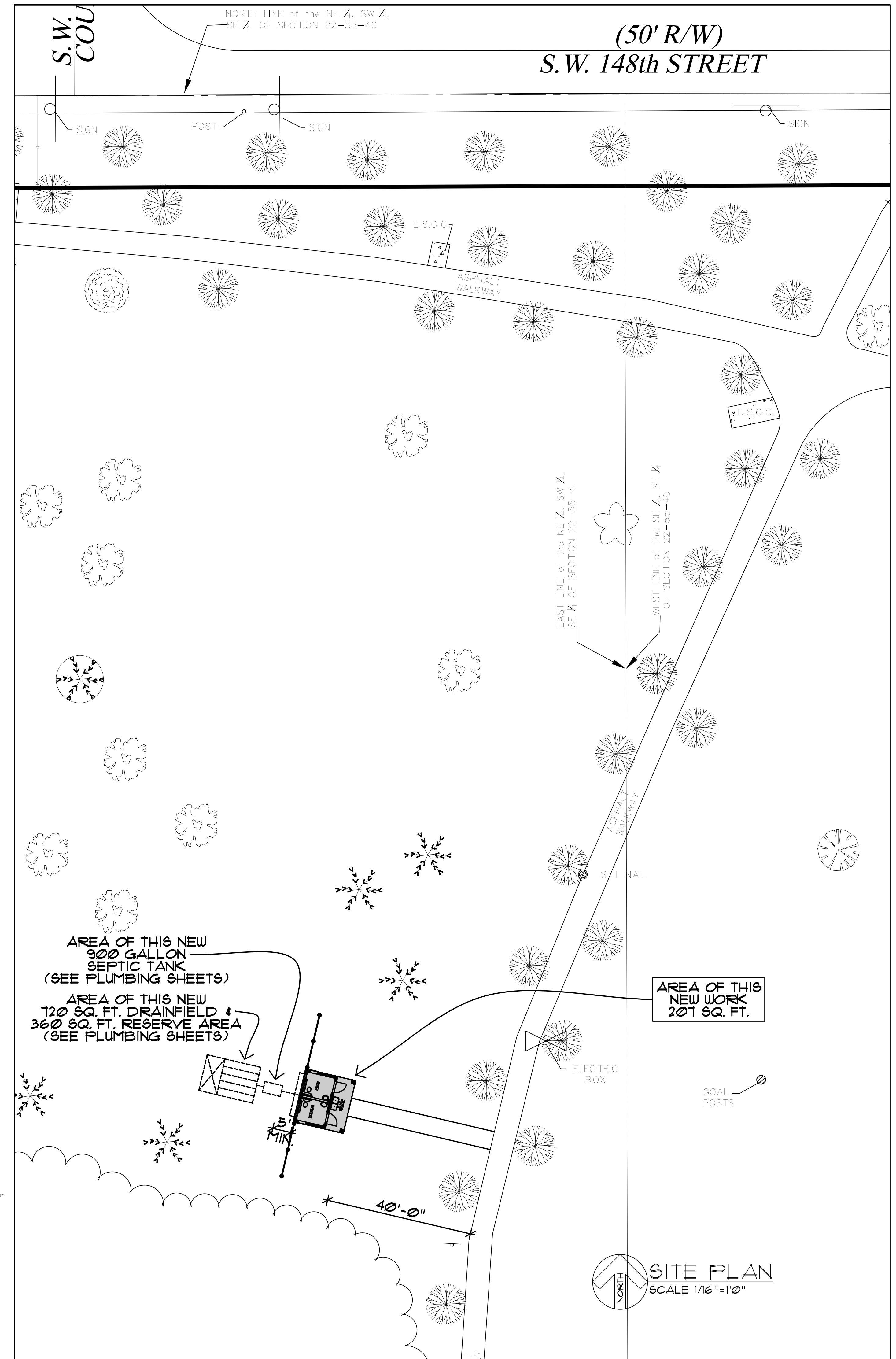
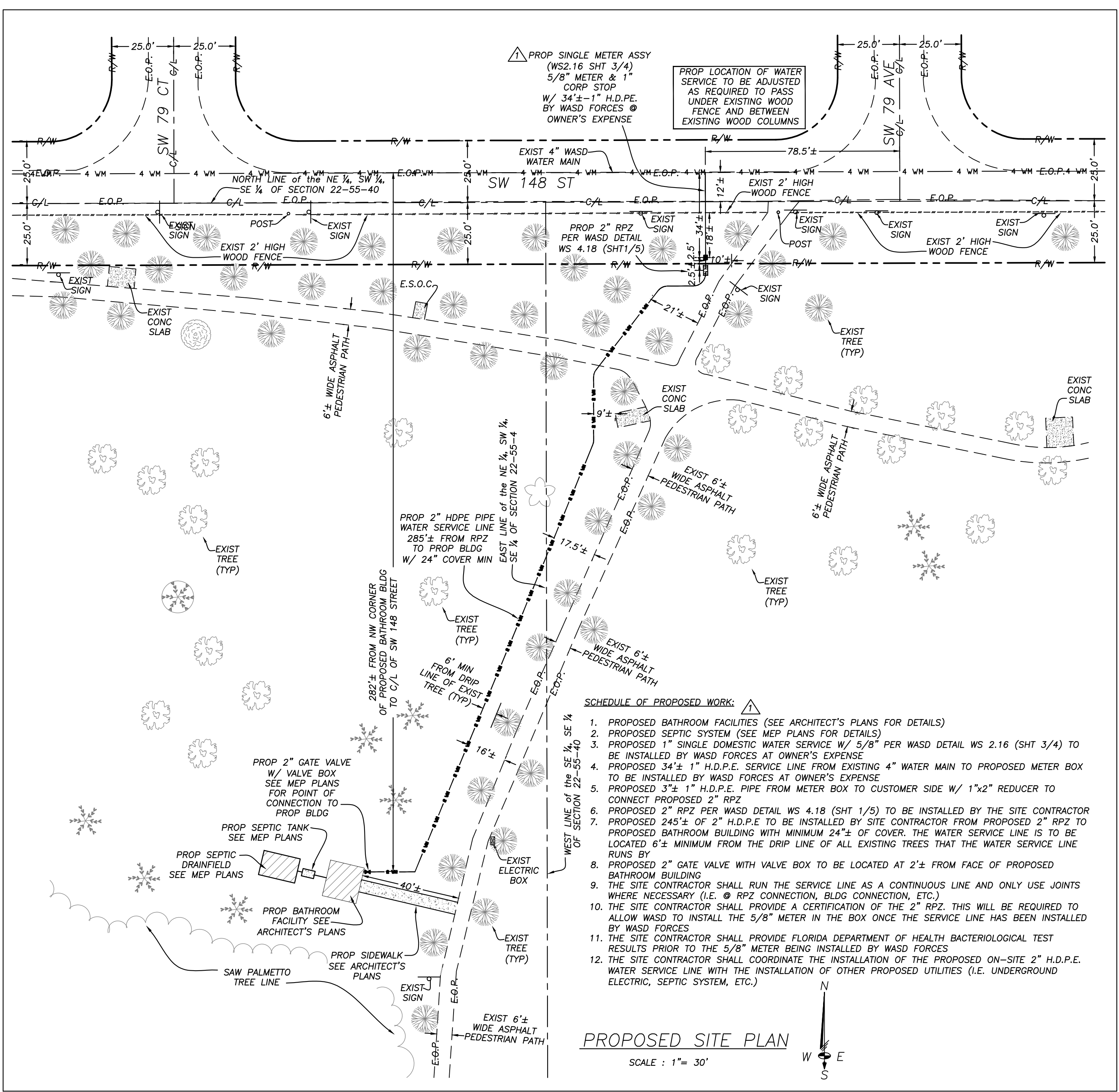


**SITE PLAN**  
SCALE 1/128" = 1'0"



**SITE PLAN**  
SCALE 1/16" = 1'0"

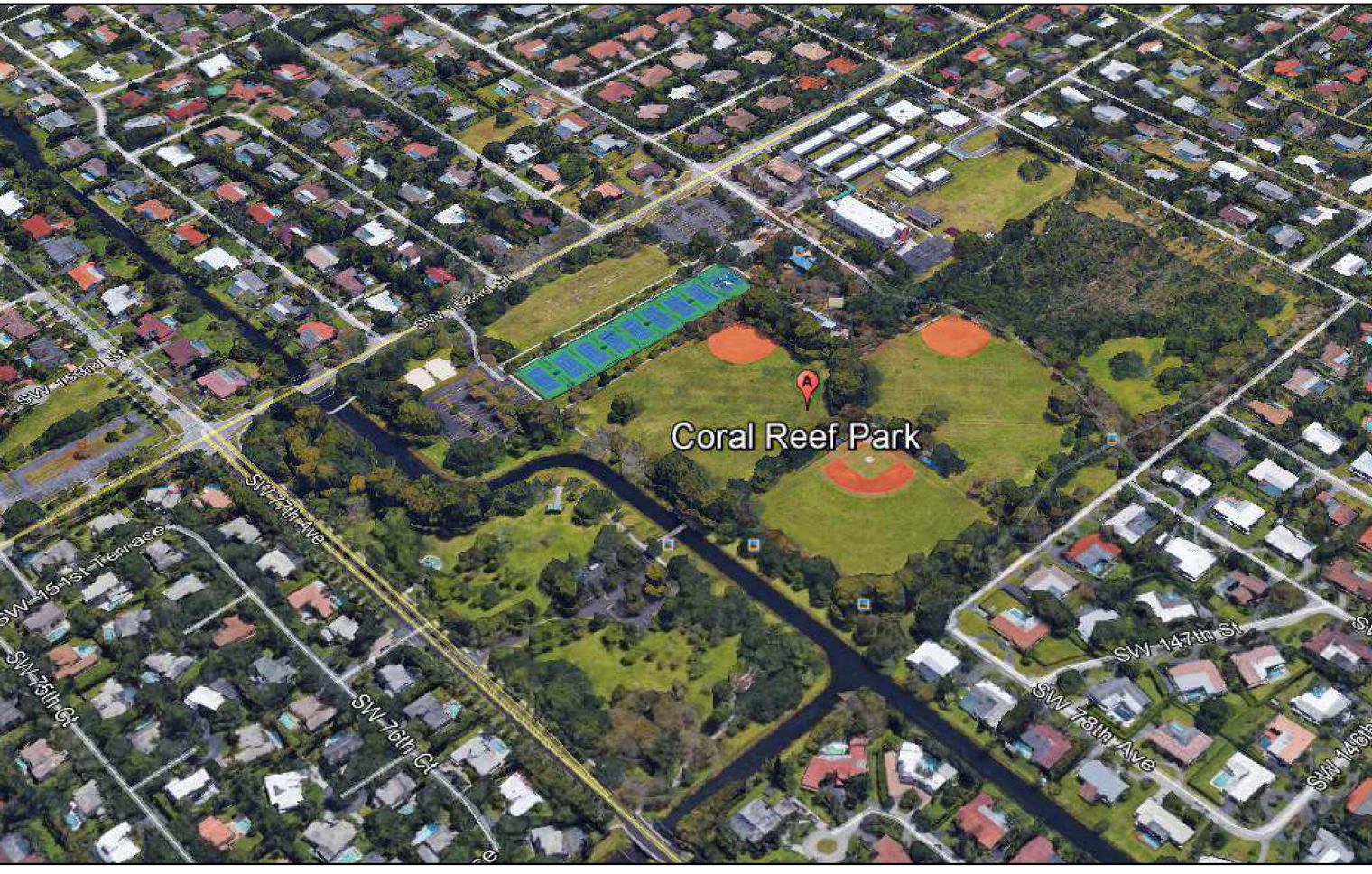


**SCHEDULE OF PROPOSED WORK:**

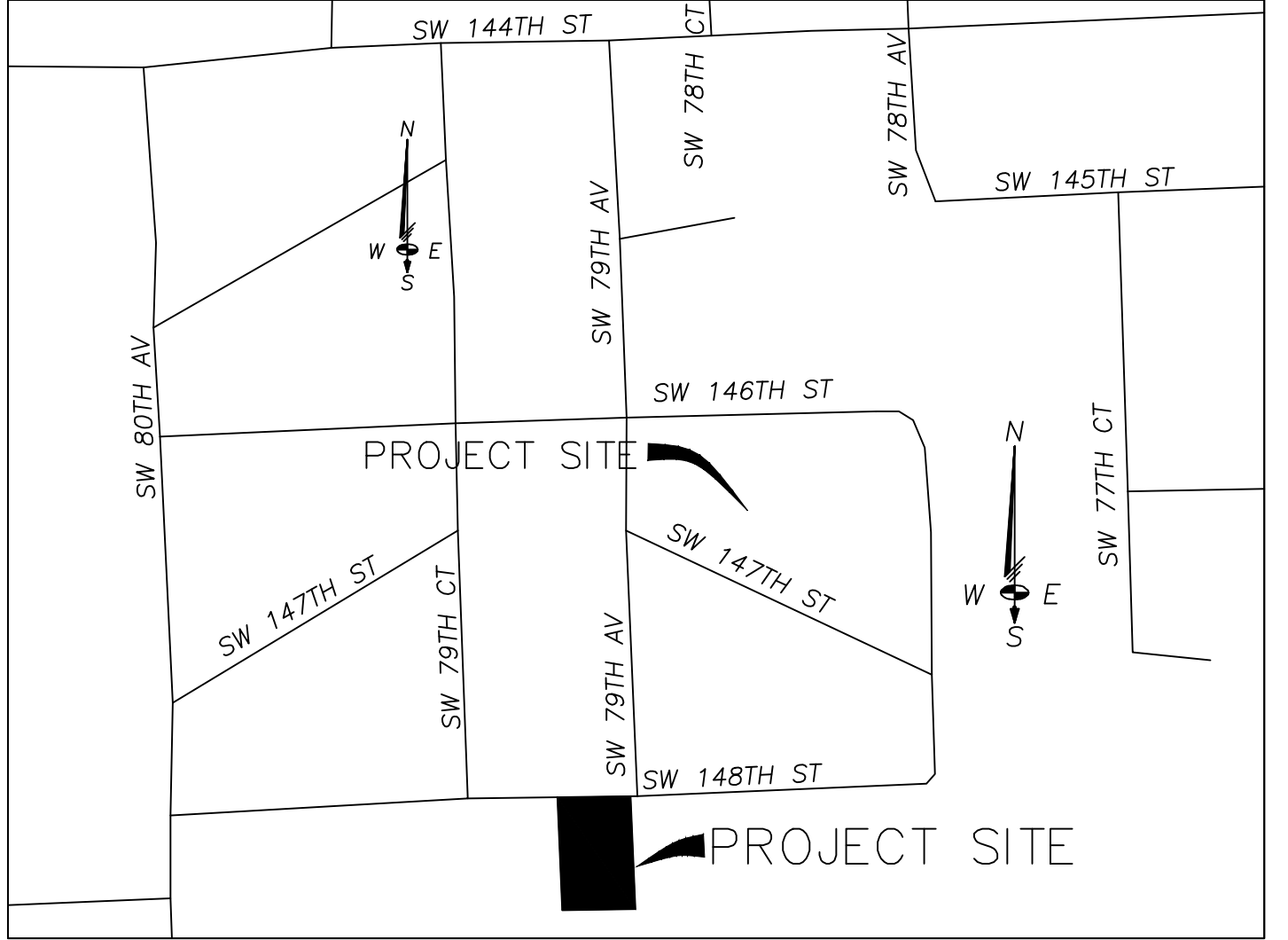
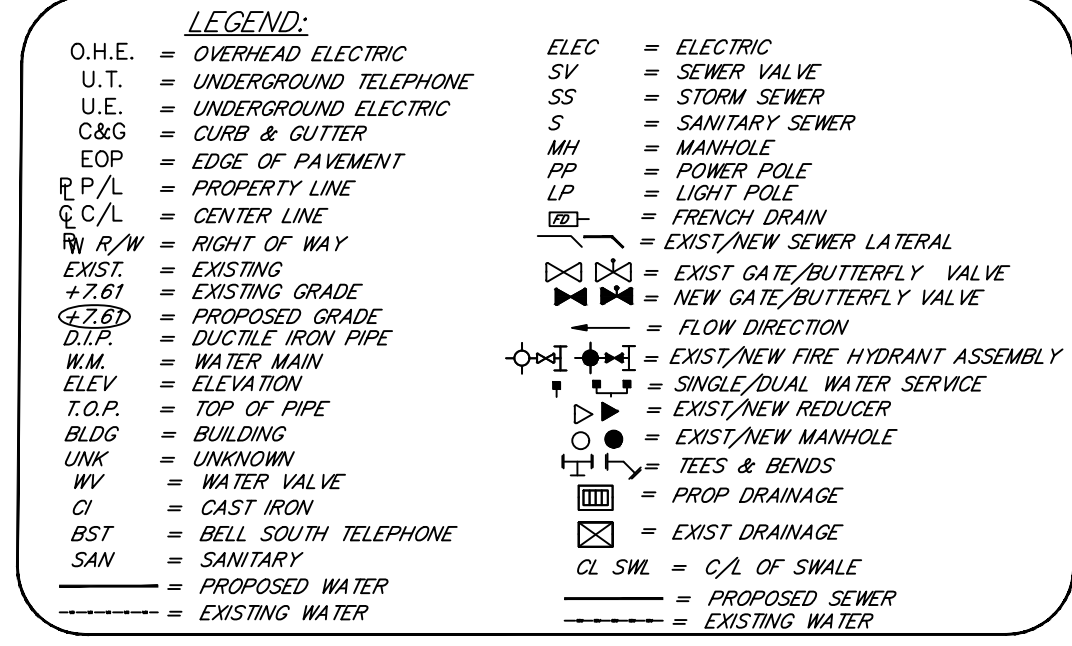
1. PROPOSED BATHROOM FACILITIES (SEE ARCHITECT'S PLANS FOR DETAILS)
2. PROPOSED SEPTIC SYSTEM (SEE MEP PLANS FOR DETAILS)
3. PROPOSED 1" SINGLE DOMESTIC WATER SERVICE W/ 5/8" PER WASD DETAIL WS 2.16 (SHT 3/4) TO BE INSTALLED BY WASD FORCES AT OWNER'S EXPENSE
4. PROPOSED 3/4" H.D.P.E. SERVICE LINE FROM EXISTING 4" WATER MAIN TO PROPOSED METER BOX TO BE INSTALLED BY WASD FORCES AT OWNER'S EXPENSE
5. PROPOSED 2" RPZ PER WASD DETAIL WS 4.18 (SHT 1/5) TO BE INSTALLED BY THE SITE CONTRACTOR FROM PROPOSED 2" RPZ TO PROPOSED BATHROOM BUILDING WITH MINIMUM 24" OF COVER. THE WATER SERVICE LINE IS TO BE LOCATED 6" MINIMUM FROM THE DRIP LINE OF ALL EXISTING TREES THAT THE WATER SERVICE LINE RUNS BY.
6. PROPOSED 2" GATE VALVE WITH VALVE BOX TO BE LOCATED AT 2'± FROM FACE OF PROPOSED BATHROOM BUILDING.
7. THE SITE CONTRACTOR SHALL RUN THE SERVICE LINE AS A CONTINUOUS LINE AND ONLY USE JOINTS WHERE NECESSARY (I.E. @ RPZ CONNECTION, BLDG CONNECTION, ETC.)
8. THE SITE CONTRACTOR SHALL PROVIDE A CERTIFICATION OF THE 2" RPZ. THIS WILL BE REQUIRED TO ALLOW WASD TO INSTALL THE 5/8" METER IN THE BOX ONCE THE SERVICE LINE HAS BEEN INSTALLED BY WASD FORCES.
9. THE SITE CONTRACTOR SHALL PROVIDE FLORIDA DEPARTMENT OF HEALTH BACTERIOLOGICAL TEST RESULTS PRIOR TO THE 5/8" METER BEING INSTALLED BY WASD FORCES.
10. THE SITE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE PROPOSED ON-SITE 2" H.D.P.E. WATER SERVICE LINE WITH THE INSTALLATION OF OTHER PROPOSED UTILITIES (I.E. UNDERGROUND ELECTRIC, SEPTIC SYSTEM, ETC.)

**PROPOSED SITE PLAN**

SCALE : 1" = 30'



**SITE DATA:**  
 METER LOCATION ADDRESS:  
 SW 148 STREET & SW 79 AVENUE  
 PALMETTO BAY, FL 33158  
 CORAL REEF PARK ADDRESS:  
 7895 SW 152 STREET  
 PALMETTO BAY, FL 33158



**LOCATION MAP**  
 SCALE: 1" = 300'  
 Section 22 Township 55S Range 40E

**ENGINEER NOTES**  
 (NOT PART OF WASD NOTES OR APPROVAL)

1. All materials and labor under this Project shall be in strict accordance with the requirements of the Miami-Dade Water and Sewer Department and shall conform to the standards and specifications available and on file with Miami-Dade Water and Sewer Department (MD-WASD).
2. The locations of the existing utilities, shown on the Drawings, are based upon the most reliable information available to the Engineer and are approximate only. The Contractor shall verify the location and elevation of the utilities located in the area of the proposed work, prior to commencing construction (i.e., underground electric, telephone, water, etc.). The Engineer takes no responsibility for the accuracy of the location of all existing utilities or for those not shown on the drawings.
3. Cover over water mains shall be a minimum of 4'-0" unless otherwise shown on the drawings.
4. All water main line valves shall be installed complete with 10" riser pipes and No. 3 valve boxes. Fire hydrants and service valves shall be installed complete with 6" riser pipes and No. 2 valve boxes.
5. All water meters will be installed by the Miami-Dade Water and Sewer Department (MD-WASD), providing the appropriate charges have been prepaid. The meter box and service piping shall be installed by the Contractor.
6. Fire hydrant requirements (number and location) shall be as required by Dade County Fire Department or the appropriate Fire Agency with installation in accordance with MD-WASD Standards.
7. The Miami-Dade Water and Sewer Department and the Engineer MUST be notified 48 hours prior to the start of construction.
8. All water mains shall be chlorinated in accordance with AWWA Standard C-651, Latest Revision. The Contractor shall contact the local Health Department and request bacteriological samples be obtained with copies being forwarded to the Engineer.
9. MD-WASD personnel will inspect all facilities approved by the MD-WASD. The other permitting agencies shall inspect all facilities approved by them and construction shall be in accordance with their standards and requirements.
10. Work performed under this Project will not be considered as complete until final acceptance of the system by Miami-Dade Water and Sewer Department (MD-WASD) and in compliance with MD-WASD detail GS 0.5, Sht 1 & 2 of 2.
11. All connections from existing MD-WASD mains to be made by MD-WASD forces ONLY. The Contractor to excavate at required locations and provide material with fittings.
12. All vertical and horizontal separations shall be in accordance with The Health Department and Miami Dade County's Regulatory and Economic Resources (RER) Department.
13. The contractor will be required to obtain the latest paving & drainage plan and have it available at the job site for the use of Miami-Dade Water and Sewer Department (MD-WASD) personnel.
14. All water mains shall be hydrostatically tested in accordance with AWWA Standard C-600, Latest Revision, and applying the following formula:  

$$L = \frac{SD \sqrt{P}}{148,000}$$

$$L = \text{Leakage in gallons per hour}$$

$$S = \text{Length of pipe in feet}$$

$$D = \text{Diameter of pipe in inches}$$

$$P = \text{Average test pressure in lbs. per sq. in.}$$
15. All water meters and service lines that will be connected to existing water mains will be installed by MD-WASD Personnel.
16. In the event unsuitable material is encountered at the depth of the proposed water and sewer facilities, the Contractor shall contact the Engineer of Record for proper direction prior to commencement of construction.
17. All valve boxes and manhole risers shall be set to match the proposed grades as per the paving and drainage plan or the grades of the existing roadways.
18. All water and sewer systems shall be constructed in accordance with Miami-Dade Water and Sewer Department Standards.
19. All sewers installed within the cone of influence shall not exfiltrate at the rate in excess of 100 gallons per day per inch dia. per mile and all construction shall be in conformity with all requirements of Section 24-12.1 of the Dade County Code.
20. All construction shall be done in a safe manner, specifically, the rules and regulations of the Occupational Safety and Health Administration (OSHA), the Manual of Uniform Traffic Control Devices (MUTCD), and Chapter 90-86 (CS/BS 2626) the Florida Trench Safety Act shall be strictly observed.
21. All elevations on the plans are based on National Geodetic Vertical Datum (NGVD).
22. It shall be the Contractor's responsibility to arrange for or supply temporary water service, sanitary facilities and electricity to his employees and subcontractors for their use during construction.
23. Maintenance of traffic in the public Right-of-Way shall be in accordance with the Dade County Public Works Department Standards or applicable Public Works Department

**REGULATORY AND ECONOMIC RESOURCES RER NOTES ON WATER-SEWER INSTALLATION**  
 (NOT PART OF WASD NOTES OR APPROVAL)

1. A horizontal distance of at least 6 feet and preferably 10 feet (outside to outside) shall be maintained between pressure sewer pipes and water pipes. The minimum horizontal separation can be reduced to 3 feet for vacuum-type sewers or for gravity sewer pipes where the top of the sewer pipe is at least 6 inches below the bottom of the water pipe. When the above specified horizontal distance criteria cannot be met due to an existing underground facility conflict, smaller separations are allowed if one of the following is met:  
  - The sewer pipes are designed and constructed equal to the water pipe and pressure tested at 150 psi.
  - The sewer is encased in a watertight carrier pipe or concrete.
  - The top of the sewer is at least 18 inches below the bottom of the water pipe.
2. A vertical distance of at least 12 inches (outside to outside) shall be maintained between any water and sewer mains with sewer pipes preferably crossing under water mains. The minimum vertical separation can be reduced to 6 inches for vacuum-type sewers or for gravity sewers where the sewer pipe is below the water main. The crossing shall be arranged so that all water main joints are at least 6 feet from all joints in gravity-type sewer pipes. The distance can be reduced to 3 feet for vacuum-type sewers. When the above specified vertical distance criteria cannot be met due to an existing underground facility conflict, smaller separations are allowed if one of the following is met:  
  - The sewer pipes are designed and constructed equal to the water pipe and pressure tested at 150 psi.
  - The sewer is encased in a watertight carrier pipe or concrete.
3. Air release valves shall be provided at high points of new force main sanitary sewers.
4. Gravity sanitary sewers constructed within a public wellfield protection area shall be C900 PVC or Ductile Iron Pipe. The Maximum allowable exfiltration rate of gravity sanitary sewers constructed in a public wellfield protection area shall be:  
  - a. Residential Land Uses: Fifty (50) gallons per inch pipe diameter per mile per day, based on a (2) hour test having a minimum of two (2) feet of positive head above the crown of the pipe.
  - b. Non-Residential Uses: Twenty (20) gallons per inch pipe diameter per mile per day, based on a minimum two (2) hour test having a minimum of two (2) feet of positive head above the crown of the pipe. Any observed leaks or any obviously defective joints shall be replaced even when the total leakage is below that allowed
5. The maximum allowable exfiltration rate of gravity sanitary sewers constructed outside a public wellfield protection area shall be one hundred (100) gallons per inch pipe diameter per mile per day, based on a minimum two (2) hour test having a minimum of two (2) feet of positive head above the crown of the pipe. Any observed leaks or any obviously defective joints shall be replaced even when the total leakage is below that allowed
6. Force main sewers constructed in a public wellfield protection area shall be ductile iron, C900 PVC, HDPE or reinforced concrete pressure sewer pipes.
7. The maximum allowable exfiltration/leakage rate of force main sanitary sewers shall be:  
  - a. Ductile Iron, C900 PVC, HDPE and PVC pipe: The allowable leakage rate specified in American Water Works Association Standard (AWWAS) C600-82 at a test pressure of 100 PSI for a duration of not less than two (2) hours
  - b. Reinforced Concrete Pressure Pipe: Half (1/2) the allowable leakage rate specified in American Water Works Association Standard (AWWAS) C600-82 at a test pressure of 100 PSI for a duration of not less than two (2) hours
  - c. Any observed leaks or any obviously defective joints shall be replaced even when the total leakage is below that allowed
8. The contractor shall verify nature, depth and character of existing underground utilities prior to start of construction
9. In no case shall a contractor install utility pipes, conduits, cables etc. in the same trench above and existing water or sewer pipe except where they cross
10. If any area of the work is found to contain buried solid waste and/or ground or ground water contamination the following shall apply:  
  - a. All work in the area shall follow all applicable safety requirements (e.g. OSHA, etc.) and notification must be provided to the appropriate agencies
  - b. Immediately notify the Environmental Monitoring and Restoration Division (EMRD). The EMRD can be contacted at 305.372.6700
  - c. If contaminated soils and/or buried solid waste material is executed during construction, then they require proper handling and disposal in accordance with local, state and federal regulations. Be advised that the landfill owner/operator is the final authority on disposal and may have requirements beyond those provided herein. If disposal within a Miami Dade County owned landfill (Class 1 Landfill) is appropriate and selected, please contact the Miami Dade County Public Works and Waste Management at 305.594.6666 for information
  - d. The reuse of contaminated soils that are not returned to the original excavation requires prior approval of a Soil Management Plan from the Environmental Monitoring and Restoration Division. The EMRD can be contacted at 305.372.6700
11. Pumps must comply with the National Electric Code (NEC) requirements for Class 1, Group D, Division 1 locations (Explosion Proof)

ISSUE DATE	APPROVED BY	ITEM	CHG#	SPCS REF.
03/07/2009	WJF	STANDARD DETAIL	GS	
07/22/2010	B.V.	STANDARD REQUIREMENTS	GS	
		CONSTRUCTION	GS	

1. AT THE COMPLETION OF ANY WATER AND SEWER JOB, EITHER DONATION OR CONTRACT, THE CONTRACTOR SHALL SUBMIT:  
  - a. AS-BUILT PRINTS WHICH HAVE BEEN SIGNED AND SEALED BY A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER (CITY OF PRINTS AS REQUIRED BY THE DEPARTMENT)
  - b. "AS-BUILT" FORMAT:  
    - i. 24"x36" PRINTS
    - ii. LOCATION MAP SCALE SHOULD BE 1"=200' AND SECTION-TOWNSHIP-RANGE SHOULD BE SHOWN
    - iii. THE WORD "AS-BUILT" IN LARGE LETTERS
    - iv. TITLE BLOCK WITH DEPARTMENT LOGO OR AN NUMBER AND PERTINENT INFORMATION
    - v. PROPOSED SCALE TO BE 1"=40' HORIZONTALLY AND 1"=4' VERTICALLY
    - vi. SEPARATE AS-BUILTS FOR WATER AND SEWER
    - vii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - viii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - ix. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - x. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xi. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xiii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xiv. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xv. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xvi. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xvii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xviii. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xix. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
    - xx. STATIONING SHALL BE IN CHAINS AND STATIONING SHALL BE IN CHAINS
2. WATER "AS-BUILTS" MUST INCLUDE:  
  - a. PLANS SHOWING PIPE SIZE, MATERIAL, AND OFFSET OF MAIN, DEFLECTIONS (IF ANY), STATION OF SERVICES, HYDRANTS AND FITTINGS AT THE MANHOLE (IF PERPENDICULAR TO FD), AND AT MAIN AND END OF SERVICES IF ANY, CORNER ANGLE, AND DEFLECTION OF PIPE, IF ANY
  - b. PROFILE SHOWING TOP OF GROUND AND TOP OF PIPE ELEVATIONS AT EVERY 50' STATION AND AT ANY CHANGE IN GRADE (WITH CORRESPONDING STATION), PIPE SIZE AND PIPE MATERIALS REFERENCED TO MANHOLE
  - c. SEWER "AS-BUILTS" MUST INCLUDE:  
    - i. PLAN SHOWING MANHOLE NUMBER, PIPE SIZE AND PIPE MATERIAL OF PIPE, DEFLECTION, IF ANY (FORCE MAIN ONLY), AND LOCATION OF LATERALS WITH REFERENCE TO MANHOLE
    - ii. PROFILE SHOWING MANHOLE NUMBER (AS PER PLAN), MANHOLE INVERT ELEVATIONS (IF MORE THAN ONE INVERT, LABEL NORTH, SOUTH, ETC), AND STATION STARTING AT EACH 50' ON DOWNSTREAM MANHOLE
3. FORCE MAIN "AS-BUILT" SAME AS WATER MAIN ABOVE.
4. EACH AS-BUILT SHALL SHOW THE FLORIDA STATE PLANE COORDINATES (CURRENT ROADWAY) OF ALL THE MANHOLES AND VALVES AND OF AT LEAST TWO HORIZONTAL POINTS PROPERLY IDENTIFIED AND LOCATED WITHIN THE PROJECT.
5. OTHER SCALE MAY BE PERMITTED, BUT MUST BE APPROVED BY THE DEPT OF DRAWINGS

**Department of Health**  
 (NOT A PART OF MD-WASD NOTES OR APPROVAL)

- WATER MAIN HORIZONTAL SEPARATION:**
1. Separations shall be measured outside edge to outside edge between water mains, and storm sewer, stormwater force mains, or reclaimed water mains, shall be 3 feet minimum.
  2. Between water mains and vacuum type sewer preferably 10 feet, and at least 3 feet minimum.
  3. Gravity or pressure sanitary sewers, wastewater force mains or reclaimed water preferably 10 FT and at least 6 FT, may be reduced to 3 feet where bottom of water mains is at least 6 inches above top of sewer.
  4. 10 feet to any part of on-site sewer treatment or disposal system
- WATER MAIN VERTICAL SEPARATION:**
1. Separations between water mains and gravity sewer, vacuum type sewer, or storm sewers to be preferably 12 inches, or at least 6 inches above, or at least 12 inches below.
  2. Pressure sanitary sewer, wastewater, stormwater or stormwater force main, or reclaimed water, at least 12 inches above or below.

\*Note: center 1 full length of water main pipe at crossings; alternatively orange pipes so joints are at least 3 feet from joints in vacuum, storm or storm force mains, at least 6 feet from joints in gravity or pressure sewers, wastewater force mains or reclaimed water

**WASD NOTES:**

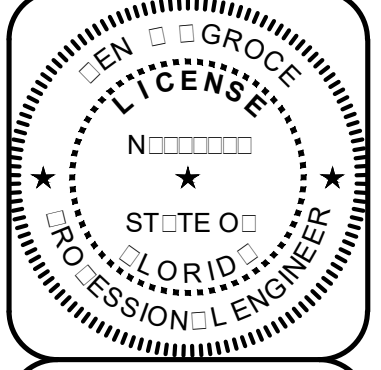
1. All Existing Mains Being Impacted By This Project And All Proposed Water & Force Mains And Fittings Are To Be Restrained Per GS 2.0. Where Applicable
2. All Existing Water And/Or Sewer Utilities Being Removed And/Or Relocated Or Abandoned In Place Must Remain Active And In Service Until Such Time When Replacing Water And/Or Sewer Utilities Have Been Installed. Placed In Service, Accepted By The Department And All Services From The Existing Mains Have Been Transferred To The New Ones By M-DWASD Forces At Owners Expense As Where Applicable.
3. All WASD Owned And Maintained Water And/Or Sewer Facilities Located On Private Property Shall Be Removed After All Installed Services Have Been Transferred To The Already Installed And In Service Water And/Or Sewer Mains. Any Associated WASD Exclusive Easements Shall Be Closed And Released After The Removal And/Or Abandon In Place Of The Existing WASD Owned Water And/Or Sewer Facilities.



**CHEROKEE CONSULTING, INC**  
 CIVIL ENGINEERS  
 5821 SW 51 TERRACE MIAMI, FLORIDA 33155  
 Phone: 305.205.2861; E-Mail: kgrace@cherokee.net  
 Certificate of Authorization 27419

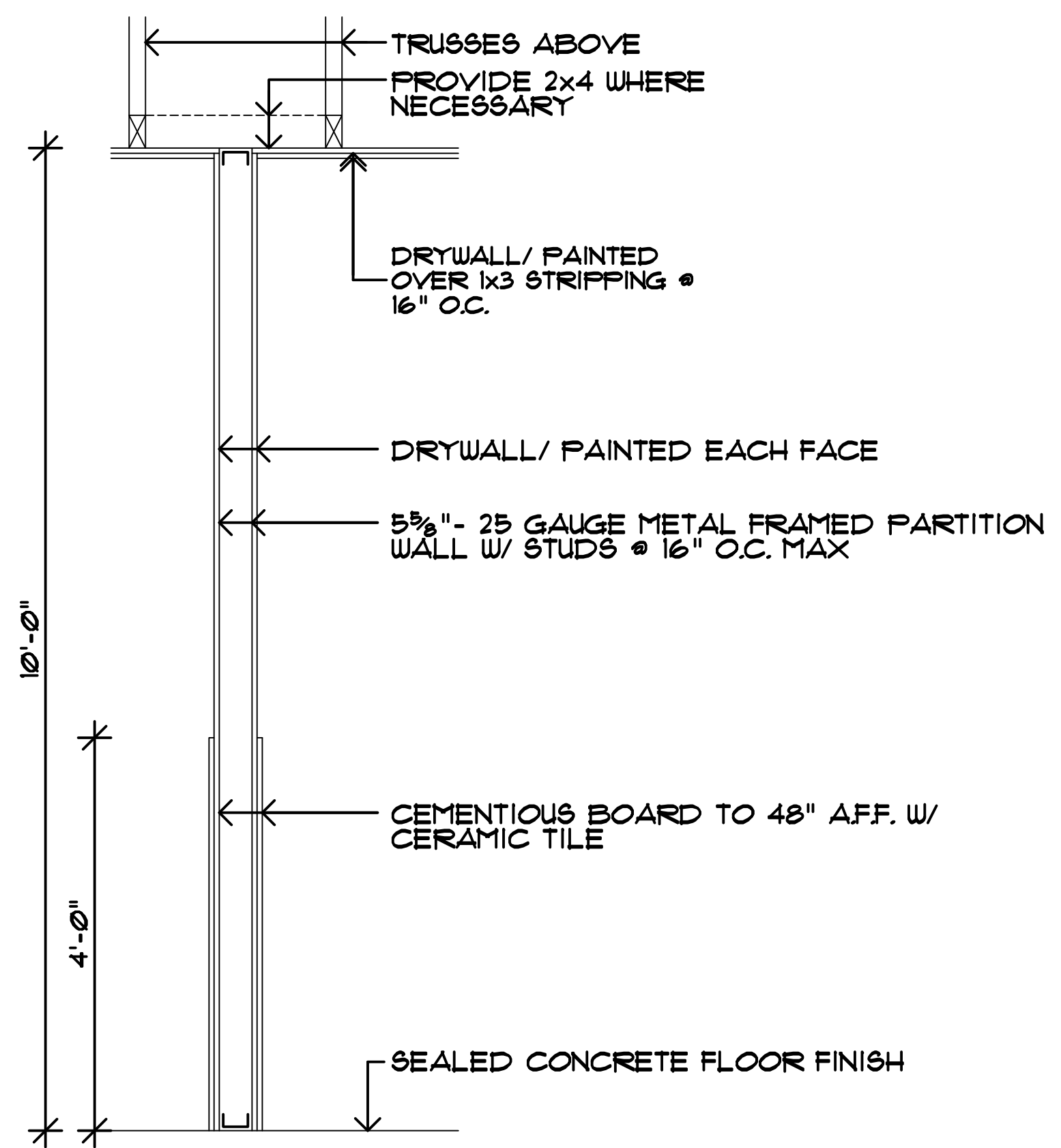
**CORAL REEF PARK BATHROOM**  
 SW 148 ST & SW 79 AVE  
 WATER SERVICE PLAN & NOTES  
 PALMETTO BAY, FLORIDA

REVISIONS	DATE	DESCRIPTION

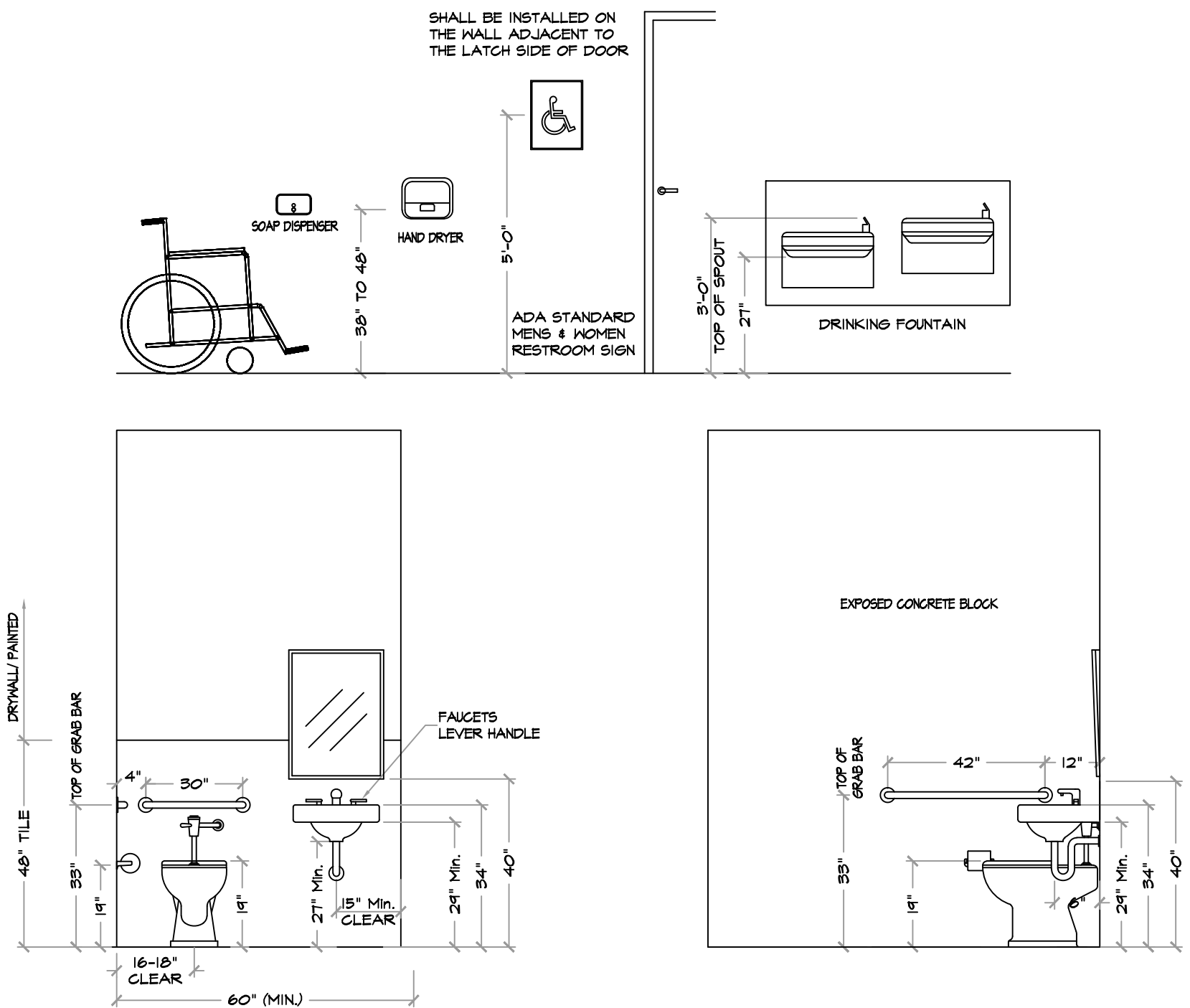


THIS SHEET HAS BEEN ELECTRONICALLY SIGNED & SEALED BY KEN W. GROCE P.E. USING A DIGITAL SIGNATURE.  
 PRINTED COPIES OF THIS SHEET ARE NOT CONSIDERED AS SIGNED & SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.  
 PRINTED COPIES SHALL HAVE AN ORIGINAL SIGNATURE AND DATE.  
 Drawn By: KGW  
 Checked By: KGW  
 Date: 8.8.17  
 Project No: 17-30  
 Sheet:  
**WS-1** OF 1

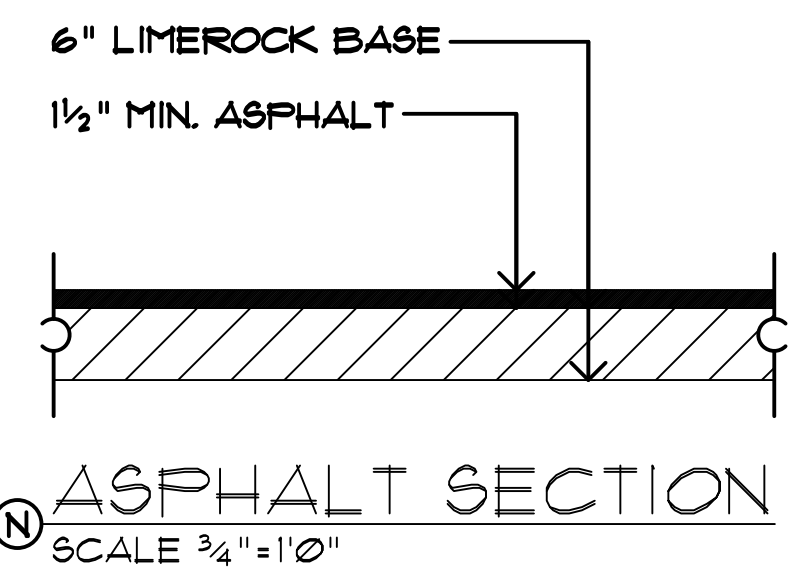
**FLOOD VENT CALCULATION**  
 1 SQ. IN. PER 1 SQ. FT.  
 50 SQ. FT. = 50 SQ. IN. MIN. REQ. PER TOILET ROOM



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



**TYP. HANDICAP FIXTURES MOUNTING HEIGHTS.** 3/8" = 1'-0"



**ASPHALT SECTION**  
 SCALE 3/4" = 1'-0"

**GENERAL NOTES**

- THIS IS A REMODELING OF EXISTING / WHERE EXISTING CONCEALED CONDITIONS MAY EXIST/ ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING W/ THE WORK
- ALL WORK IS TO COMPLY W/ ALL APPLICABLE CODES INCLUDING 2014 FLA. BLDG. CODE EXISTG. ALTERATION LEVEL 2
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD DETERMINE AREAS TO BE CUT-OUT FROM THE EXISTING WALLS & CEILING TO THEN PATCH & PAINT TO ACCOMMODATE FOR NEW MECHANICAL/ ELECTRICAL & PLUMBING

**SCOPE OF NEW WORK**

NEW MEN'S & WOMEN'S RESTROOM = 207 SQ. FT.

**NEW WORK LEGEND**

- (A) PROVIDE NEW CONCRETE BLOCK WALL CONSTRUCTION/ CONCRETE FOUNDATION & SLAB/ W/ PRE-FAB WOOD TRUSS ROOF STRUCTURE/ (SEE STRUCTURAL SHEETS)
- (B) INSTALL NEW CONCRETE SLAB (SEE STRUCTURAL SHEETS)
- (C) PROVIDE NEW 5 3/8" - 25 GAUGE METAL FRAMED PARTITION W/ CEMENTIOUS BOARD TO 48" AFF. W/ CERAMIC TILE/ DRYWALL FINISHED & PAINTED ABOVE W/ BASE EACH FACE
- (D) PROVIDE SEALED CONCRETE FLOOR FINISH
- (E) INSTALL NEW SINKS & FAUCETS W/ HOT & COLD VALVES
- (F) INSTALL NEW TOILET
- (G) PROVIDE NEW 42" (ADA COMPLIANT) GRABBAR
- (H) PROVIDE NEW 30" (ADA COMPLIANT) GRABBAR
- (J) INSTALL NEW ELECTRICAL PANEL (SEE ELECTRICAL SHEETS)
- (K) INSTALL NEW HI-LO ADA DRINKING FOUNTAIN
- (L) INSTALL NEW 36" HIGH ALUMINUM PICKET RAILING (CONTRACTOR TO SUBMIT SHOP DWGS. FOR OWNER/ ARCHITECT REVIEW & APPROVAL.) COLOR TO BE DETERMINED W/ OWNER
- (M) INSTALL NEW STEEL COLUMN WRAPPED W/ 8" & KEYSTONE/ INSTALL WOOD TRELLIS (SEE ELEVATIONS & STRUCTURAL SHEETS)
- (N) PROVIDE NEW ASPHALT THIS AREA (SEE SITE PLAN & SEE DETAIL THIS SHEET)
- (P) PROVIDE NEW R-30 INSULATION IN CEILING
- (Q) INSTALL NEW 24"x36" LOUVRE (SEE MECHANICAL SHEETS)/ PROVIDE SHOP DRAWINGS SUBMITTAL W/ NOA
- (R) EXPOSED CONCRETE BLOCK FINISH (3 WALLS)
- (S) CONTRACTOR IS TO PROVIDE AN ENCLOSURE FOR THE 8 SOLAR BATTERIES & DC-AC INVERTER/ PROVIDE STEEL BRACKET SYSTEM & SOLID STEEL PANEL ENCLOSURE W/ KEYPED DOOR ACCESS PANELS (SHOP DWGS. ARE TO BE PROVIDED FOR OWNER/ ARCHITECT REVIEW/ APPROVAL)
- (T) PROVIDE NEW 22 1/2"x30" ATTIC ACCESS PANEL (BETWEEN TRUSSES) W/ CODE APPROVED LATCH MECHANISM
- (U) PROVIDE NEW SOLAR PANELS (SEE ELECTRICAL & PLUMBING SHEETS)/ SEPARATE PERMIT REQUIRED (ENGINEERED SHOP DRAWINGS W/ CALCULATIONS ARE REQUIRED)
- (V) INSTALL NEW FLOOD VENT (50 SQ. IN. MIN.) W/ FLOATING LOUVERS/ IN COMPLIANCE W/ ASCE 24 C2.12.2/ BY SMARTVENT/ MODEL #540-520

**RESTROOM FINISHES**

Walls and partitions within 2 feet of services sinks, urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of not less than 4 feet above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture. (i.e. epoxy paint) per FBC 1210.2

**NEW DOOR SCHEDULE**

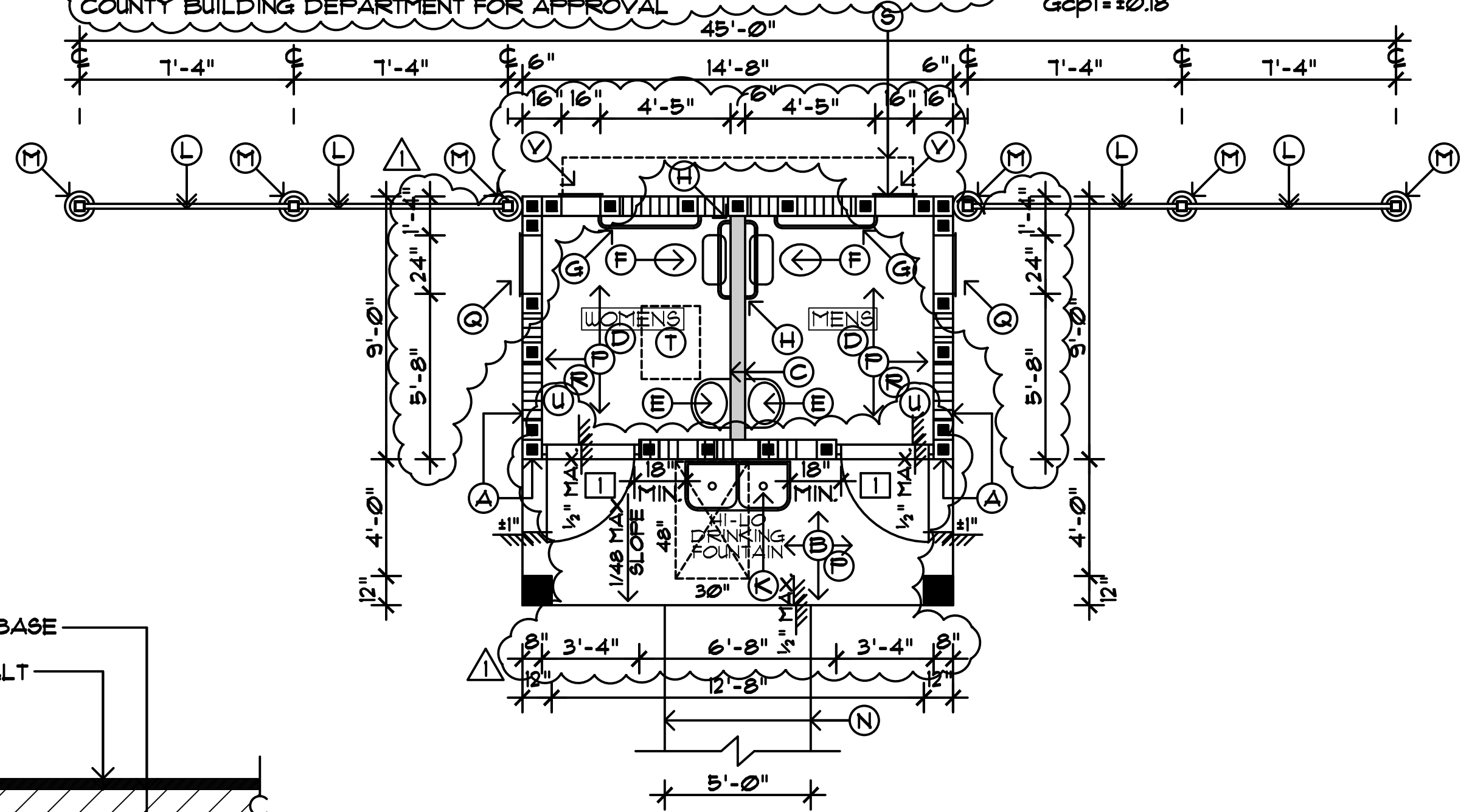
- (I) PROVIDE NEW 3'-0"x7'-0" HOLLOW METAL FULL LOUVERED DOOR/ FRAME & HARDWARE (IMPACT RESISTANT) W/ INSIDE LATCH TO LOCK/ KEYPED OUTSIDE

**DOOR NOTES**

DOOR MFR/ SERIES & NOA'S ARE TO BE AGREED UPON BY OWNER & CONTRACTOR & SUBMIT AS "SHOP-DWGS." TO THE ARCHITECT & MIAMI-DADE COUNTY BUILDING DEPARTMENT FOR APPROVAL

**WIND LOADING**

AS PER ASCE 7-10, 175 MPH, CAT. 2, EXP. C  
 Gcp1 = ±0.18



**NEW WORK PLAN**  
 SCALE 1/4" = 1'-0"

NOTE: THE CONTRACTOR IS TO PAINT THRU-OUT THE INTERIOR & EXTERIOR OF ALL EXPOSED WOOD/ STUCCO & DRYWALL SURFACES/ PAINT COLOR & MFR IS TO BE COORDINATED W/ OWNER

REV. 12 MAR 2018

**NEW WORK LEGEND**

- (A) PROVIDE NEW CONCRETE BLOCK WALL CONSTRUCTION/ CONCRETE FOUNDATION & SLAB/ W/ PRE-FAB WOOD TRUSS ROOF STRUCTURE/ (SEE STRUCTURAL SHEETS)
- (B) INSTALL NEW CONCRETE SLAB (SEE STRUCTURAL SHEETS)
- (C) PROVIDE NEW 5/8" - 25 GAUGE METAL FRAMED PARTITION W/ CEMENTIOUS BOARD TO 48" AFF. W/ CERAMIC TILE/ DRYWALL FINISHED & PAINTED ABOVE W/ BASE EACH FACE
- (D) PROVIDE SEALED CONCRETE FLOOR FINISH
- (E) INSTALL NEW SINKS & FAUCETS W/ HOT & COLD VALVES
- (F) INSTALL NEW TOILET
- (G) PROVIDE NEW 42" (ADA COMPLIANT) GRABBAR
- (H) PROVIDE NEW 30" (ADA COMPLIANT) GRABBAR
- (J) INSTALL NEW ELECTRICAL PANEL (SEE ELECTRICAL SHEETS)
- (K) INSTALL NEW HI-LO ADA DRINKING FOUNTAIN
- (L) INSTALL NEW 36" HIGH ALUMINUM PICKET RAILING (CONTRACTOR TO SUBMIT SHOP DWGS. FOR OWNER/ ARCHITECT REVIEW & APPROVAL) COLOR TO BE DETERMINED W/ OWNER
- (M) INSTALL NEW STEEL COLUMN WRAPPED W/ 8" & KEYSTONE/ INSTALL WOOD TRELLIS (SEE ELEVATIONS & STRUCTURAL SHEETS)
- (N) PROVIDE NEW ASPHALT THIS AREA (SEE SITE PLAN & SEE DETAIL THIS SHEET)
- (P) PROVIDE NEW R-30 INSULATION IN CEILING
- (Q) INSTALL NEW 24"x36" LOUVRE (SEE MECHANICAL SHEETS)/ PROVIDE SHOP DRAWINGS SUBMITTAL W/ NOA
- (R) EXPOSED CONCRETE BLOCK FINISH (3 WALLS)
- (S) CONTRACTOR IS TO PROVIDE AN ENCLOSURE FOR THE 8 SOLAR BATTERIES & DC-AC INVERTER/ PROVIDE STEEL BRACKET SYSTEM & SOLID STEEL PANEL ENCLOSURE W/ KEYED DOOR ACCESS PANELS (SHOP DWGS. ARE TO BE PROVIDED FOR OWNER/ ARCHITECT REVIEW/ APPROVAL)
- (T) PROVIDE NEW 22 1/2"x30" ATTIC ACCESS PANEL (BETWEEN TRUSSES) W/ CODE APPROVED LATCH MECHANISM
- (U) PROVIDE NEW SOLAR PANELS (SEE ELECTRICAL & PLUMBING SHEETS)/ SEPARATE PERMIT REQUIRED (ENGINEERED SHOP DRAWINGS W/ CALCULATIONS ARE REQUIRED)
- (V) INSTALL NEW FLOOD VENT (50 SQ. IN. MIN.) W/ FLOATING LOUVERS/ IN COMPLIANCE W/ ASCE 24 C2.12.2/ BY SMARTVENT/ MODEL #540-520

**RESTROOM FINISHES**

Walls and partitions within 2 feet of service sinks, urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of not less than 4 feet above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture. (i.e. epoxy paint) per FBC 1210.2

**NEW DOOR SCHEDULE**

- (I) PROVIDE NEW 3'0"x7'0" HOLLOW METAL FULL LOUVERED DOOR/ FRAME & HARDWARE (IMPACT RESISTANT) W/ INSIDE LATCH TO LOCK/ KEYED OUTSIDE

**DOOR NOTES**

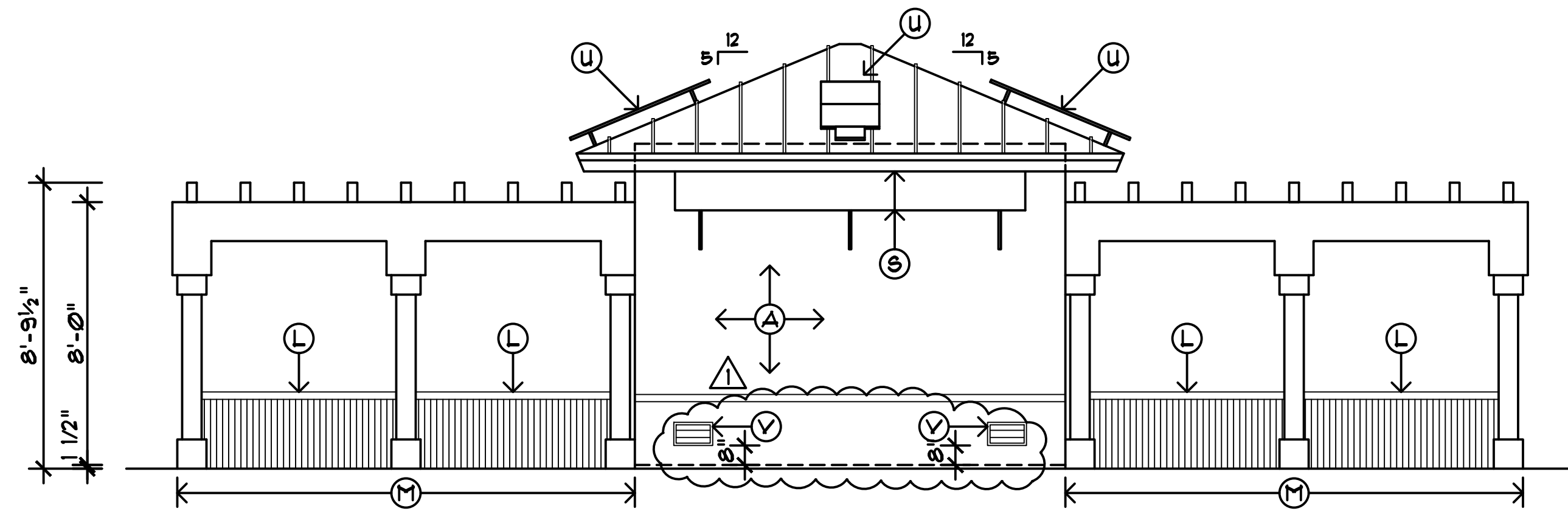
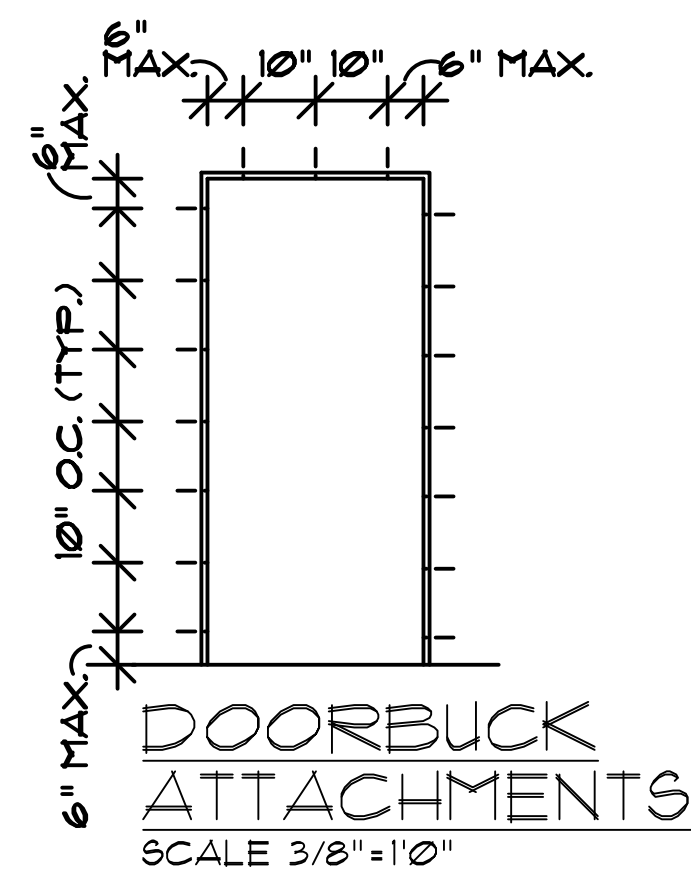
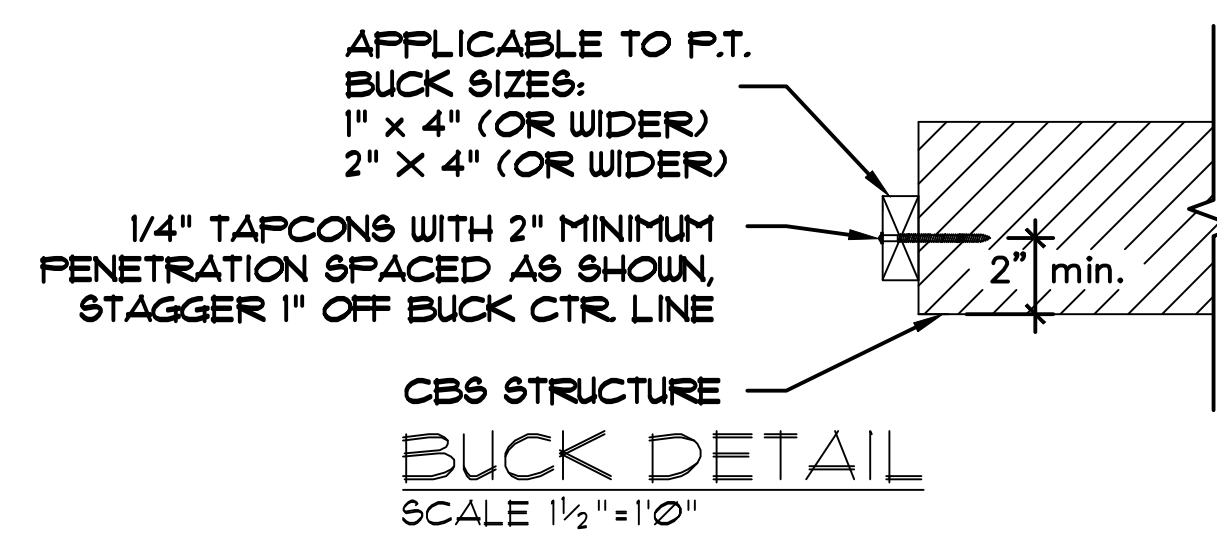
DOOR MFR/ SERIES & NOA'S ARE TO BE AGREED UPON BY OWNER & CONTRACTOR & SUBMIT AS "SHOP-DWG." TO THE ARCHITECT & MIAMI-DADE COUNTY BUILDING DEPARTMENT FOR APPROVAL

**WIND LOADING**

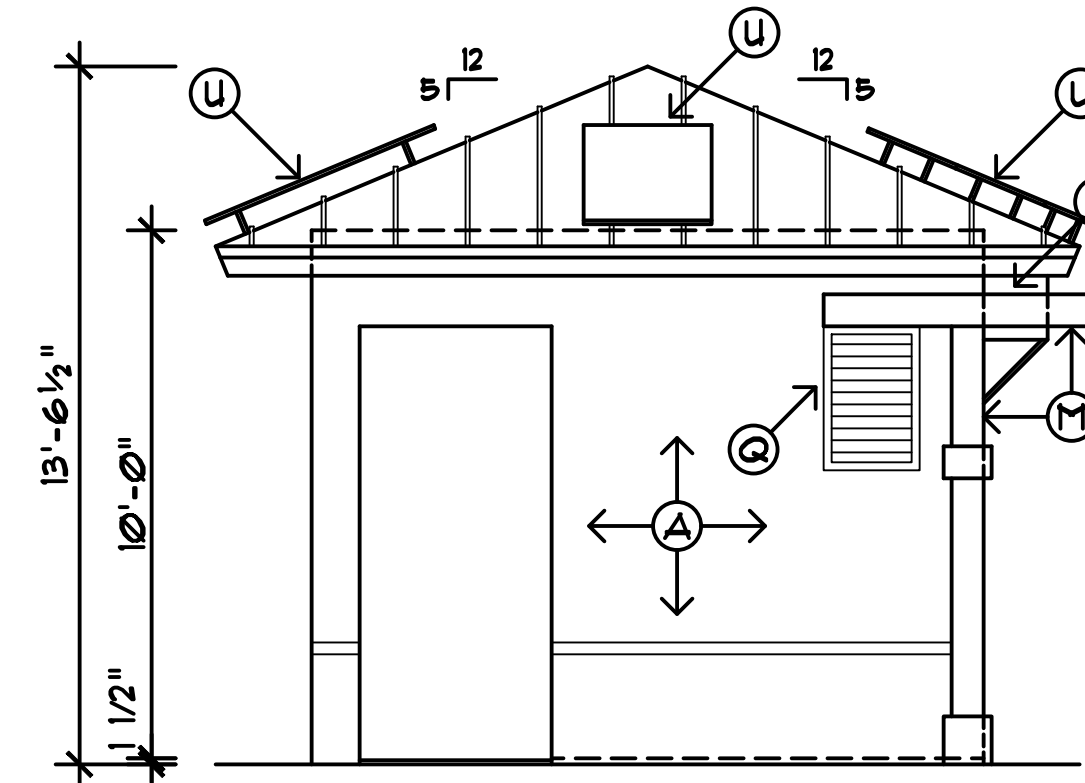
AS PER ASCE 7-10, 115 MPH, CAT. 2, EXP. C  
Gcp1 = ±0.18

**FLOOD VENT CALCULATION**

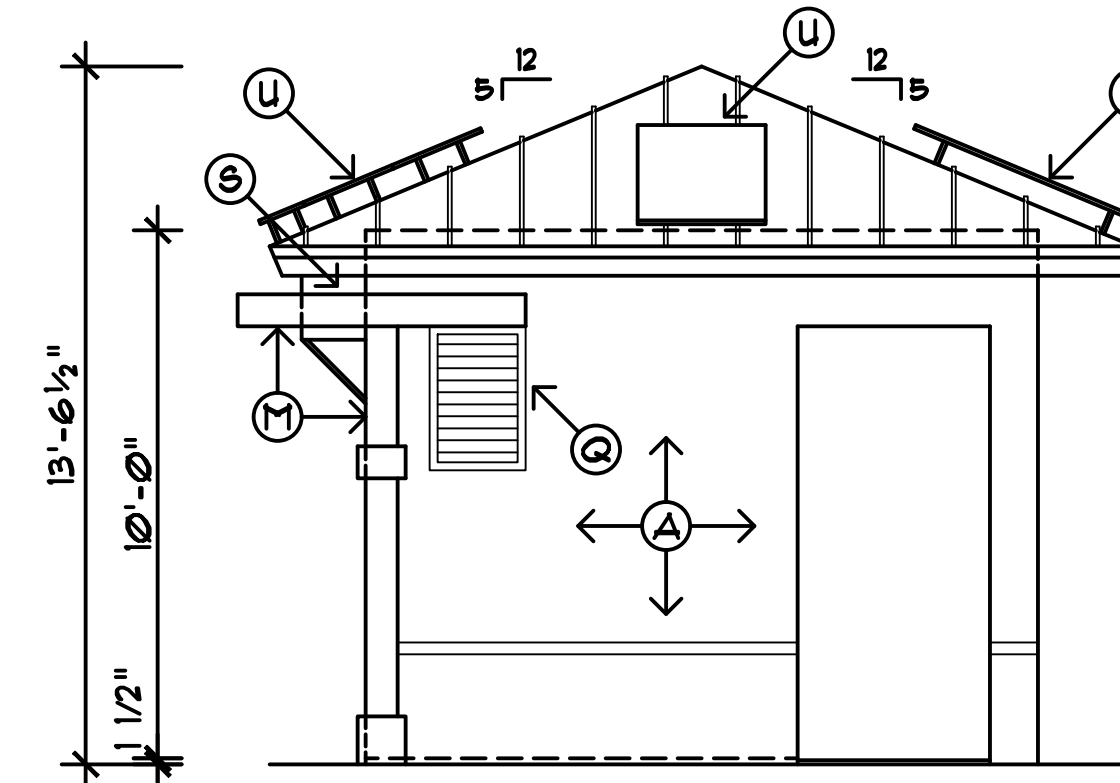
1 SQ. IN. PER 1 SQ. FT.  
50 SQ. FT. = 50 SQ. IN. MIN. REQ. PER TOILET ROOM



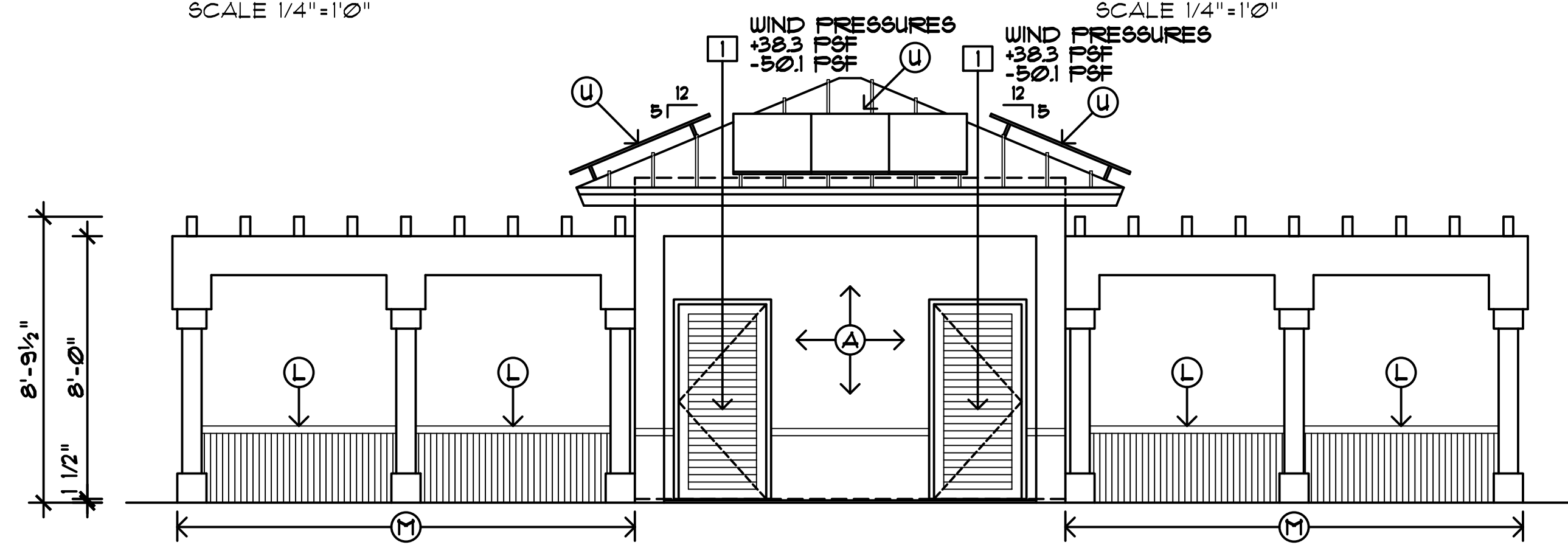
**NEW WORK REAR (WEST) ELEVATION**  
SCALE 1/4"=1'0"



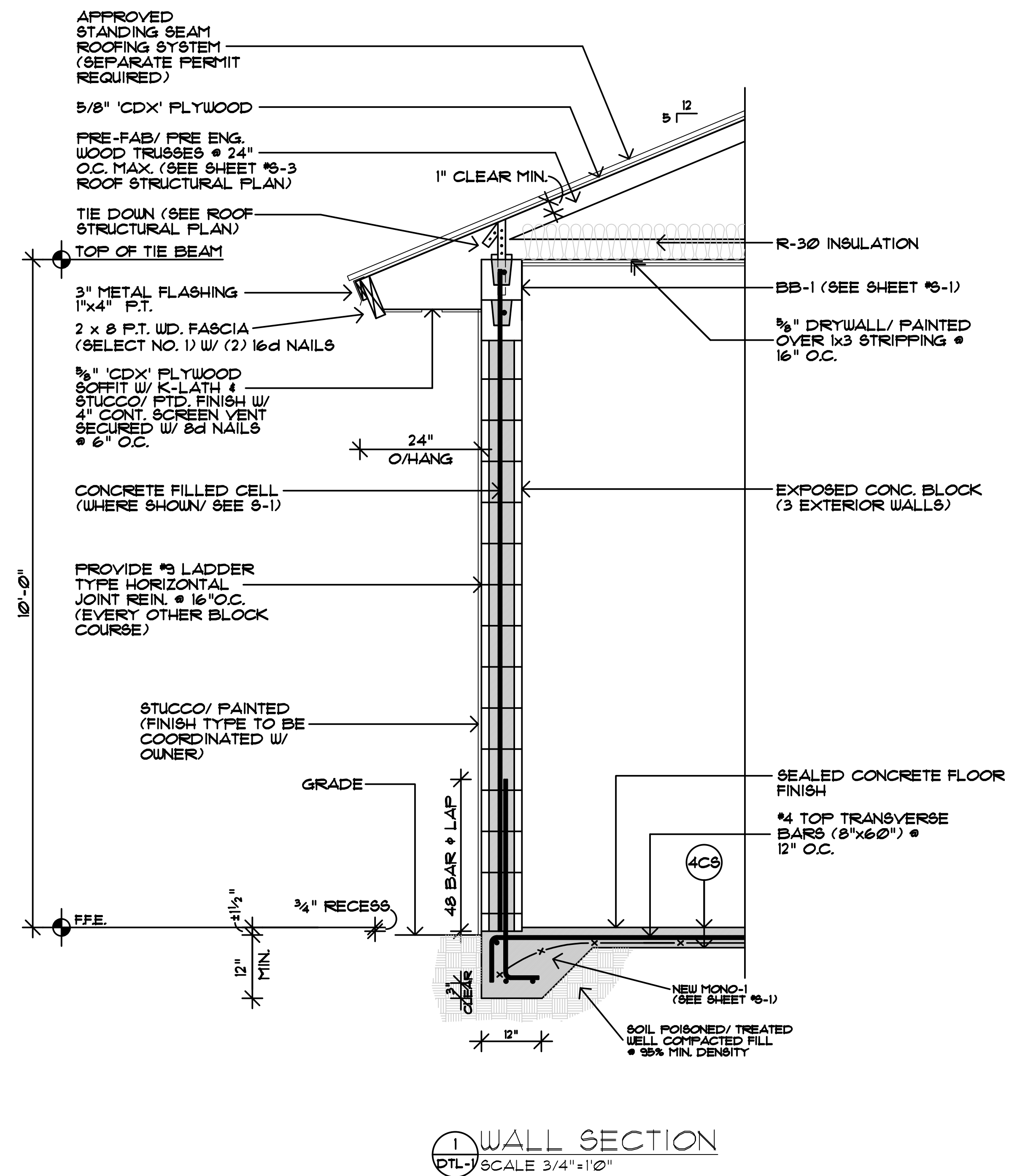
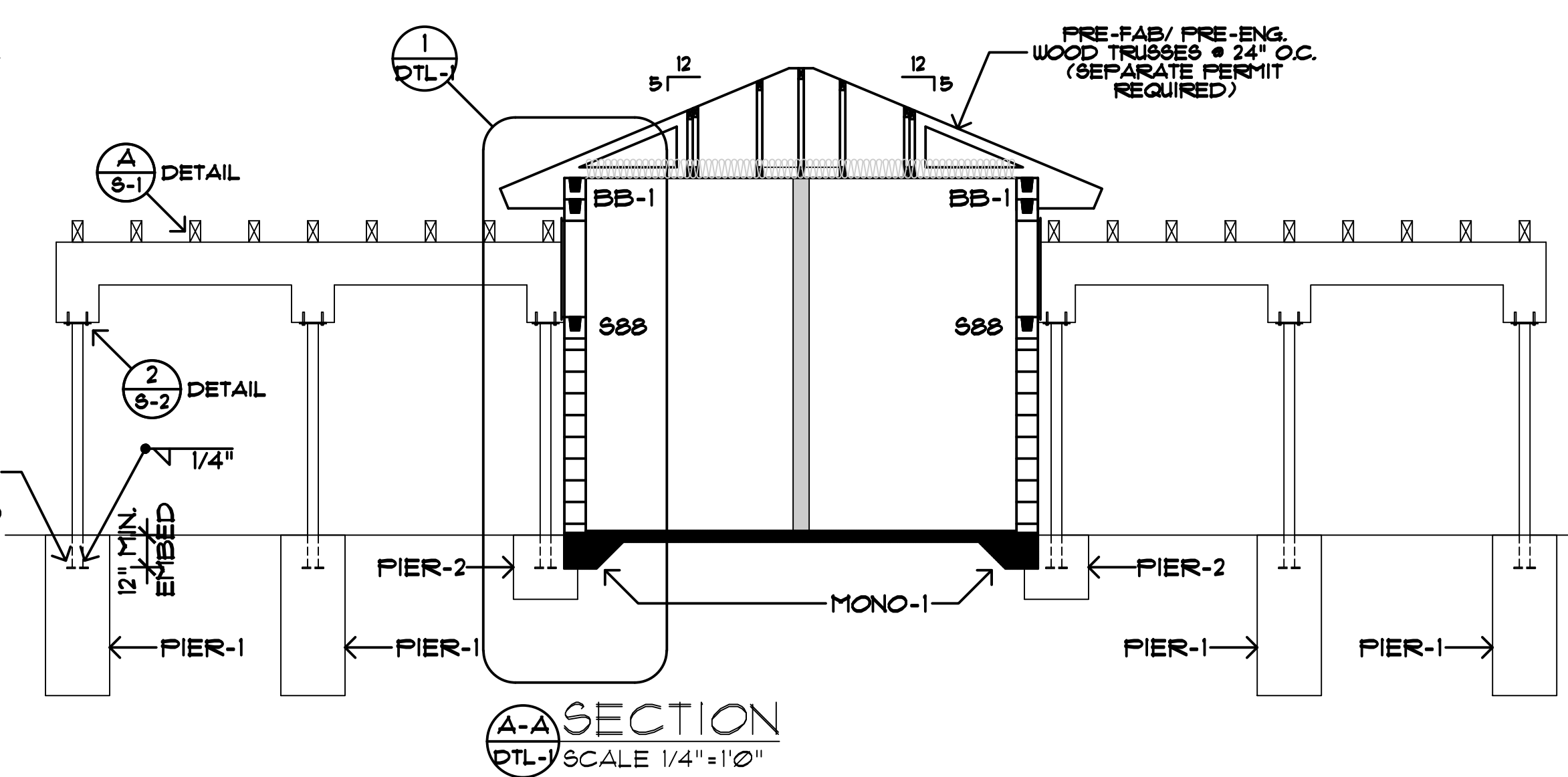
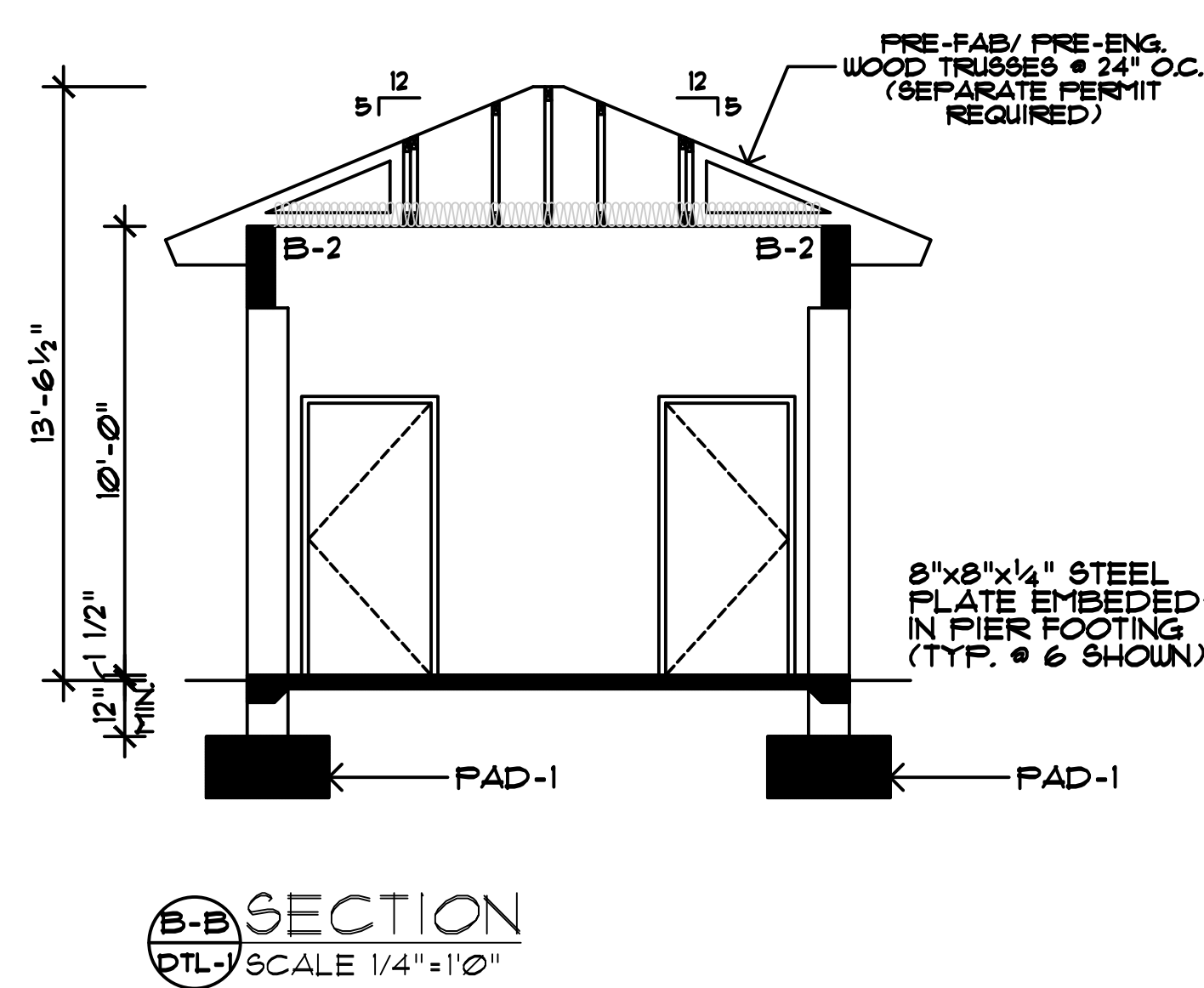
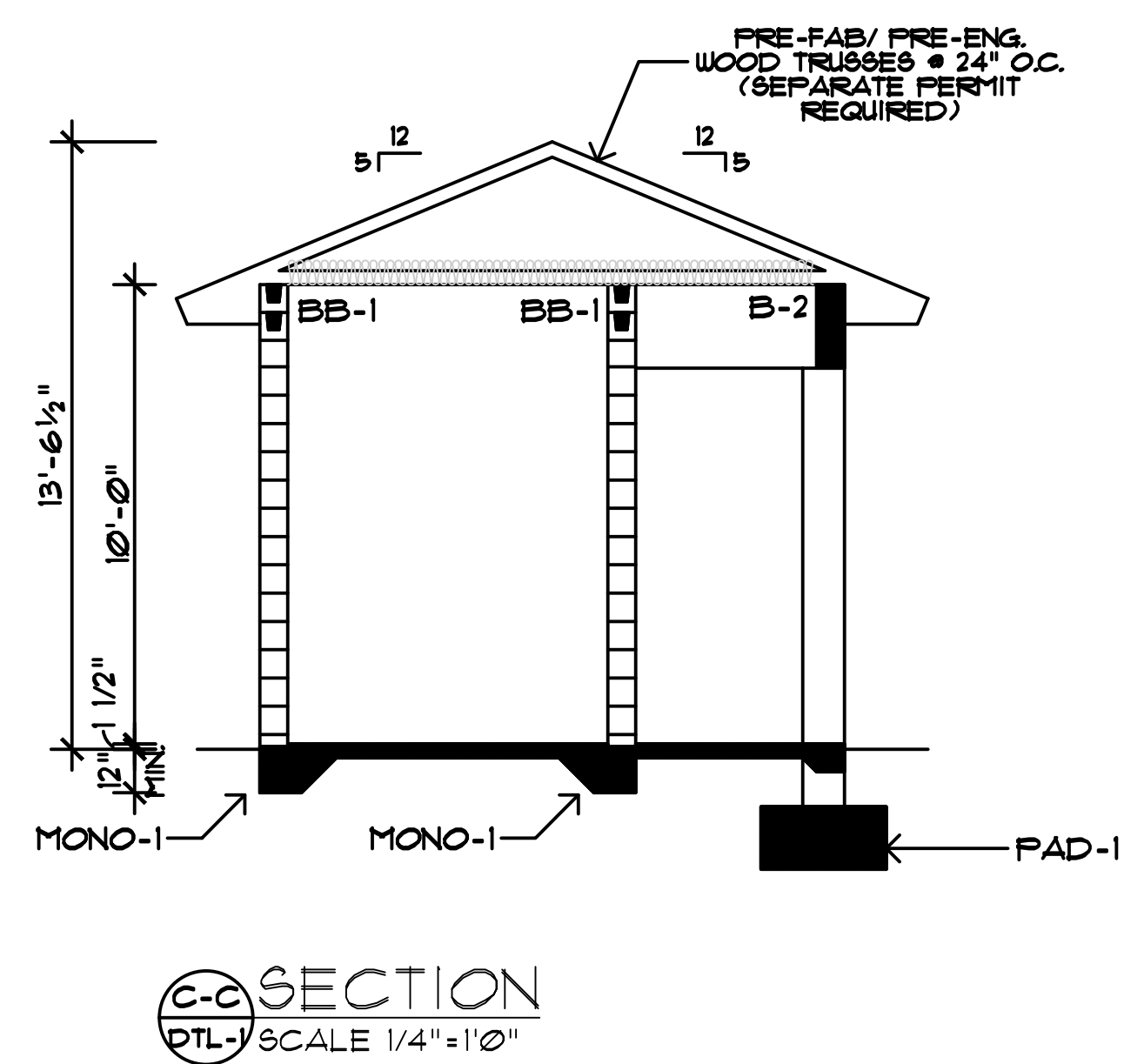
**NEW WORK LEFT SIDE (SOUTH) ELEVATION**  
SCALE 1/4"=1'0"



**NEW WORK RIGHT SIDE (NORTH) ELEVATION**  
SCALE 1/4"=1'0"



**NEW WORK FRONT (EAST) ELEVATION**  
SCALE 1/4"=1'0"



**LCK/AIA, Inc.**  
Architecture Interiors & the Arts  
17494 SW 83 Court  
Miami, FL 33157  
cell 786.355.0268  
e-mail Lou@LCKAIA.com  
Cert. of Auth. No. A26001455

DATE  
23 SEP 2017

LOUIS C. KALLINOSIS, AIA  
FLA. REG. NO. AR 93209

CORAL REEF PARK/ NEW RESTROOMS  
1895 SW 152 STREET  
PALMETTO BAY, FLORIDA

DTL-1

# GENERAL ENGINEERING – CONSTRUCTION SPECIFICATIONS

1. **GENERAL:**  
 DESIGN AND CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE 2014 FLORIDA BUILDING CODE LATEST EDITION, AMENDMENTS AND REVISIONS TO THE CODE AND REQUIREMENTS SET FORTH BY THE LOCAL BUILDING OFFICIAL.
2. **STRUCTURAL ENGINEER AND RELATED PARTIES**
- 2.1 THE WORD "ENGINEER" AS USED HEREIN REFERS TO THOMAS MOE P.E. 63863 STRUCTURAL ENGINEER, 9719 SOUTH DIXIE HWY., UNIT 2, MIAMI FLORIDA 33156. (305)669-3652, FAX (305)669-5065
- 2.2 THE FOLLOWING PARTIES REFERRED TO HEREIN ARE DEFINED AS FOLLOWS:  
 (A) OWNER: SEE TITLE BLOCK  
 (B) ARCHITECT: SEE TITLE BLOCK  
 (C) CONTRACTOR: NOT AVAILABLE
- 2.3 ALL SUBMITTALS TO AND/OR REVIEW BY ENGINEER SHALL BE MADE THROUGH THE ARCHITECT. APPROVALS FROM AND/OR REQUIRED BY ENGINEER SHALL BE REQUESTED IN WRITING THROUGH ARCHITECT.
3. **DESIGN CRITERIA**  
 3.1 **LOADS**  
 SEE: ROOF FRAMING

- 3.3 **WIND LOAD (175 MPH)**  
 PER ASCE 7-10

**4. CONSTRUCTION**

- 4.1 **GENERAL:** CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE THE NECESSARY MEASURES TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY AND SERVICEABILITY OF THE CONSTRUCTION AT ALL TIMES.
- 4.2 CONSTRUCTION LOADS: STRUCTURAL MEMBERS AS SHOWN IN THE WORKING DRAWINGS HAVE BEEN DESIGNED TO CARRY THE CODE REQUIRED SERVICE LOADS. APPROVED DURING CONSTRUCTION. CONSTRUCTION LOADS MAY EXCEED THE SERVICE DESIGN LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENGAGING THE NECESSARY CONSTRUCTION ENGINEERING AND DESIGN AND DETERMINING AND ENFORCING THE METHODS NECESSARY TO SUPPORT ALL LOADS IMPROD DURING CONSTRUCTION.
- 4.3 CONSTRUCTION COORDINATION: THE CONTRACTOR SHALL COORDINATE ALL WORK REQUIRED BY THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL WORKING DRAWINGS, AND SHALL VERIFY THE LOCATION AND SIZES OF ALL CHAINS, INSERTS, DRILLINGS, SLEEVES, FINISHES, PENETRATIONS, AND OTHER PROJECT REQUIREMENTS NOT SHOWN ON THE STRUCTURAL WORKING DRAWINGS.
- 4.4 CONFLICTS: WHEREVER CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST IN THE STRUCTURAL DRAWINGS, SCHEDULES, OR NOTES, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR CORRECTION AND/OR CLARIFICATION.
- 4.5 **SHOP DRAWINGS:**  
 (A) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS DETAILING CONCRETE REINFORCED STEEL, STRUCTURAL AND MISCELLANEOUS STEEL, WOOD ROOF TRUSSES, AND OTHER CONSTRUCTION REGARDING OFF-SITE FABRICATION INCLUDED IN THE STRUCTURAL DRAWINGS FOR APPROVAL OF THE ENGINEER.  
 (B) APPROVAL OF THE SHOP DRAWINGS BY THE ENGINEER IS FOR DESIGN AND LAYOUT, AND IS NOT FOR THE PURPOSE OF AUTHORIZING CHANGES TO THE CONTRACT DRAWINGS OR APPROVING SUBSTITUTIONS. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS, GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS, SPECIAL CONDITIONS, AND SPECIFICATIONS APPLICABLE TO THE SHOP DRAWINGS AND THE SUBMITTALS. THE CONTRACTOR SHALL CHECK AND APPROVE THE SHOP DRAWINGS BEFORE SUBMISSION TO THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING QUANTITIES, JOB CONDITIONS, AND COORDINATION AS DEFINED HEREIN, AND WITH OTHER CONSTRUCTION TRADES, IF THE SHOP DRAWINGS ARE DISAPPROVED BY THE ENGINEER. THE CONTRACTOR SHALL RESUBMIT CORRECTED DRAWINGS TO COMPLY WITH THE CONTRACT DOCUMENTS.  
 (C) THE CONTRACTOR SHALL USE MANUFACTURERS CERTIFIED SHOP DRAWINGS AND SPECIFICATIONS FOR SPECIAL EQUIPMENTS AND/OR CONSTRUCTION INSTALLATIONS AND PROVIDE ALL NECESSARY MATERIALS TO PROVIDE A FINISHED PRODUCT. DO NOT BEGIN CONSTRUCTION UNTIL THE REQUIRED SHOP DRAWINGS ARE APPROVED BY THE ARCHITECT AND ENGINEER.  
 (D) THE CONTRACTOR SHALL SUBMIT SUFFICIENT COPIES OF THE SHOP DRAWINGS TO ALLOW THE ENGINEER TO KEEP ONE SET OF DOCUMENTS FROM EACH SUBMITTAL, FOR HIS RECORDS.  
 (E) THE CONTRACTOR SHALL ALLOW A MINIMUM OF 10 WORKING DAYS FOR THE ENGINEER TO REVIEW SHOP DRAWINGS AFTER DATE RECEIVED BY THE ENGINEER. FOR LARGE SUBMITTALS, ADDITIONAL TIME MAY BE REQUIRED.
- 4.6 **SUBSTITUTIONS:**  
 PROPOSED SUBSTITUTIONS, DESIGN ALTERNATIVES, OR CHANGES BY THE CONTRACTOR SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER PRIOR TO THE AWARD OF THE CONTRACT OR PRIOR TO ANY PERTINENT WORK TO THE SUBSTITUTION. DESIGN ALTERNATIVE OR CHANGE. NO SUBSTITUTIONS WE BE ACCEPTED AFTER COMMENCEMENT OF WORK.
- 4.7 **ENGINEER'S LIMITATION OF RESPONSIBILITY DURING CONSTRUCTION:**  
 THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE QUALITY OR COMPOSITION OF MATERIALS, SHOP DRAWINGS OR FABRICATION CONSTRUCTION INSPECTION, SUPERVISION, OR REVIEW, SPECIAL INSPECTIONS, SITE VISIT, CONSTRUCTION REVIEW, OR SPECIAL INSPECTIONS PERFORMED BY THE ENGINEER OR HIS REPRESENTATIVE AS REQUIRED HEREIN, AND THEN ONLY SUCH RESPONSIBILITY AS IS ASSOCIATED WITH THE SPECIFIED WORK PERFORMED AND IS COMMONLY ASSIGNED A STRUCTURAL ENGINEER IN RELATION TO OTHER ENGINEERING AND CONSTRUCTION DISCIPLINE ASSOCIATED WITH THE PROJECT.
- 4.8 **ENGINEER'S STATEMENT OF SERVICE AND COMPLIANCE:**  
 SERVICES PROVIDED BY THE ENGINEER ARE CONSISTENT WITH THE LEVEL OF CARE AND SKILL ORDINARILY EXERCISED BY MEMBERS OF THE PROFESSION CURRENTLY PRACTICING UNDER SIMILAR CIRCUMSTANCES AND LOCATION. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE, TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE STRUCTURAL PLANS AND SPECIFICATIONS PRESENTED HEREIN COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES, STANDARDS, AND PRACTICES.

**EXCAVATING, FOOTING, AND FOUNDATION NOTES AND SPECIFICATIONS**

1. EXCAVATIONS:  
 UNL PROVISIONS FOR PERMANENT SUPPORT HAVE BEEN MADE, ALL EXCAVATIONS SHALL BE PROPERLY SHORED AND PROTECTED SO AS TO PREVENT THE SAME TO BECING DANGEROUS TO LIFE AND PROPERTY AND SHALL BE STEEL PILED, BRACED AND/OR SHORED, WHERE NECESSARY, TO PREVENT THE ADDING EARTH FROM CAUSING IN SUCH PROTECTION TO BE BY THE PERSON CAUSING THE EXCAVATION TO BE MADE. NO EXCAVATION, FOR ANY PURPOSE, SHALL EXTEND WITHIN ONE FOOT OF THE ANGLE OR REPOSE OF ANY SOIL BEARING FOOTING OR FOUNDATION UNLESS SUCH FOOTING OR FOUNDATION IS PROPERLY UNDERPINNED OR PROTECTED AGAINST SETTLEMENT.
2. FOUNDATIONS:  
 ALL STRUCTURE SHALL BE CONSTRUCTION ON SPREAD FOOTINGS WITH A MINIMUM WIDTH AS SPECIFIED ON PLAN AND SECTIONS. DESIGN WAS BASED ON 2000 PSH BEARING CAPACITY.
3. **REINFORCED CONCRETE NOTES AND SPECIFICATIONS.**  
**1. GENERAL:**  
 REINFORCED CONCRETE SHALL BE OF THE MATERIALS, PROPORTIONS, STRENGTH, AND CONSISTENCY REQUIRED IN THE STRUCTURAL DRAWINGS, SCHEDULES AND NOTES.
2. **STANDARDS:**  
 DESIGN AND CONSTRUCTION OF REINFORCED CONCRETE SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS:  
 2.1 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE ACI 308  
 2.2 MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES ACI 315  
 2.3 STANDARD SPECIFICATION FOR REFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT ASTM A603  
 2.4 STANDARD SPECIFICATION FOR COLD-DRAWN STEEL WIRE FOR REINFORCEMENT ASTM A62  
 2.5 STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC REINFORCEMENT ASTM A185  
 2.6 STANDARD SPECIFICATION FOR THE CHEMICAL ADHESIVES FOR CONCRETE ASTM C494  
 2.7 STANDARD SPECIFICATION FOR AIR-ENTRAINING ADHESIVES FOR CONCRETE ASTM C666
3. **MATERIAL AND TESTS**
- 3.1 **PORTLAND CEMENT:**  
 PORTLAND CEMENT SHALL BE TYPE I CONFORMING TO THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT ASTM C150.
- 3.2 **CONCRETE AGGREGATES:**  
 NORMAL AGGREGATES SHALL NOT BE LARGER THAN THREE-QUARTERS OF AN INCH. AGGREGATES USED IN CONCRETE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONCRETE AGGREGATES ASTM C33. AGGREGATES USED AS SAND OR WASHES IN FRESH WATER AND SHALL CONTAIN NOT MORE THAN ONE-TWENTIETH OF ONE PERCENT SLAT BY WEIGHT. SUBMIT AGGREGATE GRADATIONS TO THE ENGINEER FOR APPROVAL.
- 3.3 **WATER:**  
 MIXING FOR CONCRETE SHALL BE PORTABLE, CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS, OR SUBSTANCES THAT MAY BE DETRIMENTAL TO CONCRETE OR REINFORCEMENT.
- 3.4 **REINFORCING:**  
 REINFORCING STEEL SHALL BE GRADE 60.
- 3.5 **ADMITTURES:**  
 ADMITTURES TO BE USED IN CONCRETE SHALL BE APPROVED BY THE ENGINEER.
- 3.6 **TESTS:**  
 (A) THE ENGINEER SHALL HAVE THE RIGHT TO ORDER TESTS OF ANY MATERIAL ENTERING INTO CONCRETE OR REINFORCED CONCRETE TO BE DETERMINED SUITABILITY FOR THE PURPOSE, TO ORDER REASONABLE TESTS OF THEM FROM TIME TO TIME TO DETERMINE WHETHER THE MATERIALS AND METHODS IN USE ARE SUCH AS TO PRODUCE CONCRETE OF THE NECESSARY QUALITY, AND TO ORDER THE TEST LOAD OF ANY PORTION OF THE STRUCTURE, WHEN CONDITIONS HAVE BEEN SUCH AS TO LEAVE DOUBT AS TO THE ADEQUACY OF THE STRUCTURE TO BEHAVE THE PURPOSE FOR WHICH IT IS INTENDED.  
 (B) TESTS OF MATERIALS AND OF CONCRETE SHALL BE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS. TESTS SHALL BE MADE BY A TESTING LABORATORY APPROVED BY THE ENGINEER. THE COST OF SUCH TESTS AND REPORTS FOR CONSTRUCTION RELATED PROBLEMS SHALL BE ASSUMED BY THE CONTRACTOR.
4. **QUALITY OF CONCRETE**  
 4.1 **CONCRETE QUALITY:**  
 (A) CONCRETE SHALL BE NORMAL WEIGHT, AND SHALL ATTAIN A 28 DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:  
 28 DAY COMPRESSIVE STRENGTH PSI  
 TABLE 4.1  
 FOUNDAIONS 3,000  
 COLUMNS 4,000  
 ROOF AND FLOOR BEAMS 4,000  
 MISCELLANEOUS 4,000  
 (B) THE MAXIMUM WATER-CEMENT RATIO SHALL BE 0.55  
 (C) THE MINIMUM CEMENT CONTENT FOR CONCRETE SHALL BE FIVE BAGS PER CUBIC FOOT.  
 (D) CONCRETE SHALL CONTAIN A WATER REDUCING ADMIXTURE CAPABLE OF IMPROVING WORKABILITY AND REDUCING THE AMOUNT OF MIXING WATER CONSUMING TO ASTM C941 TYPE A. OTHER ADMIXTURES MAY BE USED IF THE ENGINEER, ADMIXTURES SHALL BE ADDED TO THE MIX IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT A CONTROLLED RATE. WORKABILITY SHALL NOT BE ACHIEVED BY WATER ADDITION.  
 (E) PROPORTIONING AND MIXING OF ALL CONCRETE MIX DESIGNS, FOR EACH STRENGTH OF CONCRETE REQUIRED, SHALL BE APPROVED BY THE ENGINEER.
- 4.2 **TESTS OF CONCRETE**  
 (A)  
 (B) TESTING ON CONCRETE USED IN CONSTRUCTION SHALL BE MADE BY AN APPROVED TESTER LABORATORY AND REPORTS SUBMITTED TO THE ENGINEER. THE COST OF SUCH TESTS SHALL BE ASSUMED BY THE OWNER.  
 (C) NOT LESS THAN THREE SPECIMENS SHALL BE MADE FOR EACH STANDARD TEST AND LESS THAN ONE CUBE YARDS OF CONCRETE USED ON THE PROJECT OR FRACTION THEREOF.  
 (D) SPECIMENS SHALL BE MADE AND CURED IN ACCORDANCE WITH THE STANDARD METHOD OF MAKING AND CURING CONCRETE COMPRESSION FLUIDEXE TEST SPECIMENS IN THE FIELD ASTM C29.  
 (E) SPECIMENS SHALL BE TESTED IN ACCORDANCE WITH THE STANDARD METHOD OF TEST FOR COMPRESSION STRENGTH OF HEILDED CONCRETE CYLINDERS ASTM C39. REPORTS TO THE ENGINEER SHALL BE SUBMITTED FOR EACH TEST PERFORMED.  
 (F) TEST CYLINDERS TAKEN OFF TRUCK-QUARTER POINT AND THE THREE-QUARTER POINT OF THE LOAD.  
 (G) THE AGE FOR STRENGTH TEST OF CONCRETE SHALL BE 28 DAYS. STRENGTH TESTS FOR AN EARLIER AGE SHALL BE SUBMITTED IF THE ENGINEER HAS APPROVED CONSTRUCTION IN THE STRUCTURE TO RECEIVE ITS FULL WORKING LOADS AT SUCH EARLIER TIME. SEVEN DAY TESTS MAY BE USED WITH THE APPROVAL OF THE ENGINEER, PROVIDED THAT THE RELATION BETWEEN THE SEVEN AND 28-DAY STRENGTHS OF THE CONCRETE IS ESTABLISHED BY TESTS FOR THE MATERIALS AND PROPORTIONS USED.  
 (H) TO CONFORM TO THE REQUIREMENTS OF THESE SPECIFICATIONS, THE AVERAGE STRENGTH OF THE LABORATORY CURED CYLINDERS REPRESENTING EACH CLASS OF CONCRETE AS WELL AS THE AVERAGE OF ANY FIVE COMBISITIVE STRENGTH TESTS REPRESENTING EACH CLASS OF CONCRETE SHALL BE EQUAL TO OR GREATER THAN THE SPECIFIED STRENGTH AND NOT MORE THAN 15% IN EXCESSIVE TEST IN TEN SHALL HAVE AN AVERAGE VALUE OF LESS THAN 90 PERCENT OF THE SPECIFIED STRENGTH.
- WHEN THERE IS A QUESTION AS TO THE QUANTITY OF THE CONCRETE IN THE STRUCTURE, THE ENGINEER SHALL HAVE THE RIGHT TO REQUIRE CORE TESTS IN ACCORDANCE WITH THE STANDARD METHOD OF OBTAINING AND TESTING DRILLED CORES AND SAWED BEAMS OF CONCRETE ASTM C42, TO ORDER LOAD TESTS ON THAT PORTION OF THE STRUCTURE WHERE THE QUESTIONED CONCRETE HAS BEEN PLACED OR TO REQUIRE OTHER REASONABLE TESTS TO EVALUATE THE STRENGTH OF THE STRUCTURE.  
 (I) THE MAXIMUM ALLOWABLE SLUMP OF CONCRETE SHALL BE FIVE INCHES. SLUMP GREATER THAN FIVE INCHES SHALL BE APPROVED BY THE ENGINEER WITH THE REINFORCED STEEL. THE CONCRETE ADJUSTED TO MAINTAIN THE STRENGTH AND QUALITY OF THE CONCRETE. NO WATER SHALL BE ADDED AT THE JOB SITE TO CONCRETE DELIVERED BY TRUCKS READY FOR USE WITHOUT THE APPROVAL OF THE ENGINEER AND THEN ONLY WHEN SLUMP TESTS ARE MADE AND THE CONCRETE SO DELIVERED IS KNOWN TO BE OF LESS SLUMP THAN SLUMP SPECIFIED.

**5. MIXING AND PLACING**

- 5.1 **FORMS AND EQUIPMENT:**  
 (A) BEFORE PLACING CONCRETE, ALL EQUIPMENT FOR MIXING AND TRANSPORTING THE CONCRETE SHALL BE CLEANED. ALL DEBRIS REMOVED FROM THE SPACES TO BE OCCUPIED BY THE CONCRETE. FORMS SHALL BE THOROUGHLY WETTED OR OILED. MASONRY FILLER UNITS THAT WILL BE IN CONTACT WITH CONCRETE SHALL BE WELL DRENCHED AND THE REINFORCEMENT THOROUGHLY CLEAN.  
 (B) STANDING WATER SHALL BE REMOVED FROM PLACES OF DEPOSIT BEFORE CONCRETE IS PLACED.

- 5.2 **MIXING OF CONCRETE:**  
 (A) JOB MIXING CONCRETE SHALL BE PERMITTED UNLESS THE PROPORTIONS, EQUIPMENT, AND METHODS ARE APPROVED BY THE ENGINEER. CONCRETE TESTS SHALL BE REQUIRED AT THE RATE OF ONE TEST FOR EACH BATCH. CONTINUOUS OR BATCHES SHOULD BE IDENTIFIED BY ASSUMED CAPACITY AND CONDITIONS. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.  
 (B) THE CONTRACTOR SHALL NOT PROCEED WITH THE CONSTRUCTION OF FOUNDATIONS OR SUPERSTRUCTURE WITHOUT PERMISSION FROM THE ENGINEER, UPON THE ENGINEER'S COMPLETION OF ANY NECESSARY REVISIONS TO THE FOUNDATION PLANS RESULTING FROM THE GEOTECHNICAL ENGINEER'S REPORT, EVALUATIONS AND RECOMMENDATIONS, REVISED PLANS SHALL BE ISSUED FOR COMMENCEMENT OF CONSTRUCTION.
- 5.3 **CONVEYING:**  
 (A) CONCRETE SHALL BE CONVEYED FROM THE MIXER TO THE PLACE OF FINAL DEPOSIT BY METHODS WHICH WILL PREVENT SEPARATION OR LOSS OF THE MATERIALS.  
 (B) EQUIPMENT FOR CHUTING, PUMPING, AND PNEUMATICALLY CONVEYING CONCRETE SHALL BE OF SUCH SIZE AND DESIGN AS TO ENSURE A PRACTICALLY CONTINUOUS FLOW OF CONCRETE AT THE DELIVERY END SEPARATION OF THE MATERIALS.
- 5.4 **DEPOSITING:**  
 (A) CONCRETE SHALL BE DEPOSITED AS NEARLY AS PRACTICABLE IN ITS FINAL POSITION TO AVOID SEGREGATION DUE TO HANDLING OR FLOWING. THE CONCRETE SHALL BE CARRIED ON AT SUCH A RATE THAT THE CONCRETE IS AT ALL TIMES PLASTIC AND FLOWS READILY INTO THE SPACES BETWEEN THE BARS. NO CONCRETE THAT HAS BEEN CONTAMINATED BY FOREIGN MATERIALS SHALL BE DEPOSITED ON THE WORK.  
 (B) WHEN CONCRETE IS STARTED, IT SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE PLACING OF THE PANEL OR SECTION IS COMPLETED. THE TOP SURFACE SHALL BE GENERALLY LEVEL.  
 (C) ALL CONCRETE SHALL BE THOROUGHLY COMPACTED BY SUITABLE MEANS DURING THE OPERATION OF THE CONCRETE. COMPACTING SHALL BE THOROUGHLY WORKED AROUND THE REINFORCEMENT AND EMBEDDED FIXTURES AND INTO THE CORNERS OF THE FORMS, WHERE THE CONCRETE IS PLACED IN COLUMNS OR WALLS. THE PLACING SHALL BE SO CONTROLLED THAT THE CONCRETE WILL NOT PASS REINFORCEMENT FOR MORE THAN SIX FEET. SEPARATE LIFTS SHALL BE THROUGHLY COMPACTED. VIBRATORS MAY BE USED TO AID IN THE PLACEMENT OF CONCRETE, PROVIDED THEY ARE USED UNDER EXPERIENCED SUPERVISION. THE FORMS DESIGNATED TO WITHSTAND THEIR ACTION AND THEIR ACTION IS NOT DIRECTED TO BARS. ANY PART WHICH IS IN CONTACT WITH CONCRETE WHICH STARTED TO TAKE ITS INITIAL SET.  
 (D) WHERE CONDITIONS MAKE COMPACTING DIFFICULT, OR WHERE THE REINFORCEMENT IS CONSIDERABLY FROM MATERIAL CONTAINING THE SAME PROPORTIONS OF CEMENT TO SAND USED IN THE CONCRETE, SUCH FIRST BE DEPOSITED IN THE FORMS TO A DEPTH OF AT LEAST ONE INCH.

- 5.5 **CURING:**  
 A CURING COMPOUND SHALL BE APPLIED TO THE TOP OF "GREEN" CONCRETE SLABS AS SOON AS PRACTICABLE AFTER PLACEMENT OF THE CONCRETE, FOLLOWING THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. SPECIFICATIONS FOR CURING COMPOUNDS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR APPROVAL. ALTERNATIVELY, CONCRETE SHALL BE KEPT IN A WET CONDITION FOR THE FIRST 24 HOURS AFTER PLACEMENT, AND SHALL BE MAINTAINED IN A MOIST CONDITION FOR AT LEAST THE FIRST SEVEN DAYS AFTER PLACING.
- 5.6 **HOT WEATHER REQUIREMENTS:**  
 BURNING HOT WEATHER, PROPER ATTENTION SHALL BE GIVEN TO INGREDIENTS, PRODUCTION METHODS, HANDLING, PLACING, PROTECTION AND CURING TO PREVENT EXCESSIVE CURING TEMPERATURES OR WATER EVAPORATION THAT MAY IMPAIR REQUIRED STRENGTH OR SERVICEABILITY OF CONCRETE MEMBERS.
- 5.7 **BONDING:**  
 BEFORE NEW CONCRETE IS DEPOSITED ON OR AGAINST CONCRETE WHICH HAS SET, THE FORMS SHALL BE RETIGHTENED. THE SURFACE OF SET CONCRETE SHALL BE CLEANED OF ALL FOREIGN MATTER AND LATHING AND WETTED. THE CLEANED AND WETTED SURFACES OF THE HARDENED CONCRETE SHALL FIRST BE SLAGGED WITH A COATING NEAT CEMENT AGAINST WITH THE NEW CONCRETE SHALL BE PLACED BEFORE THE MORTAR IS ATTAINED ITS INITIAL SET.
6. **FORMS AND DETAILS OF CONSTRUCTION**  
 6.1 **DESIGN OF FORMS:**  
 FORMS SHALL CONFORM TO THE SHAPE LINES AND DIMENSIONS OF THE MEMBERS AS CALLED FOR ON THE PLANS, AND SHALL BE SUBSTANTIAL AND SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF MORTAR. FORMS SHALL BE PROPERLY BRACED OR TIED TOGETHER SO AS TO MAINTAIN THEM TEMPORARILY OPENING, AND THE BOTTOM OF COLLINGS SHALL BE PROVIDED TO FACILITATE CLEANING AND INSPECTION BEFORE REUSING CONCRETE. WHEN THE CONCRETE HAS ATTAINED SUFFICIENT STRENGTH, FORMS SHALL BE REMOVED AND SHORED. WITH RE-SETTING, FORMS SHALL BE REMOVED AND SHORED, OTHER THAN WHEN PLACED IN CONTACT WITH THE SOIL OR JUST TO FACILITATE INSPECTION OF THE PLACING OPERATIONS, WITH THE EXCEPTION TO "T" TYPE BEAM BLOCK.
- 6.2 **REMOVAL OF FORMS:**  
 (A) REMOVAL OF FORMS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO INSURE THE COMPLETE SAFETY OF THE STRUCTURE. VERTICAL FORMS MAY BE REMOVED IN 24 HOURS, PROVIDED THAT THE CONCRETE HAS HARDENED SUFFICIENTLY SO TO RESIST DAMAGE. BOTTOM FORMS AND SHORING WITH RE-SETTING IMMEDIATELY. SLAB FORMS SHALL NOT BE REMOVED PRIOR TO 14 DAYS AFTER POOR IN SEQUENCE AND FULL RE-SHORING FOLLOWING.  
 (B) PIPES AND CONDUIT EMBEDDED IN CONCRETE: ELECTRIC CONDUIT AND OTHER PIPES SHALL NOT DISPLACE THAT TO WHICH STRESS IS CALCULATED OR OTHER WHICH IS REQUIRED FOR FIRE PROTECTION TO A GREATER EXTENT THAN FOUR PERCENT OF THE AREA OF THE CROSS SECTIONS. SLEEVES OR OTHER DEVICES IMPROVED IN THIS SECTION, AND FINISHED UNITS SHALL MEET THE REQUIREMENTS OF THIS SECTION.  
 (C) CONCRETE BLOCKS USED FOR FIRE RESISTIVE WALLS RATED TWO-HOURS OR MORE OR USED FOR LEAD-BEARING OR EXTERIOR WALLS SHALL HAVE A MINIMUM FACE-SHELL THICKNESS OF ONE AND ONE-FOURTH INCHES, A MINIMUM WEB THICKNESS OF ONE INCH, AND SHALL BE A NET CROSS-SECTIONAL AREA NOT LESS THAN 50 PERCENT OF THE CROSS SECTION.  
 (D) CONCRETE BLOCKS FOR OTHER PURPOSES SHALL HAVE A WALL AND WEB THICKNESS OF NOT LESS THAN THREE-FOURTHS INCH.  
 (E) WHERE MASONRY WALLS ARE REQUIRED BY THE PLANS TO BE EIGHT INCHES IN THICKNESS, HOLLOW CONCRETE BLOCK UNITS MAY BE 7 5/8" X 7 5/8" X 15 5/8" HOLLOW IN DIMENSION WITH CORRESPONDING WIDTHS FOR THE COLLUMS AND THE BEAMS, AND STRUCTURAL BEAMS AND COLLUMS UNLESS OTHERWISE NOTED IN THE PLANS.  
 (F) QUALITY: STANDARD UNITS OF HOLLOW CONCRETE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HOLLOW LEAD-BEARING CONCRETE MASONRY UNITS, ASTM C90, EXCEPT THAT THE MAXIMUM MOISTURE CONTENT SHALL NOT EXCEED 90 PERCENT OF THE TOTAL ABSORPTION.

- 6.3 **PLAIN CONCRETE:**  
 PLAIN CONCRETE IS CONCRETE CAST IN PLACE AND NOT REINFORCED DUE TO SHRINKAGE OR CHANGE OF TEMPERATURE. PLAIN CONCRETE SHALL BE MIXED, PLACED, AND CURED AS SPECIFIED FOR CONCRETE ELSEWHERE. THE MINIMUM STRENGTH OF REGULAR CONCRETE SHALL BE 3,000 PSI. ON 28 DAYS LIGHT WEIGHT CONCRETE SHALL NOT BE USED.
- 6.4 **MORTAR:**  
 (A) GENERAL: EXCEPT AS OTHERWISE NOTED HEREIN, ALL MORTARS AND THE MATERIALS THEREIN SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR MORTAR OF MASONRY UNITS, ASTM C270.  
 (B) THE GRADATION OF AGGREGATES FOR MORTAR SHALL BE SUCH THAT THE FINENESS MODULUS IS BETWEEN 12 AND 2.35 WHEN DETERMINED IN ACCORDANCE WITH THE STANDARD FOR AGGREGATE FOR MORTAR MORTAR, ASTM C144.  
 (C) AGGREGATES SHALL BE QUARRIED OR WASHED IN FRESH WATER AND SHALL CONTAIN NOT MORE THAN ONE-TWENTIETH OF ONE PERCENT SLAT BY WEIGHT.  
 (D) MORTAR:  
 (1) MORTAR TO BOND MASONRY SHALL BE OF TYPE M, AND SHALL COMPLY WITH EITHER THE PROPERTY SPECIFICATIONS SET FORTH BELOW OF THE PROPORTION SPECIFICATIONS OF ASTM C270.  
 (2) MORTAR STRONGER SPECIFICATION TYPE: MINIMUM AVERAGE STRENGTH, PSI M OR S 2500  
 (3) THE TYPE OF MORTAR BASED ON CONSIDERATION OF THE LOCATION OF THE UNIT MASONRY CONSTRUCTION SHALL BE AS FOLLOWS:  
 USE OR LOCATION TYPE OF MORTAR  
 EXTERIOR WALLS AND LOAD BEARING WALLS M OR S  
 MORTAR OR GROUT UNDER CONCENTRATED LOADS M  
 (4) ALL HOLLOW UNIT MASONRY SHALL OTHER THAN SHEAR WALLS SHALL BE LAID WITH FULL MORTAR COVERAGE OF THE FACE SHELLS IN BOTH HORIZONTAL AND VERTICAL JOINTS EXCEPT THE FIRST COURSE OF MASONRY SHALL BE LAID IN FULL BEDDED MORTAR.

- 6.5 **CONCRETE PROTECTION FOR REINFORCEMENT:**  
 THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:  
 MINIMUM COVER (INCH)  
 (A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3  
 (B) CONCRETE EXPOSED TO EARTH OR WEATHER 2  
 (C) THROUGH IRON BARS 2  
 (D) IN SLAB, BEAMS, AND GIRDBES, SPLICES IN REINFORCEMENT AT POINTS OF MINIMUM STRESS SHALL BE APPLIED WHEREVER POSSIBLE. SUCH SPLICES WHERE USED SHALL BE WELDED, LAPPED, OR OTHERWISE FULLY DEVELOPED, BUT IN ANY CASE, SHALL TRANSFER THE ENTIRE STRESS FROM BAR TO BAR WITHOUT EXCEEDING THE ALLOWABLE BOND AND SHEAR STRESSES. THE MINIMUM OVERLAP FOR A LAPPED SPLICE SHALL BE 36 BAR DIAMETERS, BUT NOT LESS THAN 12 INCHES. THE CLEAR DISTANCE FROM A CONTACT SPLICE TO ANY OTHER SPLICE OR BAR.  
 (E) WELDED WIRE FABRIC REINFORCEMENT SHALL BE LAPPED ONE MESH PLUS TWO INCHES, OR AS NOTED IN THE PLANS.  
 (F) SPLICES IN COLLUMS, BEAMS, GIRDBES, AND SLABS NOT SHOWN IN PLANS SHALL BE CLASS C CONTACT LAP SPLICES

- 6.6 **CONCRETE PROTECTION FOR REINFORCEMENT:**  
 THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:  
 MINIMUM COVER (INCH)  
 (A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3  
 (B) CONCRETE EXPOSED TO EARTH OR WEATHER 2  
 (C) THROUGH IRON BARS 2  
 (D) IN SLAB, BEAMS, AND GIRDBES, SPLICES IN REINFORCEMENT AT POINTS OF MINIMUM STRESS SHALL BE APPLIED WHEREVER POSSIBLE. SUCH SPLICES WHERE USED SHALL BE WELDED, LAPPED, OR OTHERWISE FULLY DEVELOPED, BUT IN ANY CASE, SHALL TRANSFER THE ENTIRE STRESS FROM BAR TO BAR WITHOUT EXCEEDING THE ALLOWABLE BOND AND SHEAR STRESSES. THE MINIMUM OVERLAP FOR A LAPPED SPLICE SHALL BE 36 BAR DIAMETERS, BUT NOT LESS THAN 12 INCHES. THE CLEAR DISTANCE FROM A CONTACT SPLICE TO ANY OTHER SPLICE OR BAR.  
 (E) WELDED WIRE FABRIC REINFORCEMENT SHALL BE LAPPED ONE MESH PLUS TWO INCHES, OR AS NOTED IN THE PLANS.  
 (F) SPLICES IN COLLUMS, BEAMS, GIRDBES, AND SLABS NOT SHOWN IN PLANS SHALL BE CLASS C CONTACT LAP SPLICES

- 6.7 **CONCRETE PROTECTION FOR REINFORCEMENT:**  
 THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:  
 MINIMUM COVER (INCH)  
 (A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3  
 (B) CONCRETE EXPOSED TO EARTH OR WEATHER 2  
 (C) THROUGH IRON BARS 2  
 (D) IN SLAB, BEAMS, AND GIRDBES, SPLICES IN REINFORCEMENT AT POINTS OF MINIMUM STRESS SHALL BE APPLIED WHEREVER POSSIBLE. SUCH SPLICES WHERE USED SHALL BE WELDED, LAPPED, OR OTHERWISE FULLY DEVELOPED, BUT IN ANY CASE, SHALL TRANSFER THE ENTIRE STRESS FROM BAR TO BAR WITHOUT EXCEEDING THE ALLOWABLE BOND AND SHEAR STRESSES. THE MINIMUM OVERLAP FOR A LAPPED SPLICE SHALL BE 36 BAR DIAMETERS, BUT NOT LESS THAN 12 INCHES. THE CLEAR DISTANCE FROM A CONTACT SPLICE TO ANY OTHER SPLICE OR BAR.  
 (E) WELDED WIRE FABRIC REINFORCEMENT SHALL BE LAPPED ONE MESH PLUS TWO INCHES, OR AS NOTED IN THE PLANS.  
 (F) SPLICES IN COLLUMS, BEAMS, GIRDBES, AND SLABS NOT SHOWN IN PLANS SHALL BE CLASS C CONTACT LAP SPLICES

- 6.8 **CONSTRUCTION JOINTS:**  
 (A) ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED TO FACILITATE CONSTRUCTION. JOINTS NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE LOCATED AND DETAILED ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER.  
 (B) JOINTS NOT INDICATED ON THE PLANS SHALL BE SET AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE WHERE A JOINT IS TO BE MADE. THE SURFACE OF THE CONCRETE SHALL BE THOROUGHLY CLEANED AND ALL LATHING AND WETTED. VERTICAL JOINTS SHALL BE THOROUGHLY WETTED AND SLAGGED WITH A COAT OF NEAT CEMENT GROUT IMMEDIATELY BEFORE PLACING OF NEW CONCRETE.  
 (C) AT LEAST TWO HOURS MUST ELAPSE AFTER DEPOSITING CONCRETE IN THE COLLUMS OR WALLS BEFORE DEPOSITING IN BEAMS GIRDBES, BRACKETS, COLUMN CAPITALS, AND HANDBES WHICH SHALL BE CONSIDERED AS PART OF THE FLOOR SYSTEM AND SHALL BE PLACED MONOLITHICALLY THEREWITH.  
 (D) CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED NEAR THE MIDDLE SPAN OF SLABS, BEAMS, OR GIRDBES EXCEPT WHERE SUCH SLABS, BEAMS, OR GIRDBES CARRY CONCENTRATED LOADS IN WHICH CASE THE LOCATION OF CONSTRUCTION JOINTS SHALL BE DETERMINED BY ENGINEER ANALYSIS.  
 (E) HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN WALLS AND BEAMS UNLESS SHOWN IN THE STRUCTURAL DRAWINGS, OR APPROVED BY THE ENGINEER.

- 6.9 **COLUMN TIES:**  
 (A) COLUMN TIES SHALL BE OF THE SIZE AND SPACING INDICATED IN THE COLUMN SCHEDULE. WHERE THE ARRANGEMENT ARE NOT SPECIFIED, TIES SHALL BE SUCH THAT EVERY CORNER AND ALTERNATE LONGITUDINAL BARS SHALL HAVE LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE OF NOT MORE THAN 125 DEGREES AND NO BAR SHALL BE FARTHER THAN SIX INCHES CLEAR ON EACH SIDE ALONG THE TIE FROM SUCH A LATERALLY SUPPORTED BAR.  
 (B) COLUMN TIES SHALL BE LOCATED NOT MORE THAN HALF A TIE SPACING ABOVE THE TOP OF FOOTING OR SLAB IN ANY STORY, AND SHALL BE SPACED SUCH THAT A TIE SHALL BE NOT MORE THAN HALF A TIE SPACING BELOW THE LOWEST HORIZONTAL REINFORCEMENT IN MEMBERS SUPPORTED ABOVE.  
 (C) WHERE BEAMS OR BRACKETS FRAME INTO ALL SIDES OF A COLUMN, TIES SHALL BE TERMINATED NOT MORE THAN THREE INCHES BELOW THE LOWEST REINFORCEMENT IN SUCH BEAMS OR BRACKETS.  
 (D) MISCELLANEOUS REINFORCEMENT DETAILS: INTERIOR AND EXTERIOR HORIZONTAL LAPPED CORNER BARS SHALL PROVIDE AT ALL CORNERS TO MATCH THE SIZE, TYPE, AND SPACING OF HORIZONTAL FOOTING WALL, MASONRY BOND BEAMS, OR CONCRETE TIE BEAMS REINFORCEMENTS.  
 (E) SHORING AND RESHORING OF CONSTRUCTION:  
 (1) THE SHORING SYSTEM SHALL BE DESIGNED BY A COMPETENT AND EXPERIENCED ENGINEER QUALIFIED BY BEING REGULARLY ENGAGED FOR AT LEAST FIVE YEARS IN DESIGN AND INSTALLATION OF SHORING AND RESHORING SYSTEMS FOR CONCRETE CONSTRUCTION SIMILAR TO THE REQUIREMENTS OF THIS PROJECT.  
 (2) THE SHORING SYSTEM DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING:  
 (1) DESIGN OF WOOD FRAMEWORK FOR CONCRETE STRUCTURES, NATIONAL LUMBER MANUFACTURERS ASSOCIATION  
 (2) FORMWORK FOR CONCRETE, PUBLICATION SP-4, ACL  
 (3) PLYWOOD FOR CONCRETE FORMING, A/C  
 (4) RECOMMENDED SAFETY REQUIREMENTS FOR SHORING CONCRETE FORMWORK, SCAFFOLDING & SHORING INSTITUTE  
 (E) THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE SHORING OR RESHORING OF CONCRETE CONSTRUCTION FOR THE PROJECT.

- 6.10 **GENERAL:**  
 CONCRETE MASONRY AND REINFORCED CONCRETE MASONRY SHALL CONFORM TO THE MATERIALS, STRENGTH, AND CONSTRUCTION REQUIRED IN THE STRUCTURAL DRAWINGS, SCHEDULES, AND NOTES.
- 6.11 **QUALITY AND TEST:**  
 (A) QUALITY:  
 (1) THE QUALITY OF MATERIALS ASSEMBLED INTO MASONRY AND THE METHOD AND MANNER OF THEIR ASSEMBLY SHALL CONFORM TO ACCEPTABLE STANDARDS OF CONSTRUCTION AND THE REQUIREMENTS SET FORTH HEREIN.  
 (2) TESTS:  
 (1) THE ENGINEER MAY REQUIRE MATERIALS TO BE SUBJECTED TO TEST IN ORDER TO DETERMINE THEIR QUALITY WHENEVER THERE IS REASON TO BELIEVE THAT THE MATERIAL IS NOT OF ACCEPTABLE QUALITY. THE COSTS OF SUCH TESTS SHALL BE ASSUMED BY THE OWNER.  
 (2) TESTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS.

- 6.12 **CONCRETE BLOCKS:**  
 (A) GENERAL:  
 (1) CONCRETE BLOCKS SHALL BE MADE OF PORTLAND CEMENT, WATER, AND APPROVED AGGREGATES. THE MATERIALS SHALL CONFORM TO THE REQUIREMENTS FOR THE MATERIALS OF CONCRETE, AND FINISHED UNITS SHALL MEET THE REQUIREMENTS OF THIS SECTION.  
 (2) CONCRETE BLOCKS USED FOR FIRE RESISTIVE WALLS RATED TWO-HOURS OR MORE OR USED FOR LEAD-BEARING OR EXTERIOR WALLS SHALL HAVE A MINIMUM FACE-SHELL THICKNESS OF ONE AND ONE-FOURTH INCHES, A MINIMUM WEB THICKNESS OF ONE INCH, AND SHALL BE A NET CROSS-SECTIONAL AREA NOT LESS THAN 50 PERCENT OF THE CROSS SECTION.  
 (3) CONCRETE BLOCKS FOR OTHER PURPOSES SHALL HAVE A WALL AND WEB THICKNESS OF NOT LESS THAN THREE-FOURTHS INCH.  
 (4) WHERE MASONRY WALLS ARE REQUIRED BY THE PLANS TO BE EIGHT INCHES IN THICKNESS, HOLLOW CONCRETE BLOCK UNITS MAY BE 7 5/8" X 7 5/8" X 15 5/8" HOLLOW IN DIMENSION WITH CORRESPONDING WIDTHS FOR THE COLLUMS AND THE BEAMS, AND STRUCTURAL BEAMS AND COLLUMS UNLESS OTHERWISE NOTED IN THE PLANS.  
 (F) QUALITY: STANDARD UNITS OF HOLLOW CONCRETE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HOLLOW LEAD-BEARING CONCRETE MASONRY UNITS, ASTM C90, EXCEPT THAT THE MAXIMUM MOISTURE CONTENT SHALL NOT EXCEED 90 PERCENT OF THE TOTAL ABSORPTION.

- 6.13 **PLAIN CONCRETE:**  
 PLAIN CONCRETE IS CONCRETE CAST IN PLACE AND NOT REINFORCED DUE TO SHRINKAGE OR CHANGE OF TEMPERATURE. PLAIN CONCRETE SHALL BE MIXED, PLACED, AND CURED AS SPECIFIED FOR CONCRETE ELSEWHERE. THE MINIMUM STRENGTH OF REGULAR CONCRETE SHALL BE 3,000 PSI. ON 28 DAYS LIGHT WEIGHT CONCRETE SHALL NOT BE USED.

- 6.14 **MORTAR:**  
 (A) GENERAL: EXCEPT AS OTHERWISE NOTED HEREIN, ALL MORTARS AND THE MATERIALS THEREIN SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR MORTAR OF MASONRY UNITS, ASTM C270.  
 (B) THE GRADATION OF AGGREGATES FOR MORTAR SHALL BE SUCH THAT THE FINENESS MODULUS IS BETWEEN 12 AND 2.35 WHEN DETERMINED IN ACCORDANCE WITH THE STANDARD FOR AGGREGATE FOR MORTAR MORTAR, ASTM C144.  
 (C) AGGREGATES SHALL BE QUARRIED OR WASHED IN FRESH WATER AND SHALL CONTAIN NOT MORE THAN ONE-TWENTIETH OF ONE PERCENT SLAT BY WEIGHT.  
 (D) MORTAR:  
 (1) MORTAR TO BOND MASONRY SHALL BE OF TYPE M, AND SHALL COMPLY WITH EITHER THE PROPERTY SPECIFICATIONS SET FORTH BELOW OF THE PROPORTION SPECIFICATIONS OF ASTM C270.  
 (2) MORTAR STRONGER SPECIFICATION TYPE: MINIMUM AVERAGE STRENGTH, PSI M OR S 2500  
 (3) THE TYPE OF MORTAR BASED ON CONSIDERATION OF THE LOCATION OF THE UNIT MASONRY CONSTRUCTION SHALL BE AS FOLLOWS:  
 USE OR LOCATION TYPE OF MORTAR  
 EXTERIOR WALLS AND LOAD BEARING WALLS M OR S  
 MORTAR OR GROUT UNDER CONCENTRATED LOADS M  
 (4) ALL HOLLOW UNIT MASONRY SHALL OTHER THAN SHEAR WALLS SHALL BE LAID WITH FULL MORTAR COVERAGE OF THE FACE SHELLS IN BOTH HORIZONTAL AND VERTICAL JOINTS EXCEPT THE FIRST COURSE OF MASONRY SHALL BE LAID IN FULL BEDDED MORTAR.

- 6.15 **CONSTRUCTION JOINTS:**  
 (A) ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED TO FACILITATE CONSTRUCTION. JOINTS NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE LOCATED AND DETAILED ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER.  
 (B) JOINTS NOT INDICATED ON THE PLANS SHALL BE SET AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE WHERE A JOINT IS TO BE MADE. THE SURFACE OF THE CONCRETE SHALL BE THOROUGHLY CLEANED AND ALL LATHING AND WETTED. VERTICAL JOINTS SHALL BE THOROUGHLY WETTED AND SLAGGED WITH A COAT OF NEAT CEMENT GROUT IMMEDIATELY BEFORE PLACING OF NEW CONCRETE.  
 (C) AT LEAST TWO HOURS MUST ELAPSE AFTER DEPOSITING CONCRETE IN THE COLLUMS OR WALLS BEFORE DEPOSITING IN BEAMS GIRDBES, BRACKETS, COLUMN CAPITALS, AND HANDBES WHICH SHALL BE CONSIDERED AS PART OF THE FLOOR SYSTEM AND SHALL BE PLACED MONOLITHICALLY THEREWITH.  
 (D) CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED NEAR THE MIDDLE SPAN OF SLABS, BEAMS, OR GIRDBES EXCEPT WHERE SUCH SLABS, BEAMS, OR GIRDBES CARRY CONCENTRATED LOADS IN WHICH CASE THE LOCATION OF CONSTRUCTION JOINTS SHALL BE DETERMINED BY ENGINEER ANALYSIS.  
 (E) HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN WALLS AND BEAMS UNLESS SHOWN IN THE STRUCTURAL DRAWINGS, OR APPROVED BY THE ENGINEER.

- 6.16 **COLUMN TIES:**  
 (A) COLUMN TIES SHALL BE OF THE SIZE AND SPACING INDICATED IN THE COLUMN SCHEDULE. WHERE THE ARRANGEMENT ARE NOT SPECIFIED, TIES SHALL BE SUCH THAT EVERY CORNER AND ALTERNATE LONGITUDINAL BARS SHALL HAVE LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE OF NOT MORE THAN 125 DEGREES AND NO BAR SHALL BE FARTHER THAN SIX INCHES CLEAR ON EACH SIDE ALONG THE TIE FROM SUCH A LATERALLY SUPPORTED BAR.  
 (B) COLUMN TIES SHALL BE LOCATED NOT MORE THAN HALF A TIE SPACING ABOVE THE TOP OF FOOTING OR SLAB IN ANY STORY, AND SHALL BE SPACED SUCH THAT A TIE SHALL BE NOT MORE THAN HALF A TIE SPACING BELOW THE LOWEST HORIZONTAL REINFORCEMENT IN MEMBERS SUPPORTED ABOVE.  
 (C) WHERE BEAMS OR BRACKETS FRAME INTO ALL SIDES OF A COLUMN, TIES SHALL BE TERMINATED NOT MORE THAN THREE INCHES BELOW THE LOWEST REINFORCEMENT IN SUCH BEAMS OR BRACKETS.  
 (D) MISCELLANEOUS REINFORCEMENT DETAILS: INTERIOR AND EXTERIOR HORIZONTAL LAPPED CORNER BARS SHALL PROVIDE AT ALL CORNERS TO MATCH THE SIZE, TYPE, AND SPACING OF HORIZONTAL FOOTING WALL, MASONRY BOND BEAMS, OR CONCRETE TIE BEAMS REINFORCEMENTS.  
 (E) SHORING AND RESHORING OF CONSTRUCTION:  
 (1) THE SHORING SYSTEM SHALL BE DESIGNED BY A COMPETENT AND EXPERIENCED ENGINEER QUALIFIED BY BEING REGULARLY ENGAGED FOR AT LEAST FIVE YEARS IN DESIGN AND INSTALLATION OF SHORING AND RESHORING SYSTEMS FOR CONCRETE CONSTRUCTION SIMILAR TO THE REQUIREMENTS OF THIS PROJECT.  
 (2) THE SHORING SYSTEM DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING:  
 (1) DESIGN OF WOOD FRAMEWORK FOR CONCRETE STRUCTURES, NATIONAL LUMBER MANUFACTURERS ASSOCIATION  
 (2) FORMWORK FOR CONCRETE, PUBLICATION SP-4, ACL  
 (3) PLYWOOD FOR CONCRETE FORMING, A/C  
 (4) RECOMMENDED SAFETY REQUIREMENTS FOR SHORING CONCRETE FORMWORK, SCAFFOLDING & SHORING INSTITUTE  
 (E) THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE SHORING OR RESHORING OF CONCRETE CONSTRUCTION FOR THE PROJECT.

- 6.17 **GENERAL:**  
 CONCRETE MASONRY AND REINFORCED CONCRETE MASONRY SHALL CONFORM TO THE MATERIALS, STRENGTH, AND CONSTRUCTION REQUIRED IN THE STRUCTURAL DRAWINGS, SCHEDULES, AND NOTES.
- 6.18 **QUALITY AND TEST:**  
 (A) QUALITY:  
 (1) THE QUALITY OF MATERIALS ASSEMBLED INTO MASONRY AND THE METHOD AND MANNER OF THEIR ASSEMBLY SHALL CONFORM TO ACCEPTABLE STANDARDS OF CONSTRUCTION AND THE REQUIREMENTS SET FORTH HEREIN.  
 (2) TESTS:  
 (1) THE ENGINEER MAY REQUIRE MATERIALS TO BE SUBJECTED TO TEST IN ORDER TO DETERMINE THEIR QUALITY WHENEVER THERE IS REASON TO BELIEVE THAT THE MATERIAL IS NOT OF ACCEPTABLE QUALITY. THE COSTS OF SUCH TESTS SHALL BE ASSUMED BY THE OWNER.  
 (2) TESTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS.

- 6.19 **CONCRETE BLOCKS:**  
 (A) GENERAL:  
 (1) CONCRETE BLOCKS SHALL BE MADE OF PORTLAND CEMENT, WATER, AND APPROVED AGGREGATES. THE MATERIALS SHALL CONFORM TO THE REQUIREMENTS FOR THE MATERIALS OF CONCRETE, AND FINISHED UNITS SHALL MEET THE REQUIREMENTS OF THIS SECTION.  
 (2) CONCRETE BLOCKS USED FOR FIRE RESISTIVE WALLS RATED TWO-HOURS OR MORE OR USED FOR LEAD-BEARING OR EXTERIOR WALLS SHALL HAVE A MINIMUM FACE-SHELL THICKNESS OF ONE AND ONE-FOURTH INCHES, A MINIMUM WEB THICKNESS OF ONE INCH, AND SHALL BE A NET CROSS-SECTIONAL AREA NOT LESS THAN 50 PERCENT OF THE CROSS SECTION.  
 (3) CONCRETE BLOCKS FOR OTHER PURPOSES SHALL HAVE A WALL AND WEB THICKNESS OF NOT LESS THAN THREE-FOURTHS INCH.  
 (4) WHERE MASONRY WALLS ARE REQUIRED BY THE PLANS TO BE EIGHT INCHES IN THICKNESS, HOLLOW CONCRETE BLOCK UNITS MAY BE 7 5/8" X 7 5/8" X 15 5/8" HOLLOW IN DIMENSION WITH CORRESPONDING WIDTHS FOR THE COLLUMS AND THE BEAMS, AND STRUCTURAL BEAMS AND COLLUMS UNLESS OTHERWISE NOTED IN THE PLANS.  
 (F) QUALITY: STANDARD UNITS OF HOLLOW CONCRETE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HOLLOW

ANCHORING SCHEDULE					
MARK	SUPPLIER / PRODUCT	UPLIFT CAP.	GRAVITY CAP.	FASTENERS	PRODUCT APPROVAL
Ⓐ	SIMPSON HHETA20 TRUSS ANCHOR	1,935 LB	—	9-10d X 1 1/2" NAILS PER TRUSS	FL 11473

NOTE:  
CONTRACTOR MAY NOT SUBSTITUTE ANCHORS/ HANGERS WITH OUT WRITTEN PERMISSION FROM ENGINEER OF RECORD

ROOF REACTIONS			
MARK	REACTIONS (LBS)		ANCHOR TYPE
	UPLIFT	GRAVITY	
①	847	963	Ⓐ
⑩	1084	1155	Ⓐ
⑩b	780	633	Ⓐ
②	655	715	Ⓐ
②a	723	770	Ⓐ
②b	495	610	Ⓐ
③	542	440	Ⓐ
④	1,069	495	Ⓐ

**ROOF TRUSS LOADING**

GRAVITY:  
DL = 25 PSF  
LL = 30 PSF

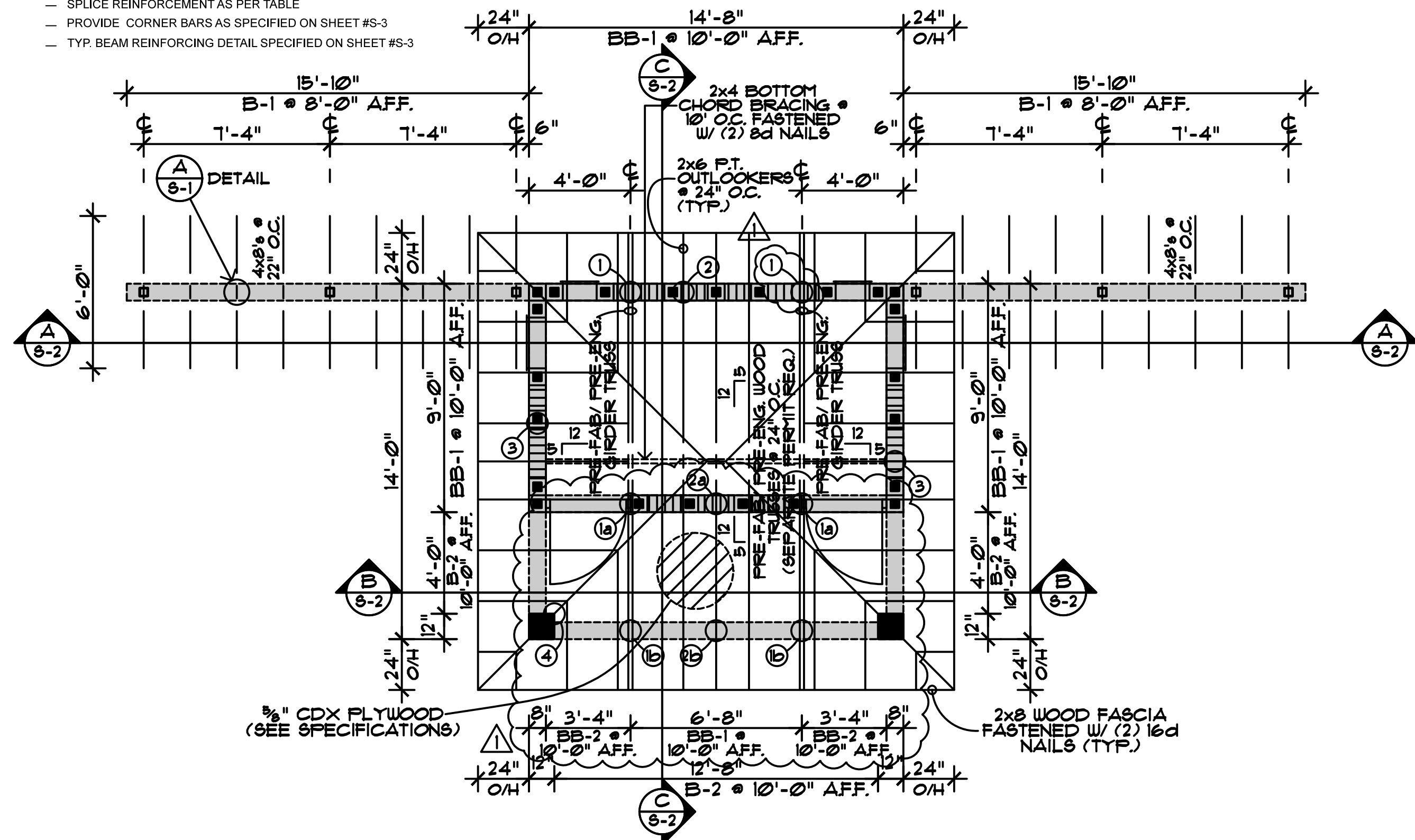
TRUSS DESIGNER NOTES:  
DESIGNER MAY OVERSTRESS WOOD MEMBERS FOR WIND LOADING BUT MAY NOT OVERSTRESS TRUSS METAL PLATES

DESIGNER TO DESIGN TRUSSES TO RESIST 200 LB POINT LOAD AT BOTTOM CHORD PANEL POINTS

UPLIFT: AS PER ASCE 7-10, 175 MPH, RISK CATEGORY 2, EXP. C, GCPI = +/-0.18

BEAM SCHEDULE					
MARK	SIZE	REINFORCEMENT		STIRRUPS	T.O.B. ELEVATIONS
		B	T		
BB-1 (BOND BEAM)	8" X 16"	(1) #7	(1) #7	-	+10'-0"
BB-2 (BOND BEAM)	8" X 36"	(2) #7	(1) #7	-	+10'-0"
B-1	8" X 16" W/ DROPPED COLUMN CAPITALS (SEE B-1 ELEVATION ON S-2)	(2) #5	(2) #5	#3 @ 6" O.C.	+8'-0"
B-2	8" X 24"	(2) #6	(2) #6	(1) #5	#3 @ 10" O.C.
S88	8" X 8"	-	(2) #5	-	VARIES

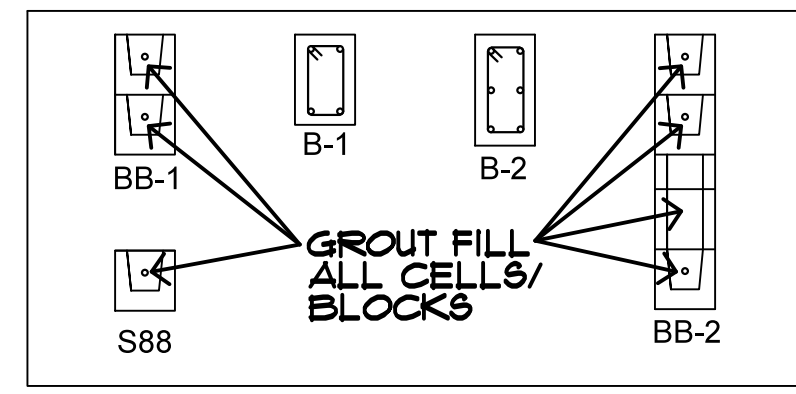
NOTES:  
- SPLICE REINFORCEMENT AS PER TABLE  
- PROVIDE CORNER BARS AS SPECIFIED ON SHEET #S-3  
- TYP. BEAM REINFORCING DETAIL SPECIFIED ON SHEET #S-3



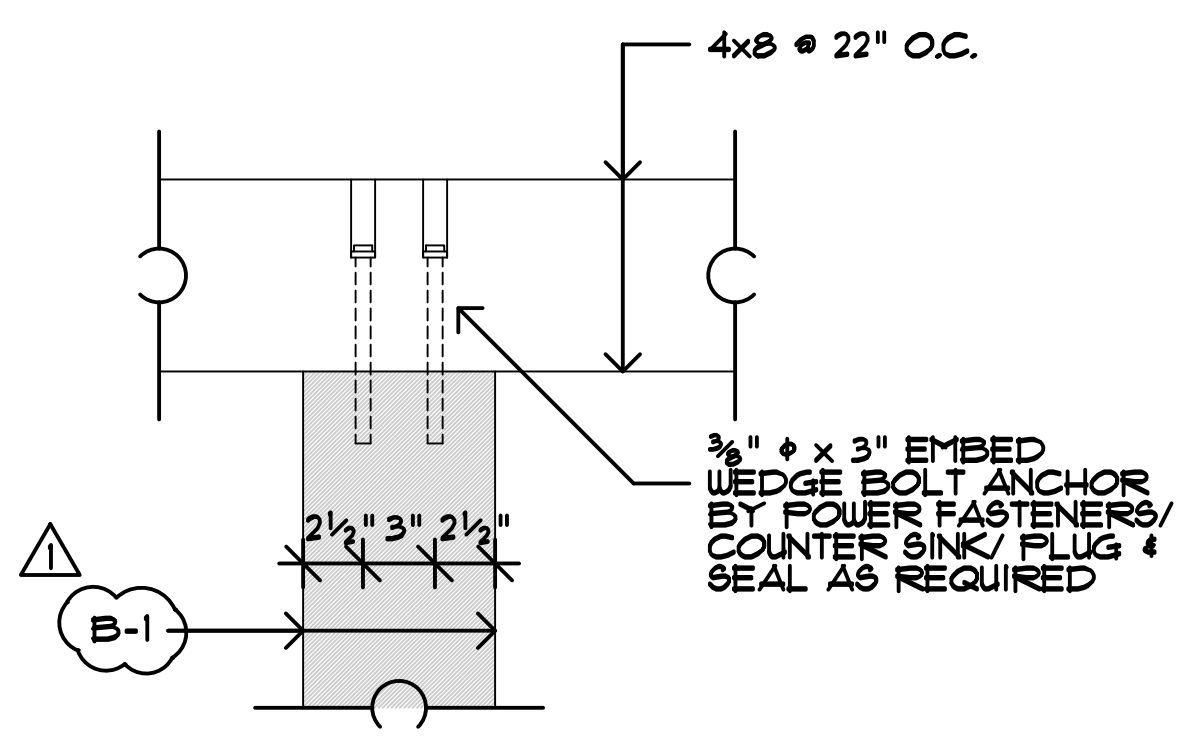
**ROOF SHEATHING**  
5/8" CD-X PLYWOOD FASTENED W/ 10d X 3" LONG COMMON NAILS FASTENED AT 4" o.c AT GABLE ENDS AND DIAPHRAGM BOUNDARIES AND AT 6" o.c AT BLOCKING MEMBERS AND REMAINDER.

**ROOF TRUSS LEGEND**  
----- DENOTES 2x4 BOTTOM CHORD BRACING @ 10'-0" O.C. W/ (2) 8d NAILS

**BEAM REINFORCING LAYOUT**



NOTE:  
M.O. (MASONRY OPENING) SHOULD IS TO BE VERIFIED W/ DOOR/ LOUVRE MFR



**TERMITE NOTE:**  
PRIOR TO PLACEMENT OF CONC. THE FILL INSIDE OF THE FOUNDATION SHALL BE TREATED FOR SUBTERRANEAN TERMITES BY A LICENSED PEST CONTROL COMPANY. UPON COMPLETION A CERTIFICATE OF COMPLETION SHALL BE ISSUED BY THE LICENSED PEST CONTROL COMPANY TO THE BUILDING DEPARTMENT CONFIRMING THAT THE BUILDING HAS RECEIVED A COMPLETE TREATMENT FOR THE PREVENTION OF SUBTERRANEAN TERMITES AND THAT THE TREATMENT IS IN ACCORDANCE WITH AGRICULTURE AND CONSUMER SERVICES.

**SOIL STATEMENT**  
BASED ON VISUAL INSPECTION, THE FOUNDATIONS HAVE BEEN DESIGNED FOR A 2,000 PSF SOIL BEARING CAPACITY. AT THE TIME THE SOIL IS BROKEN, A SITE INSPECTION MUST BE DONE BY THIS ENGINEER, OR ARCHITECT, ATTESTING THAT THE SITE HAS BEEN OBSERVED & THE FOUNDATION CONDITIONS ARE SIMILAR TO THOSE UPON WHICH THE DESIGN IS BASED.

- SLAB ON GRADE / COMPACTION SPECIFICATIONS:**
- INSTALL 4" CONCRETE SLAB ON GRADE REINFORCED WITH 6 X 6 W1.4 X W1.4 WELDED WIRE REINFORCEMENT PLACED 1 1/2" FROM TOP OF SLAB. PROVIDE (1) #4 BAR @ SLAB PERIMETER.
  - SUB SOIL TO BE FREE FROM ALL DETRITUS MATERIALS AND COMPACTED TO 95% MAX DRY DENSITY PER ASTM D-1557.
  - FILL SHALL BE PLACED IN LIFTS NOT GREATER THAN 12" LOOSE THICKNESS FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, & NOT MORE THAN 6" INCHES LOOSE THICKNESS FOR MATERIAL COMPACTED BY HAND - OPERATED UNITS. SUITABLE FILL MATERIAL SHALL BE CRUSHED LIMESTONE, WHICH SHALL BE THE LESSER OF 2" OR 50% OF THE COMPACTED LAYER THICKNESS.
  - SLAB TO BE PLACED OVER 6 MIL POLYETHYLENE VAPOR BARRIER
  - ADD 1/2"x1" CONTROL JOINTS (C.J.) AS SHOWN W/ 12 HOURS OF POUR. JOINTS TO BE TREATED W/ CLOSED CELL POLYETHYLENE BACKER RODS & SEALER

**FOUNDATION SCHEDULE**

MARK	SIZE	REINFORCEMENT
TE88	8" X 8" CONT. THICKENED EDGE	(1) #5 BAR CONTINUOUS (BOTTOM)
MONO-1	12" WIDE X 16" DEEP (MIN.) MONOLITHIC FOOTING	(2) #5 CONT. BOTTOM BARS/ (1) #4 CONT. TOP EDGE BAR & #4 TOP TRANSVERSE BARS @ 5" W/ 8" HOOK (SEE MONOLITHIC FTG. DTL.)
PAD-1	3'-0" X 3'-0" X 1'-2" DEEP	#5 BARS @ 10" O.C. EACH WAY (BOTTOM) & #5 BARS @ 10" O.C. EACH WAY (TOP)
PIER-1	24" X 5' DEEP PIER	(8) #5 BARS & #3 TIES @ 16" O.C.
PIER-2	24" X 2' DEEP PIER	(8) #5 BARS & #3 TIES @ 16" O.C.

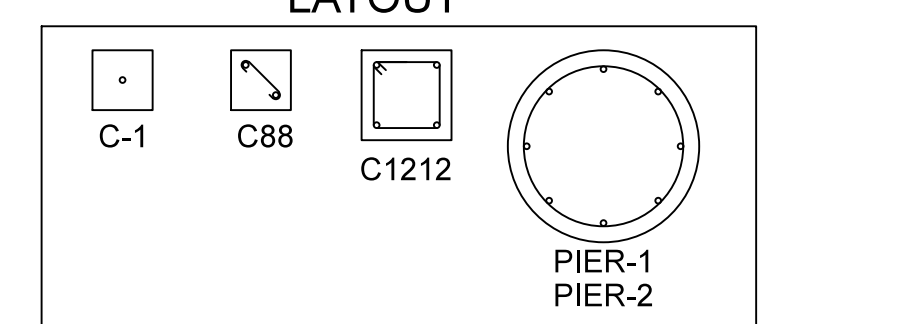
NOTES:  
- SPLICE REINFORCEMENT 36 BAR DIAMETERS  
- AT CORNERS AND TURNS PROVIDE 48 BAR DIAMETER BENT BARS  
- TOP OF ALL FOOTINGS TO E 12" BELOW NATURAL GRADE (UNLESS OTHERWISE STATED)  
- TOP OF ALL PADS TO BE 12" BELOW GRADE  
- TOP OF ALL CONTINUOUS WALL FOOTINGS TO BE 12" BELOW GRADE

**COLUMN SCHEDULE**

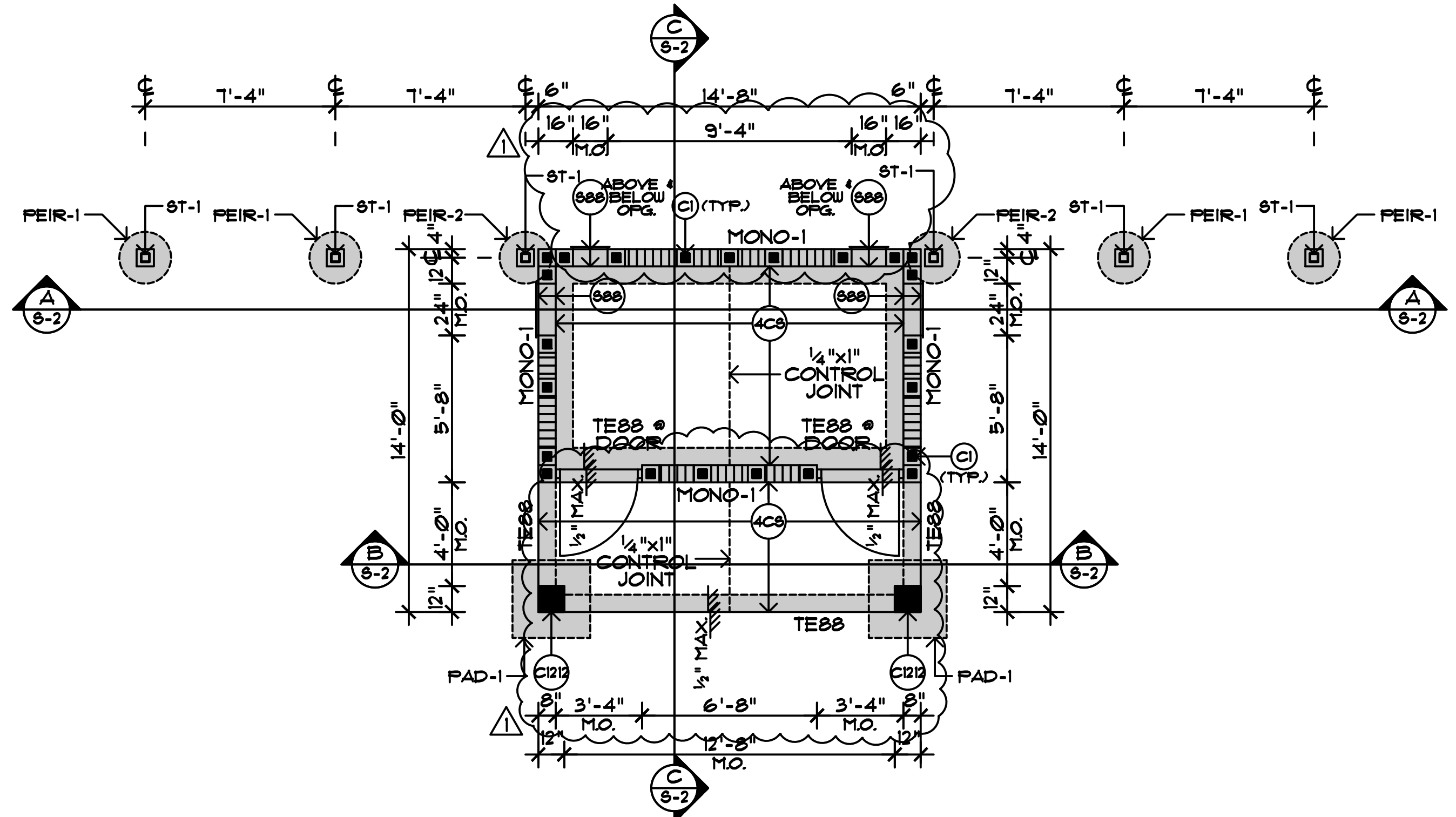
MARK	SIZE	REMARKS
C1	8" MASONRY BLOCK	1 #5 BAR IN GROUT FILLED MASONRY BLOCK SPACED AS SHOWN BUT NO GREATER THAN 32" O.C. (UNLESS OTHERWISE STATED)
ST-1	4"x4"x14"	ASTM A500 GR. B (W/ 2 COATS OF PRIMER)
C1212	12" X 12" CONCRETE COLUMN	(4) #6 BARS WITH #3 TIES @ 12" O.C.

NOTES:  
- SPLICE ALL CONCRETE COLUMN REINFORCEMENT 48 BAR DIA.  
- HOOK VERTICAL REINFORCEMENT 8" AT TOP OF COLUMN

**COLUMN REINFORCING LAYOUT**



NOTE:  
M.O. (MASONRY OPENING) SHOULD IS TO BE VERIFIED W/ DOOR/ LOUVRE MFR



**THM**  
STRUCTURAL CONSULTING  
7719 South Dixie Hwy. #2  
Miami, FL 33156  
Cell: 305.669.3652  
Fax: 305.669.5065  
CA 28548

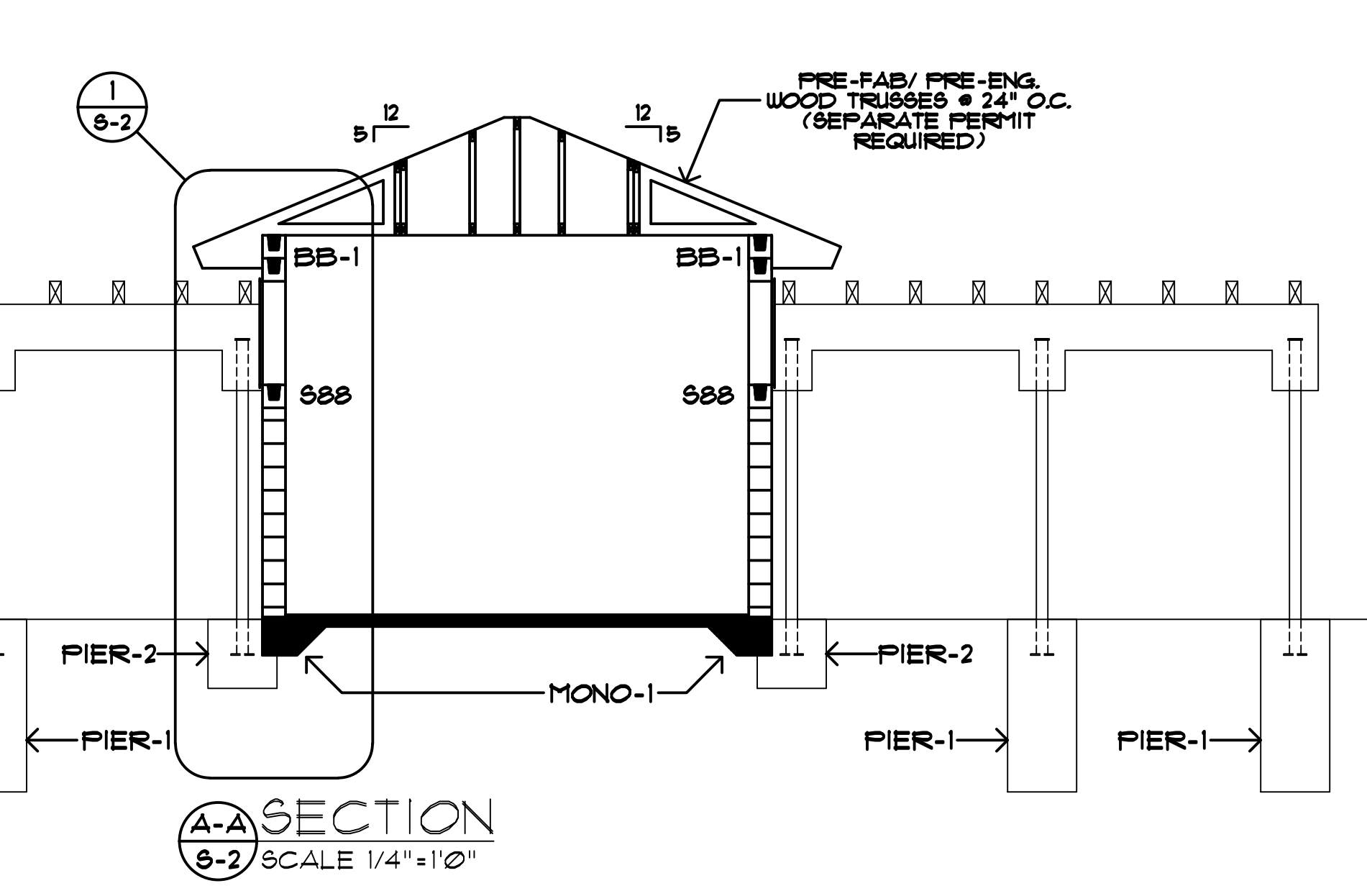
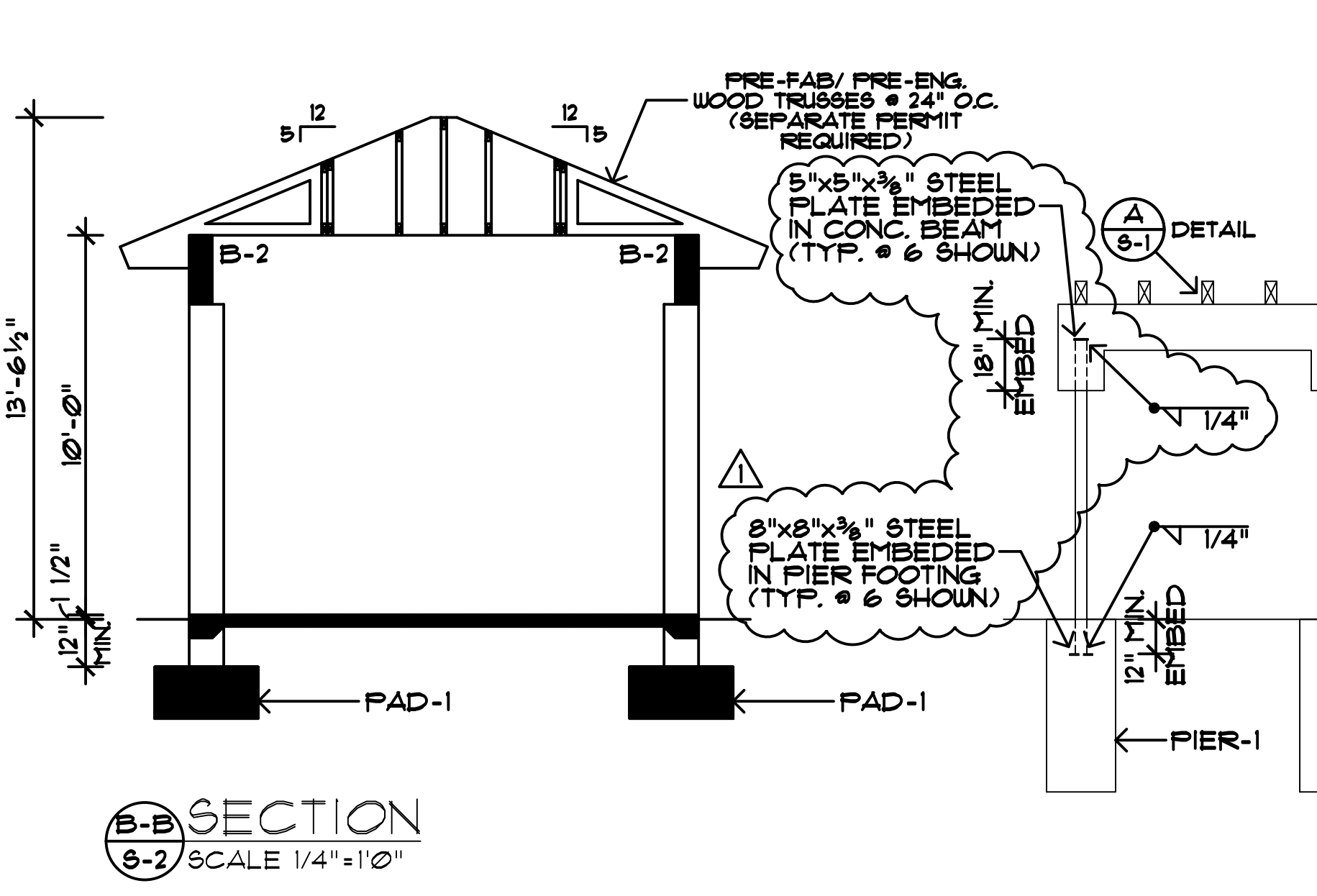
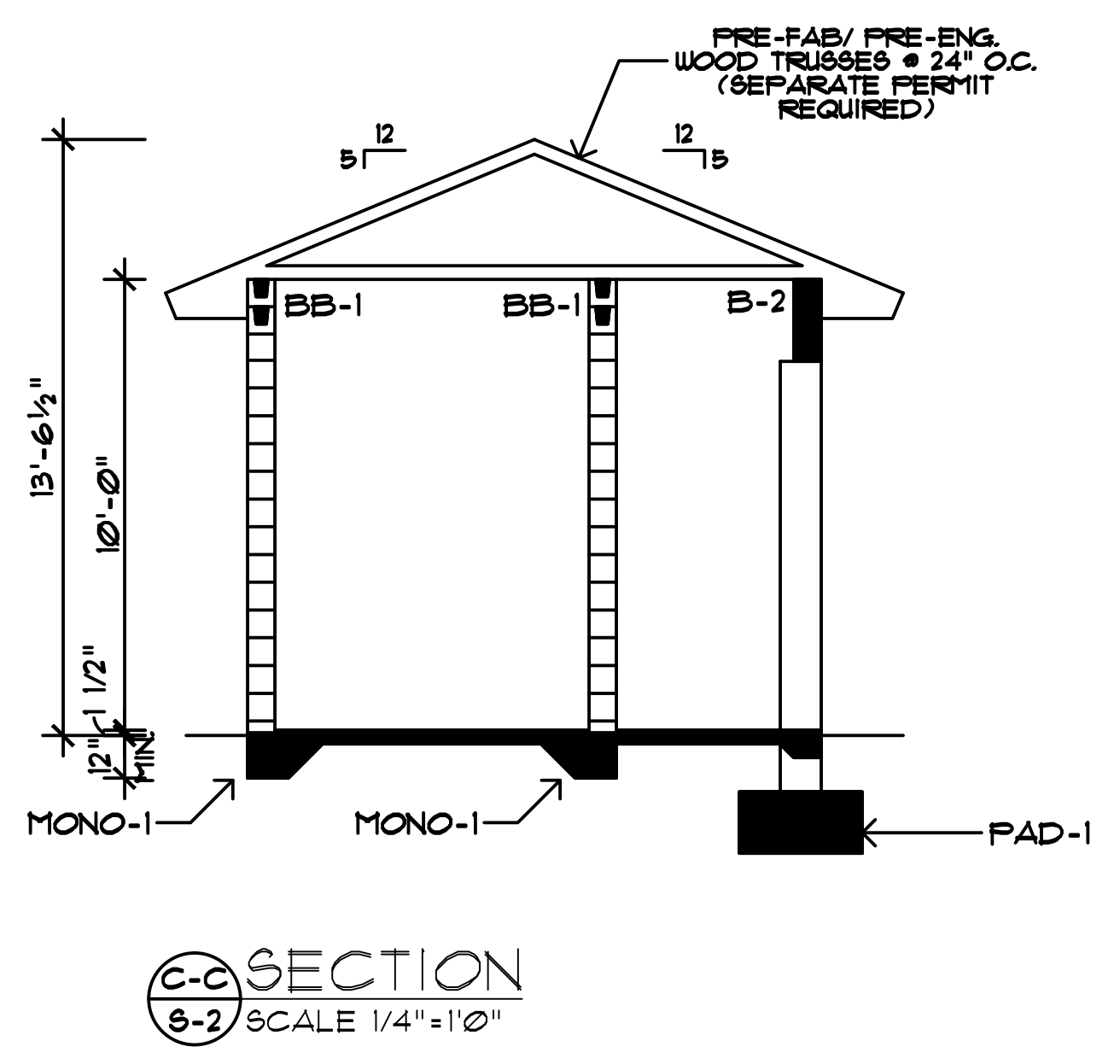
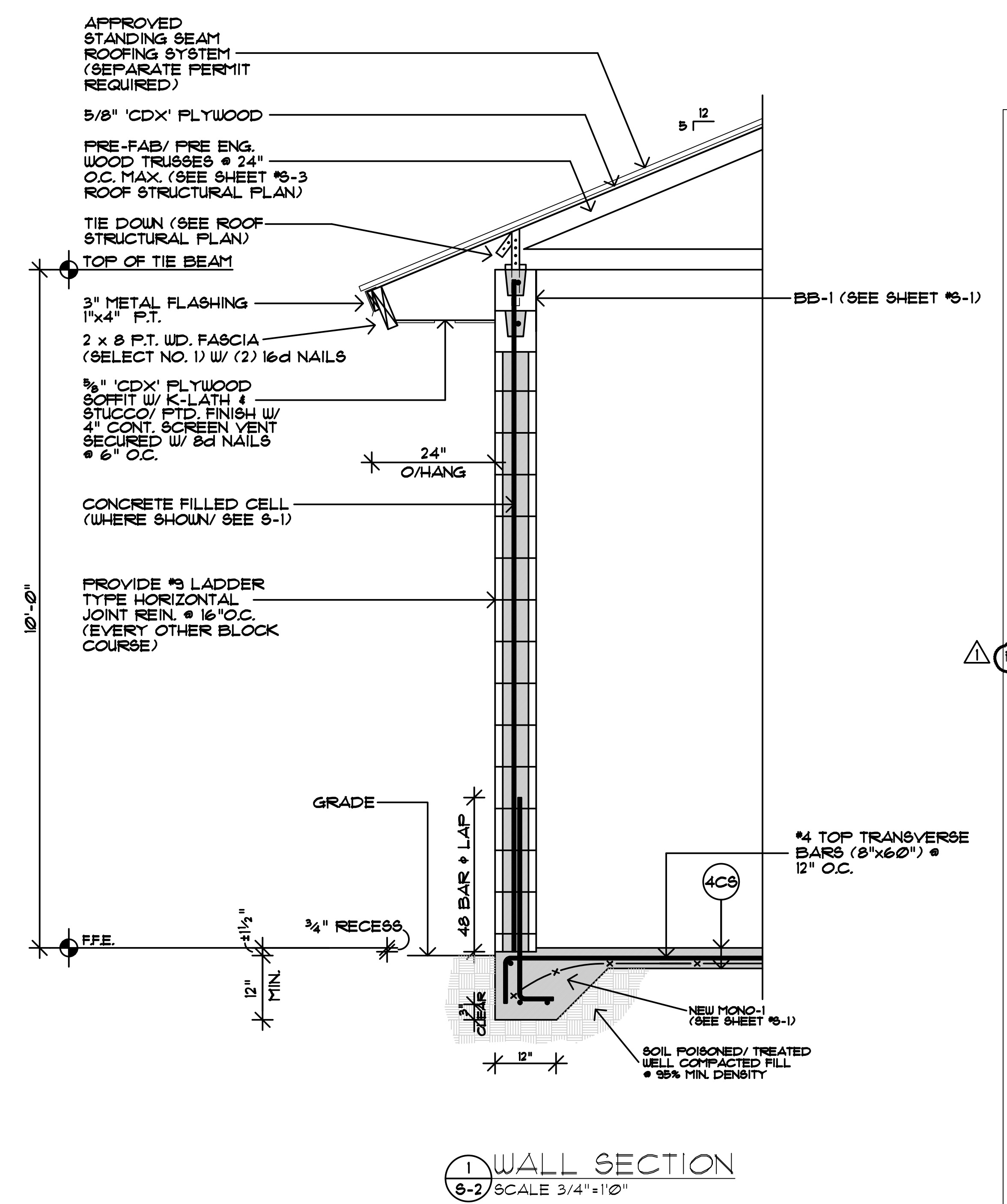
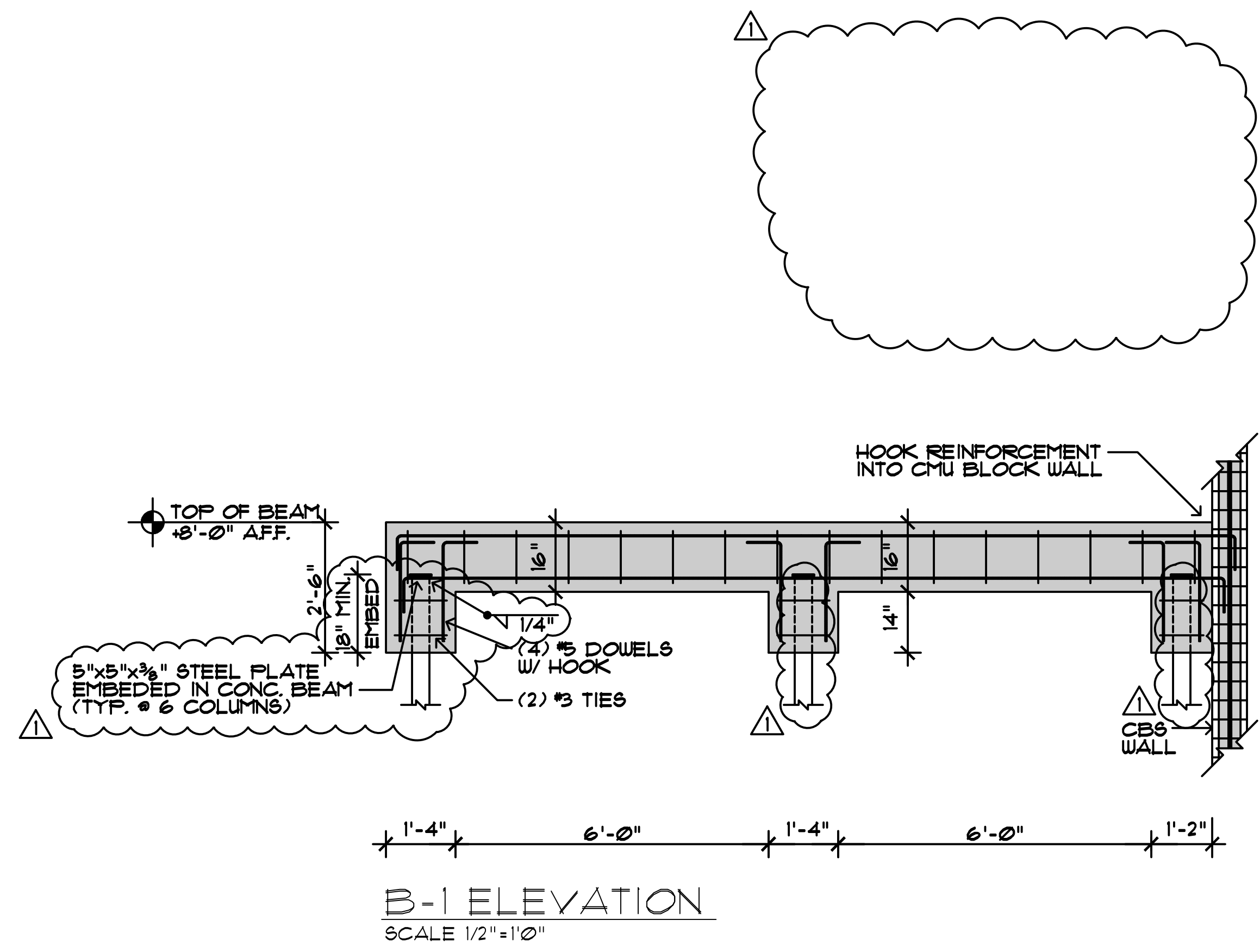
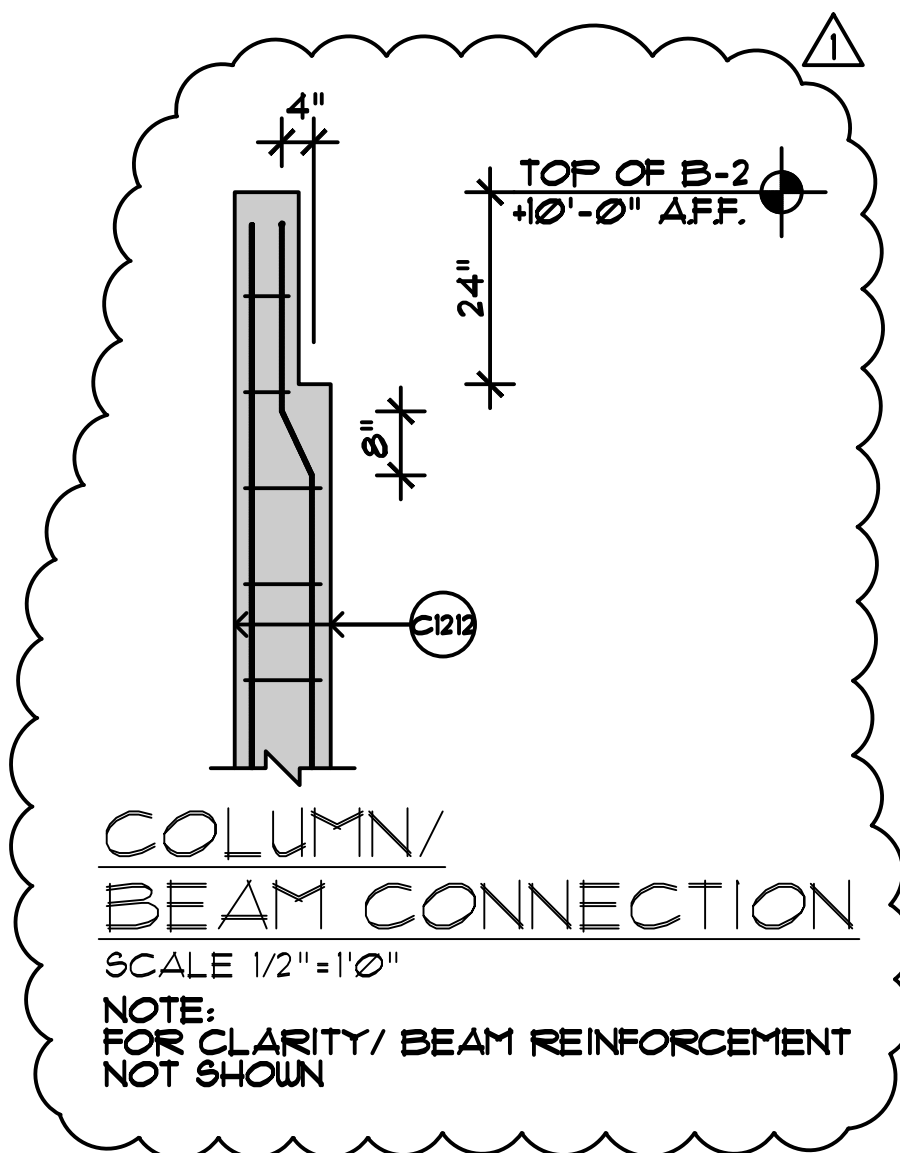
Thomas Moe, P.E.  
PE: 63863

DATE  
22 SEP 2017

REV. 12 MAR 2018

CORAL REEF PARK/ NEW RESTROOMS  
1895 SW 152 STREET  
PALMETTO BAY, FLORIDA

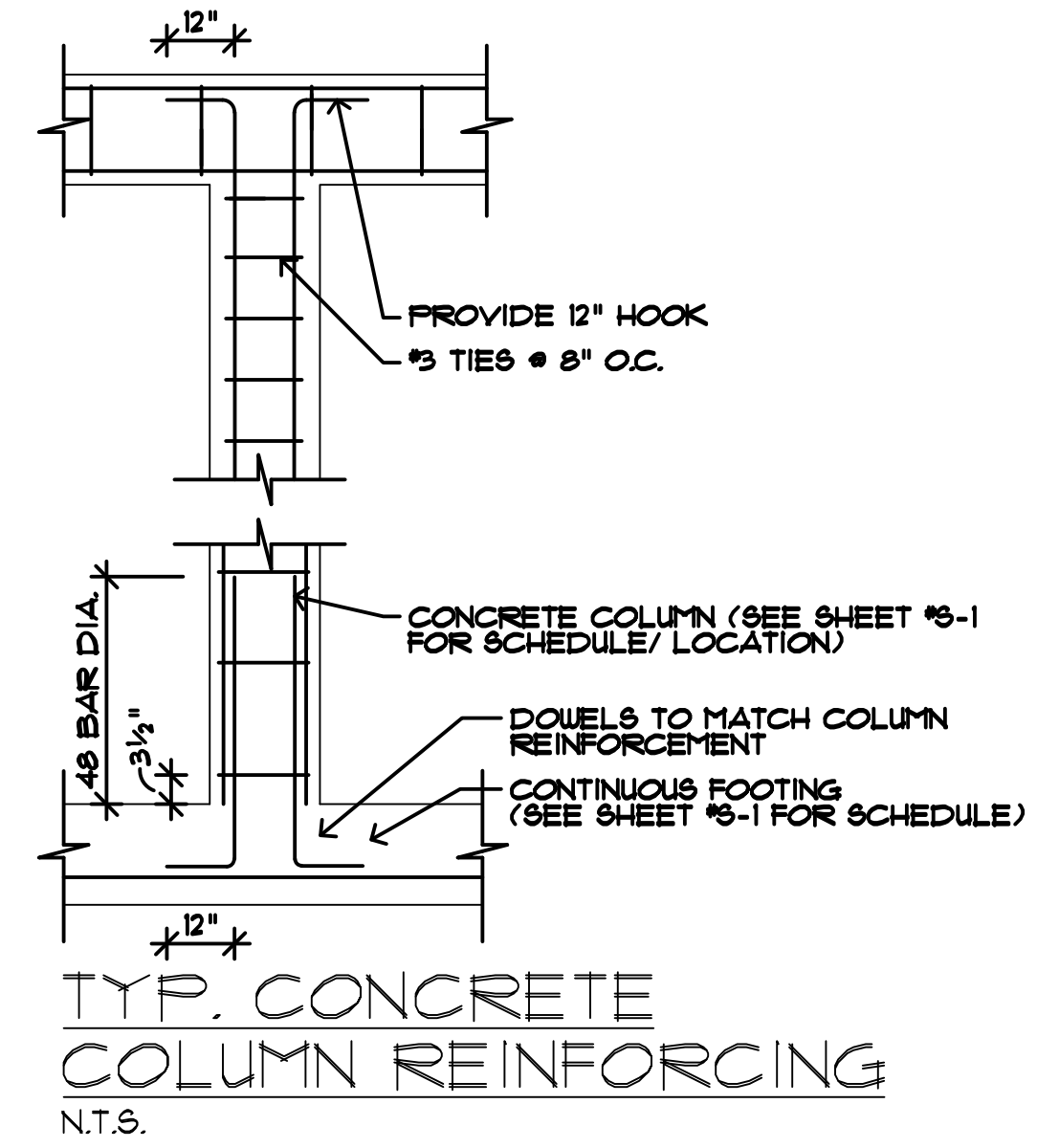
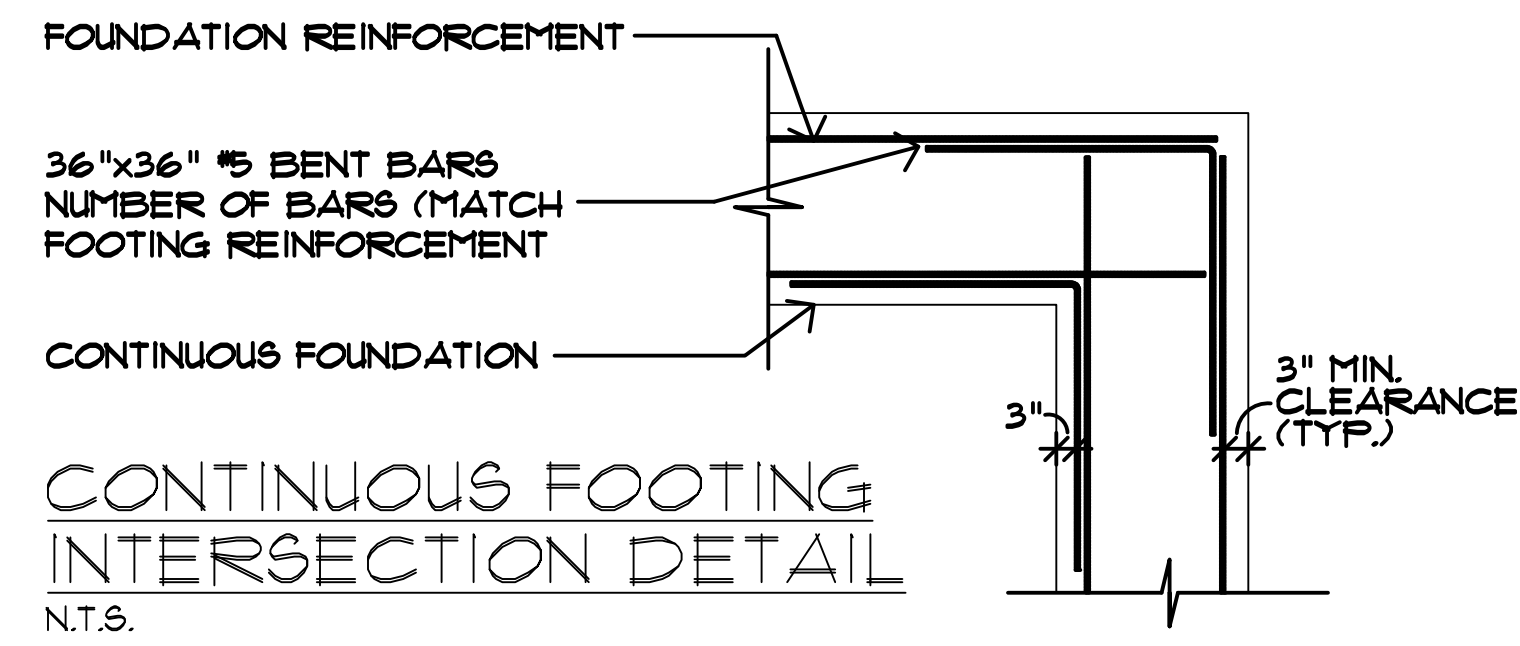
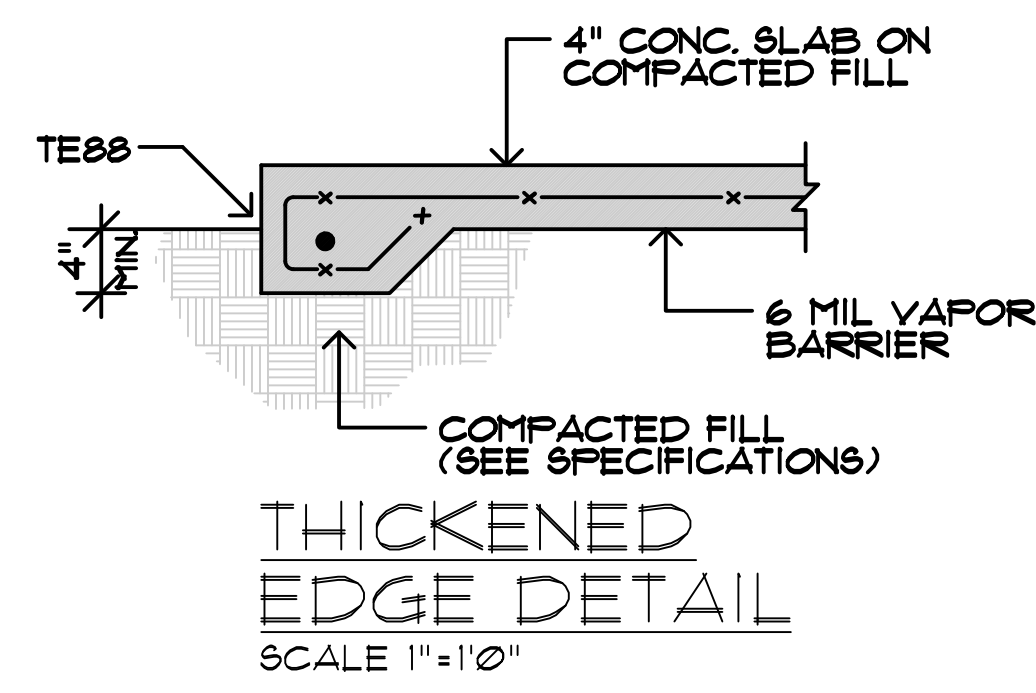
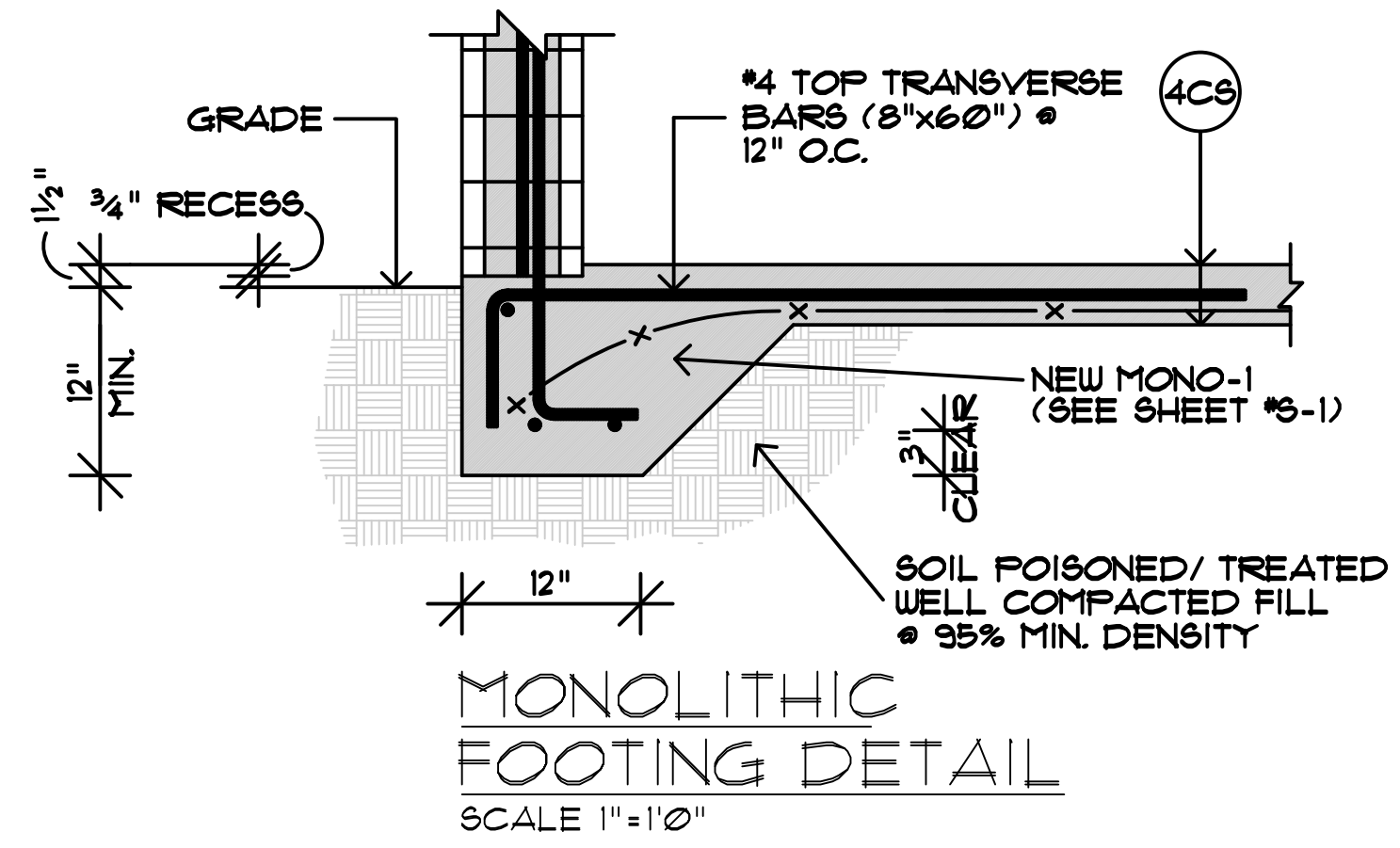
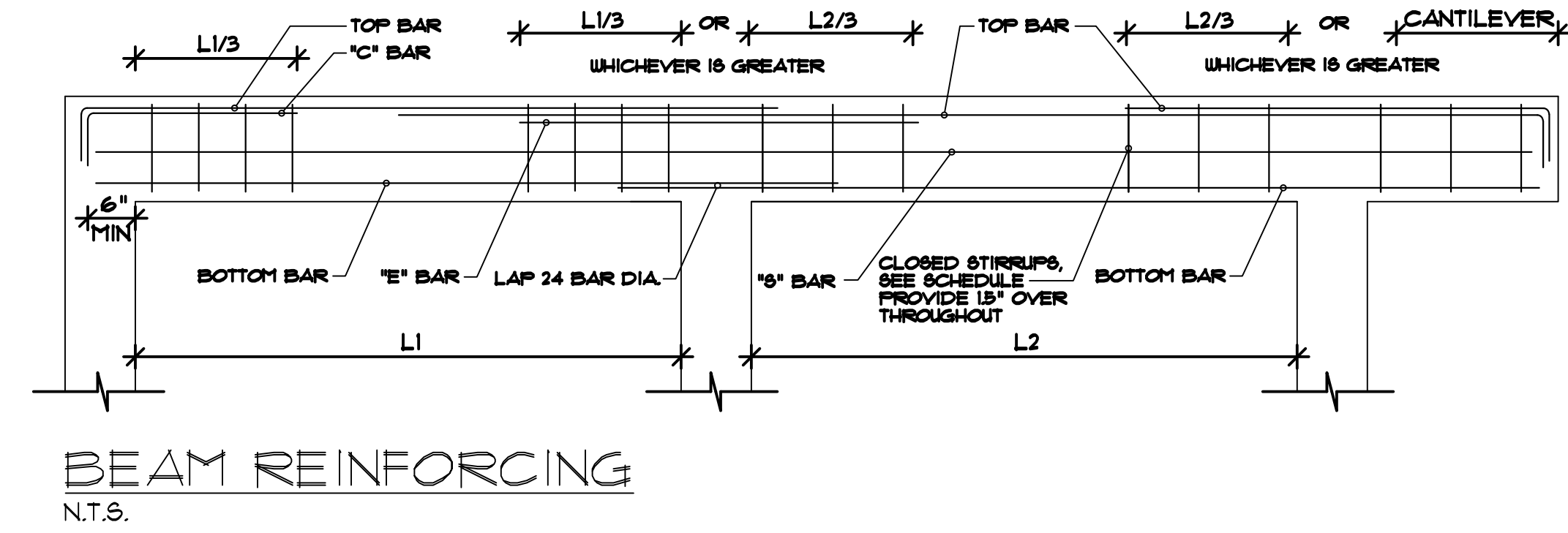
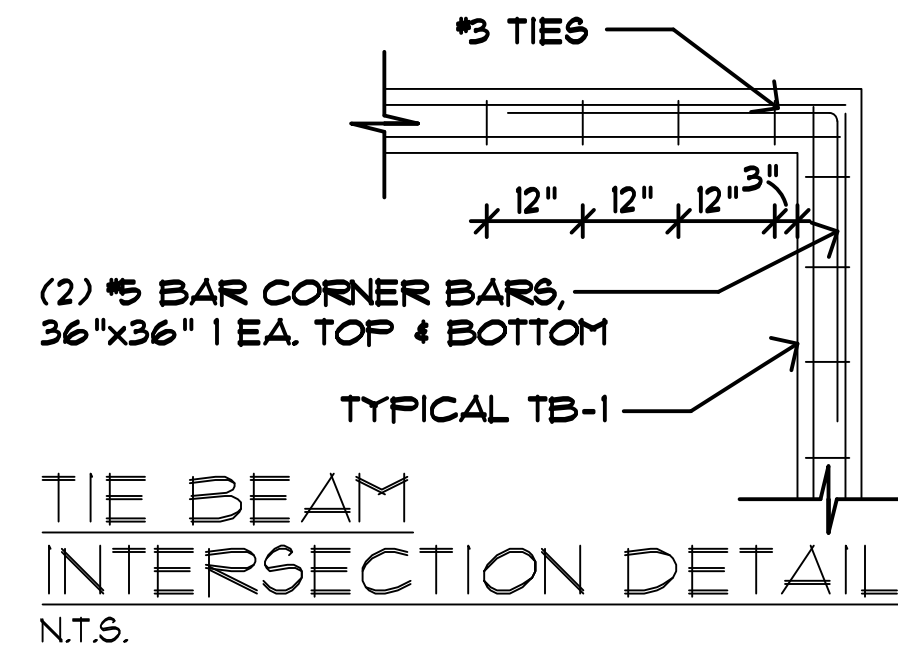
S-1





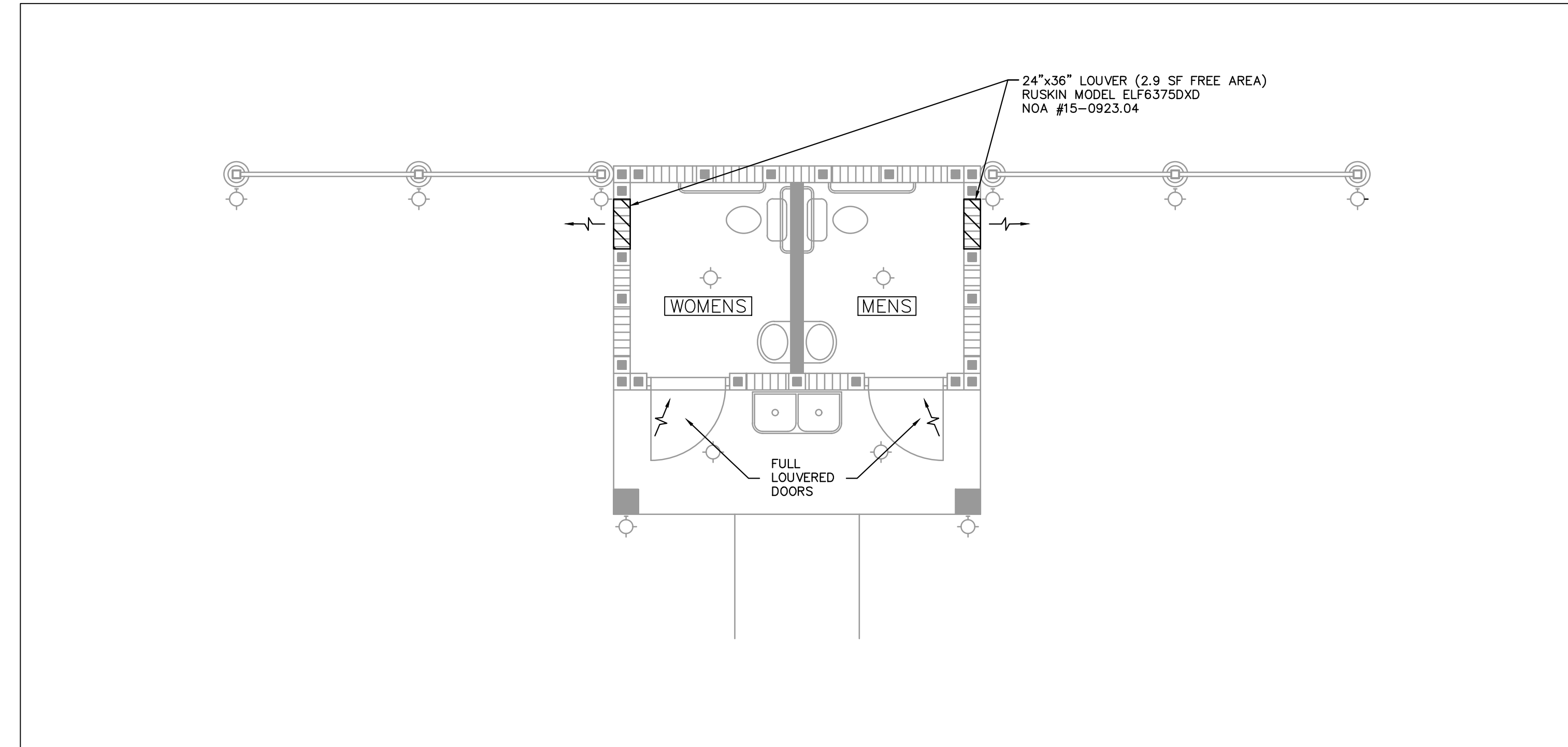
LAP LENGTHS FOR TENSION BARS:  
 CONCRETE BEAMS

#4 BAR	= 24"
#5 BAR	= 30"
#6 BAR	= 36"
#7 BAR	= 42"



### H.V.A.C. GENERAL NOTES

- 1.0 GENERAL
  - 1.1 ALL WORK TO BE PERFORMED UNDER THESE DOCUMENTS SHALL CONFORM WITH THE FLORIDA BUILDING CODE, AND ALL OTHER APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES.
  - 1.2 ALL WORK SHALL BE PERFORMED BY A LICENSED AND INSURED MECHANICAL CONTRACTOR, IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETE SYSTEM SHALL BE FULLY OPERATIVE AFTER COMPLETION OF WORK.
  - 1.3 MECHANICAL CONTRACTOR SHALL FURNISH WRITTEN GUARANTEE THAT THE INSTALLED SYSTEM SHALL BE FREE OF MATERIALS AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE BY THE OWNER.
  - 1.4 MECHANICAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING HIS OWN PERMIT AND PAYING ALL PERMIT AND INSPECTION FEES.
  - 1.5 SUBMIT SHOP DRAWINGS FOR ACCEPTANCE BY THE ARCHITECT AND/OR ENGINEER BEFORE PROCEEDING WITH PURCHASE OR INSTALLATION OF THE EQUIPMENT AND MATERIALS.
  - 1.6 THE CONTRACTOR SHALL PROVIDE A SET OF PRINTS CLEARLY MARKED TO SHOW AS-BUILT CONDITIONS AT THE COMPLETION OF CONSTRUCTION.
  - 1.7 ALL BUILDING CONSTRUCTION AFFECTED BY THE REMOVAL, RELOCATION OR INSTALLATION OF ANY PIECE OF EQUIPMENT SHALL BE REPAIRED AND FINISHED AS REQUIRED TO MATCH EXISTING CONDITIONS, OR AS DIRECTED BY THE ARCHITECTURAL DRAWINGS AND/OR SPECIFICATIONS.
  - 1.8 PLANS AND SCHEMATICS ARE DIAGRAMMATIC ONLY AND SHALL NOT BE SCALED. COORDINATE HVAC WORK WITH ALL PLUMBING, FIRE PROTECTION AND ELECTRICAL WORK AT THE SITE SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK PERFORMED UNDER THIS CONSTRUCTION DOCUMENTS.
- 2.0 FIELD VERIFICATION
  - 2.1 ALL WORK SHALL BE FIELD VERIFIED BEFORE INSTALLATION AND COORDINATED WITH ALL OTHER TRADES.
  - 2.2 WHERE INTERFERENCES OCCUR AND DEPARTURES FROM INDICATED DESIGN WILL BE REQUIRED TO DETERMINE CHANGES ON LOCATIONS, SIZES AND ELEVATIONS OF PIPING, DUCTWORK, ETC. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR THE CHANGE ACCOMPANIED BY A DETAILED DRAWING FOR APPROVAL FROM ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH ANY CHANGE OR DEPARTURES FROM CONTRACT DOCUMENTS.
  - 2.3 COORDINATE LOCATION OF LOUVERS, WITH OTHER TRADES, PARTICULARLY WHERE LOUVER PENETRATES STRUCTURAL ELEMENTS. PROVIDE ALL NECESSARY SLEEVES BEFORE CONCRETE IS POURED.
  - 2.4 BEFORE CUTTING OR MAKING OPENINGS IN ANY BUILDING COMPONENT, CONTRACTOR SHALL VERIFY USING ANY REQUIRED MEANS THAT ITS LOAD BEARING CAPABILITY IS NOT COMPROMISED IN ANY MATTER.
- 3.0 EQUIPMENT
  - 3.1 ALL MECHANICAL EQUIPMENT LOCATED ON THE EXTERIOR OF THE BUILDING SHALL BE CONSTRUCTED AND INSTALLED TO WITHSTAND HURRICANE FORCE WINDS FROM ANY DIRECTION AS PER F.B.C.
  - 3.2 MECHANICAL EQUIPMENT SHALL BE INSTALLED AND SUPPORTED PER MANUFACTURER RECOMMENDATIONS AND AS REQUIRED FOR APPLICABLE CODES AND STANDARDS, USING SOUND INDUSTRY STANDARD PRACTICES. STRUCTURAL ENGINEER DESIGN AND RECOMMENDATIONS SHALL BE AS FOLLOWS. SUBMIT SHOP DRAWINGS OF ALL SUPPORTING STRUCTURES THAT CLEARLY INDICATE SIZES, MATERIAL, DESIGN AND PRODUCT APPROVAL NUMBERS.
  - 3.3 EQUIPMENT DATA SHOWN IN THE EQUIPMENT SCHEDULES IS BASED ON MANUFACTURER'S ACTUAL CATALOG. VERIFY THIS INFORMATION WITH MANUFACTURERS PRIOR TO PURCHASING OR INSTALLING ANY EQUIPMENT. MANUFACTURER'S NAMES SHALL BE INTERPRETED AS ESTABLISHMENT OF REQUIRED TYPE CLASS AND QUALITY. ALL SUBSTITUTIONS SHALL BE APPROVED BY THE PROJECT ENGINEER. PROVIDE ALL NECESSARY INSTRUCTIONS TO THE OWNER IN THE OPERATION OF THE MECHANICAL SYSTEM.
  - 3.4 EXHAUST VENTS SHALL BE LOCATED 10' MINIMUM DISTANCE FROM ANY OUTSIDE AIR INTAKE.



MECHANICAL PLAN  
SCALE 1/4"=1'0"

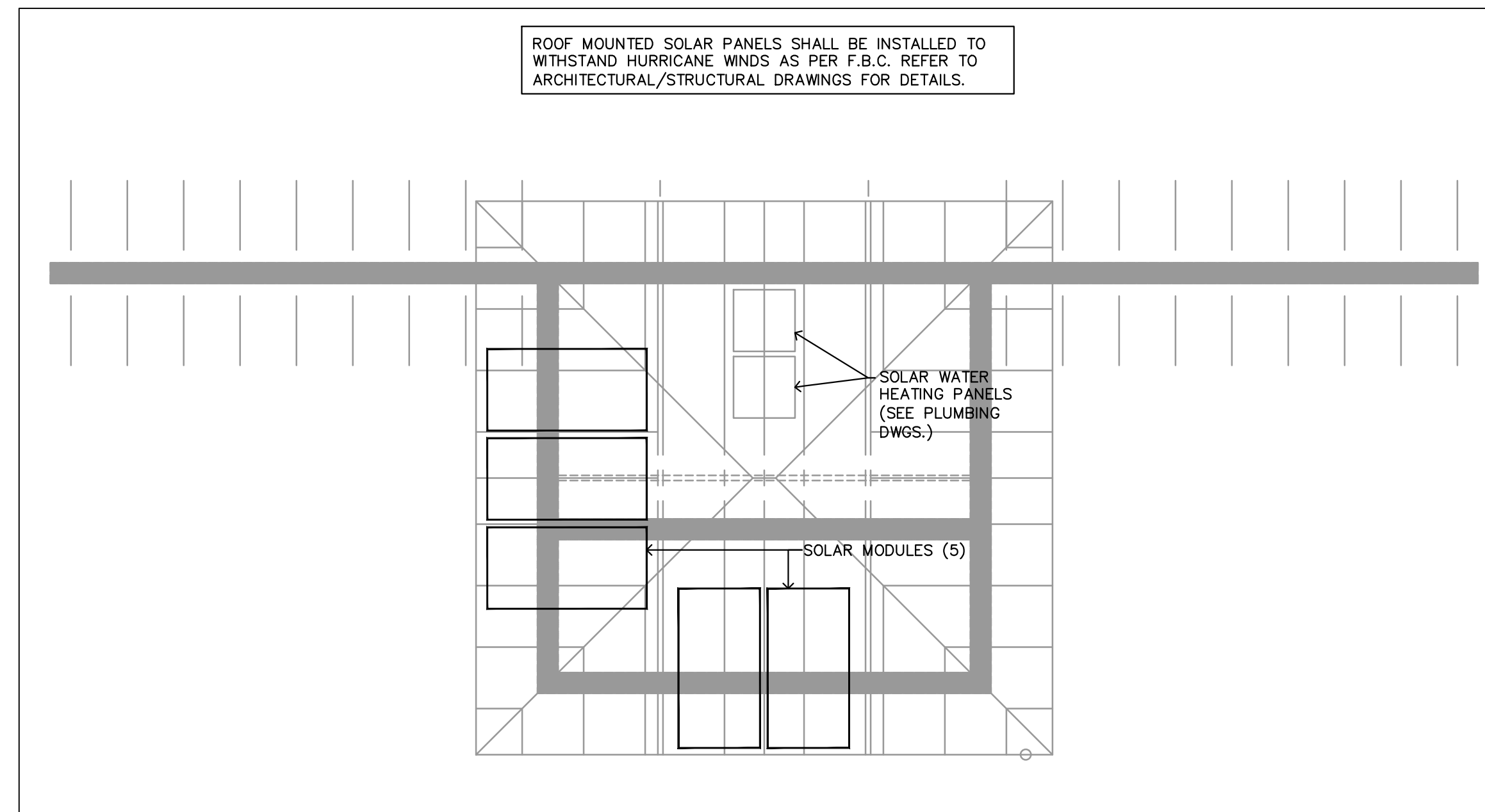
#### VENTILATION CALCULATION

BATHROOMS SHALL BE VENTILATED BY MEANS OF NATURAL VENTILATION AS PER 2014 F.B.C.—MECHANICAL SECTION 402.

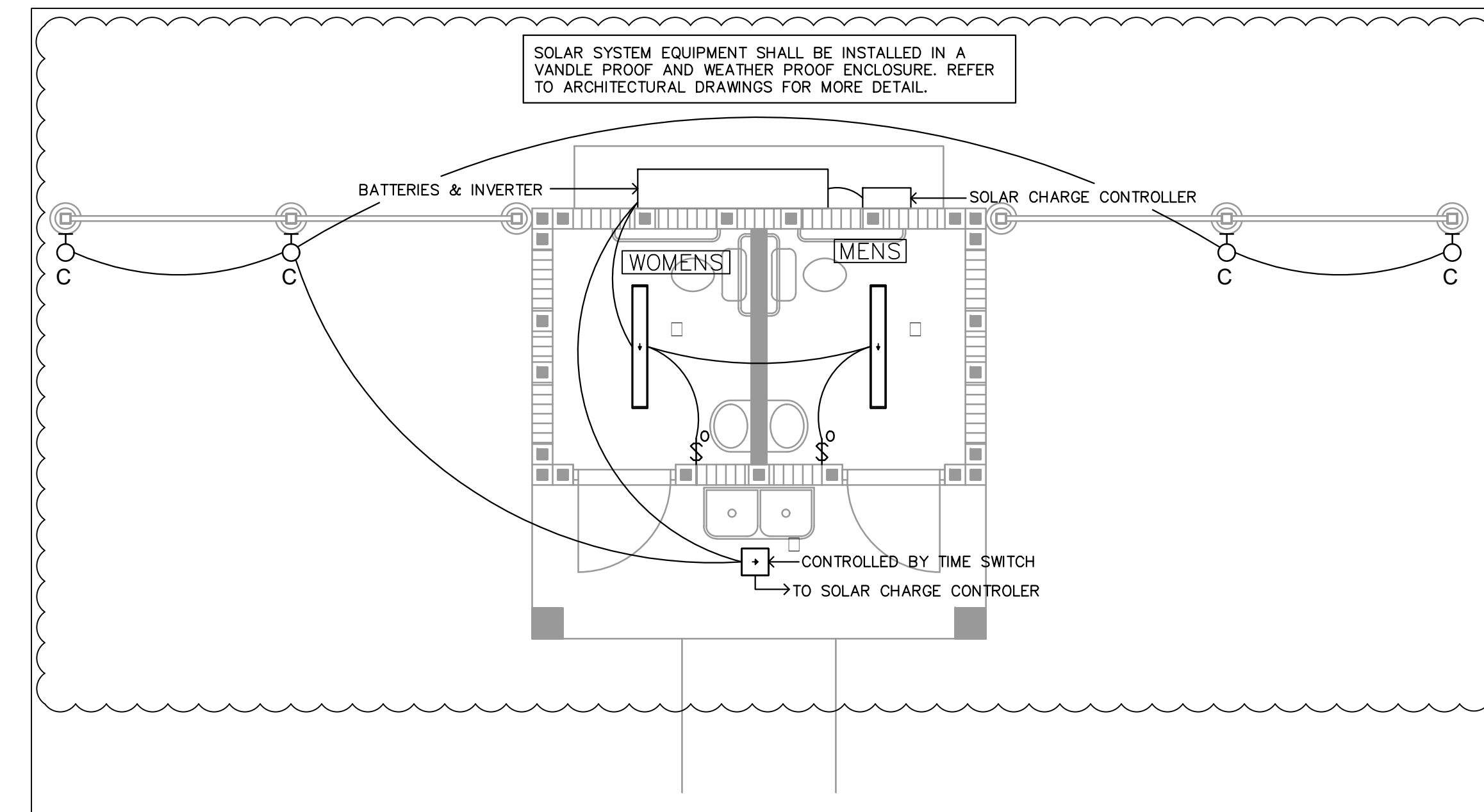
MINIMUM REQUIRED OPENABLE AREA TO THE OUTDOORS SHALL BE 4 PERCENT OF THE FLOOR AREA BEING VENTILATED AS PER SECTION 402.2

BATHROOM	FLOOR AREA (SQ. FT.)	REQUIRED OPENING (SF. FREE AREA)	OPENING PROVIDED (SF. FREE AREA)
MENS	50	2	2.9
WOMENS	50	2	2.9

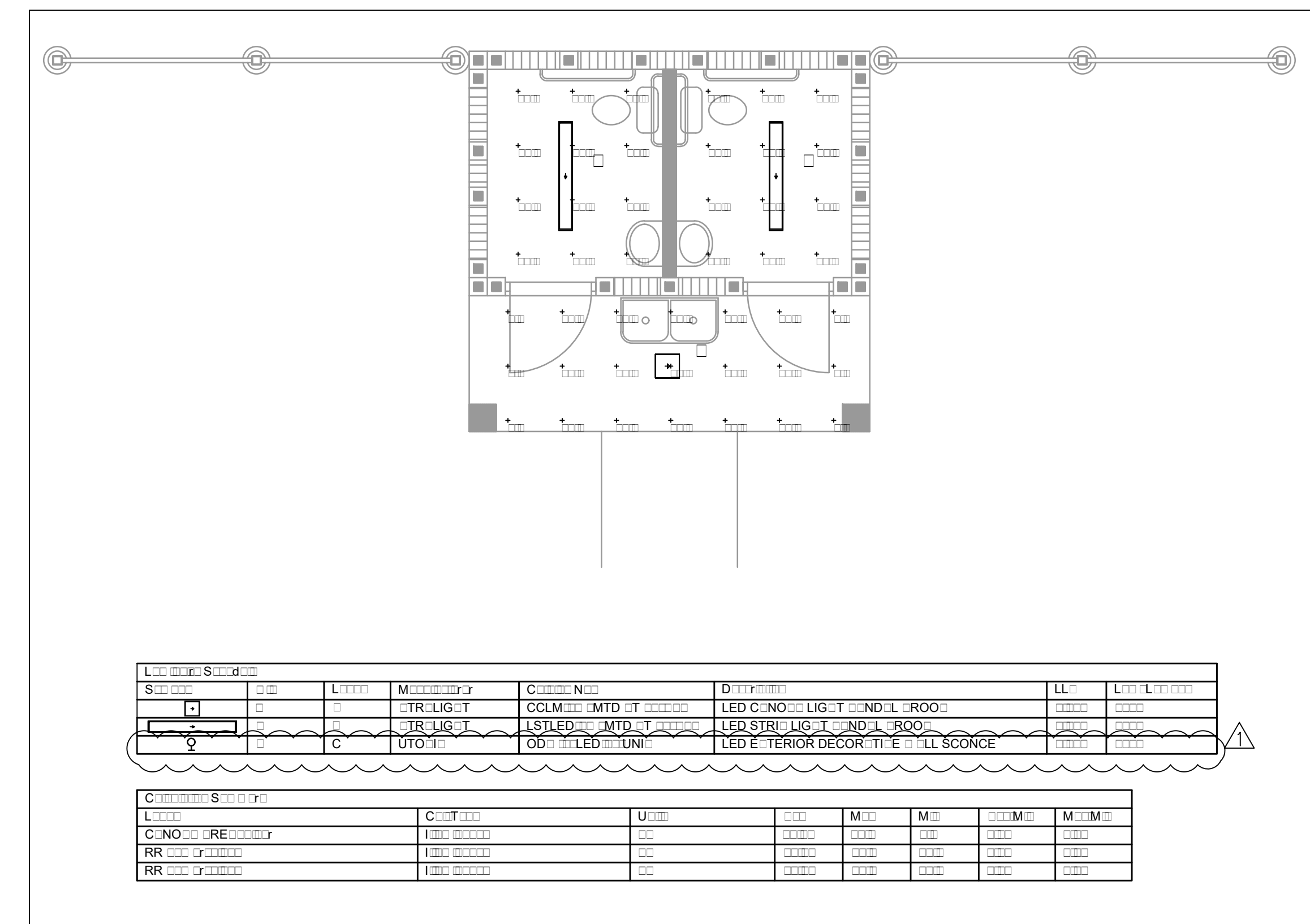
DATE  
22 SEPT. 2017



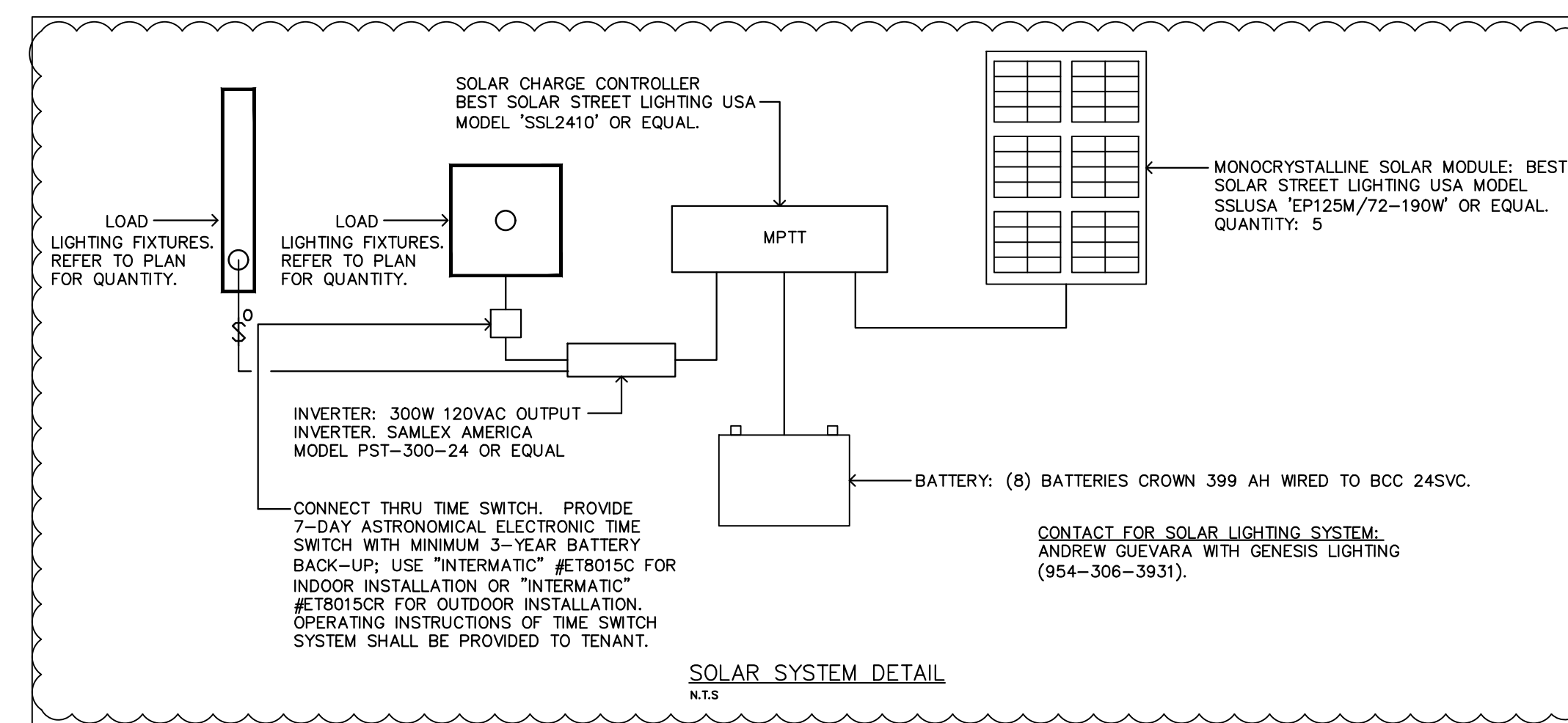
ELECTRICAL ROOF PLAN  
SCALE 1/4"=1'0"



ELECTRICAL PLAN  
SCALE 1/4"=1'0"



PHOTOMETRIC PLAN  
SCALE 1/4"=1'0"



- ### GENERAL ELECTRICAL NOTES
- ALL ELECTRICAL WORK PERFORMED UNDER THIS CONTRACT SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC) 2011, LOCAL CODES AND ORDINANCES (INCLUDING THE 2014 FLORIDA BUILDING CODE (F.B.C.) WITH LATEST SUPPLEMENTS & AMENDMENTS), AND ALL STANDARDS OF CONSTRUCTION ESTABLISHED BY THE LANDLORD.
  - PRIOR TO BID OR COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VISIT THE JOB SITE AND EVALUATE ALL EXISTING FIELD CONDITIONS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OR ENGINEER OF ANY DISCREPANCIES. THE CONTRACTOR SHALL QUALIFY THE BID ACCORDINGLY.
  - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ACCEPTANCE BY THE ARCHITECT AND/OR ENGINEER BEFORE PROCEEDING WITH THE PURCHASE OR INSTALLATION OF THE EQUIPMENT AND MATERIALS. NO FACSIMILES OR FACSIMILE COPIES SHALL BE ACCEPTED.
  - THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING OR DRILLING ANY STRUCTURAL SUPPORT MEMBER.
  - THE CONTRACTOR SHALL SATISFACTORILY REPAIR/REPLACE ANY EQUIPMENT OR PART OF STRUCTURE DAMAGED AS A RESULT OF WORK PERFORMED. SURFACES AND FINISHED AREAS SHALL BE RESTORED TO MATCH ADJACENT AREAS.
  - ALL CONDUCTORS SHALL BE THHN OR THHN COPPER.
  - METAL-CLAD (MC) CABLE SHALL NOT BE USED IN ANY PORTION OF THE INSTALLATION UNLESS PRIOR WRITTEN CONSENT IS OBTAINED FROM THE OWNER, ARCHITECT AND ENGINEER.
  - ALL EXPOSED CONDUITS SHALL BE RUN AS NEAT AS POSSIBLE. P.V.C. CONDUIT SHALL ONLY BE USED IN SLAB OR UNDERGROUND AT A MINIMUM DEPTH OF 24 INCHES.
  - ALL UNDERGROUND CONDUIT INSTALLATIONS SHALL COMPLY WITH NEC SECTION 300.5.
  - ALL UNDERGROUND CONDUITS SHALL BE CONVERTED TO E.M.T. CONDUIT ABOVE SLAB LEVEL. ALL UNDERGROUND ELBOWS SHALL BE R.G.S. CONDUIT.
  - PROVIDE PULL STRINGS IN ALL EMPTY CONDUITS.
  - ALLOW NO MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) BETWEEN ALL PULL POINTS, E.G., CONDUIT BODIES AND BOXES AS PER NEC 344.26.
  - PROVIDE EXPANSION JOINTS WHERE REQUIRED AS PER NEC 300.7(B).
  - ALL WIRING DEVICES SHALL BE LEVITON COMMERCIAL GRADE (WHITE DECORA) OR EQUAL AS APPROVED BY ARCHITECT OR ENGINEER.
  - ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH THE ARCHITECTURAL PLANS BEFORE ROUGH INSTALLATION OF LIGHTS, RECEPTACLES, SWITCHES, AND EQUIPMENT FOR EXACT LOCATION.
  - ELECTRICAL CONTRACTOR SHALL VERIFY EXACT DIMENSIONS AND LOCATIONS OF ALL EQUIPMENT WITH OWNER PRIOR TO ROUGH INSTALLATION.
  - ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF ALL ELECTRICAL WIRING DEVICES (INCLUDING LUMINAIRES, RECEPTACLES, SWITCHES, CONDUITS, WIRING, ETC.) WITH OTHER TRADES TO AVOID CONFLICTS.
  - ELECTRICAL CONTRACTOR SHALL VERIFY THE CEILING FINISHES AND SUSPENSION SYSTEMS FOR SELECTION OF THE PROPER TRIM AND SUPPORT ARRANGEMENTS OF ALL ELECTRICAL DEVICES.
  - PROVIDE ACCESS PANELS AS REQUIRED TO SERVICE ALL ELECTRICAL EQUIPMENT ABOVE HARD CEILINGS. COORDINATE WITH ARCHITECT BEFORE ROUGH INSTALLATION.
  - WHERE APPLICABLE, ALL LUMINAIRES SHALL BE PROPERLY SECURED TO CEILING GRID SYSTEM.
  - FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINAIRES THAT ARE SUPPLIED FROM MULTIWIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS IN ACCORDANCE WITH NEC 410.130(G), WHERE APPLICABLE.
  - ALL LUMINAIRES SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH THE CEILING SYSTEM MANUFACTURER RECOMMENDATIONS AND LOCAL CODE REQUIREMENTS.
  - ALL LIGHTING CIRCUITS WHICH CONTROL AND/OR OPERATE LIGHTING FIXTURES WITH AN ELECTRONIC BALLAST SHALL BE PROVIDED WITH A SEPARATE NEUTRAL WIRE PER EACH PHASE.
  - ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LIGHT FIXTURE QUANTITIES AND MEASUREMENTS (LENGTHS) ON PLANS PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
  - EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS WHAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES AS PER NEC 210.4(B).
  - ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE APPROVED AS SAFE FOR USE IN THE U.S. WORKPLACE FOR THE INTENDED APPLICATION, AS DETERMINED BY AN ORGANIZATION CURRENTLY RECOGNIZED BY OSHA (OCCUPATIONAL SAFETY AND HEALTH) AS A NRTL (NATIONALLY RECOGNIZED TEST LABORATORY). (E.G. - UL, CSA, ETC.)
  - AS PER F.B.C. ENERGY CONSERVATION, CHAPTER 4, SECTION 405.7.3.1, FEEDER AND CUSTOMER-OWNED SERVICE CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD REGARDLESS OF SIZES SHOWN ON PLANS OR PANEL SCHEDULES.
  - ALL BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH N.E.C. 210.19 AND FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD AS PER F.B.C. ENERGY CONSERVATION, CHAPTER 4, SECTION 405.7.3.2 REGARDLESS OF SIZES SHOWN ON PLANS OR PANEL SCHEDULES.
  - AS PER F.B.C. ENERGY CONSERVATION, CHAPTER 4, SECTION 405.7.4.1, WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED BY THE GENERAL CONTRACTOR TO THE BUILDING OWNER, INCLUDING:
    1. A SINGLE-LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND
    2. FLOOR PLANS INDICATING LOCATION AND AREA SERVED FOR ALL DISTRIBUTION.
  - AS PER F.B.C. ENERGY CONSERVATION, CHAPTER 4, SECTION 405.7.4.2, THE GENERAL CONTRACTOR SHALL PROVIDE AN OPERATING MANUAL AND MAINTENANCE MANUAL TO THE BUILDING OWNER. THE MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:
    1. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
    2. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
    3. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
  - IF ANY CONFLICT IS ENCOUNTERED WITHIN THE DESIGN DOCUMENTS, REGARDLESS OF TRADE OR RESPONSIBILITY, THE GREATER SCOPE OF WORK SHALL PREVAIL.
  - CONTRACTOR SHALL WARRANT ALL WORK TO BE FREE OF DEFECT IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE PROJECT.

### GENERAL PLUMBING NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, AND ALL APPLICABLE LOCAL ORDINANCES.
2. ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETE SYSTEM SHALL BE FULLY OPERATIVE AFTER COMPLETION OF WORK.
3. PLUMBING CONTRACTOR SHALL FURNISH WRITTEN GUARANTEE THAT ALL PLUMBING WORK SHALL BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
4. CONTRACTOR SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. FIELD VERIFY LOCATION OF EXISTING POINTS OF CONNECTIONS BEFORE SUBMITTING BID AND OBTAIN ANY REQUIRED CLARIFICATION BEFORE COMMENCING WORK.
5. NOT USED.
6. COORDINATE NEW PLUMBING WORK WITH LIGHTING, ELECTRICAL, DUCTWORK, STRUCTURAL FRAMING AND CEILING SYSTEMS.
7. CONTRACTOR SHALL COORDINATE LOCATION AND SIZE OF ALL PENETRATIONS THROUGH WALLS, CEILINGS, FLOORS AND ROOFS WITH OTHER TRADES AND REPORT ANY DISCREPANCIES TO ARCHITECT /ENGINEER. NO STRUCTURAL MEMBER SHALL BE CUT OR MODIFIED WITHOUT WRITTEN AUTHORIZATION.
8. DRAWING ARE DIAGRAMMATIC. DO NOT SCALE DRAWINGS FOR EXACT LOCATION OF FIXTURES AND PIPING.
9. CONTRACTORS SHALL BE RESPONSIBLE FOR ALL PERMITS, TAXES, INSPECTIONS AND TEST FEES.
10. ALL MATERIALS TO BE PROVIDED UNDER THIS DOCUMENTS MEET ALL THE REQUIREMENTS OF THE F.P.C. AND ALL OTHER LOCAL STANDARDS AND REGULATIONS. MATERIALS SHALL BE NEW, FREE OF DEFECTS AND OF AMERICAN MANUFACTURER, INDELIBLY MARKED WITH MANUFACTURER NAME, WEIGHT AND/OR CLASS. MANUFACTURER NAMES SHALL BE INTERPRETED AS ESTABLISHMENT OF REQUIRED TYPE, CLASS AND QUALITY. MATERIAL SHALL BE PROVIDED AS FOLLOWS:
  - A. ALL WASTE AND VENT PIPING SHALL BE SCHEDULE 40, DWV, PVC PIPING AS PER TABLE 702.2, F.P.C
  - B. DOMESTIC WATER PIPING AND FITTINGS SHALL CONFORM WITH TABLES 605.4 THRU 605.8 OF THE F.P.C. AND SHALL BE ONE OF THE FOLLOWING TYPES:
    - B.1 COPPER TYPE 'M' ABOVE GROUND AND BELOW GROUND INSIDE A PROTECTIVE SLEEVE, WATER SERVICE PIPING SHALL BE PRESSURE RATED, SCHEDULE 40 PVC PIPING, AS PER ASTM D 1785.
    - B.2 INSULATE ALL HOT WATER PIPING WITH 1" RIGID FIBERGLASS OR 1/2" FLEXIBLE FOAM INSULATION (ARMAFLEX). FLEXIBLE FOAM INSULATION SHALL NOT BE SPLIT, AND SHALL BE TAPED AT BUTT JOINTS.
  - E. WALL CLEANOUTS.
    - E.1 JOSAM SERIES 58750 WITH ACCESS COVER OR EQUAL.
    - E.2 PROVIDE CHROME PLATED BRASS ESCUTCHEONS WITH LOCKING SCREWS WHERE PIPE PASS THROUGH FINISHED WALLS.
    - E.3 A CLEANOUT SHALL BE PROVIDED AT THE BASE OF EACH SOIL AND WASTE STACK.
  - F. VALVES.
    - F.1 125 PSI NIBCO SCOTT, STOCKHAM OR EQUAL.
    - F.2 PROVIDES STOPS AT ALL PLUMBING FIXTURES. EXPOSED STOPS SHALL BE CHROME PLATED.
  - G. PLUMBING FIXTURES.
    - G.1 SEE PLUMBING FIXTURE SCHEDULE FOR FIXTURE SPECIFICATIONS.
    - G.2 PLUMBING FIXTURES SHALL COMPLY WITH WATER CONSERVATION REGULATION FS.553.14.
11. PERFORM THE FOLLOWING TEST:
  - A. NEW DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT 100 PSIG FOR A PERIOD OF NO LESS THAN ONE HOUR.
  - B. WASTE AND VENT PIPING SHALL BE FILLED WITH WATER TO A 10 FOOT HEAD AND ALLOWED TO STAND UNTIL THE WATER LEVEL REMAINS CONSTANT.
  - C. CORRECT ALL DEFECTS DISCLOSED BY ABOVE TESTING.
  - D. STERILIZE ALL NEW DOMESTIC WATER PIPING WITH A MIXTURE OF TWO POUNDS OF CHLORINATED LIME TO EACH 1000 GALLONS OF WATER (50PPM OF AVAILABLE CHLORINE). RETAIN MIXTURE IN PIPE FOR A PERIOD OF 24 HOURS AND FLUSH THOROUGHLY WITH POTABLE WATER BEFORE PLACING SYSTEM IN SERVICE.
12. WASTE PIPING 2 1/2", AND SMALLER SHALL BE SLOPED AT 1/4" PER FOOT MINIMUM. PIPES LARGER THAN 2 1/2" SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM FALL.
13. NOT USED.
14. PIPING PENETRATION AT ROOFS, CEILINGS, FLOORS AND WALLS SHALL BE SEALED AIR AND WATER TIGHT. WHERE PENETRATING FIRE RATED CONSTRUCTION, FIRE SAFE TO PROVIDE PROTECTION MATCHING REQUIRED FIRE RESISTANCE RATING.
15. ALL HORIZONTAL VENT PIPING SHALL SLOPE TO DRAW TO STACKS. NO POCKETS OR LOW POINTS SHALL BE CREATED IN THE VENT LINES WHICH MAY PREVENT VENTING IF FILLED WITH CONDENSATION.
16. CEILING ACCESS PANELS SHALL BE PROVIDED FOR VALVES INSTALLED ABOVE OTHERWISE NON-ACCESSIBLE CEILINGS.
17. NO EQUIPMENT OR MATERIALS SHALL BE PURCHASED OR INSTALLED PRIOR TO FINAL APPROVAL OF SHOP DRAWINGS.
18. THE CONTRACTOR SHALL PROVIDE A SET OF PRINTS CLEARLY MARKED TO SHOW AS-BUILT CONDITIONS AT THE COMPLETION OF CONSTRUCTION.
19. FURNISH AND INSTALL DIELECTRIC COUPLINGS AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS.

### PLUMBING ABBREVIATIONS

A/C	AIR CONDITIONING	HB	HOSE BIBB
A.F.F.	ABOVE FINISH FLOOR	HP	HORSE POWER
A.A.V.	AIR ADMITTANCE VALVE	HYD.	HYDRANT
B.F.P.	BACK FLOW PREVENTER	HW	HOT WATER
BH	BOOSTER HEATER	HWR	HOT WATER RETURN
BV	BALANCING VALVE	MIN.	MINIMUM
BFP	BACK FLOW PREVENTER	PRES.	PRESSURE
CLG.	CEILING	PRV.	PRESSURE REDUCING VALVE
CO	CLEANOUT	PSI.	POUND SQUARE INCH
COND.	CONDENSATE	PTR	PRESSURE AND TEMPERATURE RELIEF VALVE.
CONTN.	CONTINUATION	REG.	REGULAR
CW	COLD WATER	SAN.	SANITARY
CONN.	CONNECTION	SF	SQUARE FEET
DN.	DOWN	SD	STORM DRAIN
DWG.	DRAWING	TDH.	TOTAL DYNAMIC HEAD
DR.	DRAIN	TYP.	TYPICAL
ELEC.	ELECTRIC	TMV	TEMPERATURE MIXING VALVE (LOW FLOW).
EQUIP.	EQUIPMENT	UNDRG.	UNDERGROUND
EXP.	EXPANSION	VTR	VENT THRU ROOF
EDP	EMERGENCY DRAIN PAN		
EX.	EXISTING		
FT.	FEET		
FD	FLOOR DRAIN		
FFE.	FLOOR ELEVATION		
FU	FIXTURE UNITS		
FL.	FLOOR		
GAL.	GALLONS		
GALV.	GALVANIZED		
GRND.	GROUND		
GPM	GALLONS PER MINUTES		
GW	GREASE WASTE		

### PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SANITARY WASTE PIPE		GATE VALVE
	GREASE WASTE PIPE		CHECK VALVE
	INDIRECT WASTE		BALANCING VALVE
	VENT PIPE		CLEANOUT
	COLD WATER PIPE		HOSE BIBB
	HOT WATER PIPE		BALL VALVE
	RECIRCULATING PIPE		UNION
	CONDENSATE PIPE		AIR CHAMBER
	DENOTES EXISTING PIPING OR FIXTURE		PIPE DOWN
	VENT THRU ROOF		DIAMETER
	FLOOR DRAIN WITH TRAP PRIMING		MECHANICAL SHOCK ABSORBER AS SCHEDULED
	FLOOR SINK		DENOTES NEW CONNECTING TO EXISTING
	FLOOR CLEANOUT		DENOTES DRAWING REFERENCE CALL OUT
	WALL CLEANOUT		

### PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	FIXTURE	WASTE (IN.)	VENT (IN.)	COLD WATER (IN.)	HOT WATER (IN.)	REMARKS
WC	WATER CLOSET	4	2	1-1/2	--	ADA COMPLIANT
LAV	LAVATORY	2	2	1/2	1/2	ADA COMPLIANT
DF	DRINKING FOUNTAIN	2	2	1/2	--	HI/LO ADA COMPLIANT

- NOTES:
1. PLUMBING FIXTURES SHALL COMPLY WITH REQUIREMENTS OF F.P.C. CHAPTER 4, SECTION 405.3.1 AND TABLES 604.4, 604.5 AND 709.1.
  2. WALL HUNG FIXTURES SHALL BE SUPPORTED AS PER SECTION 2318.15 OR 2510.5.1.1, 2510.5.1.3, FLORIDA BUILDING CODE.
  3. COORDINATE FINAL FIXTURE LAYOUT AND SPECIFICATIONS WITH ARCHITECTURAL DRAWINGS BEFORE COMMENCEMENT OF JOB.
  4. PROVIDE ALL REQUIRED ADDITIONAL COMPONENTS, DEVICES AND ACCESSORIES FOR A COMPLETE FIXTURE INSTALLATION.
  5. PLUMBING FIXTURES TO BE SELECTED AND SUPPLIED BY OWNER.
  6. ALL FIXTURES SHALL COMPLY WITH MIAMI-DADE COUNTY CODE SEC. 8-31.



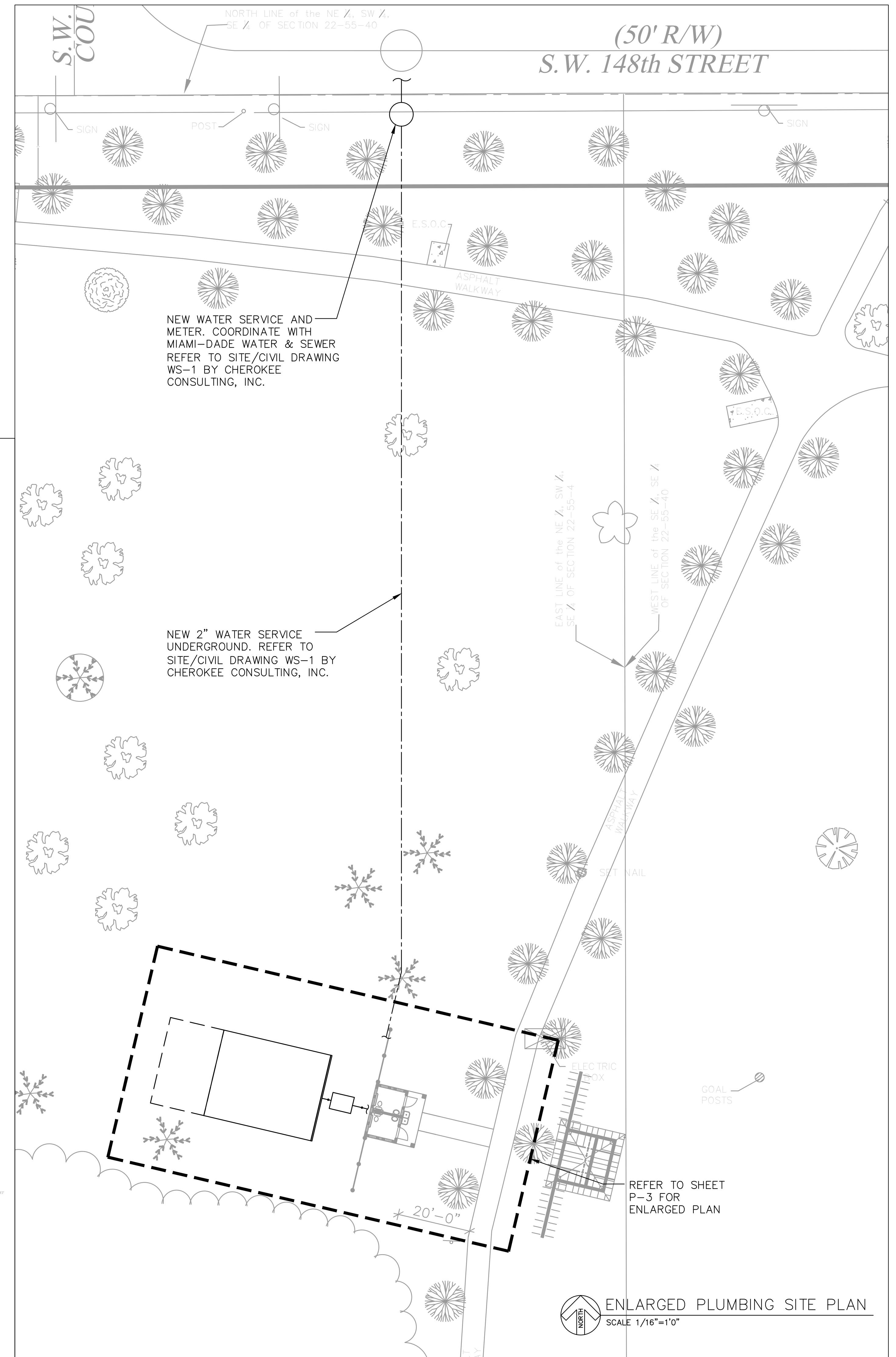
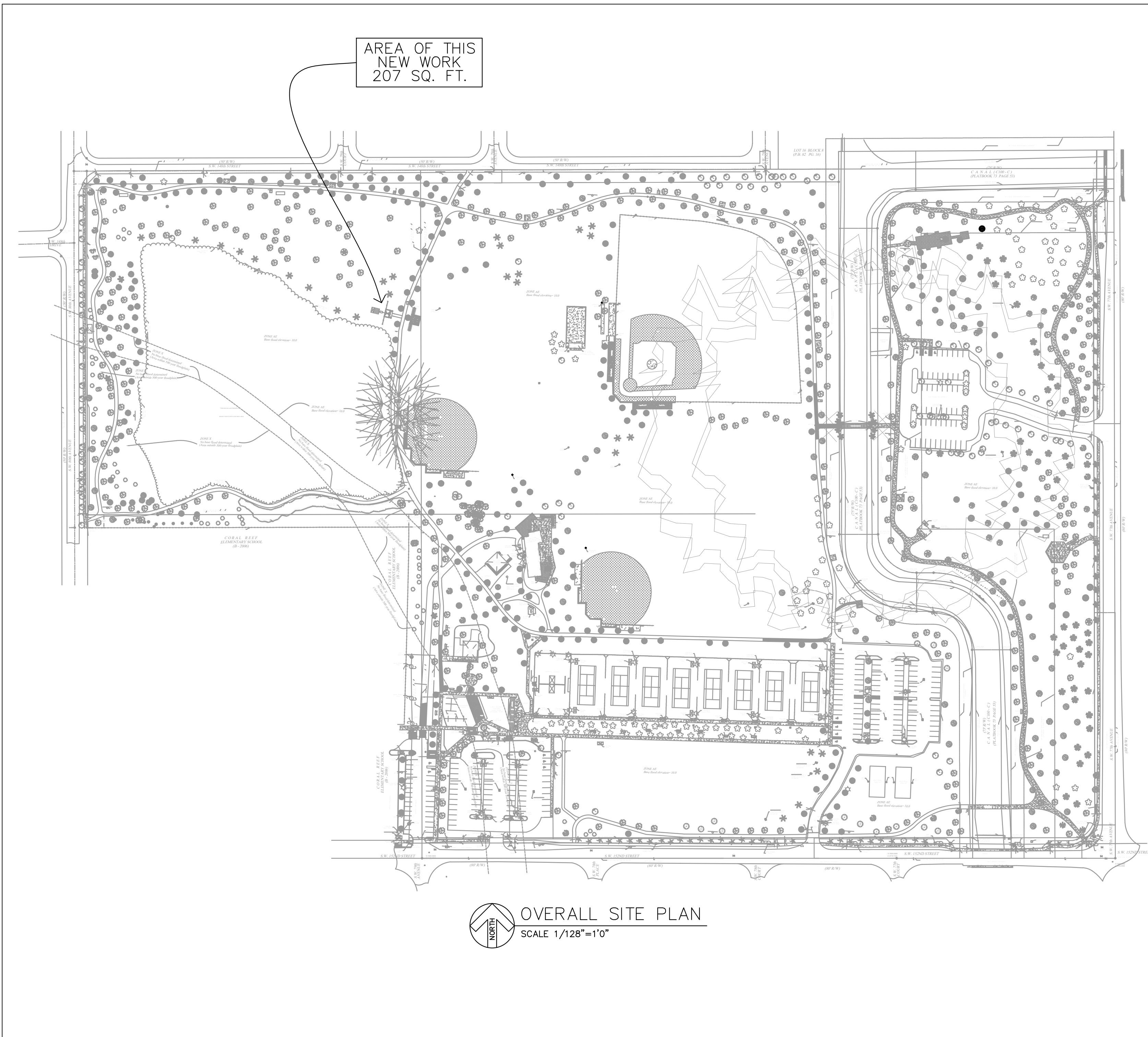
GM CONSULTING ENGINEERS  
 GM CONSULTING ENGINEERS  
 5001 SW 74th COURT  
 SUITE #204  
 MIAMI, FLORIDA 33155  
 PHONE: (305) 663-2944  
 FAX: (305) 663-2970  
 E-MAIL: office@gm-ce.net  
 CA No. 29859

DATE

22 SEPT. 2017

CORAL REEF PARK/ RESTROOMS

PALMETTO BAY, FLORIDA



GM CONSULTING ENGINEERS  
GM CONSULTING ENGINEERS  
5001 SW 74th COURT  
SUITE #204  
MIAMI, FLORIDA 33155  
PHONE: (305) 663-2944  
FAX: (305) 663-2970  
E-MAIL: office@gm-ce.net  
CA No. 29859

DATE  
22 SEPT. 2017

CORAL REEF PARK/ RESTROOMS

PALMETTO BAY, FLORIDA

P-2



**GM CONSULTING ENGINEERS**  
 5001 SW 74th COURT  
 SUITE #204  
 MIAMI, FLORIDA 33155  
 PHONE: (305) 663-2944  
 FAX: (305) 663-2970  
 E-MAIL: office@gm-ce.net  
 CA No. 29859

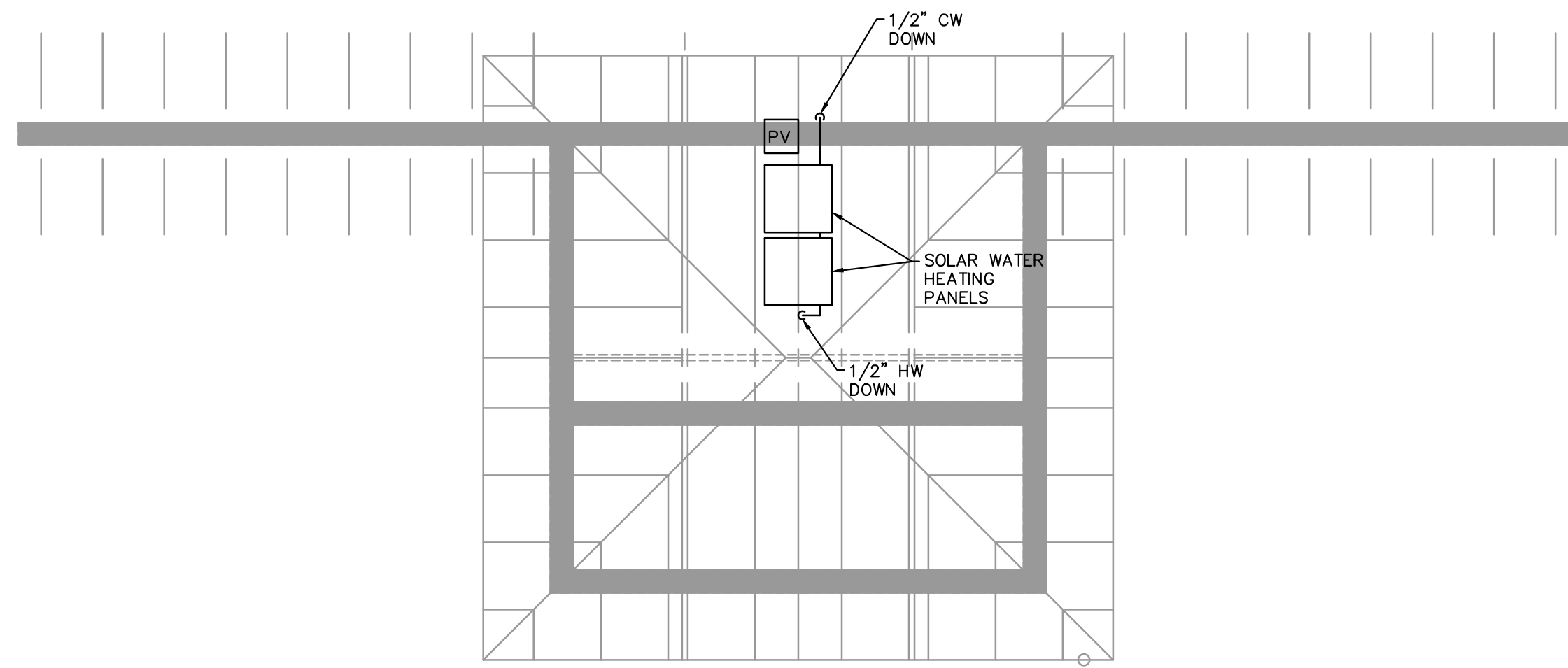
DATE  
 22 SEPT. 2017

CORAL REEF PARK / RESTROOMS

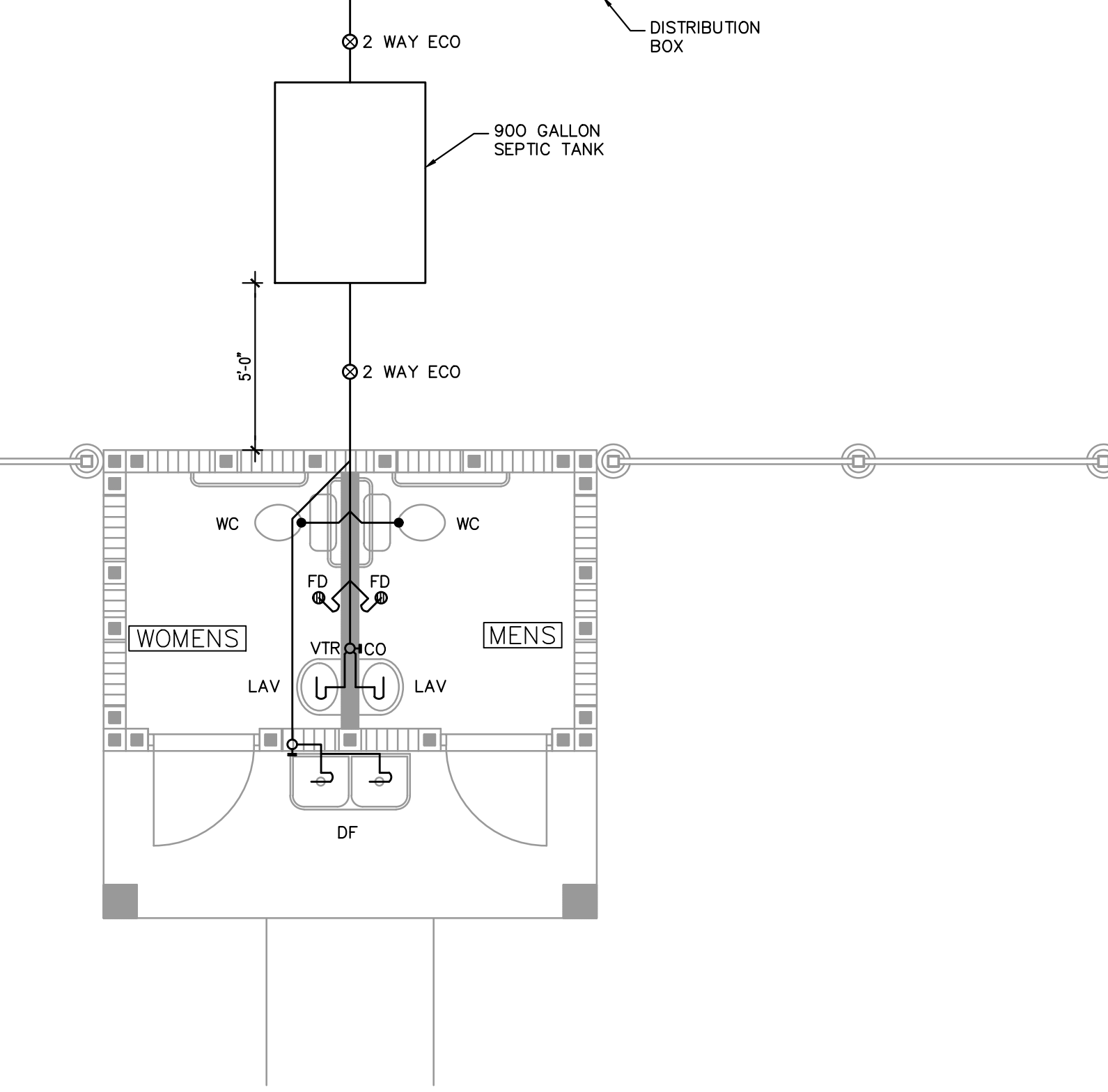
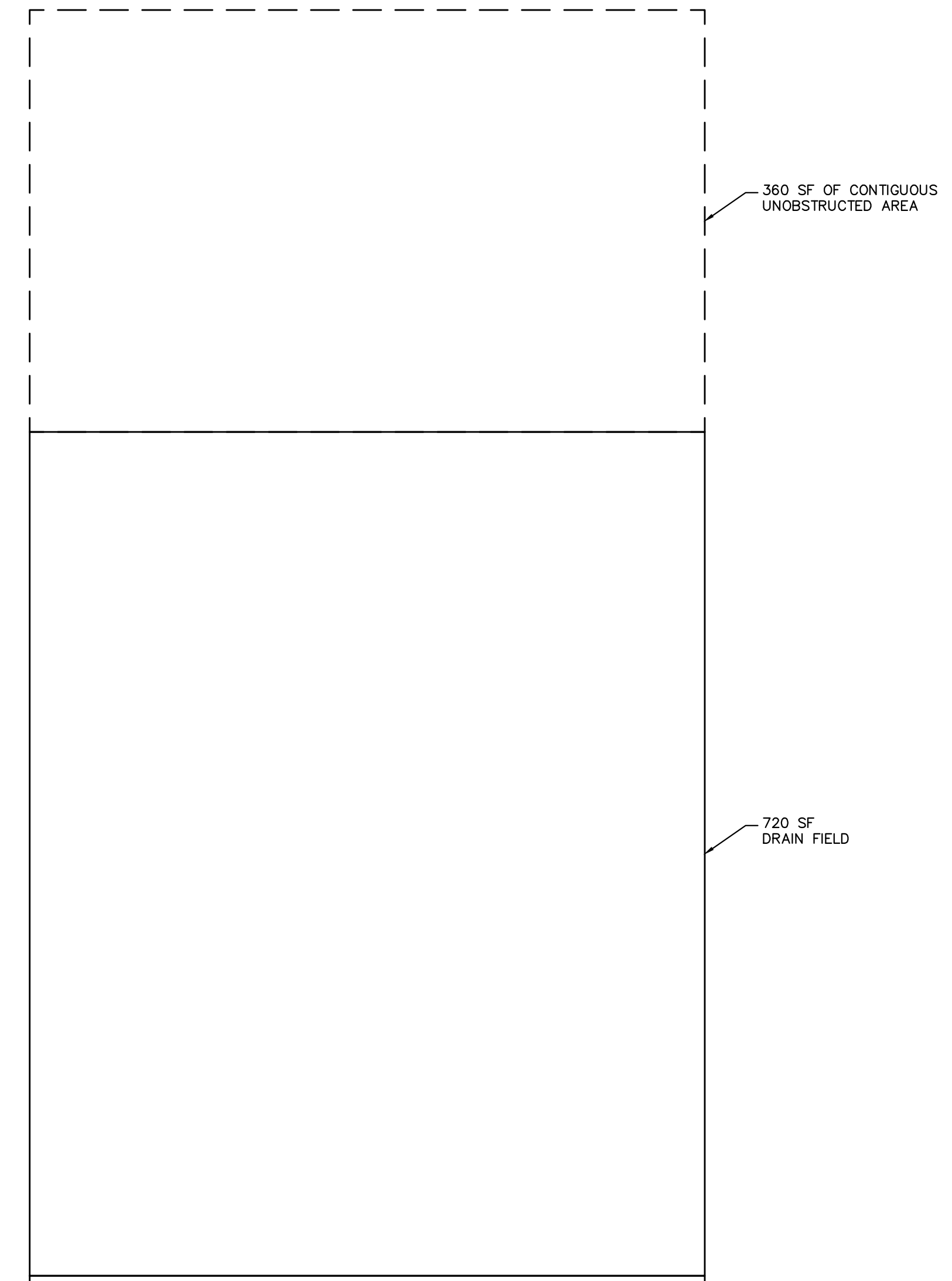
PALMETTO BAY, FLORIDA

P-3

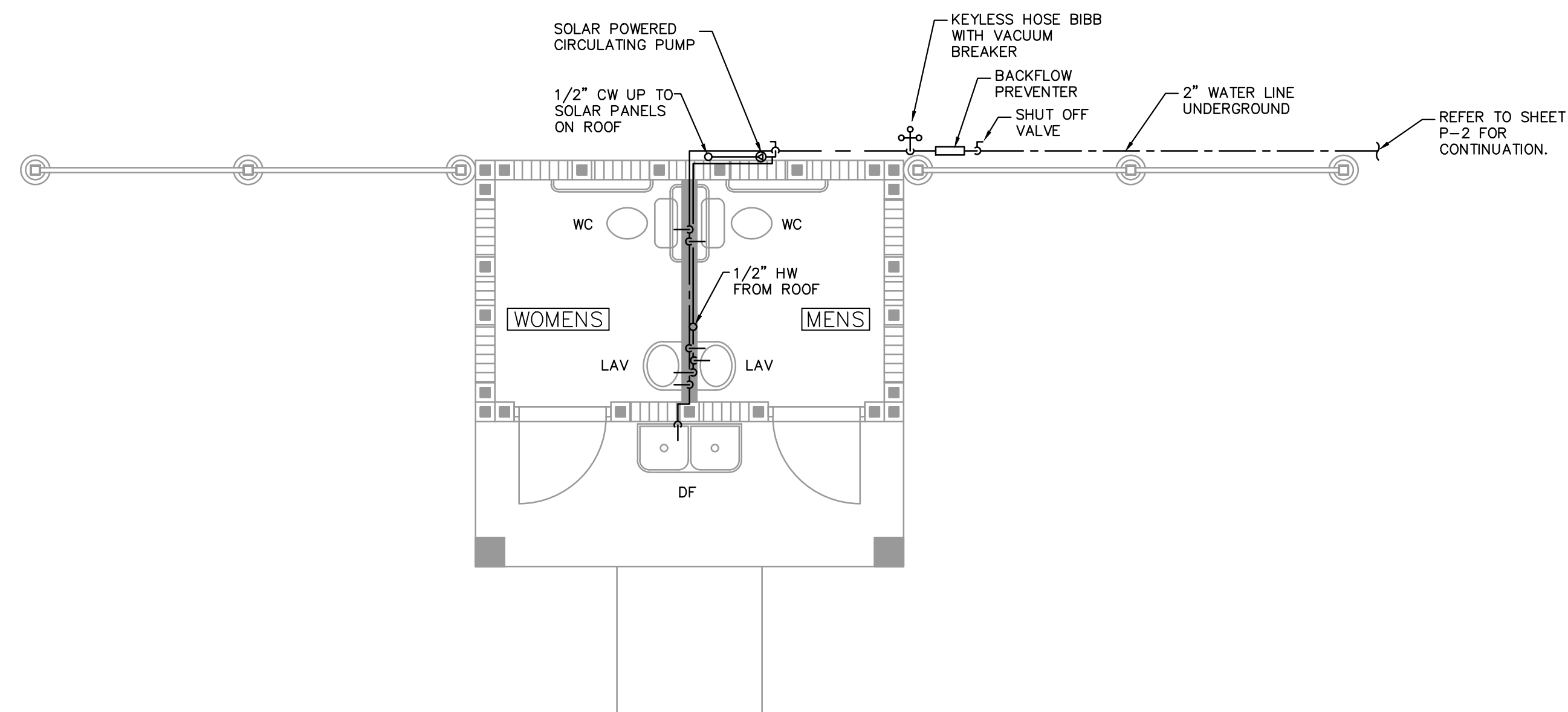
ROOF MOUNTED SOLAR PANELS SHALL BE INSTALLED TO WITHSTAND HURRICANE WINDS AS PER F.B.C. REFER TO ARCHITECTURAL/STRUCTURAL DRAWINGS FOR DETAILS.



**PLUMBING ROOF PLAN - WATER**  
 SCALE 1/4"=1'0"



**PLUMBING PLAN - SANITARY**  
 SCALE 1/4"=1'0"



**PLUMBING PLAN - WATER**  
 SCALE 1/4"=1'0"

**SEPTIC TANK CALCULATION AND NOTES**

SUBSURFACE SEWAGE DISPOSAL SYSTEM SHALL COMPLY WITH CHAPTER 64R-6, F.A.C.—STANDARDS FOR ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.

- THE SEWAGE DISPOSAL SYSTEM IS CONFIGURED TO PROVIDE THE FOLLOWING MINIMUM CLEARANCES TO EXISTING/PROPOSED STRUCTURES:
  - DISTANCE TO PRIVATE POTABLE WELL (AS MEASURED FROM NEAREST CORNER OF DRAINFIELD)..... EXCEEDS 75'
  - DISTANCE TO LIMITED USE NON-COMMUNITY OR OTHER PUBLIC POTABLE WATER WELL..... EXCEEDS 100'
  - DISTANCE TO PUBLIC POTABLE WELL SYSTEM..... EXCEEDS 200'
  - DISTANCE TO NON-POTABLE WELL..... EXCEEDS 50'
  - DISTANCE TO STORM SEWER PIPE..... EXCEEDS 10'
  - DISTANCE TO STRUCTURE FOUNDATIONS..... EXCEEDS 5'
  - DISTANCE TO MEAN HIGH WATER LINE OF TIDAL WATERS, STREAMS, CANALS AND DRAINAGE STRUCTURES..... EXCEEDS 75'
  - DISTANCE TO DESIGN HIGH WATER LINE OF INDIVIDUAL STORM WATER DRY RETENTION AREAS..... EXCEEDS 15'
  - DISTANCE TO PROPERTY LINE..... EXCEEDS 5'

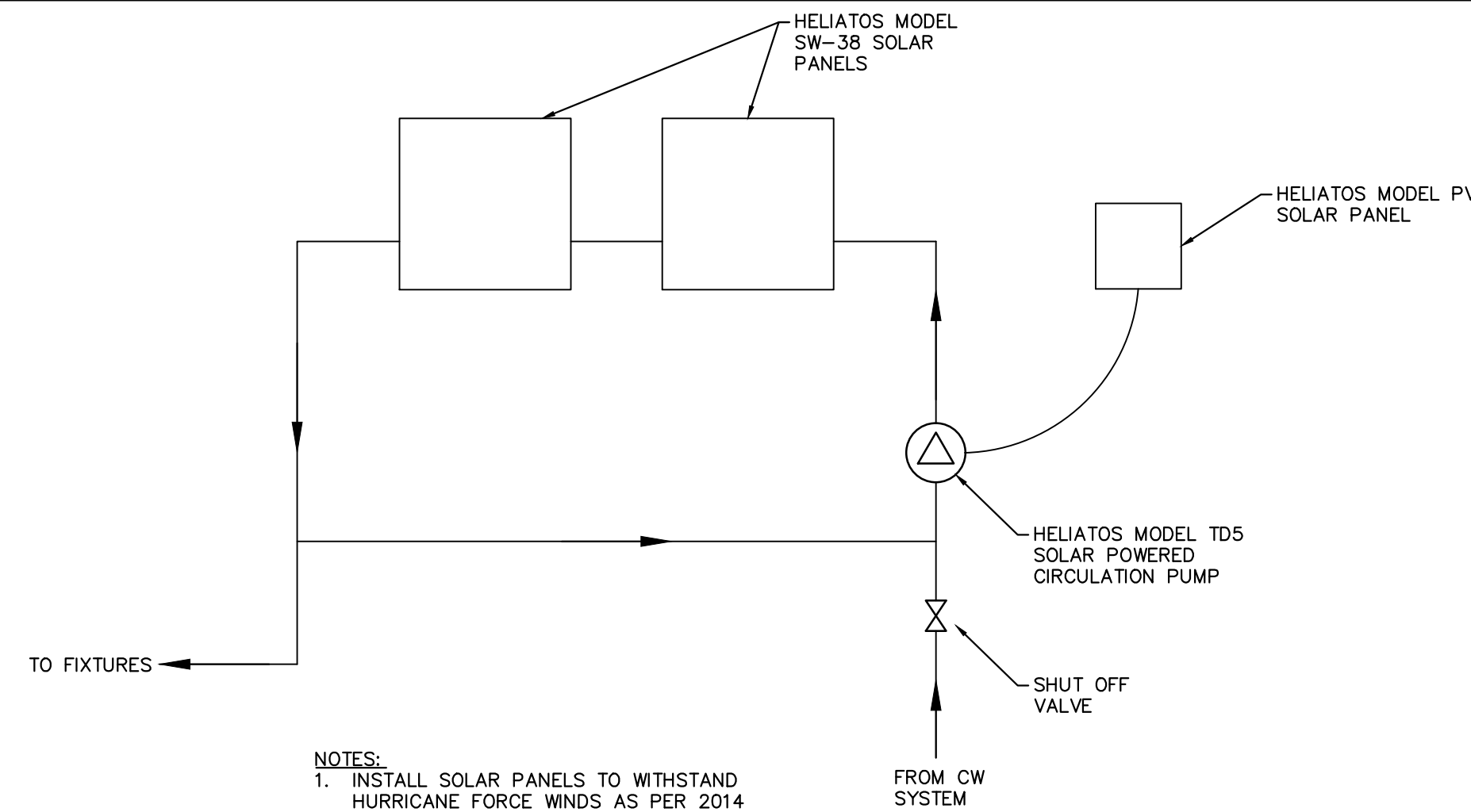
2. CALCULATED SEWAGE FLOW UP TO 1,020.0 GALLONS PER DAY. REFER TO CALCULATIONS BELOW.

SPACE TYPE	AREA	PERSON/DAY	DISCHARGE RATE	GPD
PUBLIC PARK	270	50	4 GPD/PERSON	200

- THEREFORE, SEPTIC TANK MINIMUM EFFECTIVE CAPACITY = 900 GALLONS PER CHAPTER 64E-6.00B, F.A.C. TABLE II.
- REQUIRED DRAINFIELD AREA IS 720 SQUARE FEET (MINIMUM) PER SYSTEM PER SEWAGE LOADING RATE OF 0.8 GALLONS PER SQUARE FOOT PER DAY.
- MAINTAIN A CONTIGUOUS UNSTRUCTURED AREA EQUAL TO 50% OF THE DRAINFIELD AREA AND COMPLY WITH SET-BACK REQUIREMENTS.
- SEASONAL HIGH WATER TABLE ELEVATION = 5.50' N.G.V.D.
- THE ENGINEER HAS VERIFIED WITH THE OWNER THAT THERE ARE NO ACTIVE WELLS WITHIN 200 FEET OF THE PROPOSED DRAINFIELD AND THAT THE PROPOSED AND EXISTING WELLS ARE NOT WITHIN 200 FEET OF THE PROPOSED SEPTIC SYSTEM.

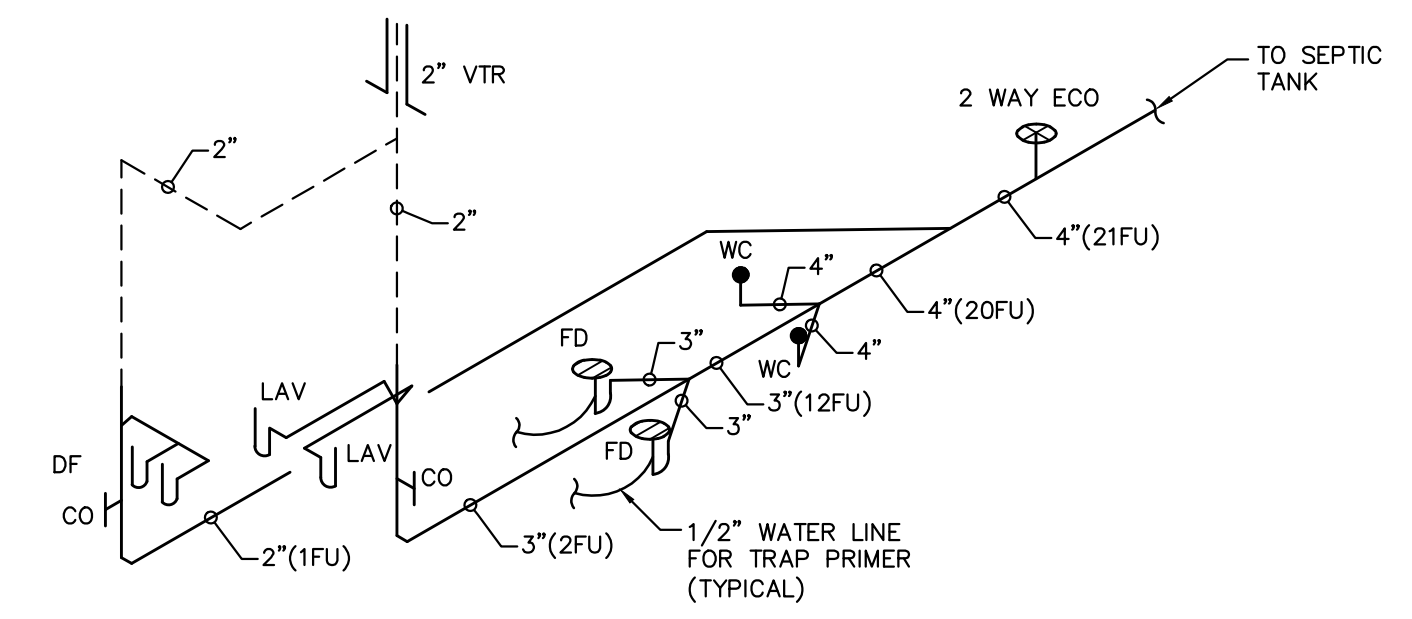
**PERTINENT FEATURE NOTES:**

- THERE ARE NO PERTINENT FEATURES ON ADJACENT PROPERTIES OR ACROSS THE STREET THAT AFFECT THE SYSTEM INSTALLATION.
- THE SEPTIC TANK AND DRAINFIELD ARE NOT WITHIN 100 FEET OF A POTABLE WELL WATER SOURCE.
- NO PERTINENT FEATURE ON THIS PROPERTY WILL AFFECT ANY OF THE ADJACENT PROPERTIES.

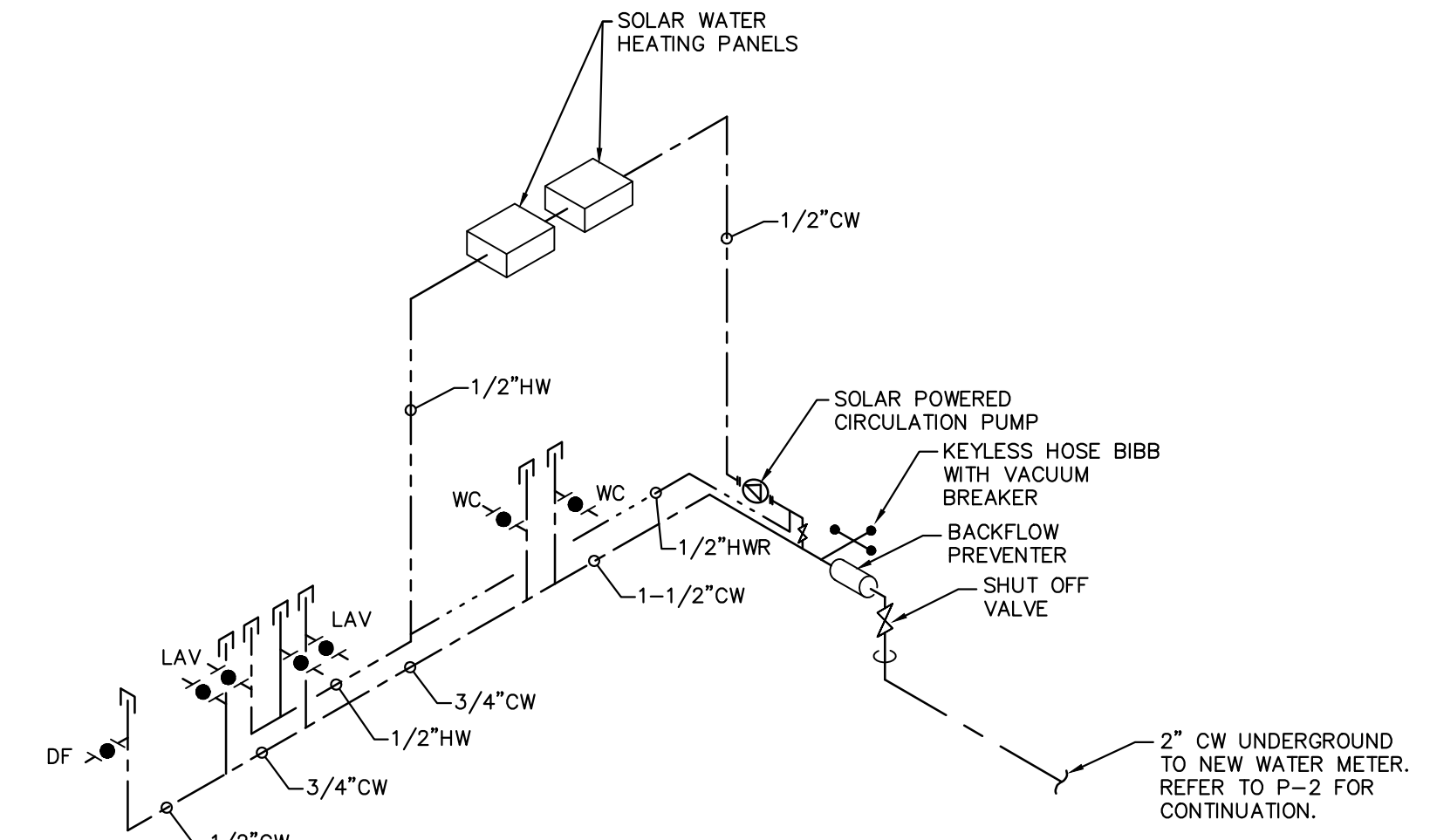


**SOLAR POWERED WATER HEATING SYSTEM DETAIL**  
N.T.S.

- NOTES:**
- INSTALL SOLAR PANELS TO WITHSTAND HURRICANE FORCE WINDS AS PER 2014 F.B.C. FOLLOW ARCHITECT/STRUCTURAL ENGINEERS RECOMMENDATIONS.
  - PUMP SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION FOR MAINTENANCE.



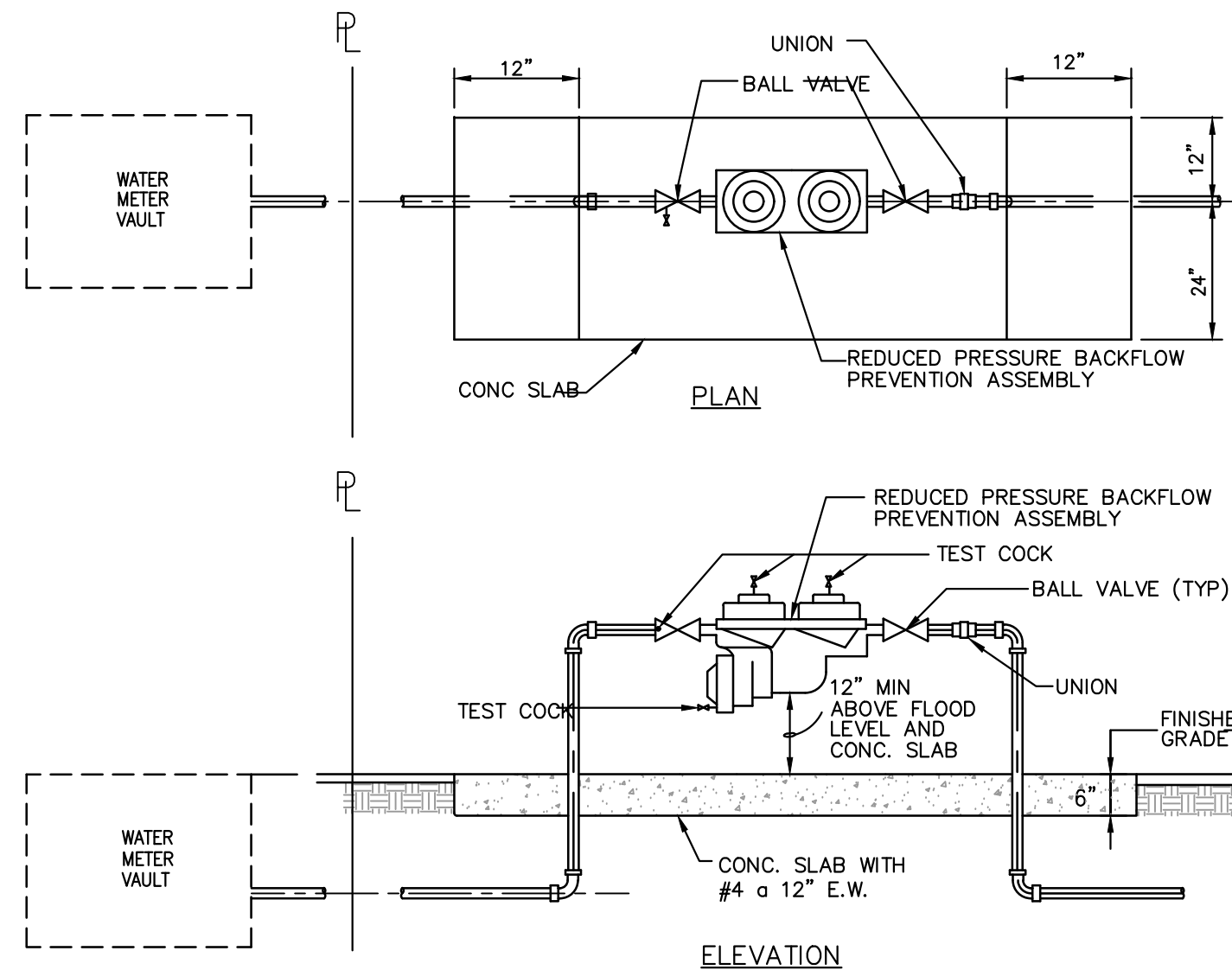
**PLUMBING SANITARY RISER DIAGRAM**  
N.T.S.



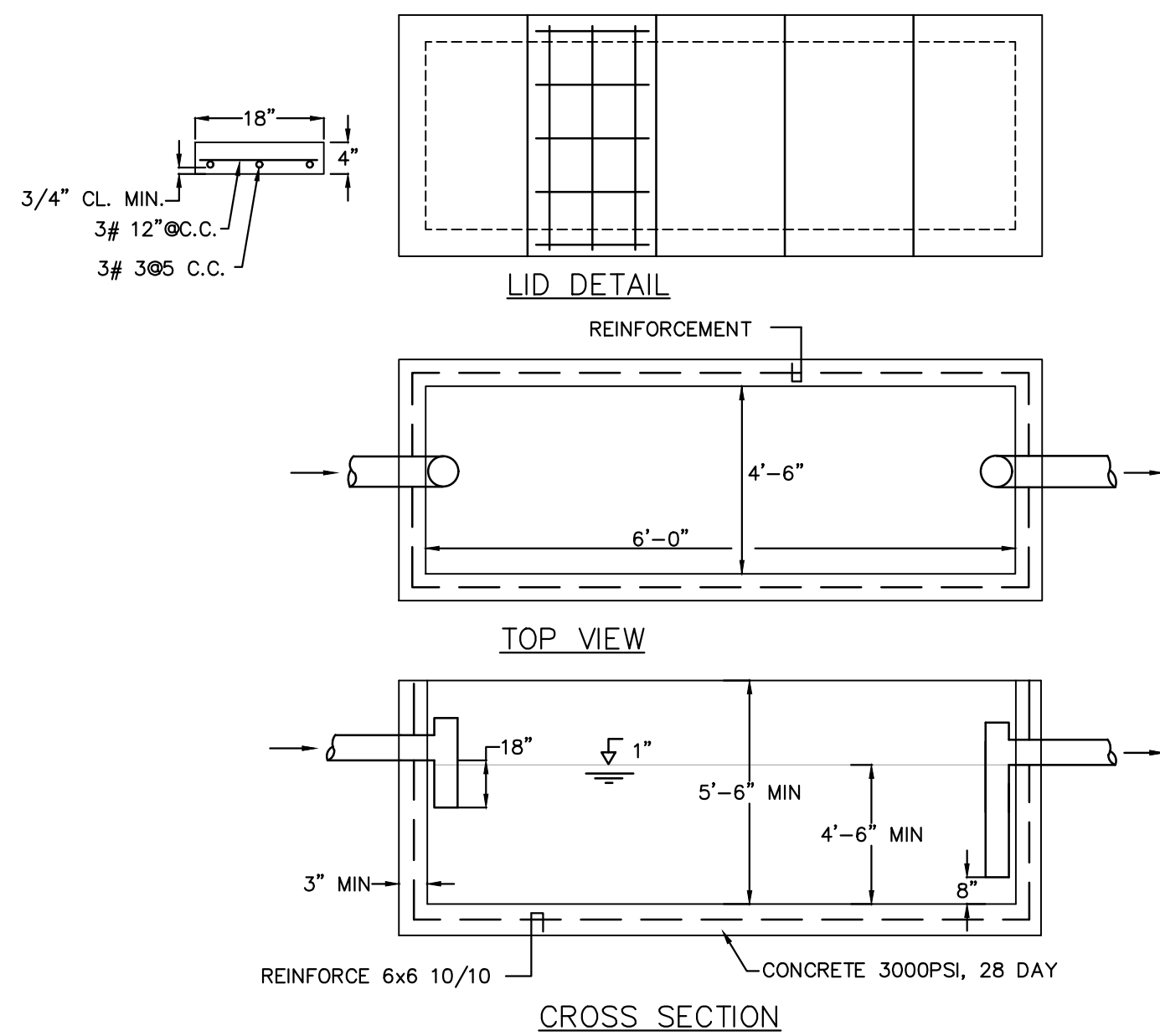
**PLUMBING WATER RISER DIAGRAM**  
N.T.S.

**NOTES:**

- THE ASSEMBLY SHALL BE INSTALLED WITH MINIMUM HORIZONTAL CLEARANCES OF 30 INCHES FREE FROM OBSTRUCTIONS IN ALL DIRECTIONS.
- GUARD POSTS SHALL BE INSTALLED IF THE ASSEMBLY IS EXPOSED TO POSSIBLE DAMAGE FROM VEHICULAR TRAFFIC, AS DETERMINED BY THE DEPARTMENT, OR THE MDWASD INSPECTOR.
- THE ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION, APPROVED BY THE DEPARTMENT AND THE MDWASD INSPECTOR.
- ADJUSTABLE PIPE SADDLE SUPPORT (GRINNEL FIG. 264, OR EQUAL) SIZED TO FIT CURVATURE OF DOUBLE DETECTOR CHECK VALVE ASSEMBLY, WITH GALVANIZED STEEL PIPE AND FLOOR FLANGE. ATTACHED FLOOR FLANGE TO CONCRETE SLAB WITH GALVANIZED EXPANSION BOLTS.
- THE DEPARTMENT SHALL HAVE UNRESTRICTED AND CONTINUOUS ACCESS TO THE BACKFLOW PREVENTION ASSEMBLY.
- PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE WITH GALVANIZED MALLEABLE IRON THREADED FITTINGS. PIPING 2-1/2" AND LARGER SHALL BE DUCTILE IRON PIPE WITH FLANGED FITTINGS. ALL PIPING SHALL BE IN ACCORDANCE WITH MDWASD "CONSTRUCTION SPECIFICATIONS FOR DONATION OF WATER MAINS".
- ALL EXPOSED METALLIC THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT.

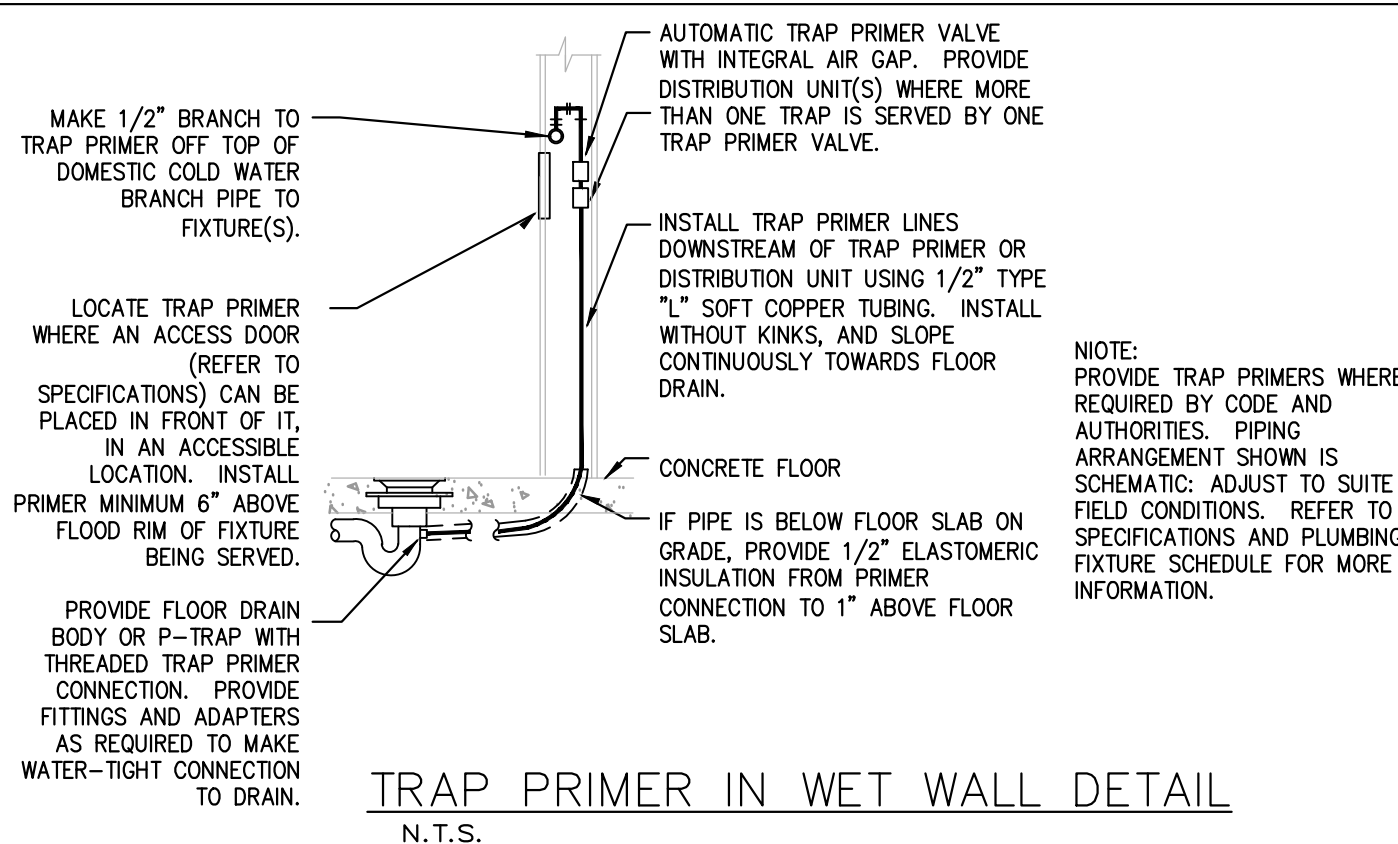


**REDUCED PRESSURE BACKFLOW PREVENTOR**  
N.T.S. (SERVICE SIZES 3/4" THRU 2")



**900 GAL SEPTIC TANK STANDARD DETAIL**  
N.T.S.

NOTE: INFLUENT INVERT SHALL BE 1" MIN. / 3" MAX ABOVE EFFLUENT INVERT ELEVATION.



**TRAP PRIMER IN WET WALL DETAIL**  
N.T.S.

HOT OR COLD WATER SUPPLY

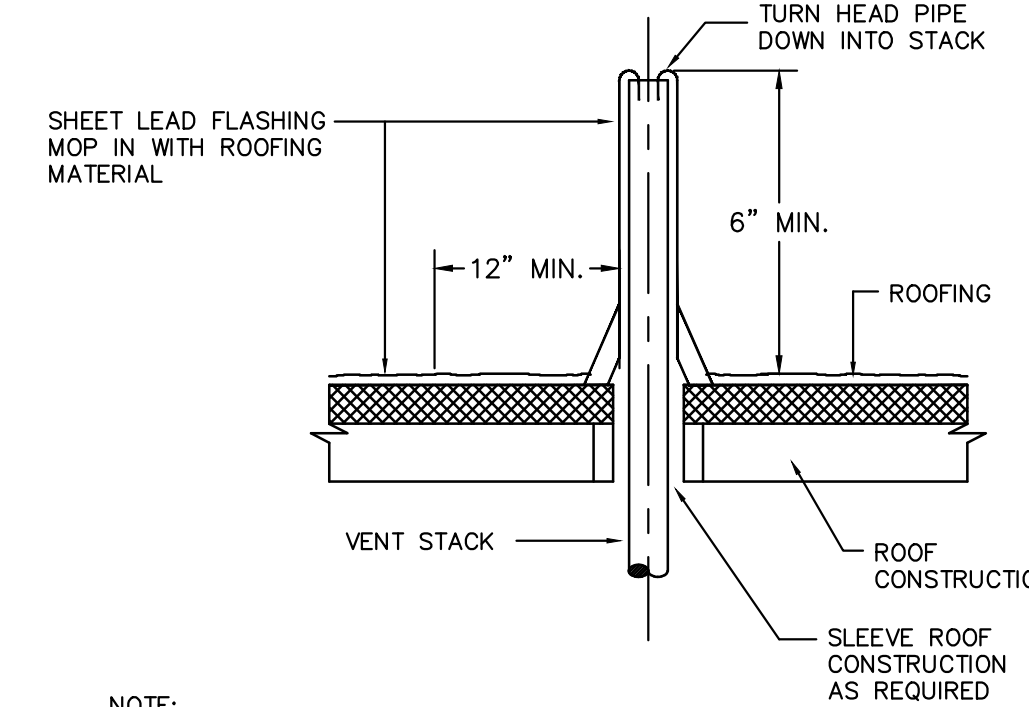
IF HORIZONTAL BRANCH IS LESS THAN 20' LONG, PROVIDE ONE "WHA" AT END OF LINE. IF BRANCH IS GREATER THAN 20' LONG, PROVIDE ANOTHER "WHA" IN MIDDLE, EACH SIZED FOR HALF THE FIXTURE UNITS.

PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	154-330

FIXTURE	FIXTURE UNIT TABULATION	
	COLD	HOT
VALVE WATER CLOSET	10	---
TANK WATER CLOSET	5	---
URINAL	5	---
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATH/TUB	2	2

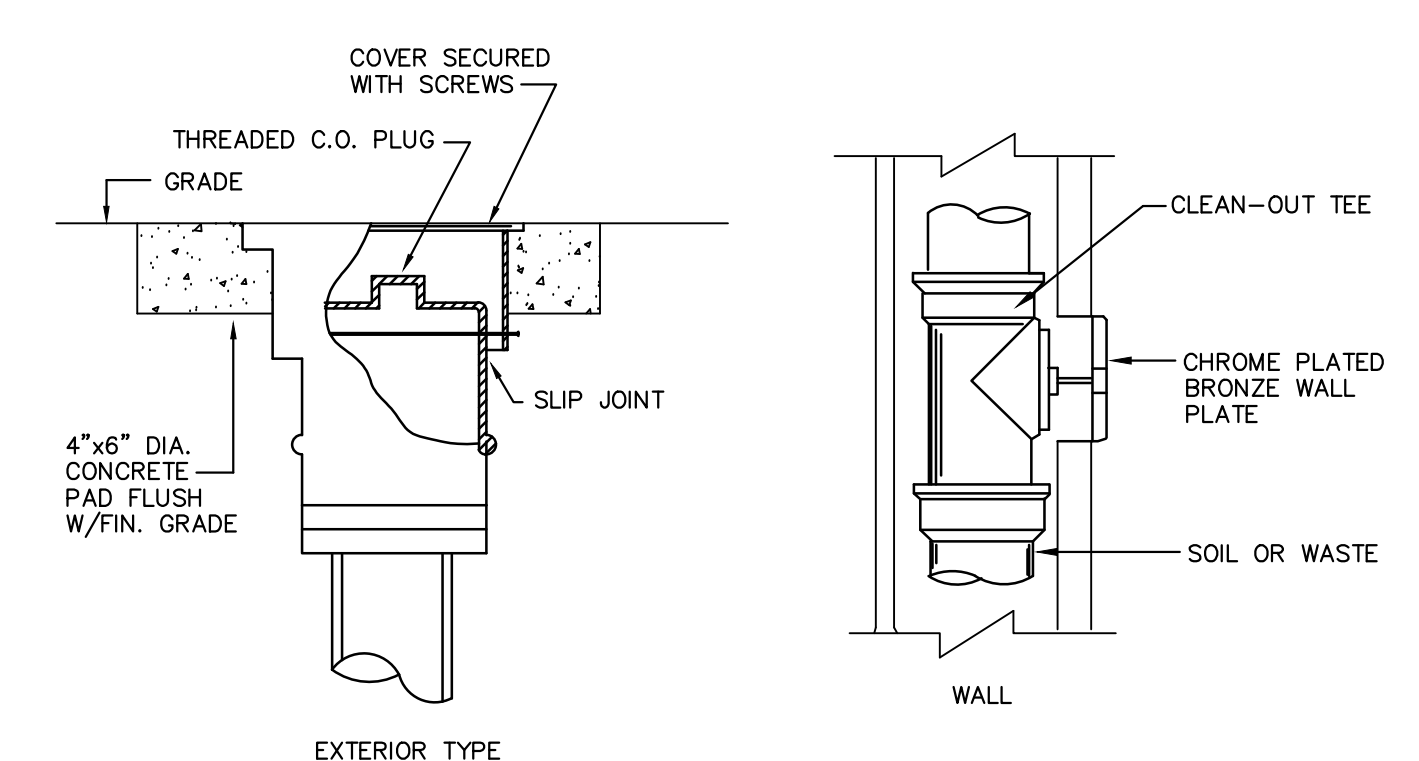
DO NOT PROVIDE AIR CHAMBERS. PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE # 1010 AND ANSI # A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE.

**WATER HAMMER ARRESTERS INSTALLATION GUIDE**  
N.T.S.



NOTE: ANY VENT PIPE WITHIN 10'-0" OF ANY DOOR, WINDOW, OR INTAKE OPENINGS SHALL EXTEND NOT LESS THAN 3'-0" ABOVE SUCH

**VENT THRU ROOF DETAIL**  
N.T.S.



**TYPICAL CLEANOUT DETAILS**  
N.T.S.

DATE

22 SEPT. 2017