REQUIRED BY WORK UNDER THIS SECTION. PATCHING SHALL MATCH THE ORIGINAL MATERIAL AND CONSTRUCTION. REPAIR AND REFINISH AREAS DISTURBED BY WORK TO THE CONDITION OF ADJOINING SURFACES IN A MANNER SATISFACTORY TO THE ARCHITECT.
1.1.3 FIELD VERIFY ALL EXISTING CONDITIONS AND INCLUDE AN ALLOWANCE IN BID FOR REMOVAL AND/OR RELOCATION OF EXISTING PIPING, DUCTWORK, EQUIPMENT, ETC. AS INDICATED ON THE PLANS OR AS REQUIRED TO COORDINATE AND ADAPT NEW AND EXISTING SYSTEMS TO ALL OTHER WORK. CONTRACTORS SHALL VERIFY OPERATIONAL CONDITION OF ALL EQUIPMENT LOCATED WITHIN THE AREA PRIOR TO BEGINNING WORK. THE CONTRACTORS SHALL PREPARE A LIST OF DEFICIENCIES FOR THE PROPERTY MANAGER/OWNER PRIOR TO THE START OF CONSTRUCTION. THIS LIST SHALL ALSO INCLUDE ANY ITEMS THAT WERE NOT OR COULD NOT BE VERIFIED.	1.2 INSPECTION OF SITE:	1.10 ROUGH-IN:	1.10.1 COORDINATE WITHOUT DELAY ROUGH-IN WITH GENERAL CONSTRUCTION. CONCEAL PIPING AND CONDUIT ROUGH-IN EXCEPT IN UNFINISHED AREAS AND WHERE OTHERWISE SHOWN.
1.1.4 REPLACE ANY WORK OR MATERIAL INSTALLED OR FURNISHED UNDER THIS CONTRACT WHICH DEVELOPS DEFECTS, EXCEPT FOR NORMAL WEAR, WITHIN ONE (1) YEAR AFTER CERTIFICATE OF COMPLETION IS SECURED. RETURN DEFECTIVE MATERIALS TO OWNER.	1.2.1 PRIOR TO SUBMITTING BID, VISIT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO DO SO WILL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.	1.11 STRUCTURAL STEEL:	1.11.1 STRUCTURAL STEEL USED FOR PIPE SUPPORTS, EQUIPMENT SUPPORTS, ETC., SHALL BE NEW, CLEAN, AND CONFORM TO ASTM DESIGNATION A-36.
1.1.5 CONTRACTOR SHALL OBTAIN OWNER OR BUILDING MANAGEMENT APPROVAL BEFORE CUTTING ANY FLOOR PENETRATIONS.	1.2.2 INSPECTION OF SITE:	1.12 ACCESS DOORS:	1.12.1 PROVIDE ACCESS DOORS IN CEILINGS AND WALLS WHERE INDICATED OR REQUIRED FOR ACCESS TO CONCEALED VALVES AND EQUIPMENT INSTALLED UNDER THIS SECTION. PROVIDE CONCEALED HINGES, SCREWDRIVER-TYPE LOCK, ANCHOR STRAPS; MANUFACTURED BY MILCOR, ZURN, TITUS, OR EQUAL. OBTAIN ARCHITECT'S APPROVAL OF TYPE, SIZE, LOCATION, AND COLOR BEFORE ORDERING.
1.1.6 THE SPECIFICATIONS AND DRAWINGS FOR THE PROJECT ARE COMPLEMENTARY, AND PORTIONS OF THE WORK DESCRIBED IN ONE, SHALL BE PROVIDED AS IF DESCRIBED IN BOTH. IN THE EVENT OF DISCREPANCIES, NOTIFY THE ENGINEER AND/OR OWNER AND REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK INVOLVED.	1.3 MATERIAL AND WORKMANSHIP:	1.13 PENETRATIONS:	1.13.1 SEAL FLOOR, EXTERIOR WALL AND ROOF PENETRATIONS WATER AND WEATHER TIGHT WITH APPROPRIATE NON-SHRINK, NON-HARDENING COMMERCIAL CONSTRUCTION SEALANT. SEALROOF PENETRATIONS WITH 4 POUND PER SQUARE FOOT LEAD FLASHING. PROVIDE A SLEEVE, AND SEAL NON-FIRE-RATED FLOOR AND WALL PENETRATIONS WITH FIBERGLASS PACKING AND SILICONE CAULK (FOR ACUSTICAL INSULATION).
1.2 INSPECTION OF SITE:	1.3.1 PROVIDE NEW MATERIAL, EQUIPMENT, AND APPARATUS UNDER THIS CONTRACT UNLESS OTHERWISE STATED HEREIN. OF BEST QUALITY NORMALLY USED FOR THE PURPOSE IN GOOD COMMERCIAL PRACTICE, AND FREE FROM ANY DEFECTS. MODEL NUMBERS LISTED IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS ARE NOT NECESSARILY INTENDED TO DESIGNATE THE REQUIRED TRIM, WRITTEN DESCRIPTIONS OF THE TRIM GOVERN MODEL NUMBERS.	1.13.2 COORDINATE FIRE RATING REQUIREMENTS AND LOCATIONS WITH THE ARCHITECT. SEAL PENETRATIONS OF FIRE-RATED ASSEMBLIES WITH 3M # CP-25 FIRE BARRIER CAULK (PROVIDE THICKNESS AND METHOD AS REQUIRED AND RECOMMENDED BY MANUFACTURER) TO MAINTAIN THE FIRE RESISTANCE RATING OF FIRE-RATED ASSEMBLIES.	1.13.3 SEAL EXTERIOR WALL PENETRATIONS BELOW GRADE WITH CAST IRON WALL PIPES AND MODULAR MECHANICAL SLEEVE SEALS, MANUFACTURED BY THUNDERLINE/LINK SEAL, CALPICO, INC AND METRAFLEX.
1.2.1 PRIOR TO SUBMITTING BID, VISIT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO DO SO WILL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.	1.3.2 THE COMPLETE INSTALLATION SHALL FUNCTION AS DESIGNED AND INTENDED WITH RESPECT TO EFFICIENCY, CAPACITY, NOISE LEVEL, ETC. ABNORMAL NOISE CAUSED BY RATTLING EQUIPMENT, PIPING, DUCTS, AIR DEVICES, AND SQUEAKS IN ROTATING COMPONENTS WILL NOT BE ACCEPTABLE. IN GENERAL, MATERIALS AND EQUIPMENT SHALL BE OF COMMERCIAL SPECIFICATION GRADE IN QUALITY. LIGHT DUTY AND RESIDENTIAL TYPE EQUIPMENT WILL NOT BE ACCEPTED.	1.13.4 PROVIDE SLEEVES FOR HORIZONTAL PIPE PASSING THROUGH OR UNDER FOUNDATION. SLEEVES SHALL BE CAST IRON SOIL PIPE TWO NOMINAL PIPE SIZES LARGER THAN THE PIPE SERVED.	1.13.5 PROVIDE SLEEVES FOR VERTICAL PIPE PASSING THROUGH SLAB ON GRADE. SLEEVES SHALL BE SCHEDULE 40 PVC PIPE, TWO NOMINAL PIPE SIZES LARGER THAN THE PIPE SERVED. SEAL WATER-TIGHT WITH SILICONE CAULK.
1.2.2 INSPECTION OF SITE:	1.3.3 REMOVE FROM THE PREMISES WASTE MATERIAL PRESENT AS A RESULT OF WORK, INCLUDING CARTONS, CRATING, PAPER, STICKERS, AND/OR EXCAVATION MATERIAL NOT USED IN BACKFILLING, ETC. CLEAN EQUIPMENT INSTALLED UNDER THIS CONTRACT TO PRESENT A NEAT AND CLEAN INSTALLATION AT THE TERMINATION OF THE WORK.	1.14 AIR DISTRIBUTION:	1.14.1 PROVIDE ALL SHEET METAL DUCT SYSTEMS, CONNECTIONS, DAMPERS, HOUSINGS, SHEET METAL DOORS FOR THE COMPLETE SUPPLY, RETURN, AND EXHAUST SYSTEMS.
1.3 MATERIAL AND WORKMANSHIP:	1.3.4 REPAIR OR REPLACE PROPERTY DAMAGED AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT TO THE SATISFACTION OF AUTHORITIES AND REGULATIONS HAVING JURISDICTION.	1.6 PROTECTION OF EQUIPMENT AND MATERIALS:	
1.3.1 PROVIDE NEW MATERIAL, EQUIPMENT, AND APPARATUS UNDER THIS CONTRACT UNLESS OTHERWISE STATED HEREIN. OF BEST QUALITY NORMALLY USED FOR THE PURPOSE IN GOOD COMMERCIAL PRACTICE, AND FREE FROM ANY DEFECTS. MODEL NUMBERS LISTED IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS ARE NOT NECESSARILY INTENDED TO DESIGNATE THE REQUIRED TRIM, WRITTEN DESCRIPTIONS OF THE TRIM GOVERN MODEL NUMBERS.	1.4 COORDINATION:		
1.3.2 THE COMPLETE INSTALLATION SHALL FUNCTION AS DESIGNED AND INTENDED WITH RESPECT TO EFFICIENCY, CAPACITY, NOISE LEVEL, ETC. ABNORMAL NOISE CAUSED BY RATTLING EQUIPMENT, PIPING, DUCTS, AIR DEVICES, AND SQUEAKS IN ROTATING COMPONENTS WILL NOT BE ACCEPTABLE. IN GENERAL, MATERIALS AND EQUIPMENT SHALL BE OF COMMERCIAL SPECIFICATION GRADE IN QUALITY. LIGHT DUTY AND RESIDENTIAL TYPE EQUIPMENT WILL NOT BE ACCEPTED.	1.4.1 COORDINATE WORK WITH THAT OF OTHER TRADES SO THAT THE VARIOUS COMPONENTS OF THE SYSTEMS THAT ARE BEING INSTALLED AND/OR EXISTING SYSTEMS WILL BE INSTALLED AT THE PROPER TIME, WILL FIT THE AVAILABLE SPACE, AND WILL ALLOW PROPER SERVICE ACCESS TO THOSE ITEMS REQUIRING MAINTENANCE. COMPONENTS WHICH ARE INSTALLED WITHOUT REGARD TO THE ABOVE SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.		
1.3.3 REMOVE FROM THE PREMISES WASTE MATERIAL PRESENT AS A RESULT OF WORK, INCLUDING CARTONS, CRATING, PAPER, STICKERS, AND/OR EXCAVATION MATERIAL NOT USED IN BACKFILLING, ETC. CLEAN EQUIPMENT INSTALLED UNDER THIS CONTRACT TO PRESENT A NEAT AND CLEAN INSTALLATION AT THE TERMINATION OF THE WORK.	1.4.2 UNLESS OTHERWISE INDICATED, THE GENERAL CONTRACTOR WILL PROVIDE CHASES AND OPENINGS IN BUILDING CONSTRUCTION REQUIRED FOR INSTALLATION OF THE SYSTEMS SPECIFIED HEREIN. MECHANICAL CONTRACTOR SHALL FURNISH THE GENERAL CONTRACTOR WITH INFORMATION WHERE CHASES AND OPENINGS ARE REQUIRED, KEEP INFORMED AS TO THE WORK OF OTHER TRADES ENGAGED IN THE CONSTRUCTION OF THE PROJECT, AND EXECUTE WORK IN A MANNER AS TO NOT INTERFERE WITH OR DELAY THE WORK OF OTHER TRADES.		
1.3.4 REPAIR OR REPLACE PROPERTY DAMAGED AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT TO THE SATISFACTION OF AUTHORITIES AND REGULATIONS HAVING JURISDICTION.	1.4.3 FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALE DIMENSIONS. MECHANICAL CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AT THE BUILDING, AS VARIATIONS MAY OCCUR. MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ERRORS THAT COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION.		
1.4 COORDINATION:	1.4.4 MECHANICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR DUCTWORK LAYOUT TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.		
1.4.1 COORDINATE WORK WITH THAT OF OTHER TRADES SO THAT THE VARIOUS COMPONENTS OF THE SYSTEMS THAT ARE BEING INSTALLED AND/OR EXISTING SYSTEMS WILL BE INSTALLED AT THE PROPER TIME, WILL FIT THE AVAILABLE SPACE, AND WILL ALLOW PROPER SERVICE ACCESS TO THOSE ITEMS REQUIRING MAINTENANCE. COMPONENTS WHICH ARE INSTALLED WITHOUT REGARD TO THE ABOVE SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.	1.5 ORDINANCES AND CODES:		
1.4.2 UNLESS OTHERWISE INDICATED, THE GENERAL CONTRACTOR WILL PROVIDE CHASES AND OPENINGS IN BUILDING CONSTRUCTION REQUIRED FOR INSTALLATION OF THE SYSTEMS SPECIFIED HEREIN. MECHANICAL CONTRACTOR SHALL FURNISH THE GENERAL CONTRACTOR WITH INFORMATION WHERE CHASES AND OPENINGS ARE REQUIRED, KEEP INFORMED AS TO THE WORK OF OTHER TRADES ENGAGED IN THE CONSTRUCTION OF THE PROJECT, AND EXECUTE WORK IN A MANNER AS TO NOT INTERFERE WITH OR DELAY THE WORK OF OTHER TRADES.	1.5.1 WORK PERFORMED UNDER THIS CONTRACT SHALL, AT A MINIMUM, BE IN CONFORMANCE WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES HAVING JURISDICTION. EQUIPMENT FURNISHED AND ASSOCIATED INSTALLATION WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN STRICT COMPLIANCE WITH CURRENT APPLICABLE CODES ADOPTED BY THE LOCAL AHJ INCLUDING ANY AMENDMENTS AND STANDARDS AS SET FORTH BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), UNDERWRITERS LABORATORIES (UL), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME), AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS (ASHRAE), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AMERICAN SOCIETY OF TESTING MATERIALS (ASTM) AND OTHER NATIONAL STANDARDS AND CODES WHERE APPLICABLE. WHERE THE CONTRACT DOCUMENTS EXCEED THE REQUIREMENTS OF THEIR REFERENCED CODES, STANDARDS, ETC., THE CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE.		
1.4.3 FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALE DIMENSIONS. MECHANICAL CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AT THE BUILDING, AS VARIATIONS MAY OCCUR. MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ERRORS THAT COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION.	1.5.2 PROCURE AND PAY FOR PERMITS AND LICENSES REQUIRED FOR THE ACCOMPLISHMENT OF THE WORK HEREIN DESCRIBED. WHERE REQUIRED, OBTAIN, PAY FOR AND FURNISH CERTIFICATES OF INSPECTION TO OWNER. MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR VIOLATIONS OF THE LAW.		
1.4.4 MECHANICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR DUCTWORK LAYOUT TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.			



ISSUE DATES	
PRELIMINARY SET	06 . 26 . 19
DESIGN DEVELOPMENT	08 . 09 . 19
REVIEW SET	12 . 10 . 19

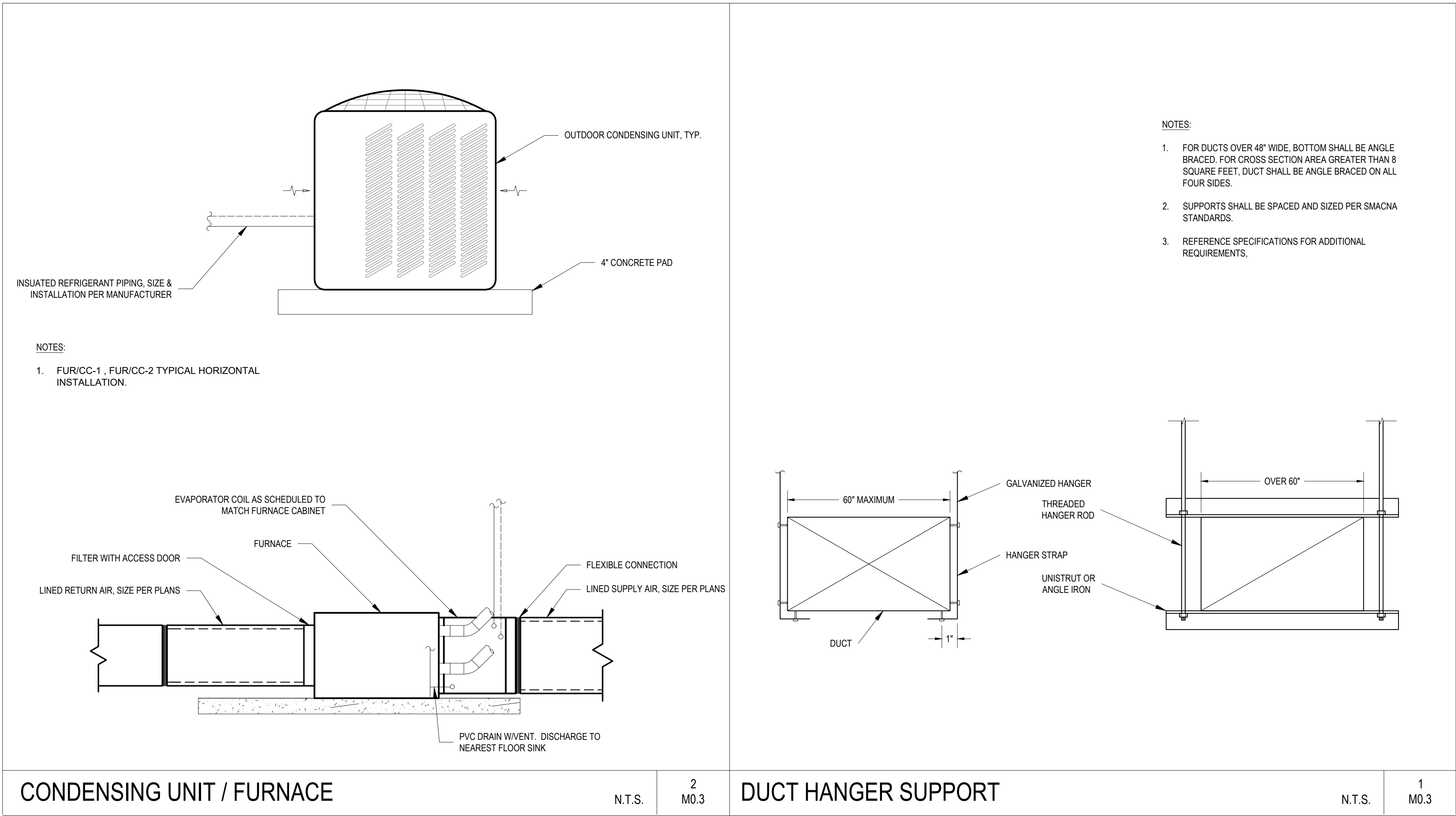
DRAWN BY: RPM
REVIEWED BY: JEM
PROJECT # 19052

CONSULTING ENGINEERS, INC.

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G2CE #2019092

MECHANICAL SPECIFICATIONS

M0.2



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TWIN ENVIRO ADDITION

2065 CO ROAD 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

ISSUE	DATES
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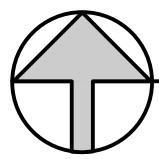
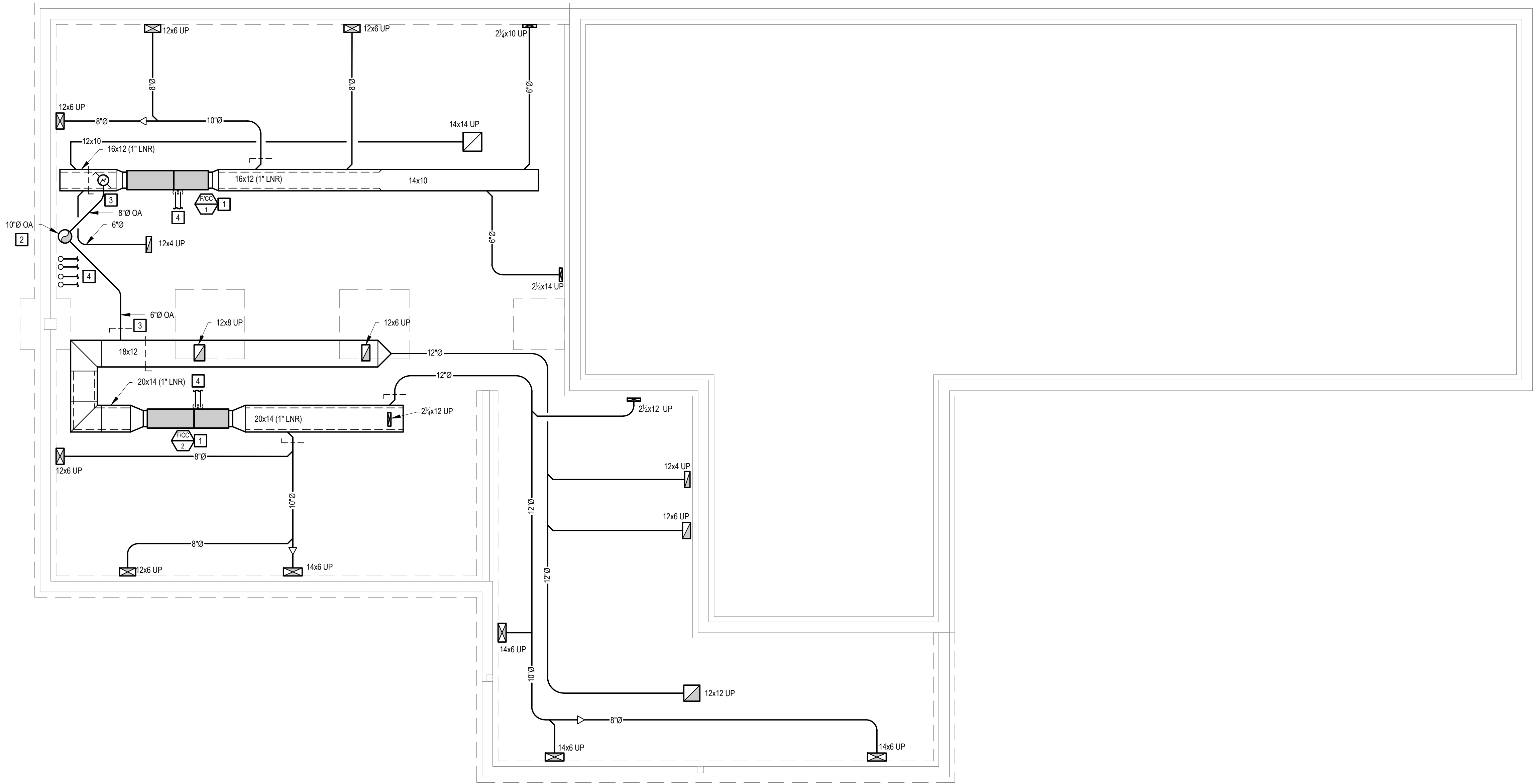
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PROJECT # 19052

MECHANICAL
DIAGRAMS

M0.3

WORK NOTES: [A]

1. INSTALL FURNACE IN THE HORIZONTAL POSITION PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE 3/4" CONDENSATE DRAIN PIPE, ROUTE TO NEAREST FLOOR DRAIN. TYPICAL.
2. 10"Ø OA DUCT UP THROUGH FLOOR FROM CRAWLSPACE.
3. PROVIDE MANUAL BALANCING DAMPER IN OA DUCT AND BALANCE TO SCHEDULE CFM. REFER TO PROJECT DRAWING M0.1. TYPICAL.
4. PROVIDE FURNACE INTAKE AND VENT PIPING. ROUTE FROM FURNACE, UP THROUGH FLOOR TO MAIN LEVEL. OFFSET PIPING AS REQUIRED. COORDINATE FINAL LOCATION WITH STRUCTURE AND ARCHITECT.



CRAWLSPACE PLAN - MECHANICAL

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



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CRAWLSPACE
PLAN -
MECHANICAL

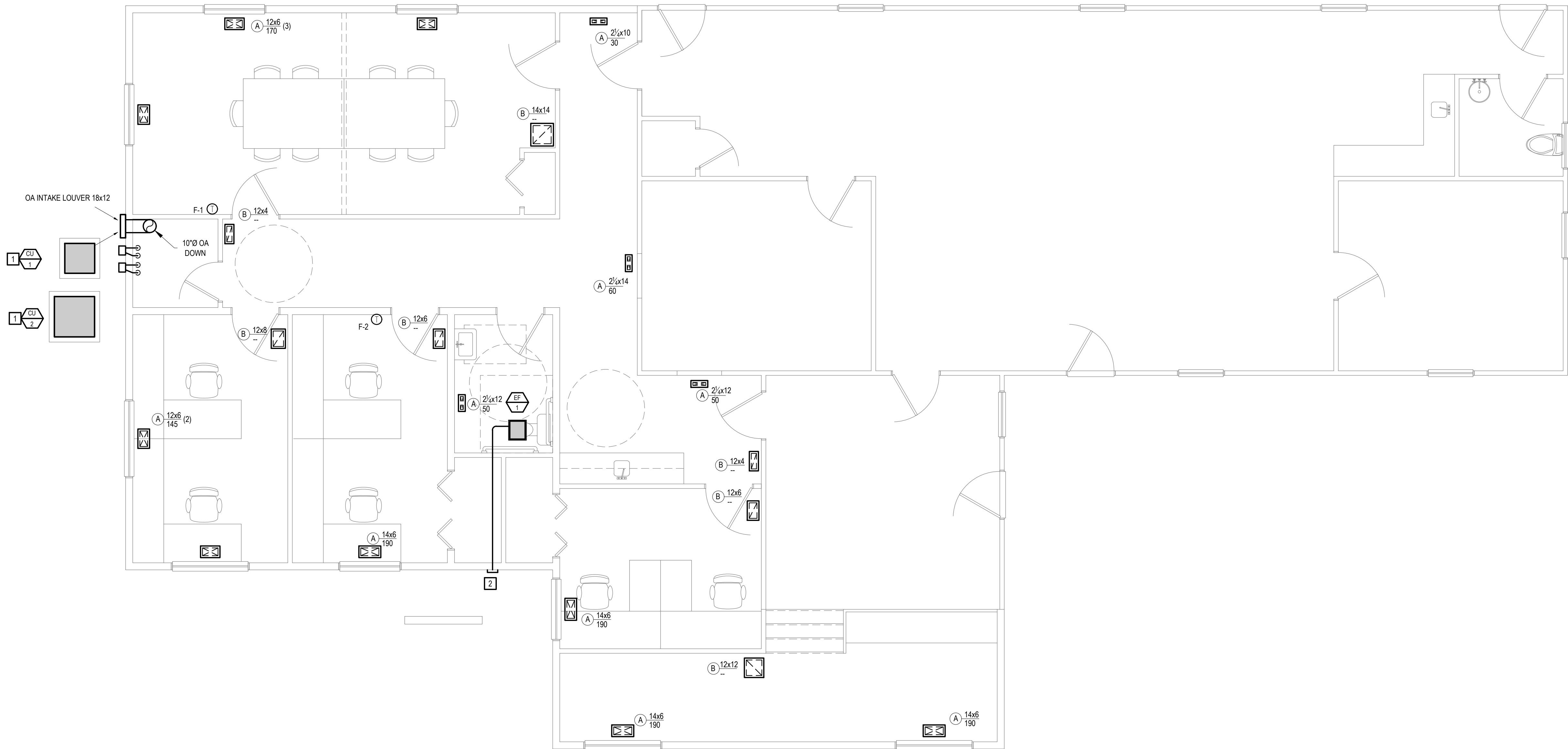
M1.0



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WORK NOTES: [A]

1. INSTALL CONDENSING UNIT ON MINIMUM 4" CONCRETE HOUSEKEEPING PAD. EQUIPMENT AND PIPING INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE FINAL UNIT LOCATIONS WITH ARCHITECT/OWNER.
2. INSTALL CEILING MOUNTED EXHAUST FAN PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE 6" Ø EA DUCT, ROUTE DUCT HORIZONTALLY THROUGH SIDEWALL TO MANUFACTURER'S APPROVED WALL CAP. COORDINATE FINAL DUCT ROUTE WITH STRUCTURE AND ARCHITECT.



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



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TWIN ENVIRO ADDITION
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MAIN FLOOR PLAN - MECHANICAL

M1.1

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PLUMBING GENERAL NOTES

1. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH.
2. THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR FOR SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS, AND PERFORMANCE.
3. ALL WORK SHALL CONFORM WITH ALL APPLICABLE BUILDINGS CODES, FIRE CODES, AND ALL AUTHORITIES HAVING JURISDICTION.
4. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT, ARRANGEMENT, AND GENERAL EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS SHOP DRAWINGS. WHERE ALTERNATIVE ROUTING, OFFSETS, AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL OTHER TRADES, THIS CONTRACTOR SHALL PROVIDE FIELD COORDINATION OF ALL OTHER TRADES, THIS CONTRACTOR SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
5. CONTRACTOR SHALL CLOSELY COORDINATE NEW PLUMBING WORK WITH ALL NEW AND EXISTING MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL, AND STRUCTURAL MEMBERS. RELOCATE EXISTING MECHANICAL, PLUMBING AND FIRE PROTECTION WORK AS REQUIRED TO ACCOMMODATE ALL NEW WORK (ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM, LOW VOLTAGE, AV, ETC.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION AND INSTALLING SLEEVES, INSERTS AND SUPPORTS AS REQUIRED FOR THIS SCOPE OF WORK AND/OR CORE DRILL REQUIREMENTS. COORDINATE WITH GENERAL CONTRACTOR AND STRUCTURAL ENGINEER AS REQUIRED.
7. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION UNLESS SPECIFICALLY DIRECTED OTHERWISE.
8. THE PLUMBING DIAGRAMS SHALL BE INCORPORATED INTO THE ASSOCIATED WORK AND PROVIDE GENERAL GUIDANCE AS TO THE INSTALLATION INTENT WHETHER REFERENCED TO OR NOT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY COMPONENTS FOR A COMPLETE INSTALLATION, AND INSURE THAT ALL INSTALLATIONS ARE IN ACCORDANCE WITH THE EQUIPMENT'S MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
9. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND INVERT ELEVATIONS OF ALL EXISTING UTILITIES AT THE SITE PRIOR TO THE INSTALLATION OF ANY PIPING SYSTEMS.
10. ALL SANITARY SEWER PIPING 3" AND LARGER SHALL SLOPE AT 1% OR 1/8" PER FOOT, UNLESS NOTED OTHERWISE. ALL SANITARY SEWER PIPING 2" AND SMALLER SHALL SLOPE AT 2% OR 1/4" PER FOOT.
11. ALL WALL AND FLOOR CLEAN OUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEAN OUTS SERVING 5" AND 6" PIPE SYSTEMS SHALL BE 4". CLEAN OUTS SERVING 8" PIPING SYSTEMS SHALL BE 6". CLEAN OUTS SERVING, 10" AND LARGER, SHALL BE 8".
12. ALL ROOF WORK SHALL BE PER THE ROOFING MANUFACTURE'S INSTALLATION INSTRUCTIONS TO MAINTAIN THE EXISTING WARRANTY.
13. PROVIDE TEMPERING VALVES FOR ALL LAVATORIES AND HAND WASHING SINKS. TEMPERING VALVES SHALL CONFORM WITH ASSE 1070 (POWERS MODEL LFG480 OR EQUIVALENT).
14. PROVIDE WATER HAMMER ARRESTERS AT ALL QUICK CLOSING VALVES WITH ISOLATION VALVE AND WITH ACCESS OR ACCESS PANEL.
15. PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALLS FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THIS SHALL INCLUDE ALL NEW AND EXISTING PLUMBING ITEMS REQUIRING ACCESS.
16. PROVIDE REDLINE MARKUPS OF ANY FIELD CHANGES OR MODIFICATIONS ON THE CONSTRUCTION DOCUMENTS. REDLINE DRAWINGS SHALL BE REQUIRED WHETHER COORDINATION DRAWINGS ARE REQUIRED OR NOT.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND PATCHING OF DAMAGED ARCHITECTURAL COMPONENTS TO REMAIN DURING THE REMOVAL OF THE DESIGNATED SYSTEMS. COORDINATE REPAIR WITH ARCHITECT.

PLUMBING LEGEND					
ALL SYMBOLS IN LEGEND MAY NOT BE USED ON THIS PROJECT.					
ABBREVIATIONS					
AD	ACCESS DOOR	HR	HOUR	PD	PRESSURE DROP
AFF	ABOVE FINISH FLOOR	HZ	HERTZ	PH	PHASE
APP	ACCESS PANEL	IN	INCH	PRV	PRESSURE REDUCING VALVE
BAS	BUILDING AUTOMATION SYSTEM	I.E.	INVERT ELEVATION	PSI	POUND PER SQUARE INCH
BOP	BOTTOM OF PIPE	KW	KILOWATT	PSIA	POUND PER SQUARE INCH ABS.
BHP	BRAKE HORSE POWER	KWH	KILOWATT-HOUR	PSIG	POUND PER SQUARE INCH GAUGE
BMS	BUILDING MANAGEMENT SYSTEM	LBS	POUNDS	RPM	REVOLUTIONS PER MINUTE
BTU	BRITISH THERMAL UNIT	LF	LINEAR FEET	SQ FT	SQUARE FEET
CFH	CUBIC FEET PER HOUR	LWT	LEAVING WATER TEMPERATURE	TAB	TESTING AND BALANCING
CFM	CUBIC FEET PER MINUTE	MHT	1000 BRITISH THERMAL UNITS PER HOUR	TDH	TOTAL DEVELOPED HEAD
CP	CONDENSATE PUMP	MBH	THOUSAND BTU PER HOUR	TEL	TOTAL EQUIVALENT LENGTH
DN	DOWN	MCA	MINIMUM CIRCUIT AMPS	TYP	TYPICAL
(E)	EXISTING	MOCPP	MAXIMUM OVER CURRENT PROTECTION	UNO	UNLESS NOTED OTHERWISE
ET	EXPANSION TANK	NA	NOT APPLICABLE	UV	ULTRA VIOLET
FHW	ENTERING WATER TEMPERATURE	NC	NORMALLY CLOSED	V	VOLT
°F	DEGREES FAHRENHEIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	VAV	VARIABLE AIR VOLUME
FLA	FULL LOAD AMPS	NIC	NOT IN CONTRACT	VD	VOLUME DAMPER (MANUAL)
FRM	FEET PER MINUTE	NO	NORMALLY OPEN	VFD	VARIABLE FREQUENCY DRIVE
FPS	FEET PER SECOND	NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE	VTR	VENT THRU ROOF
FT	FEET	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED	WC	WATER COLUMN
FM	FORCED MAIN	P	PUMP	WH	WATER HEATER
GAL	GALLONS	PCF	POUND PER CUBIC FOOT	(N)	NEW
GPH	GALLONS PER HOUR			(E)	EXISTING
GPM	GALLONS PER MINUTE			(F)	FUTURE
HD	HEAD			(R)	RELOCATED
HP	HORSE POWER				
SYMBOLS AND DESCRIPTIONS					
	EQUIPMENT DESIGNATION.		DOWNSPOUT (DS)		
	EXISTING PIPING TO REMAIN		CLEANOUT, WALL (WCO)		
	EXISTING PIPING TO BE REMOVED.		CLEANOUT, FINISH FLOOR (FCO)		
	SECTION REFERENCE NUMBER. SECTION SHEET NUMBER		CLEANOUT, PLUG (CO)		
	WORK NOTE DESIGNATION.		FLOOR SINK		
	DEMOLITION NOTE DESIGNATION.		FLOOR DRAIN		
	POINT OF CONNECTION. NEW TO EXISTING		FROST PROOF WALL HYDRANT		
	ROOF DRAIN (RD), OVERFLOW ROOF DRAIN (ORD)		HOSE BIB		
			SPRINKLER HEAD		
			FIXTURE SUPPORT (WALL CARRIER)		
PIPING DESIGNATIONS AND FITTINGS					
CA	COMPRESSED AIR		ISOLATION VALVE		
CW	DOMESTIC COLD WATER		CHECK VALVE		
HW	DOMESTIC HOT WATER		PLUG VALVE		
HWC	DOMESTIC HOT WATER CIRCULATION		DYNAMIC VALVE		
NP	DOMESTIC NON-POTABLE WATER		TWO-WAY CONTROL VALVE		
SCW	DOMESTIC SOFT COLD WATER		THREE-WAY CONTROL VALVE		
SHW	DOMESTIC SOFT HOT WATER		BALANCING VALVE		
————	EXISTING DOMESTIC WATER		PRESSURE REDUCING VALVE		
- - - - -	EXISTING SANITARY		STRAINER		
---	GAS PIPING		TEST PORT, UNION		
- · - · -	ABOVE GRADE SANITARY		THERMOMETER, PRESSURE GAUGE		
- · · - ·	BELOW GRADE SANITARY		WELL, MANUAL AIR VENT		
- · · · -	GREASE SANITARY		PIPE DOWN AND PIPE TEE DOWN		
- · · · · -	SS - COMBINATION WASTE AND VENT		PIPE UP AND PIPE TEE UP		
- · · · · ·	VENT		PIPE CAP, BLIND FLANGE		
- · · · · · -	CIRCUIT VENT		PIPE ANCHOR ALIGNMENT GUIDE		
- · · · · · - ·	SD - STORM DRAIN PIPING ABOVE GRADE				
- · · · · · - · ·	SD - STORM DRAIN PIPING BELOW GRADE				
- · · · · · - · · ·	OSD - OVERFLOW STORM DRAIN PIPING				
PIPING NOTATION					
"X" PIPE TYPE (XXX)					
XXX = FIXTURE UNITS FOR WATER AND SANITARY PIPING					
XXX = GPM OF FLOW FOR HWC PIPING					
XXX = MBH CONNECTED LOAD FOR GAS PIPING					
XXX, XX = ROOF AREA IN SQ. FT. AND GPM FOR STORM PIPING					

PLUMBING DRAWING INDEX							
SHEET NUMBER	SHEET TITLE	<input checked="" type="radio"/> ISSUED FOR CONSTRUCTION <input type="radio"/> ISSUED FOR REFERENCE ONLY	PERMIT SET				
			01/16/2020				
		P0.0	PLUMBING INDEX, LEGEND AND NOTES	<input checked="" type="radio"/>			
		P1.1	FLOOR PLANS - PLUMBING	<input checked="" type="radio"/>			
		TOTAL:		2			

DESIGN DATA	
LOCATION:	MILNER, CO
CODES:	2015 INTERNATIONAL BUILDING CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2015 IECC ALL APPLICABLE LOCAL AMENDMENTS

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LOCATION:	MILNER, CO
CODES:	2015 INTERNATIONAL BUILDING CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2015 IECC ALL APPLICABLE LOCAL AMENDMENTS

PIPING SYSTEM NOTES

1. ALL NEW COLD, HOT AND HOT WATER CIRC. WATER PIPING SHALL BE TYPE "L" HARD DRAWN COPPER CONFORMING TO LEAD-FREE STANDARDS WITH CAST BRONZE OR WROUGHT COPPER FITTINGS, SOLDER JOINT TYPE USING ONLY LEAD FREE SOLDER.
2. PROVIDE 1 1/2" FIBERGLASS INSULATION ON ALL HOT AND HOT WATER CIRC PIPING. CW PIPING DOES NOT REQUIRE INSULATION.
3. PIPE INSULATION SHALL BE SNAP-ON TYPE, FIBERGLASS PIPE INSULATION WITH WHITE SELF-SEALING FLAME RETARDANT VAPOR BARRIER JACKET. ALL VALVES AND FITTINGS SHALL BE INSULATED.
4. PROVIDE CALCIUM SILICATE INSERT AT ALL HANGER LOCATIONS. PROVIDE INSULATION SHIELDS AT ALL HANGERS WITH HANGERS LOCATED UNDER THE INSULATION AND NOT IN CONTACT WITH THE PIPING.
5. PROVIDE PIPE MARKERS AND FLOW ARROWS FOR ALL PIPING.
6. ALL BELOW GRADE SANITARY PIPING SHALL BE SCHEDULE 40 PVC. ABOVE GRADE SANITARY SEWER SHALL BE CAST IRON WITH NO-HUB FITTINGS.
7. ABOVE GRADE GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON FITTINGS. BELOW GRADE GAS PIPING SHALL BE POLYETHYLENE PIPING WITH SOCKET FUSION FITTINGS.
8. UPON THE COMPLETION OF THE DOMESTIC WATER SUPPLY SYSTEM PIPING SHALL BE TESTED AND PROVED AIR TIGHT UNDER A WATER PRESSURE TEST NOT LESS THAN THE WORKING PRESSURE OF THE SYSTEM, OR, FOR PIPING SYSTEMS EXCLUDING PLASTIC PIPE, BY AN AIR TEST OF NOT LESS THAN 50 PSIG. PIPING SHALL HOLD PRESSURE FOR A MINIMUM ONE (1) HOUR.



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2065 CO ROAD 205
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AN ADDITION FOR:
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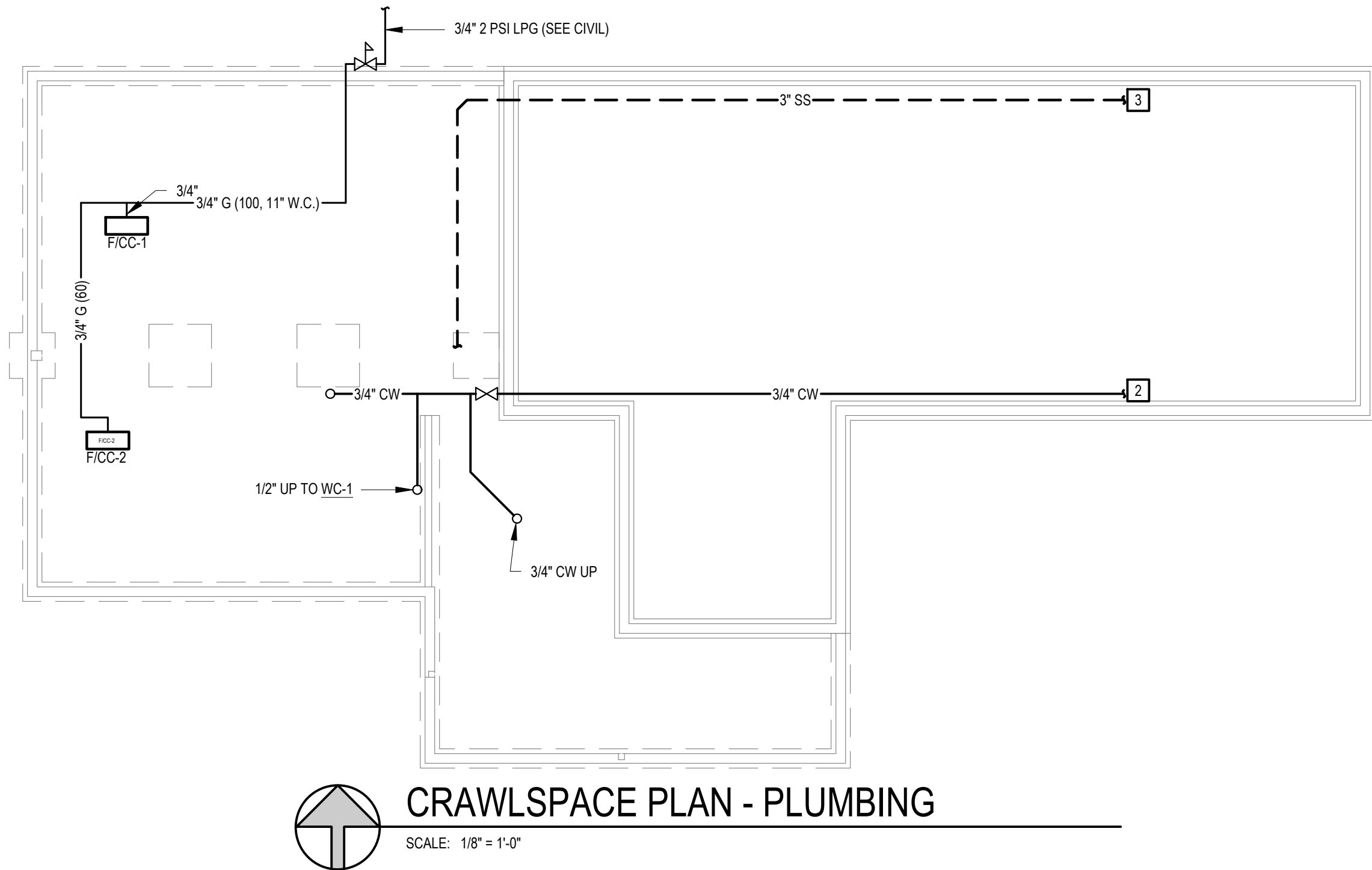
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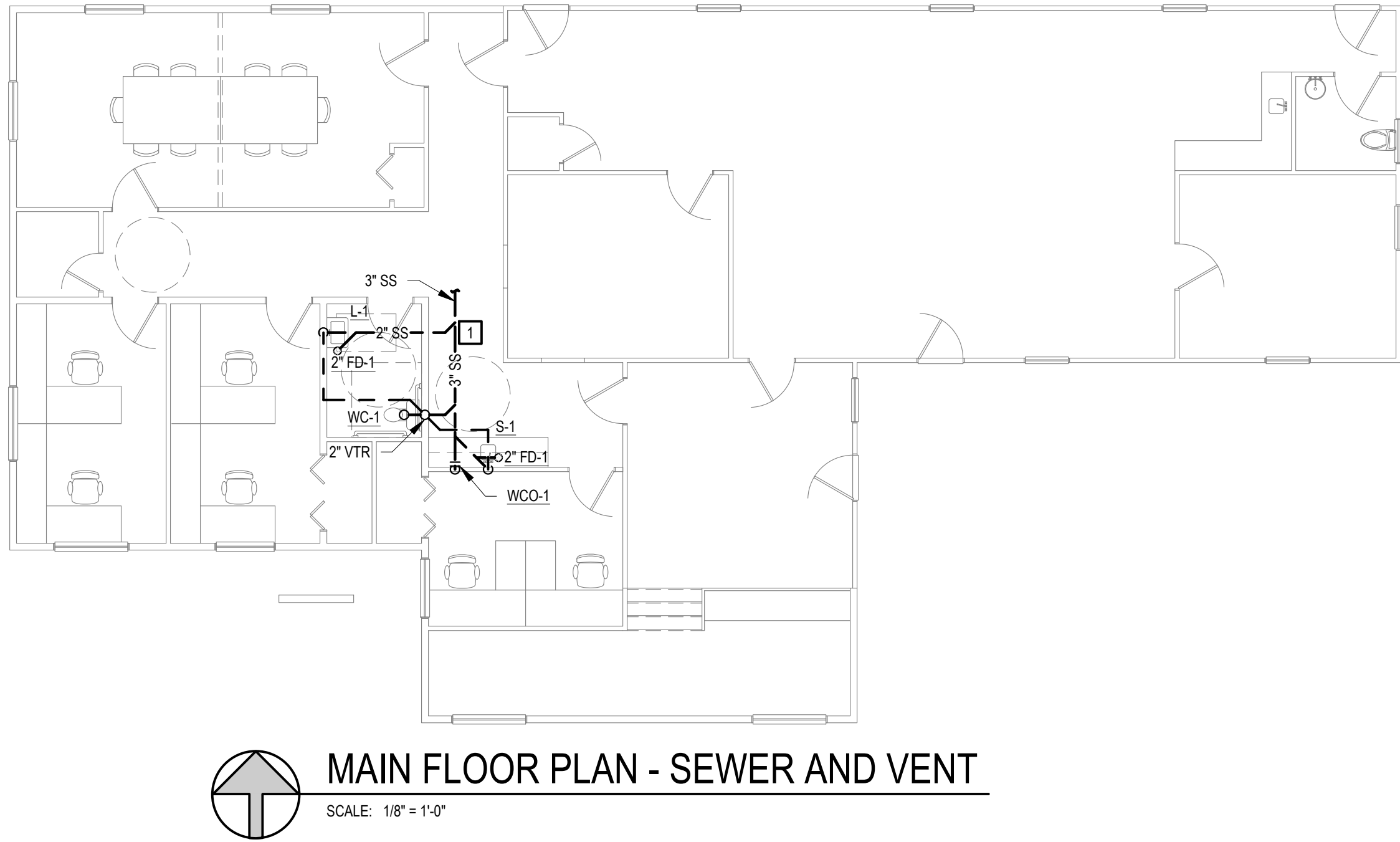
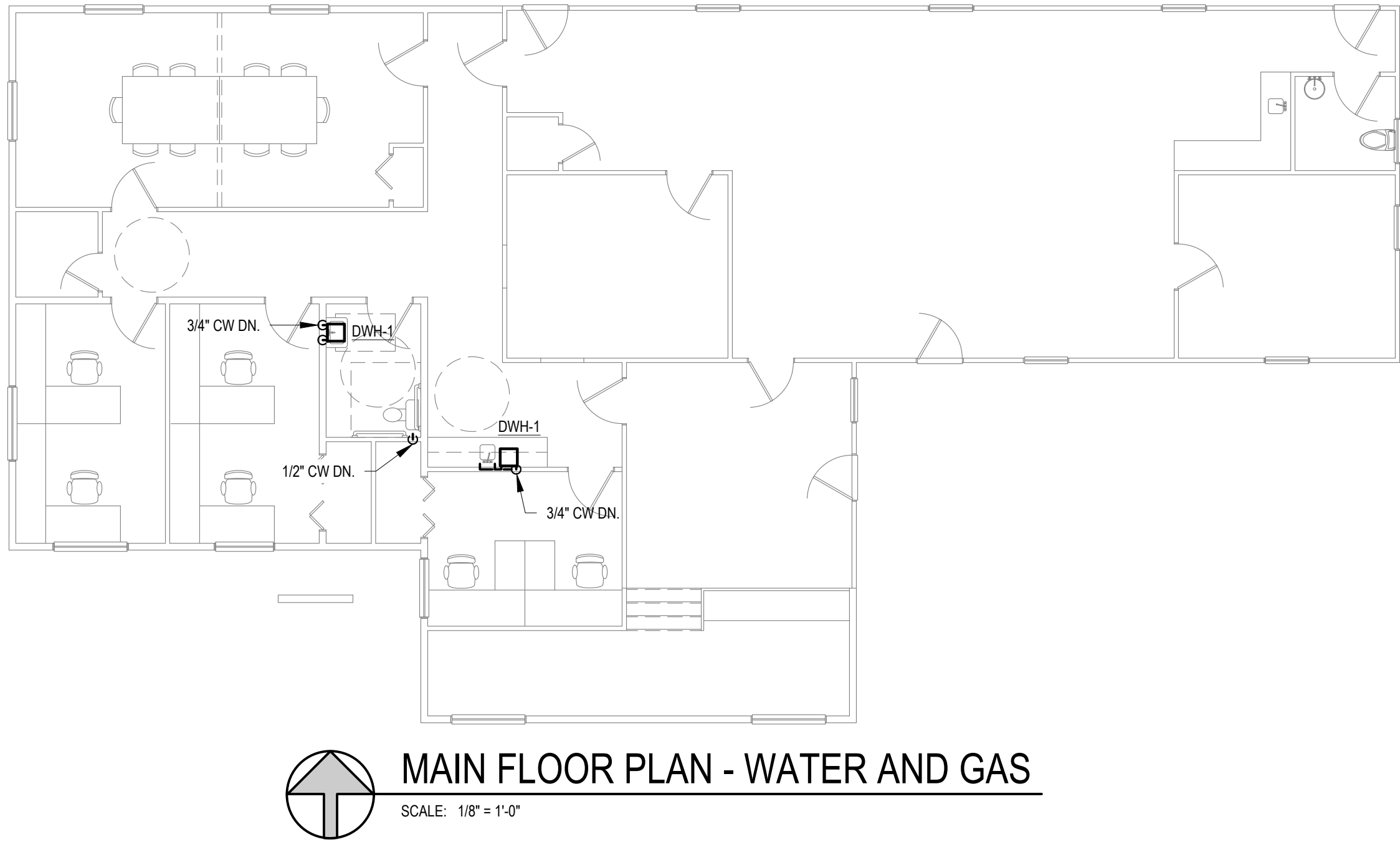
PLUMBING FIXTURE SCHEDULE										
TAG	ITEM	MANUFACTURER	MODEL	FINISH	DESCRIPTION	CONNECTION SIZE				NOTES
						WASTE	VENT	HOT WATER	COLD WATER	
<u>WC-1</u>	WATER CLOSET	AMERICAN STANDARD	CADET 3483.001 AND 4142 TANK	WHITE	RIGHT HEIGHT PRESSURE ASSISTED FLUSH TANK, 1.1 GPF, ELONGATED BOWL, EVERCLEAN SURFACE, 12" ROUGH IN. MOUNTED TO A.D.A STANDARDS TOILET SEAT. AMERICAN STANDARD, MODEL 5321.110. COMMERCIAL HEAVY DUTY OPEN FRONT, WHITE, LESS COVER.	3"	2"	N/A	1/2"	1
<u>L-1</u>	LAVATORY - SINK	AMERICAN STANDARD	9024.008EC	WHITE	WALL HUNG, 20x18 VITREOUS CHINA, EVERCLEAN FINISH, REAR OVERFLOW, 8" CENTERS	2"	1-1/2"	1/2"	1/2"	2 THRU 8"
	LAVATORY - FAUCET	AMERICAN STANDARD	4800.372H	BRUSHED NICKEL	WIDESPREAD LAVATORY FAUCET, LEAD FREE, RIGID SPOUT, WRIST BLADE HANDLES, ADA COMPLIANT.					
<u>S-1</u>	SINK	ELKAY	LRAD221960	S/S	LUSTERTONE STAINLESS STEEL 22"x19-1/2"x6", SINGLE BOWL, TOP MOUNT, 4 FAUCET HOLES	2"	1-1/2"	1/2"	1/2"	1
	FAUCET	DELTA	400LF-HDF	S/S	SINGLE LEVER HANDLE WITH SEPARATE SPRAY, 1.5 GPM, 45" HOSE AND SPRAY ATTACHEMNT.					
<u>FD-1</u>	FLOOR DRAIN	SIOUX CHIEF	832-36PNQ	TBD	CAST IRON BODY, FLASHING COLLAR, NICKEL BRONZE STRAINER, ROUND FIXED GRATE. PROVIDE PRO-SET TRAP GUARD.	2" OR AS NOTED ON DRAWINGS	1-1/2"	N/A	N/A	-
<u>WCO</u>	WALL CLEANOUT	SIOUX CHIEF	873	N/A	ROUND, FACE OF WALL COVER AND SCREW. IRON COVER.	N/A	N/A	N/A	N/A	-
<u>FCO</u>	FINISH FLOOR CLEANOUT	SIOUX CHIEF	851	NICKEL-BRONZE COVER	CAST IRON WITH ROUND ADJUSTABLE TOP.	2"	N/A	N/A	N/A	-
NOTES:	1) SHALL MEET ADA STANDARDS 2) ADA BARRIER FREE 3) TRUEBRO 102 INSULATION KIT FOR CW,HW, AND SS. 4) ANGLE STOPS 5) INSTALL BLOCKING TO SUPPORT FAUCET 6) PROVIDE WALL CARRIER FOR FIXTURE 7) 0.5 GPM AERATOR 8) PROVIDE POWERS TEMPERING VALVE MODEL LFG480 (MIN OF 0.25 GPM FLOW) OR EQUIVALENT CERTIFIED TO ASSE 1070									

WATER HEATER SCHEDULE											
TAG	SERVICE	MANUF.	MODEL	TANK SIZE GALLONS	CAPACITY GAL / HR	WATER INLET TEMP.	WATER OUTLET	VOLTS/PH	E-PWR	WEIGHT (LBS.)	ACCESS.
DWH-1	S-1	BOSCH	ES4	4	6.8	40	120	120/1	N	55	1
ACCESS.: 1) 125 PSIG PRESSURE AND TEMPERATURE RELIEF VALVE											



WORK NOTES: 1

- ROUTE CW AND SS PIPING IN CRAWLSPACE.
- CONNECT NEW 3/4" CW TO EXISTING CW LINE.
- CONNECT NEW 3" SS TO EXISTING SS LINE.



G2

CONSULTING ENGINEERS, INC.

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UNIT G
WINDSOR, CO 80550
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SEAD

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E-mail: jake@seadinc.com

TWIN ENVIRO ADDITION

2065 CO ROAD 205
MILNER, COLORADO

AN ADDITION FOR:
TWIN ENVIRO

ISSUE DATES

PRELIMINARY SET
06 . 26 . 19
DESIGN DEVELOPMENT
08 . 09 . 19
REVIEW SET
12 . 10 . 19

DRAWN BY: RPM
REVIEWED BY: JEM
PROJECT # 19052

FLOOR PLANS - PLUMBING

P1.1

SYMBOLS	POWER SYMBOLS	NOTES
	MOTOR OUTLET	
	FUSED DISCONNECT SWITCH SWITCH XX/XX/XX = AMP SWITCH/POLES/AMP FUSE	
	HEAVY DUTY NON-FUSED DISCONNECT SWITCH SWITCH XX/XX = AMP SWITCH/POLES	
	COMBINATION MOTOR STARTER	
	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD	
	STATIONARY - CIRCUIT BREAKER; RATING AS SHOWN ON PLANS	
	SWITCH AND FUSE; RATING AS SHOWN ON PLANS	
	SWITCH AND FUSE; RATING AS SHOWN ON PLANS	
	JUNCTION BOX	
	SURFACE MOUNTED PANELBOARD OR TERMINAL CABINET	

SYMBOLS	FIRE ALARM DEVICE SYMBOLS
	SURFACE WALL FIRE ALARM MANUAL REPORTING STATION, MOUNTED AT +48" AFF.
	SURFACE WALL FIRE ALARM AUDIO/VISUAL DEVICE, MTD. 9" BELOW CEILING, UNLESS NOTED OTHERWISE.
	CEILING MOUNTED FIRE ALARM SMOKE DETECTOR / STROBE DEVICE.
	FIRE ALARM CONTROL PANEL.
	FIRE ALARM REMOTE ANNUNCIATOR PANEL.
	GENERATOR REMOTE STATUS.

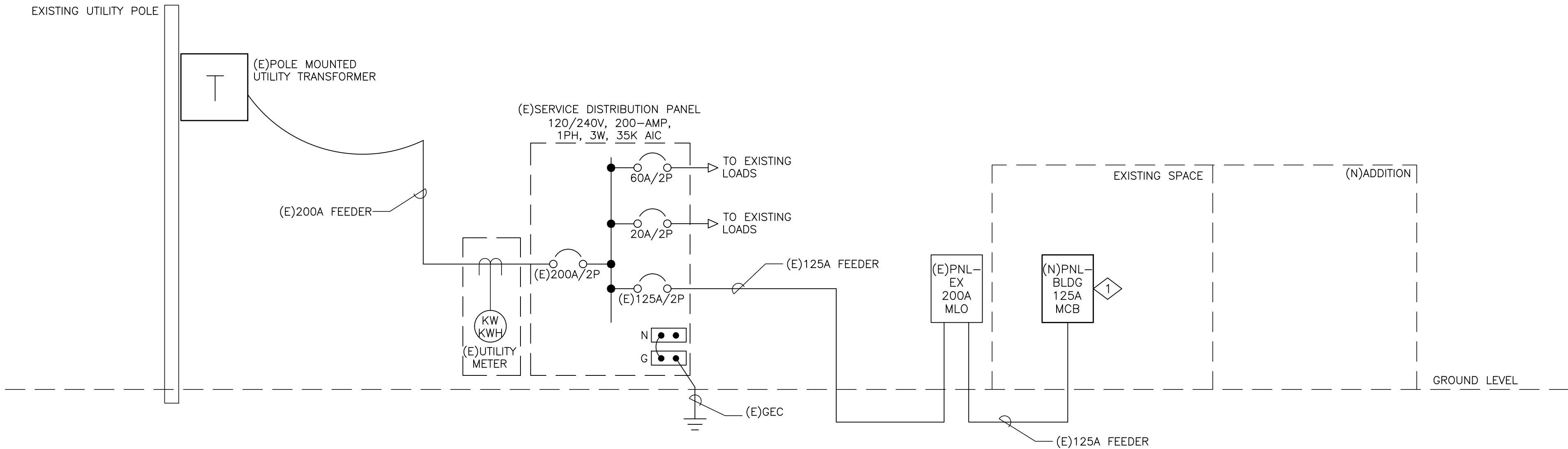
SYMBOLS	WIRING DEVICE SYMBOLS
	20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE
	20A, 125V, DUPLEX RECEPTACLE OUTLET, TOP HALF SWITCHED +18" UNO
	SURFACE 20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE
	20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE
	SURFACE 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNO
	SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS
	SURFACE SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS
	20A, 125V, DEDICATED DUPLEX RECEPTACLE OUTLET +18" UON
	DUPLEX OUTLET WITH GROUND FAULT INTERRUPTER
	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET
	CEILING MOUNTED 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET
	FLOOR MOUNTED DUPLEX CONVENIENCE/TELECOM OUTLET WITH BLANK STAINLESS STEEL COVER. COORDINATE TYPE AND FINISH WITH ARCHITECT.
	SPST WALL SWITCH, LETTERS INDICATE THE NUMBER OF SWITCHES AND OUTLETS THEY CONTROL
	DIMMER SWITCH
	OCCUPANCY LIGHT CONTROL SWITCH; WALL MOUNTED

SYMBOLS	DESIGNATION SYMBOLS	NOTES
	FIXTURE DESIGNATION UPPER CASE LETTER INDICATES FIXTURE TYPE. LOWER CASE LETTER INDICATES SWITCH LEG NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN).	
	LETTER INDICATES FIXTURES CONTROL (WHERE SHOWN)	
	NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN)	

GENERAL NOTES
1. ALL WORK SHOWN IS NEW, UNLESS NOTED OTHERWISE.
2. ALL WORK TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE, 2017 EDITION.
3. SEAL ALL CONDUIT PENETRATIONS OF FLOORS AND FIRE RATED ASSEMBLIES TO MAINTAIN FIRE RATING.
4. PROVIDE NEW TYPEWRITTEN DIRECTORIES REFLECTING WORK PERFORMED FOR ALL NEW PANELBOARDS IN THIS PROJECT.
5. PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUIT NUMBERS. - PROVIDE AND INSTALL ALL CONDUITS, CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOMERUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH SPECIFICATIONS AND N.E.C.
6. ALL NEUTRAL CONDUCTORS ON POWER BRANCH CIRCUITING ROUNDHOUSES TO BE #10 AWG UNLESS NOTED OTHERWISE.

SHEET LIST
E-1.0 SYMBOL LIST AND SINGLE LINE DIAGRAM
E-1.1 SCHEDULES
E-2.0 ELECTRICAL POWER AND SIGNAL PLAN
E-3.0 ELECTRICAL LIGHTING PLAN
E-4.0 SPECIFICATIONS

	ABBREVIATIONS	NOTES
A, AMP	AMPERE	
AIC	AMPERE INTERRUPTING CAPACITY	
AF	FRAME RATING IN AMPERES	
AS	SWITCH RATING IN AMPERES	
AT	TRIP RATING IN AMPERES	
AWG	AMERICAN WIRE GAUGE	
C	CONDUIT	
CKT	CIRCUIT	
(E)	EXISTING TO REMAIN	
EC	EMPTY CONDUIT	
ELEC	ELECTRICAL	
EMT	ELECTRO METALLIC TUBING	
FA	FIRE ALARM	
G, GND	GROUND	
HP	HORSEPOWER	
MECH	MECHANICAL	
MCB	MAIN CIRCUIT BREAKER	
(N)	NEW EQUIPMENT OR DEVICE	
NEC	NATIONAL ELECTRIC CODE	
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	
NO	NORMALLY OPEN	
NTS	NOT TO SCALE	
ø, PH	PHASE	
PNL	PANEL	
PVC	POLYVINYL CHLORIDE CONDUIT	
PWR	POWER	
RSC	RIGID STEEL CONDUIT	
TEL	TELEPHONE	
TYP	TYPICAL	
UON	UNLESS OTHERWISE NOTED	
V	VOLT	
VA	VOLT AMPERES	
W	WATT	
(X)	EXISTING TO BE DEMOLISHED	



GENERAL NOTES

- ALL WORK SHOWN IS EXISTING, UON.
- ALL CONDUCTORS SHOWN ARE SIZED AS COPPER CONDUCTORS, UON.

RISER NOTES

- REPLACE EXISTING PANEL WITH NEW125-AMP PANEL WITH 42 BREAKER SPACES. SEE PANEL SCHEDULE FOR MORE INFORMATION.

1 SINGLE LINE DIAGRAM
NTS

TWIN ENVIRO
ADDITION

20650 CO Road 205
Milner, CO

SEAD

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Issue	By	Date & Issue Description	By
-		PERMIT SET - 1.27.20	AW

Scale: 24x36_NTS
Description: SYMBOLS, DIAGRAMS
Project Name: TWIN ENVIRO ADDITION
Project Number: 2019072
Sheet No. E-1.0

TWIN ENVIRO
ADDITION

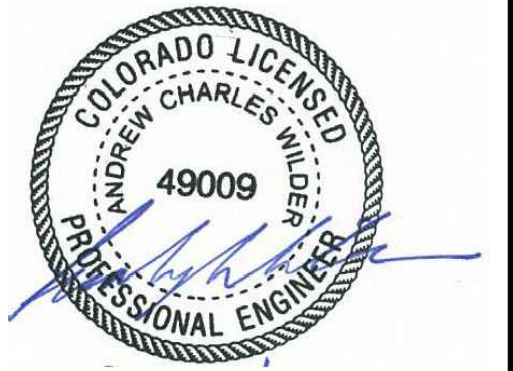
20650 CO Road 205
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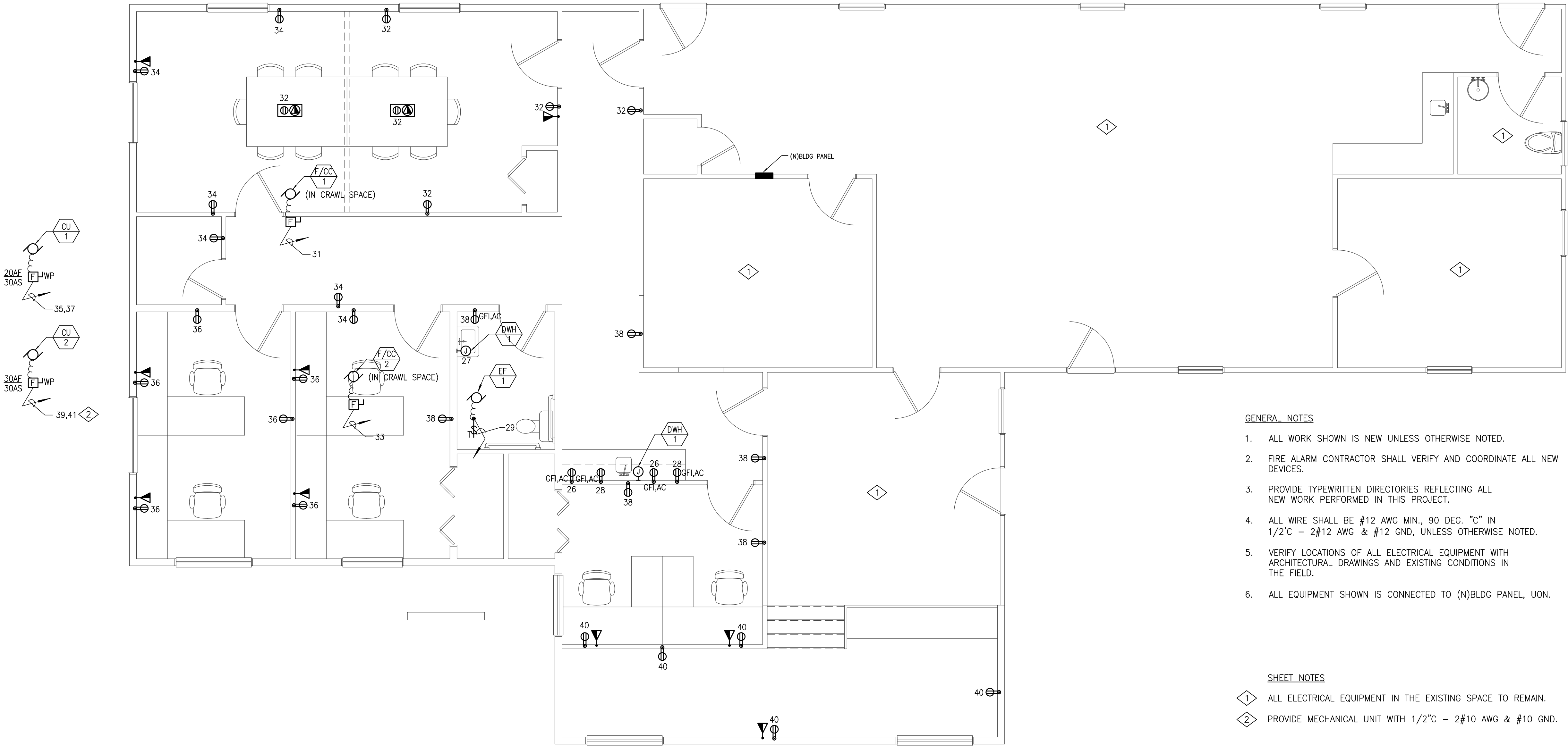


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Issue	By	Date & Issue Description	By
—	—	PERMIT SET — 1.27.20	AW

Scale:
24x36 1/4"=1'-0"
Description: ELECTRICAL PLAN
Project Name: TWIN ENVIRO ADDITION
Project Number: 2019072
Sheet No.
E-2.0



- GENERAL NOTES
- ALL WORK SHOWN IS NEW UNLESS OTHERWISE NOTED.
 - FIRE ALARM CONTRACTOR SHALL VERIFY AND COORDINATE ALL NEW DEVICES.
 - PROVIDE TYPEWRITTEN DIRECTORIES REFLECTING ALL NEW WORK PERFORMED IN THIS PROJECT.
 - ALL WIRE SHALL BE #12 AWG MIN., 90 DEG. "C" IN 1/2"C — 2#12 AWG & #12 GND, UNLESS OTHERWISE NOTED.
 - VERIFY LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS IN THE FIELD.
 - ALL EQUIPMENT SHOWN IS CONNECTED TO (N)BLDG PANEL, UON.

- SHEET NOTES
- ALL ELECTRICAL EQUIPMENT IN THE EXISTING SPACE TO REMAIN.
 - PROVIDE MECHANICAL UNIT WITH 1/2"C — 2#10 AWG & #10 GND.

1 ELECTRICAL POWER & SIGNAL PLAN
1/4"=1'-0"

TWIN ENVIRO
ADDITION

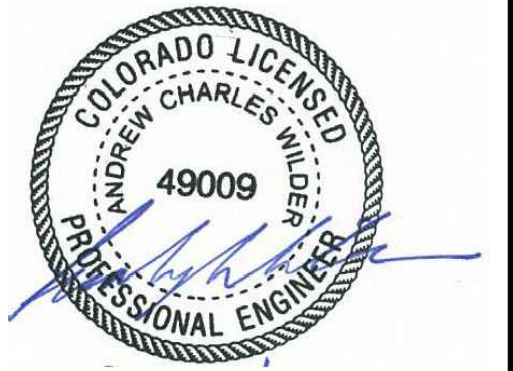
20650 CO Road 205
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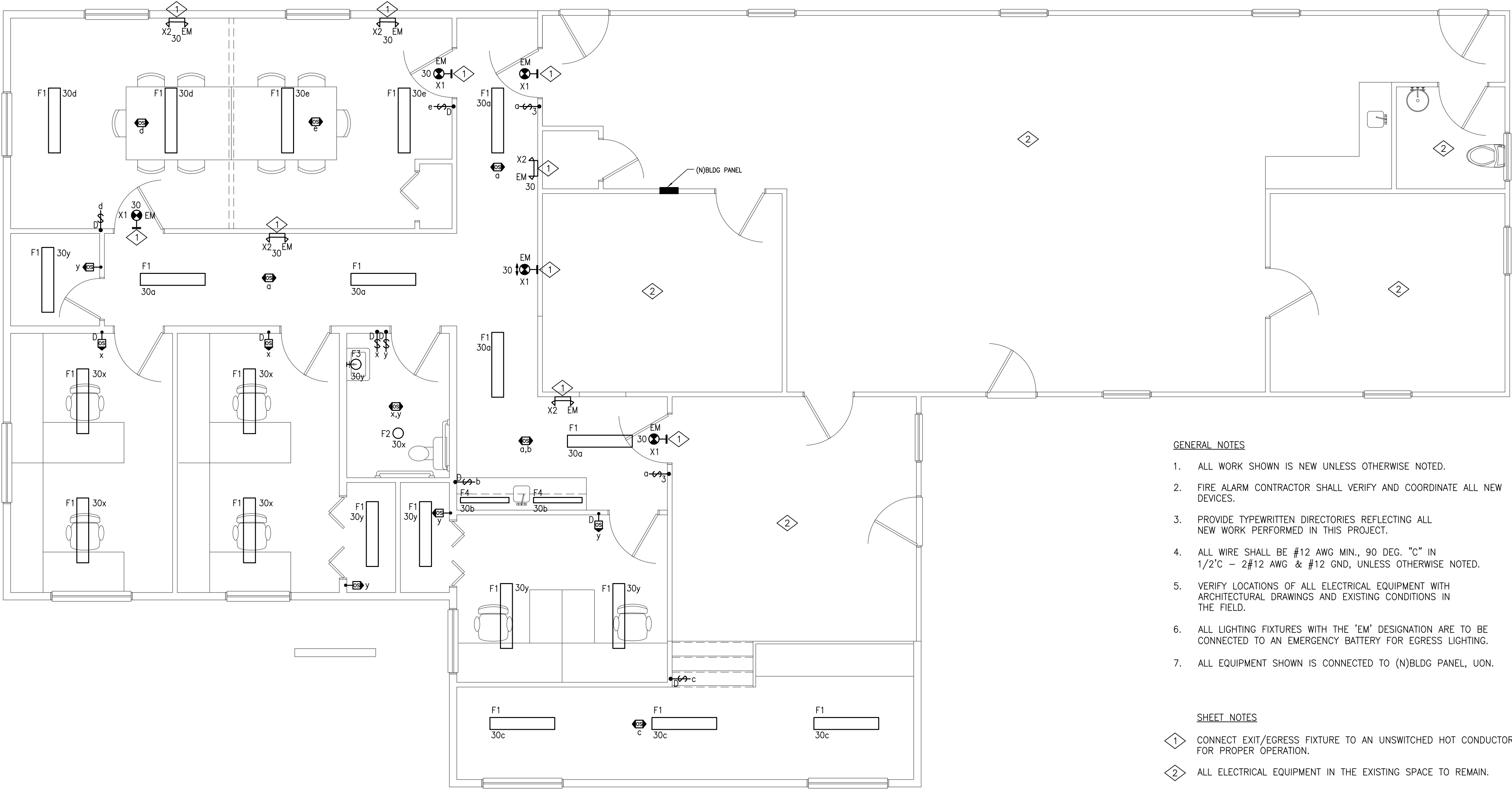


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Issue	By	Date & Issue Description	By
—		PERMIT SET — 1.27.20	AW

Scale:
24x36 1/4"=1'-0"
Description: ELECTRICAL LIGHTING PLAN
Project Name: TWIN ENVIRO ADDITION
Project Number: 2019072
Sheet No.
E-3.0



- GENERAL NOTES
- ALL WORK SHOWN IS NEW UNLESS OTHERWISE NOTED.
 - FIRE ALARM CONTRACTOR SHALL VERIFY AND COORDINATE ALL NEW DEVICES.
 - PROVIDE TYPEWRITTEN DIRECTORIES REFLECTING ALL NEW WORK PERFORMED IN THIS PROJECT.
 - ALL WIRE SHALL BE #12 AWG MIN., 90 DEG. "C" IN 1/2" C — 2#12 AWG & #12 GND, UNLESS OTHERWISE NOTED.
 - VERIFY LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS IN THE FIELD.
 - ALL LIGHTING FIXTURES WITH THE 'EM' DESIGNATION ARE TO BE CONNECTED TO AN EMERGENCY BATTERY FOR EGRESS LIGHTING.
 - ALL EQUIPMENT SHOWN IS CONNECTED TO (N)BLDG PANEL, UON.

- SHEET NOTES
- CONNECT EXIT/EGRESS FIXTURE TO AN UNSWITCHED HOT CONDUCTOR FOR PROPER OPERATION.
 - ALL ELECTRICAL EQUIPMENT IN THE EXISTING SPACE TO REMAIN.

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

