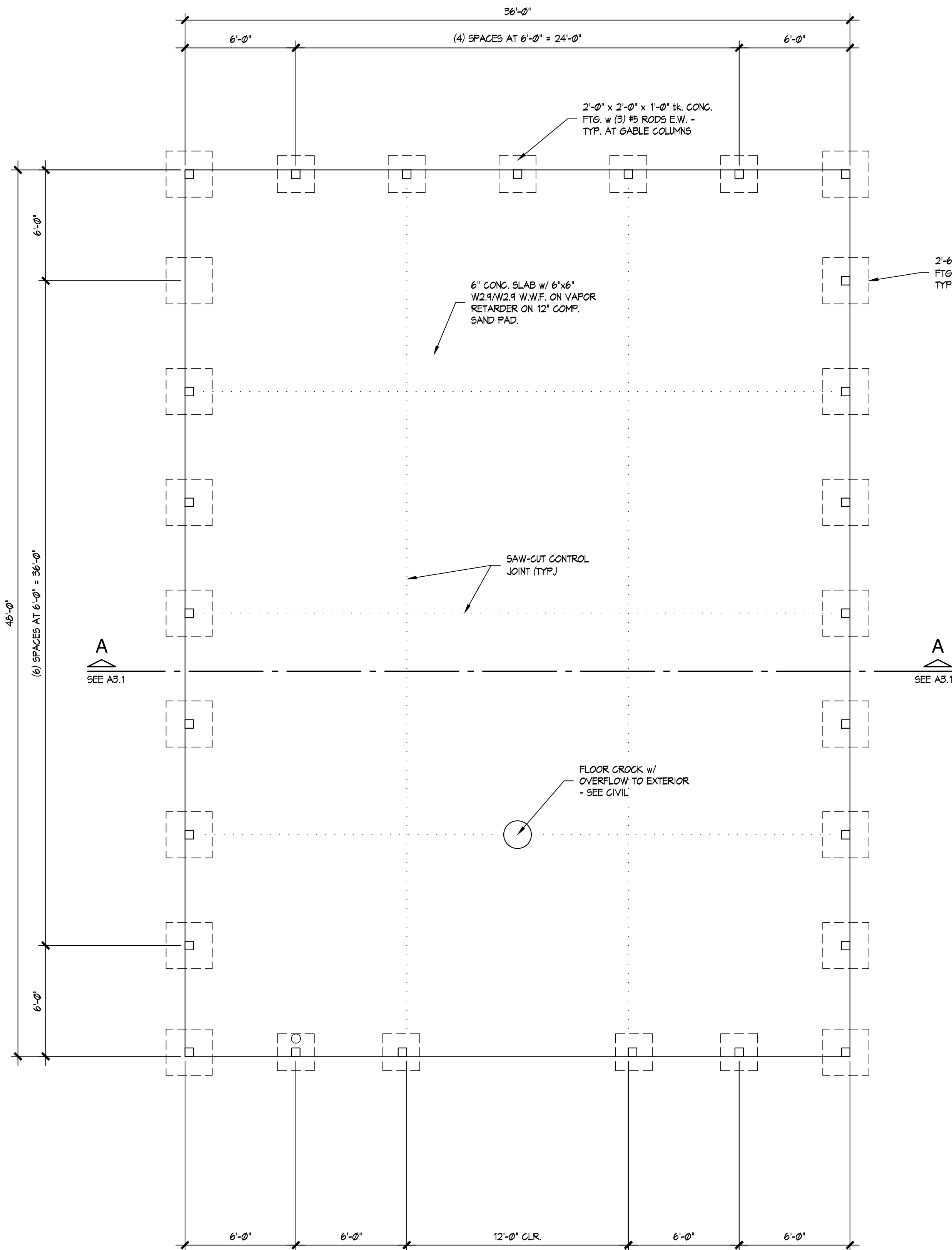
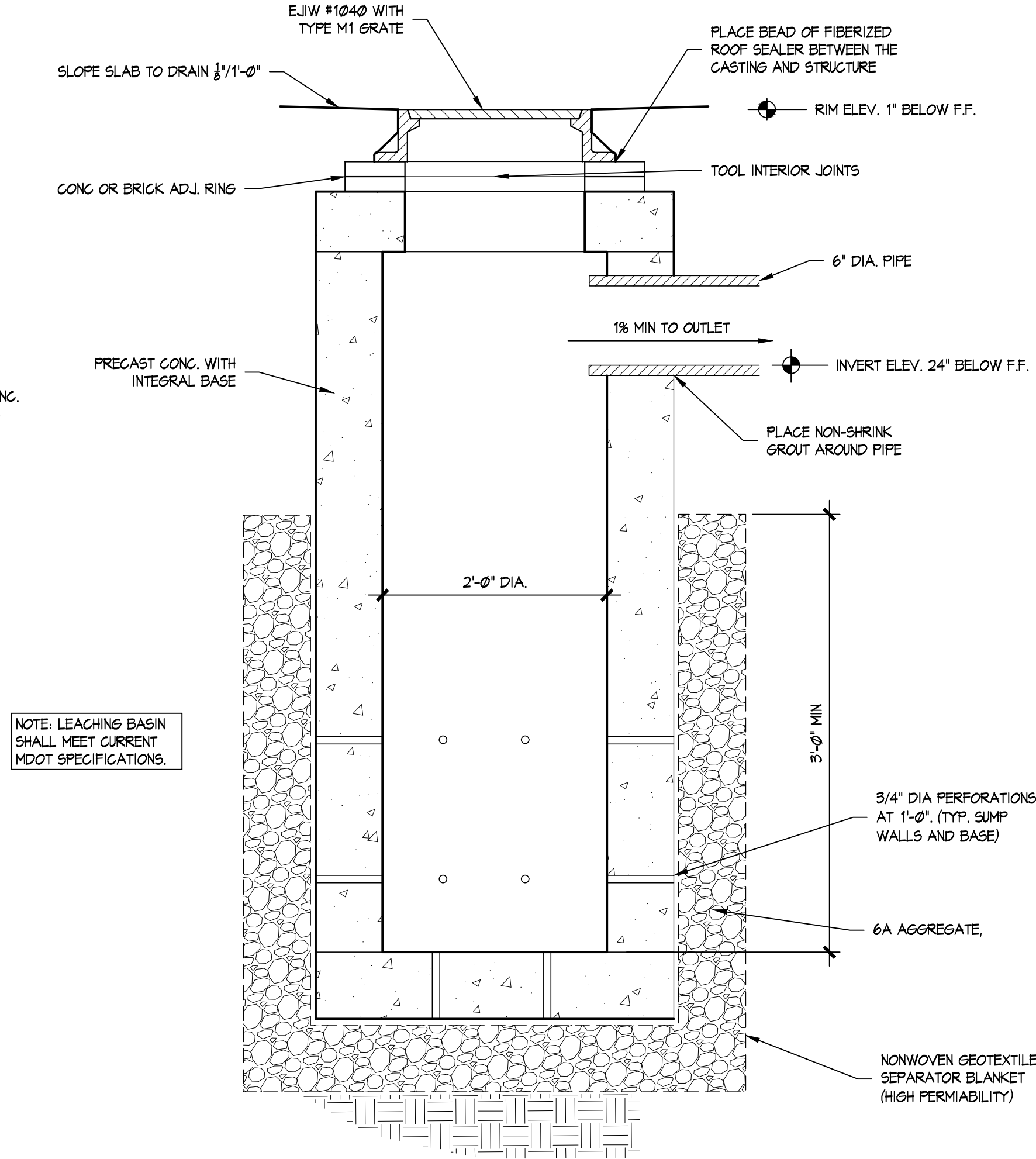




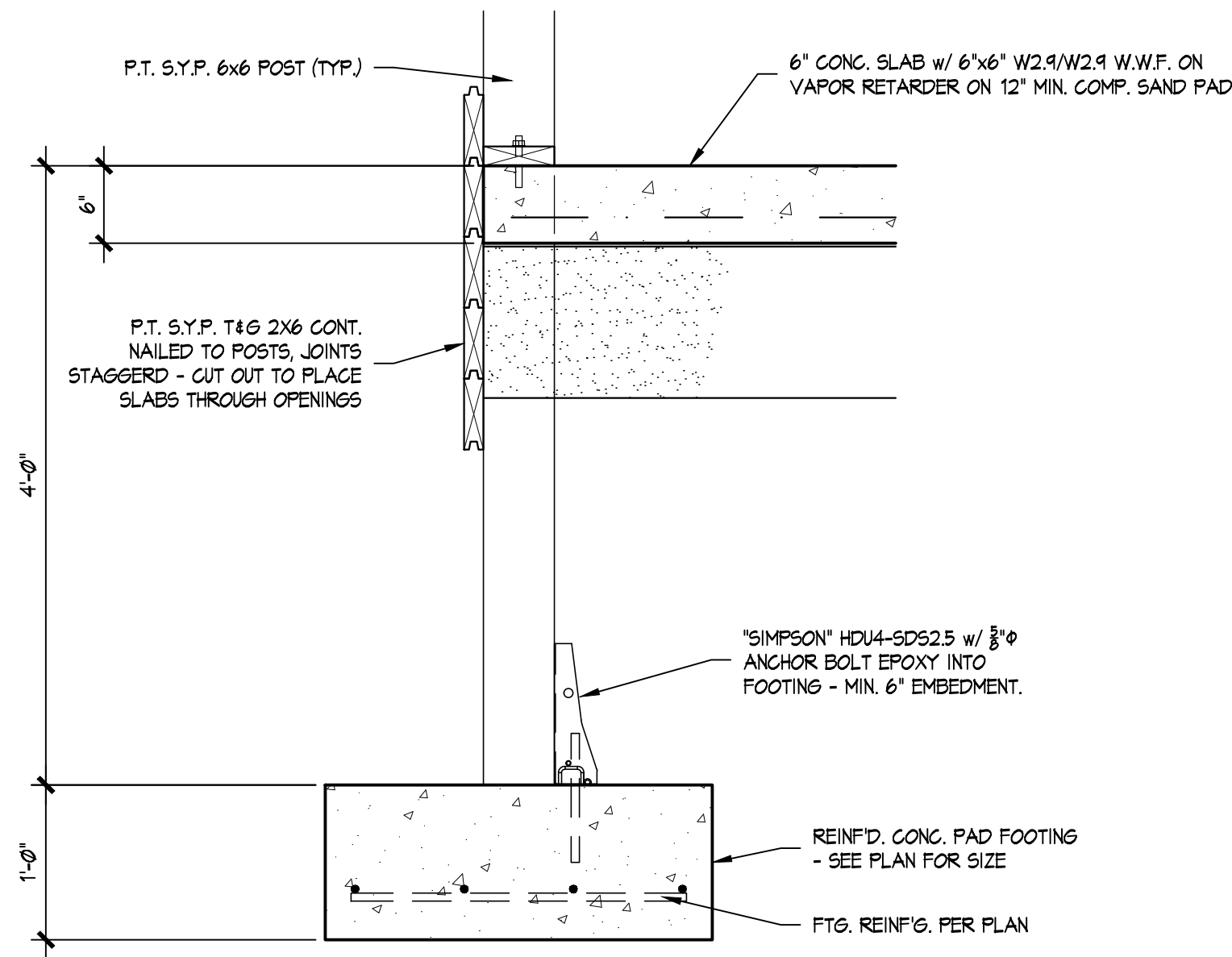
FOUNDATION PLAN

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



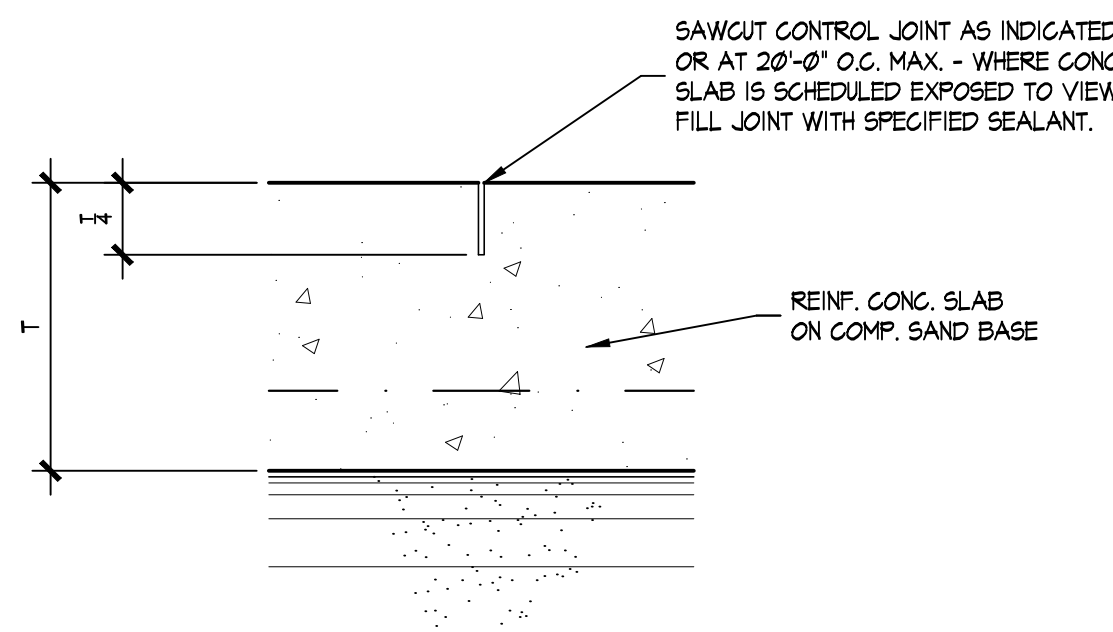
LEECHING BASIN DETAIL

SCALE: 1" = 1'-0"



TYP. FOOTING DETAIL

SCALE: 1" = 1'-0"

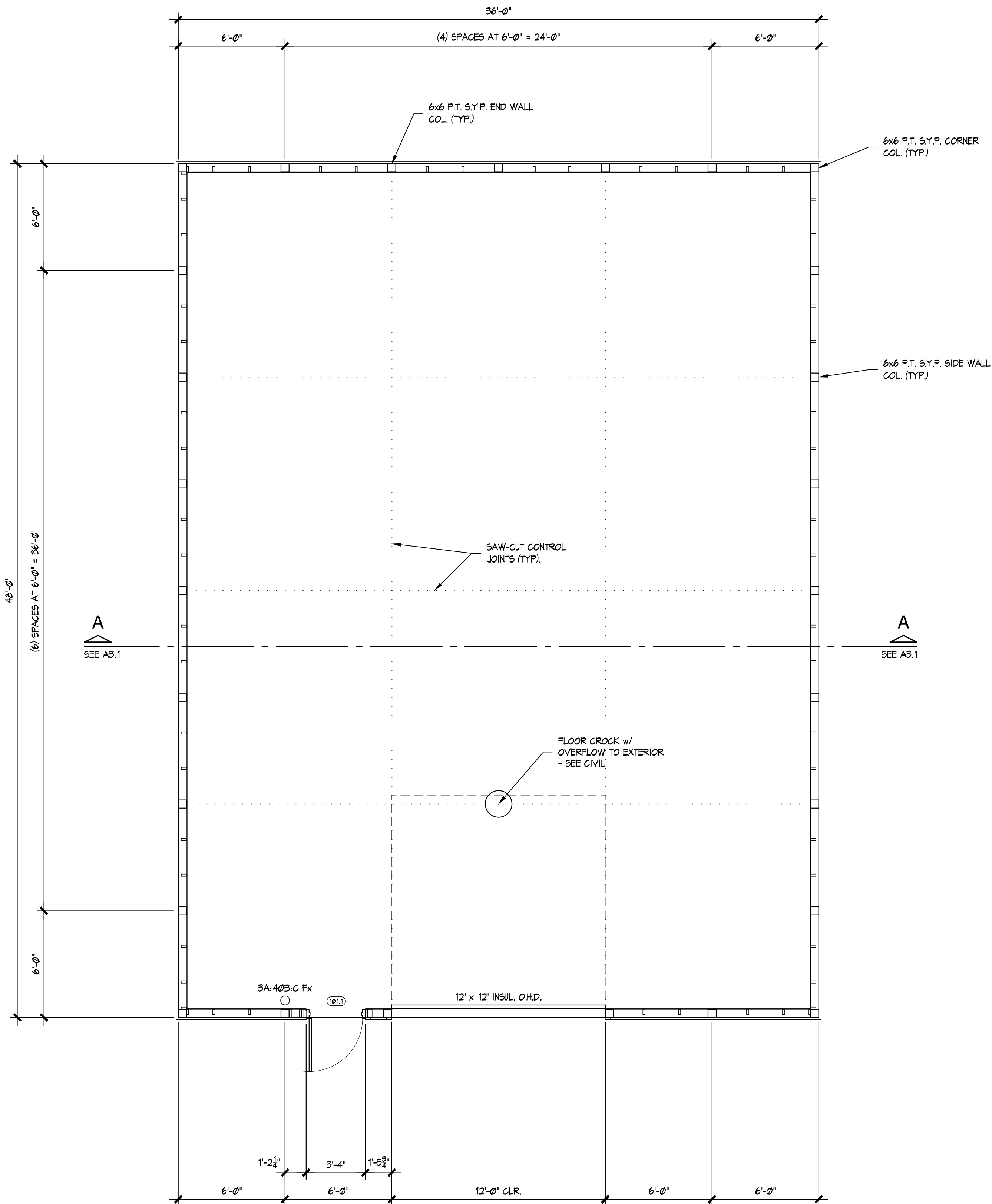


TYP. C.J. DETAIL

SCALE: 3/4" = 1'-0"

CAST IN PLACE CONCRETE NOTES

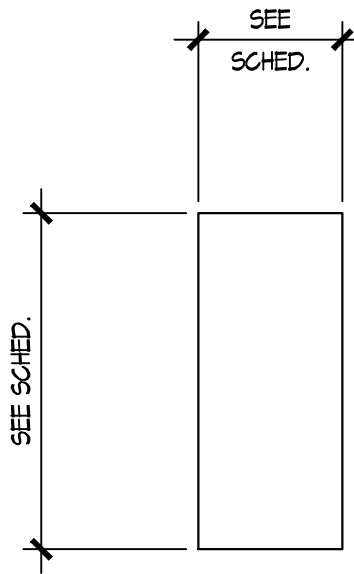
- ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ACI 318 CODE REQUIREMENTS AND STANDARDS.
- CONCRETE SHALL BE A MINIMUM OF F'c = 3,500 psi AT 28 DAYS.
- ALL REBAR SHALL BE HIGH STRENGTH NEW BILLET STEEL CONFORMING TO ASTM A615 GRADE 60. ALL DETAILS AND ACCESSORIES SHALL CONFORM TO THE LATEST ACI 315 STANDARD DETAILING MANUAL.
- ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- REINFORCEMENT PROTECTION SHALL BE AS FOLLOWS U.O.N.
 - CONCRETE POURED AGAINST EARTH 3"
 - ALL OTHER CONCRETE 2"
- ALL EMBEDDED ITEMS SHALL BE PLACED IN THE FORMWORK PRIOR TO PLACING CONCRETE. DRILLING AND GROUTING IS ACCEPTABLE SUBJECT TO ENGINEER APPROVAL.
- ALL BOLTS, NUTS, WASHERS, PLATES, AND ANCHOR BOLTS IN DIRECT OR INTERMITTENT CONTACT WITH WATER SHALL BE HOT DIPPED GALVANIZED PER LATEST ASTM STANDARDS.
- ALL FOOTINGS AND SLABS SHALL BEAR ON SAND COMPACTED TO 98% MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHOD.
- ALL SLABS ON GRADE SHALL BEAR ON NATURAL SAND SOILS. PROVIDE A VAPOR BARRIER AS CALLED FOR ON THE PLANS AND PITCH ALL SLABS TO DRAIN WHERE INDICATED WITHOUT REDUCING THE THICKNESS OF THE SLAB.
- FIELD BEND BARS COLD. DO NOT FIELD BEND BARS WITH HEAT OR BARS PARTIALLY EMBEDDED IN CONCRETE.
- ALL CONCRETE SHALL BE AIR-ENTRAINED.
- FOR CONCRETE SLABS ON GRADE, PROVIDE CONTROL JOINTS (CJ) AT A MINIMUM OF 20'-0" O.C. UNLESS OTHERWISE CALLED OUT.
- SEE ARCHITECTURAL DRAWINGS FOR ALL FLOOR FINISHES, SLOPES, FLOOR DRAINS, ETC. NOT SHOWN ON FOUNDATION PLANS.



FOUNDATION PLAN

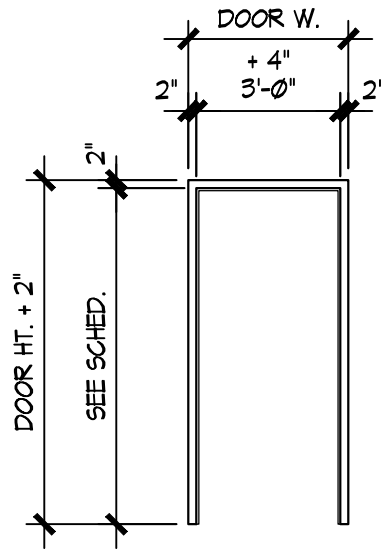
SCALE: 1/4" = 1'-0"

DOOR SCHEDULE													
DOOR TAG	DOOR SIZE	DOOR DATA			FRAME DATA			DETAILS			HDWE SET NO	FIRE RATING	REMARKS
		MATERIAL	TYPE	GLAZING	MATERIAL	TYPE	GLAZING	HEAD	JAMB	SILL			
101.1	3'-0"x6'-0"	H.M.	A	NONE	H.M.	1	NONE	H1	J1	S1	1	-	
DOOR AND FRAME NOTES: 1. PAINT HM DOORS AND FRAMES EPS-1. HARDWARE SET NO. 1: 3 EA. HINGE, 4B51 4.5x4.5 NRP, FINISH 35D, PBB 1 EA. ENTRANCE LOCK, GT 116 BSN, FINISH 26D, PDQ 1 EA. SURFACE CLOSER, T101 BG EDA (PUSH SIDE MOUNT), FINISH 68A, PDQ 1 EA. KICK PLATE, 40 10" x 2" LDW B4E, FINISH 32D, DON JO 1 EA. SEALS, 8B5C, FINISH AL, REESE 1 EA. DOOR SWEEP, 354C MOUNT FULL SIDE, FINISH AL, REESE 1 EA. THRESHOLD, S205A NOTCH AND COPE AS REQ'D, FINISH AL, REESE 1 EA. RAIN DRIP, R201A, FINISH AL, REESE TEMPLATE CLOSER FOR 180 DEGREES. PROVIDE MASTERKEYED CYLINDER MATCHING OWNERS EX'G. KEYING SYSTEM.													



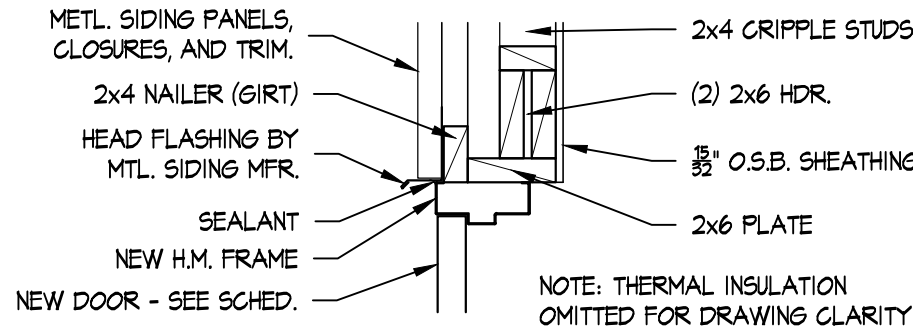
DOOR TYPES

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



FRAME TYPES

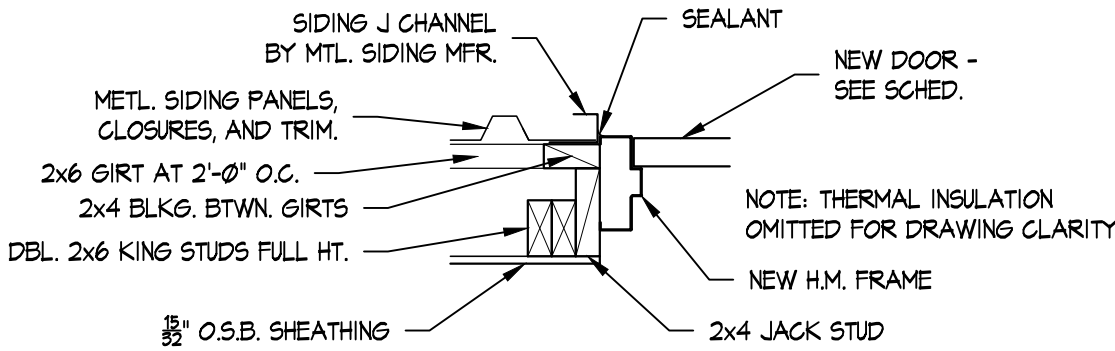
SCALE: 1/4" = 1'-0"



H1 - HEAD DETAIL

HEAD DETAILS

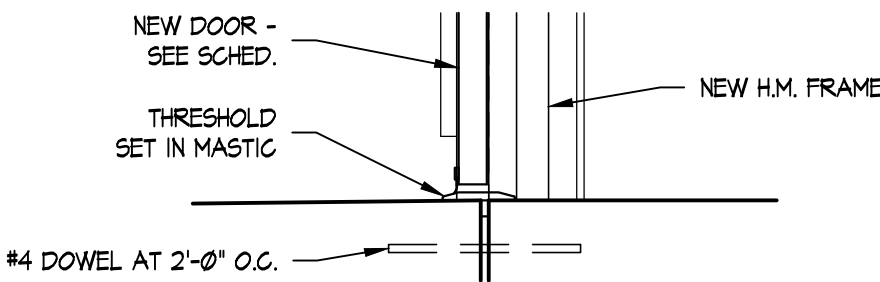
SCALE: 1" = 1'-0"



J1 - JAMB DETAIL

JAMB DETAILS

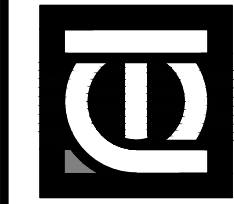
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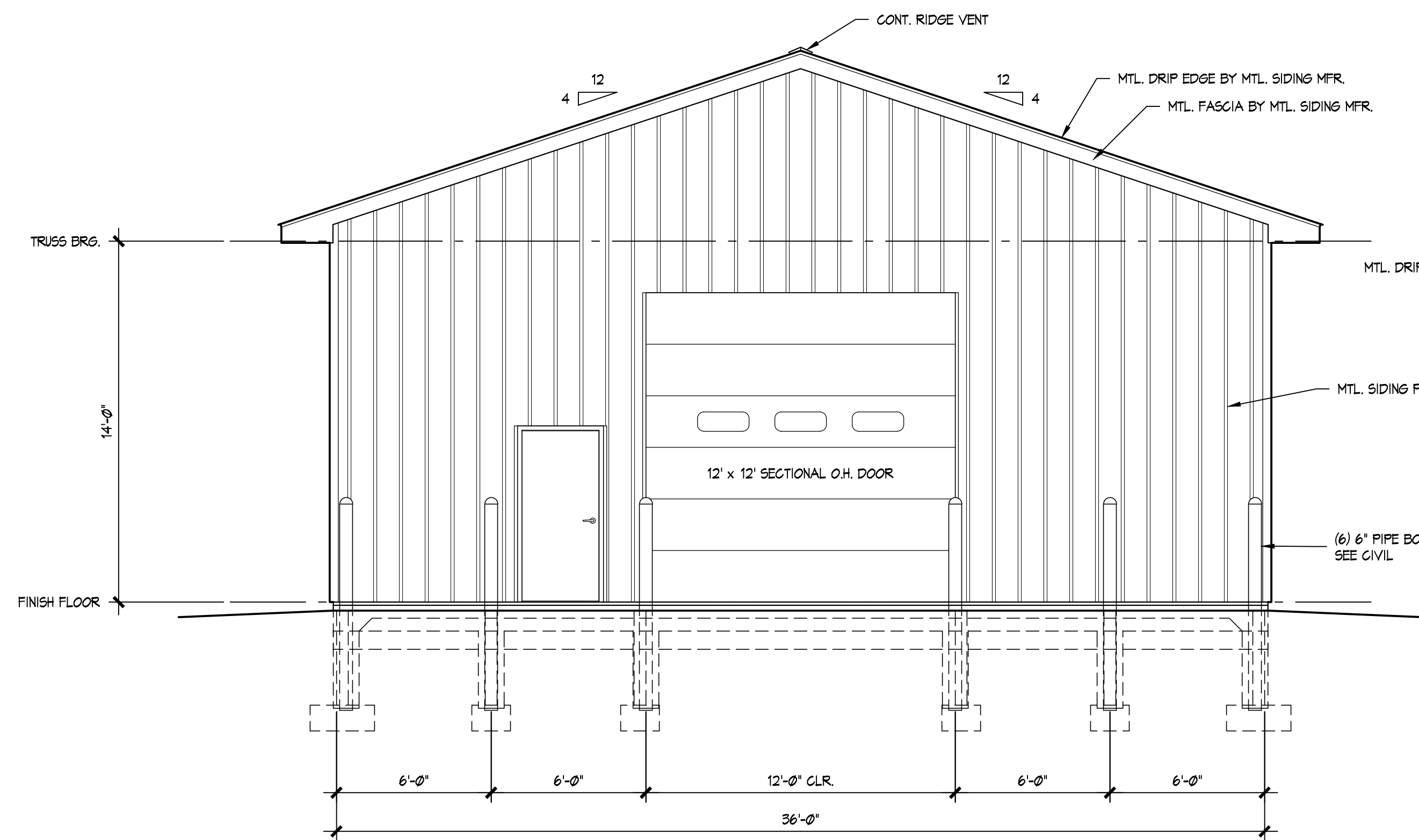


S1 - SILL DETAIL

SILL DETAILS

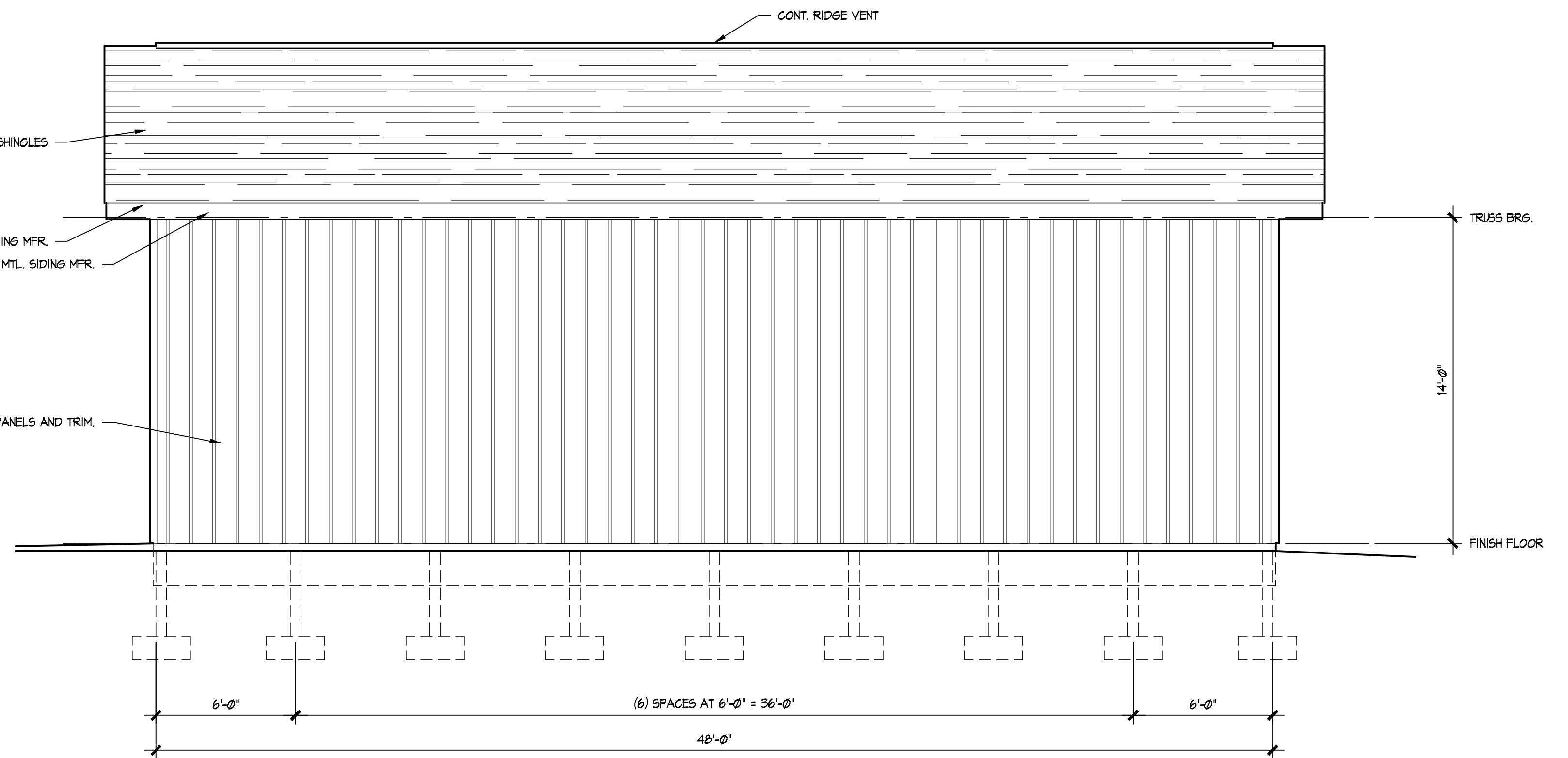
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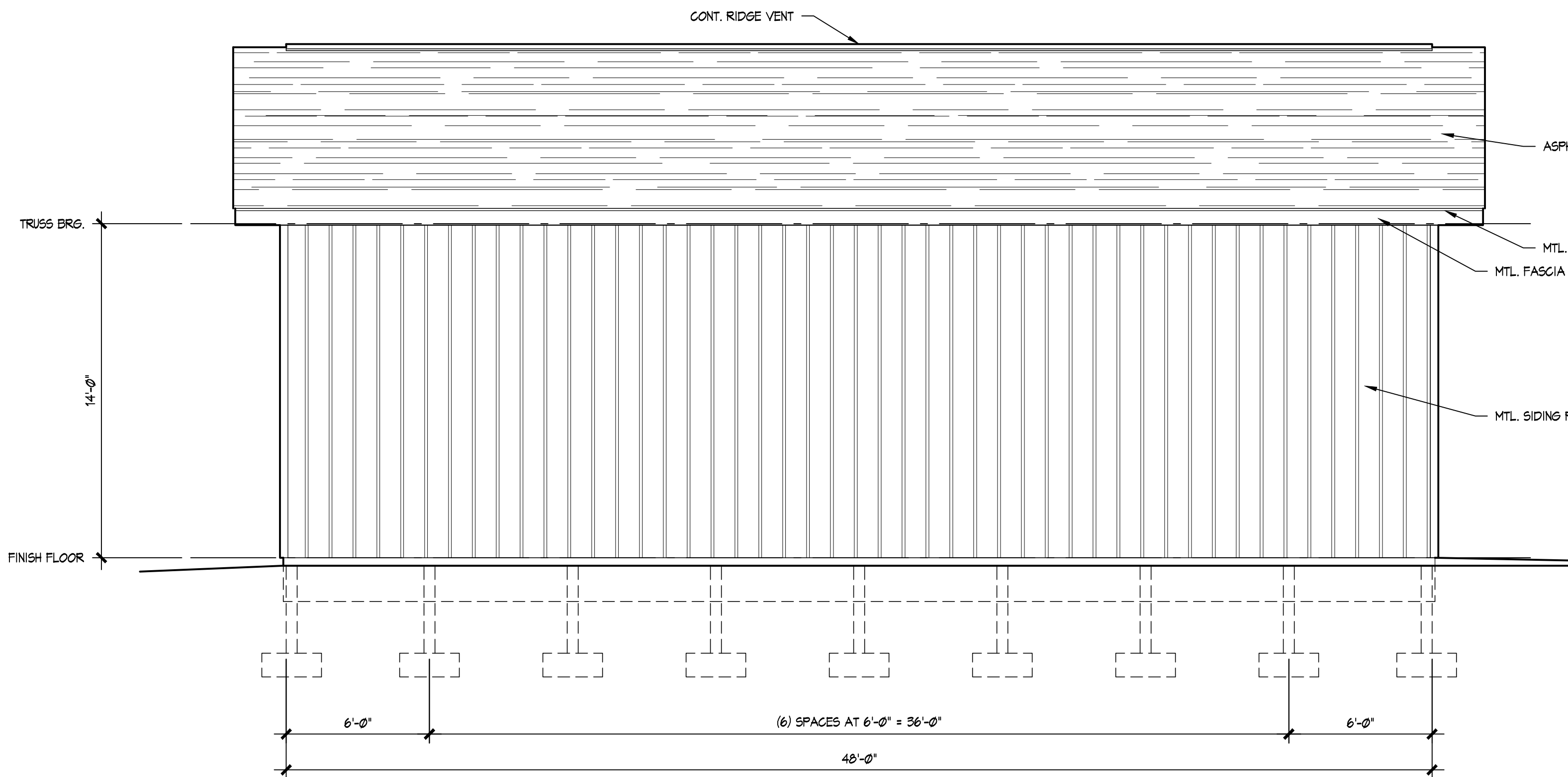
FRONT ELEVATION

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



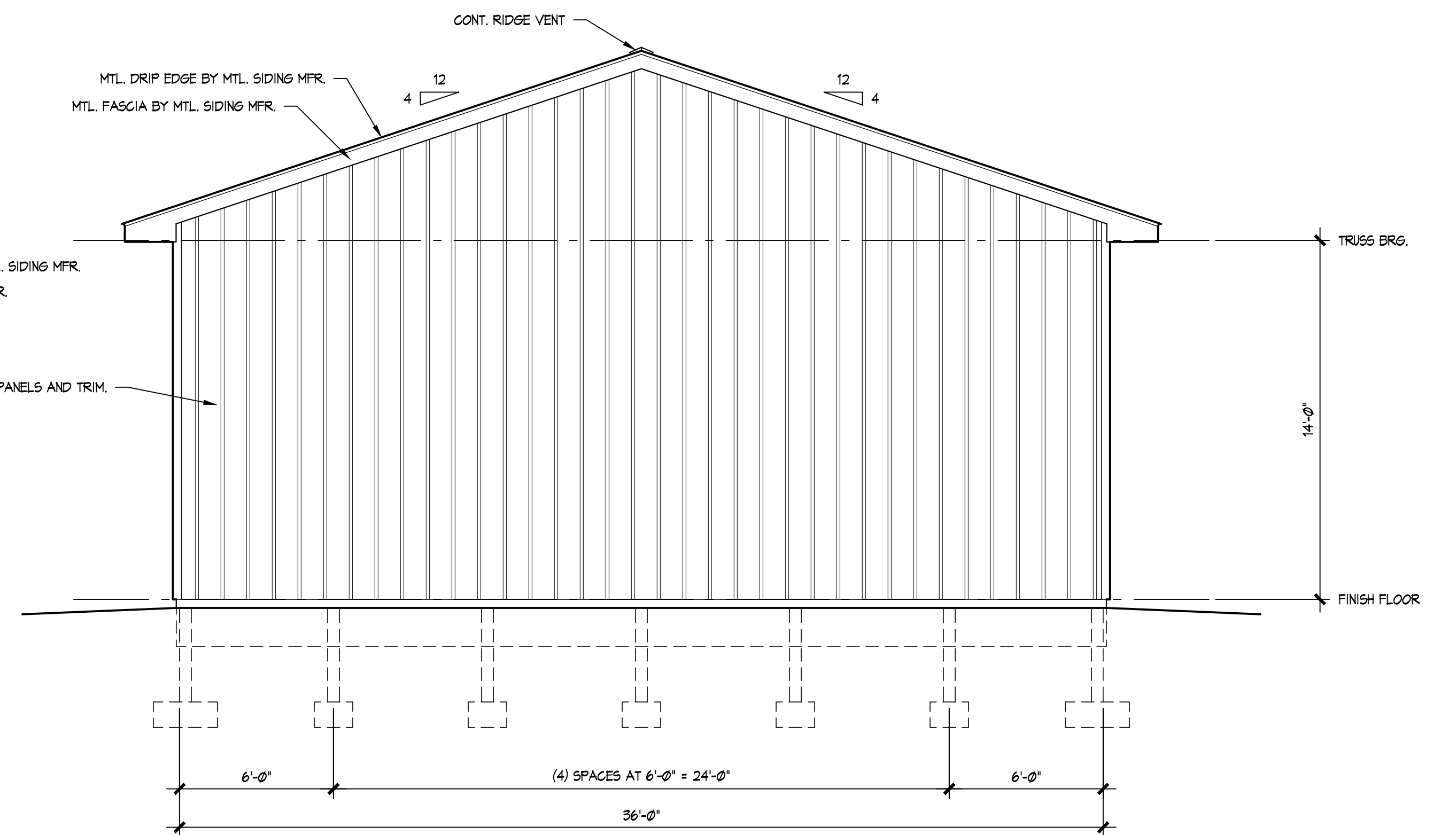
RIGHT EAVE ELEVATION

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



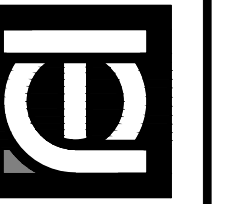
LEFT EAVE ELEVATION

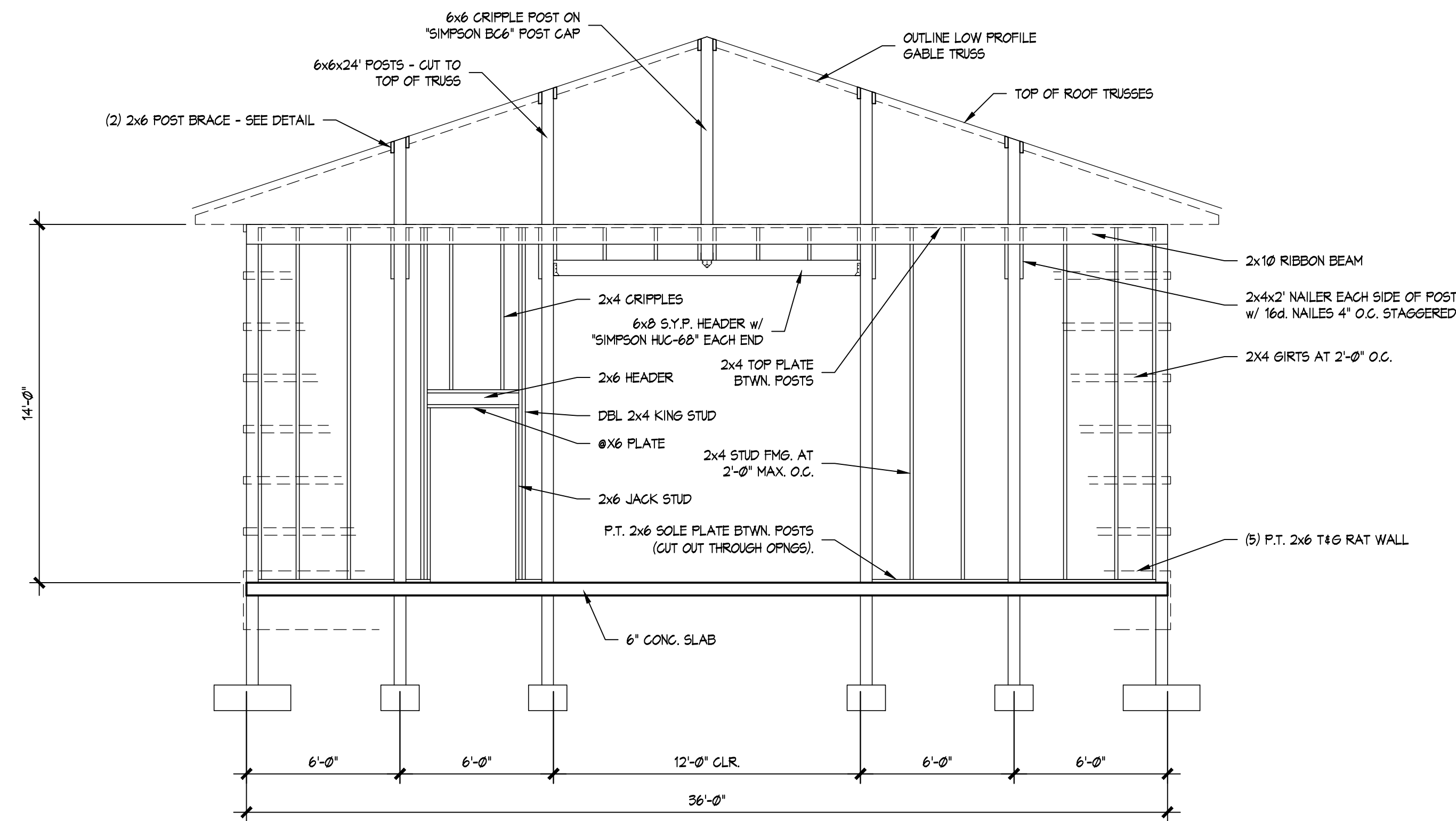
SCALE: $\frac{1}{2}" = 1'-0"$



REAR ELEVATION

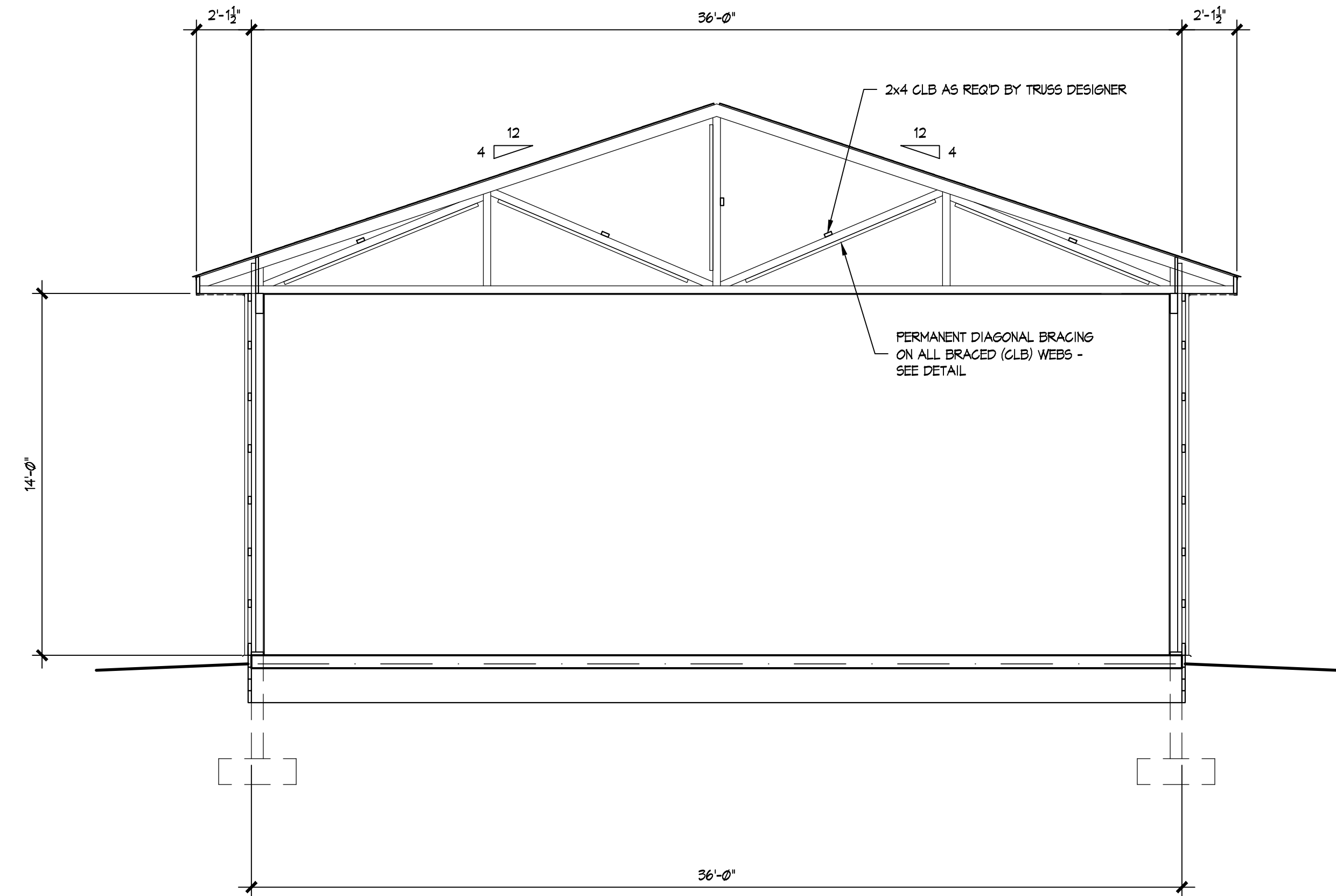
SCALE: $\frac{1}{2}" = 1'-0"$





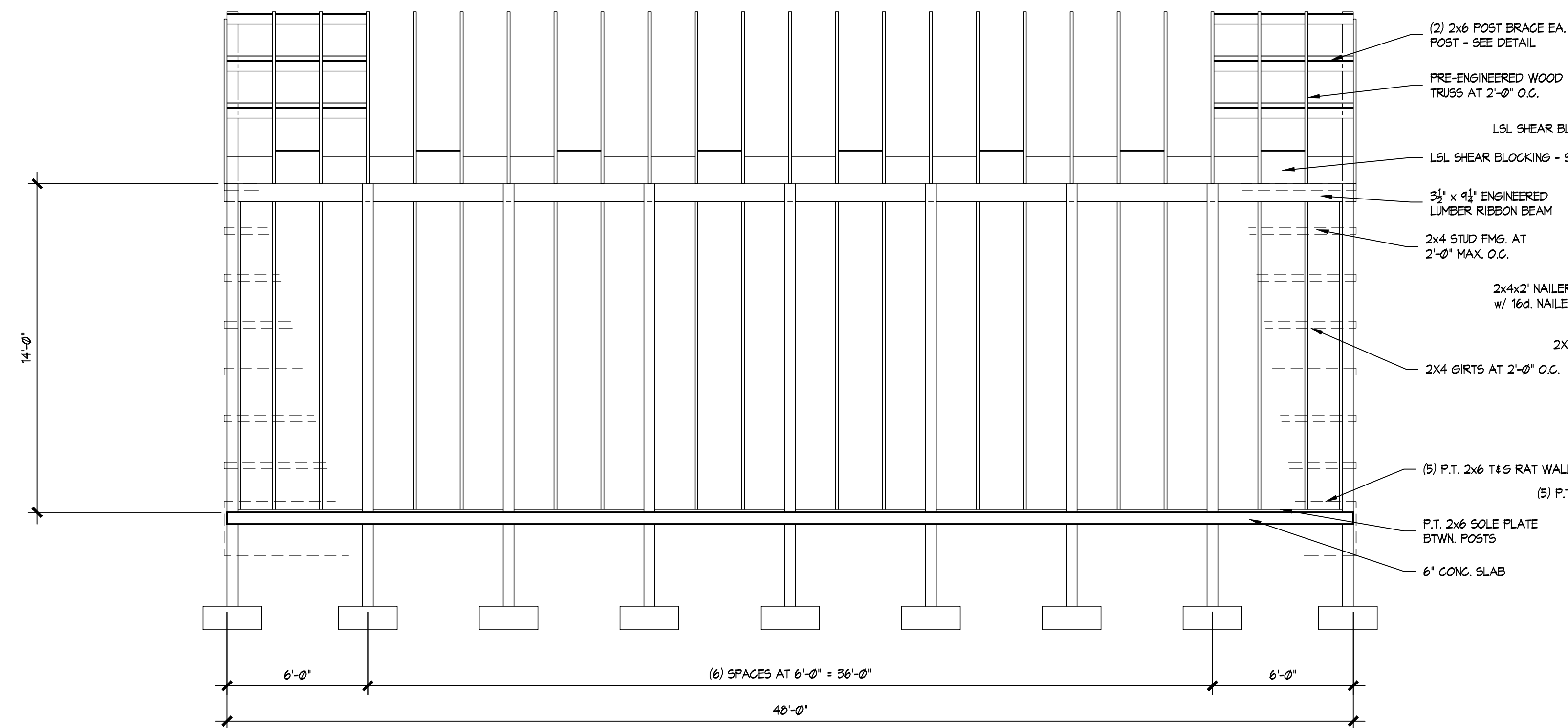
FRONT FRAMING ELEVATION

SCALE: $\frac{3}{4}" = 1'-0"$



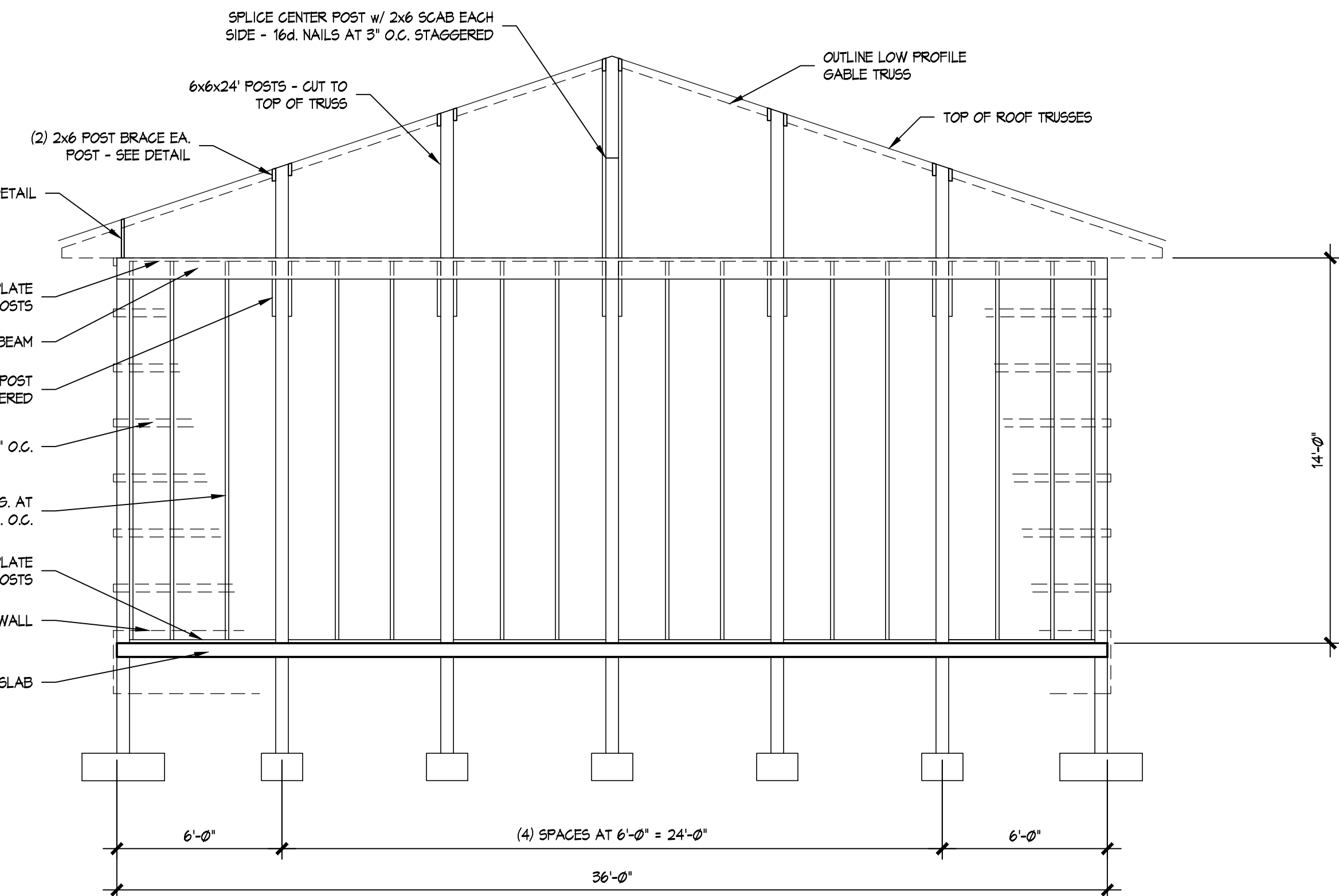
BUILDING SECTION "A-A"

SCALE: $\frac{3}{4}" = 1'-0"$



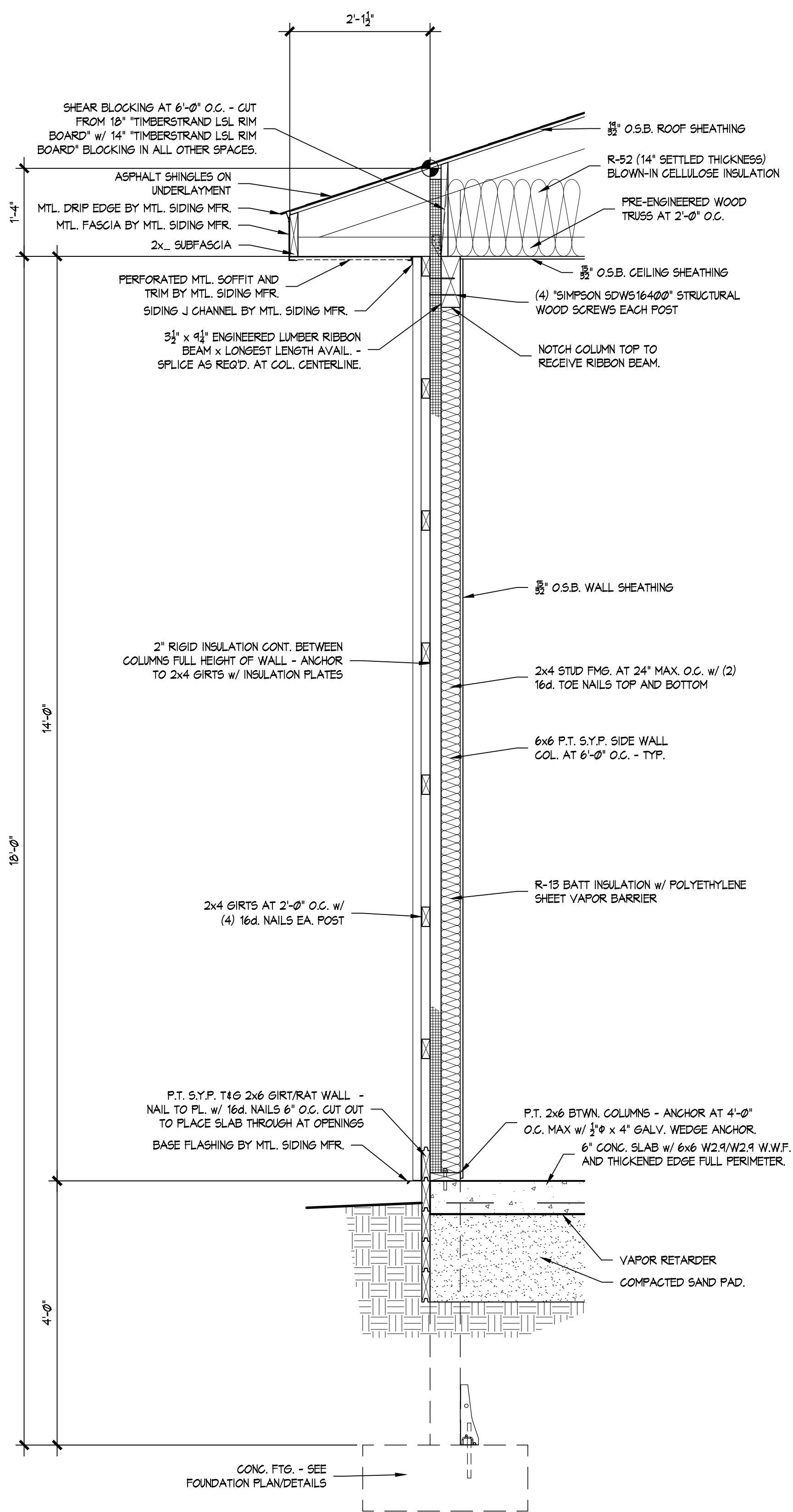
EAVE FRAMING ELEVATION

SCALE: $\frac{3}{4}" = 1'-0"$



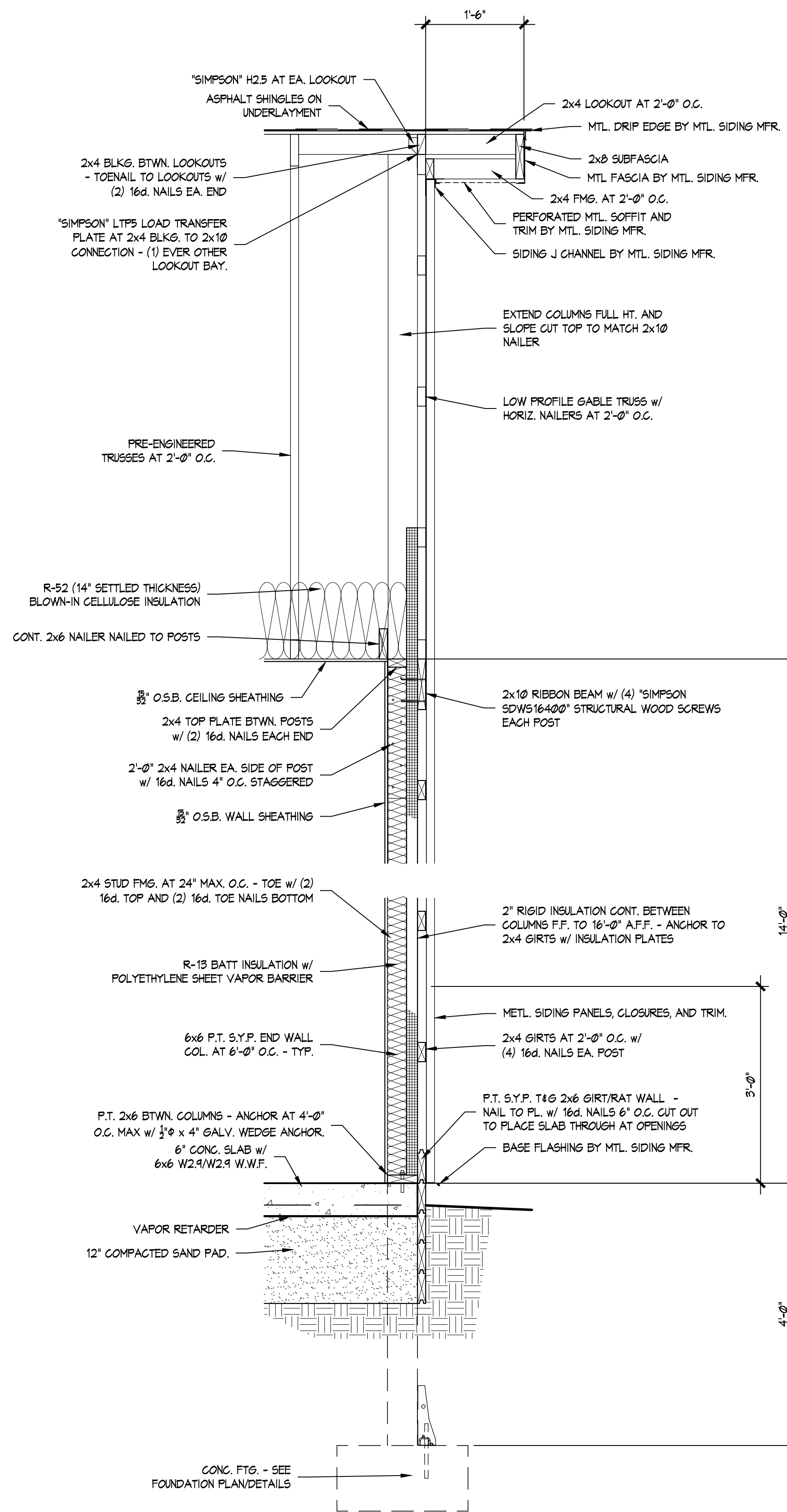
REAR FRAMING ELEVATION

SCALE: $\frac{3}{4}" = 1'-0"$



TYP. EAVE WALL DETAIL

SCALE: 3/4" = 1'-0"



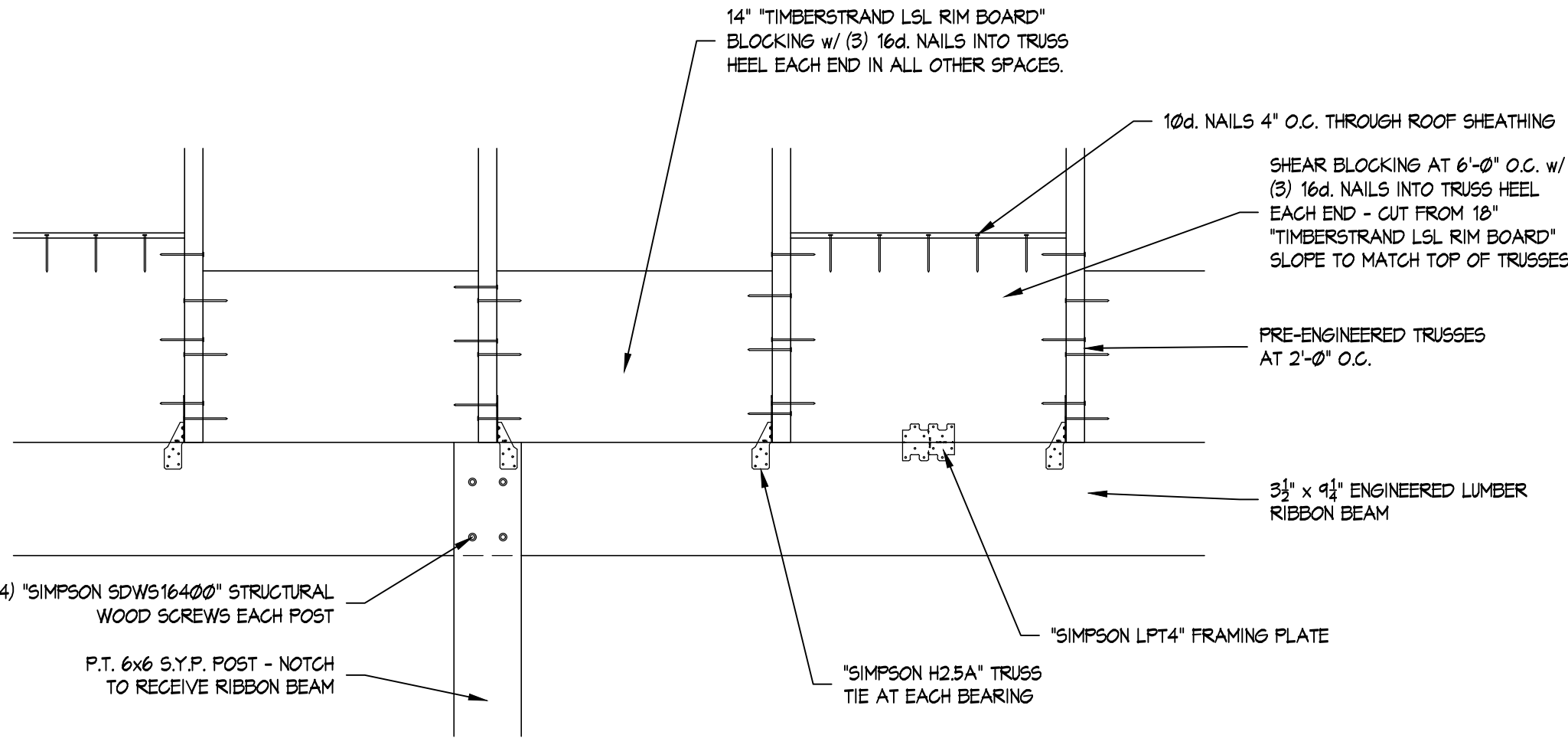
TYP. GABLE WALL DETAIL

SCALE: 3/4" = 1'-0"

SHEATHING / NAILING SCHEDULE:

INTERIOR WALL SHEATHING: 1/2" O.S.B. SHEATHING PLACED LONG EDGE PERPENDICULAR TO FRAMING AND ENDS STAGGERED w/ MIN. 8d COMMON NAILS SPACED 6" O.C. MAX. AT FRAMING AT PANEL ENDS AND EDGES AND 12" O.C. INTO VERTICAL FRAMING MEMBERS IN PANEL FIELD.

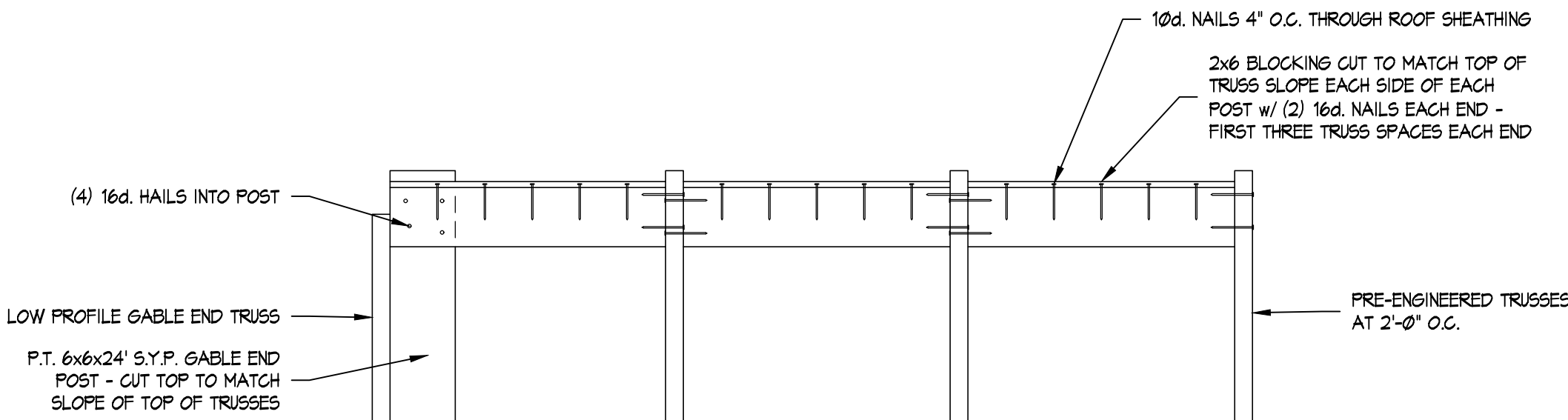
ROOF SHEATHING: 1/2" 40/20 SPAN-RATED O.S.B. ROOF SHEATHING PLACED LONG EDGE PERPENDICULAR TO FRAMING AND ENDS STAGGERED w/ MIN. 10d COMMON NAILS SPACED 6" O.C. MAX AT FRAMING AT PANELS ENDS AND EDGES, AND 12" O.C. INTO FRAMING IN PANEL FIELD. NAILS PANELS INTO SHEAR BLOCKING w/ 10d COMMON NAILS 4" O.C.



TRUSS HEEL SHEAR BLOCKING DETAIL

SCALE:

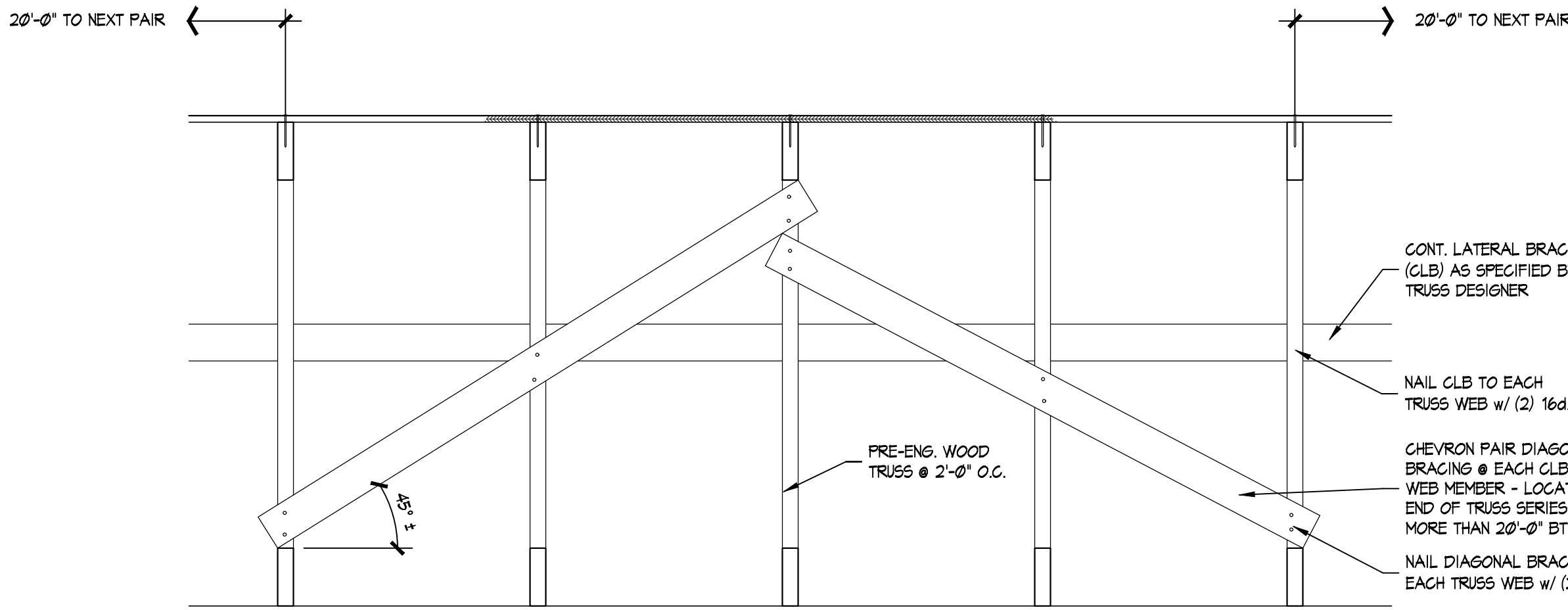
1" = 1'-0"



POST BRACE SHEAR BLOCKING DETAIL

SCALE:

1" = 1'-0"



TYP. DIAGONAL TRUSS BRACING DETAIL

SCALE:

1" = 1'-0"

GENERAL STRUCTURAL NOTES

1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS. AND SPECIFICATIONS. SHOULD CONFLICTS OCCUR BETWEEN THE DRAWINGS AND/OR THE GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.
2. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED, SELF SUPPORTING, STABLE STRUCTURE UNLESS OTHERWISE INDICATED. THEY DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND CONSTRUCTION SEQUENCE AND PROVIDE ALL MEASURES NECESSARY TO ENSURE THE STABILITY AND SAFETY OF THE STRUCTURE AND ITS COMPONENTS. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, SHORING FOR EARTH BANKS, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, SUPPORT AND BRACING FOR CRANES AND ON POLES, ETC.
3. THE GOVERNING BUILDING CODE IS MBC 2009.
4. SHOP DRAWINGS PREPARED BY SUPPLIERS, SUBCONTRACTORS, ETC. SHALL BE REVIEWED BY THE ARCHITECT/ENGINEER FOR CONFORMANCE WITH DESIGN INTENT ONLY.
5. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS AGAINST APPROVED MANUFACTURERS CERTIFIED EQUIPMENT DRAWINGS.
6. UNLESS NOTED OTHERWISE, REQUIREMENTS GIVEN FOR ONE OR MORE LOCATIONS ALSO APPLY AT OTHER LOCATIONS AT WHICH CONDITIONS ARE SIMILAR. THE REQUIREMENTS GIVEN SHALL BE ADAPTED TO CONDITIONS AT SUCH OTHER LOCATIONS.
7. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS AND FOR COORDINATING ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH THOSE SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS. IF DISCREPANCIES IN THE DIMENSIONS OCCUR, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO BRING THE DISCREPANCY TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

BACKFILLING NOTES

1. PROVIDE A BALANCED BACKFILL AGAINST FOUNDATION WALLS TO ELIMINATE LATERAL LOAD EFFECTS, OR PROVIDE NECESSARY TEMPORARY LATERAL SUPPORT TO THE TOP OF THE WALL UNTIL PERMANENT SUPPORT IS INSTALLED.
2. AFTER EXCAVATING FOR ALL EARTH-SUPPORTED FLOOR SLABS, THE EXPOSED NATURAL SOIL SHALL BE THOROUGHLY COMPACTED PRIOR TO PLACING FILL.
3. ALL EXCAVATED AREAS AROUND STRUCTURES SHALL BE BACKFILLED WITH GRANULAR MATERIAL FREE OF ORGANIC MATTER, SILT AND CLAY. ALL FILL SLOPES SHALL BE PLACED IN 12" LAYERS AND COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY THE MICHIGAN CONE METHOD.

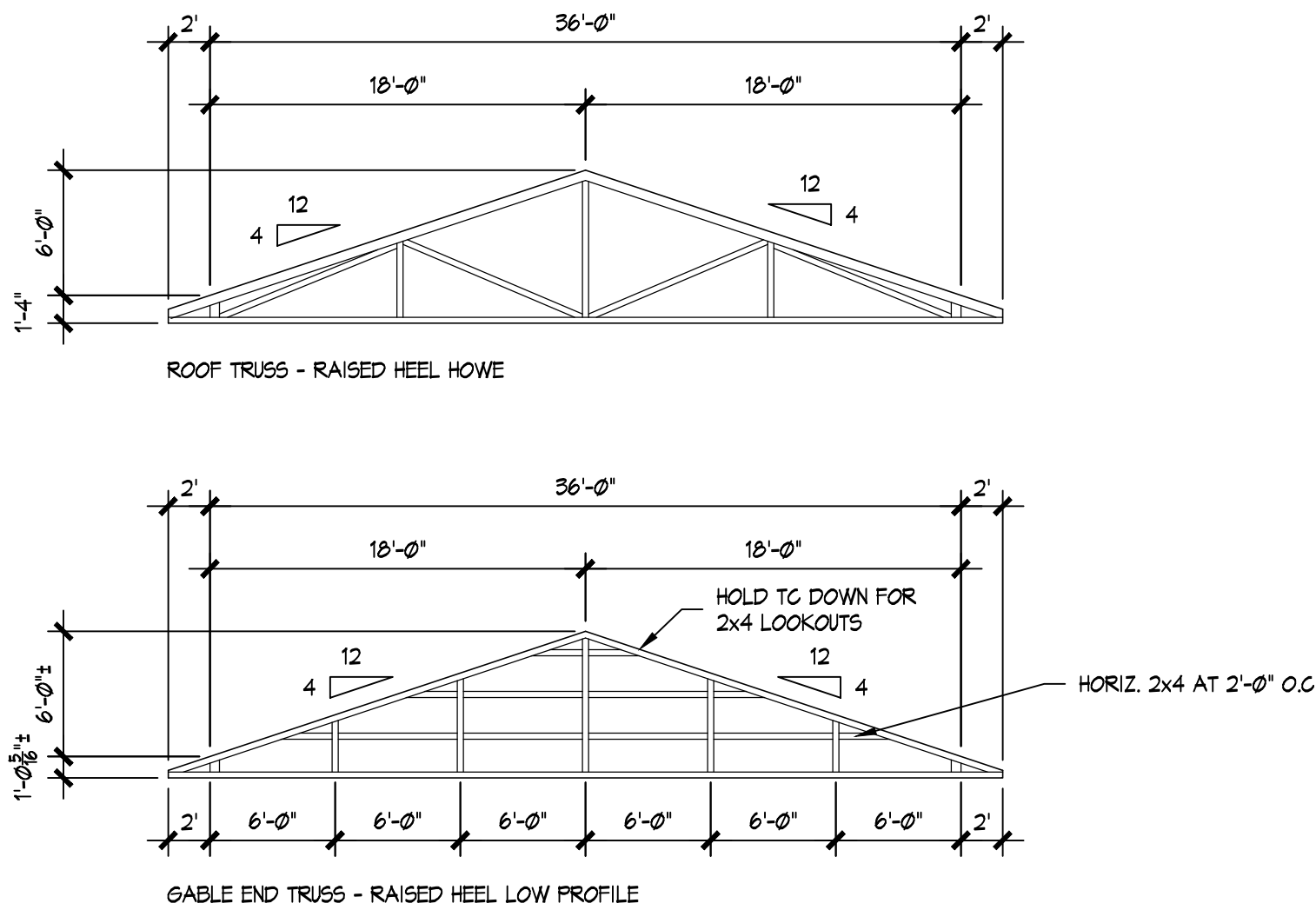
WOOD FRAMING NOTES

1. ALL FRAMING LUMBER SHALL BE SPF #2 OR BETTER, EXCEPT SOLE PLATE WHICH SHALL BE S.Y.P. NO. 2 OR BETTER. LUMBER LABELED P.T. SHALL BE PRESSURE PRESERVATIVE TREATED S.Y.P. #2 OR BETTER.
2. ALL ENGINEERED LUMBER BEAMS SHALL BE TJM 2.0E PARALLAM OR BETTER.
3. STEEL PLATES OR FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER AND PROTECTED WITHIN THE BUILDING ENVELOPE (ADEQUATELY SHIELDED FROM DIRECT CONTACT WITH MOISTURE) SHALL BE STAINLESS STEEL OR GALVANIZED TO G60 PER ASTM A924 REQUIREMENTS. STEEL PLATES OR FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER LOCATED OUTSIDE OF THE BUILDING ENVELOPE OR EXPOSED TO MOISTURE SHALL BE STAINLESS STEEL OR GALVANIZED TO G90 PER ASTM A924.
4. CONTRACTOR SHALL NOT MIX GALVANIZED AND STAINLESS STEEL. ANY METAL PARTS IN CONTACT WITH OTHER METAL PARTS SHALL BE OF A SIMILAR MATERIAL.

WOOD TRUSS NOTES

1. CONTRACTOR SHALL PROVIDE AND INSTALL METAL-PLATE CONNECTED WOOD TRUSSES DESIGNED TO SUPPORT THE LOADS INDICATED ON THE PLANS. TRUSSES SHALL HAVE A MAXIMUM DEFLECTION OF L/240 AND SHALL BE SPACED AT 2'-0" O.C. MAX.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF MICHIGAN. SHOP DRAWINGS FOR EACH TRUSS SHALL SHOW SIZE, SPECIES AND STRESS GRADES OF ALL LUMBER, METAL PLATE TYPE, ORIENTATION AND SIZES, BEARING AND UPLIFT REQUIREMENTS. ALL LOAD CASES INVESTIGATED AND MAXIMUM STRESSES IN EACH MEMBER SHALL ALSO BE INCLUDED.
3. TRUSS MANUFACTURER SHALL DESIGN TRUSSES FOR WIND LOADS PER SECTION OF SEI/ASCE 7-05.
4. WOOD TRUSS FABRICATION SHALL COMPLY WITH TPI 1-95, "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION" AND TPI D58-89, "RECOMMENDED DESIGN SPECIFICATION FOR TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES".
5. METAL PLATE CONNECTORS SHALL COMPLY WITH TPI 1, HOT-DIP GALVANIZED STEEL SHEET: ASTM A653/A653 M, G60 COATING DESIGNATION, DESIGNATION SS, GRADE 33, AND NOT LESS THAN 0.036 IN. THICK.
6. PROVIDE DIMENSIONAL LUMBER OF ANY SPECIES FOR TRUSS CHORD AND WEB MEMBERS, CAPABLE OF SUPPORTING THE REQUIRED LOADS WITHOUT EXCEEDING ALLOWABLE DESIGN VALUES ACCORDING TO AFPA'S "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION" AND ITS "SUPPLEMENT".
7. CONTRACTOR SHALL INSTALL (1) "SIMPSON H2.5A" TIE-DOWNS AT EACH BEARING LOCATIONS OF ALL TRUSSES (U.O.N.), EXCLUDING GABLE END TRUSS WITH CONTINUOUS BEARING.
8. TRUSS MANUFACTURER SHALL DESIGN TRUSS BEARINGS FOR 650 PSI ALLOWABLE BEARING PRESSURE. CONTRACTOR SHALL PROVIDE BEARING ENHANCEMENT AS INDICATED IN PLANS OR AS OTHERWISE REQUIRED.
9. TRUSSES SHALL BE HANDLED AND INSTALLED PER WTCA AND TPI REQUIREMENTS. INSTALL AND FASTEN PERMANENT BRACING DURING TRUSS ERECTION AND BEFORE LOADS ARE APPLIED.
10. ANCHOR ENDS OF PERMANENT BRACING WHERE TERMINATING AT WALLS OR BEAMS. IN ADDITION TO ANY LATERAL BRACING WHICH IS REQUIRED BY THE TRUSS MANUFACTURER/SUPPLIER, THE CONTRACTOR SHALL PROVIDE AND INSTALL PERMANENT DIAGONAL STABILITY BRACING FOR ALL COMPRESSION WEBS AND PRIMARY TOP CHORDS OF PIGGY BACK TRUSSES OR OTHER MEMBERS WHICH REQUIRE BRACING TO REDUCE THEIR BUCKLING LENGTH. THIS BRACING SHALL CONSIST OF 2X4's ATTACHED TO EACH WEB MEMBER WITH NOT LESS THEN 2 - 16d NAILS. BRACING SHALL EXTEND ON A 45 DEGREE DIAGONAL FROM THE TOP TO BOTTOM OF THE WEBS. FOR EACH BRACED MEMBER, DIAGONALS SHALL BE INSTALLED IN CHEVRON PAIRS WITH ONE PAIR OF DIAGONALS AT EACH END OF THE SERIES OF TRUSSES AND NOT MORE THAN 20 FEET BETWEEN PAIRS.

BUILDING LOADS		
LIVE LOADS		
Section 1603.1.1		
OCCUPANCY OR USE	UNIFORM (PSF)	CONCENTRATED (LBS.)
PARKING GARAGE		
Section 1603.1.3		
LOAD TYPE		UNIFORM (PSF)
1. GROUND SNOW LOAD, Pg		70
2. FLAT ROOF SNOW LOAD, Pf		53.9
3. SLOPED ROOF SNOW LOAD, Ps		53.9
4. UNBALANCED SNOW LOADS		0.0/70.0
SNOW LOAD FACTORS		VALUE
1. SNOW EXPOSURE FACTOR, Ce		1.0
2. SNOW LOAD IMPORTANCE FACTOR, Is		1.0
3. THERMAL FACTOR, Ct		1.1
4. ROOF SLOPE FACTOR, Cs		1.0
WIND LOADS		
Section 1603.1.4		
LOAD OR VARIABLE		VALUE
1. BASIC WIND SPEED (3-SECOND GUST)		105 MPH
2. WIND IMPORTANCE FACTOR, Iw		1.00
3. WIND EXPOSURE CATEGORY		C
4. INTERNAL PRESSURE COEFFICIENT, GCpi		+0.18 -0.18
4. MAIN WIND FORCE RESISTING SYSTEM (MAX WALL)		31.2 PSF
5. COMPONENTS & CLADDING DESIGN PRESSURE (MAX)		+15.5,-81.9 PSF
EARTHQUAKE DESIGN DATA		
Section 1603.1.5		
LOAD OR VARIABLE		VALUE
1. SEISMIC USE GROUP		I
2. SPECTRAL RESPONSE ACCELERATION, Ss		0.048g
3. SPECTRAL RESPONSE ACCELERATION, Si		0.025g
4. SPECTRAL RESPONSE COEFFICIENT, Fa		1.6
5. SPECTRAL RESPONSE COEFFICIENT, Fv		2.4
6. SITE CLASS		D
7. SEISMIC DESIGN CATEGORY		A
8. BASIC SEISMIC-FORCE-RESISTING SYSTEM USED:		
TIMBER FRAME/LIGHT FRAME WALL OF SHEAR PANELS OF ALL OTHER MATERIALS		
7. SEISMIC IMPORTANCE FACTOR Ie = 1.0		
8. MINIMUM LATERAL FORCE ANALYSIS PROCEDURE, SECTION 1616.4		
SOIL BEARING STRENGTH		
Section 1802.6		
ASSUMED SOIL BEARING STRENGTH IS 2,000 PSF.		
CONTRACTOR SHALL VERIFY BEARING STRENGTH BY SOIL BORINGS OR OTHER MEANS.		
NOTES:		
1. APPLICABLE CODE IS MBC 2021.		
2. LOADS ARE BASED ON SECTION 16 OF MBC 2021 UNLESS OTHERWISE NOTED.		



PRE-ENGINEERED TRUSS PROFILES

SCALE:

3/8" = 1'-0"

DRAWING TITLE

STRUCTURAL NOTES AND DETAILS

PROJECT TITLE

LITTLE TRAVERSE BAY BANDS OF OJAWA INDIANS
WWNDK MAINTENANCE BUILDING
HARBOR SPRINGS, MICHIGAN

PROJECT NO.

300-25

DATE

JULY 31, 2026

SHEET

A6.1

ANTHONY P. ESSON
ARCHITECT
PO BOX 479
GAYLORD, MICHIGAN 49724
(989) 732-0585
TELEPHONE:



J:\JLK Engineering\projects\2025\WVNDK_MAINTENANCE\WVNDK_MAINTENANCE.dwg, 10/20/25, 4:20:14 PM, AutoCAD 2025 (Document) 1:03

GENERAL MECHANICAL & PLUMBING NOTES:

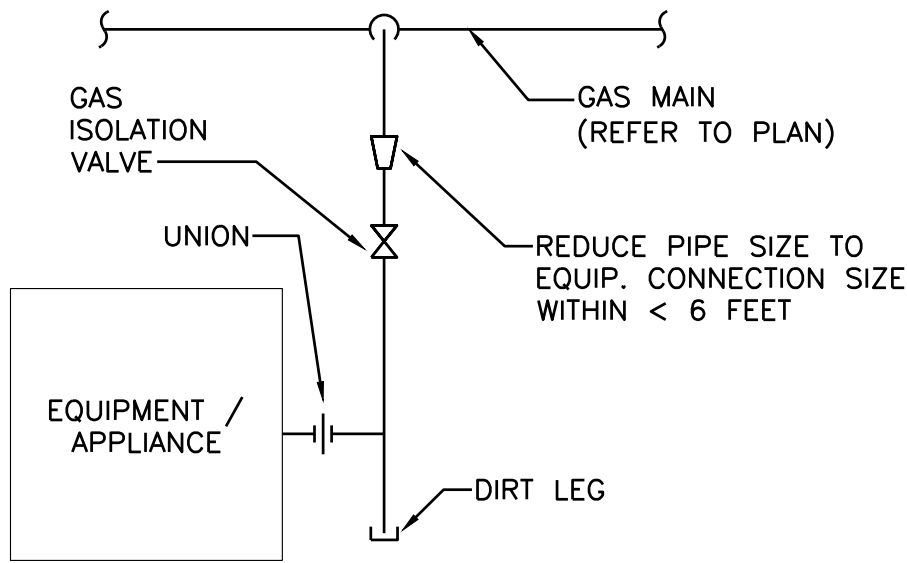
1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL SCOPE OF WORK. CONTRACTOR SHALL PROVIDE MECHANICAL & PLUMBING SYSTEMS AND RELATED EQUIPMENT COMPLETE AND INCLUDE ALL NECESSARY OFFSETS, FITTINGS, AND OTHER COMPONENTS REQUIRED DUE TO INTERFERENCES, SPACE CONSTRAINTS, ETC.
2. MECHANICAL SYSTEMS SHALL BE INSTALLED PER MICHIGAN MECHANICAL CODE, MICHIGAN PLUMBING CODE, INTERNATIONAL FUEL GAS CODE, APPLICABLE NFPA BUILDING CODES (IE. 101, 90A, ETC.), AND APPLICABLE BUILDING CODES (I.E. MICHIGAN BUILDING CODE, MICHIGAN ENERGY CODE, ETC.).
3. PLUMBING SYSTEMS SHALL BE INSTALLED PER MICHIGAN PLUMBING CODE, INTERNATIONAL FUEL GAS CODE, MICHIGAN MECHANICAL CODE, AND APPLICABLE BUILDING CODES (I.E. MICHIGAN BUILDING CODES, NFPA CODES, ETC.).
4. COORDINATE THE INSTALLATION OF MECHANICAL AND PLUMBING WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL VERIFY ALL MECHANICAL, PLUMBING AND ELECTRICAL CLEARANCES PRIOR TO FABRICATION OF ANY NEW WORK. DUCTWORK, PIPING, ETC. SHALL NOT BE LOCATED DIRECTLY OVER ELECTRICAL EQUIPMENT AND PANELS, OR INTERFERE WITH ELECTRICAL/MECHANICAL EQUIPMENT CLEARANCE SPACES.
5. PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, HANGERS, ETC., FOR THE PROPER INSTALLATION OF ALL MECHANICAL AND PLUMBING SYSTEMS. DUCTWORK AND/OR PIPING SHALL NOT BE SUPPORTED FROM/BY EQUIPMENT OR EQUIPMENT CONNECTIONS.
6. VERIFY REQUIREMENTS OF ALL EQUIPMENT WITH SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION. NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN SHOP DRAWINGS AND PLANS.
7. COORDINATE ALL FLOOR, WALL, AND ROOF PENETRATIONS, LOUVERS, ETC. WITH ARCHITECTURAL/STRUCTURAL TRADES PRIOR TO ROUGH-IN. UNLESS NOTED OTHERWISE, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING, PATCHING ASSOCIATED WITH THEIR WORK.
8. UNLESS OTHERWISE NOTED, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL NEW PENETRATIONS THROUGH ALL WALLS WITH FIRE CAULK IN ACCORDANCE WITH CURRENT BUILDING CODE REQUIREMENTS.

MECHANICAL & PLUMBING ABBREVIATION LIST

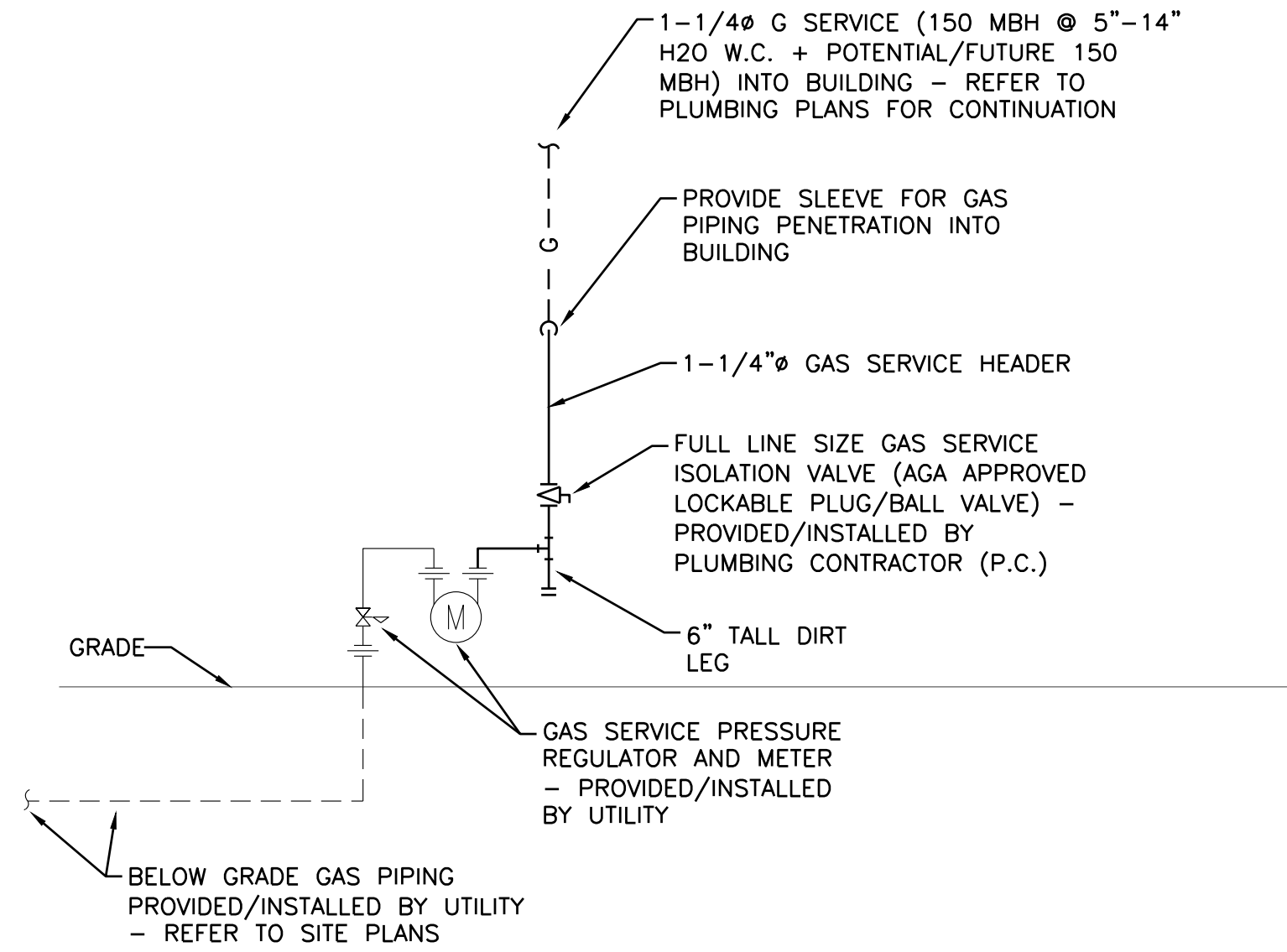
ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
APD	AIR PRESSURE DROP	LAT	LEAVING AIR TEMPERATURE
BFP	BACKFLOW PREVENTER	MAX	MAXIMUM
BHP	BRAKE HORSEPOWER	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BTU	BRITISH THERMAL UNIT	M.A.	MECHANICAL CONTRACTOR
BTUH	BRITISH THERMAL UNITS PER HOUR	MCA	MINIMUM CIRCUIT AMPS
CAP	CAPACITY	MECH	MECHANICAL
CFH	CUBIC FEET PER HOUR	MFR	MANUFACTURER
CFM	CUBIC FEET PER MINUTE	MIN	MINIMUM
CO	CLEAN OUT	MISC	MISCELLANEOUS
COND	CONDENSATE	N.C.	NOISE CRITERIA
CONT	CONTINUATION OR CONTINUED	NIC	NOT IN CONTRACT
CONTR	CONTRACTOR	NOM	NOMINAL
COORD	COORDINATE	OA	OUTSIDE AIR
CW	DOMESTIC COLD WATER		
DB	DRY BULB TEMPERATURE		
DEG	DEGREES	P.C.	PLUMBING CONTRACTOR
DN	DOWN	PD	PRESSURE DROP
DW&V	DRAINAGE WASTE & VENT	PRI	PRIOR TO ROUGH-IN
		PRV	PRESSURE REDUCING/REGULATING VALVE
(E)	EXISTING	PSIA	POUNDS PER SQUARE INCH (ABSOLUTE)
EA	EXHAUST AIR	PSIG	POUNDS PER SQUARE INCH (GAUGE)
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
E.C.	ELECTRICAL CONTRACTOR	REL.A	RELIEF AIR
EF	EXHAUST FAN	RH	RELATIVE HUMIDITY
EG	EXHAUST GRILLE OR REGISTER	RPM	REVOLUTIONS PER MINUTE
ELEC	ELECTRICAL		
ELEV	ELEVATION	SA	SUPPLY AIR
ESP	EXTERNAL STATIC PRESSURE	SAG	SUPPLY AIR GRILLE OR REGISTER
EWB	ENTERING WET BULB TEMPERATURE	SAN	SANITARY WASTE
EWT	ENTERING WATER TEMPERATURE	SP	STATIC PRESSURE
EXH	EXHAUST	SqFt	SQUARE FOOT/SQUARE FEET
		ST	STORM WATER
(F)	FUTURE		
FA	FRESH AIR	TSP	TOTAL STATIC PRESSURE
FD	FLOOR DRAIN	TYP	TYPICAL
FLA	FULL LOAD AMPS		
FLR	FLOOR	U/G	UNDERGROUND (BELOW GRADE)
FPM	FEET PER MINUTE	UH	UNIT HEATER
FT	FEET	UL	UNDERWRITERS LABORATORY
		UON	UNLESS OTHERWISE NOTED
G	GAS (NATURAL GAS/PROPANE)		
GPH	GALLONS PER HOUR	V	VENT
GPM	GALLONS PER MINUTE	VD	VOLUME DAMPER
GUH	GAS UNIT HEATER	VTR	VENT THRU ROOF
HP	HORSEPOWER	W	WASTE
HR	HOUR	WCO	WALL CLEAN OUT
HTG	HEATING	WG	WATER GAUGE
HW	DOMESTIC HOT WATER	W&V	WASTE & VENT
I.E.	INVERT ELEVATION		
IN	INCHES		
INL	INLET		
ISP	INTERNAL STATIC PRESSURE		

MECHANICAL & PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PIPE ELBOW UP		RECTANGULAR TAKE-OFF (SINGLE LINE)
	PIPE ELBOW DOWN		ROUND TAKE-OFF (SINGLE LINE)
	DIRECTION OF FLOW		SPIN-IN FITTING (WITH VOLUME DAMPER)
	UNION		RECTANGULAR ELBOW UP
	CONCENTRIC REDUCER		ROUND ELBOW UP
	ECCENTRIC REDUCER		DUCT UP (SINGLE LINE)
	PIPE CAP OR PLUG		RECTANGULAR ELBOW DOWN
	ISOLATION VALVE		ROUND ELBOW DOWN
	BALL VALVE		DUCT DOWN (SINGLE LINE)
	PLUG VALVE		CONCENTRIC TRANSITION (SINGLE LINE)
	PRESSURE REDUCING VALVE		ECCENTRIC TRANSITION (SINGLE LINE)
	PRESSURE AND TEMPERATURE RELIEF VALVE		CROSS SECTION OF SUPPLY AIR DUCT
	PRESSURE REGULATING VALVE		CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
	PRESSURE AND TEMPERATURE TEST PLUG		FLEXIBLE CONNECTION (DUCT)
	PRESSURE GAUGE AND COCK		SQUARE CEILING DIFFUSER
	MANUAL AIR VENT		RETURN OR EXHAUST CEILING GRILLE
	GAS PIPING (NATURAL GAS OR PROPANE)		TRANSFER GRILLE
	THERMOSTAT		VOLUME DAMPER (MANUALLY ADJUSTABLE)
	TEMPERATURE SENSOR		MOTORIZED DAMPER
	CARBON DIOXIDE SENSOR		
	COMBO SMOKE/CO DETECTOR		
	CARBON MONOXIDE SENSOR		
	NITROGEN DIOXIDE SENSOR		
	COMBO CO/NO2 MONITOR/CONTROL PANEL		



TYPICAL GAS CONNECTION AT EQUIPMENT PIPING DETAIL
NO SCALE



- NOTES:
- COORDINATE INSTALLATION OF GAS SERVICE WITH OWNER AND UTILITY (DTE/MICHCON? - CONTACT ? @ ?). THE OWNER SHALL PAY FOR ALL GAS UTILITY SERVICE CHARGES.
 - COORDINATE GAS SERVICE PRESSURE FOR THIS PROJECT WITH GAS UTILITY. SERVICE PRESSURE SHALL BE 7.5" W.C. (1/4 PSI) - 14" W.C. (1/2 PSI) PROVIDED AT OUTLET OF GAS SERVICE METER.
 - PROVIDE DIRT LEGS & ISOLATION VALVES AT ALL EQUIPMENT CONNECTIONS.

NATURAL GAS SERVICE RISER DETAIL
NO SCALE

POWER-VENTED, SEPARATED COMBUSTION, LOW STATIC, GAS FIRED UNIT HEATER SCHEDULE												
UNIT I.D.	GAS TYPE	CAPACITY INPUT MBH	CAPACITY OUTPUT MBH	AIRFLOW CFM	AIR TEMP RISE ° F	FAN			ELECTRICAL			REMARKS
						TYPE	HP	RPM	VOLTS	PHASE	FLA	
GUH-1	NAT. GAS 5-14" W.C.	75	62,250	961	60	DIRECT DRIVE PROPELLER (SOUTH)	0.06	1,550	115	1	3.7	SEE NOTES BELOW
GUH-2	NAT. GAS 5-14" W.C.	75	62,250	961	60	DIRECT DRIVE PROPELLER	0.06	1,550	115	1	3.7	SEE NOTES BELOW

- NOTES:
- MODEL NUMBERS ARE REZNOR UNLESS OTHERWISE NOTED.
 - PROVIDE THE FOLLOWING STANDARD FEATURES: 115V/1PHASE POWER; 82% EFFICIENT; OPTION TO CONVERT TO SEPARATED-COMBUSTION VENTING (SC1); NAT. GAS STANDARD (PROPANE CONVERSION KIT AVAILABLE); TRANSFORMER & EXTERNAL TERMINAL STRIP FOR 24V T-STAT CONTROLS; FAN RELAY; BUILT-IN ELECTRICAL ON/OFF SWITCH (20A @ 115V RATED); FULL FAN GUARD (OSHA APPROVED); 2-POINT (35-125) OR 4-POINT SUSPENSION VIA UNI-STRUT BY CONTRACTOR; NATURAL GAS FOR 5" - 14" W.C.
 - PROVIDE THE FOLLOWING OPTIONS - FACTORY INSTALLED: 409 STAINLESS STEEL HEAT EXCHANGER (AC2); 2-STAGE COMBINATION GAS VALVE (AG2); TOTALLY ENCLOSED FAN MOTOR (AL14).
 - PROVIDE THE FOLLOWING ACCESSORIES FOR FIELD INSTALLATION: VERTICAL LOUVERS, DIRECT DISCHARGE AIR TO PROVIDE WIDER THROW PATTERN (CD1); MANUAL SHUTOFF VALVE, NATURAL GAS (CE1); 4-POINT SUSPENSION KIT FOR SUSPENSION FROM 1" PIPE (CK10); TWO-STAGE T-STAT (CL22?); MULTIPLE UNIT CONTROL OPTION FOR CONTROLLING TWO (2) UNITS - (CL31); LOCKING COVER FOR T-STAT (CM1B?); SEPARATED-COMBUSTION CONVERSION KIT (SC1) USING EITHER HORIZONTAL (CC6) OR VERTICAL (CC2) CONCENTRIC ADAPTER.
 - M.C. SHALL PROVIDE/INSTALL SEALED COMBUSTION VENTING THRU SIDEWALL OR UP THRU ROOF USING MFR PROVIDED VENT KIT (CC2 FOR VERTICAL KIT OR CC6 FOR HORIZONTAL KIT, CONTRACTOR'S CHOICE) WITH APPROVED VENT MATERIALS PER MFR RECOMMENDATIONS AND CODE REQUIREMENTS.

EQUIPMENT GAS LOAD SCHEDULE - NATURAL GAS					
UNIT I.D.	EQUIPMENT TYPE	AGA INPUT BTU/HR	MAX INPUT PRESSURE (IN W.C.)	MIN INPUT PRESSURE (IN W.C.)	REMARKS
GUH-1	GAS UNIT HEATER (SOUTH)	75,000	14	5	SEE NOTES
GUH-2	GAS UNIT HEATER (NORTH)	75,000	14	5	SEE NOTES
(F) GUH-3	POTENTIAL/FUTURE (F) ADDN GAS UNIT HEATER	75,000	14	5	
(F) GUH-4	POTENTIAL/FUTURE (F) ADDN GAS UNIT HEATER	75,000	14	5	
TOTAL CURRENT LOAD		150,000	14	5	
TOTAL POTENTIAL/FUTURE LOAD		300,000	14	5	

- NOTES:
- COORDINATE INSTALLATION OF GAS SERVICE WITH OWNER AND UTILITY. THE OWNER SHALL PAY FOR ALL GAS UTILITY SERVICE CHARGES.
 - COORDINATE GAS SERVICE PRESSURE FOR THIS PROJECT WITH GAS UTILITY. SERVICE PRESSURE SHALL BE 7.5" W.C. (1/4 PSI) - 14" W.C. (1/2 PSI) PROVIDED AT OUTLET OF GAS SERVICE METER.
 - PROVIDE DIRT LEGS & ISOLATION VALVES AT ALL EQUIPMENT CONNECTIONS.

METHODS OF NOTATION

S-1	SUPPLY DIFFUSER WITH SCHEDULE TAG
10ø	10" DIAMETER NECK SIZE
350-4	350 CFM TYPICAL FOR 4
R-1	RETURN REGISTER WITH SCHEDULE TAG
22x10	22x10 NECK SIZE
640-2	640 CFM TYPICAL FOR 2
	EXHAUST REGISTER (E) DESIGNATION SIMILAR
	EQUIPMENT DESIGNATION (I.E. EXHAUST FAN NUMBER 1)
	CONSTRUCTION KEYED NOTE NUMBER
	DEMOLITION KEYED NOTE NUMBER
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	NEW SYSTEM COMPONENT
	EXISTING SYSTEM COMPONENT TO REMAIN
	POINT OF NEW CONNECTION

MECHANICAL & PLUMBING DRAWING INDEX

- MT MECHANICAL & PLUMBING TITLE SHEET
- M1 MECHANICAL & PLUMBING PLANS

JLK Engineering
Project Number:
AEA 2503-01

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DRAWING TITLE

MECHANICAL & PLUMBING

TITLE SHEET

PROJECT TITLE

LITTLE TRAVERSE BAY BANDS OF OJAWA INDIANS

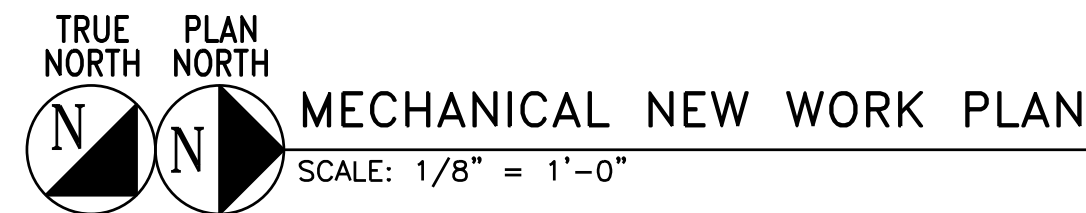
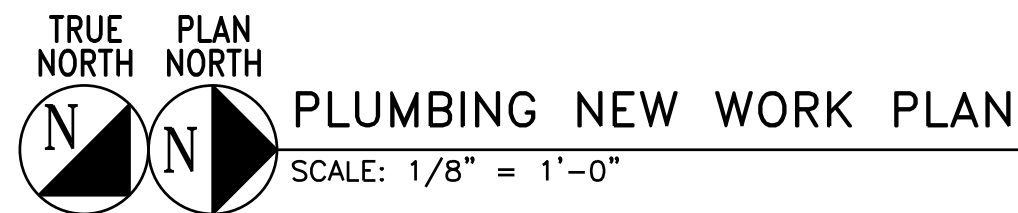
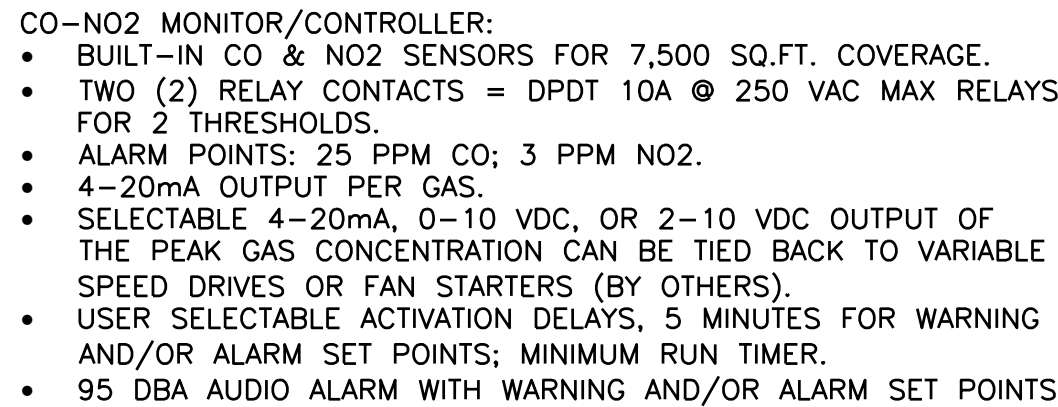
WVNDK MAINTENANCE BUILDING

HARBOR SPRINGS, MICHIGAN

PROJECT NO. 300-25

DATE JULY 31, 2026

SHEET MT



1. PROVIDE ALL LOW VOLTAGE (<115V) CONTROL WIRING FOR THE GARAGE VENTILATION SYSTEM CONTROL.
2. STAND-BY MODE (STAGE #1 - MINIMUM VENTILATION WHEN EVER GARAGE IS OCCUPIED AS SENSED BY OCCUPANCY SENSORS AND/OR LIGHT SWITCH POSITION): MINIMUM CONTINUOUS VENTILATION (0.05 CFM/SQ.FT.) SHALL BE PROVIDED BY BASE EXHAUST FAN EF-1.
3. SAFETY MODE (STAGE #2 - UPON DETECTION OF HIGH CO AND/OR NO2 LEVELS OR MANUAL OVERRIDE BY OWNER): UPON DETECTION OF CARBON MONOXIDE (CO) FROM CO DETECTOR(S) (>25 PPM), OR NITROGEN DIOXIDE (NO2) FROM THE NO2 DETECTOR(S) (> 3 PPM), THE VENTILATION MONITOR/CONTROLLER SHALL INITIATE EXHAUST FAN(S) AT OPEN INTAKE LOW LEVEL DAMPER(S) INTERLOCK WITH EXHAUST FAN(S). EXHAUST FAN(S) SHALL OPERATE UNTIL CO/NO2 LEVELS RETURN TO OR BELOW SET POINT (ADJUSTABLE AT MONITOR/CONTROLLER). PANEL SHALL SEND AN ALARM SIGNAL TO AN AUDIBLE/VISIBLE ALARM LOCATED WITHIN THE SPACE.
4. THE OWNER MAY MANUALLY INITIATE STAGE #2 CONTROL BY SWITCHING EXHAUST FAN'S H-O-A STARTER SWITCH (PROVIDED/INSTALLED BY E.C.) INTO "HAND" MANUAL MODE.

NO SCALE

Code: 2021 Michigan Mechanical Code
By: Justin Kowatch, PE - JLK Engineering
Project: LTBB ODAWA WWNDK MAINTENANCE GARAGE
Project : AEA2503
Date: 8/2/2026

Room / Zone		Natural Ventilation		Occupants			Mechanical Ventilation						Notes:	
Room Name	Az Size (SqFt)	Area @4% (SqFt)	Provided (SqFt)	Default # Per 403.3 (1000 SqFt)	Pz Estimated OR Actual	Pz Actual Seating #	People OA R/p CFM/Person Per 403.3	Area OA Ra CFM/SqFt Per 403.3	Exhaust Airflow CFM/SqFt Per 403.3	Exhaust Airflow Required CFM	Ez - Zone Effectiveness per 403.3.1.2	Zone Vbz Vbz = RpPz+Ra/Az CFM		Zone OA Voz = VzB/Ez CFM
LTBB Odawa WWNDK Maintenance Garage														
		0.0			0.0				0.0	0.8		0.0	0.0	
STORAGE/PARKING GARAGE	1728	69.1			0.0		10.0	0.06	0.8	1296.0	0.8	103.7	129.6	STAGE 2 VENTILATION: VIA EF-CS & LOUVER/DAMPER L/D-CS, CONTROLLED BY COIN02 GARAGE VENTILATION SYSTEM
		0.0			0.0					0.0	0.8	0.0	0.0	
STORAGE/PARKING GARAGE	1728	69.1			0.0				0.1	86.4	0.8	0.0	0.0	PROVIDE MINIMUM 0.05 CFM/SQ.FT. (= 63 CFM OF CONTINUOUS STAGE #1 (STANDBY) VENTILATION, CONTROLLED ON WITH LIGHTS TO OPERATE DURING OCCUPIED PERIODS
		0.0			0.0					0.0	0.8	0.0	0.0	

HANG NEW GAS UNIT HEATER @ APPROX 12' FEET ABOVE THE FLOOR TO TOP OF UNIT HEATER - COORD./CONFIRM WITH OTHER TRADES.
PROVIDE/INSTALL COMBUSTION AIR INTAKE AND EXHAUST VENTING GAS UNIT HEATER PER MFR REQUIREMENTS, EITHER UP THRU ATTIC/ROOF OR THRU SIDEWALL, USING MANUFACTURER'S SEALED-COMBUSTION VENT KIT.

[illegible]

NOTES:

1. MODEL NUMBERS ARE GREENHECK UNLESS NOTED OTHERWISE. RUSKIN MAY BE BID AS EQUAL.
2. LOUVERS SHALL HAVE A ACRYLFLUR COATING WITH 50% KYNAR OR HYLAR IN ITS RESIN SYSTEM WITH A 5 YEAR ADHESION WARRANTY AND 5 YEAR CHALKING/FADING WARRANTY. COLOR SHALL BE STANDARD COLOR, SELECTED BY ARCHITECT PRIOR TO ORDERING. PROVIDE COLOR CHART IN SHOP DRAWING SUBMITTAL.
3. PROVIDE WITH THE FOLLOWING OPTIONS: ALUMINUM BIRDSCREEN, EXTENDED SILL.
4. PROVIDE LOUVER WITH AUTOMATIC DAMPER "D-M" WITH ELECTRIC ACTUATOR: DAMPER SHALL BE 36"x36" AND SHALL BE A GREENHECK VCD-23 LOW LEAK DAMPER (OR EQUAL) WITH GALV. FRAME, VINYL RUBBER BLADE SEALS, STAINLESS STEEL AXLES, STAINLESS STEEL BEARINGS, STAINLESS STEEL LINKAGE. DAMPER ACTUATOR SHALL BE A 120V SPRING FAIL CLOSED/POWER OPEN, TWO POSITION ACTUATOR (BY BELIMO, SIEMENS, OR INVENSYN). DAMPER "D-M" SHALL BE INTERLOCKED TO OPEN WHEN EF-M OPERATES.

FAN SCHEDULE															
UNIT I.D.	SYSTEM SERVED	TYPE	AIRFLOW CFM	E.S.P. IN. W.G.	RPM	MOTOR				ELECTRICAL		CURB HEIGHT (IN)	WEIGHT LBS	MODEL NO.	REMARKS
						BHP	HP	RPM	DRIVE	VOLTS	PHASE				
EF-1	MAINTENANCE MIN. VENT. FAN	THRU-WALL	200	0.1	2,500	216 W	FRACT.	-	DIRECT	115	1	N/A	-	BROAN #509	SEE NOTE 3
EF-M	MAINTENANCE SAFETY FAN	SIDEWALL PROPELLER	1,500	0.15	1,186	0.1	1/3	1,750	DIRECT	115	1	N/A	122	SE1-16-421	SEE NOTES 1, 2

NOTES:

1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED. COOK AND S&P MAY BE BID AS EQUAL.
2. PROVIDE THE FOLLOWING OPTIONS/ACCESSORIES: PSC MOTOR; UL 705 LISTED; DAMPER, WD-320-PB 18x18, GRAVITY OPERATED (MOUNTED); SHORT WALL HOUSING; AIRFLOW DIRECTION: EXHAUST; FLUSH EXTERIOR W/ OSHA GUARD; MOTOR ACCESS: FROM INSIDE BUILDING; SWITCH, NEMA-1 WITH THERMAL OVERLOADS, J-BOX MOUNTED & WIRED; CLOSURE ANGLES; WEATHERHOOD, GALVANIZED 45 DEGREE WITH BIRD SCREEN; WIRING PIGTAIL, INTERNAL, GENERAL, 9 FT FROM UNIT OF FLEXIBLE METAL CONDUIT; SOLID STATE SPEED CONTROL, 6 AMP - SHIPPED LOOSE.
3. INTERLOCK VENTILATION STAGE #1 FAN WITH ROOM LIGHTS TO OPERATE WHENEVER ROOM IS OCCUPIED.

ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPS	M.C.	MECHANICAL CONTRACTOR
AFF	ABOVE FINISHED FLOOR	MCA	MINIMUM CIRCUIT AMPS
AFG	ABOVE FINISHED GRADE	MCB	MAIN CIRCUIT BREAKER
AIC	AMPS INTERRUPTING CAPACITY	MDP	MAIN DISTRIBUTION PANEL
		MFS	MAX FUSE SIZE
BKR	BREAKER	MLO	MAIN LUGS ONLY
		MTD	MOUNTED
C	CONDUIT	MTR	MOTOR
CB	CIRCUIT BREAKER		
CKT	CIRCUIT	NC	NORMALLY CLOSED
COORD	COORDINATE	N.E.C.	NATIONAL ELECTRIC CODE
		NF	NON-FUSIBLE
DISC	DISCONNECT	NIC	NOT IN CONTRACT
DWG	DRAWING	NO	NORMALLY OPEN
		NTS	NOT TO SCALE
(E)	EXISTING		
EBU	EMERGENCY BATTERY UNIT	P-A	PANEL "A"
E.C.	ELECTRICAL CONTRACTOR	PB	PUSHBUTTON STATION
EF	EXHAUST FAN	P.C.	PLUMBING CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING	PRI	PRIOR TO ROUGH-IN
EUH	ELECTRIC UNIT HEATER		
		(R)	RELOCATED
(F)	FUTURE	RECEPT	RECEPTACLE
FLA	FULL LOAD AMPS		
FU	FUSE	SD	SMOKE DETECTOR
		SPEC	SPECIFICATION
GFI	GROUND FAULT INTERRUPTER	SW	SWITCH
GRD	GROUND		
GRS	GALVANIZED RIGID STEEL	TELECOM	TELECOMMUNICATIONS
		TTB	TELECOM TERMINAL BACKBOARD
HOA	HAND-OFF-AUTO	TYP	TYPICAL
HP	HORSEPOWER		
HZ	HERTZ	UH	UNIT HEATER
		UON	UNLESS OTHERWISE NOTED
JB	JUNCTION BOX	U/G	UNDERGROUND (BELOW GRADE)
		V	VOLTS
KAIC	KILO AMPS INTERRUPTING CAP.	VSD	VARIABLE SPEED DRIVE
KVA	KILO VOLT-AMPERES		
KW	KILOWATT	W	WATTS
KWH	KILOWATT-HOURS	WG	WIRE GUARD
		WP	WEATHERPROOF
LC	LIGHTING CONTROLLER	WR	WEATHER-RESISTANT
LP	LIGHTING PANEL		
		XFMR	TRANSFORMER

GENERAL ELECTRICAL POWER, AUXILIARY, & LIGHTING NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIALS (I.E. CONDUIT, WIRE, PULL BOXES, FIXTURES, ETC.) REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.
- ALL ELECTRICAL SYSTEMS SHALL BE PROVIDED/INSTALLED TO MEET APPLICABLE BUILDING CODES: MICHIGAN BUILDING CODE, MICHIGAN ELECTRICAL CODE, N.E.C., LIFE SAFETY CODE NFPA 101, MICHIGAN ENERGY CODE, ETC.
- VERIFY REQUIREMENTS OF ALL MECHANICAL/PLUMBING/ARCHITECTURAL EQUIPMENT WITH SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION. NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN SHOP DRAWINGS AND PLANS.
- INSTALL ALL MISCELLANEOUS STEEL, STRUT, ETC. REQUIRED TO SUPPORT/HANG EQUIPMENT, CONDUIT, ETC. COORDINATE ATTACHMENTS WITH STRUCTURAL TRADES.
- COORDINATE THE INSTALLATION OF ALL ELECTRICAL WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL VERIFY ALL MECHANICAL AND ELECTRICAL CLEARANCES PRIOR TO FABRICATION OF ANY NEW WORK. ELECTRICAL EQUIPMENT, WIRING, ETC. SHALL NOT INTERFERE WITH MECHANICAL EQUIPMENT CLEARANCE SPACES.
- ALL CIRCUITS FOR POWER, LIGHTING, ETC. SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. ALL CIRCUITS SHALL BE CONCEALED IN WALLS, INCLUDING (E) WALLS. SURFACE MOUNTED RACEWAY SHALL NOT BE USED, UNLESS NOTED OTHERWISE, OR UNLESS ABSOLUTELY NECESSARY. APPROVAL FROM ARCHITECT/ENGINEER MUST BE OBTAINED PRIOR TO USING SURFACE MOUNTED CONDUIT.
- ALL LIGHTING SYSTEMS SHALL BE PROVIDED/INSTALLED TO MEET APPLICABLE BUILDING CODES: MICHIGAN BUILDING CODE, MICHIGAN ELECTRICAL CODE, N.E.C., LIFE SAFETY CODE NFPA 101, MICHIGAN ENERGY CODE, ETC.
- COORDINATE EXACT FIXTURE LOCATIONS WITH ARCHITECTURAL PLANS (REFLECTED CEILING PLANS, BUILDING ELEVATIONS ETC.).
- ALL NIGHT LIGHTS, EMERGENCY LIGHTS, AND EXIT LIGHTS SHALL BE CIRCUITED TO UNSWITCHED/HOT LEG OF THE GENERAL LIGHTING CIRCUIT OF THE AREA SERVED BY THE NIGHT/EMERGENCY/EXIT LIGHTS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-INS (IE BOXES, CONDUIT, ETC.) FOR AUXILIARY ELECTRICAL SYSTEMS (IE. TEMP. CONTROLS, TELECOM, SECURITY, ETC.) COORDINATE REQUIREMENTS WITH AUXILIARY ELECTRICAL SUB-CONTRACTORS PRIOR TO ISSUE OF BID AND VERIFY ALL WORK REQUIRED. ALL CONDUIT ROUGH-INS SHALL TERMINATE AT ACCESSIBLE LOCATIONS.

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FIXTURE TYPE		SINGLE PHASE MOTOR
	SURFACE MOUNTED LIGHT FIXTURE (2x4)		THREE PHASE MOTOR
	SURFACE MOUNTED EMERGENCY LIGHT FIXTURE (2x4)		COMBINATION MOTOR STARTER WITH DISCONNECT SWITCH
	PENDANT OR SURFACE MOUNTED LIGHT FIXTURE		VARIABLE SPEED DRIVE COMBINATION MOTOR STARTER WITH DISCONNECT SWITCH
	PENDANT OR SURFACE MOUNTED EMERGENCY LIGHT FIXTURE		NON-FUSABLE DISCONNECT SWITCH
	OUTDOOR WALL MOUNTED LIGHTING FIXTURE		FUSIBLE DISCONNECT SWITCH
	EMERGENCY LIGHTING UNIT		HORSE POWER RATED SWITCH
	EXIT LIGHTING FIXTURE WITH EMERGENCY EGRESS LIGHTING AND BATTERY		PUSH BUTTON STATION
	EXIT LIGHTING FIXTURE - WALL MOUNTED		JUNCTION BOX
	REMOTE EMERGENCY EXIT DISCHARGE LIGHT		HARD WIRE POWER CONNECTION
	SINGLE POLE TOGGLE SWITCH		CONDUIT UP
	3-WAY TOGGLE SWITCH		CONDUIT DOWN
	4-WAY TOGGLE SWITCH		DUPLEX RECEPTACLE
	OCCUPANCY SENSOR WALL SWITCH		DUPLEX RECEPTACLE MOUNTED AT 48" ABOVE FLOOR (UNLESS NOTED OTHERWISE) - SIMILAR FOR ISOLATED GROUND, EMERGENCY AND GFI RECEPTACLES
	VACANCY SENSOR WALL SWITCH		QUAD RECEPTACLE
	DIMMER SWITCH		DUPLEX RECEPTACLE - GROUND FAULT INTERRUPTER
	LIGHTING CONTROLLER/CONTACTOR		DUPLEX RECEPTACLE - GROUND FAULT INTERRUPTER - WEATHER-RESISTANT (WR) RECEPTACLE IN WEATHERPROOF ENCLOSURE
	CONTACTOR		SPECIAL RECEPTACLE - NEMA CONFIGURATION AS NOTED
	PHOTOELECTRIC CONTROLLER		CIRCUIT BREAKER
	CEILING OR WALL MOUNTED OCCUPANCY SENSOR		SWITCH
	CEILING OR WALL MOUNTED VACANCY SENSOR		GROUND
	OCCUPANCY/VACANCY SENSOR POWER PACK		TRANSIENT VOLTAGE SURGE SUPPRESSION
	TIME CLOCK		LIGHTING PANEL (LP = <240V)
	T-STAT (BY OTHERS) ROUGHED IN BY E.C. 52" AFF WITH CONDUIT PATHWAY TO EQUIPMENT CONTROLS CONNECTION - COORD. WITH MECHANICAL TRADES		POWER PANEL (PP = >480V)
	CARBON MONOXIDE/NITROUS DIOXIDE SENSOR (BY OTHERS) ROUGHED IN BY E.C. 52" AFF WITH CONDUIT PATHWAY TO EQUIPMENT CONTROLS CONNECTION - COORD. WITH MECHANICAL TRADES		TRANSFORMER
	TEMPERATURE SENSOR (BY OTHERS) ROUGHED IN BY E.C. 52" AFF WITH CONDUIT PATHWAY TO EQUIPMENT CONTROLS CONNECTION - COORD. WITH MECHANICAL TRADES		UTILITY METER
	SMOKE DETECTOR		UTILITY CT CABINET
	COMBINATION SMOKE/CO DETECTOR		

LIGHTING POWER DENSITY CALCULATION

QUANTITY	TYPE	DESCRIPTION	WATTS PER FIXTURE	TOTAL WATTS PER FIXTURE TYPE
18	V4/V4E	LED VAPORTITE SURFACE MOUNTED FIXTURE	51	918
TOTAL WATTS				918
TOTAL FLOOR/BUILDING SQ.FT.				1746
TOTAL WATTS PER SQ.FT.				0.53

WATTS PER SQ.FT. ALLOWANCE 0.60

LIGHTING CONTROL REQUIREMENTS (AHSHAE 90.1 2019)

ROOM #	ROOM NAME	LOCAL CONTROL (9.4.1.1[a])	MANUAL ON (9.4.1.1[b])	PARTIAL AUTO ON (9.4.1.1[c])	BILEVEL LIGHTING (9.4.1.1[d])	DAYLIGHT FOR SIDELIGHTING (9.4.1.1[e])	DAYLIGHT FOR TOPLIGHTING (9.4.1.1[f])	AUTO PARTIAL OFF (9.4.1.1[g])	AUTO FULL OFF (9.4.1.1[h])	SCHEDULED SHUTOFF (9.4.1.1[i])
	MAINTENANCE GARAGE	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

*REQ" IS REQUIRED.
*ADD 1" CHOOSE ONE.
*ADD 2" CHOOSE ONE.
DAYLIGHTING NOT REQUIRED IF PRIMARY = <150W AND PRIMARY + SECONDARY = <300W.
AREAS REQUIRING DAYLIGHTING (REFER TO DAYLIGHTING KEY AND LIGHTING PLAN FOR APPLICABLE AREA).

BRANCH CIRCUIT WIRE SIZE/LENGTH SCHEDULE

MAX BRANCH CIRCUIT (AMPS)	50	75	100	125	150	300	
15	#12	#10	#10	#8	#6	#4	
20	#10	#10	#8	#6	#6	#3	
30	#8	#8	#6	#4	#4	#1	

- NOTES:
- REFER TO SPECIFICATIONS FOR WIRE TYPE.
 - SCHEDULE IS BASED UPON A MAX 3% VOLTAGE DROP ON 115-120V/1Ø CIRCUITS.
 - FOR LENGTHS BETWEEN TABLED VALUES - USE LONGER LENGTH.

BRANCH CIRCUIT WIRE SIZE/LENGTH SCHEDULE

MAX BRANCH CIRCUIT (AMPS)	50	75	100	125	150	< 300	< 500
15	#10	#10	#10	#10	#8	#4	#3
20	#10	#10	#10	#8	#6	#4	#2
30	#8	#8	#6	#6	#4	#2	#1/0

- NOTES:
- REFER TO SPECIFICATIONS FOR WIRE TYPE.
 - SCHEDULE IS BASED UPON A MAX 3% VOLTAGE DROP ON 208-240V/1Ø CIRCUITS.
 - FOR LENGTHS BETWEEN TABLED VALUES - USE LONGER LENGTH.

STANDARD MOUNTING HEIGHTS

CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS, TELE/DATA AND COMMUNICATIONS OUTLETS, NOT OTHERWISE SPECIFIED:

- 18" AFF TO THE MIDDLE OF BOX
- 16" AFF TO BOTTOM OF BOX IN CMU WALLS

CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS ABOVE COUNTERS, NOT OTHERWISE SPECIFIED:

- 6" ABOVE COUNTER TO CENTER OF BOX OR AS REQUIRED TO ACCOMMODATE COUNTERS. (REFER TO ARCHITECTURAL ELEVATIONS.)

LIGHT SWITCHES, MOTOR CONTROL DEVICES, AND FIRE ALARM PULL STATIONS, NOT OTHERWISE SPECIFIED:

- 48" AFF TO THE MIDDLE OF BOX
- 48" AFF TO THE TOP OF BOX IN CMU WALLS

T-STATS, TEMP. SENSORS, CO2 SENSORS, NOT OTHERWISE SPECIFIED:

- 48" AFF TO THE MIDDLE OF BOX
- 48" AFF TO THE TOP OF BOX IN CMU WALLS

LIGHTING AND RECEPTACLE BRANCH CIRCUIT PANELBOARDS AND LIGHTING CONTROLLERS:

- 6"-6" AFF TO TOP OF ENCLOSURE.

METHODS OF NOTATION

	LIGHT FIXTURE DESIGNATION (I.E. FIXTURE TYPE "FA" - SEE FIXTURE SCHEDULE)
	CONSTRUCTION KEYED NOTE NUMBER
	NEW SYSTEM COMPONENT
	EXISTING SYSTEM COMPONENT TO REMAIN
	POINT OF NEW CONNECTION
	CIRCUIT HOMERUN (BACK TO PANEL "A" - REFER TO PANEL SCHEDULE)

ELECTRICAL DRAWING INDEX

ET ELECTRICAL TITLE SHEET

E1 ELECTRICAL PLANS & DETAILS

JLK Engineering
Project Number:
AEA 2503-01

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DRAWING TITLE
ELECTRICAL TITLE SHEET

PROJECT TITLE
LITTLE TRAVERSE BAY BANDS OF ODAWA INDIANS
WVNDK MAINTENANCE BUILDING
HARBOR SPRINGS, MICHIGAN

PROJECT NO.
300-25

DATE
JULY 31, 2026

SHEET
ET

PANEL:

M

200 AMP WITH MAIN CIRCUIT BREAKER

BUSING SIZE:

200A

FED FROM :

UTILITY

OF POLES:

42

VOLTS: 120-240/1P/3W

NEUTRAL BUS:

200A

MOUNTING:

SURFACE

PHASE:

3

GROUND BUS:

YES

TVSS:

NO

AIC RMS AMPS:

14,000

HERTZ:

60

ISOLATED GROUND:

NO

THIS IS A NEW SERVICE PANEL

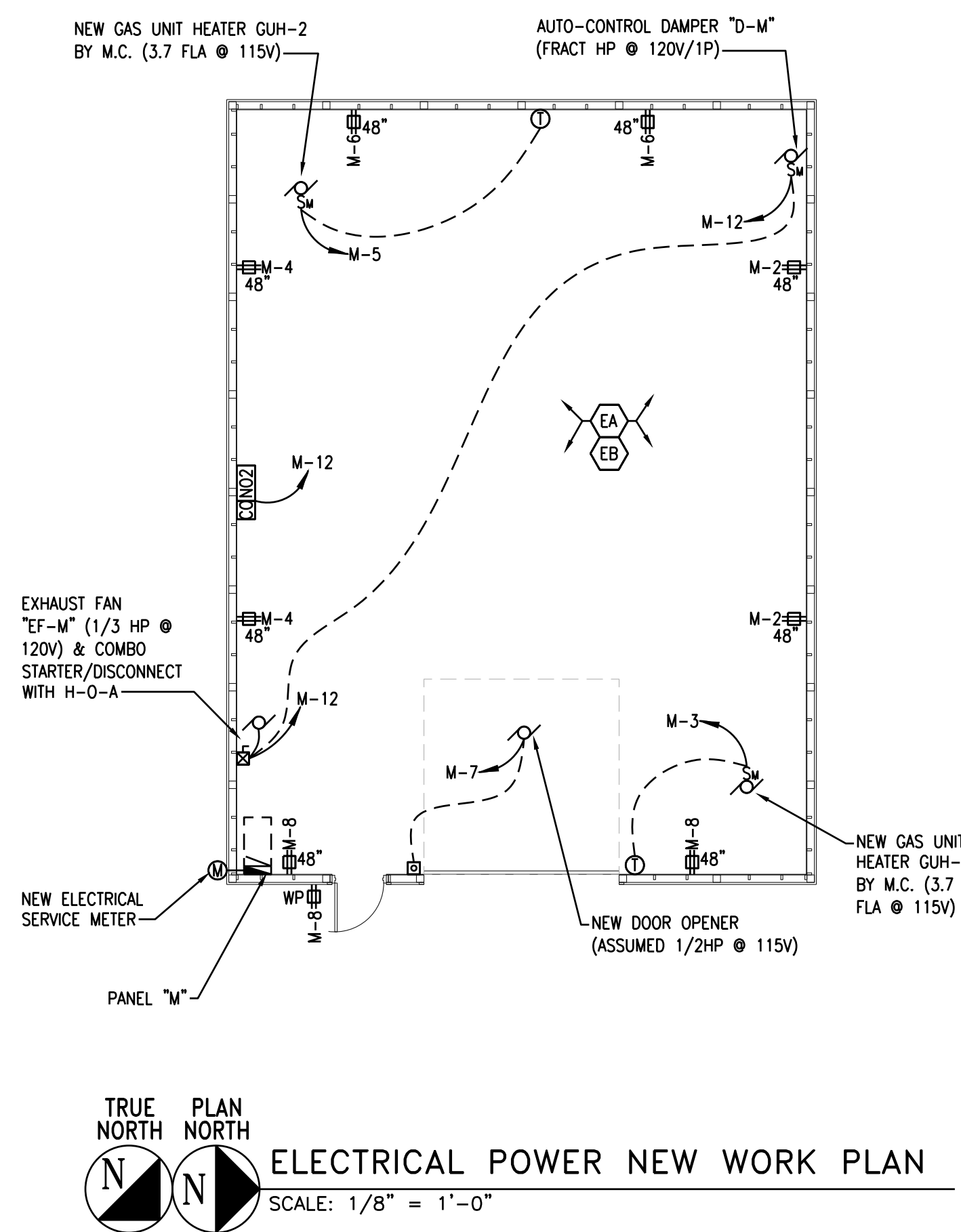
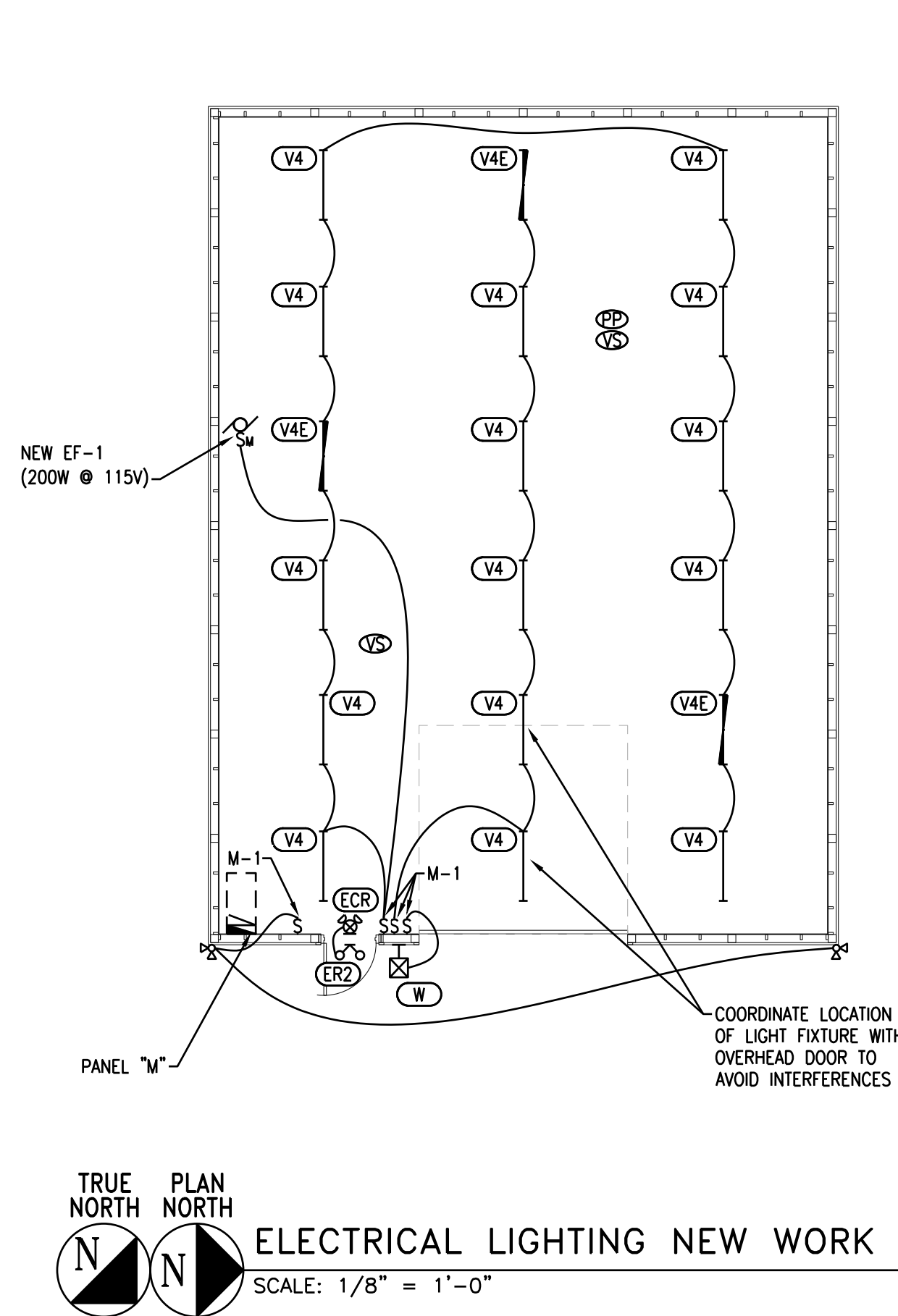
LOCATION:

NEW MAINTENANCE GARAGE

REMARKS:

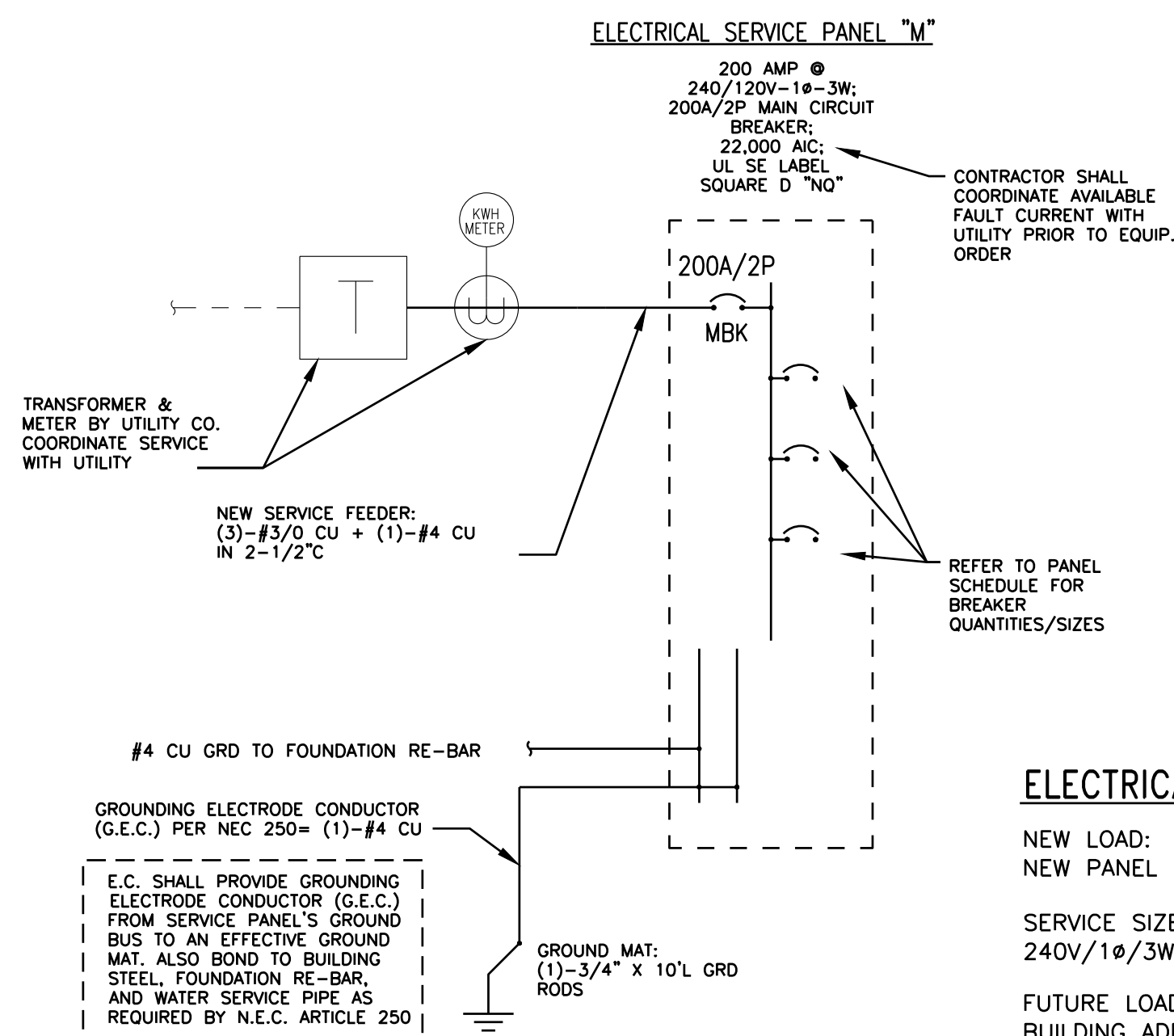
SIZED FOR CURRENT LOAD & FUTURE LOAD

CIRCUIT	BREAKER	DESCRIPTION	A	B		
1	20	LIGHTING	1159.4			
3	20	GUH-1 (3.7 FLA @ 115V/1P)		750		
5	20	GUH-2 (3.7 FLA @ 115V/1P)	750			
7	20	DOOR OPENER (ASSUMED 1/2HP @ 115V)		1000		
9			0			
11				0		
13			0			
15				0		
17			0			
19				0		
21			0			
23				0		
25			0			
27				0		
29			0			
31				0		
33			0			
35				0		
37			0			
39				0		
41			0			
2	20	RECEPTS - NORTH	360			
4	20	RECEPTS - SOUTH		360		
6	20	RECEPTS - WEST	360			
8	20	RECEPTS - EAST		540		
10	20	SPARE	0			
12	20	EF-M, D-M & VENTILATION CONTROLS		1000		
14			0			
16				0		
18			0			
20				0		
22			0			
24				0		
26			0			
28				0		
30			0			
32				0		
34			0			
36				0		
38			0			
40				0		
42			0			
KVA:	06	CONNECTED AMPS:	30.2	PHASE WATTS:	2,629	3,650



KEYED ELECTRICAL POWER CONSTRUCTION NOTES:

- | | |
|----|--|
| EA | COORDINATE LOCATION AND MOUNTING HEIGHT OF ALL ELECTRICAL DEVICES WITH OWNER/OWNER'S REP PRIOR TO ROUGH-IN. |
| EB | PROVIDE ALL POWER AND CONTROL WIRING FOR PARKING GARAGE VENTILATION SYSTEM EQUIPMENT INCLUDING EXHAUST FAN EF-M AND INTAKE DAMPER D-M, BOTH CONTROLLED BY A CO/NO2 VENTILATION CONTROLLER. |



ELECTRICAL SERVICE ONE-LINE DIAGRAM

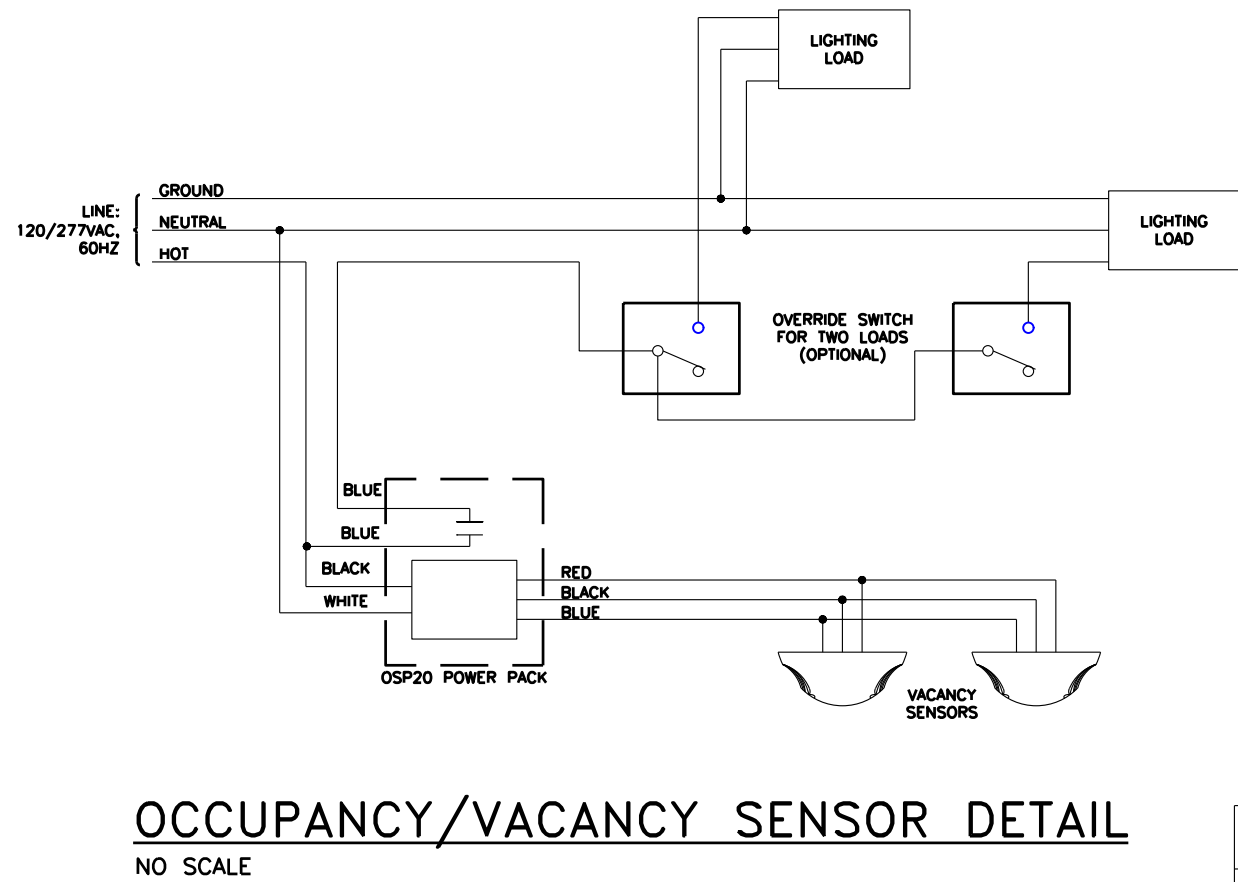
ELECTRICAL SERVICE LOAD CALCULATIONS:

NEW LOAD:
NEW PANEL "M" = 6.3 KW (CONNECTED) / 5 KW (DEMAND)

SERVICE SIZE = 6,300 WATTS / 240V/1 ϕ = 26 AMPS x 1.25 = 33 AMPS ----> 100 AMP @ 240V/1 ϕ /3W SERVICE PANEL

FUTURE LOADS:
BUILDING ADDITION?, COOLERS/FREEZERS, OFFICE WITH A/C, ETC. = 20 KW

FUTURE SERVICE SIZE = CURRENT 6.3 KW + FUTURE 20 KW = 26,300 WATTS / 240V/1Ø = 110 AMPS x 1.25 = 136 AMPS ---> 200 AMP @ 240V/1Ø/3W SERVICE PANEL FOR FUTURE LOAD



LIGHTING FIXTURE SCHEDULE

LIGHTING FIXTURE SCHEDULE					
TYPE	DESCRIPTION	MANUFACTURERS	LAMPS	VOLTS/WATTS	REMARKS
(ECR)	19.75"Wx7.5"Hx2.25"D EXIT/EMERGENCY LIGHT COGNATION WITH HIGH POWER BATTERY FOR EMERGENCY REMOTE CAPACITY; LED EXIT LIGHT; POLYCARBONATE HOUSING WITH WHITE FACE PLATE, EMERGENCY LIGHTING HIGH POWER COMBO FIXTURE WITH: TWO LED HEADS (100 LUMENS EACH); SEALED MAINTENANCE FREE NICKEL-CADMIUM BATTERY; AUTOMATIC CHARGER AND TRANSFER CIRCUIT; DUAL 120/277 VOLT AC/EM OPERATION; 3 REMOTE WATTS.	1. SURE-LITES "LPKC" SERIES MODEL# LPKC25R3SD (RED FACE) 2. OR EQUAL BY HUBBLE OR LITHONIA	(2) LED EM HEADS & LED EXIT LAMPS	120V / 2.2W 277V / 3.2W	ARROWS AND FACES SHALL BE AS INDICATED ON DRAWINGS. PROVIDE MOUNTING HARDWARE AS REQUIRED FOR SINGLE OR DOUBLE SIDE AS REQUIRED BY CODE.
(ER2)	8.5"Wx6"H REMOTE OUTDOOR EMERGENCY LIGHTING UNIT: WALL/CEILING MOUNTED WEATHERPROOF FIXTURE WITH TWO LED HEADS.	1. SURE-LITES "SEL" SERIES #SRP25DWH 2. OR EQUAL BY HUBBLE OR LITHONIA	(2)-3.6V/0.78W LED EM HEADS	4.8V / 2.5W	WIRE TO BATTERY IN HIGH POWER CAPACITY EXIT SIGN OR EMERGENCY BATTERY LOCATED INSIDE BUILDING. PROVIDE OPTIONAL WIREGLARD (WG9) WHERE NOTED ON DRAWINGS.
(F)	EXTERIOR MOTION ACTIVATED LED SECURITY FLOODLIGHT; DUSK TO DAWN; POLYCARBONATE CONSTRUCTION; 180° DETECTION UP TO 50'; 10' LISTED; TYPICAL DURATION FROM 1-12 MINUTES	1. HALO OUTDOOR "ESF" SERIES ESF-1A-4-M-W/B? 2. OR EQUAL BY HUBBLE / LITHONIA	LED 1,420 LUMENS 4,000 K TEMP	120V / 15W	VERIFY WHITE OR BRONZE FINISH WITH OWNER/ARCHITECT PRIOR TO ORDER.
(V4)	6"W x 4"H x 48"L VANDAL RESISTANT LED FIXTURE WITH POLYCARBONATE LENS, WEI LISTED; SURFACE MTD OR CHAIN HUNG (COORDINATE WITH FIELD CONDITIONS)	1. FAIL-SAFE "VAPORTITE" SERIES 4VRV3-LDS-6-G-UNV-L840-CD1-WL-VT3-SS-SBK 2. OR EQUAL BY HUBBLE / LITHONIA	LED 6,000 LUMENS 4,000 K TEMP	120-277V / 51W	PROVIDE OPTIONAL S.S. SURFACE MOUNTING BRACKETS (VT3-SS-SBK)
(V4E)	FIXTURE SHALL BE THE SAME AS "V4" AND ALSO HAVE AN INTEGRAL EMERGENCY LIGHTING BATTERY, WITH TEST SWITCH/INDICATOR/LASER TEST, THAT SHALL PROVIDE 1,270 LUMENS FOR 90 MINUTES	1. FAIL-SAFE "VAPORTITE" SERIES 4VRV3-LDS-6-G-UNV-EL10W-L840-CD1-WL-VT3-SS-SBK 2. OR EQUAL BY HUBBLE/LITHONIA	LED 6,000 LUMENS 4,000 K TEMP	120-277V / 51W	PROVIDE OPTIONAL S.S. SURFACE MOUNTING BRACKETS (VT3-SS-SBK)
(W)	9"W x 16.5"L x 7"H OUTDOOR WALL-PACK LED; TRAPEZOID SHAPE; ALUMINUM HOUSING; STD BRONZE COLOR (CONFORM W/ ARCHITECT) TYPE 4 FWD THROW; W/ OPTIONAL INTEGRATED PHOTOCELL RECEPT & PHOTOCELL	1. MCGRAW-EDISON "IMPACT ELITE" SERIES #IST-SA1B-740-U-T4FT-BZ-PR7.	LED 3,462 LUMENS 4,000 K TEMP	120-277V / 25.4W	VERIFY MOUNTING HEIGHT/LOCATION WITH ARCHITECTURAL ELEVATIONS. VERIFY COLOR WITH ARCHITECT/OWNERS REP PRIOR TO ORDER.