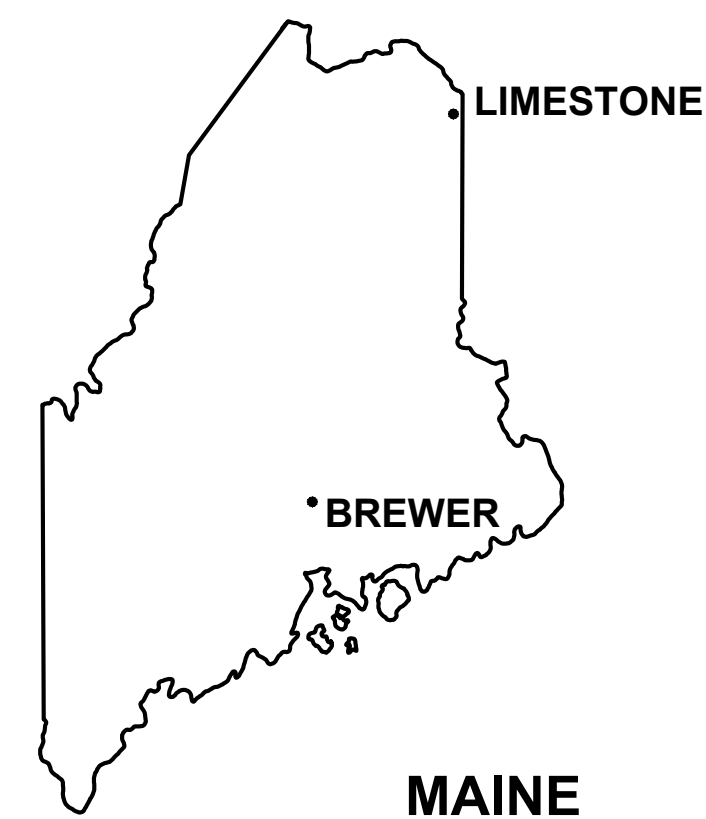


# MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

32 WARDEN LANE, EAGLE LAKE, MAINE



**2019.03.26**

PROJECT NO. BREM # PT 3031

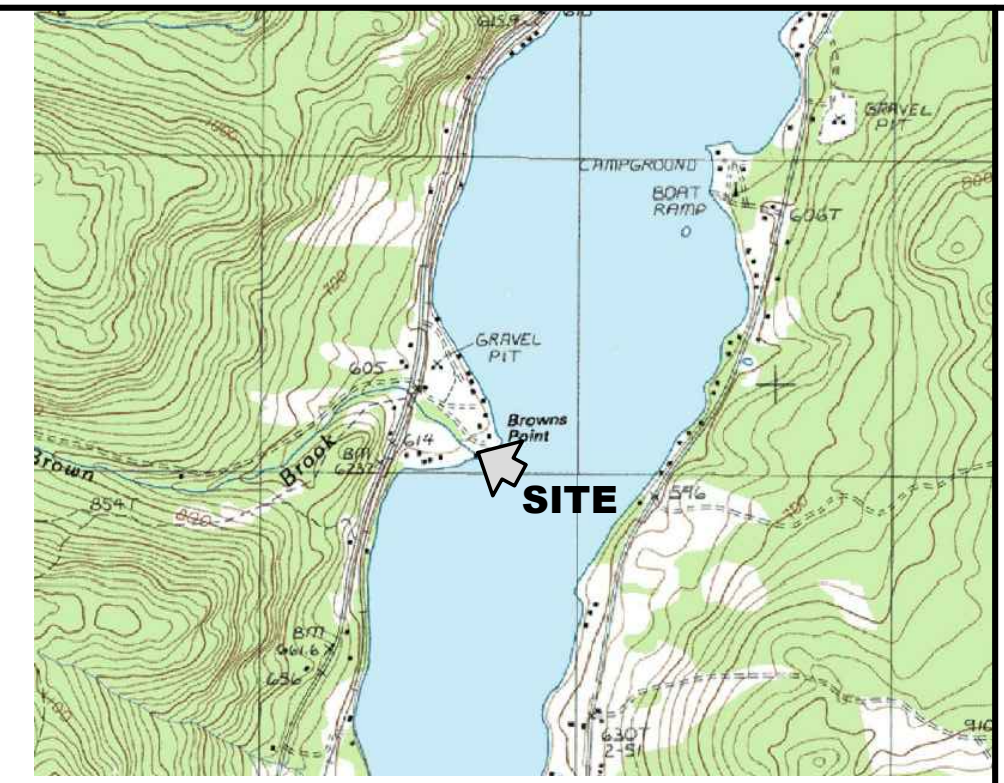
## INDEX OF DRAWINGS

G0	COVER SHEET
C101	SITE PLAN
B101	FOUNDATION AND SHELTER PLANS AND DETAILS
M101	MECHANICAL PLAN
E100	ELECTRICAL SYMBOLS, NOTES, DETAILS AND ABBREVIATIONS PLAN
E101	ELECTRICAL PLAN



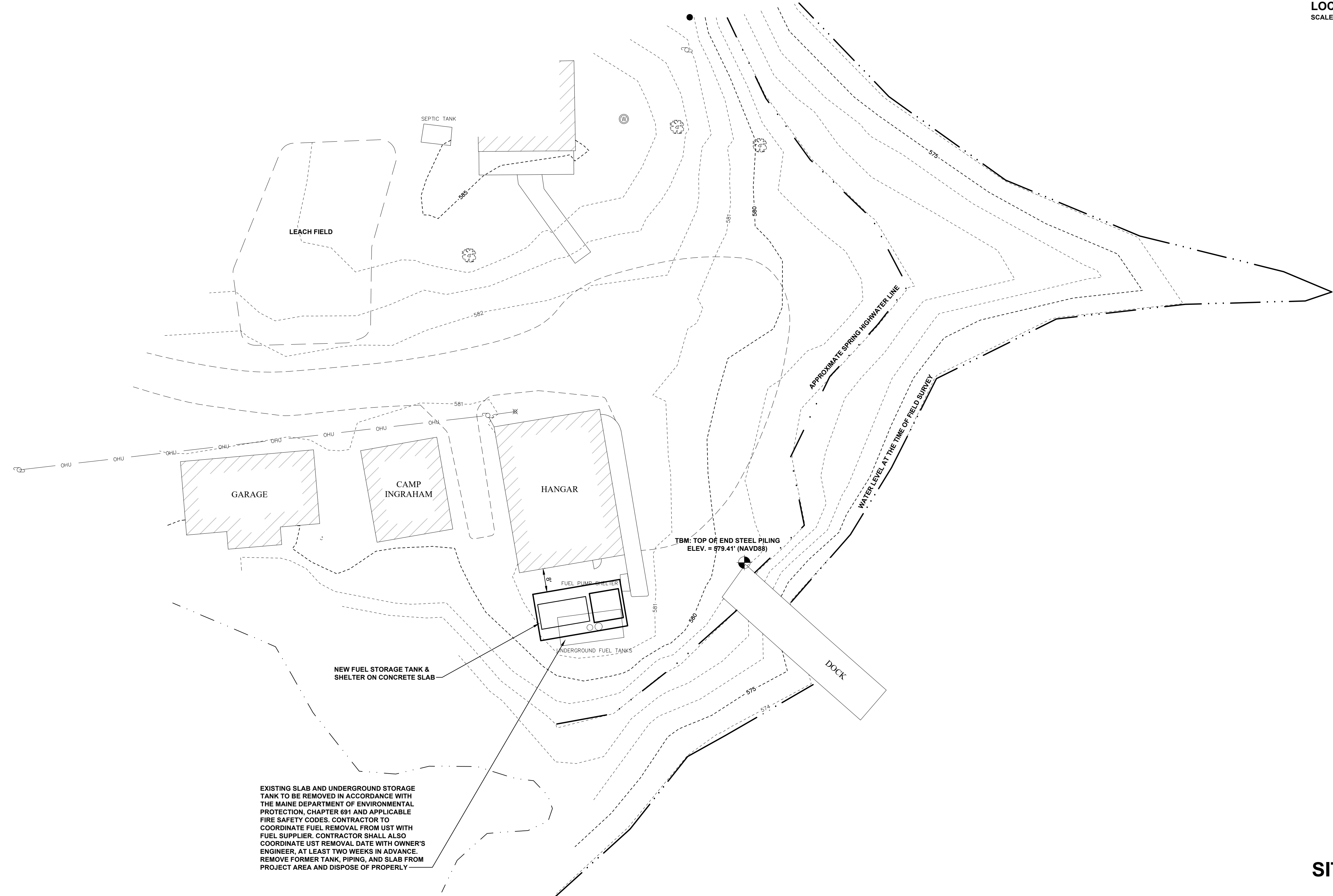
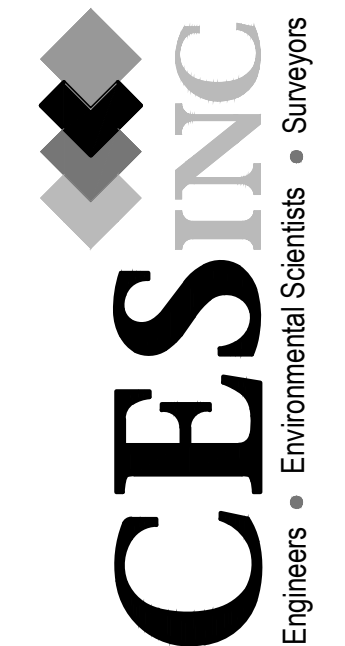
ENGINEERS • ENVIRONMENTAL SCIENTISTS • SURVEYORS

465 So. Main Street, P.O. Box 639, Brewer, ME 04412 Tel: 207-989-4824 Fax 207-989-4881  
1366 State Highway 102, Bar Harbor, ME 04609 Tel: 207-288-0587 Fax 207-288-0588  
61 Dublin Street, P.O. Box 587, Machias, ME 04654 Tel: 207-255-3270 Fax 207-255-8367  
549 Main Street, P.O. Box 827, Presque Isle, ME 04769 Tel: 207-764-8412 Fax: 207-764-8414  
44 Main Street, Suite 204, Waterville, ME 04903 Tel: 207-680-2202 Fax: 207-680-2204  
640 Main Street, Lewiston, ME 04240 Tel: 207-795-6009 Fax: 207-795-6128



LOCATION MAP: USGS QUADRANGLE: EAGLE LAKE  
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 F: 207-736-6593  
 F: 207-736-6594  
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 F: 207-736-6609  
 F: 207-736-6610



EXISTING SLAB AND UNDERGROUND STORAGE TANK TO BE REMOVED IN ACCORDANCE WITH THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, CHAPTER 681 AND APPLICABLE FIRE SAFETY CODES. CONTRACTOR TO COORDINATE FUEL REMOVAL FROM UST WITH FUEL SUPPLIER. CONTRACTOR SHALL ALSO COORDINATE UST REMOVAL DATE WITH OWNER'S ENGINEER AT LEAST TWO WEEKS IN ADVANCE. REMOVE FORMER TANK, PIPING, AND SLAB FROM PROJECT AREA AND DISPOSE OF PROPERLY.

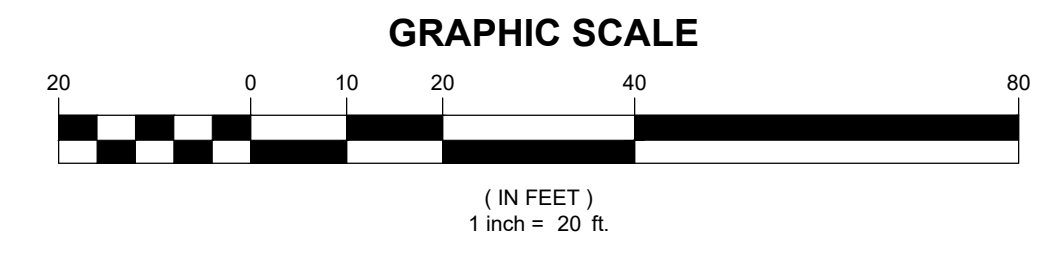
**LEGEND:**

- IRON ROD OR PIPE FOUND
- UTILITY POLE
- ⊙ WELL
- ⊗ GUY WIRE ANCHOR
- ⊕ DECIDUOUS TREE
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- SPRING HIGHWATER LINE
- WATER LEVEL AT TIME OF SURVEY
- STREAM
- OHU OVERHEAD UTILITIES

**NOTES:**

- 1) THIS PLAN DEPICTS CONDITIONS FOUND AND SURVEYED BY CES INC. ON NOVEMBER 7, 2016.
- 2) THIS SURVEY IS ORIENTED TO THE MAINE STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD83 DATUM.
- 3) ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- 4) CES, INC. HAS NOT INVESTIGATED THE EXISTENCE OR LOCATION OF SUBTERRANEAN UTILITY INFRASTRUCTURE.

**SITE PLAN  
 OF  
 EAGLE LAKE FUEL TANK REPLACEMENT  
 FOR  
 MAINE DEPARTMENT OF INLAND  
 FISHERIES AND WILDLIFE (MDIFW)  
 32 WARDEN LANE, EAGLE LAKE, MAINE**

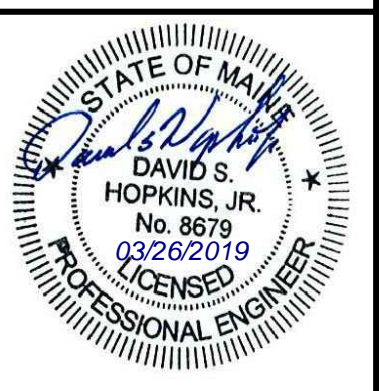


MDIF&W  
 32 WARDEN LANE, EAGLE LAKE, MAINE

**SITE PLAN**

NO.	DATE	DESCRIPTION

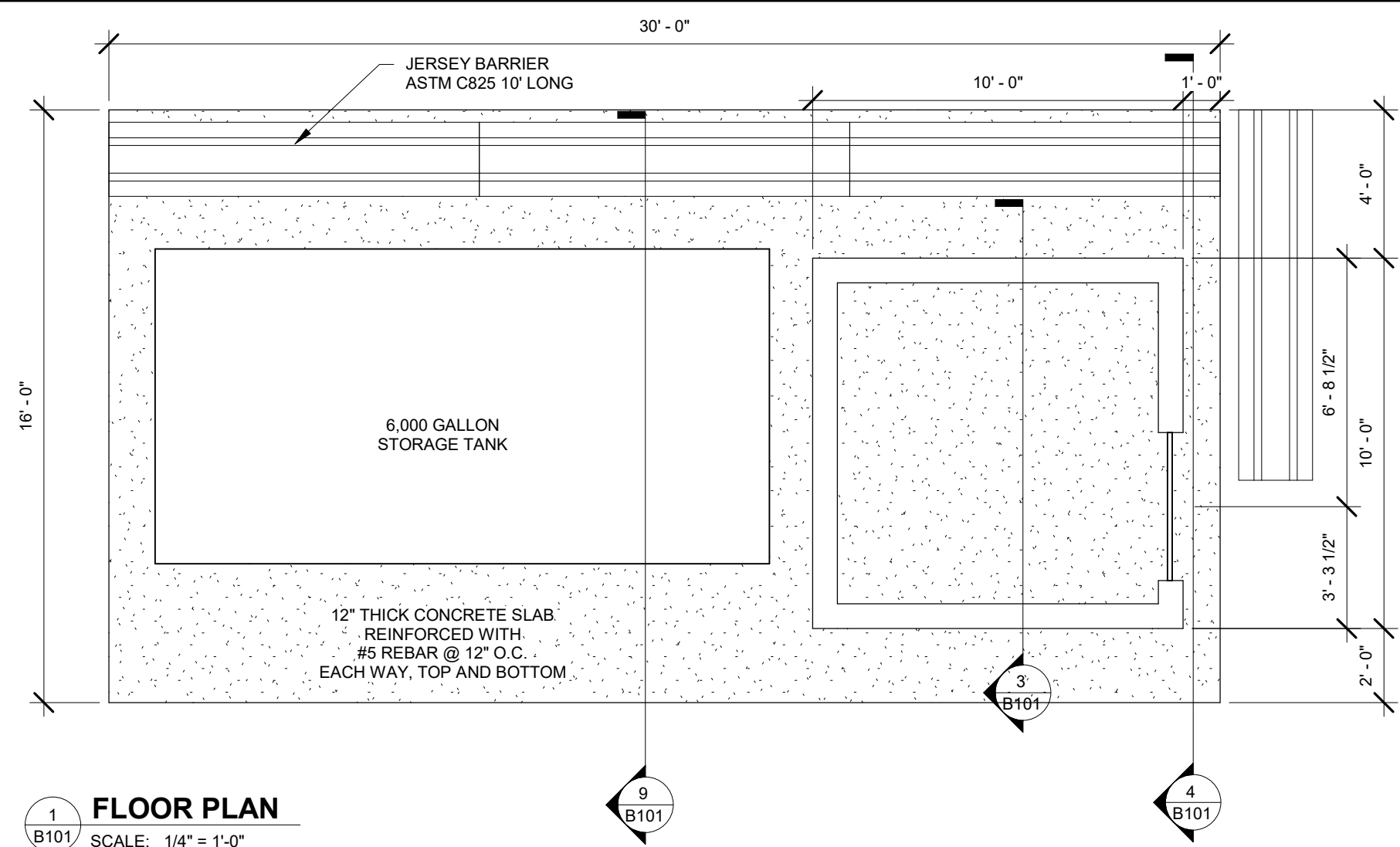
**FOR BIDDING**



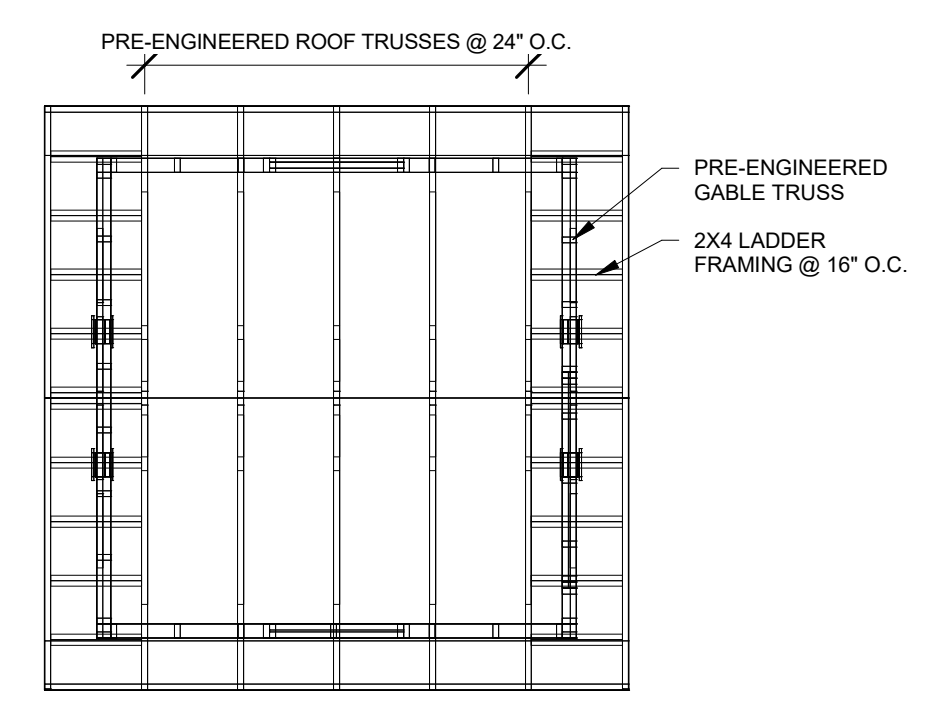
SCALE	1"=20'
DATE	2019-03-26
DESIGNED BY	WAB
CHECKED BY	DSH
APPROVED BY	CEB
APPROVED BY	DSH
JOB NUMBER	10267.010
DRAWING NUMBER	

**C101**

P:\10267-010\10267-EAGLE LAKE BLANK BASE ENG SPKS-DRAWING-CAD DRAWINGS\CAD\10267-010-C-SP-DWG-1/26/2019 10:18 AM



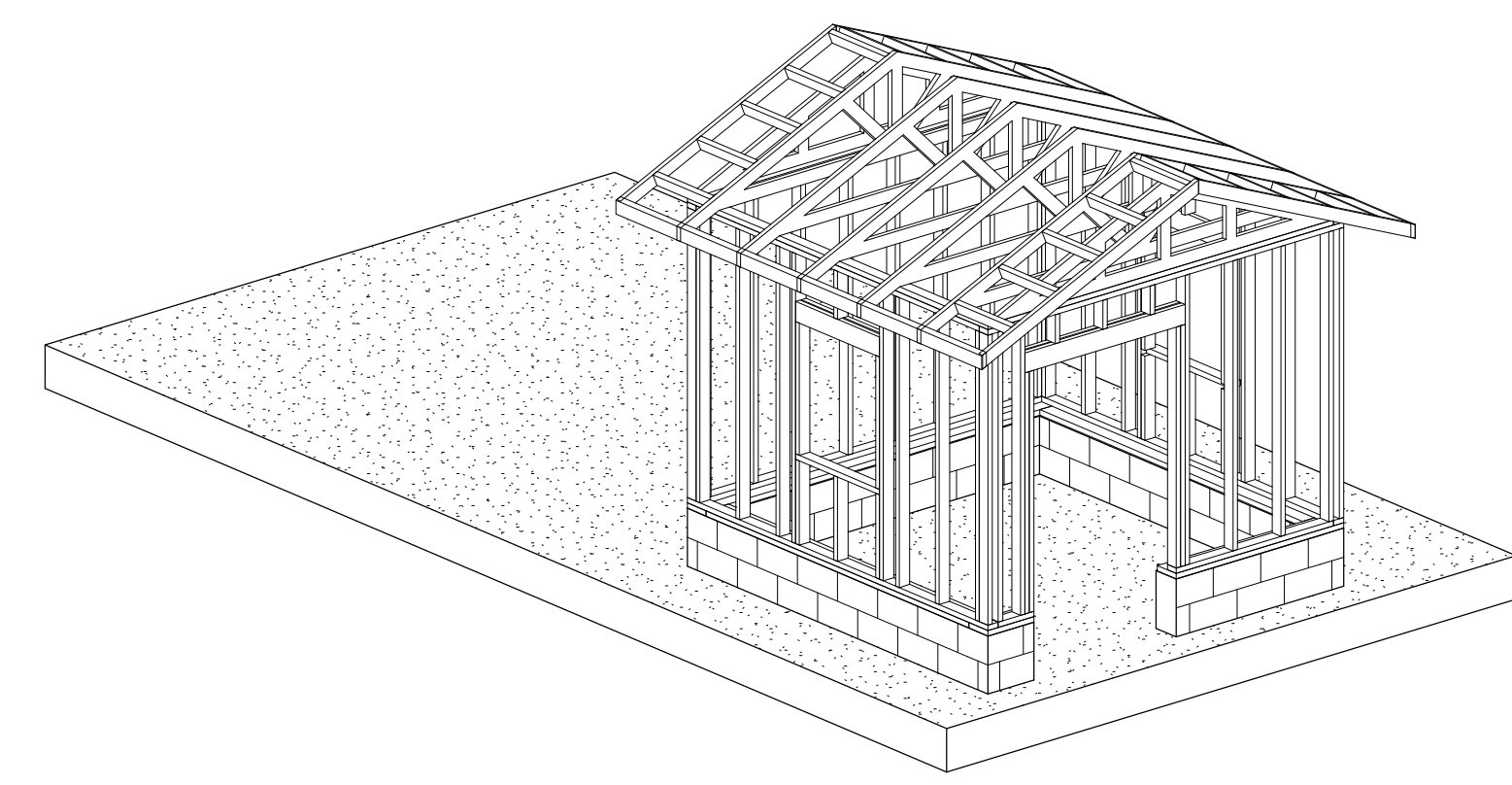
**1 FLOOR PLAN**  
B101 SCALE: 1/4" = 1'-0"



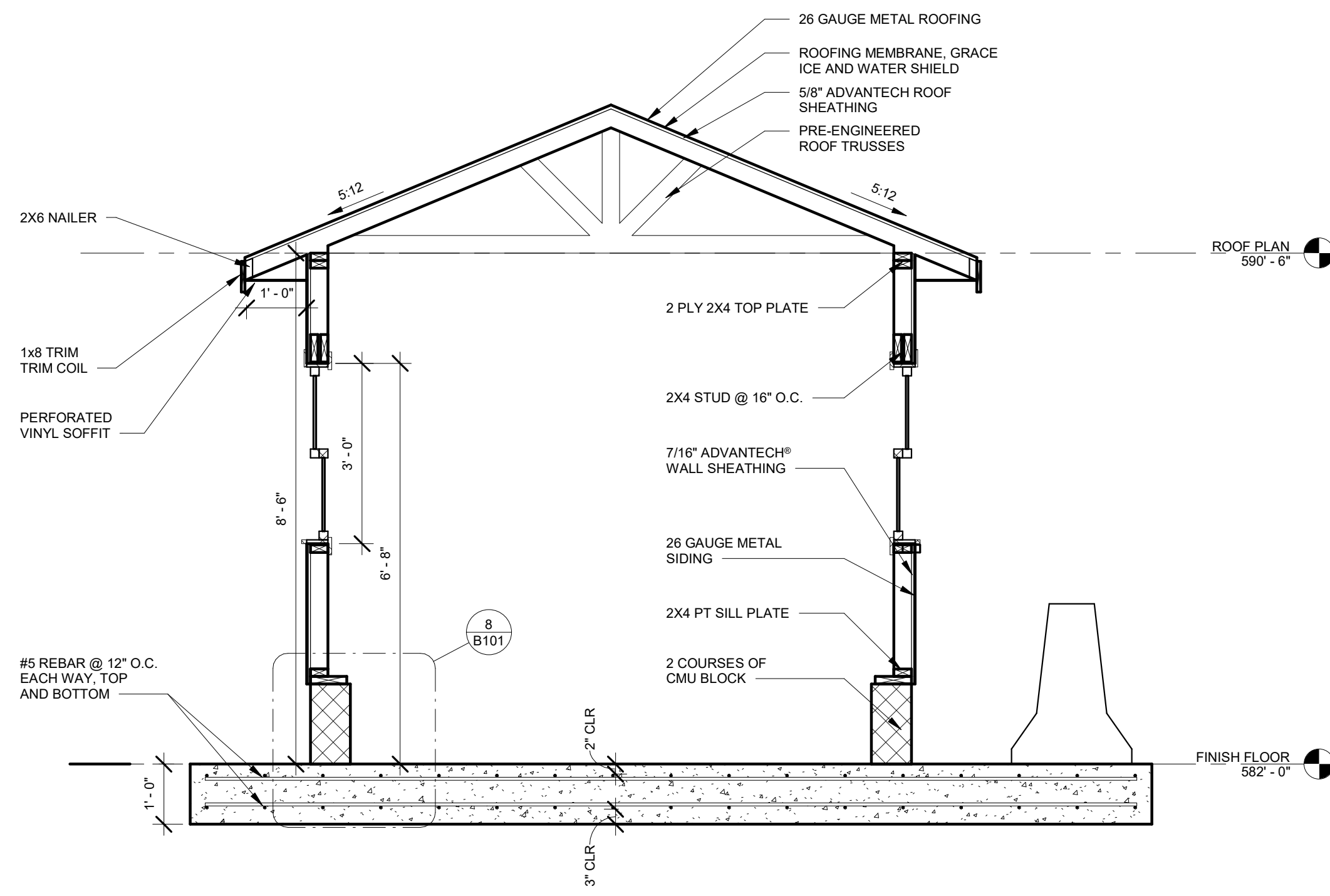
**2 ROOF FRAMING PLAN**  
B101 SCALE: 1/4" = 1'-0"

**DESIGN CRITERIA BASED ON IBC 2015 AND ASCE 7-10**

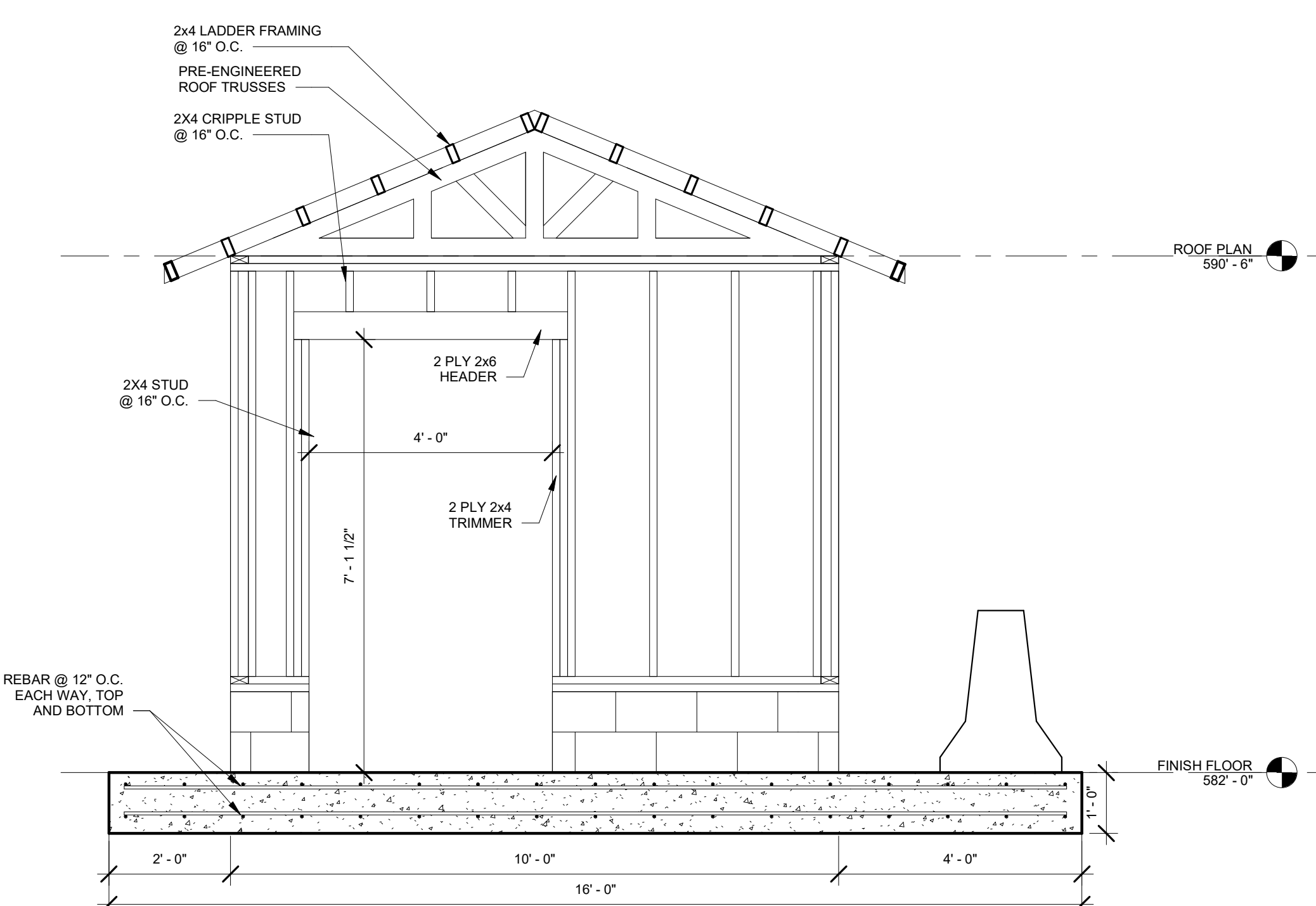
- 1) SUPERIMPOSED DEAD LOADS:**
  - ROOF: 15 PSF
- 2) SNOW LOADS:**
  - DESIGN SNOW LOAD (P<sub>f</sub>): 120 PSF
  - GROUND SNOW LOAD (P<sub>g</sub>): 87 PSF
  - SNOW EXPOSURE FACTOR (C<sub>e</sub>): 1.0
  - SNOW LOAD IMPORTANCE FACTOR (I<sub>s</sub>): 1.0
  - THERMAL FACTOR (C<sub>t</sub>): 1.2
  - ROOF PITCH: 5:12
- 3) WIND LOAD DESIGN DATA:**
  - MAIN WIND FORCE RESISTING SYSTEM: C
  - ULTIMATE DESIGN WIND SPEED, V<sub>ult</sub>: 115 MPH
  - EXPOSURE: II
  - RISK CATEGORY: 2
  - INTERNAL PRESSURE COEFFICIENT: ±0.18
- 4) SEISMIC LOAD DESIGN DATA:**
  - SEISMIC IMPORTANCE FACTOR (I<sub>s</sub>): 1.0
  - S<sub>s</sub>: 0.291 g
  - S<sub>1</sub>: 0.101 g
  - S<sub>0.5</sub>: 0.304 g
  - S<sub>D1</sub>: 0.162 g
  - SITE CLASS: D
  - SEISMIC DESIGN CATEGORY: 8
  - LATERAL SYSTEM DESCRIPTION: LIGHT FRAME WALL SYSTEMS
  - SEISMIC RESPONSE COEFFICIENT (C<sub>s</sub>): 0.12
  - RESPONSE MODIFICATION FACTOR (R): 4/2
  - ANALYSIS PROCEDURE DESCRIPTION: EQUIVALENT LATERAL FORCE



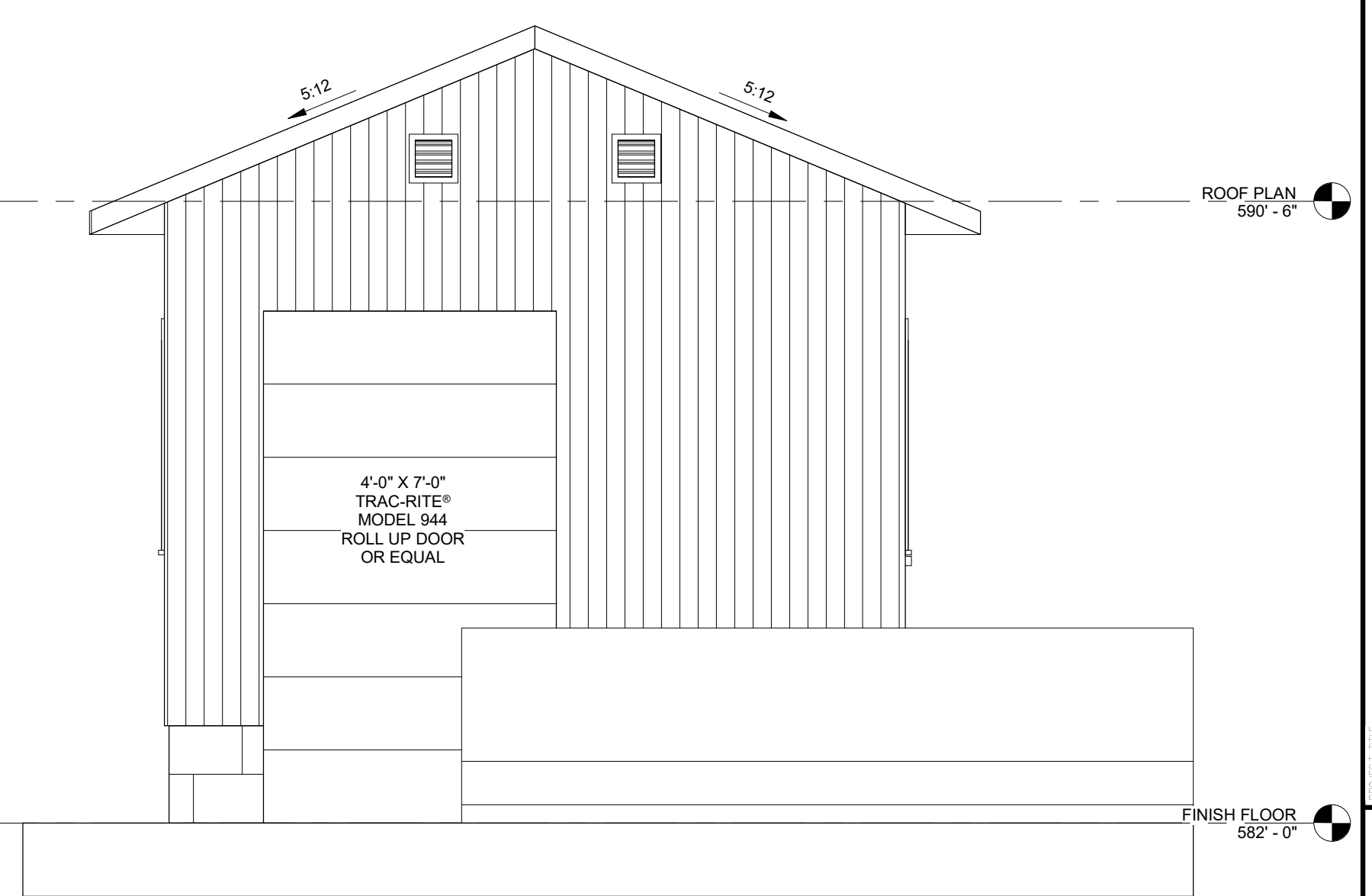
**10 FRAMING ISO**  
B101 SCALE:



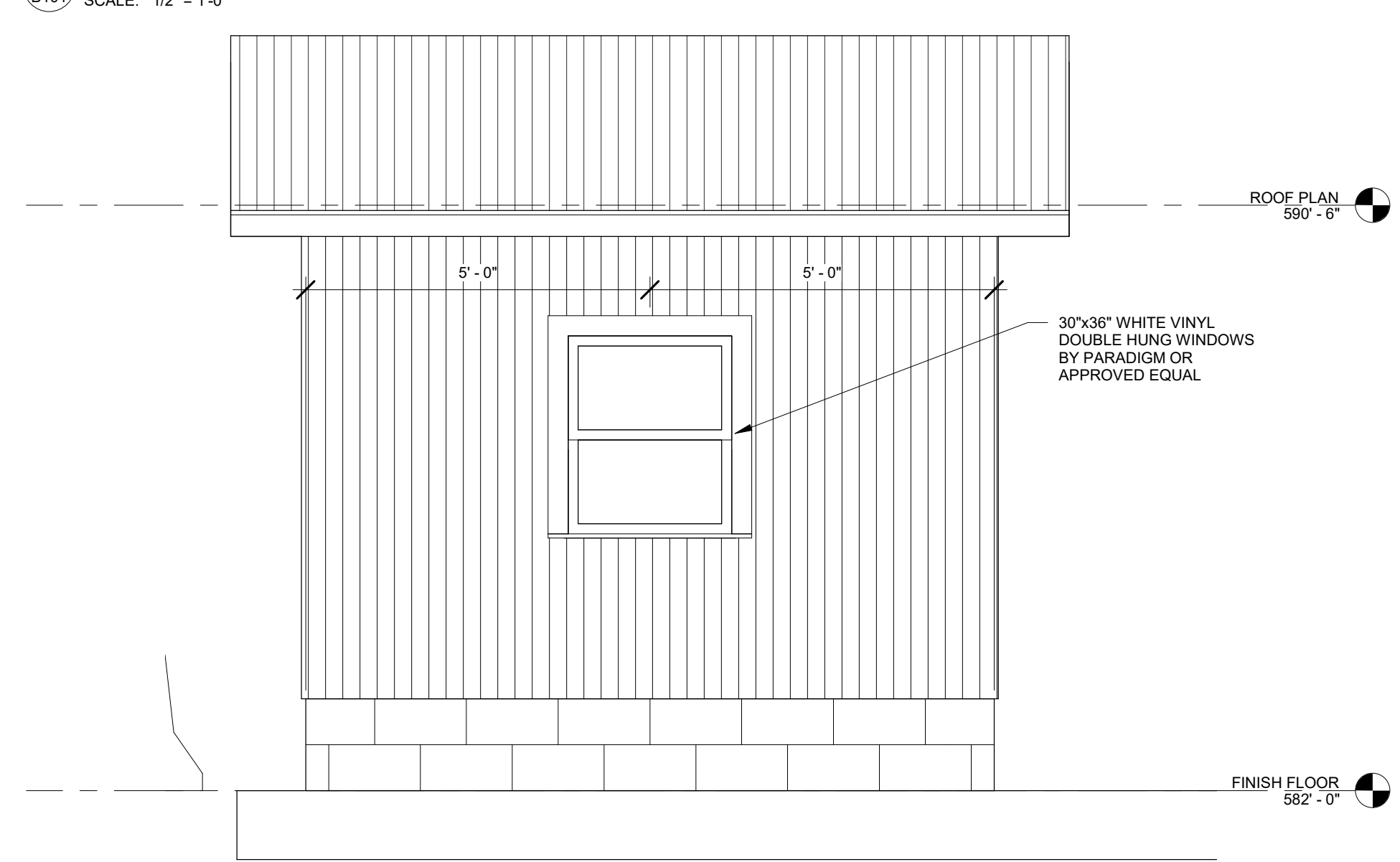
**3 BUILDING SECTION**  
B101 SCALE: 1/2" = 1'-0"



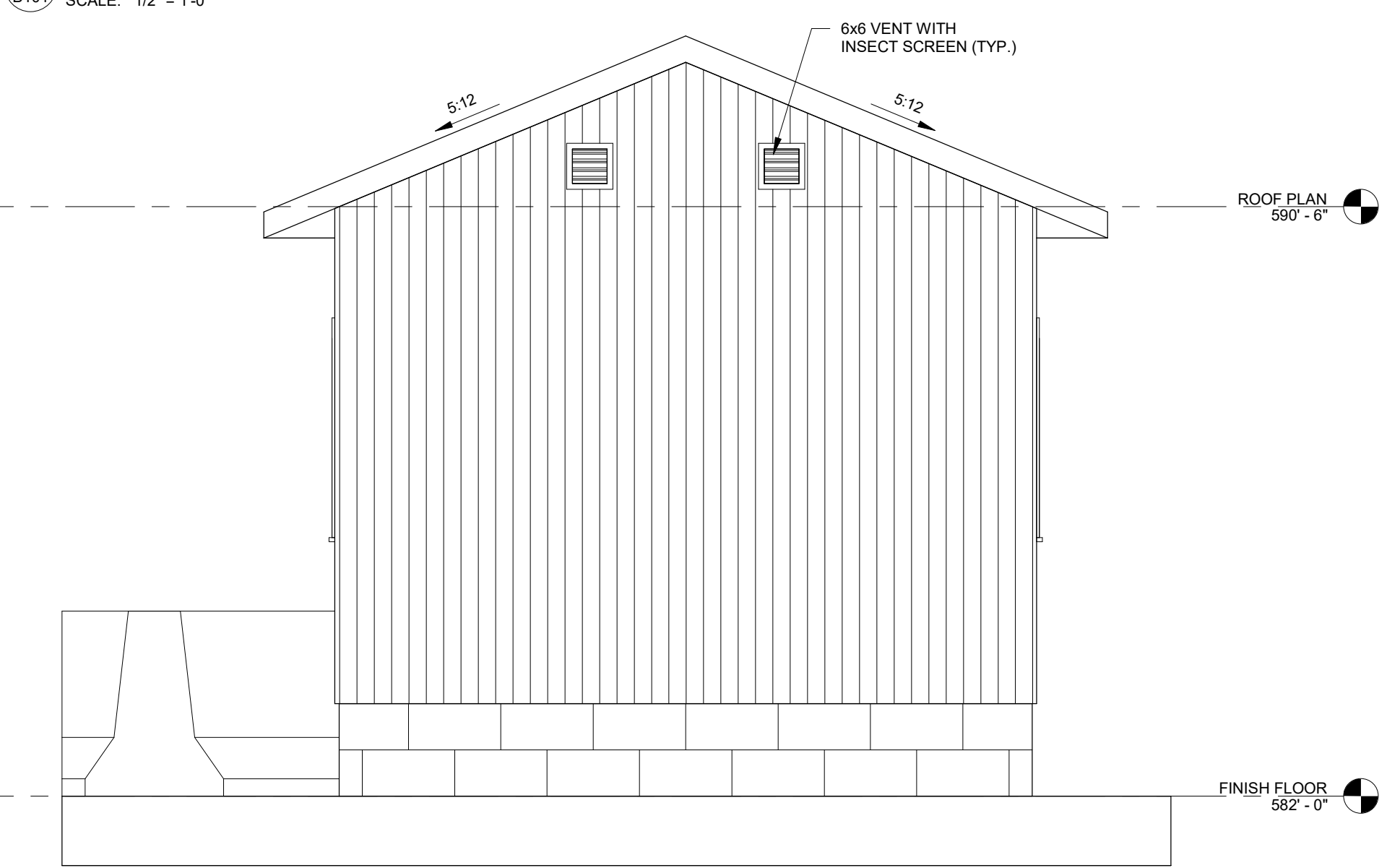
**4 FRAMING SECTION**  
B101 SCALE: 1/2" = 1'-0"



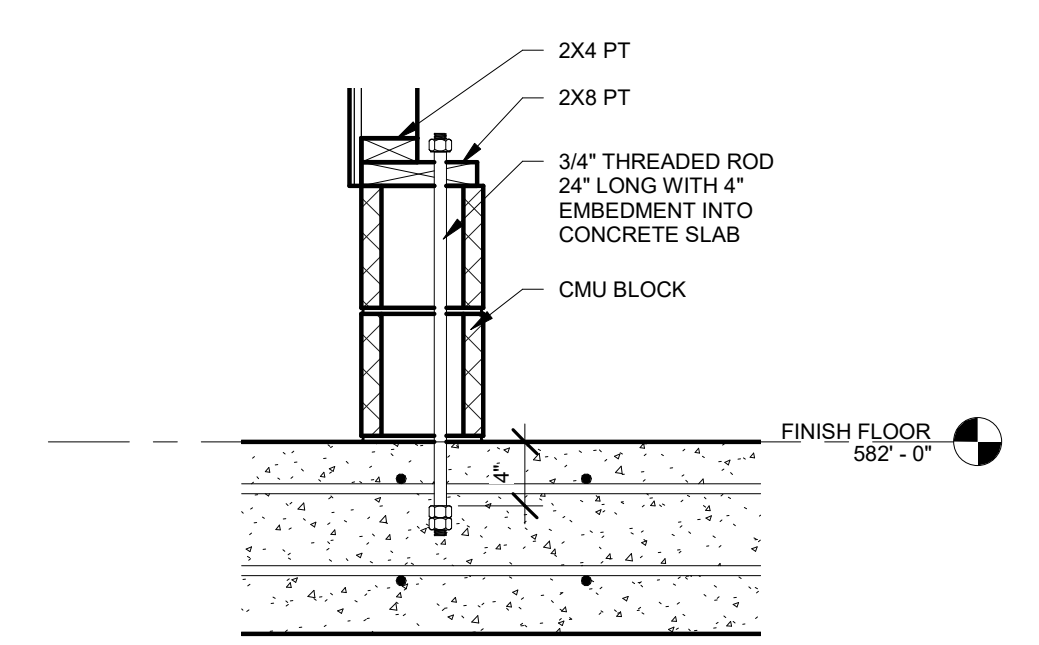
**5 FRONT ELEVATION**  
B101 SCALE: 1/2" = 1'-0"



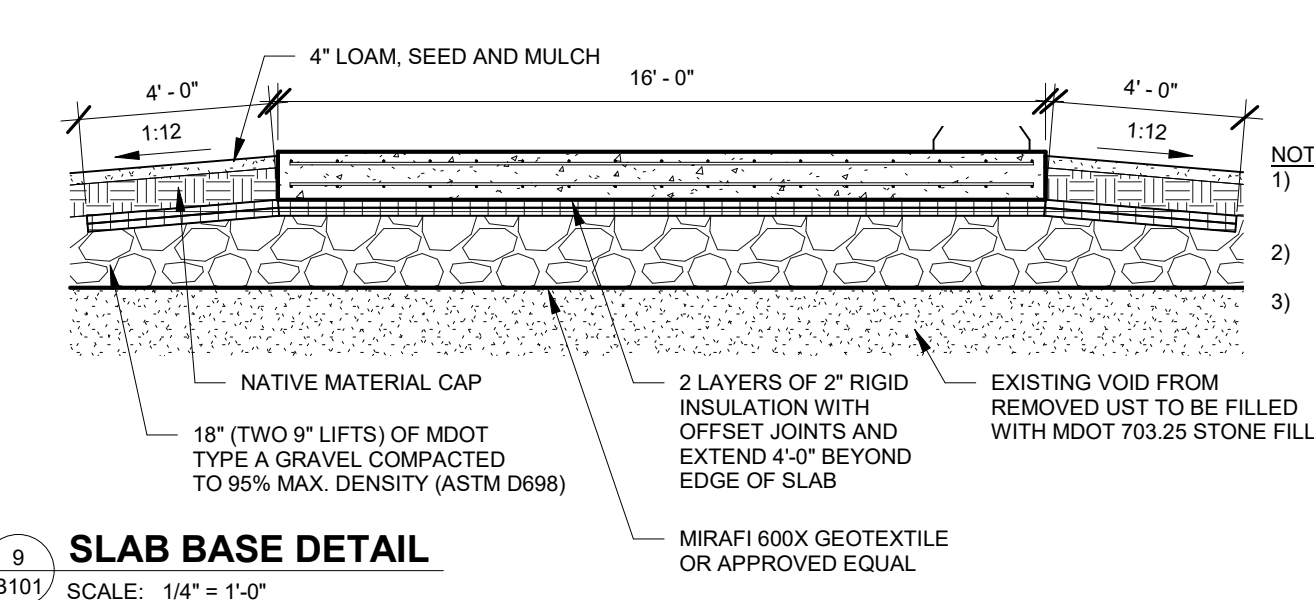
**6 SIDE ELEVATION**  
B101 SCALE: 1/2" = 1'-0"



**7 REAR ELEVATION**  
B101 SCALE: 1/2" = 1'-0"



**8 CONNECTION DETAIL**  
B101 SCALE: 1" = 1'-0"



**9 SLAB BASE DETAIL**  
B101 SCALE: 1/4" = 1'-0"

- NOTE:**
- 1) CONCRETE 4,000 PSI, SLUMP 4 +/- 1, AIR CONTENT 6-8%
  - 2) MEDIUM BROOM FINISH
  - 3) CONTRACTOR SHALL PROVIDE AND APPLY TWO COATS OF UNIDUR-O-SEAL CURE & SEAL TO ALL CONCRETE SURFACES THAT WILL REMAIN EXPOSED.

Waterville  
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Engineers • Environmental Scientists • Surveyors

**FOUNDATION AND SHELTER PLANS AND DETAILS**

MDF&W  
32 WARDEN LANE, EAGLE LAKE, MAINE


**FOR BIDDING**

STATE OF MAINE  
CHRISTOPHER W. SNOWDEAL  
03265-0119  
No. 13764  
LICENSED PROFESSIONAL ENGINEER

As indicated

DATE: 2019.03.26

PREPARED BY: BTH      CHECKED BY: DSH

DESIGNED BY: CWS      APPROVED BY: CWS

PROJECT NUMBER: 10267.010

**B101**

P:\10267\_010\10-Eagle Lake - Plans - Base - Eng - SWS-05\F102-Cad - Drawings\Shuaurani\10267\_010-S-FP.rvt



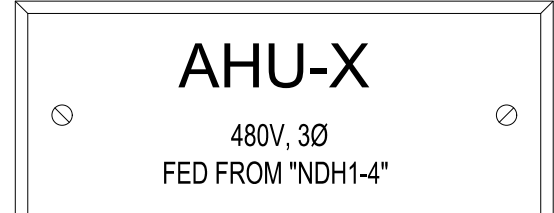
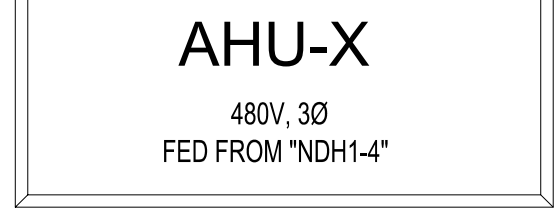
ELECTRICAL POWER, LIGHTING AND SYSTEMS DRAWING NOTES:

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NFPA 70, NATIONAL ELECTRICAL CODE (NEC), OSHA REGULATIONS, AS WELL AS APPLICABLE REGULATIONS OF THE PERTINENT FEDERAL, STATE, COUNTY, AND CITY AGENCIES. PROVIDE MATERIALS AND EQUIPMENT THAT COMPLY WITH ANSI, IEEE, IES AND NEMA STANDARDS. WHERE APPLICABLE, PROVIDE ONLY MATERIALS THAT ARE U.L. LISTED AND LABELED.
2. THE ELECTRICAL SUBCONTRACTOR SHALL COORDINATE THIS WORK WITH THE GENERAL CONTRACTOR DURING CONSTRUCTION. FAILURE TO DO SO WILL NOT RELIEVE THE ELECTRICAL SUBCONTRACTOR OF THE RESPONSIBILITY FOR FULL COMPLETION OF THE WORK IN ACCORDANCE WITH APPLICABLE DRAWINGS AND SPECIFICATIONS. IF DISCREPANCIES EXIST BETWEEN THE CONTRACT DRAWINGS AND THE ACTUAL EXISTING CONDITIONS, THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER/OWNER PRIOR TO PROCEEDING WITH THE INSTALLATION.
3. ALL MOTOR SAFETY SWITCHES, DISCONNECTS AND MOTOR STARTERS ARE PROVIDED BY DIVISION 26, UNLESS NOTED AS FURNISHED WITH EQUIPMENT.
4. PROVIDE ALL NECESSARY ACCESSORIES REQUIRED TO MEET THE INTENT OF THE CONTRACT DRAWINGS.
5. ALL GENERAL NOTES, SYMBOL LISTS, ABBREVIATIONS AND DETAILS ARE TO BE CONSIDERED APPLICABLE TO ALL ELECTRICAL DRAWINGS FOR THIS PROJECT.
6. WHERE A DISCREPANCY OCCURS BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE SPECIFICATIONS SHALL PREVAIL. CONTACT THE ENGINEER FOR CLARIFICATION WHEN SUCH A SITUATION OCCURS.
7. WHERE MATERIAL IS CALLED OUT IN THE LEGEND BY MANUFACTURER TYPE OR CATALOG NUMBER, SUCH DESIGNATIONS ARE TO ESTABLISH STANDARDS OR DESIRED QUALITY. ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.
8. ELECTRICAL DRAWINGS ARE DIAGRAMMATICAL IN NATURE AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT AND DEVICES, AND FURNITURE REQUIREMENTS, PRIOR TO ROUGHING IN FOR SAME.
9. IN AREAS NOT AFFECTED BY THIS RENOVATION, THE ELECTRICAL SUBCONTRACTOR SHALL MAINTAIN CONTINUITY OF EXISTING ELECTRICAL SERVICE.
10. PRIOR TO THE REMOVAL OF EQUIPMENT, THE OWNER WILL INDICATE WHICH EXISTING DEVICES OR MATERIALS SHALL BE SALVAGED AND TURNED OVER FOR STORAGE.
11. WHERE IT IS INDICATED THAT EXISTING WIRING IS TO BE REUSED, THE ELECTRICAL SUBCONTRACTOR SHALL VERIFY THAT THE INTEGRITY OF THE INSULATION IS ADEQUATE FOR REUSE. ALL SUSPECT WIRING SHALL BE REPLACED BY THE SUBCONTRACTOR.
12. GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS, PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THE PROJECT SCOPE OF WORK. FILE ALL NECESSARY DRAWINGS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTIONS FOR PROJECT SCOPE OF WORK AND DELIVER A COPY TO THE ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE PROJECT SCOPE OF WORK.
13. COOPERATE FULLY WITH SEPARATE CONTRACTORS SO WORK ON THOSE CONTRACTS MAY BE CARRIED OUT SMOOTHLY, WITHOUT INTERFERING WITH OR DELAYING WORK UNDER THIS CONTRACT. COORDINATE THE WORK OF THIS CONTRACT WITH WORK PERFORMED UNDER SEPARATE CONTRACTS.
14. DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY UTILITY SERVICES.
15. EACH CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION OPERATIONS WITH THOSE OF OTHER CONTRACTORS AND ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK. EACH CONTRACTOR SHALL COORDINATE ITS OPERATIONS WITH OPERATIONS, INCLUDED IN DIFFERENT SECTIONS, THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND OPERATION. SCHEDULE CONSTRUCTION OPERATIONS IN SEQUENCE REQUIRED TO OBTAIN THE BEST RESULTS WHERE INSTALLATION OF ONE PART OF THE WORK DEPENDS ON INSTALLATION OF OTHER COMPONENTS, BEFORE OR AFTER ITS OWN INSTALLATION. COORDINATE INSTALLATION OF DIFFERENT COMPONENTS WITH OTHER CONTRACTORS TO ENSURE MAXIMUM PERFORMANCE AND ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE, AND REPAIR. MAKE ADEQUATE PROVISIONS TO ACCOMMODATE ITEMS SCHEDULED FOR LATER INSTALLATION.
16. IF COMPLIANCE WITH TWO OR MORE STANDARDS OR DIRECTIVES IS SPECIFIED AND THE STANDARDS ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ARCHITECT/ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DELIVER, STORE, AND HANDLE PRODUCTS USING MEANS AND METHODS THAT WILL PREVENT DAMAGE, DETERIORATION, AND LOSS, INCLUDING THEFT. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND GENERALLY ACCEPTED CONSTRUCTION PRACTICE.
19. WARRANTY EQUIPMENT AND INSTALLATIONS FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION OF PROJECT.
20. EACH CONTRACTOR SHALL ASSIGN REPRESENTATIVES WITH EXPERTISE AND AUTHORITY TO ACT ON ITS BEHALF AND SHALL SCHEDULE THEM TO PARTICIPATE IN AND PERFORM COMMISSIONING PROCESS ACTIVITIES FOR ALL NEW EQUIPMENT AND SYSTEMS.
21. PREPARE PROJECT SPECIFIC INFORMATION TO BE SUBMITTED AS SHOP DRAWINGS FOR PROJECT. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL EQUIPMENT AND MATERIALS TO BE USED ON PROJECT. SUBMITTALS SHALL BE DRAWN ACCURATELY AND TO SCALE. DO NOT BASE SHOP DRAWINGS ON REPRODUCTIONS OF THE CONTRACT DOCUMENTS OR STANDARD PRINTED DATA. SUBMIT SHOP DRAWINGS IN QUANTITIES AS REQUIRED BY ARCHITECT.
22. THE EXISTENCE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AND CONSTRUCTION INDICATED AS EXISTING ARE NOT GUARANTEED. BEFORE BEGINNING WORK, INVESTIGATE AND VERIFY THE EXISTENCE AND LOCATION OF UTILITIES, MECHANICAL AND ELECTRICAL SYSTEMS, AND OTHER CONSTRUCTION AFFECTING THE WORK. ADVISE ARCHITECT OF CONFLICTS OR DEFICIENCIES PRIOR TO STARTING WORK.
23. TAKE FIELD MEASUREMENTS AS REQUIRED TO FIT THE WORK PROPERLY. RECHECK MEASUREMENTS BEFORE INSTALLING EACH PRODUCT. WHERE PORTIONS OF THE WORK ARE INDICATED TO FIT TO OTHER CONSTRUCTION, VERIFY DIMENSIONS OF OTHER CONSTRUCTION BY FIELD MEASUREMENTS BEFORE FABRICATION. COORDINATE FABRICATION SCHEDULE WITH CONSTRUCTION PROGRESS TO AVOID DELAYING THE WORK. VERIFY SPACE REQUIREMENTS AND DIMENSIONS OF ITEMS SHOWN DIAGRAMMATICAL ON DRAWINGS. IMMEDIATELY ON DISCOVERY OF THE NEED FOR

- CLARIFICATION OF THE CONTRACT DOCUMENTS, SUBMIT A REQUEST FOR INFORMATION TO ENGINEER, INCLUDING A DETAILED DESCRIPTION OF PROBLEM ENCOUNTERED, TOGETHER WITH RECOMMENDATIONS FOR CHANGE TO THE CONTRACT DOCUMENTS.
24. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS FOR INSTALLING PRODUCTS IN APPLICATIONS INDICATED.
25. CONDUCT CONSTRUCTION OPERATIONS SO NO PART OF THE WORK IS SUBJECT TO DAMAGING OPERATIONS OR LOADING IN EXCESS OF THAT EXPECTED DURING NORMAL CONDITIONS OF OCCUPANCY.
26. KEEP INSTALLED WORK CLEAN. CLEAN INSTALLED SURFACES ACCORDING TO WRITTEN INSTRUCTIONS OF MANUFACTURER OR FABRICATOR OF PRODUCT INSTALLED. USING ONLY CLEANING MATERIALS SPECIFICALLY RECOMMENDED. IF SPECIFIC CLEANING MATERIALS ARE NOT RECOMMENDED, USE CLEANING MATERIALS THAT ARE NOT HAZARDOUS TO HEALTH OR PROPERTY AND THAT WILL NOT DAMAGE EXPOSED SURFACES.
27. DURING HANDLING AND INSTALLATION, CLEAN AND PROTECT CONSTRUCTION IN PROGRESS AND ADJOINING MATERIALS ALREADY IN PLACE. APPLY PROTECTIVE COVERING WHERE REQUIRED TO ENSURE PROTECTION FROM DAMAGE OR DETERIORATION AT SUBSTANTIAL COMPLETION.
28. CLEAN AND PROVIDE MAINTENANCE ON COMPLETED CONSTRUCTION AS FREQUENTLY AS NECESSARY THROUGH THE REMAINDER OF THE CONSTRUCTION PERIOD. ADJUST AND LUBRICATE OPERABLE COMPONENTS TO ENSURE OPERABILITY WITHOUT DAMAGING EFFECTS.
29. START EQUIPMENT AND OPERATING COMPONENTS TO CONFIRM PROPER OPERATION. REMOVE MALFUNCTIONING UNITS, REPLACE WITH NEW UNITS, AND RE-TEST. ADJUST OPERATING COMPONENTS FOR PROPER OPERATION WITHOUT OVERHEATING. ADJUST EQUIPMENT FOR PROPER OPERATION. TEST EACH PIECE OF EQUIPMENT TO VERIFY PROPER OPERATION. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
30. PROVIDE FINAL PROTECTION AND MAINTAIN CONDITIONS THAT ENSURE INSTALLED WORK IS WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.
31. THE COST OF CORRECTIVE WORK SHALL BE INCLUDED UNDER THE CONTRACT.
32. INSTALL EQUIPMENT TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS ARE INDICATED. INSTALL EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS IN EXPOSED INTERIOR SPACES, UNLESS OTHERWISE INDICATED. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS.
33. ELECTRICAL AND SYSTEMS CONTRACTOR SHALL COORDINATE HIS WORK WITH GENERAL, HVAC, FIRE PROTECTION AND PLUMBING CONTRACTORS AND SHALL MAKE NECESSARY ADJUSTMENTS OR CHANGES TO FACILITATE INSTALLATION OF EQUIPMENT IN SPACES AVAILABLE.
34. ELECTRICAL CONTRACTOR SHALL KEEP AN UP TO DATE SET OF "AS-BUILT" RECORD DRAWINGS ON SITE AT ALL TIMES. AT PROJECT COMPLETION PROVIDE THE OWNER, ARCHITECT AND THE ENGINEER WITH A COMPLETE SET OF CONTRACT DRAWINGS WITH ALL FIELD CHANGES IN CAD FORMAT ALONG WITH A PDF SET AND A FULL SIZE PRINT.
35. ALL ELECTRICAL EQUIPMENT, DEVICES, CONDUCTORS, CABLES AND ETC. SHALL BE U.L. LABELED AND LISTED FOR THE APPLICATION IN WHICH IT IS BEING USED.
36. CONTRACTOR SHALL PROVIDE A COORDINATION DRAWING SHOWING ALL ELECTRICAL EQUIPMENT, CONDUIT RUNS OVER 2" AND/OR GROUPED CONDUITS OVER 12" WIDE, DRAWN TO SCALE WITH THE HVAC, FIRE PROTECTION, PLUMBING AND TELECOMMUNICATIONS EQUIPMENT WITHOUT CONFLICTS.
37. CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS FOR PROJECT. AS BUILT DRAWINGS SHALL SHOW ALL MODIFICATIONS TO DESIGN DRAWINGS THAT WERE MADE DURING CONSTRUCTION. AS BUILT DRAWINGS SHALL BE PREPARED USING AUTOCAD FILES PROVIDED BY ARCHITECT. AUTOCAD FILES SHALL BE MODIFIED BY CONTRACTOR TO SHOW ANY MODIFIED LOCATIONS OF EQUIPMENT OR MODIFIED ROUTING OF PIPING, ETC. CONTRACTOR SHALL INCLUDE 1 COPY OF MODIFIED CAD FILES ON CD IN EACH OPERATION AND MAINTENANCE MANUAL. 1 PAPER SET OF DRAWINGS SHALL BE FOLDED AND INCLUDED IN EACH OPERATION AND MAINTENANCE MANUAL. OWNER SHALL BE PROVIDED WITH 3 COPIES OF THE OPERATION AND MAINTENANCE MANUAL.
38. CONTRACTOR SHALL PREPARE OPERATION AND MAINTENANCE MANUALS FOR BUILDING OWNER. OPERATION AND MAINTENANCE MANUALS SHALL INCLUDE SHOP DRAWING SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT AND SYSTEM INSTALLED FOR PROJECT. OWNER SHALL BE PROVIDED WITH 3 COPIES OF OPERATION AND MAINTENANCE MANUALS.
SUBMITTALS
1. PROVIDE THE FOLLOWING SUBMITTALS AS A MINIMUM REQUIREMENT, ALL OTHER MATERIAL USED WITHOUT APPROVED SUBMITTALS SHALL BE CONSIDERED AT RISK AND SUBJECT TO REPLACEMENT AT NO COST TO THE OWNER.
1.1. BREAKERS
1.2. FUSES
1.3. DISCONNECTS
1.4. GROUNDING AND BONDING
1.5. CONDUITS
1.6. CABLES
1.7. BOXES
1.8. FITTINGS
1.9. WIRING DEVICES
1.10. WIRING DEVICE COVERS
1.11. HANGERS AND SUPPORTS
2. SUBMITTALS SHALL CONSIST OF THE FOLLOWING, AS A MINIMUM REQUIREMENT.
2.1. PRODUCT DATA: FOR EACH TYPE OF PRODUCT
2.1.1. ENCLOSURE TYPE
2.1.2. CURRENT AND VOLTAGE RATINGS
2.1.3. SHORT CIRCUIT RATINGS
2.2. SHOP DRAWINGS
2.2.1. INCLUDE DIMENSIONED PLANS, ELEVATIONS, SECTIONS AND DETAILS
2.2.2. DETAIL ENCLOSURE TYPES
2.2.3. DETAIL BUS CONFIGURATION, CURRENT AND VOLTAGE RATINGS
2.2.4. SHORT CIRCUIT RATING
2.2.5. TIME CURRENT CURVES
2.2.6. PANEL BOARD SCHEDULES
3. CLOSEOUT SUBMITTALS SHALL INCLUDE OPERATION AND MAINTENANCE DATA FOR EACH SYSTEM, MANUFACTURER'S WRITTEN INSTRUCTIONS FOR TESTING AND ADJUSTING.
GROUNDING & BONDING
1. EQUIPMENT GROUNDING CONDUCTOR(S) SHALL BE COPPER WITH GREEN COLORED INSULATION OR FOR LARGER WIRES GREEN MARKING TAPE VISIBLE AT ALL PIECES OF EQUIPMENT AND JUNCTION BOXES. 6" MINIMUM OF COLORED IS REQUIRED.
2. BARE COPPER GROUNDING CONDUCTORS SHALL COMPLY WITH ASTM STANDARDS.
3. CONNECTORS SHALL BE BOLTED TYPE OR EXOTHERMICALLY WELDED. BOLTED CONNECTIONS SHALL BE BOLTED PRESSURE TYPE CONNECTORS OR COMPRESSION TYPE.

- PROVIDE A SEPARATE INSULATED GROUNDING CONDUCTOR SIZED PER THE NEC IN ALL FEEDERS AND CIRCUITS.
5. INSTALL BONDING STRAPS SO VIBRATION BY EQUIPMENT MOUNTED ON VIBRATION ISOLATION HANGERS AND SUPPORTS WILL NOT TRANSMIT TO RIGIDLY MOUNTED EQUIPMENT.
6. BOND INTERIOR METAL PIPING SYSTEMS AND METAL AIR DUCTS TO EQUIPMENT GROUNDING CONDUCTORS OF THE ASSOCIATED PUMPS, FANS, BLOWERS, ELECTRIC HEATERS, AND AIR CLEANERS, USING BRAIDED TYPE BONDING STRAPS.
ELECTRICAL IDENTIFICATION
1. INSTALL LABELING AND CONDUIT/BOX MARKERS ON ALL CONDUITS EXCEPT AS NOTED ON DRAWINGS AND 2017 NEC.
2. INSTALL CIRCUITING, AND EQUIPMENT LABELING ACCORDING TO DETAILS ON DRAWINGS AND 2017 NEC.
3. PROVIDE BRANCH CIRCUITING INFORMATION "PANEL NAME - CIRCUIT NUMBER" ON DEVICE COVER PLATES USING SELF ADHESIVE VINYL LABELS IN HIGHLY CONTRASTING COLORS, (BLACK INK ON CLEAR VINYL, OR SIMILAR).
4. PROVIDE BRANCH CIRCUITING INFORMATION "PANEL NAME - CIRCUIT NUMBER" ON ALL JUNCTION BOXES.
5. FIELD APPLIED, COLOR CODING TAPE SHALL BE APPLIED IN HALF-LAPPED TURNS FOR A MINIMUM OF 6" FROM TERMINAL POINTS AND IN BOXES WHERE SPLICING OR TAPS ARE MADE.
6. PROVIDE EQUIPMENT IDENTIFICATION LABELS USING SELF ADHESIVE, INDOOR APPLICATIONS AND SCREW MOUNTED IN ALL EXTERIOR APPLICATIONS. ENGAGE LETTERING ACRYLIC OR MELAMINE LABEL, MINIMUM LETTER HEIGHT SHALL BE 3/4" OF AN INCH. LABEL SHALL INCLUDE THE EQUIPMENT NAME DESIGNATION, POWER SOURCE AND ANY OTHER REQUIRED INFORMATION AS LISTED ON THE DRAWINGS.
7. COLOR CODING FOR PHASE AND VOLTAGE LEVEL IDENTIFICATION FOR ALL UNGROUNDED FEEDER, AND BRANCH CIRCUIT SERVICE, FEEDER AND CONDUCTORS:
120/208V: PHASE A: BLACK
PHASE B: RED
PHASE C: BLUE
NEUTRAL: WHITE
HANGERS AND SUPPORTS
1. ALL THREADED ROD SHALL BE GALVANIZED.
2. INSTALL SEISMIC RESTRAINTS ON ELECTRICAL AND SYSTEMS CONDUIT AND EQUIPMENT TO MEET THE REQUIREMENTS OF THE BUILDING CODE AND ASCE/SEI STANDARD 7-05.
3. STEEL SLOTTED SUPPORT SYSTEMS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: ALLIED TUBE AND CONDUIT, COOPER B-LINE, ERICO, THOMAS AND BETTS OR UNISTRUT CORP.
4. CONDUIT AND CABLE SUPPORT, STEEL AND MALLEABLE-IRON HANGERS, CLAMPS AND ASSOCIATED FITTINGS, DESIGNED FOR TYPES AND SIZES OF RACEWAYS OR CABLES TO BE SUPPORTED.
CONDUITS AND CABLES
5. PROVIDE PRESSURE TYPE GROUNDING LUGS FOR #8 AND LARGER FOR #10 AND SMALLER WINGED PRESSURE TYPE MAY BE USED.
6. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALY. INSTALL CONDUIT WITH A MINIMUM OF BENDS IN THE SHORTEST PRACTICAL DISTANCE CONSIDERING THE BUILDING'S CONSTRUCTION AND OBSTRUCTIONS, EXCEPT WHERE OTHERWISE NOTED.
7. UNLESS OTHERWISE NOTED, WIRING SHALL BE 2 #12 AWG CONDUCTORS & #12 GND. HOME RUNS FED FROM 20A, SINGLE POLE CIRCUITS IN EXCESS OF 100 FEET SHALL BE #10 AWG, UNLESS INDICATED OTHERWISE. INSULATION TYPE SHALL BE THHN/TWN, 75 DEG C, AND 600V CLASS UNLESS SPECIFIED OTHERWISE.
8. UNLESS OTHERWISE NOTED, ALL WIRING SHALL BE 600V, COPPER WITH THHN-TWN INSULATION.
9. CONDUCTORS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: ALCAN CABLE, ALPHA WIRE, BELDEN, ENCORE, GENERAL CABLE OR ITH WIRE.
10. CONNECTORS AND SPLICES SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: AFC CABLE SYSTEMS, HUBBELL POWER SYSTEMS, IDEAL INDUSTRIES, ILSCO, NSI INDUSTRIES, O-ZIGEDNEY, 3M OR TYCO ELECTRONICS.
11. PROVIDE SOLID CONDUCTORS FOR #8 AND SMALLER CABLES AND STRAPS FOR #6 AND LARGER, UNLESS OTHERWISE INDICATED IN THE DRAWINGS.
12. INCREASE THE SIZE OF THE EQUIPMENT GROUNDING CONDUCTOR SHOWN ON POWER RISER DIAGRAMS AND FEEDER SIZING CHARTS ON DRAWINGS PER NEC TO ACCOMMODATE SIZE OF PHASE CONDUCTORS INCREASED IN SIZE DUE TO VOLTAGE DROP.
13. ISOLATED EQUIPMENT ENCLOSURE CIRCUITS: FOR DESIGNATED EQUIPMENT SUPPLIED BY A BRANCH CIRCUIT OR FEEDER, ISOLATE EQUIPMENT ENCLOSURE FROM SUPPLY RACEWAY WITH NONMETALLIC RACEWAY FITTING FOR THE PURPOSE. INSTALL FITTING WHERE RACEWAY ENTERS ENCLOSURE AND INSTALL A SEPARATE EQUIPMENT GROUNDING CONDUCTOR. ISOLATE EQUIPMENT GROUNDING CONDUCTOR FROM RACEWAY AND FROM PANEL BOARD GROUNDING TERMINALS. TERMINATE AT EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF APPLICABLE DERIVED SYSTEM OR SERVICE, UNLESS OTHERWISE INDICATED.
14. MAKE CONNECTIONS SO GALVANIC ACTION OR ELECTROLYSIS POSSIBILITY IS MINIMIZED. SELECT CONNECTOR TYPE OR HARDWARE, CONDUCTORS AND CONNECTION METHODS SO METALS IN DIRECT CONTACT WILL BE GALVANICALLY COMPATIBLE.
15. USE HYDRAULIC COMPRESSION TOOLS TO PROVIDE CORRECT CIRCUMFERENTIAL PRESSURE FOR COMPRESSION CONNECTORS. USE TOOLS OR DIES AS RECOMMEND BY CONNECTOR MANUFACTURER.
16. MULTI-CONDUCTOR CABLES SHALL BE ZINC COATED STEEL TYPE MC WITH INSULATED EQUIPMENT GROUNDING CONDUCTOR. HEALTHCARE FACILITIES CABLE TYPE AC CABLE WITH A 90 DEGREE CABLE AND INSULATED EQUIPMENT GROUND CONDUCTOR) WITH GROUND WIRE.
17. ALL CONDUCTORS SHALL BE INSTALLED AS SINGLE CONDUCTORS IN RACEWAYS UNLESS OTHERWISE NOTED OR APPROVED BY THE AHJ.
RACEWAY AND BOXES
1. FLEXIBLE CONNECTIONS TO MOTORS SHALL BE FLEXIBLE LIQUID TIGHT CONDUIT.
2. E.N.T., ELECTRICAL NON-METALLIC TUBING IS NOT ALLOWED.
3. METAL CONDUITS, TUBING AND FITTINGS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: AFC CABLE, HINDS, ERICKSON, HOFFMAN, HUBBELL, MILBANK, O-ZIGEDNEY, RACO-HUBBELL, SPRING CITY, THOMAS AND BETTS OR WIREMOLD/LEGRAND.
4. NONMETALLIC CONDUITS, TUBING AND FITTINGS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: AFC CABLE, CANTEX, RACE OR THOMAS AND BETTS.
5. METAL WIREWAYS AND CABINETS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: COOPER B-LINE, HOFFMAN OR SQUARE D
6. BOXES, ENCLOSURES, AND CABINETS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: COOPER CROUSE HINDS, ERICKSON, HOFFMAN, HUBBELL, MILBANK, O-ZIGEDNEY, RACO-HUBBELL, SPRING CITY, THOMAS AND BETTS OR WIREMOLD/LEGRAND.
7. IMC SHALL BE USED IN ALL LOCATIONS SUBJECT TO SEVERE

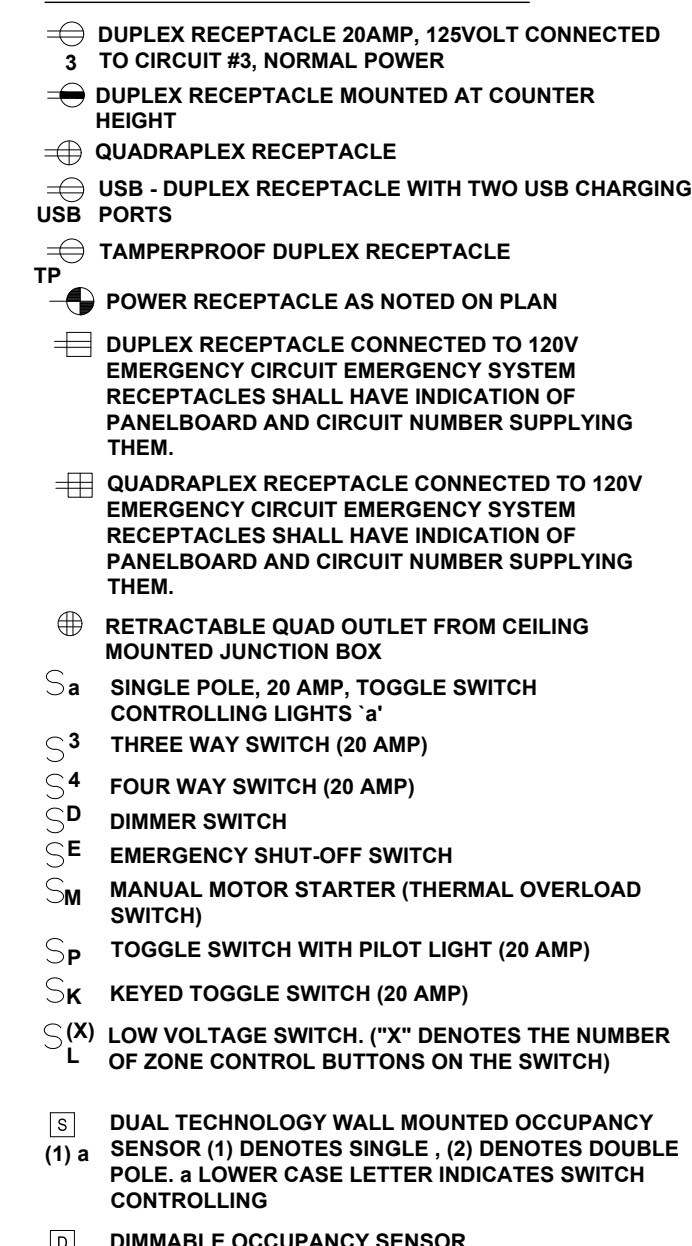
- PHYSICAL DAMAGE AS DETERMINED BY THE ENGINEER OF RECORD.
8. E.M.T. FITTINGS SHALL BE ZINC COATED STEEL, COMPRESSION TYPE, MANUFACTURED BY ONE OF THE FOLLOWING COMPANIES: BRIDGEPORT, CROUSE HINDS, ARLINGTON, HUBBALL OR APPROVED EQUALS.
9. METALLIC WIREWAYS SHALL BE MANUFACTURED BY HOFFMAN, SQUARE D, OR APPROVED EQUAL.
10. INDOOR RACEWAYS SHALL BE E.M.T., RIGID IN ALL LOCATION SUBJECT TO PHYSICAL DAMAGE, CONNECTIONS TO ALL VIBRATING EQUIPMENT SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT, LFMC.
11. MINIMUM RACEWAY SHALL BE 12" FOR ALL POWER, LIGHTING AND SYSTEMS, 1" FOR ALL TELECOMMUNICATIONS.
12. NO MORE THAN 360 DEGREES OF BEND IN A SINGLE RUN BETWEEN PULL POINTS AND 270 DEGREES FOR TELECOMMUNICATIONS. PROVIDE A 200 LB FULL STRING IN ALL EMPTY CONDUITS.
13. NO MORE THAN 72" OF FLEXIBLE METAL CONDUIT SHALL BE USED FOR CONNECTIONS TO LIGHTING FIXTURES AND EQUIPMENT.
WIRING DEVICES
1. PREFERRED MANUFACTURE FOR WIRING AND MULTI OUTLET ASSEMBLIES IS HUBBELL AND ALTERNATE APPROVED MANUFACTURES ARE COPPER WIRING DEVICES AND PASS & SEYMOUR.
2. ALL DEVICES SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING: COOPER, HUBBELL, LEVITON OR PASS AND SEYMOUR.
3. DEVICE COLOR SHALL BE:
3.1. NORMAL POWER - WHITE
4. ALL DEVICES SHALL BE OF A SINGLE MANUFACTURE TO THE EXTENT POSSIBLE.
5. ALL WIRING DEVICES SHALL HAVE THE NEMA RATING FOR THE INTENDED PURPOSE AND CONTRACTOR SHALL COORDINATE ALL WIRING DEVICES WITH OWNER FURNISHED EQUIPMENT.
6. WALL PLATES SHALL BE COORDINATED WITH THE ARCHITECT AND OF HIGH IMPACT THERMOPLASTIC AND CAST ALUMINUM WITH SPRING LOADED COVER IN ALL WET LOCATIONS.
7. WALL PLATE COVER SHALL MATCH THE DEVICE COLOR.
PANEL BOARDS, BREAKERS, TRANSFORMERS AND FUSES
1. PANELBOARDS SHALL BE MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, OR EATON CORP.
2. CONTRACTOR SHALL VERIFY ALL CIRCUITS AND SPACES PRIOR TO STARTING WORK AND INFORM ENGINEER OF ALL DISCREPANCIES WITH SPACES, SPACE AND DEMO CIRCUITS.
3. PHASE AND GROUND BUS SHALL BE HARD DRAWN COPPER, 98 PERCENT CONDUCTIVITY AND THE NEUTRAL BUSS SHALL BE RATED FOR 200 PERCENT OF PHASE BUS AND FULL LISTED FOR NON LINEAR LOADS. CONNECTIONS SHALL BE OF COMPRESSION TYPE.
4. PANELBOARDS SHALL BE NEMA 1 RATED FOR ALL DRY LOCATIONS, NEMA 4 FOR WET OR DAMP LOCATIONS, NEMA 4X STAINLESS STEEL FOR KITCHEN AREAS.
5. PANELBOARDS COVER SHALL BE HINGED FRONT WITH A STANDARD DOOR WITHIN HINGED TRIM COVER.
6. BRANCH OVERCURRENT CIRCUIT BREAKERS SHALL BE BOLT ON TYPE REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.
7. ALL PANELBOARDS SHALL BE MARKED WITH PANEL NAME AND FEEDER INFORMATION. A PRINTED DIRECTORY SHALL BE PROVIDED IN A CLEAR PLASTIC COVER LOCATED ONT HE BACK SIDE OF THE DOOR.
8. PROVIDE ARC FLASH INCIDENT STUDY AND WARNING LABELS ON ALL ELECTRICAL EQUIPMENT.
9. ALL DISCONNECTS SHALL BE OF HEAVY DUTY TYPE AND MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, OR EATON CORP.



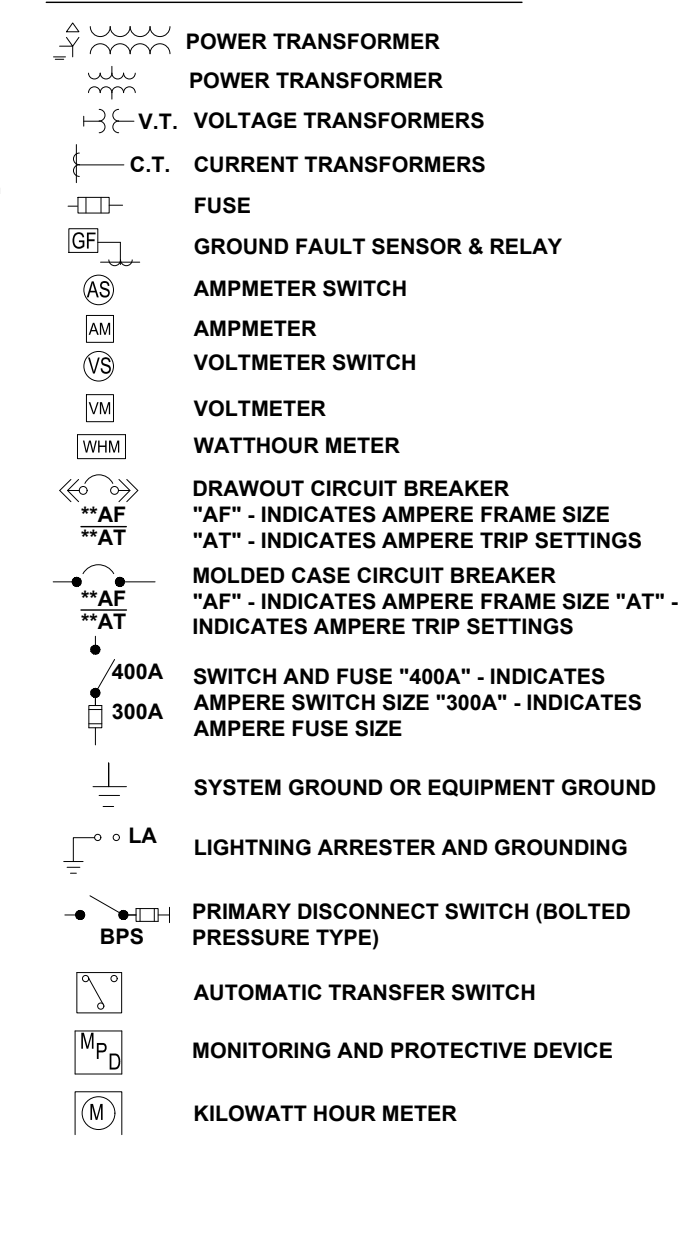
TYPICAL EQUIPMENT



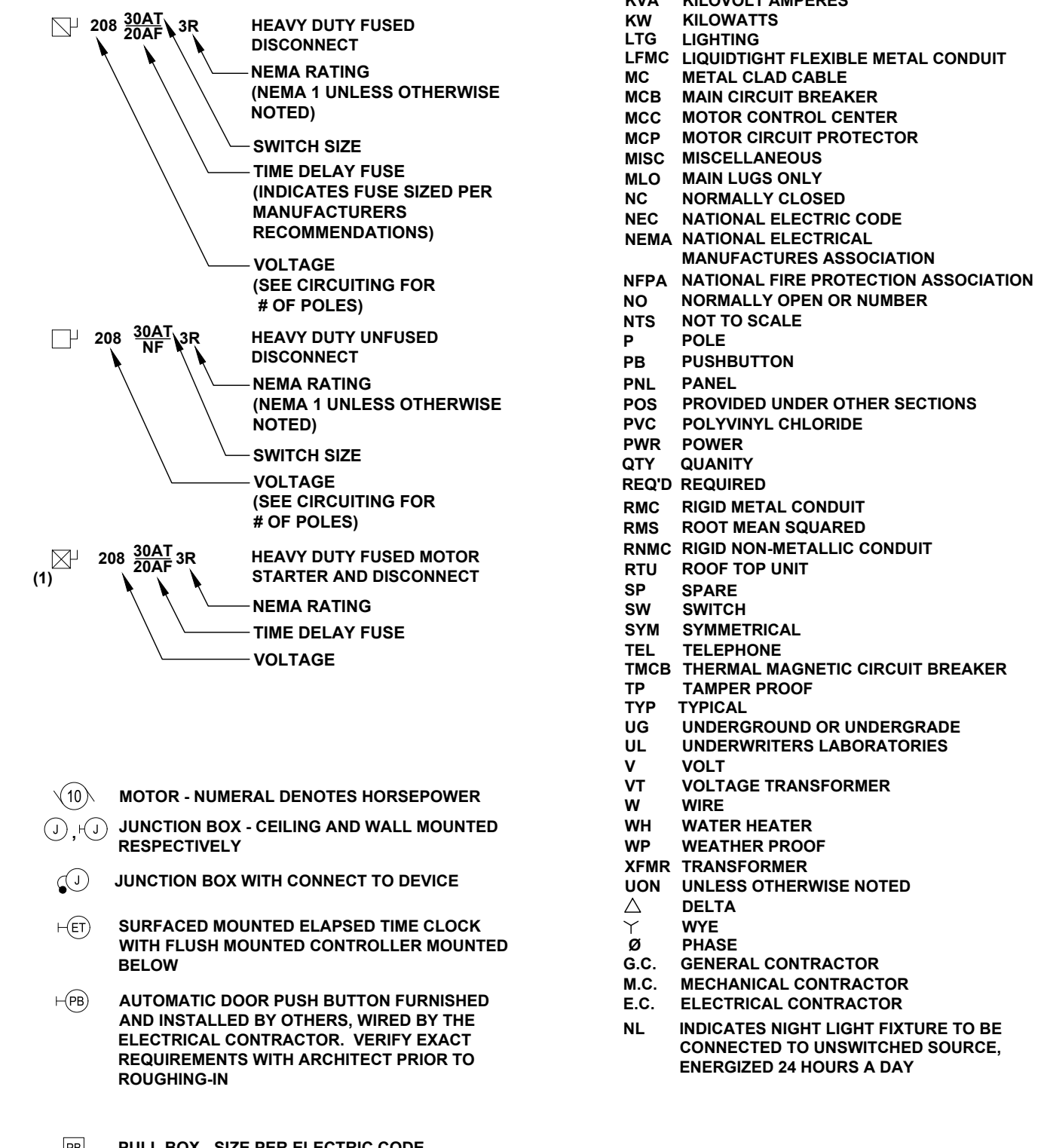
WIRING DEVICES LEGEND



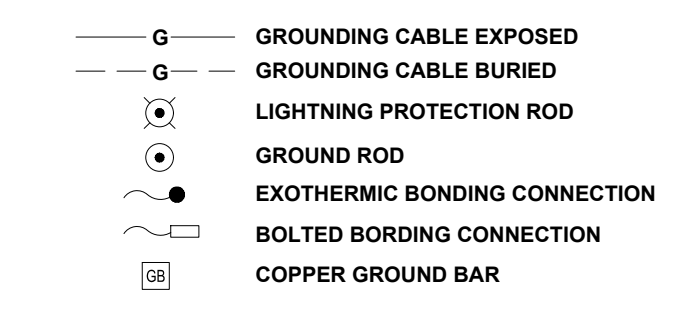
POWER ON-LINE LEGEND



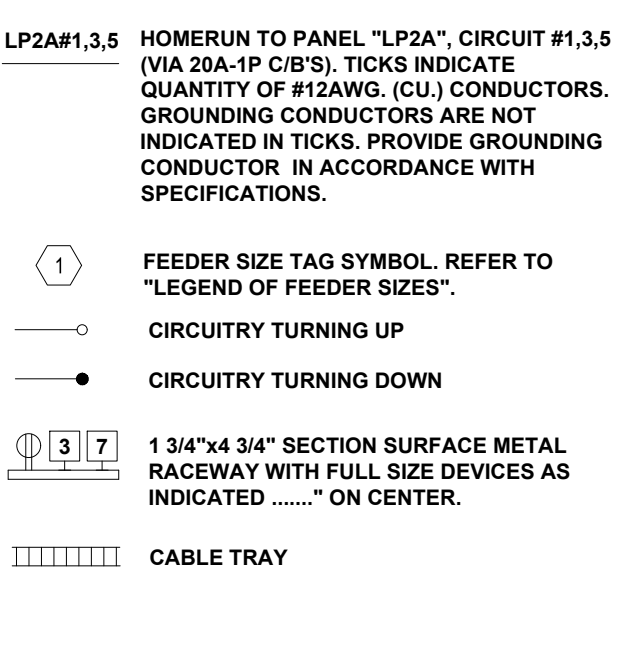
EQUIPMENT LEGEND



BUILDING GROUNDING GRID LEGEND



CIRCUITRY, RACEWAYS AND FEEDERS LEGEND



General Abbreviations table listing symbols for Amperes, Americans with Disabilities Act, Above Finish Floor, Above Finish Grade, Authority Having Jurisdiction, Air Handling Unit, Ampere Interrupting Capacity, Aluminum, American National Standards Institute, Architect, Automatic Transfer Switch, Automatic Temperature Control, American Wire Gauge, Below Finish Grade, Building, Conduit, Catalog, Circuit Breaker, Certified Ballasts Manufacturers, Circuit, Centerline, Current Limiting Fuse, Column, Control Power Transformer, Current Transformer, Copper, Drawing, Exhaust Fan, Emergency, Electrical Metallic Tubing, Emergency Power Off, Electric Water Cooler, Fuse, Fire Alarm, Full Load Amperes, Flexible Metal Conduit, Feet, Ground Fault Circuit Interrupter, Ground or Grounding, Galvanized Rigid Metallic Conduit, Hand Off, Automatic Switch, Institute of Electrical and Electronic Engineers, Intermediate Metal Conduit, Interlock, Isolated Ground, Isolated Grounding, Kilovolt Amperes, KiloVOLT, Kilowatts, Lighting, Liquidtight Flexible Metal Conduit, Metal Clad Cable, Motor Circuit Breaker, Motor Control Center, Motor Circuit Protector, Miscellaneous, Main Lugs Only, Normally Closed, National Electric Code, National Electrical Manufacturers Association, National Fire Protection Association, Normally Open or Number, Not to Scale, Pole, Pushbutton, Panel, Provided Under Other Sections, Polyvinyl Chloride, Power, Quantity, Required, Rigid Metal Conduit, Rigid Non-Metallic Conduit, Roof Top Unit, Spare, Switch, Symmetrical, Telephone, Thermal Magnetic Circuit Breaker, Weather Proof, Typical, Underground or Undergrade, Underwriters Laboratories, Volt, Voltage Transformer, Wire, Water Heater, Weather Proof, Transformer, Unless Otherwise Noted, Delta, Wye, Phase, General Contractor, Mechanical Contractor, Electrical Contractor, Indicates Night Light Fixture to be Connected to Unswitched Source, Energized 24 Hours a Day.

CES INC logo and contact information for Environmental Scientists & Surveyors.

Project address: 32 WARDEN LANE, EAGLE LAKE, MAINE and drawing title: ELECTRICAL SYMBOLS, NOTES, DETAILS AND ABBREVIATIONS PLAN.

Professional Engineer seal for David B. Poirer, License No. 12480, State of Maine, and project information including Date (2019-03-26), Drawn by (WAB), Checked by (PEB), Designed by (PEB), Approved by (PEB), Job Number (10267.010), and Drawing Number (E100).

