DESIGN PARAMETERS

1. DESIGN CODES AND STANDARDS

A. BUILDING CODE:	IBC 2018
RISK CATEGORY	III

B. MATERIAL CODES AND STANDARDS
DESIGN LOADS:
ASCE/SEI 7-16 – MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

CONCRETE:
ACI 318-14 – BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 350-06 – CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
ACI 350.1-10 – SPECIFICATION FOR TIGHTNESS TESTING OF ENVIRONMENTAL ENGINEERING CONCRETE CONTAINMENT STRUCTURES

2. GRAVITY LOADS

A. LIVE LOADS (UNIFORM/CONCENTRATED)	
CONTAINER ROOF	20 PSF / 300 LB
CONCRETE LID (NOT AT CONTAINERS)	60 PSF

B. SHIPPING CONTAINER TOTAL WEIGHT (PROVIDED BY MANUFACTURER)
1.) CONTAINER 1: "DRY" 28,954 LBS, "WET" 43,975 LBS
2.) CONTAINER 2: "DRY" 6,984 LBS, "WET" 10,781 LBS

3. ROOF SNOW LOAD

A. GROUND SNOW LOAD, Pg	71 PSF
B. FLAT ROOF SNOW LOAD, Pf	78.1 PSF
C. SNOW EXPOSURE FACTOR, Ce	1.0
D. SNOW LOAD IMPORTANCE FACTOR, I	1.1
E. THERMAL FACTOR, Ct	1.0

4. WIND DESIGN DATA (CONTAINER DESIGN BY MANUFACTURER)

A. ULTIMATE DESIGN WIND SPEED (3 SECOND GUST), Vult	115 MPH
NOMINAL DESIGN WIND SPEED (3 SECOND GUST), Vasd	89.1 MPH
B. WIND EXPOSURE CATEGORY	C
C. INTERNAL PRESSURE COEFFICIENT, GCpi	+/- 0.18
D. WIDTH OF END ZONE	3 FT

5. EARTHQUAKE DESIGN DATA (TANK WALLS)

A. SEISMIC IMPORTANCE FACTOR, Ie	1.25
B. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETER, Ss	52.4%
C. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETER, S1	9.7%
D. SITE CLASS	B
E. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETER, Sds	0.314
F. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETER, Sd1	0.052
G. SEISMIC DESIGN CATEGORY	B
H. STRUCTURAL SYSTEM	
1.) VERTICAL ELEMENT TYPE	BEARING WALL SYSTEM
2.) BASIC SEISMIC FORCE-RESISTING SYSTEM TYPE	ORDINARY REINFORCED CONCRETE SHEAR WALLS
3.) RESPONSE MODIFICATION FACTOR, R	4.0
4.) SEISMIC RESPONSE COEFFICIENT (ASD), Cs	0.069
5.) DESIGN BASE SHEAR (ASD)	0.069W
J. ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE

GENERAL NOTES

GENERAL

1. STRUCTURAL ELEMENTS ARE NON-SELF SUPPORTING AND REQUIRE INTERACTION WITH OTHER ELEMENTS FOR STABILITY AND RESISTANCE TO LATERAL FORCES. WALLS SHALL BE TEMPORARILY BRACED BY THE CONTRACTOR UNTIL PERMANENT BRACING, FLOOR AND ROOF SLABS, AND/OR WALLS HAVE BEEN INSTALLED AND CONNECTIONS BETWEEN THESE ELEMENTS HAVE BEEN MADE.
2. THE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION, UNLESS NOTED OTHERWISE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATION OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO.
3. THE STRUCTURE HAS BEEN DESIGNED FOR THE INDICATED LOADS ONLY. USE OF HEAVY EQUIPMENT AND SCAFFOLDING, OR STORAGE OF MATERIALS THAT TRANSFER EXCESSIVE LOADS TO THE STRUCTURE SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED TO VERIFY THE ADEQUACY OF THE STRUCTURE FOR ALL APPLIED CONSTRUCTION LOADS THAT EXCEED THE LOADS INDICATED IN THE CONSTRUCTION DOCUMENTS AND SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER-OF-RECORD PRIOR TO ANY CONSTRUCTION ACTIVITY.
4. STRUCTURAL DRAWINGS ARE NOT STAND-ALONE DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH CIVIL, PROCESS, MECHANICAL, ELECTRICAL, PLUMBING AND DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO SHOP DRAWINGS AND WORK.
5. ALL WELDS SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (A.W.S) SPECIFICATIONS.
6. THE SIZE AND LOCATION OF EQUIPMENT PADS AND PENETRATIONS THROUGH THE STRUCTURE FOR MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL BE VERIFIED BY THE CONTRACTOR. PENETRATIONS SHALL BE SUBJECT TO APPROVAL BY THE ARCHITECT AND THE ENGINEER-OF-RECORD. REFERENCE PROCESS DRAWINGS FOR OPENING LOCATIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
7. USE ONLY DIMENSIONS INDICATED IN THE CONTRACT DOCUMENTS. DO NOT SCALE CONTRACT DOCUMENTS OR USE ANY DIMENSIONS TAKEN FROM ELECTRONIC DRAWING FILES. CONTRACTOR SHALL COORDINATE IN-PLACE DIMENSIONS BASED ON TOLERANCES OF THE RESPECTIVE TRADES.
8. ASSUME EQUAL SPACING IF NOT INDICATED IN CONTRACT DOCUMENTS.
9. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS, OPENING, BLOCKOUTS, RECESSES, ELEVATIONS, ANCHOR RODS AND EMBED LOCATIONS PRIOR TO CONSTRUCTION.

FOUNDATIONS

1. FOUNDATION DESIGNS AND SUBGRADE PREPARATION NOTES ARE BASED ON THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT NUMBER 22-12813 BY: NORTHWEST COLORADO CONSULTANTS, INC., DATED: JANUARY 17, 2023
2. FOOTING DESIGNS ARE BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF 3000 PSF ON COMPACTED FILL MATERIALS OVER NATURAL SANDS AND GRAVELS
3. CONTRACTOR AND TESTING LABORATORY REPRESENTATIVE SHALL READ THE GEOTECHNICAL REPORT AND BECOME THOROUGHLY FAMILIAR WITH SITE AND SUBGRADE INFORMATION GIVEN THEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT QUANTITIES OF CUT AND FILL FOR ESTIMATING AND CONSTRUCTION.
4. A QUALIFIED AND REGISTERED GEOTECHNICAL ENGINEER, LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND WORKING FOR THE TESTING LABORATORY, SHALL DETERMINE CONFORMANCE OF THE FOUNDATION BEARING STRATA WITH THE FOUNDATION DESIGN CRITERIA ABOVE, AND ALL OTHER CONTRACT DOCUMENTS. TESTING LABORATORY SHALL NOTIFY CONTRACTOR, ARCHITECT AND ENGINEER-OF-RECORD OF ANY CONDITIONS NOT IN ACCORDANCE WITH FOUNDATION DESIGN CRITERIA OR CONTRACT DOCUMENTS.
5. THE SUBGRADE SHALL BE PREPARED AS INDICATED IN THE GEOTECHNICAL REPORT
6. USE ONLY STRUCTURAL FILL MATERIAL IDENTIFIED IN THE GEOTECHNICAL REPORT FOR FILL BELOW BUILDING AND FIVE FEET BEYOND THE EDGES OF THE BUILDING AND 1 FOOT BEYOND THE EDGES OF PAVING.
7. PER GEOTECHNICAL REPORT, THE FOUNDATION SHALL NOT BEAR ON ANY EXISTING FILLS OR NATURAL CLAYS. BEARING ON CLAYSTONE SHALE BEDROCK REQUIRES A MINIMUM DEAD LOAD OF 700 PSF.
8. FOUNDATION WALLS SHALL HAVE ADEQUATE TEMPORARY BRACING INSTALLED BY THE CONTRACTOR BEFORE BACKFILL IS PLACED AGAINST THEM. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL WALL IS PERMANENTLY BRACED.
9. AVOID DAMAGE TO UNDERGROUND UTILITIES INCLUDING, BUT NOT LIMITED TO, WATER MAINS, SANITARY SEWERS AND BURIED CABLES WHICH MIGHT EXTEND ACROSS OR ADJOIN SITE.

CONCRETE

1. EXTERIOR CONCRETE AND INTERIOR CONCRETE EXPOSED TO FREEZE-THAW, AND CONCRETE SLABS AND WALLS PERMANENTLY EXPOSED TO THE EXTERIOR MINIMUM 28-DAY COMPRESSIVE STRENGTH = 4500 PSI. PROPORTIONED TO HAVE A MAXIMUM WATER/CEMENT RATIO OF 0.42. SLUMP = 3" - 5". ALL CONCRETE EXPOSED TO THE EXTERIOR SHALL BE AIR ENTRAINED WITH MINIMUM TOTAL AIR CONTENT OF 6% (+/- 1%) BY VOLUME PER ASTM C231 FOR 3/4" AGGREGATE AND LARGER. REFERENCE ACI 350-06 TABLE 4.2.1, TOTAL AIR CONTENT FOR CONCRETE EXPOSED TO CYCLES OF FREEZING AND THAWING, SEVERE EXPOSURE, FOR SMALLER AGGREGATE SIZES.
2. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE II
3. AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C-33. MAXIMUM COARSE AGGREGATE SIZE SHALL BE 3/4".
4. MATERIALS OR ADMIXTURES SHALL NOT CONTAIN ANY CALCIUM CHLORIDE
5. REINFORCING STEEL SHALL MEET THE FOLLOWING — ASTM SPECIFICATION
   A. DEFORMED BARS — A615, GRADE 60
6. WHERE DOWELS ARE INDICATED BUT NOT SIZED, PROVIDE DOWELS THAT MATCH THE SIZE AND LOCATION OF MAIN REINFORCEMENT STEEL. REINFORCING BARS SHALL BE SPLICED AS NOTED IN THE REINFORCING LAP SPLICE SCHEDULE (6/S7)
7. REFER TO ACI 350-06 FOR CONCRETE COVER REQUIREMENTS, ACI 315 LATEST EDITION FOR DETAILING PRACTICES AND FABRICATION, AND ACI 301 LATEST EDITION FOR STANDARD PRACTICES FOR MIXING AND PLACING CONCRETE. REFER TO ACI 306R-10 FOR REQUIRED COLD WEATHER CONCRETING PROCEDURES. MINIMUM PROTECTION PERIOD FOR CONCRETE PLACED DURING FREEZING TEMPERATURES IS 7 DAYS
8. ANCHORS INSTALLED IN HARDENED CONCRETE SHALL BE USED WHERE SPECIFIED ON THE CONTRACT DRAWINGS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REINFORCING. HOLES SHALL BE DRILLED, DRY AND CLEANED AND ANCHORS INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED WRITTEN INSTRUCTIONS AND APPLICABLE ESR REPORT. REFERENCE DETAILS FOR ANCHOR SIZE AND EMBEDMENT. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED ON THE CONTRACT DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD ALONG WITH CALCULATIONS THAT ARE SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION AND LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE. ALLOWABLE SUBSTITUTIONS FOR POST-INSTALLED ANCHORS IN CONCRETE ARE:
   A. HILTI HIT-RE 500-V3 EPOXY ADHESIVE (ICC-ES ESR-3814)
   B. HILTI HIT-HY 200 (A OR R) ADHESIVE (ICC-ES ESR-4868)
   C. HILTI KWIK BOLT TZ2 EXPANSION ANCHOR (ICC-ES ESR-4266)
   D. SIMPSON STRONG-TIE SET-XP EPOXY ADHESIVE (ICC-ES ESR-2508)
   E. SIMPSON STRONG-TIE AT-XP ADHESIVE (ICC-ES ESR-263)
   F. SIMPSON STRONG-TIE BOLT 2 WEDGE ANCHOR (ICC-ES ESR-3037)
9. FOUNDATION SLAB, WALLS, AND LID SHALL BE PLACED IN A SINGLE POUR (EACH) WITHOUT CONSTRUCTION JOINTS. IF CONTRACTOR PLANS MULTIPLE POURS, CONTACT WALLACE DESIGN COLLECTIVE FOR REQUIRED COLD JOINT DETAILS

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PROJECT: WWTP IMPROVEMENT PROJECT
COMMUNITY OF PHIPPSBURG
ROUTT COUNTY, COLORADO

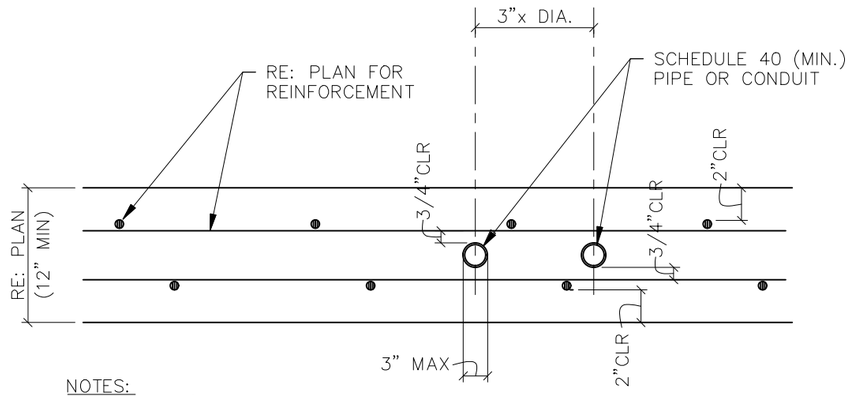
ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

SHEET TITLE: GENERAL STRUCTURAL NOTES

PROJECT NUMBER:	SCALE:	SHEET:
#2479	N.T.S.	S1

STRUCTURAL OBSERVATION REQUIREMENTS (IBC 2018 SECTION 1704.6)

1. A REPRESENTATIVE OF THE ENGINEER OF RECORD WILL PERFORM THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR THE INSPECTION REQUIRED OF THE BUILDING OFFICIAL OR THE SPECIAL INSPECTOR.
2. A PRE-CONSTRUCTION MEETING SHALL BE HELD AND ATTENDED BY AQUAWORKS DBO, STRUCTURAL ENGINEER OF RECORD, GENERAL CONTRACTOR, SUBCONTRACTORS, AND SPECIAL INSPECTORS.
3. THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AT LEAST 48 HOURS PRIOR TO COMPLETING CONSTRUCTION OPERATIONS THAT REQUIRE STRUCTURAL OBSERVATION (BY CALLING (303) 350-1690 TO SCHEDULE A SITE VISIT.)
4. AT A MINIMUM, THE FOLLOWING SIGNIFICANT CONSTRUCTION STAGES REQUIRE A SITE VISIT AND AN OBSERVATION REPORT FROM THE STRUCTURAL OBSERVER:
   A. AFTER INSTALLATION OF CONCRETE WALL DOWELS AND BEFORE FOUNDATION CONCRETE PLACEMENT.
5. AT THE CONCLUSION OF THE WORK INCLUDED IN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.



NOTES:
1. CONDUIT/PIPE SHALL BE FABRICATED AND INSTALLED SUCH THAT CUTTING, BENDING, OR DISPLACEMENT OF REINF. WILL NOT BE REQUIRED.
2. CONDUIT/PIPE SHALL NOT BE PLACED WITHIN 9" OF CONTAINER SUPPORT
3. DO NOT STACK CONDUIT VERTICALLY IN SLAB.
4. CONDUIT/PIPE SHALL BE SUPPORTED AND SECURED TO PREVENT DISPLACEMENT DURING PLACEMENT OF CONCRETE.
5. ALUMINUM CONDUIT/PIPE NOT PERMITTED.
6. CONDUIT/PIPE SHALL BE MIN. 3/4" CLR. TO REINF.

1/S2 TYPICAL EMBEDDED CONDUIT DETAIL

SCALE: NTS

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
A.O.R.	ARCHITECT OF RECORD
A.R.	ANCHOR RODS
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ARCH.	ARCHITECTURAL
B.L.	BLOCK LINTEL
B.O.D.	BOTTOM OF DECK
B.O.S.	BOTTOM OF STEEL
B.P.	BASE PLATE
BAL.	BALANCE
BLDG.	BUILDING
BRG.	BEARING
C.J.	CONTRACTION JOINT
C.L.	CENTER LINE
CFMF	COLD FORMED METAL FRAMING
CLR.	CLEAR
CMU	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
D.B.A.	DEFORMED BAR ANCHOR
D.B.E.	DECK BEARING ELEVATION
DIA.	DIAMETER
DTL.	DETAIL
DWG.	DRAWING
E.F.	EACH FACE
E.J.	EXPANSION JOINT
E.O.D.	EDGE OF DECK
E.O.R.	ENGINEER OF RECORD
E.O.S.	EDGE OF SLAB
E.W.	EACH WAY
EA.	EACH
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EQ.	EQUAL
EXIST.	EXISTING
F.F.E.	FINISHED FLOOR ELEVATION
F.S.	FAR SIDE
F.V.	FIELD VERIFY
FDN.	FOUNDATION
FT.	FOOT/FEET
FTG.	FOOTING
G.B.	GRADE BEAM
G.C.	GENERAL CONTRACTOR
GA.	GAGE
GALV.	GALVANIZED
H.S.A.	HEADED STUD ANCHOR
HORIZ.	HORIZONTAL
I.F.	INSIDE FACE
IN.	INCH/INCHES
INFO.	INFORMATION
J.B.E.	JOIST BEARING ELEVATION
JT.	JOINT
K	UNIT OF 1,000 POUNDS (KIP)
KSI	KIPS PER SQUARE INCH
LBS.	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG.	LONGITUDINAL
LSH	LONG SIDE HORIZONTAL
LSL	LONG SLOT
LSV	LONG SIDE VERTICAL
MAX.	MAXIMUM
MECH.	MECHANICAL
MEP	MECHANICAL/ELECTRICAL/PLUMBING
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MTL.	METAL
N.I.C.	NOT IN CONTRACT
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.	OPPOSITE FACE
O.H.	OPPOSITE HAND
OPP.	OPPOSITE
P.A.F.	POWER/POWDER ACTUATED FASTENER
PCF	POUNDS PER CUBIC FOOT
PEMB	PRE-ENGINEERED METAL BUILDING
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PLUMB.	PLUMBING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
R.O.	ROUGH OPENING
RE:	REFER
REINF.	REINFORCING
REQD.	REQUIRED
RTU	ROOF TOP UNIT
S.D.S.	SELF-DRILLING SCREWS
S.S.	STAINLESS STEEL
SCHED.	SCHEDULE
SIM.	SIMILAR
SP.	SPACE/SPACING
SPECS.	SPECIFICATIONS
SSL	SHORT SLOT
STD.	STANDARD
STL.	STEEL
T&B	TOP AND BOTTOM
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.M.	TOP OF MASONRY
T.O.P.	TOP OF PIER
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
TRANS.	TRANSVERSE
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W.P.	WORK POINT
W.S.	WATERSTOP
W.W.R.	WELDED WIRE REINFORCEMENT
WT.	WEIGHT

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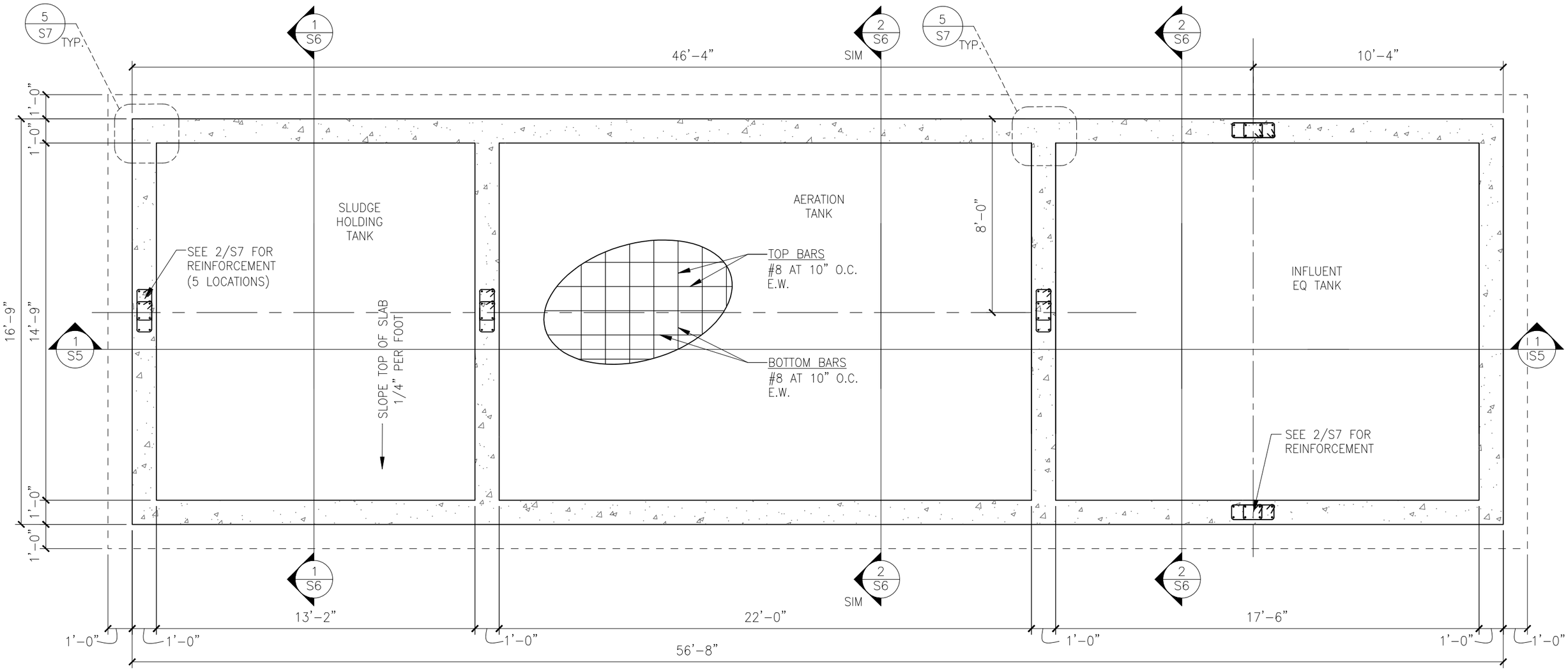
SHEET TITLE:
STRUCTURAL OBSERVATION REQUIREMENT AND ABBREVIATIONS

PROJECT NUMBER:	SCALE:	SHEET:
#2479	N.T.S.	S2



1/S3 CONCRETE TANK FOUNDATION PLAN

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

	FOUNDATION PLAN NOTES:
1.	18" CONCRETE SLAB REINFORCED AS SHOWN ON PLAN. PLACE SLAB OVER 6" BASE OF WELL GRADED GRANULAR FILL, OVER NEWLY PLACED, COMPACTED FILL (REMOVE ALL CLAYS PRIOR TO FILL PLACEMENT). PREPARE SUBGRADE PER GEOTECHNICAL RECOMMENDATIONS FROM REPORT REFERENCED ON SHEET S1.
2.	EXTERIOR GRADE ELEVATION VARIES, REF CIVIL. SLOPE BOTTOM OF FOOTING TO MAINTAIN MINIMUM BEARING DEPTH.
3.	REFERENCE PROCESS PLANS AND SECTIONS FOR SIZE AND LOCATIONS OF PENETRATIONS, TYP.

PLAN NORTH

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SHEET TITLE: CONCRETE TANK FOUNDATION PLAN

PROJECT NUMBER:	SCALE:	SHEET:
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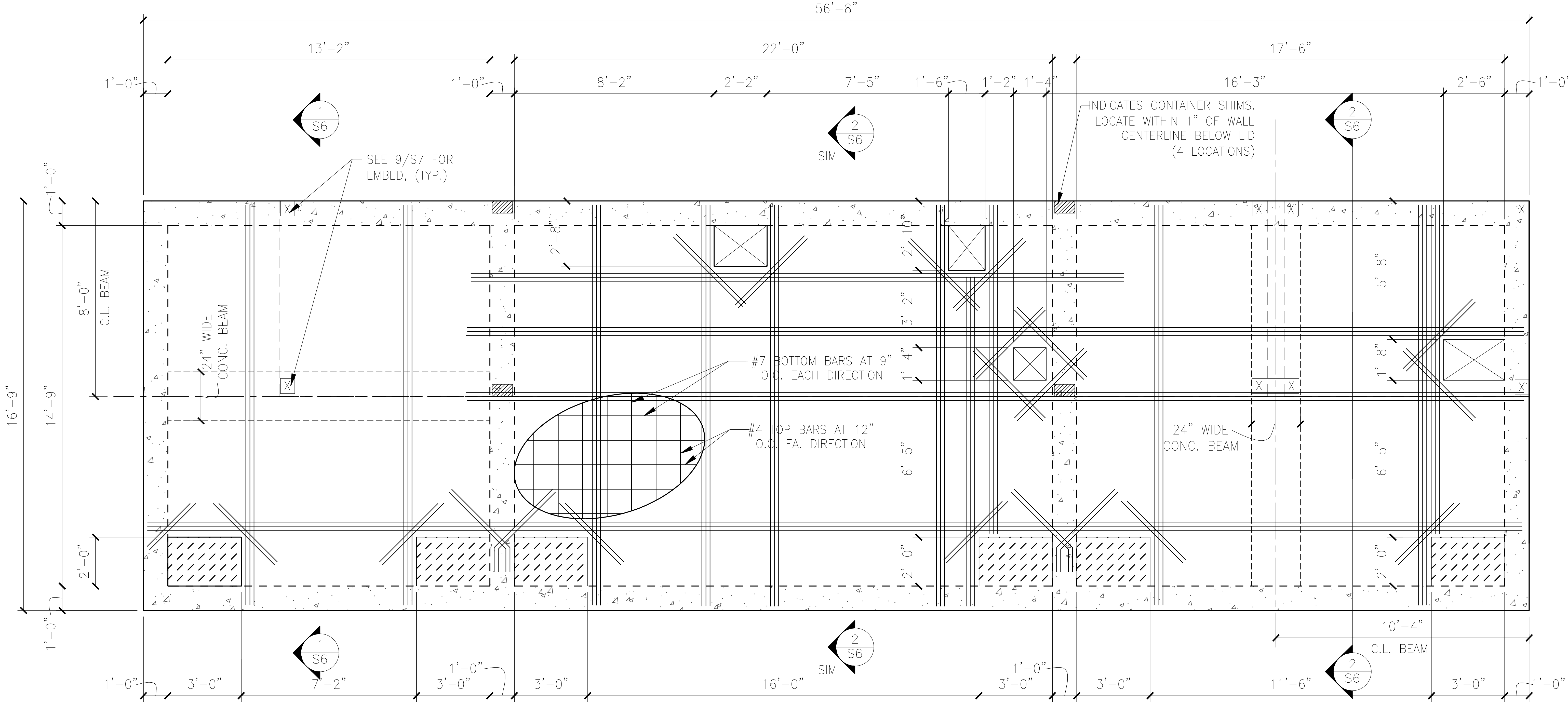
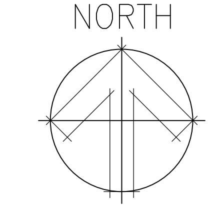


1/S4 **CONCRETE TANK LID PLAN**

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

	CONCRETE TANK LID PLAN NOTES:
1.	12" CONCRETE SLAB REINFORCED AS SHOWN ON PLAN.
2.	EXTERIOR GRADE ELEVATION VARIES, REF CIVIL.
3.	REFERENCE PROCESS PLANS AND SECTIONS FOR SIZE AND LOCATIONS OF PENETRATIONS, TYP.
4.	REF. 7-S7 AND 8-S7 FOR TYPICAL WALL PIPE SLEEVE OR OTHER WALL OPENING DETAILS. RE: PROCESS PLANS FOR LOCATIONS
5.	SPACING OF ADDITIONAL BARS AROUND OPENINGS SHALL BE MINIMUM OF 2".
6.	EXTEND ALL ADDITIONAL BARS TO NEXT INTERIOR WALL CL OR DEVELOPMENT LENGTH PER 6/S7 (WHICHEVER IS LONGER)
7.	PROVIDE 2" CLR FROM REINF. EA SIDE OF OPNG. PER 3/S7
8.	REF DETAIL 9/S7 FOR EMBEDS CAST INTO CONCRETE LID UNDER CONTAINER LEG LOCATIONS



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SHEET TITLE: CONCRETE TANK LID PLAN

PROJECT NUMBER:	SCALE:	SHEET:
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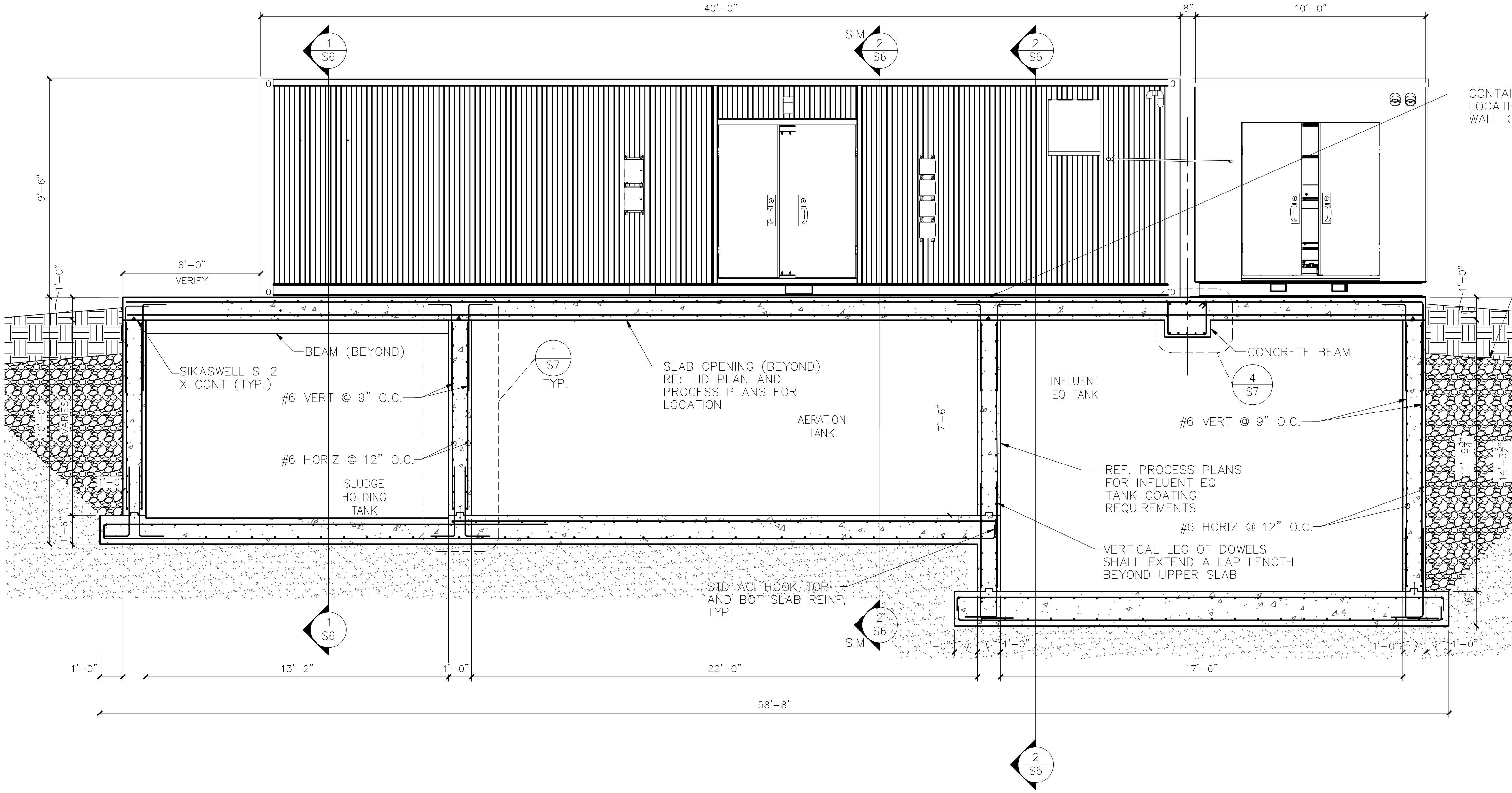
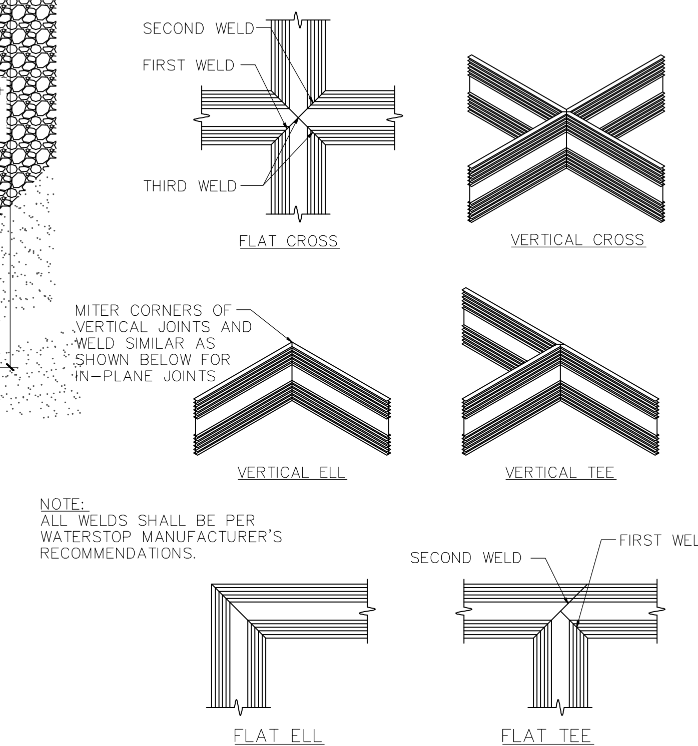


1/S5 CONCRETE TANK SECTION

SCALE: 3/16" = 1'-0"



2/S5 WATERSTOP JOINTS

SCALE: NTS

NOTES:
1. BRACE TOP OF TANK WALLS BEFORE BACKFILLING AND UNTIL CONCRETE LID IS IN PLACE AND HAS REACHED ITS 28–DAY STRENGTH
2. AT ALL COLD JOINTS, COAT REBAR AND SURFACE OF CONCRETE WITH SIKA ARMATEC 110 EPOCEM BONDING AGENT AND ANTI–CORROSION PROTECTANT (OR EQUIVALENT). APPLY (2) FULL COATS PER MANUFACTURERS' RECOMMENDATIONS WITH 3RD COAT AS BONDING AGENT. ADDITIONALLY, A 6" WIDE–RIBBED CONTINUOUS WATERSTOP GREEN STREAK "679" OR EQUIV. SHALL BE PLACED IN A FULL–LENGTH KEYWAY AT ALL COLD JOINTS
3. REF 2/S5 FOR WATERSTOP DETAILING

wallace design collective

wallace design collective, pc
structural · civil · landscape · survey
9800 pyramid court, suite 350
englewood, colorado 80112
303.350.1690 · 800.364.5858

COLORADO LICENSED PROFESSIONAL ENGINEER PE.0058764
2023.11.14
15:26:43-06'00'

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

DRAWN BY: CMW
DESIGNED BY: SCJ
FILE PRINTED ON: 11/9/2023 4:53:53 PM

0 1 IF THIS BAR DOES NOT READ 1" DRAWING IS NOT LABELED TO SCALE

AquaWorks DBO INC — DESIGN BUILD OPERATE

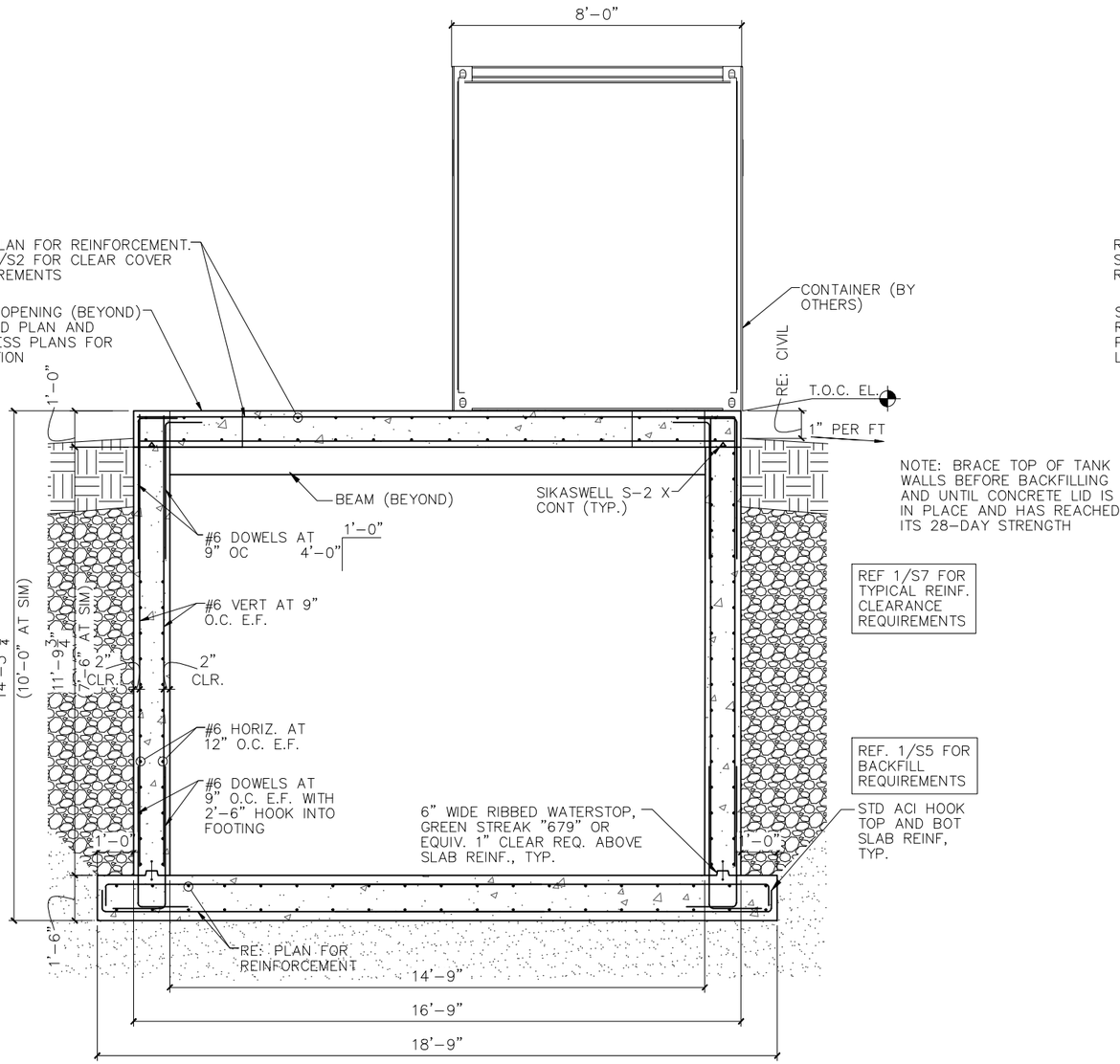
REVIEWED FOR CODE COMPLIANCE
10/10/2024

PROJECT: WWTP IMPROVEMENT PROJECT
COMMUNITY OF PHIPPSBURG
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477–5915

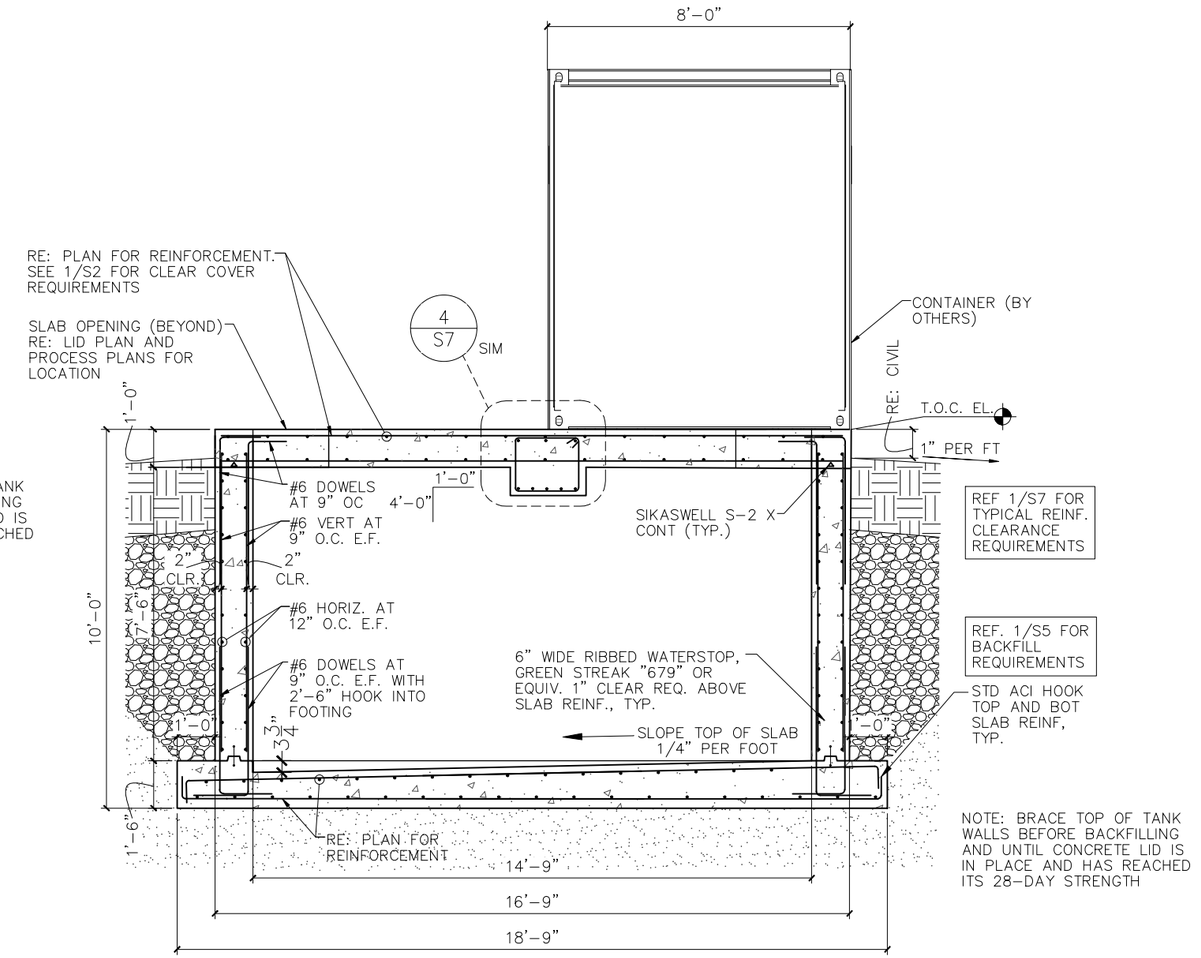
SHEET TITLE: CONCRETE TANK SECTION

PROJECT NUMBER:	SCALE:	SHEET:
#2479	3/16" = 1'	S5



2/S6 ELEVATION SECTION

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



1/S6 ELEVATION SECTION

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

SECTION NOTES:
1. AT ALL COLD JOINTS, COAT REBAR AND SURFACE OF CONCRETE WITH SIKA ARMATEC 110 EPOCEM BONDING AGENT AND ANTI-CORROSION PROTECTANT (OR EQUIVALENT). APPLY (2) FULL COATS PER MANUFACTURERS' RECOMMENDATIONS WITH 3RD COAT AS BONDING AGENT. ADDITIONALLY, A 6" WIDE-RIBBED CONTINUOUS WATERSTOP GREEN STREAK "679" OR EQUIV. SHALL BE PLACED IN A FULL-LENGTH KEYWAY AT ALL COLD JOINTS
2. REF 2/S5 FOR WATERSTOP DETAILING

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COLORADO LICENSED PROFESSIONAL ENGINEER PE.0058764

2023.11.14 15:26:54-06'00'

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

DRAWN BY: CMW
DESIGNED BY: SCJ
FILE PRINTED ON: 11/9/2023 5:07:47 PM

0 1 IF THIS BAR DOES NOT READ 1" DRAWING IS NOT LABELED TO SCALE

AquaWorks DBO DESIGN BUILD OPERATE

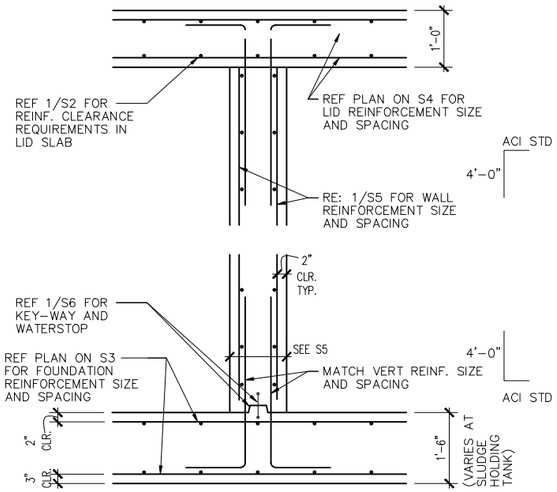
REVIEWED FOR CODE COMPLIANCE 10/10/2024

PROJECT: WWTP IMPROVEMENT PROJECT
COMMUNITY OF PHIPPSBURG
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

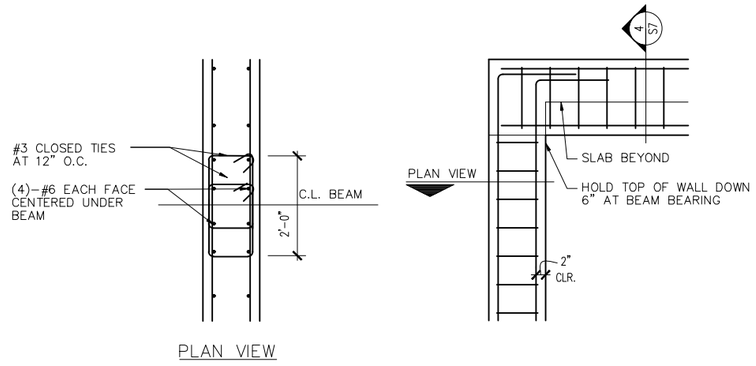
SHEET TITLE: CONCRETE TANK SECTION

PROJECT NUMBER:	SCALE:	SHEET:
#2479	1/4" = 1'	S6



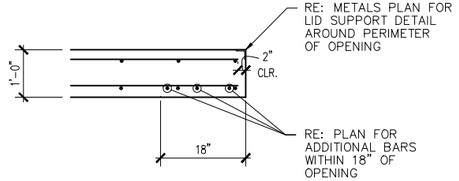
1/S7 DETAIL (INTERIOR WALL)

SCALE: 3/8" = 1'-0"



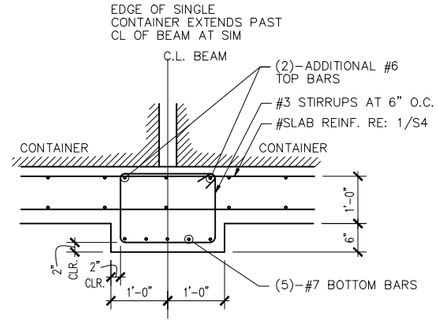
2/S7 DETAIL (COLUMN IN WALL)

SCALE: 3/8" = 1'-0"



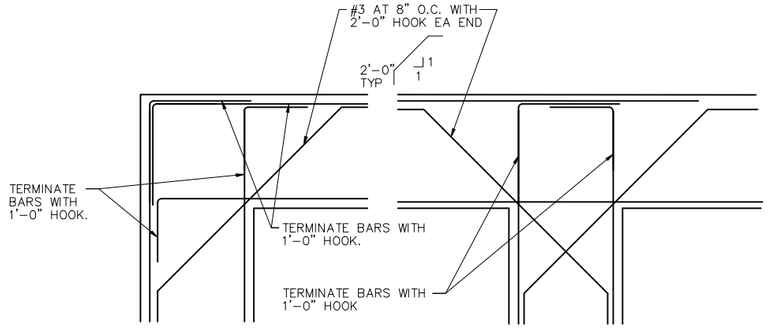
3/S7 DETAIL (LID OPENING)

SCALE: 3/8" = 1'-0"



4/S7 DETAIL (LID BEAM)

SCALE: 3/8" = 1'-0"



5/S7 TYPICAL CONCRETE CORNER BARS

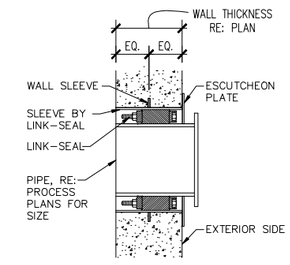
NO SCALE

STEEL REINF. LAP SCHEDULE

BAR SIZE	CONCRETE LAP SPLICE f'c = 4500psi	
	TOP	OTHER
3	14	12
4	19	14
5	23	18
6	28	21
7	40	31
8	46	35
9	57	44
10	70	54

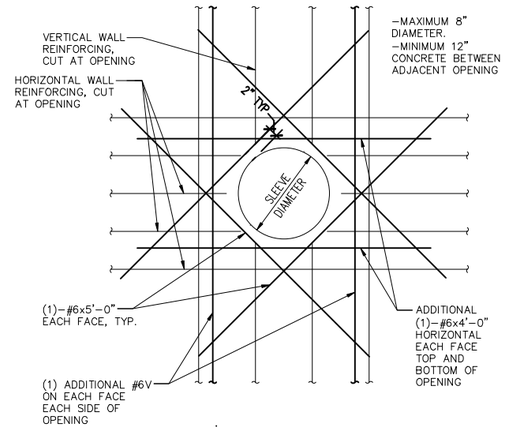
6/S7 STEEL REINFORCING LAP SCHEDULE

NO SCALE



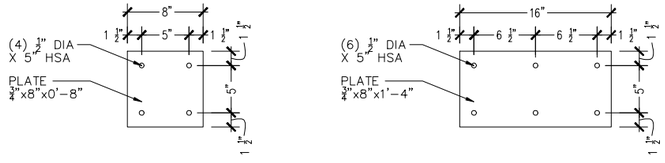
7/S7 WALL PIPE SLEEVE

NO SCALE



8/S7 OPENING IN TANK WALL

NO SCALE



9/S7 LID EMBEDS AT CONTAINER LEGS

NO SCALE

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englewood, colorado 80112
303.350.1690 · 800.364.5858

COLORADO LICENSED PROFESSIONAL ENGINEER PE.0058764

2023.11.14 15:28:30-06'00'

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

DRAWN BY: CMW
DESIGNED BY: SCJ
FILE PRINTED ON: 11/9/2023 4:54:50 PM

0 1 IF THIS BAR DOES NOT READ 1" DRAWING IS NOT LABELED TO SCALE

AquaWorks DBO, INC. DESIGN BUILD OPERATE

REVIEWED FOR CODE COMPLIANCE 10/10/2024

PROJECT: WWTP IMPROVEMENT PROJECT
COMMUNITY OF PHIPPSBURG
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

SHEET TITLE: STRUCTURAL DETAILS

PROJECT NUMBER: #2479

SCALE: PER DETAIL

SHEET: S7

STRUCTURAL GENERAL NOTES – APPLICABLE TO ALL CONSTRUCTION UNLESS OTHERWISE NOTED ON THE PLANS

A. DESIGN SCOPE BY PSE CONSULTING ENGINEERS, INC. (PSE):

1. Design Shown on drawings by PSE is for the following items.
   a. Foundation and framing.
2. Design Shown on PSE drawings does not include: finishes, architectural items, windows, doors, moisture barriers, water proofing, mechanical units, plumbing, or electrical items.

B. GENERAL REQUIREMENT:

1. Furnish all labor, materials, and equipment necessary to complete the work shown or inferred by these drawings.
2. Where construction details are not shown or noted for any part of the work, such details shall be the same as for similar work shown on the drawings.
3. Notes and details on the drawings take precedence over the general notes and typical details in case of conflict.
4. Provide manufacturer's approved product evaluation reports (ICBO reports) and a list of all proposed substitutions to the Engineer for review and written approval before fabrication.
5. Pipes, ducts, sleeves, chases, etc. shall not be placed in slabs, beams, or walls unless specifically shown or noted nor shall any structural member be cut for pipe, ducts, etc., unless specifically shown. Obtain prior written approval for installation of any additional holes, ducts, etc.
6. Locate and protect underground or concealed conduit, plumbing or other utilities where new work is being performed.
7. The contract drawings and specifications represent the finished structure and do not indicate methods, procedures or sequence of construction. The contractor shall take necessary precautions to maintain and insure the integrity of the new and any existing structures during construction. The design stresses shall not be exceeded during construction based on the age of each element . Neither the owner nor Architect/Engineer will enforce safety measure regulations. Contractor shall design, construct and maintain all safety devices, including shoring and bracing for the new and any existing structures and shall be solely responsible for conforming to all local, state and federal safety and health standards, laws and regulations. Observation visits to the site by the engineer shall not include inspection of the above items.
8. Obtain prior written approval for any changes to the drawings.
9. The contractor shall review and compare the structural drawings with all other Construction Documents, such as Architectural, Mechanical and Electrical drawings, specifications, etc. Do not scale drawings. The contractor shall verify dimensions, elevations and all information. Report, in writing, any inconsistencies, errors, or omissions to the Architect/Engineer of record before proceeding with the work.
10. All existing constructions shown are schematic only. Contractor is responsible to verify actual conditions and allow for them in his bid. Notify the Architect/Engineer, in writing, in case of any discrepancy between actual conditions and what is shown on the structural drawings before proceeding with the work.
11. See Architectural, Mechanical, Electrical and other drawings for embedded items.
12. Camber shall be provided for all members with 30 feet or more of span. Check beam table and contact the Structural Engineer for the amount of camber.
13. Shop drawings:
    a) Shop drawings shall be submitted in the form of two copies.
    b) Prior to submittals, the general contractor shall review all submittals for conformance with the Construction Documents and shall stamp submittals as being "Reviewed for Conformance".
    c) Any detail on the shop drawing that deviates from the Construction Documents shall be marked with the note "This is a change"
    d) Shop drawing submittals processed by the Structural Engineer are not Change Orders.
    e) Shop drawings shall be submitted to the Architect/Engineer prior to fabrication and construction regarding all structural items including:
       –Concrete and masonry reinforcement, drawings shall conform to ACI 315 and ACI 318.
       –Structural steel, drawings to conform to AISC.
       –Glued–Laminated members, drawings to conform to AITC.
       –Prefabricated wood joists and trusses, drawings to conform to ICBO product evaluation report.
       –Wood trusses, drawings to conform to UBC.
    f) Shop drawings or calculations submitted for review that require re–submittal for re–review, as determined by the Structural Engineer, shall be billed hourly to the general contractor. Re–review will not proceed without written approval from the general contractor for additional engineering services.
14. Submit seismic anchorage calculations stamped by a licensed Professional Engineer for all equipment and components weighing more than 400 lb.
15. Submit structural drawings signed and sealed by a professional Engineer licensed in the State where the project is located for any structural member needed for this project that is not designed by P.S.E.
17. Any substitutions for structural members, hardware or details shall be reviewed by the Architect and Structural Engineer. Such review will be billed on a time and materials basis to the General Contractor with no guarantee that the substitution will be allowed.
18. All communication shall be in writing. No verbal communications, decisions, instructions or approvals shall be valid.

C. CODE AND LOADS:

1. All design, material, and construction work for this project shall conform to the Colorado State Building Codes based on the 2021 International Building Code (IBC).
2. Design parameters.

a. Floor Live Load = 40 psf.	b. Floor Dead Load = 15 psf.
c. Roof Live Load = n/a psf.	d. Roof Dead load = 15 psf.
e. Ground Snow Load, Pg = 70.1psf.	f. Flat Roof snow load = 49.1 psf.
g. Snow Exposure Factor, Ce = 1.0	h. Snow Load Importance Factor, Is = 1.0
i. Thermal Factor, Ct = 1.0	j. Ultimate Wind Speed (3 second gust) = 105 mph
k. Wind Importance Factor, Iw = 1.0	l. Wind Exposure = C
m. Internal Pressure Coefficient = 0.85	n. Components and Cladding studs = 38 psf
o. Seismic Importance Factor, Ie = 1.0	p. Site Class = D
q. Ss = 0.525	r. S1 = 0.097
s. Sms = 0.724	t. Sm1 = 0.232
u. Sds = 0.483	v. Sd1 = 0.155
w. Seismic Design Category = C	x. Basic Seismic Force Resisting System = Metal Sheathed Shipping Container
y. Design Base Shear = 0.242 * W	z. Approximate Fundamental Period, T = 0.104
aa. Response Modification Factor, R = 2.0	bb. Analysis Procedure Used = Equivalent Lateral Force Procedure

D. INSPECTION:

The owner shall employ one or more qualified Inspectors to provide inspections during construction in according with section 1701 of the above code. The Inspector shall be certified by the building official to perform the type of inspection specified. Inspection shall be provided for:

a. Foundation excavation.
b. Reinforcement placement, prior to closing the forms and delivery of concrete.
c. Concrete placement.
d. Bolts installed in concrete and masonry, prior to and during the placement of concrete around bolts.
e. Structural Steel.
f. Field welding.
g. High–strength bolting.
h. During preparation and taking of test specimens.
i. See other sections of these notes for more required inspections.

Note: All discrepancies shall be brought to the immediate attention of the contractor for correction; then if not corrected, to the building official and to the Engineer in writing. The inspector shall furnish an inspection report to the building official and to the Engineer/Architect of Record.

E. TESTING:

The owner/contractor shall retain an independent testing laboratory to test the quality of:

a. Soil or fill material supporting footings and slab–on–grade.
b. Concrete.
c. Mortar shall be tested in accordance with UBC standard 21–16.
d. Grout shall be tested in accordance with UBC standard 21–18.
e. All other material used in this project as required by the Engineer.
f. A copy of test results shall be sent to the Engineer of Record.

F. STRUCTURAL STEEL:

1. Unless noted otherwise on plans, all structural steel shall be per Table 2–3 of AISC Manual of Steel Construction, Thirteenth Edition, as shown below:

On–Site Fabrication

Shape	Steel, Typ	Yeild Strength Fy, KSI
W–shape	A 992	50–65
Angles	A 36	36
Rectangular Tube, HSS	A 500, Gr.C	50
Round Tube, HSS	A 500, Gr.C	46
Pipe	A53, Gr.B	35
Plate	A 36	36
$\frac{1}{2}$"ø – $\frac{3}{4}$"ø Bolts	A 325	120/105
LGS Stud < 18ga	A 570 Gr. 33	33
LGS Stud ≥ 18 ga	A 607 Gr. 55	55
Container/Module Tube	Corten/A242	50
Container/Module Channel	Corten/A242	50
Container/Module Panel	Corten/A242	50

2. Fabrication and erection shall be in accordance with the American Institute of Steel Construction (AISC).
3. All beam connections shall be bolted or shop welded as detailed on the drawing or designed by fabricator per AISC Manual of Steel Construction allowable Stress Design, "Framed Beam Connections." Bolts shall be 3/4 inch. diameter ASTM A325, load indicator bolts. All bolts shall be tightened to the minimum tension specified in the specification for structural joints using A325 or A490 bolts.
4. All welding shall conform to the current American Welding Society (AWS) Specifications and be performed by certified welders.
5. Column anchor bolts shall have minimum yield strength of 36 KSI.
6. Metal deck shall be the type as indicated on the drawings. The deck shall be welded to the supporting members per manufacturer's recommendations or as indicated on the drawings whichever is more restricting or stringent.
7. All openings in metal deck to have 4" X 4" X ¼" angle frames set between joists.
8. All structural steel and bar joists shall have one shop coat of rust inhibitor primer paint conforming to specification. Field touch up all unpainted areas and weld areas.
9. Grout for base plates shall be nonmetallic, non–shrinkage cementitious grout having a minimum 3–days compressive strength of 4000 PSI.
10. Reference specifications for additional requirements.

G. SHIPPING / CARGO CONTAINER SPECIFICATION:

1. The shipping / cargo container(s) shall be:
   a) Undamaged (Free of rust, dents, cracks, et cetera that affect the structural integrity of the container).
   b) Made from steel.
   c) Design and tested according to the International Organization for Standardization (ISO) specifications.
   d) Certified for compliance to the Rules for Certification of Cargo Containers and the International Convention for Safe Containers (CSC) for use as shipping containers by the American Bureau of Shipping (ABS) or other approved Certified Inspection and Testing Agency (CITA).
   e) Container shall have a CSC safety approval placard (CSC Plate) and CITA logo prior to any modification.
   f) Walls and roof are continuously welded around its entire periphery and is itself made from sheets of corrugated 14ga. Cor–Ten steel also continuously welded together. This steel, also used for the side and end walls has a minimum yeild strength of 50ksi and tensile of 70ksi.
2. Prior to construction/modification, Client / Owner / Contractor shall:
   a) Provide pictures of high/good quality to PSE showing the following of each container:
      – All four sides
      – Roof
      – Under framing
      – Top Rails
      – Bottom Rails
      – Interior
      – CSC Plate
   b) Visually inspect all existing welds for consistency and undamaged.
   c) Confirm existing plywood floor sheathing is:
      – Not damaged, cracked, deformed, delaminated, or showing any other signs that structural integrity has been compromised
      – Free of hazardous materials, liquids, and/or stains, or shall be encapsulated.
      – Fully fastened to container floor joists per original construction.
      – If existing plywood floor sheathing needs to be replaced, inform PSE prior to replacing with equivalent pressure/preservative treated OSB or $\frac{1}{4}$" steel plate with equivalent or better fastening to container floor joists.
   d) If possible, provide manufacturer drawings of container to PSE.
3. Dimensions provided may be the nominal dimensions of the container. Contractor/fabricator, owner, and/or architect to verify actual dimension before construction.

H. ABBREVIATIONS:

AB ANCHOR BOLT
ADDL ADDITIONAL
ALT ALTERNATE
APA AMERICAN PLYWOOD ASSOCIATION
ARCH ARCHITECTURAL
B BOTTOM
BLKG BLOCKING
BN BOUNDARY NAIL
BOF BOTTOM OF FOOTING
CBC CALIFORNIA BUILDING CODE
CJ CONSTRUCTION JOINT OR CONTROL JOINT
CL CENTER LINE
CLR CLEAR
CONN CONNECTION
CONT CONTINUOUS
DBL DOUBLE
DIM DIMENSION
DL DEAD LOAD
DO DITTO (REPEAT)
DWG DRAWING
DWL DOWEL
E EXISTING
EA EACH
EF EACH FACE
EL ELEVATION
EMBED EMBEDMENT
EN EDGE NAIL
EOR ENGINEER OF RECORD
EQ EQUAL
ES EACH SIDE
EW EACH WAY
FA FRAMING ANCHOR
FD FROST DEPTH
FEN FLOOR EDGE NAILING
FF FINISHED FLOOR
FN FIELD/INTERMEDIATE NAILING
FS FAR SIDE
FTG FOOTING
GALV GALVANIZED
GC GENERAL CONTRACTOR
GIR GEOTECHNICAL INVESTIGATION REPORT
GLB GLUED LAMINATED BEAM
GR GRADE
HDR HEADER
HGR HANGER
HORIZ HORIZONTAL
HSH HORIZONTALLY SLOTTED HOLES
ICBO INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
ID INSIDE DIAMETER
INT INTERIOR
JT JOINT
LDGR LEDGER
LGST LIGHT GAUGE STEEL, COLD–FORMED STEEL
LL LIVE LOAD
MATL MATERIAL
MAX MAXIMUM
MB MACHINE BOLT
MFR MANUFACTURER
MIN. MINIMUM
MTL METAL
NO. NUMBER
NS NEAR SIDE
NTS NOT TO SCALE
OC ON CENTER
OD OUTSIDE DIAMETER
OFDSC OREGON ONE & TWO FAMILY DWELLING SPECIALTY CODE
OH OPPOSITE HAND
OSB ORIENTED STRAND BOARD
OSSC OREGON STRUCTURAL SPECIALTY CODE
OSV ON SITE VERIFY
OTOB OUT TO OUT OF BEARING
PERP PERPENDICULAR
PL PLATE
PLF POUND PER LINEAR FOOT
PSE PSE, INC.
PT PRESSURE TREATED
PW PLATE WASHER
REF REFERENCE
REN ROOF EDGE NAILING
REINF REINFORCEMENT
RFT RAFTERS
SGN STRUCTURAL GENERAL NOTES
SEP SEPARATION
SIM SIMILAR
SN SHEAR NAIL
SNL SNOW LOAD
SPEC SPECIFICATION
STD STANDARD
STGR STAGGER
STIFF STIFFENERS
T TOP
TB TOP & BOTTOM
TD TYPICAL DETAILS
TG TONGUE & GROOVE
THK THICKNESS/THICK
TN TOENAIL
TOB TOP OF BEAM
TOF TOP OF FOOTING
TOW TOP OF WALL
TYP TYPICAL
UBC UNIFORM BUILDING CODE
UON UNLESS OTHERWISE NOTED
VERT VERTICAL
VSH VERTICAL SLOTTED HOLES
WD WOOD
WEN WALL EDGE NAILING
WWF WELDED WIRE FABRIC
W/ WITH
W/O WITHOUT

SHEET INDEX:

Structural details for this project are for illustration only. They are not drawn to scale unless noted otherwise. Contractor must verify all dimensions before fabrication or construction. Do not scale drawings.

REVIEWED FOR CODE COMPLIANCE
10/10/2024

PSE Consulting Engineers, Inc.
www.structure1.com
Klamath Falls Office
250 Main
Klamath Falls, Oregon 97601
Phone: (541) 850-6300
Fax: (541) 850-6233
info@structure1.com

Medford Office
836 Mason Way
Medford OR. 97501
Phone: (541) 858-8500
Fax: (541) 776-4663
infomd@structure1.com

Project:
AquaWorks DBO, Inc. Shipping Container
22158 CR 12, Phippsburg, CO

Owner / Client:
AquaWorks DBO, Inc.

3-1-2024
COLORADO LICENSED PROFESSIONAL ENGINEER
30389
Expires 10/31/2025

REVISION SCHEDULE

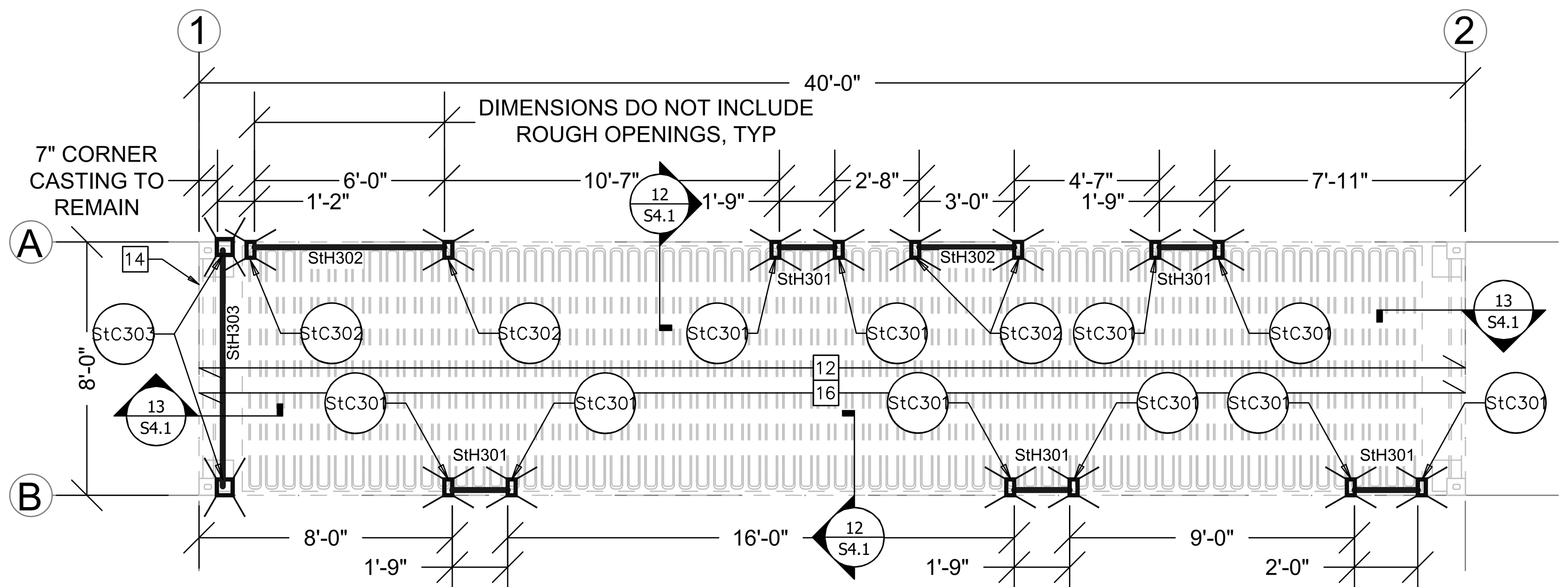
MARK	DESCRIPTION	DATE

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

TITLE:
GENERAL NOTES

PAGE NO:
S1

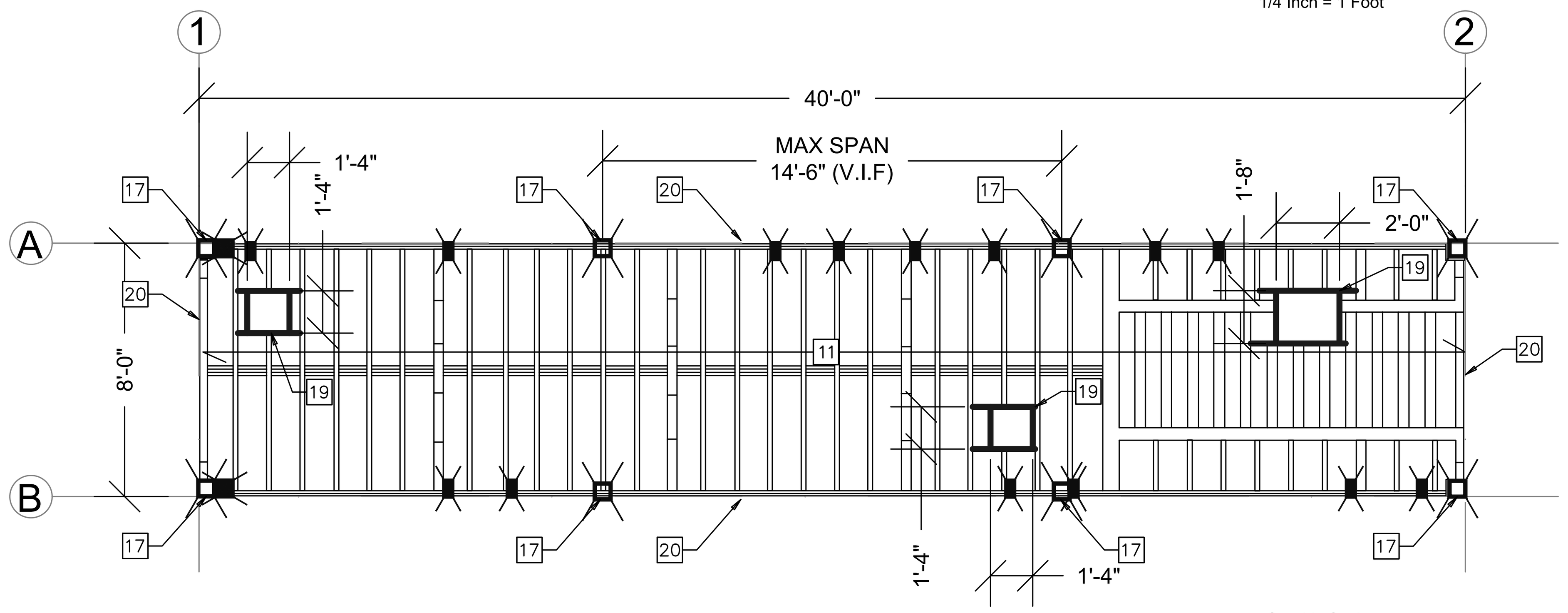
PROJECT #:
AquaWorks DBO Inc., 224-2001



1 SHIPPING CONTAINER ROOF FRAMING PLAN

Approximate Scale: 1/4" = 1'-0"

Graphic Scale 0ft 10ft 1/4 Inch = 1 Foot



2 SHIPPING CONTAINER FLOOR FRAMING PLAN

Approximate Scale: 1/4" = 1'-0"

Graphic Scale 0ft 10ft 1/4 Inch = 1 Foot

MARK	SIZE	TYPE	BASE CONNECTION	TOP CONNECTION	REMARKS
StC301	HSS 3x3x$\frac{3}{16}$"	A1085	REFER TO DETAIL 3-4/S2.1	REFER TO DETAIL 3-4/S2.1	-
StC302	HSS 3x3x$\frac{3}{16}$"	A1085	REFER TO DETAIL 1-2/S2.1	REFER TO DETAIL 1-2/S2.1	-
StC303	HSS 3x3x$\frac{3}{16}$"	A1085	REFER TO DETAIL 5-7/S2.1	REFER TO DETAIL 5-7/S2.1	-

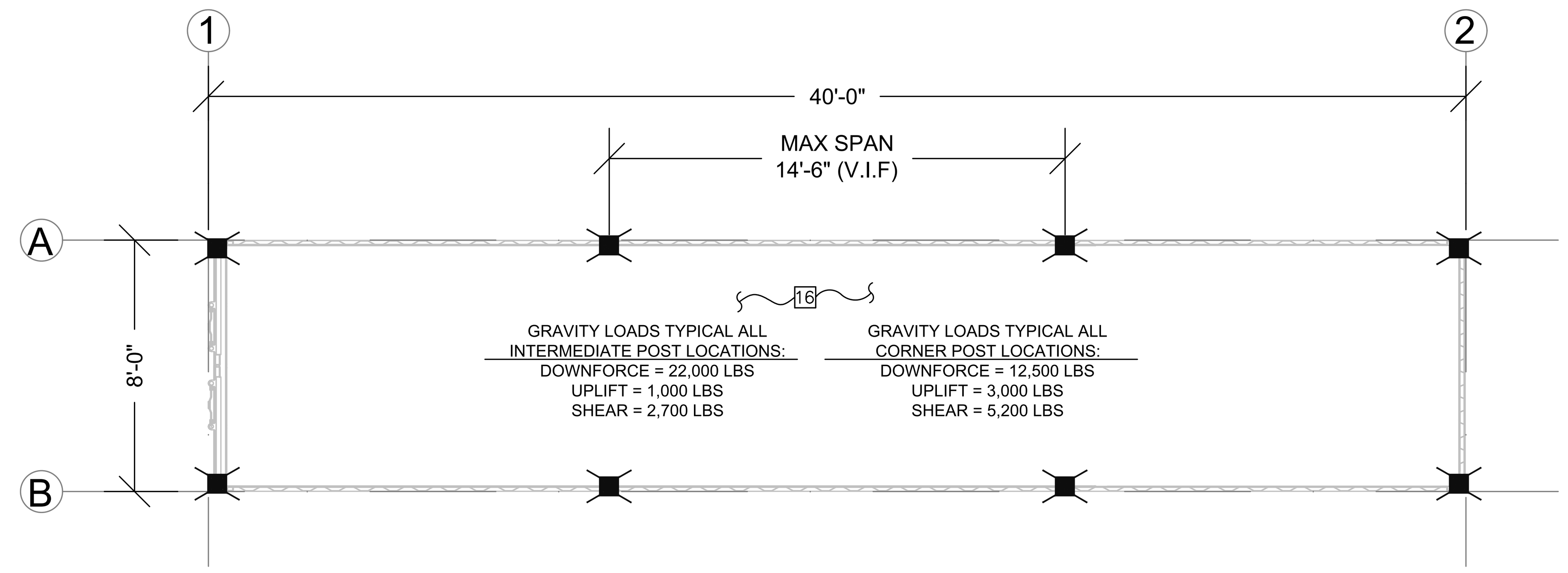
3 STEEL COLUMN SCHEDULE (StC)

N.T.S. COLUMN BELOW, SUPPORTING THIS FLOOR/ROOF LEVEL.

MARK	MAX OPENING	COMBINATION	FRAME SIZE	REMARKS
StH301	UP TO 2'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 3-4/S2.1
StH302	UP TO 6'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 1-2/S2.1
StH303	UP TO 8'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 5-7/S2.1

4 STEEL HEADER SCHEDULE (StH)

N.T.S.



5 FOUNDATION LOADS: ASSUMED LOCATIONS

Approximate Scale: 1/4" = 1'-0"

Graphic Scale 0ft 10ft 1/4 Inch = 1 Foot

DESIGN DATA:	
ROOF DESIGN LOADS:	
GROUND SNOW LOAD:	70.1 PSF
ROOF SNOW LOAD:	49.1 PSF
ROOF LIVE LOAD:	n/a
ROOF DEAD LOAD:	10 PSF
CEILING DEAD LOAD:	5 PSF
FLOOR DESIGN LOADS:	
FLOOR DEAD LOAD:	15 PSF
FLOOR LIVE LOAD:	40 PSF
LIVE LOAD OCCUPANCY:	MEP ROOM
WIND DESIGN LOADS:	
ULTIMATE (3-SEC GUST)	105 MPH
EXPOSURE CATEGORY:	C
SEISMIC DESIGN LOADS:	
Ss	0.525
S1	0.097
SEISMIC DESIGN CATEGORY	C
Ie	1

LEGEND:

- DISCONTINUOUS 2x6 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL SUPPORTING/BELOW THIS FLOOR/ROOF.
- DISCONTINUOUS 2x6 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL ABOVE THIS FLOOR/ROOF.
- DISCONTINUOUS COLUMN SUPPORTING THIS FLOOR/ROOF.
- STUB, SHORT,POST.
- n INDICATES SHEET NOTES.
- Cn INDICATES COLUMN MARK, REFER TO COLUMN SCHEDULE.
- n NUMERICAL VALUE, 1, 2, 3 ETC.

SHEET NOTES:

1. REFER TO S1 FOR STRUCTURAL GENERAL NOTES AND TO ROOF DETAIL SHEETS FOR CONSTRUCTION DETAILS.
2. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. DO NOT SCALE DRAWINGS.
3. PROVIDE MULTIPLE STUDS UNDER BEAMS OR TRUSSES TO MATCH WIDTH OF SUPPORTED MEMBER, TYP. STUDS SHALL BE CONTINUED IN LOWER FLOORS AND/OR CRAWL SPACE TO FOOTING, TYP.
4. ROOF DRAINAGE SHALL BE DIRECTED AWAY FROM FOUNDATION.
5. PROVIDE SOLID BLOCKING UNDER POSTS AND MULTIPLE STUDS TO TRANSFER LOADS TO POSTS/STUDS BELOW.
6. LAY FLOOR AND ROOF STRUCTURAL PANELS WITH THE LONG DIMENSION AT RIGHT ANGLE TO SUPPORTS AND CONTINUOUS OVER TWO OR MORE SPANS.
7. LIMIT LIVE LOAD DEFLECTION TO SPAN OVER 480 FOR RAFTERS, JOISTS, BEAMS.
8. FLOOR SHEATHING SHALL BE 3/4" OR MORE THICK APA T&G PLYWOOD OR OSB WITH 48"/24" SPAN RATING. USE 8d @ 4" O.C. (BN) AT EXTERIOR WALLS AND INTERIOR SHEAR WALLS. 8d @ 6" O.C. (FEN) ALONG PANEL EDGES AND 8d @ 10" O.C. AT INTERMEDIATE SUPPORTS, UON. MINIMUM PENETRATION IS 1 5/8" INTO FRAMING. USE GLUE.
9. FIELD GLUE FLOORS TO ALL SUPPORTS AND T&G EDGES PER APA, AFG-01. FRAMING SHALL BE FREE OF SURFACE MOISTURE AND DEBRIS PRIOR TO GLUING.
10. IF HEAVY EQUIPMENT (WEIGHING OVER 500LBS) IS PLACED OVER FINISHED FLOOR CONTACT EOR FOR REVIEW PRIOR TO INSTALLATION.
11. EXISTING CONTAINER FLOOR BEAMS/RAILS, JOISTS & FLOORING TO REMAIN UNMODIFIED U.N.O
12. EXISTING CONTAINER ROOF TO REMAIN UNMODIFIED U.N.O
13. CENTER FOOTING UNDER POSTS AND WALLS UNLESS OTHERWISE NOTED ON PLANS AND/OR DETAILS.
14. SHIPPING CONTAINER DOOR AND CORNER CASTING TO REMAIN.
15. LINE OF SHIPPING CONTAINER ABOVE
16. CONTRACTOR'S CHOICE:
2x4 DF-L #1 CEILING JOIST @ 12" O.C. WITH 2x BLOCKING AT HALFWAY POINT AND WOOD SHIM ABOVE @ 1/3RD POINTS. REFER TO DETAIL 12/S2.1 FOR CONNECTION TO TOP RAIL OR
2x4 DF-L #1 RAFTER @ 12" O.C. WITH 2x BLOCKING AT HALFWAY POINT. REFER TO DETAIL 13/S2.1 FOR CONNECTION TO TOP RAIL
17. CONTRACTOR TO ATTACH SHIPPING CONTAINER TO FOUNDATION BY OTHERS WITH BASE PLATE AS PER 8-9/S2.1 AT CORNERS AND MAXIMUM 14'-6" O.C. ALONG BOTTOM RAIL.
18. REINFORCE BOTTOM RAIL ALONG THIS LINE AS PER DETAIL 11/S2.1
19. CONTRACTOR SHALL VERIFY OPENING IN FLOOR. FLOOR OPENING SHALL BE REINFORCED WITH (2) L4x4x$\frac{1}{4}$" A36 ANGLE BETWEEN EXISTING FRAMING MEMBERS AND (2) 4"x$\frac{1}{4}$" A36 FLAT PLATE BETWEEN NEW 'L'-ANGLE
20. FOUNDATION NOT BY PSE. OWNER/CONTRACTOR TO HIRE LOCAL LICENSED ENGINEER OR PSE TO DESIGN FOUNDATION TO SUPPORT SHIPPING CONTAINER. CONTACT PSE FOR ADDITIONAL INFORMATION.

REVIEWED FOR CODE COMPLIANCE 10/10/2024

PSE Consulting Engineers, Inc.

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836 Mason Way
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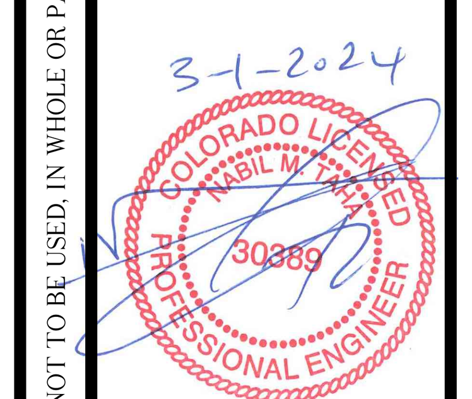
infomd@structure1.com

Project: AquaWorks DBO, Inc. Shipping Container
22158 CR 12, Phippsburg, CO

Owner / Client: AquaWorks DBO, Inc.



Expires 10/31/2025

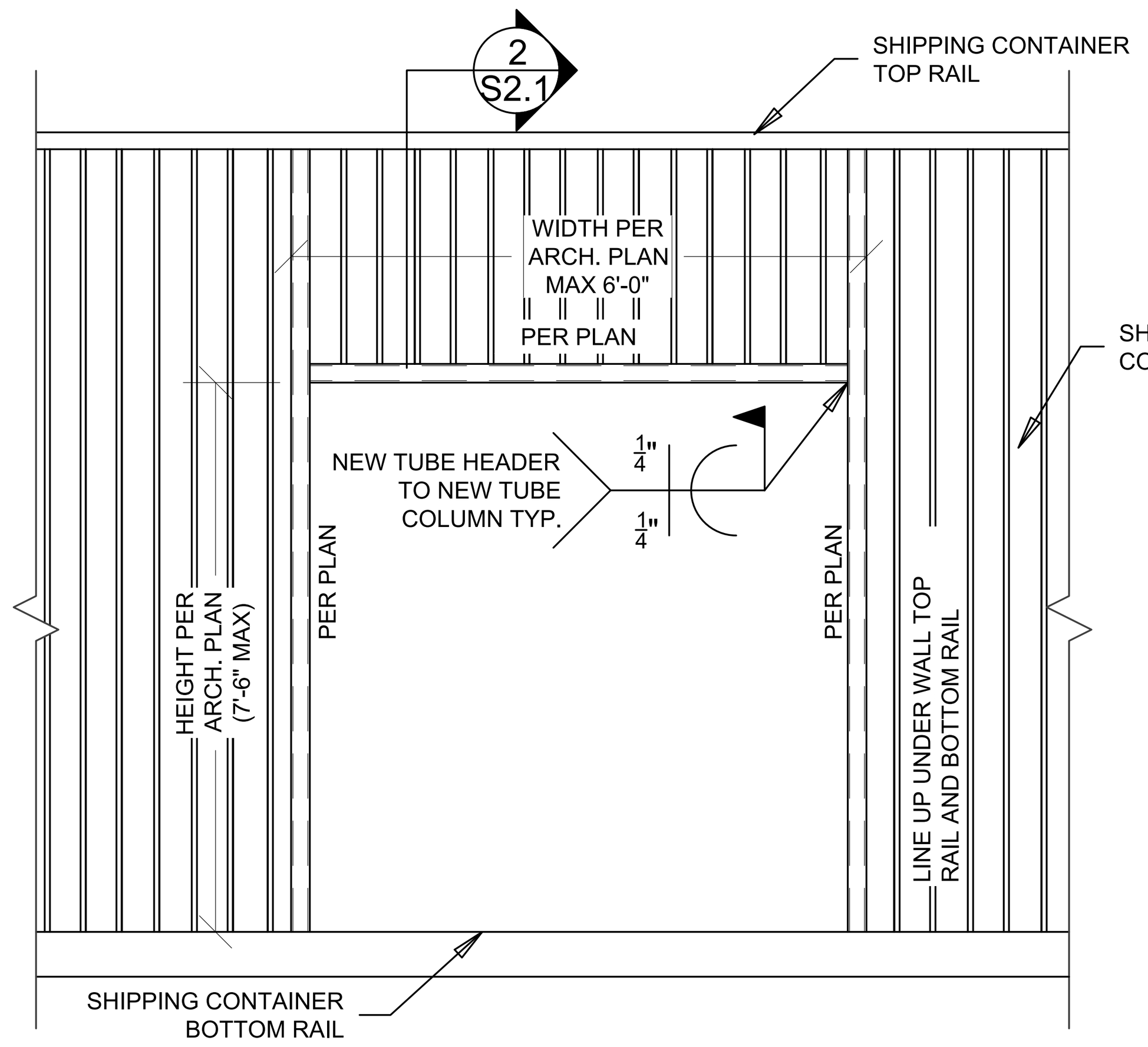
MARK	REVISION SCHEDULE DESCRIPTION	DATE

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

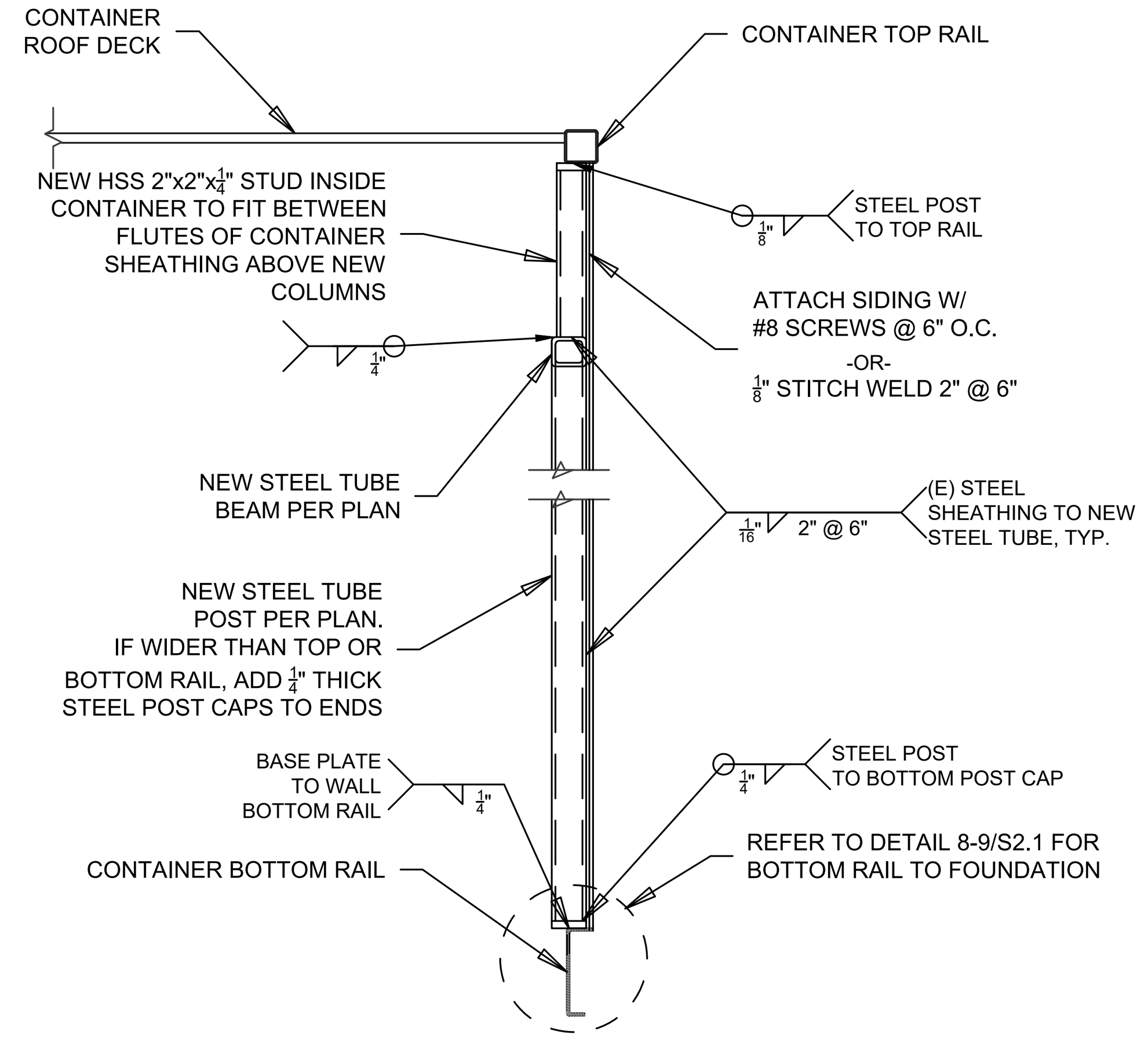
TITLE: CONTAINER FLOOR PLANS

PAGE NO: S2

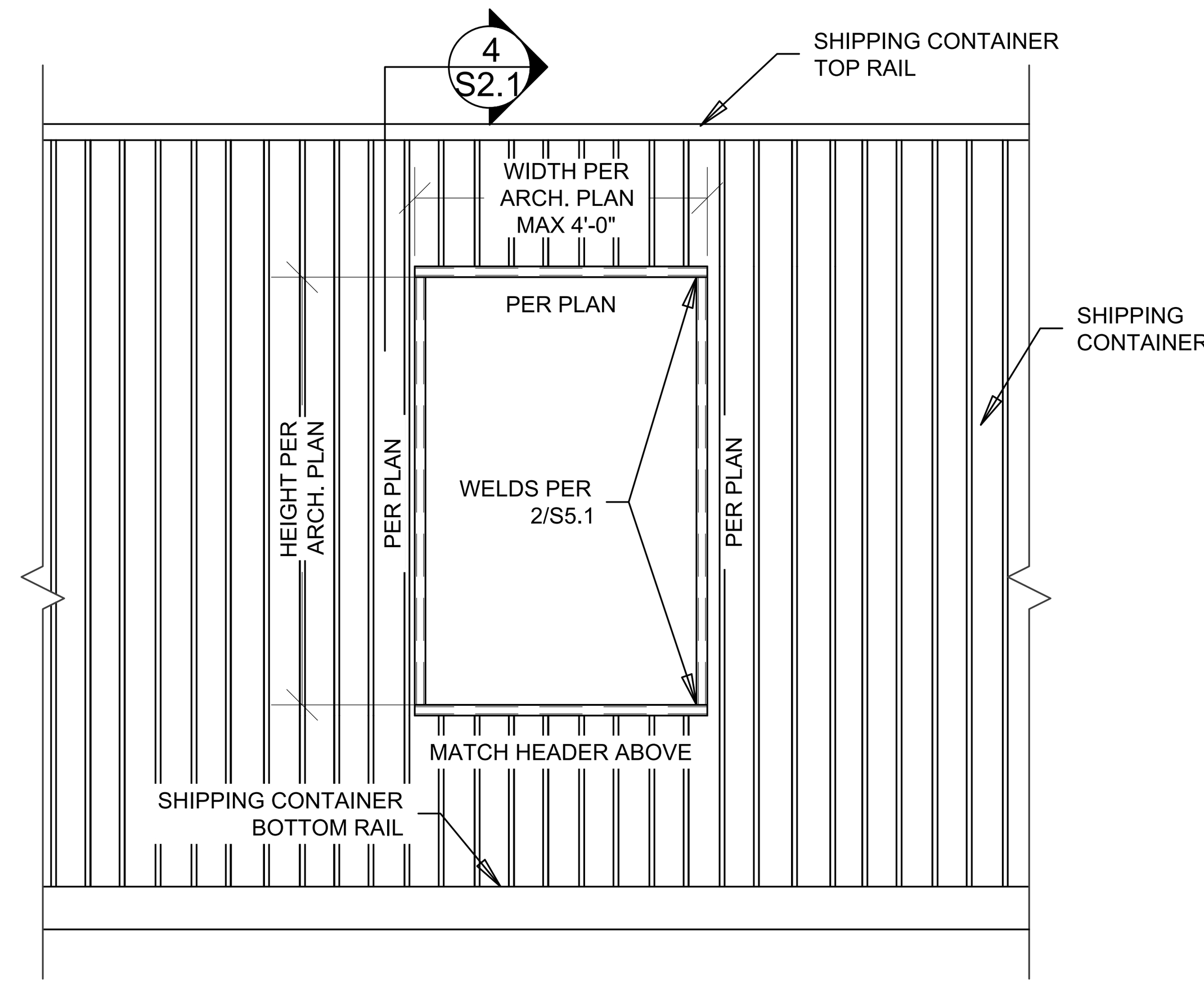
PROJECT #: AquaWorks DBO Inc., 224-2001



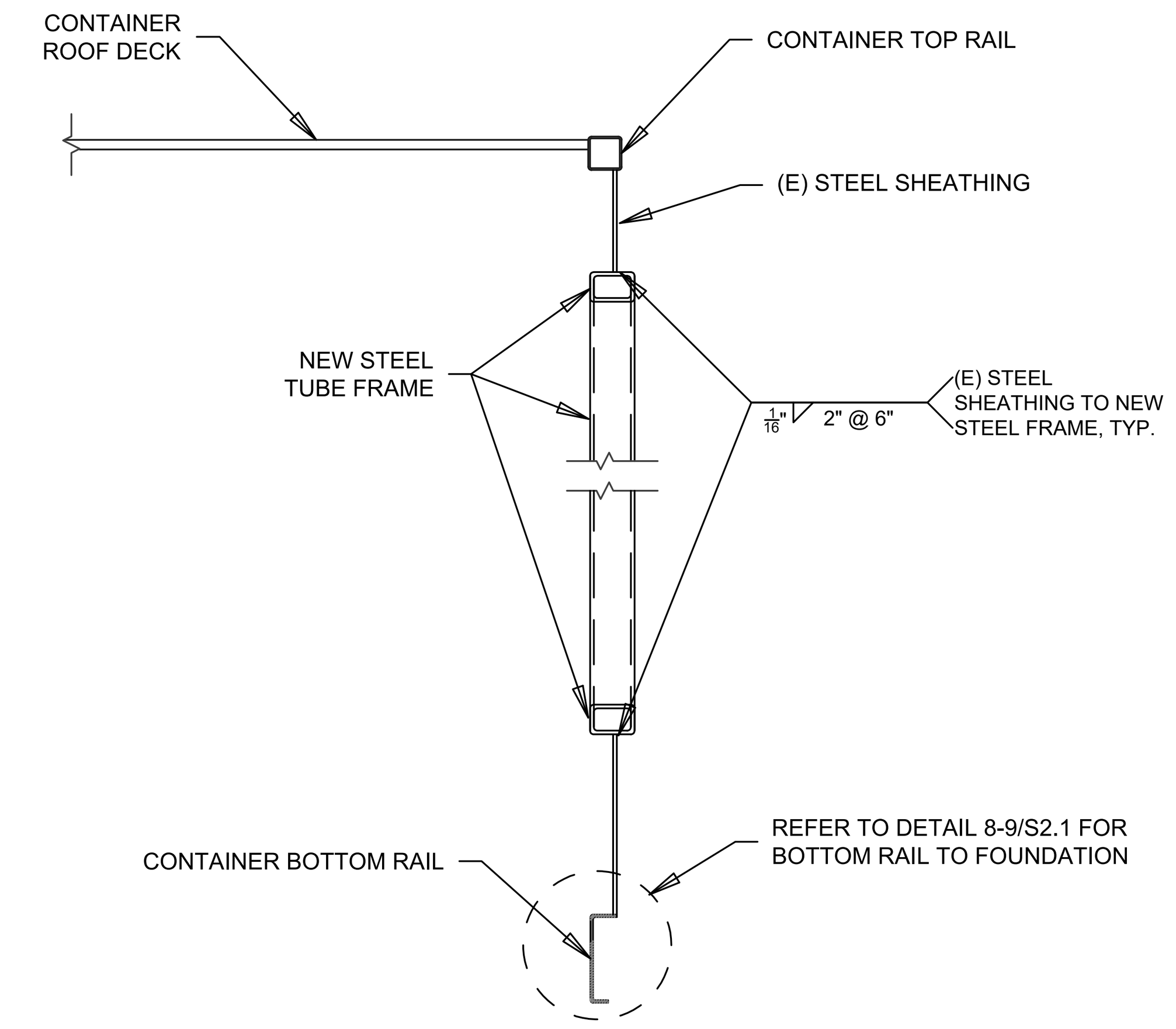
1 TYPICAL DOOR OPENING
N.T.S.



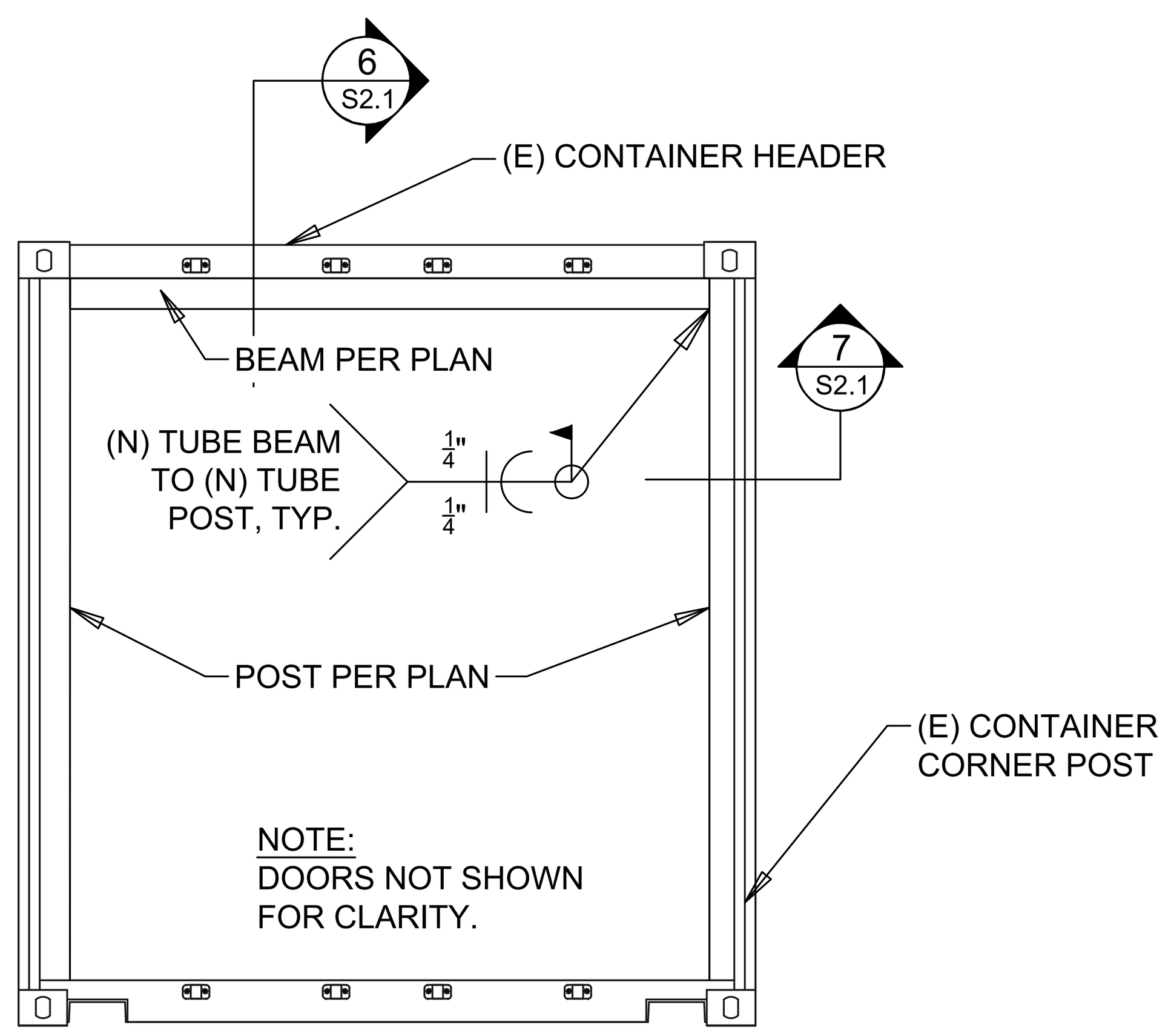
2 TYPICAL DOOR OPENING SECTION VIEW
N.T.S.



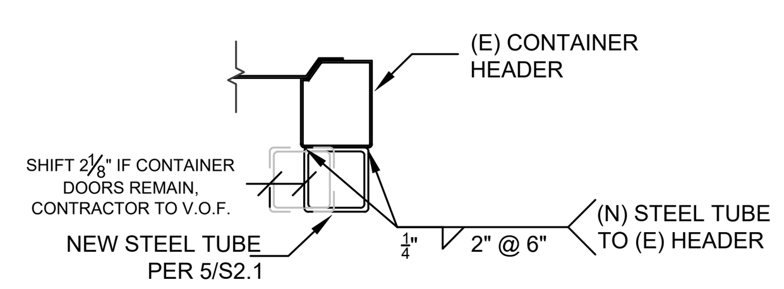
3 TYPICAL WINDOW OPENING
N.T.S.



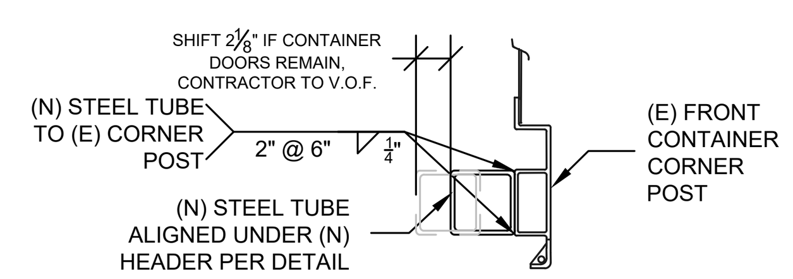
4 TYPICAL WINDOW OPENING SECTION VIEW
N.T.S.



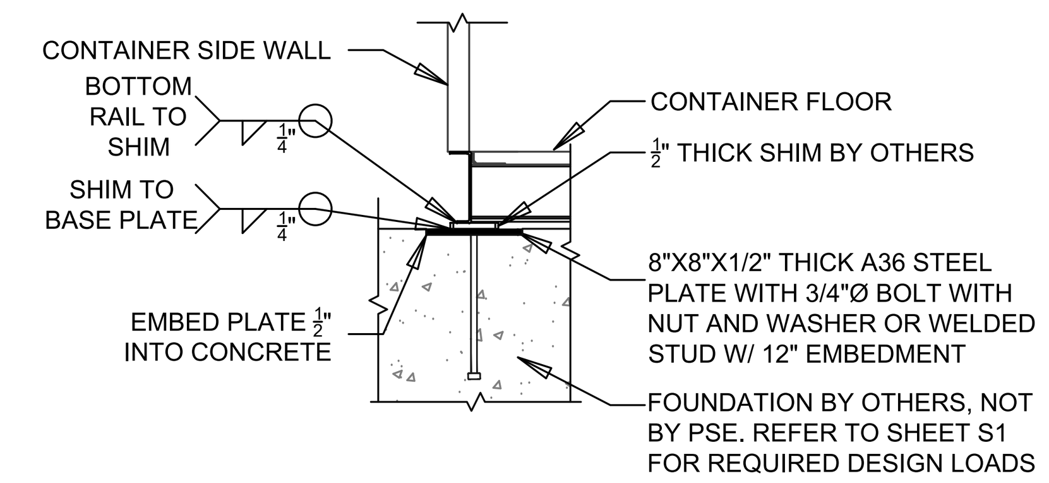
5 NEW FRAME AT CONTAINER DOORWAY
N.T.S.



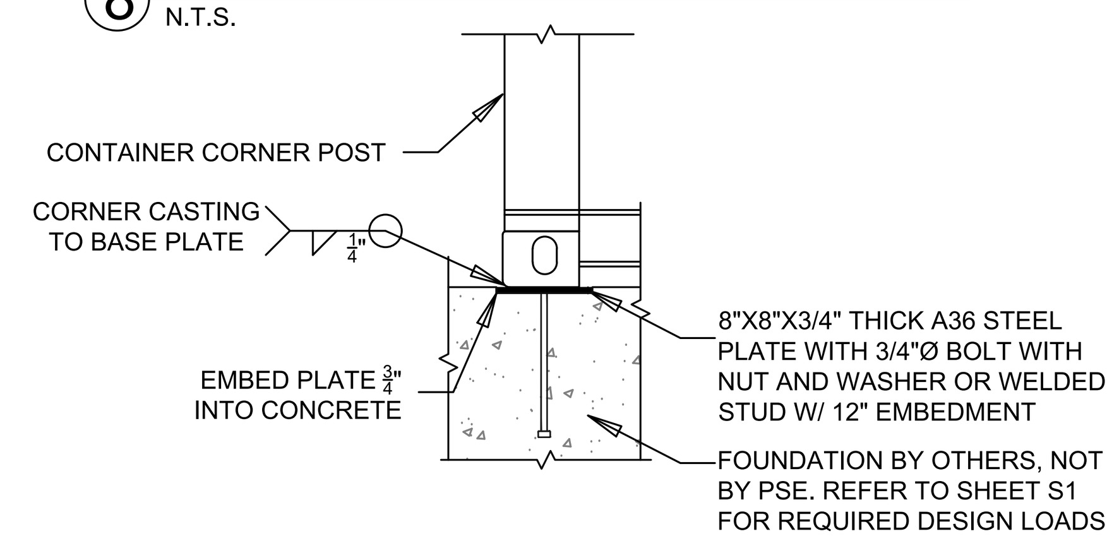
6 NEW HEADER AT CONTAINER DOORWAY
N.T.S.



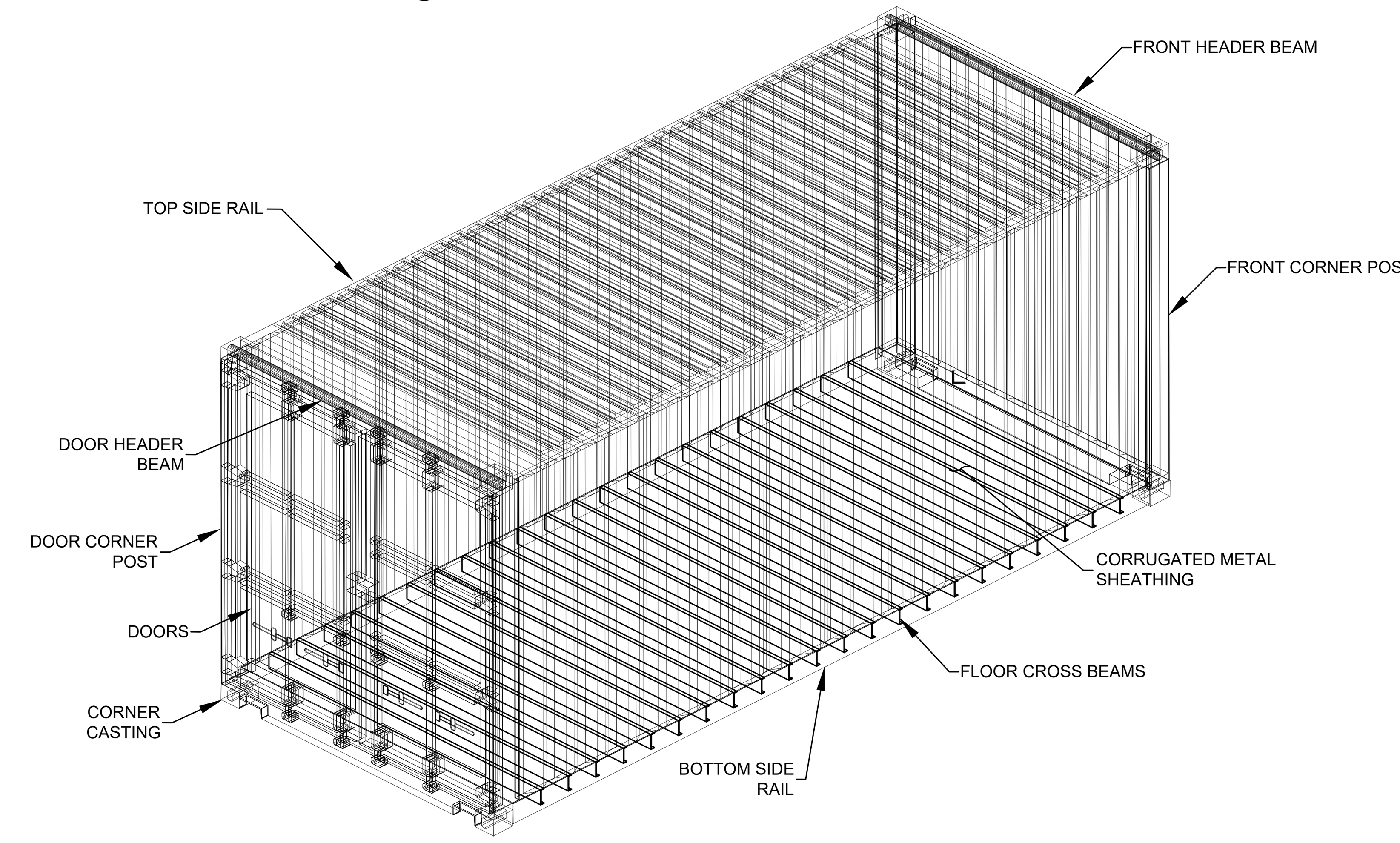
7 NEW POST AT CONTAINER DOORWAY
N.T.S.



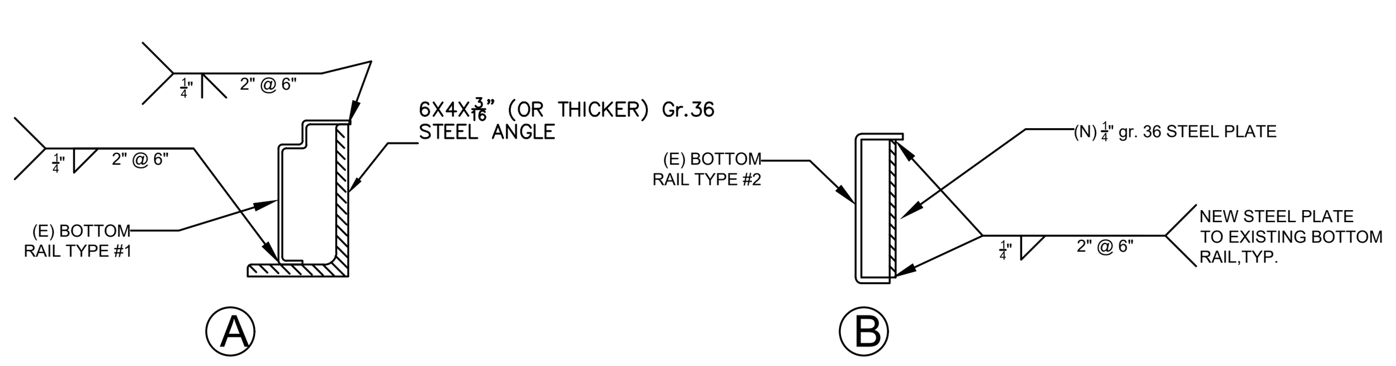
8 BOTTOM RAIL TO FOOTING
N.T.S.



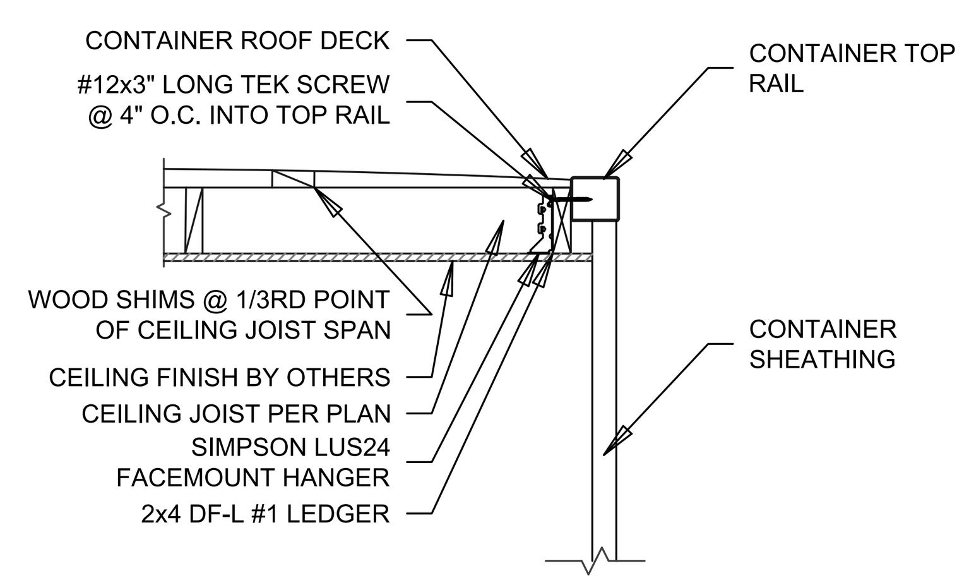
9 CORNER CASTING TO FOOTING
N.T.S.



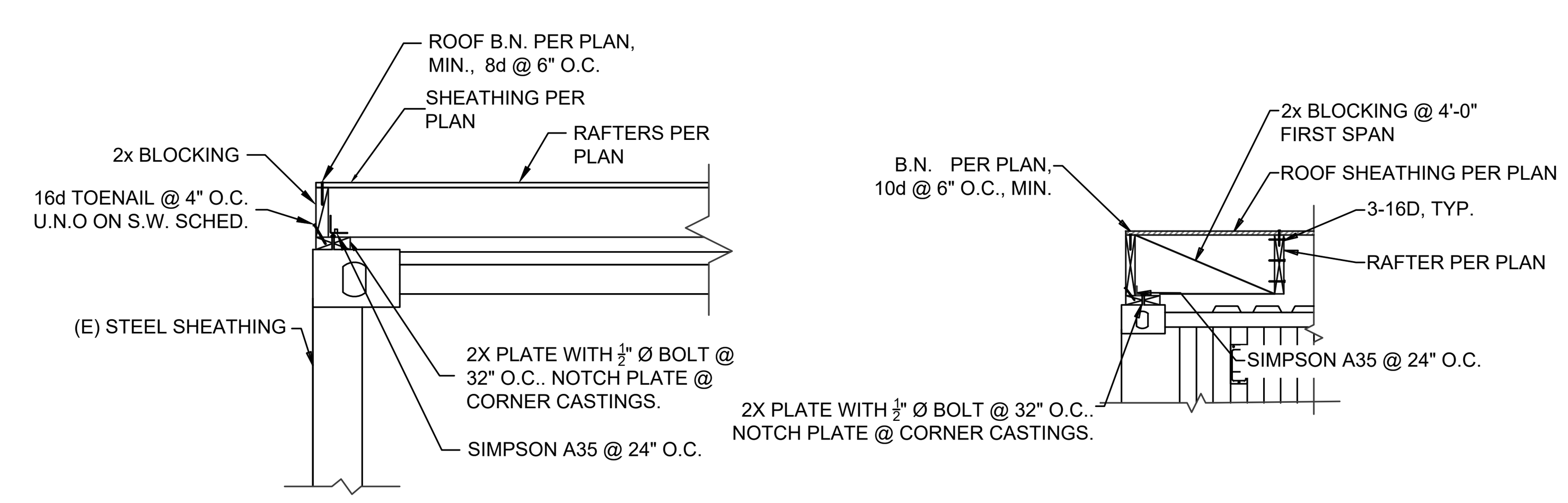
10 STANDARD SHIPPING CONTAINER MEMBER NOMENCLATURE
N.T.S.



11 REQUIRED BOTTOM RAIL REINFORCEMENT (CONTRACTOR CHOICE)
N.T.S.



12 CEILING JOIST TO TOP RAIL
N.T.S.



12 OPTIONAL DETAIL: RAFTER TO CONTAINER TOP RAIL
N.T.S.

REVIEWED FOR CODE COMPLIANCE 10/10/2024

Structural details for this project are for illustration only. They are not drawn to scale unless noted otherwise. Contractor must verify all dimensions before fabrication or construction. Do not scale drawings.

PSE Consulting Engineers, Inc.
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Construction Types: Light Gauge Steel, Straw Bales, Bamboo, Log, Timber/Wood, Structural Insulated Panels/SIPs, Masonry, Steel, Concrete, Modular Homes/Factory Built Housing (FBH), ICF, Shipping Containers, and many more! Commercial or Residential. And Green/Sustainable!

Project:
AquaWorks DBO, Inc. Shipping Container
22158 CR 12, Phippsburg, CO

Owner / Client:
AquaWorks DBO, Inc.

3-1-2024
COLORADO LICENSED PROFESSIONAL ENGINEER 38389
Expires 10/31/2025

REVISION SCHEDULE		
MARK	DESCRIPTION	DATE

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

TITLE:
CONTAINER DETAILS

PAGE NO:
S2.1

PROJECT #: AQUAWORKS DBO INC., 224-2001

STRUCTURAL GENERAL NOTES – APPLICABLE TO ALL CONSTRUCTION UNLESS OTHERWISE NOTED ON THE PLANS

A. DESIGN SCOPE BY PSE CONSULTING ENGINEERS, INC. (PSE):

1. Design Shown on drawings by PSE is for the following items.
   a. Foundation Reactions and Framing.
2. Design Shown on PSE drawings does not include: finishes, architectural items, windows, doors, moisture barriers, water proofing, mechanical units, plumbing, or electrical items.

B. GENERAL REQUIREMENT:

1. Furnish all labor, materials, and equipment necessary to complete the work shown or inferred by these drawings.
2. Where construction details are not shown or noted for any part of the work, such details shall be the same as for similar work shown on the drawings.
3. Notes and details on the drawings take precedence over the general notes and typical details in case of conflict.
4. Provide manufacturer's approved product evaluation reports (ICBO reports) and a list of all proposed substitutions to the Engineer for review and written approval before fabrication.
5. Pipes, ducts, sleeves, chases, etc. shall not be placed in slabs, beams, or walls unless specifically shown or noted nor shall any structural member be cut for pipe, ducts, etc., unless specifically shown. Obtain prior written approval for installation of any additional holes, ducts, etc.
6. Locate and protect underground or concealed conduit, plumbing or other utilities where new work is being performed.
7. The contract drawings and specifications represent the finished structure and do not indicate methods, procedures or sequence of construction. The contractor shall take necessary precautions to maintain and insure the integrity of the new and any existing structures during construction. The design stresses shall not be exceeded during construction based on the age of each element . Neither the owner nor Architect/Engineer will enforce safety measure regulations. Contractor shall design, construct and maintain all safety devices, including shoring and bracing for the new and any existing structures and shall be solely responsible for conforming to all local, state and federal safety and health standards, laws and regulations. Observation visits to the site by the engineer shall not include inspection of the above items.
8. Obtain prior written approval for any changes to the drawings.
9. The contractor shall review and compare the structural drawings with all other Construction Documents, such as Architectural, Mechanical and Electrical drawings, specifications, etc. Do not scale drawings. The contractor shall verify dimensions, elevations and all information. Report, in writing, any inconsistencies, errors, or omissions to the Architect/Engineer of record before proceeding with the work.
10. All existing constructions shown are schematic only. Contractor is responsible to verify actual conditions and allow for them in his bid. Notify the Architect/Engineer, in writing, in case of any discrepancy between actual conditions and what is shown on the structural drawings before proceeding with the work.
11. See Architectural, Mechanical, Electrical and other drawings for embedded items.
12. Camber shall be provided for all members with 30 feet or more of span. Check beam table and contact the Structural Engineer for the amount of camber.
13. Shop drawings:
    a) Shop drawings shall be submitted in the form of two copies.
    b) Prior to submittals, the general contractor shall review all submittals for conformance with the Construction Documents and shall stamp submittals as being "Reviewed for Conformance".
    c) Any detail on the shop drawing that deviates from the Construction Documents shall be marked with the note "This is a change"
    d) Shop drawing submittals processed by the Structural Engineer are not Change Orders.
    e) Shop drawings shall be submitted to the Architect/Engineer prior to fabrication and construction regarding all structural items including:
       –Concrete and masonry reinforcement, drawings shall conform to ACI 315 and ACI 318.
       –Structural steel, drawings to conform to AISC.
       –Glued–Laminated members, drawings to conform to AITC.
       –Prefabricated wood joists and trusses, drawings to conform to ICBO product evaluation report.
       –Wood trusses, drawings to conform to UBC.
    f) Shop drawings or calculations submitted for review that require re–submittal for re–review, as determined by the Structural Engineer, shall be billed hourly to the general contractor. Re–review will not proceed without written approval from the general contractor for additional engineering services.
14. Submit seismic anchorage calculations stamped by a licensed Professional Engineer for all equipment and components weighing more than 400 lb.
15. Submit structural drawings signed and sealed by a professional Engineer licensed in the State where the project is located for any structural member needed for this project that is not designed by P.S.E.
17. Any substitutions for structural members, hardware or details shall be reviewed by the Architect and Structural Engineer. Such review will be billed on a time and materials basis to the General Contractor with no guarantee that the substitution will be allowed.
18. All communication shall be in writing. No verbal communications, decisions, instructions or approvals shall be valid.

C. CODE AND LOADS:

1. All design, material, and construction work for this project shall conform to the 2022 Colorado State Building Code based on the 2021 International Building Code (IBC).
2. Design parameters.

REVIEWED FOR CODE COMPLIANCE
10/10/2024

a. Floor Live Load = 40 psf.	b. Floor Dead Load = 15 psf.
c. Roof Live Load = 20 psf.	d. Roof Dead load = 20 psf.
e. Ground Snow Load, Pg = 70.1psf.	f. Flat Roof snow load = 70 psf.
g. Snow Exposure Factor, Ce = 1.0	h. Snow Load Importance Factor, Is = 1.0
i. Thermal Factor, Ct = 1.0	j. Ultimate Wind Speed (3 second gust) = 105 mph
k. Wind Importance Factor, Iw = 1.0	l. Wind Exposure = C
m. Internal Pressure Coefficient = 0.85	n. Components and Cladding studs = 21.71 psf
o. Seismic Importance Factor, Ie = 1.0	p. Site Class = D
q. Ss = 0.525	r. S1 = 0.097
s. Sms = 0.725	t. Sm1 = 0.233
u. Sds = 0.483	v. Sd1 = 0.155
w. Seismic Design Category = C	x. Basic Seismic Force Resisting System = LIGHT FRAME WALLS WITH SHEAR PANELS
y. Design Base Shear = 0.242 * W	z. Approximate Fundamental Period, T = 0.104
aa. Response Modification Factor, R = 2.0	bb. Analysis Procedure Used = Equivalent Lateral Force Procedure

D. INSPECTION:

The owner shall employ one or more qualified Inspectors to provide inspections during construction in according with section 1701 of the above code. The Inspector shall be certified by the building official to perform the type of inspection specified. Inspection shall be provided for:

a. Foundation excavation.
b. Reinforcement placement, prior to closing the forms and delivery of concrete.
c. Concrete placement.
d. Bolts installed in concrete and masonry, prior to and during the placement of concrete around bolts.
e. Structural Steel.
f. Field welding.
g. High–strength bolting.
h. During preparation and taking of test specimens.
i. See other sections of these notes for more required inspections.

Note: All discrepancies shall be brought to the immediate attention of the contractor for correction; then if not corrected, to the building official and to the Engineer in writing. The inspector shall furnish an inspection report to the building official and to the Engineer/Architect of Record.

E. TESTING:

The owner/contractor shall retain an independent testing laboratory to test the quality of:

a. Soil or fill material supporting footings and slab–on–grade.
b. Concrete.
c. Mortar shall be tested in accordance with UBC standard 21–16.
d. Grout shall be tested in accordance with UBC standard 21–18.
e. All other material used in this project as required by the Engineer.
f. A copy of test results shall be sent to the Engineer of Record.

F. STRUCTURAL STEEL:

1. Unless noted otherwise on plans, all structural steel shall be per Table 2–3 of AISC Manual of Steel Construction, Thirteenth Edition, as shown below:

On–Site Fabrication

Shape	Steel, Typ	Yeild Strength Fy, KSI
W–shape	A 992	50–65
Angles	A 36	36
Rectangular Tube, HSS	A 500, Gr.C	50
Round Tube, HSS	A 500, Gr.C	46
Pipe	A53, Gr.B	35
Plate	A 36	36
½"ø – ¾"ø Bolts	A 325	120/105
LGS Stud < 18ga	A 570 Gr. 33	33
LGS Stud ≥ 18 ga	A 607 Gr. 55	55
Container/Module Tube	Corten/A242	50
Container/Module Channel	Corten/A242	50
Container/Module Panel	Corten/A242	50

2. Fabrication and erection shall be in accordance with the American Institute of Steel Construction (AISC).
3. All beam connections shall be bolted or shop welded as detailed on the drawing or designed by fabricator per AISC Manual of Steel Construction allowable Stress Design, "Framed Beam Connections." Bolts shall be 3/4 inch. diameter ASTM A325, load indicator bolts. All bolts shall be tightened to the minimum tension specified in the specification for structural joints using A325 or A490 bolts.
4. All welding shall conform to the current American Welding Society (AWS) Specifications and be performed by certified welders.
5. Column anchor bolts shall have minimum yield strength of 36 KSI.
6. Metal deck shall be the type as indicated on the drawings. The deck shall be welded to the supporting members per manufacturer's recommendations or as indicated on the drawings whichever is more restricting or stringent.
7. All openings in metal deck to have 4" X 4" X ¼" angle frames set between joists.
8. All structural steel and bar joists shall have one shop coat of rust inhibitor primer paint conforming to specification. Field touch up all unpainted areas and weld areas.
9. Grout for base plates shall be nonmetallic, non–shrinkage cementitious grout having a minimum 3–days compressive strength of 4000 PSI.
10. Reference specifications for additional requirements.

G. WOOD:

GENERAL:

1. All wood exposed to the weather or in contact with concrete or masonry shall be pressure treated or protected with a waterproof membrane. Newly exposed surfaces resulting from field cutting, boring or handling shall be field treated in accordance with AWPA M–4.
2. Maintain 1/2 inch air space at sides and at ends for beam pockets in concrete or masonry. Minimum bearing is 3 inches UON.
3. Wood framing members, sheathing and combustible materials shall not be placed closer than 2 inches to chimney walls. The gap shall be fire stopped using a minimum of 1 inch thick noncombustible materials, UON.
4. Reference specifications for more requirements.
5. It is required that the contractor keep a copy of the Simpson catalog and/or Simpson Installation Manual on site at all times, and shall be used with the installation process at all Simpson connections.

MATERIALS

STICK FRAMING:

1. All wood Stick Framing shall be Douglas Fir/Larch #2 (DF #2) or better unless otherwise noted on the drawings. Comply with PS 20, American softwood lumber standard and standard grading rules for western lumber. 19%maximum moisture content at time of placement.
2. All wood members shall be stamped showing wood grade and the grading agency.
3. All timbers to be FSC rated.
4. All materials to be low V.O.C. and non–urea formaldehyde.

GLUED–LAMINATED TIMBER:

1. Glued–Laminated timber shall be manufactured, inspected, and tested according to:
   a. American National Standard for Wood products–Structural Glued Laminated Timber, ANSI/AITC A190.1 –1992
   b. Standard Specification for Structural Glued–Laminated Timber of Softwood Species, AITC 117; Manufacturing.
   c. Design and Standard Specifications for Hardwood Glued–Laminated Timber, AITC 119.
   In case of conflict, the most stringent requirement shall apply.
2. Submit certificate by one of the above agencies to the Engineer and the Building Inspector prior to installation.
3. Glued–Laminated timber shall have wet–use adhesive, ASTM D2559. Lamination shall be 2 inches nominal. Appearance shall be Industrial, AITC 110.
4. Colorless end sealer shall be applied immediately to the ends of all members after fabrication and field trimming. Members shall be individually wrapped.
5. Pressure treatment shall be provided for all members exposed to weather and not protected by a roof or eave overhang.
6. All cuts, holes, etc. shall be re–coated as recommended by the manufacturer.
7. Glued–Laminated timber shall have the following minimum combination and strength:
   a. Beams with simple spans shall have combination 24F–V4 or better.
   b. Continuous beams shall have combination as shown on plans.

JOISTS/ RAFTERS:

1. Provide a copy of the manufacturer's approved ICC product evaluation reports.
2. Wood joists shall be installed according to the manufacturer recommendations and as shown on drawings. Blocking, web stiffeners and bridging etc. shall be as required by the manufacturer's approved ICC product evaluation reports.
3. All joists, ceiling joists and rafters shall have a minimum of 1–1/2 inches bearing at each end on wood or metal, and not less than 3 inches on masonry or concrete. Use approved joist hanger if bearing is not provided.
4. Install full depth solid blocking or cross bracing at intervals not exceeding 8 feet for all joists and rafters 2x12 inches and deeper.

STUDS:

1. Double full height studs shall be used at both ends of all walls shown on the structural drawings, UON.
2. Studs shall have full bearing on plates and sills.
3. Provide blocking at all ceiling levels.
4. Provide multiple studs under beams or trusses to match width of supported member, typical.

TOP PLATES AND/OR CHORDS:

1. Top plates or chords shall be continuous over headers UON.
2. Top plates shall be two pieces, same size as studs. Stagger splices 4'–0" minimum. Center splices over studs UON.

SHEATHING:

1. All wood structural panels shall be stamped with the appropriate grade trademark of the American Plywood Association (APA).
2. Block structural panel with 2X4 inch flat blocking where noted on roof or floor framing plans. Use ply clips at mid–span of unsupported panel edges.
3. Maintain 1/8" air space between structural panels in walls, floors and roofs at ends and at edges or as specified by the manufacturer.
4. Wood structural panels shall be manufactured using exterior glue and shall be not less than 4X8 feet except at boundaries.

H. WOOD CONNECTIONS:

1. It is required that the contractor keep the Simpson catalog and/or Simpson Installation Manual on site at all times to be used during the installation of all typical Simpson connections.
2. All exposed steel timber hardware, fasteners and connectors shall be galvanized.
3. All fasteners installed in contact with preservative–treated wood shall be of hot–dipped zinc–coated galvanized steel, stainless steel, silicon bronze or copper. The coating weights for zinc–coated fasteners shall be in accordance with ASTM A153.
4. Connector Hardware model numbers are those for the Simpson–Strong Tie Company. Size and number of nails, screws or bolts to be the maximum specified by the manufacturer UON.
5. Nails shall be common wire unless otherwise noted.
6. Machine nailing: The use of machine nailing is subject to continued satisfactory performance. Panel nails shall be driven so that the heads are flush with the surface of the panel and the minimum panel edge distance is 1/2 inch.
7. Bolts: maintain a distance not less then 7 bolt diameters from the end and 4 diameters from the edge of the member. Bore holes $\frac{1}{32}$ to $\frac{1}{16}$ inch larger than the bolt diameter. All nuts shall be tightened when installed and re–tightened at completion of work or before closing in. Thread projection shall be ½ inch minimum beyond the nut. Use 5/16 inch thick X 3" X 3" washers, typ.
8. Lag screw clearance and lead/pilot holes shall be bored in two stages as follows: The clearance hole for the shank shall have the same diameter as the shank, and the same depth of penetration as the length of unthreaded shank. The lead hole for the threaded portion shall have diameter equal to 70% of the shank diameter and a length equal to at least the length of the threaded portion.
9. Nailed/screwed or bolted hold–down anchors shall be installed per manufacturer's approved [ICC or ICC] product evaluation report. Install hold–downs 3/4 inch minimum above the plate to allow for tightening anchor bolt. The hold–down shall be installed tight to the hold–down post without fillers or dapping. Do not bend hold–down anchors.
10. Connections shall be as detailed on the drawings. If not shown, minimum connections shall be as follows:
    a. Joist or rafter to sill or girder, toe nail.....3–8d
    b. Bridging to joist, toenail each end.....2–8d
    c. Sill plate to joist or blocking, typical, face nail [SN].....16d at 6" o.c.
    d. Double top plates:
       - Lower plate to studs.....3–16d
       - Top plate to lower plate, face nail.....16d @ 12" O.C.
       - Top plate to lower plate at lap Splice [4'–0" minimum].....20–16d minimum UON on drawings.
       - Top plate to lower plate at intersection.....3–16d
    e. Stud to sill plate.....4–8d toenails or 2–16d endnail.
    f. Double studs, face nail.....16d at 12" o.c.
    g. Blocking between joists or rafters to top plate, toenail.....3–8d
    h. Continuous header, two pieces.....16d @ 16" o.c. along each edge.
    i. Ceiling joists to plate, toenail.....3–8d
    j. Continuous header to stud, toenail.....4–8d
    k. Ceiling joists, laps over partitions, face nail.....3–16d
    l. Ceiling joists to parallel rafters, face nail.....3–16d
    m. Built–up corner studs.....16d @ 12" o.c.
    n. 5/8" gyp. Sheathing to studs, sill plates & top plates.....8d @ 4" O.C. @ 3/8" from all panel edges and 8" O.C. @ intermediate supports.
    o. For floor/roof stick framing construction, structural sheathing could be fastened to structural members using 16 gauge wire staples two inches long. Staples shall have a minimum of 7⁄16" diameter crown width. For roof and floor, staple spacing shall be per plan. For shear wall, spacing should be per shear wall schedule.
    p. Staples for structural insulated panels, sips shall be per sips notes.
    q. NOTES: REF: To the above Building Code.

I. ABBREVIATIONS:

AB	ANCHOR BOLT
ADDL	ADDITIONAL
ALT	ALTERNATE
APA	AMERICAN PLYWOOD ASSOCIATION
ARCH	ARCHITECTURAL
B	BOTTOM
BLKG	BLOCKING
BN	BOUNDARY NAIL
BOF	BOTTOM OF FOOTING
IBC	INTERNATIONAL BUILDING CODE
CJ	CONSTRUCTION JOINT OR CONTROL JOINT
CL	CENTER LINE
CLR	CLEAR
CONN	CONNECTION
CONT	CONTINUOUS
DBL	DOUBLE
DIM	DIMENSION
DL	DEAD LOAD
DO	DITTO (REPEAT)
DWG	DRAWING
DWL	DOWEL
E	EXISTING
EA	EACH
EF	EACH FACE
EL	ELEVATION
EMBED	EMBEDMENT
EN	EDGE NAIL
EOR	ENGINEER OF RECORD
EQ	EQUAL
ES	EACH SIDE
EW	EACH WAY
FA	FRAMING ANCHOR
FD	FROST DEPTH
FEN	FLOOR EDGE NAILING
FF	FINISHED FLOOR
FN	FIELD/INTERMEDIATE NAILING
FS	FAR SIDE
FTG	FOOTING
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GIR	GEOTECHNICAL INVESTIGATION REPORT
GLB	GLUED LAMINATED BEAM
GR	GRADE
HDR	HEADER
HGR	HANGER
HORIZ	HORIZONTAL
HSH	HORIZONTALLY SLOTTED HOLES
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
ID	INSIDE DIAMETER
INT	INTERIOR
JT	JOINT
LDGR	LEDGER
LGST	LIGHT GAUGE STEEL, COLD–FORMED STEEL
LL	LIVE LOAD
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MFR	MANUFACTURER
MIN.	MINIMUM
MTL	METAL
NO.	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFDSC	OREGON ONE & TWO FAMILY DWELLING SPECIALTY CODE
OH	OPPOSITE HAND
OSB	ORIENTED STRAND BOARD
OSSC	OREGON STRUCTURAL SPECIALTY CODE
OSV	ON SITE VERIFY
OTOB	OUT TO OUT OF BEARING
PERP	PERPENDICULAR
PL	PLATE
PLF	POUND PER LINEAR FOOT
PSE	PSE, INC.
PT	PRESSURE TREATED
PW	PLATE WASHER
REF	REFERENCE
REN	ROOF EDGE NAILING
REINF	REINFORCEMENT
RFT	RAFTERS
SGN	STRUCTURAL GENERAL NOTES
SEP	SEPARATION
SIM	SIMILAR
SN	SHEAR NAIL
SNL	SNOW LOAD
SPEC	SPECIFICATION
STD	STANDARD
STGR	STAGGER
STIFF	STIFFENERS
T	TOP
TB	TOP & BOTTOM
TD	TYPICAL DETAILS
TG	TONGUE & GROOVE
THK	THICKNESS/THICK
TN	TOENAIL
TOB	TOP OF BEAM
TOF	TOP OF FOOTING
TOW	TOP OF WALL
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VSH	VERTICAL SLOTTED HOLES
WD	WOOD
WEN	WALL EDGE NAILING
WWF	WELDED WIRE FABRIC
W/	WITH
W/O	WITHOUT

SHEET INDEX:

S1	GENERAL STRUCTURAL NOTES
S2	TYPICAL FRAMING DETAILS
S3	FOUNDATION REACTIONS & FRAMING PLAN

Structural details for this project are for illustration only. They are not drawn to scale unless noted otherwise. Contractor must verify all dimensions before fabrication or construction. Do not scale drawings.

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Project:
AquaWorks DBO, Inc.
Screen Building

22158 County Rd 12,
Phippsburg,
Colorado.

Owner / Client:
AquaWorks DBO, Inc.

4-25-2024
COLORADO LICENSED PROFESSIONAL ENGINEER
NABIL M. TAHA
30389
Expires 10/31/2025

REVISION SCHEDULE

MARK	DESCRIPTION	DATE

DRAWN BY: AYPN
DS. BY: M.R.D
CHK BY: N.T.
DATE: 04-06-2024

TITLE:
GENERAL STRUCTURAL NOTES

PAGE NO:
S1

PROJECT #:
AquaWorks DBO Inc., 224-2001

1 WOOD SHEARWALL SCHEDULE
Scale: N/A

ASD CAPACITY (plf) *Co WIND	ASD CAPACITY (plf) *Co SEISMIC	MARK (1)	WALL SHEATHING EDGE NAILING (EN)	FOUNDATION PLATE ANCHOR BOLTS (AB) (8)	BOTTOM PLATE SHEAR NAILING (SN)	AT ROOF OR FLOOR, BLOCKING TO WALL TOP\SILL PLATE	SHEATHING
		'X' 1	NOT USED				
		(5) 'X' 2	NOT USED				
		'X' 3	NOT USED				
		(6) 'X' 4	NOT USED				
		(6) 'X' 5	NOT USED				
365	260	'X' 6	8d @ 6"	5/8" DIAM. @ 48"	16d @ 6" STAGGERED	8d @ 4" O.C. TOENAILS & A35 @ 30" O.C.	7/16" APA SHEATHING ONE SIDE
		'X' 7	NOT USED				
		'X' 8	NOT USED				

NOTES:

(1) 'X' 3 — MIN LENGTH (WIDTH) OF SHEAR WALL (FT) PER PLAN; WOOD STRUCTURAL PANEL MARK

(2) THIS SHEARWALL SCHEDULE SHALL SUPERCEDE ANY CONFLICTING CALLS ON TYPICAL DETAILS.

(3) NAILING AT INTERMEDIATE SUPPORTS (FIELD NAILING) SHALL BE SAME PENNY AS EDGE NAILS SPACED @ 12" O.C.

(4) REFER TO TYPICAL DETAILS 3 THROUGH 7 THIS SHEET.

(5) FOR WALL TYPES I AND 2:
  a. IT IS SUGGESTED TO USE DOUBLE SILL PLATE NAILED TOGETHER W/ 2-16D @ 6" O.C. HORIZONTALLY AND STAGGERED EDGE NAILING TO REDUCE SPLITTING OF SILL.
  b. AT ADJACENT PANEL EDGES, STUDS SHALL BE 3" THICK OR TWO STUDS NAILED WITH 2-16D @ 6" O.C. VERTICALLY

(6) FOR WALL TYPE 3, 4, AND 5:
  a. AT ADJACENT PANEL EDGES, STUDS SHALL BE 3" THICK OR TWO STUDS NAILED WITH 2-16D @ 6" O.C. VERTICALLY

(7) MINIMUM AMOUNT OF STUDS SHALL BE 2x6 @ 16" O.C. FOR EXTERIOR WALLS, 2x4 @ 16" O.C. FOR INTERIOR WALLS, UNLESS NOTED OTHERWISE ON PLANS.

(8) NOT USED

(9) SILL PLATE SHALL BE 2x PT LUMBER MINIMUM.

(10) WALLS SHALL BE BLOCKED. ALL SHEATHING EDGES SHALL OVERLAP AND BE NAILED TO A 2X MEMBER.

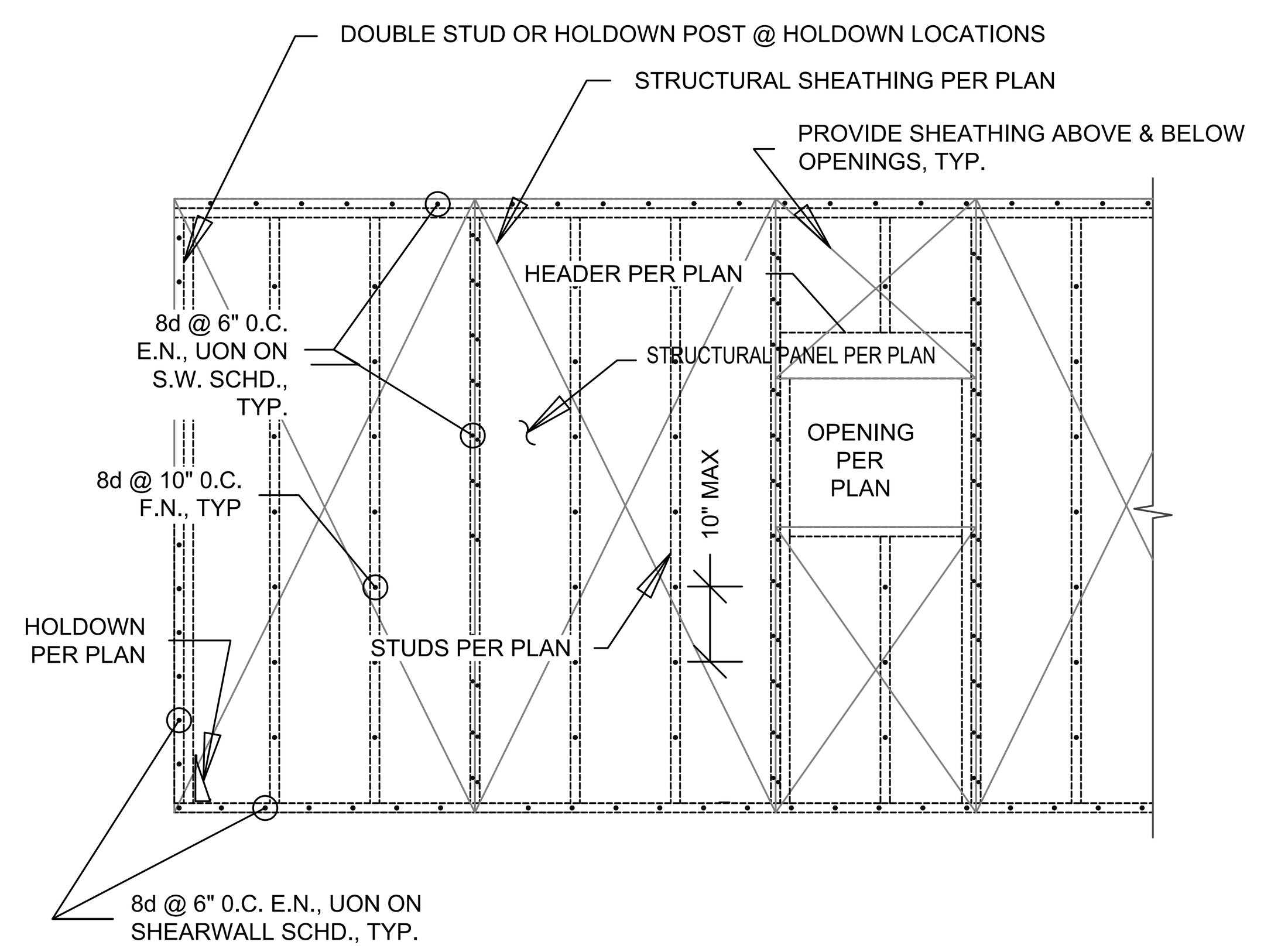
(11) ALL NAILS SHALL BE COMMON PENNYWEIGHT.

(12) FOR 24" O.C. STUDS WALL SHEATHING PANELS MUST BE PLACED WITH LONG DIRECTION ACROSS STUDS.

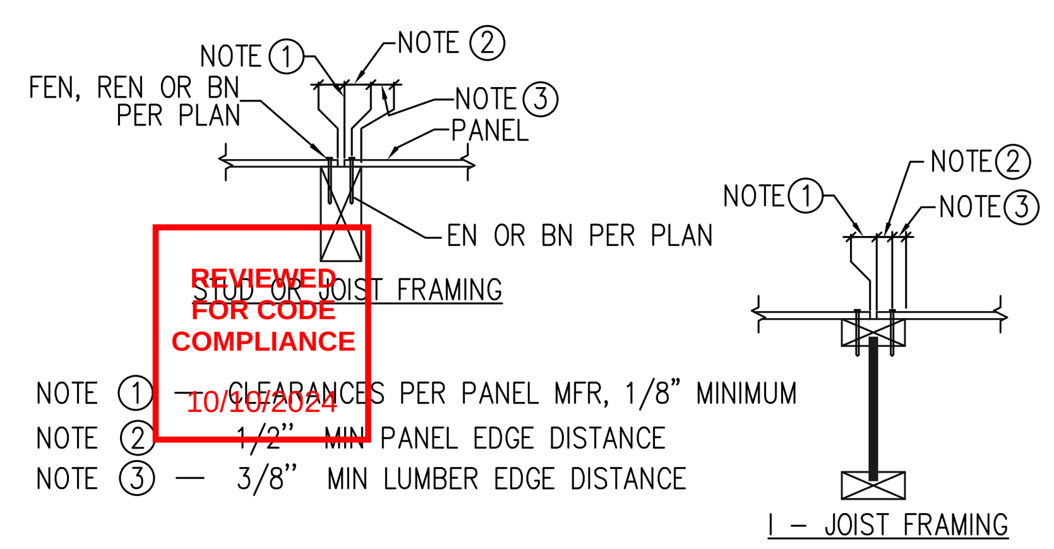
2 HOLDOWN SCHEDULE
Scale: N/A

HOLDOWN MARK	HOLDOWN BRACKET	SIMPSON STRAP	ANCHOR BOLT (f'c=2500 psi min)	EMBED LENGTH	STUDS/POST	EDGES (in. min.) CORNER	EDGES (in. min.) END	EDGES (in. min.) EDGE	MIN. STEMWALL WIDTH	NOTES	CAPACITY (lbs.) ASD
HDU4	HDU4-SDS2.5	_	SB5/8x24	8"	2 - 2x STUDS OR 1 - 4x POST	4 1/4"	4 1/4"	1 3/4"	6"	_	4,565
CS16	_	CS16	N/A	N/A	1 - 2x STUDS OR 1 - 4x POST	N/A	N/A	N/A	N/A	USE MAX. NAILING PER MNFR.	1,705

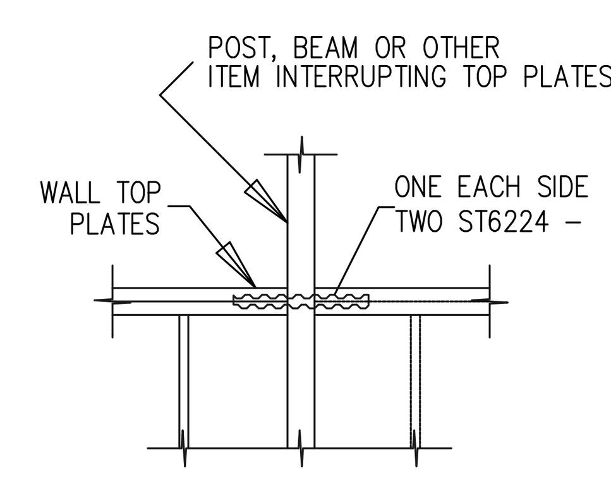
NOTE: IT MAY BE NECESSARY TO THICKEN THE FOOTING BELOW SOME ANCHORS TO PROVIDE REQ. EMBED LENGTH AND CLEAR SPACING.



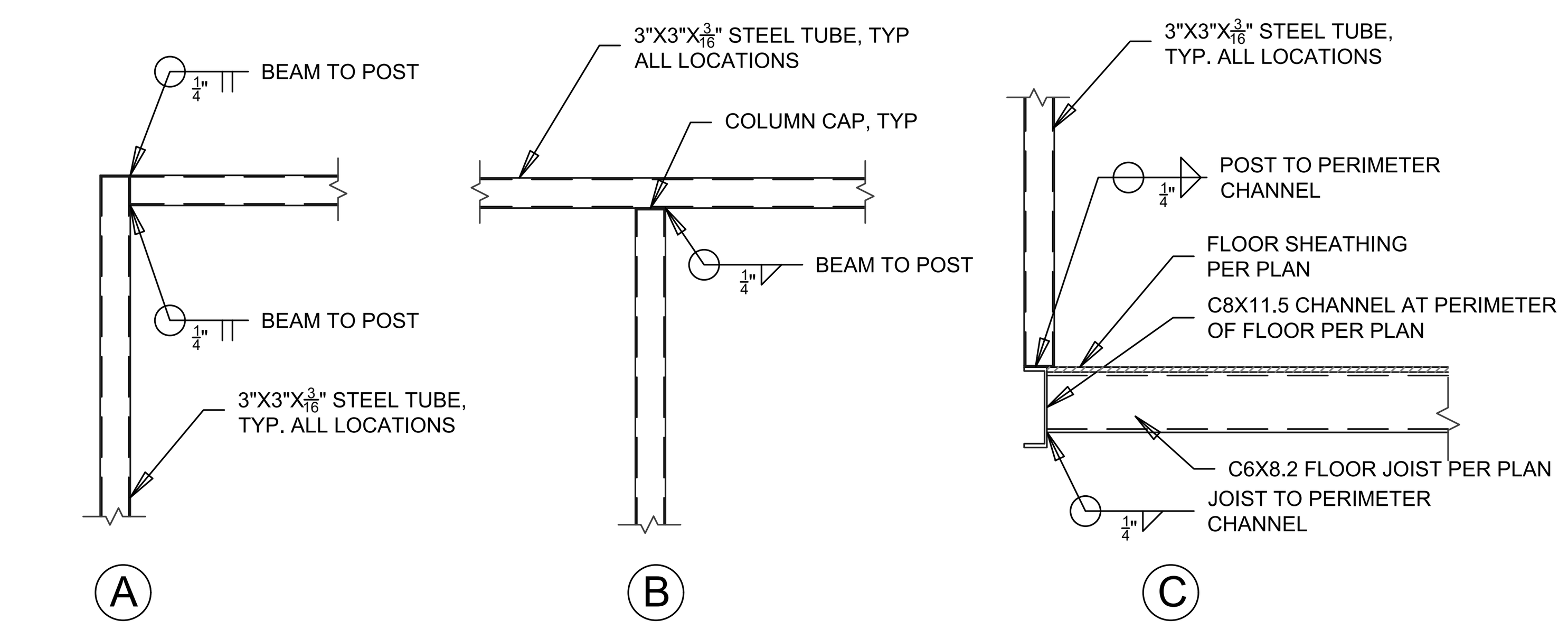
3 TYPICAL SHEAR WALL ELEVATION, UON
Scale: N.T.S.



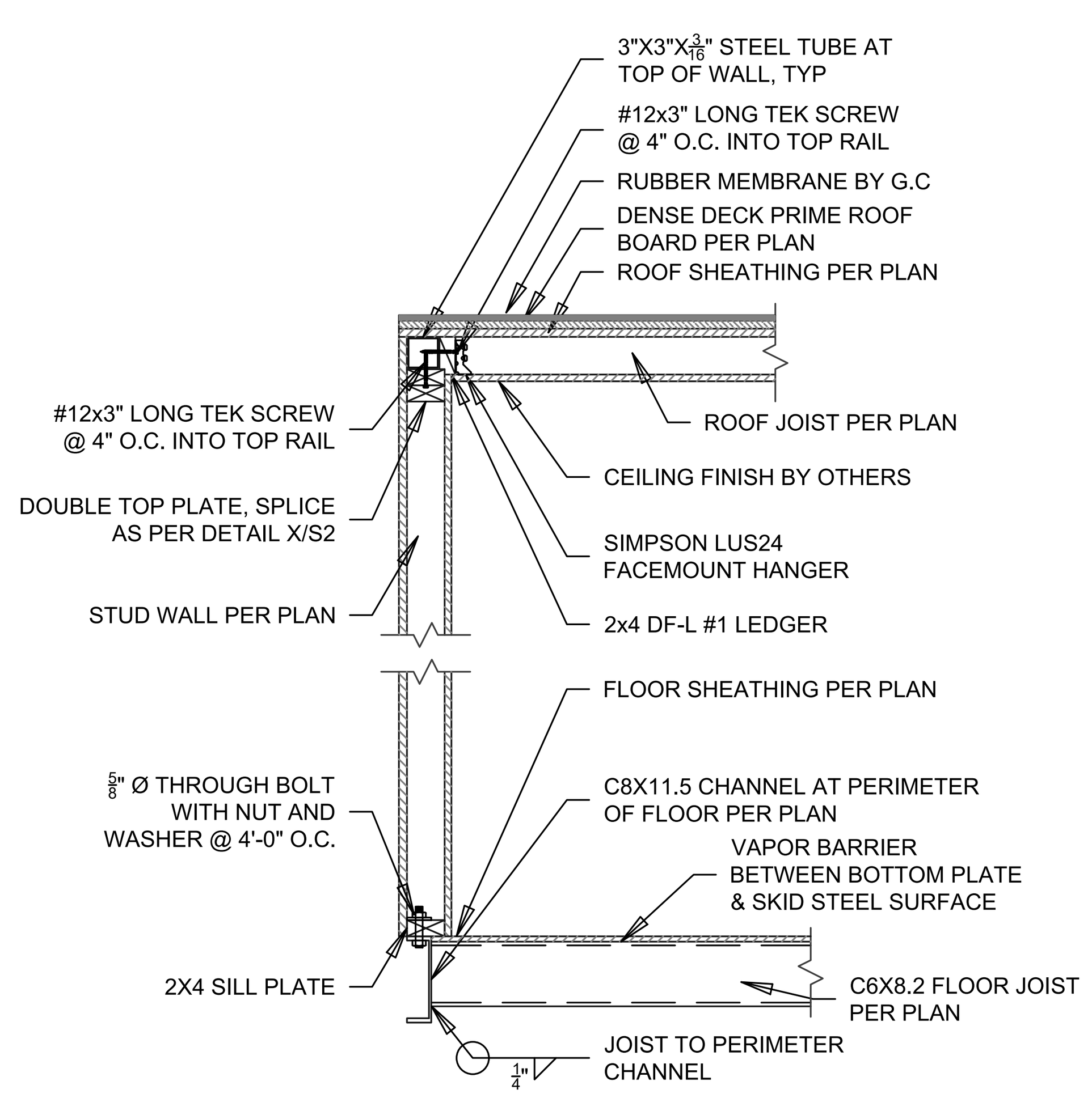
4 TYPICAL WOOD STRUCTURE PANEL NAILING FOR WALL, FLOOR AND ROOF, UON
Scale: N.T.S.



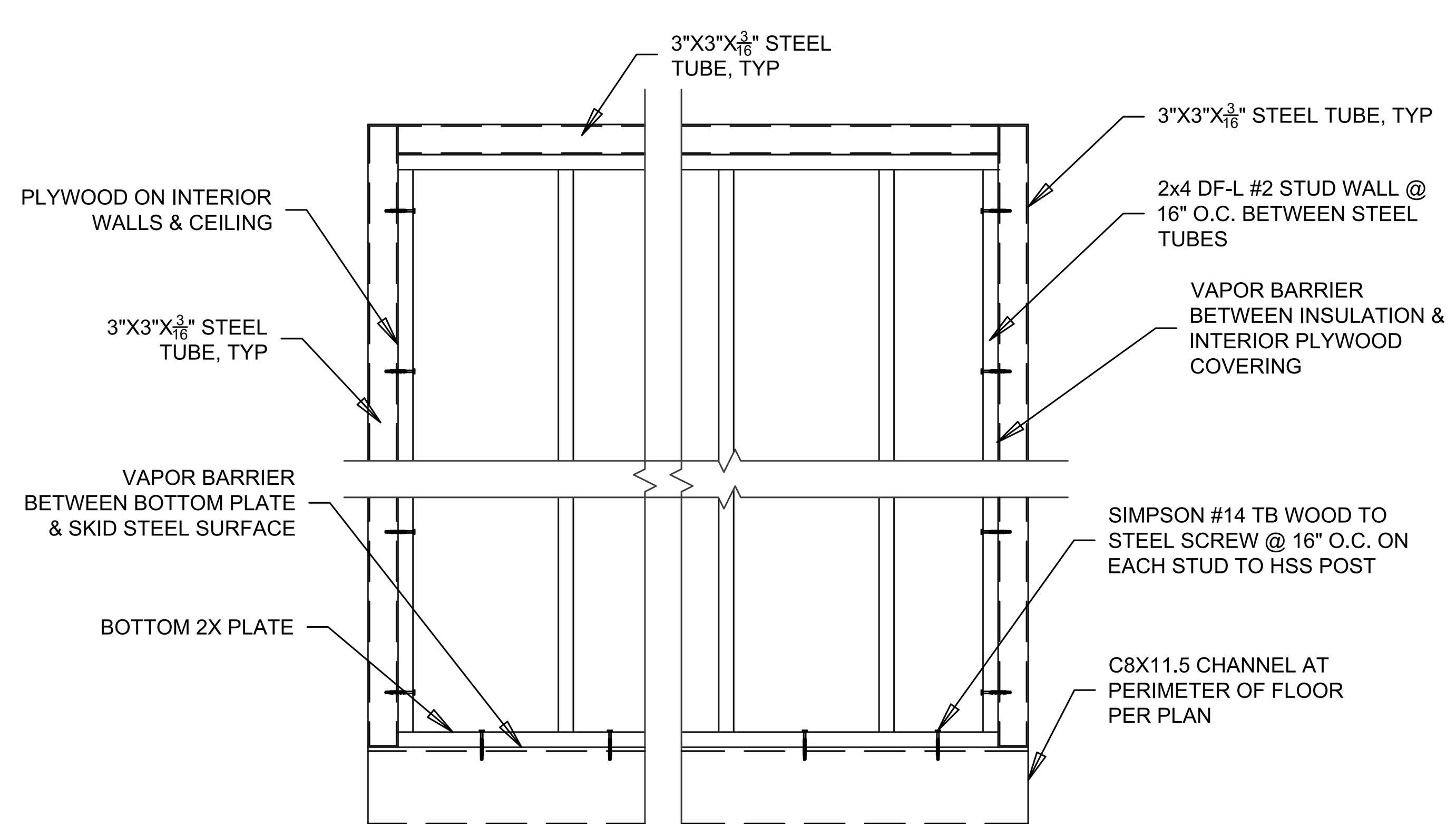
5 TOP PLATE REINFORCEMENT AT DISCONTINUITIES
Scale: N.T.S.



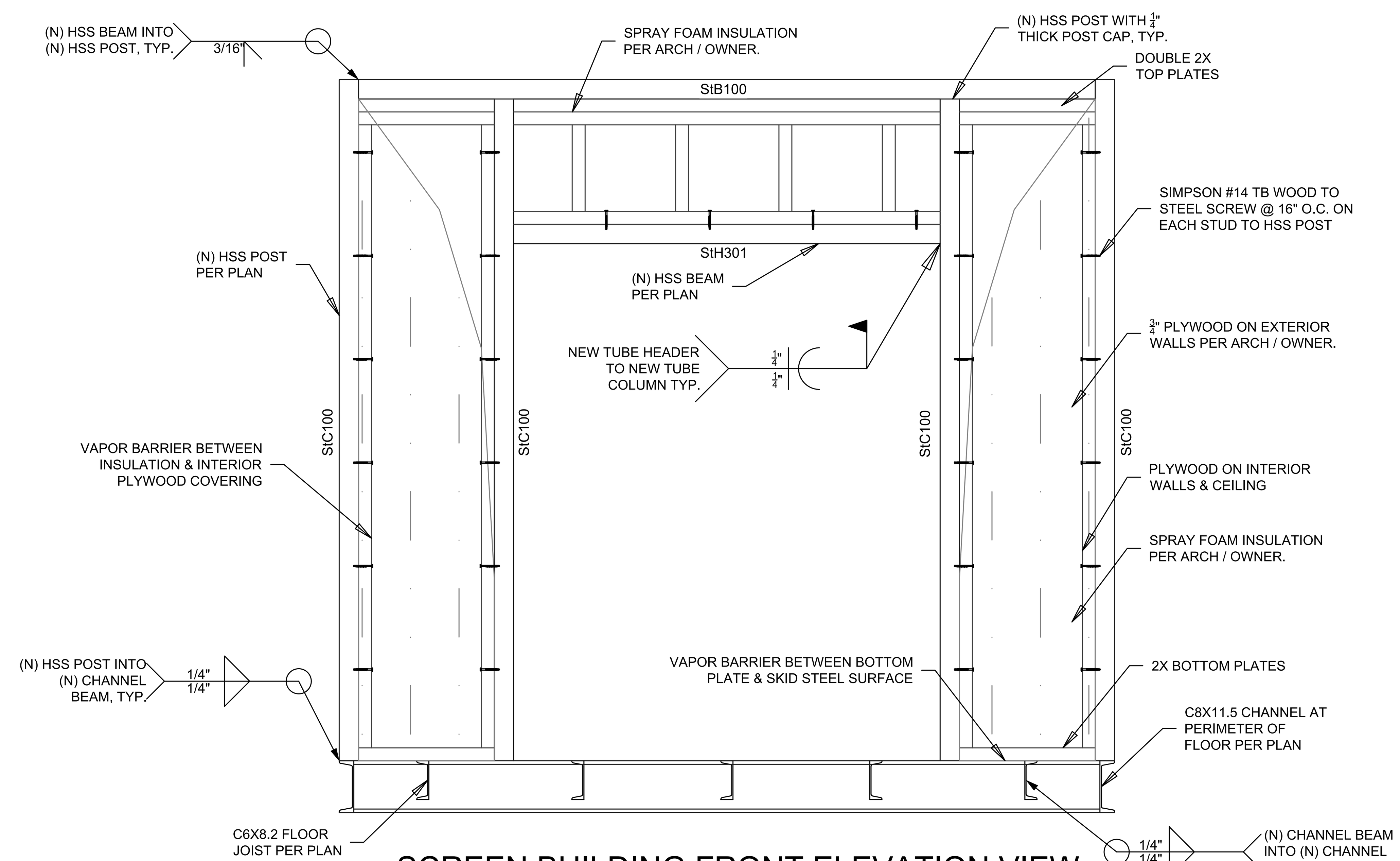
6 STEEL HSS TUBE CONNECTION DETAILS
N.T.S.



7 WOOD STUD WALL CONNECTION DETAILS
N.T.S.



8 WOOD STUD WALL CONNECTION DETAILS
N.T.S.



9 SCREEN BUILDING FRONT ELEVATION VIEW
N.T.S.

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Construction Types: Light Gauge Steel, Straw Bales, Bamboo, Log, Timber/Wood, Structural Insulated Panels/SIPs, Masonry, Steel, Concrete, Modular Homes/Factory Built Housing (FBH), ICF, Shipping Containers, and many more! Commercial or Residential. And Green/Sustainable!

Project: AquaWorks DBO, Inc. Screen Building
22158 County Rd 12, Phippsburg, Colorado.

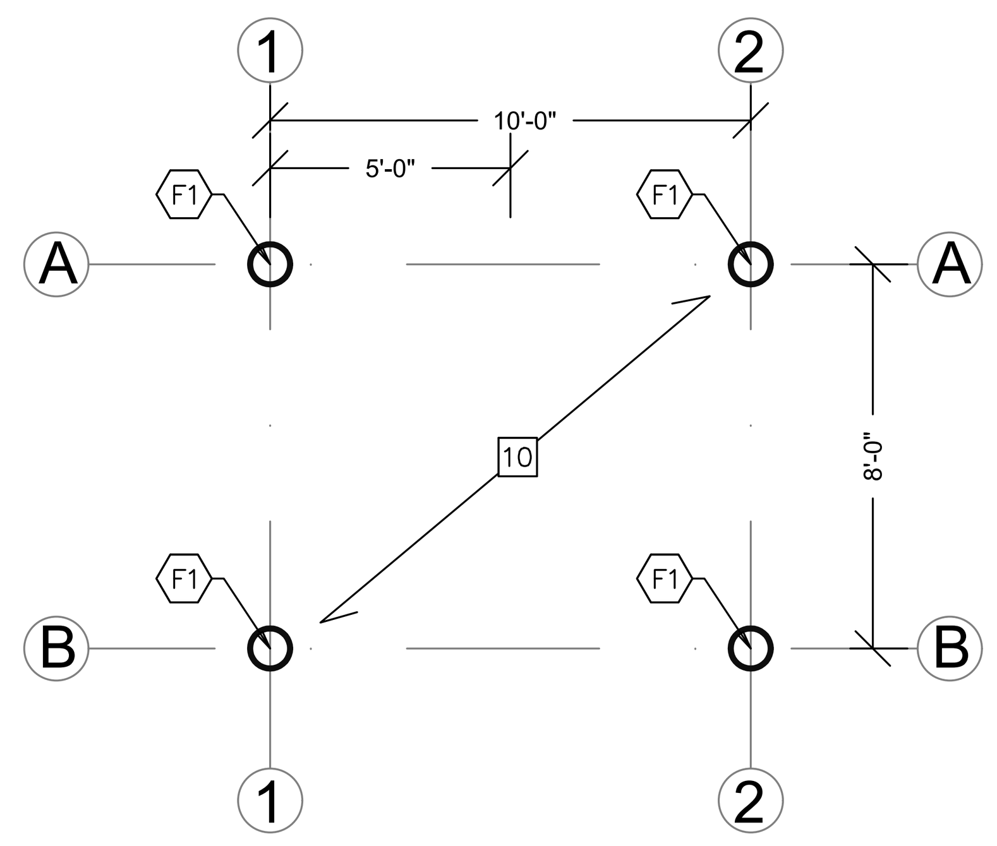
Owner / Client: AquaWorks DBO, Inc.

4-25-2024
COLORADO LICENSED PROFESSIONAL ENGINEER 60389
Expires 10/31/2025

REVISION SCHEDULE		
MARK	DESCRIPTION	DATE

DRAWN BY: AYPN
DS. BY: M.R.D
CHK BY: N.T.
DATE: 04-06-2024
TITLE: TYPICAL DETAILS
PAGE NO: S2
PROJECT #: AQUAWORKS DBO INC., 224-2001

NOTE: F1 MARK INDICATES THE ASSUMED FOOTING LOCATIONS.



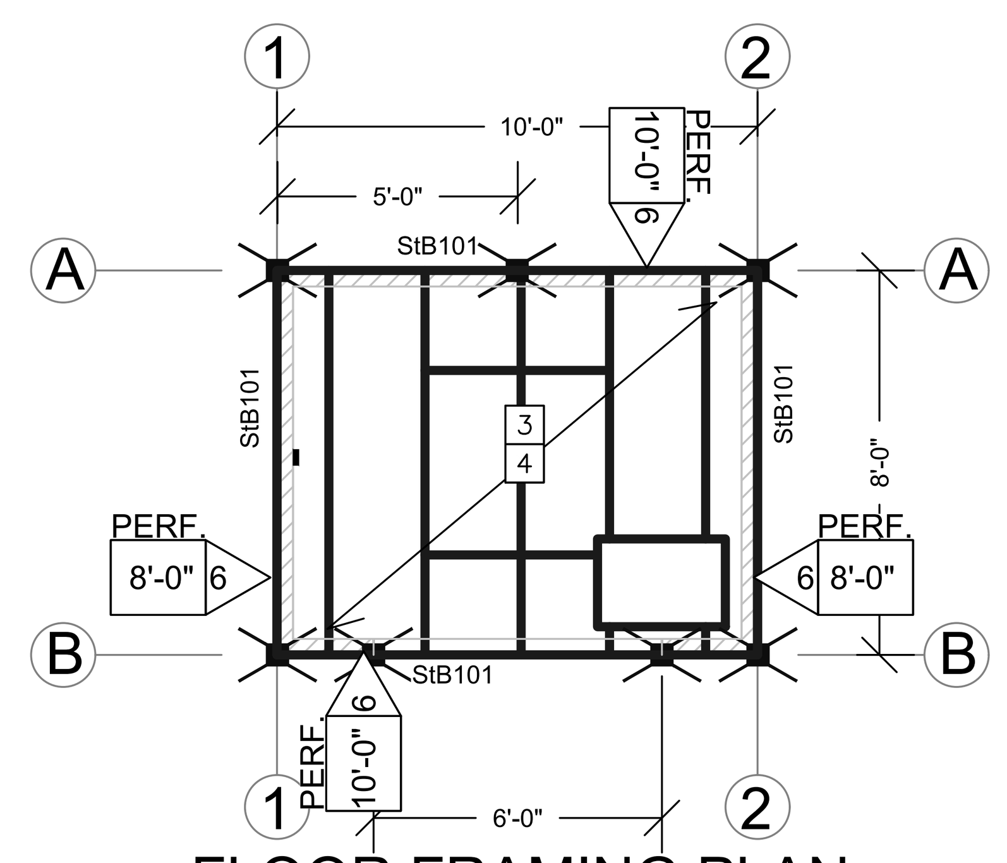
1 FOUNDATION LOADS: ASSUMED LOCATIONS
Approximate Scale: 1/4" = 1'-0"

NOTE: F1 MARK INDICATES THE ASSUMED FOOTING LOCATIONS.

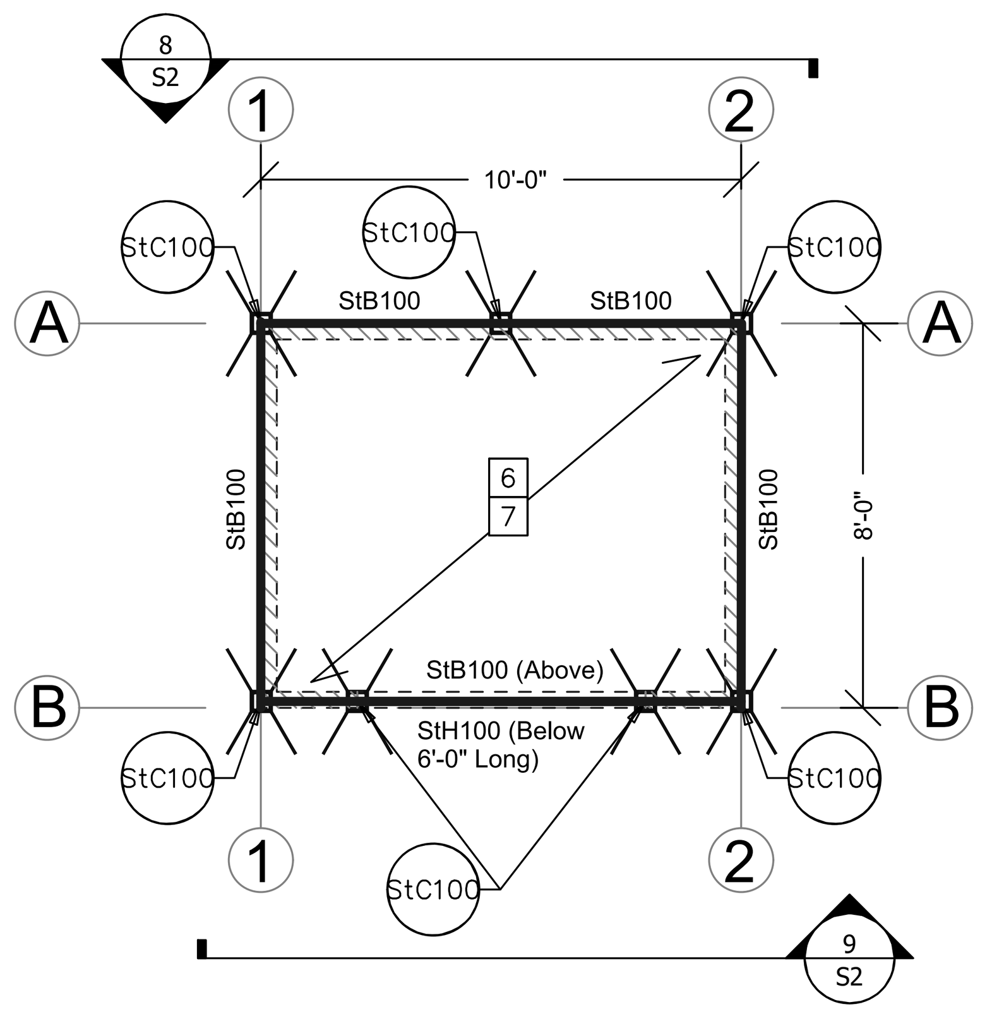
FOR INCLUDING LATERAL LOADS TYPICAL
ALL CORNER POST LOCATIONS:
DOWNFORCE = 4191 LBS
UPLIFT = 996 LBS
SHEAR = 1251 LBS

SUMMARY OF REACTIONS AT FOOTING POINTS FOR LRFD LOAD COMBINATION

DESIGN DATA:	
ROOF DESIGN LOADS:	
GROUND SNOW LOAD:	70.1 PSF
ROOF SNOW LOAD:	70 PSF
ROOF LIVE LOAD:	20 PSF
ROOF DEAD LOAD:	15 PSF
CEILING DEAD LOAD:	5 PSF
FLOOR DESIGN LOADS:	
FLOOR DEAD LOAD:	15 PSF
FLOOR LIVE LOAD:	40 PSF
LIVE LOAD OCCUPANCY:	RESIDENTIAL
WIND DESIGN LOADS:	
ULTIMATE (3-SEC GUST)	105 MPH
EXPOSURE CATEGORY:	C
SEISMIC DESIGN LOADS:	
Ss	0.525
S1	0.097
SEISMIC DESIGN CATEGORY	C
Ie	1.0



2 FLOOR FRAMING PLAN
Approximate Scale: 1/4" = 1'-0"



3 CEILING FRAMING PLAN
Approximate Scale: 1/4" = 1'-0"

MARK	SIZE	MATERIAL	CAMBER (INCH)	REMARKS
StB100	HSS 3X3X$\frac{3}{16}$"	A1085	–	MAIN STRUCTURE BOX FRAME
StB101	C8X11.5	A36	–	BOTTOM DECK FRAME
StB102	C6X8.2	A36	–	BOTTOM DECK FRAME

4 STEEL BEAM SCHEDULE (StB)
N.T.S.

MARK	SIZE	TYPE	BASE CONNECTION	TOP CONNECTION	REMARKS
StC100	HSS 3x3x$\frac{3}{16}$"	A1085	REFER TO DETAIL 6/S2	REFER TO DETAIL 2/S2	-

5 STEEL COLUMN SCHEDULE (StC)
N.T.S.

MARK	MAX OPENING	COMBINATION	FRAME SIZE	REMARKS
StH100	UP TO 6'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 9/S2

6 STEEL HEADER SCHEDULE (StH)
N.T.S.

Graphic Scale
0ft 10ft
1/4 Inch = 1 Foot

LEGEND:

DISCONTINUOUS 2X4 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL SUPPORTING/BELOW THIS FLOOR/ROOF.

DISCONTINUOUS 2X4 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL SUPPORTING ABOVE THIS FLOOR/ROOF.

COLUMN BELOW AND COLUMN ABOVE THIS FLOOR.

COLUMN SUPPORTING NEXT FLOOR/ROOF UP.

DISCONTINUOUS COLUMN SUPPORTING THIS FLOOR/ROOF.

VERTICAL WINDOW FRAMING STUB POST, NOT FULL HEIGHT.

HDNn INDICATES HOLD-DOWN MARK, REFER TO HOLD -DOWN SCHEDULE.

n INDICATES SHEET NOTES.

Cn INDICATES COLUMN MARK, REFER TO COLUMN SCHEDULE.

n NUMERICAL VALUE, 1, 2, 3 ETC.

SHEET NOTES:

1 REFER TO S1 FOR STRUCTURAL GENERAL NOTES AND TO FLOOR DETAIL SHEETS FOR CONSTRUCTION DETAILS. TYPICAL DETAILS ARE GENERALLY NOT CUT ON PLANS BUT RATHER ARE INTENDED TO DEFINE TYPICAL CONSTRUCTION CONDITIONS. WHERE TYPICAL DETAILS ARE CUT ON PLAN, THE INTENT IS TO ILLUSTRATE THE TYPE OF CONDITION AT WHICH THAT DETAIL IS INTENDED TO APPLY RATHER THAN EVERY OCCURRENCE OF THAT DETAIL.

2 VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. DO NOT SCALE DRAWINGS.

3 CHECKERED STEEL FLOOR PLATE OR EQUIVALENT AS PER ARCH DRAWINGS / OWNER. (OR) IF THE FLOOR SHEATHING IS DONE WITH PLYWOOD SHEATHING MEANS, THE FLOOR SHEATHING SHALL BE 3/4" OR MORE THICK APA T&G PLYWOOD OR OSB WITH 48"/24" SPAN RATING. USE 8d @ 4" O.C. (BN) AT EXTERIOR WALLS AND INTERIOR SHEAR WALLS. 8d @ 6" O.C. (FEN) ALONG PANEL EDGES AND 8d @ 10" O.C. AT INTERMEDIATE SUPPORTS, UON. MINIMUM PENETRATION IS 1 5/8" INTO FRAMING. USE GLUE.

4 ALL THE INTERIOR / INNER SIDE BEAMS ARE StB102 - C6X8.2. & FOR OUTER PERIMETER MAIN BEAM WILL BE StB101 - C8X11.5, AS PER ARCH DRAWING & DIMENSIONS, SEE 1-3/S3 FOR MORE DETAILS.

5 ROOF DRAINAGE SHALL BE DIRECTED AWAY FROM FOUNDATION.

6 2x4 DF-L #1 CEILING JOIST @ 12" O.C. WITH 2x BLOCKING AT HALFWAY POINT AND WOOD SHIM ABOVE @ 1/3RD POINTS. REFER TO DETAIL 7/S2.

7 RUBBER MOISTURE BARRIER ABOVE $\frac{1}{2}$" DENSEDECK ROOF BOARD WITH (20) FASTENERS PER 4'X8' BOARD INTO ROOF SHEATHING BELOW. SEE DENSDECK TECHNICAL GUIDE FOR ADDITIONAL INFORMATION. ROOF SHEATHING SHALL BE 5/8" THICK APA PLYWOOD WITH 24"/16" SPAN RATING. USE 8d @ 4" O.C. (BN) AT EXTERIOR WALLS AND INTERIOR SHEAR WALLS. 8d @ 6" O.C. (REN) AT PANEL EDGES AND 8d @ 10" O.C. AT INTERMEDIATE SUPPORTS, UON. MINIMUM PENETRATION IS 1 5/8" INTO FRAMING.

8 ALL EXTERIOR WALLS SHALL BE TYPE 6 PER SHEAR WALL PER SHEAR WALL SCHEDULE UNLESS OTHERWISE NOTED ON PLANS.

9 IF HEAVY EQUIPMENT (WEIGHING OVER 500LBS) IS PLACED OVER FINISHED FLOOR CONTACT EOR FOR REVIEW PRIOR TO INSTALLATION.

10 FOUNDATION, BASE PLATE, ANCHOR BOLT DESIGN BY OTHERS. FOR THE FOUNDATION BASE NODE REACTIONS REFER SHEET 1/S3. CONTACT PSE FOR ADDITIONAL INFORMATION.

REVIEWED FOR CODE COMPLIANCE
10/10/2024

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Owner / Client:
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4-25-2024
COLORADO LICENSED PROFESSIONAL ENGINEER
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MARK	REVISION SCHEDULE DESCRIPTION	DATE

DRAWN BY: AYPN
DS. BY: M.R.D
CHK BY: N.T.
DATE: 04-06-2024

TITLE:
FRAMING PLANS & DETAILS

PAGE NO:
S3

PROJECT #:
AquaWorks DBO Inc., 224-2001

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STRUCTURAL GENERAL NOTES – APPLICABLE TO ALL CONSTRUCTION UNLESS OTHERWISE NOTED ON THE PLANS

A. DESIGN SCOPE BY PSE CONSULTING ENGINEERS, INC. (PSE):

1. Design Shown on drawings by PSE is for the following items.
   a. Foundation and framing.
2. Design Shown on PSE drawings does not include: finishes, architectural items, windows, doors, moisture barriers, water proofing, mechanical units, plumbing, or electrical items.

B. GENERAL REQUIREMENT:

1. Furnish all labor, materials, and equipment necessary to complete the work shown or inferred by these drawings.
2. Where construction details are not shown or noted for any part of the work, such details shall be the same as for similar work shown on the drawings.
3. Notes and details on the drawings take precedence over the general notes and typical details in case of conflict.
4. Provide manufacturer's approved product evaluation reports (ICBO reports) and a list of all proposed substitutions to the Engineer for review and written approval before fabrication.
5. Pipes, ducts, sleeves, chases, etc. shall not be placed in slabs, beams, or walls unless specifically shown or noted nor shall any structural member be cut for pipe, ducts, etc., unless specifically shown. Obtain prior written approval for installation of any additional holes, ducts, etc.
6. Locate and protect underground or concealed conduit, plumbing or other utilities where new work is being performed.
7. The contract drawings and specifications represent the finished structure and do not indicate methods, procedu… construction. The contractor shall take necessary precautions to maintain and insure the integrity of the new … during construction. The design stresses shall not be exceeded during construction based on the age of each … Architect/Engineer will enforce safety measure regulations. Contractor shall design, construct and maintain all … devices, including shoring and bracing for the new and any existing structures and shall be solely responsible for conforming to all local, … and federal safety and health standards, laws and regulations. Observation visits to the site by the engineer shall not include inspectio… the above items.
8. Obtain prior written approval for any changes to the drawings.
9. The contractor shall review and compare the structural drawings with all other Construction Documents, such a… Electrical drawings, specifications, etc. Do not scale drawings. The contractor shall verify dimensions, elevations … writing, any inconsistencies, errors, or omissions to the Architect/Engineer of record before proceeding with the … .
10. All existing constructions shown are schematic only. Contractor is responsible to verify actual conditions and … for ther… Notify the Architect/Engineer, in writing, in case of any discrepancy between actual conditions and what is shown on the structural drawings before proceeding with the work.
11. See Architectural, Mechanical, Electrical and other drawings for embedded items.
12. Camber shall be provided for all members with 30 feet or more of span. Check beam table and contact the Structural Engineer for the amount of camber.
13. Shop drawings:
    a) Shop drawings shall be submitted in the form of two copies.
    b) Prior to submittals, the general contractor shall review all submittals for conformance with the Construction Documents and shall stamp submittals as being "Reviewed for Conformance".
    c) Any detail on the shop drawing that deviates from the Construction Documents shall be marked with the note "This is a change"
    d) Shop drawing submittals processed by the Structural Engineer are not Change Orders.
    e) Shop drawings shall be submitted to the Architect/Engineer prior to fabrication and construction regarding all structural items including:
       –Concrete and masonry reinforcement, drawings shall conform to ACI 315 and ACI 318.
       –Structural steel, drawings to conform to AISC.
       –Glued–Laminated members, drawings to conform to AITC.
       –Prefabricated wood joists and trusses, drawings to conform to ICBO product evaluation report.
       –Wood trusses, drawings to conform to UBC.
    f) Shop drawings or calculations submitted for review that require re–submittal for re–review, as determined by the Structural Engineer, shall be billed hourly to the general contractor. Re–review will not proceed without written approval from the general contractor for additional engineering services.
14. Submit seismic anchorage calculations stamped by a licensed Professional Engineer for all equipment and components weighing more than 400 lb.
15. Submit structural drawings signed and sealed by a professional Engineer licensed in the State where the project is located for any structural member needed for this project that is not designed by P.S.E.
17. Any substitutions for structural members, hardware or details shall be reviewed by the Architect and Structural Engineer. Such review will be billed on a time and materials basis to the General Contractor with no guarantee that the substitution will be allowed.
18. All communication shall be in writing. No verbal communications, decisions, instructions or approvals shall be valid.

Digitally signed by Nabil Taha
DN: E=Bill@structure1.com, CN=Nabil Taha, O="PSE Consulting Engineers, Inc", L=Klamath Falls, S=Oregon, C=US
Date: 2024.08.19 10:48:29-07'00'
Nabil Taha

C. CODE AND LOADS:

1. All design, material, and construction work for this project shall conform to the Colorado State Building Codes based on the 2021 International Building Code (IBC).
2. Design parameters.

a. Floor Live Load = 40 psf.
b. Floor Dead Load = 15 psf.
c. Roof Live Load = n/a psf.
d. Roof Dead load = 15 psf.
e. Ground Snow Load, Pg = 70.1psf.
f. Flat Roof snow load = 49.1 psf.
g. Snow Exposure Factor, Ce = 1.0
h. Snow Load Importance Factor, Is = 1.0
i. Thermal Factor, Ct = 1.0
j. Ultimate Wind Speed (3 second gust) = 105 mph
k. Wind Importance Factor, Iw = 1.0
l. Wind Exposure = C
m. Internal Pressure Coefficient = 0.85
n. Components and Cladding studs = 38 psf
o. Seismic Importance Factor, Ie = 1.0
p. Site Class = D
q. Ss = 0.525
r. S1 = 0.097
s. Sms = 0.724
t. Sm1 = 0.232
u. Sds = 0.483
v. Sd1 = 0.155
w. Seismic Design Category = C
x. Basic Seismic Force Resisting System = Metal Sheathed Shipping Container
y. Design Base Shear = 0.242 * W
z. Approximate Fundamental Period, T = 0.104
aa. Response Modification Factor, R = 2.0
bb. Analysis Procedure Used = Equivalent Lateral Force Procedure

REVIEWED FOR CODE COMPLIANCE
10/10/2024

D. INSPECTION:

The owner shall employ one or more qualified Inspectors to provide inspections during construction in according with section 1701 of the above code. The Inspector shall be certified by the building official to perform the type of inspection specified. Inspection shall be provided for:

a. Foundation excavation.
b. Reinforcement placement, prior to closing the forms and delivery of concrete.
c. Concrete placement.
d. Bolts installed in concrete and masonry, prior to and during the placement of concrete around bolts.
e. Structural Steel.
f. Field welding.
g. High–strength bolting.
h. During preparation and taking of test specimens.
i. See other sections of these notes for more required inspections.

Note: All discrepancies shall be brought to the immediate attention of the contractor for correction; then if not corrected, to the building official and to the Engineer in writing. The inspector shall furnish an inspection report to the building official and to the Engineer/Architect of Record.

E. TESTING:

The owner/contractor shall retain an independent testing laboratory to test the quality of:

a. Soil or fill material supporting footings and slab–on–grade.
b. Concrete.
c. Mortar shall be tested in accordance with UBC standard 21–16.
d. Grout shall be tested in accordance with UBC standard 21–18.
e. All other material used in this project as required by the Engineer.
f. A copy of test results shall be sent to the Engineer of Record.

F. STRUCTURAL STEEL:

1. Unless noted otherwise on plans, all structural steel shall be per Table 2–3 of AISC Manual of Steel Construction, Thirteenth Edition, as shown below:

On–Site Fabrication

Shape	Steel, Typ	Yeild Strength Fy, KSI
W–shape	A 992	50–65
Angles	A 36	36
Rectangular Tube, HSS	A 500, Gr.C	50
Round Tube, HSS	A 500, Gr.C	46
Pipe	A53, Gr.B	35
Plate	A 36	36
$\frac{1}{2}$"ø – $\frac{3}{4}$"ø Bolts	A 325	120/105
LGS Stud < 18ga	A 570 Gr. 33	33
LGS Stud ≥ 18 ga	A 607 Gr. 55	55
Container/Module Tube	Corten/A242	50
Container/Module Channel	Corten/A242	50
Container/Module Panel	Corten/A242	50

2. Fabrication and erection shall be in accordance with the American Institute of Steel Construction (AISC).
3. All beam connections shall be bolted or shop welded as detailed on the drawing or designed by fabricator per AISC Manual of Steel Construction allowable Stress Design, "Framed Beam Connections." Bolts shall be 3/4 inch. diameter ASTM A325, load indicator bolts. All bolts shall be tightened to the minimum tension specified in the specification for structural joints using A325 or A490 bolts.
4. All welding shall conform to the current American Welding Society (AWS) Specifications and be performed by certified welders.
5. Column anchor bolts shall have minimum yield strength of 36 KSI.
6. Metal deck shall be the type as indicated on the drawings. The deck shall be welded to the supporting members per manufacturer's recommendations or as indicated on the drawings whichever is more restricting or stringent.
7. All openings in metal deck to have 4" X 4" X ¼" angle frames set between joists.
8. All structural steel and bar joists shall have one shop coat of rust inhibitor primer paint conforming to specification. Field touch up all unpainted areas and weld areas.
9. Grout for base plates shall be nonmetallic, non–shrinkage cementitious grout having a minimum 3–days compressive strength of 4000 PSI.
10. Reference specifications for additional requirements.

G. SHIPPING / CARGO CONTAINER SPECIFICATION:

1. The shipping / cargo container(s) shall be:
   a) Undamaged (Free of rust, dents, cracks, et cetera that affect the structural integrity of the container).
   b) Made from steel.
   c) Design and tested according to the International Organization for Standardization (ISO) specifications.
   d) Certified for compliance to the Rules for Certification of Cargo Containers and the International Convention for Safe Containers (CSC) for use as shipping containers by the American Bureau of Shipping (ABS) or other approved Certified Inspection and Testing Agency (CITA).
   e) Container shall have a CSC safety approval placard (CSC Plate) and CITA logo prior to any modification.
   f) Walls and roof are continuously welded around its entire periphery and is itself made from sheets of corrugated 14ga. Cor–Ten steel also continuously welded together. This steel, also used for the side and end walls has a minimum yeild strength of 50ksi and tensile of 70ksi.
2. Prior to construction/modification, Client / Owner / Contractor shall:
   a) Provide pictures of high/good quality to PSE showing the following of each container:
      – All four sides
      – Roof
      – Under framing
      – Top Rails
      – Bottom Rails
      – Interior
      – CSC Plate
   b) Visually inspect all existing welds for consistency and undamaged.
   c) Confirm existing plywood floor sheathing is:
      – Not damaged, cracked, deformed, delaminated, or showing any other signs that structural integrity has been compromised
      – Free of hazardous materials, liquids, and/or stains, or shall be encapsulated.
      – Fully fastened to container floor joists per original construction.
      – If existing plywood floor sheathing needs to be replaced, inform PSE prior to replacing with equivalent pressure/preservative treated OSB or $\frac{1}{4}$" steel plate with equivalent or better fastening to container floor joists.
   d) If possible, provide manufacturer drawings of container to PSE.
3. Dimensions provided may be the nominal dimensions of the container. Contractor/fabricator, owner, and/or architect to verify actual dimension before construction.

H. ABBREVIATIONS:

AB ANCHOR BOLT
ADDL ADDITIONAL
ALT ALTERNATE
APA AMERICAN PLYWOOD ASSOCIATION
ARCH ARCHITECTURAL
B BOTTOM
BLKG BLOCKING
BN BOUNDARY NAIL
BOF BOTTOM OF FOOTING
CBC CALIFORNIA BUILDING CODE
CJ CONSTRUCTION JOINT OR CONTROL JOINT
CL CENTER LINE
CLR CLEAR
CONN CONNECTION
CONT CONTINUOUS
DBL DOUBLE
DIM DIMENSION
DL DEAD LOAD
DO DITTO (REPEAT)
DWG DRAWING
DWL DOWEL
E EXISTING
EA EACH
EF EACH FACE
EL ELEVATION
EMBED EMBEDMENT
EN EDGE NAIL
EOR ENGINEER OF RECORD
EQ EQUAL
ES EACH SIDE
EW EACH WAY
FA FRAMING ANCHOR
FD FROST DEPTH
FEN FLOOR EDGE NAILING
FF FINISHED FLOOR
FN FIELD/INTERMEDIATE NAILING
FS FAR SIDE
FTG FOOTING
GALV GALVANIZED
GC GENERAL CONTRACTOR
GIR GEOTECHNICAL INVESTIGATION REPORT
GLB GLUED LAMINATED BEAM
GR GRADE
HDR HEADER
HGR HANGER
HORIZ HORIZONTAL
HSH HORIZONTALLY SLOTTED HOLES
ICBO INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
ID INSIDE DIAMETER
INT INTERIOR
JT JOINT
LDGR LEDGER
LGST LIGHT GAUGE STEEL, COLD–FORMED STEEL
LL LIVE LOAD
MATL MATERIAL
MAX MAXIMUM
MB MACHINE BOLT
MFR MANUFACTURER
MIN. MINIMUM
MTL METAL
NO. NUMBER
NS NEAR SIDE
NTS NOT TO SCALE
OC ON CENTER
OD OUTSIDE DIAMETER
OFDSC OREGON ONE & TWO FAMILY DWELLING SPECIALTY CODE
OH OPPOSITE HAND
OSB ORIENTED STRAND BOARD
OSSC OREGON STRUCTURAL SPECIALTY CODE
OSV ON SITE VERIFY
OTOB OUT TO OUT OF BEARING
PERP PERPENDICULAR
PL PLATE
PLF POUND PER LINEAR FOOT
PSE PSE, INC.
PT PRESSURE TREATED
PW PLATE WASHER
REF REFERENCE
REN ROOF EDGE NAILING
REINF REINFORCEMENT
RFT RAFTERS
SGN STRUCTURAL GENERAL NOTES
SEP SEPARATION
SIM SIMILAR
SN SHEAR NAIL
SNL SNOW LOAD
SPEC SPECIFICATION
STD STANDARD
STGR STAGGER
STIFF STIFFENERS
T TOP
TB TOP & BOTTOM
TD TYPICAL DETAILS
TG TONGUE & GROOVE
THK THICKNESS/THICK
TN TOENAIL
TOB TOP OF BEAM
TOF TOP OF FOOTING
TOW TOP OF WALL
TYP TYPICAL
UBC UNIFORM BUILDING CODE
UON UNLESS OTHERWISE NOTED
VERT VERTICAL
VSH VERTICAL SLOTTED HOLES
WD WOOD
WEN WALL EDGE NAILING
WWF WELDED WIRE FABRIC
W/ WITH
W/O WITHOUT

SHEET INDEX:

S1	GENERAL STRUCTURAL NOTES
S2	CONTAINER FLOOR PLANS
S2.1	CONTAINER DETAILS

Structural details for this project are for illustration only. They are not drawn to scale unless noted otherwise. Contractor must verify all dimensions before fabrication or construction. Do not scale drawings.

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Licensed in 48 States!

Construction Types: Light Gauge Steel, Straw Bales, Bamboo, Log, Timber/Wood, Structural Insulated Panels/SIPs, Masonry, Steel, Concrete, Modular Homes/Factory Built Housing (FBH), ICF, Shipping Containers, and many more! Commercial or Residential. And Green/Sustainable!

Project:
AquaWorks DBO, Inc. Shipping Container
22158 CR 12, Phippsburg, CO

Owner / Client:
AquaWorks DBO, Inc.

8-19-24
COLORADO LICENSED PROFESSIONAL ENGINEER
NABIL M. TAHA
30389
Expires 10/31/2025

REVISION SCHEDULE

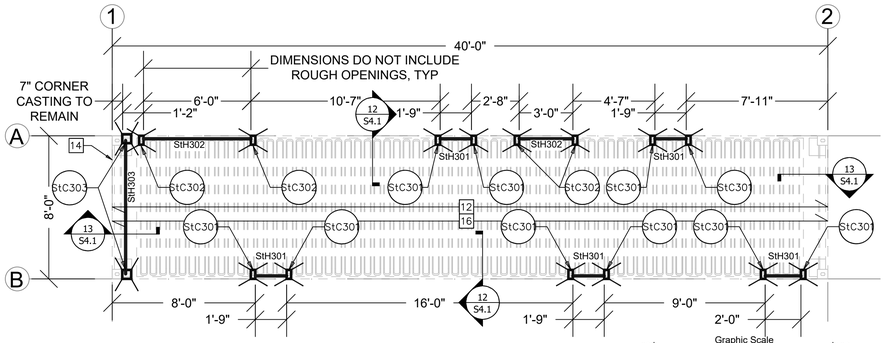
MARK	DESCRIPTION	DATE

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

TITLE:
GENERAL NOTES

PAGE NO:
S1

PROJECT #: AquaWorks DBO Inc., 224-2001

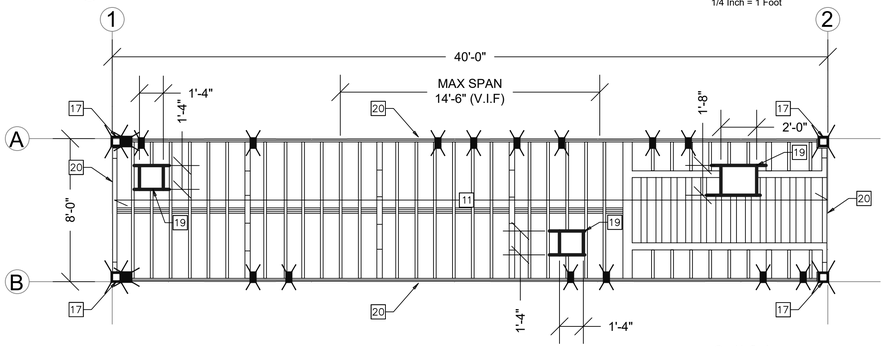


1 SHIPPING CONTAINER ROOF FRAMING PLAN

Approximate Scale: 1/4" = 1'-0"

Graphic Scale: 0ft – 10ft

1/4 Inch = 1 Foot



2 SHIPPING CONTAINER FLOOR FRAMING PLAN

Approximate Scale: 1/4" = 1'-0"

Graphic Scale: 0ft – 10ft

1/4 Inch = 1 Foot

MARK	SIZE	TYPE	BASE CONNECTION	TOP CONNECTION	REMARKS
StC301	HSS 3x3x$\frac{5}{16}$"	A1085	REFER TO DETAIL 3-4/S2.1	REFER TO DETAIL 3-4/S2.1	-
StC302	HSS 3x3x$\frac{5}{16}$"	A1085	REFER TO DETAIL 1-2/S2.1	REFER TO DETAIL 1-2/S2.1	-
StC303	HSS 3x3x$\frac{5}{16}$"	A1085	REFER TO DETAIL 5-7/S2.1	REFER TO DETAIL 5-7/S2.1	-

3 STEEL COLUMN SCHEDULE (StC)

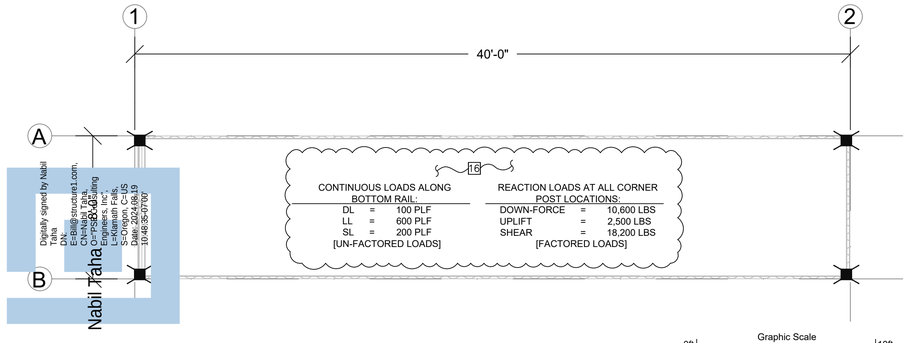
N.T.S.

COLUMN BELOW, SUPPORTING THIS FLOOR/ROOF LEVEL.

MARK	MAX OPENING	COMBINATION	FRAME SIZE	REMARKS
StH301	UP TO 2'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 3-4/S2.1
StH302	UP TO 6'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 1-2/S2.1
StH303	UP TO 8'-0"	A1085	HSS 3x3x$\frac{3}{16}$"	REFER TO DETAIL 5-7/S2.1

4 STEEL HEADER SCHEDULE (StH)

N.T.S.



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DN: C=US, E=Nabil@structure1.com, CN=Nabil Taha, O=PSE Consulting Engineers, Inc., L=Klamath Falls, ST=Oregon, C=US
Date: 2024.08.19 10:48:35-07'00'

5 FOUNDATION LOADS: ASSUMED LOCATIONS

Approximate Scale: 1/4" = 1'-0"

Graphic Scale: 0ft – 10ft

1/4 Inch = 1 Foot

DESIGN DATA:	
ROOF DESIGN LOADS:	
GROUND SNOW LOAD:	70.1 PSF
ROOF SNOW LOAD:	49.1 PSF
ROOF LIVE LOAD:	n/a
ROOF DEAD LOAD:	10 PSF
CEILING DEAD LOAD:	5 PSF
FLOOR DESIGN LOADS:	
FLOOR DEAD LOAD:	15 PSF
FLOOR LIVE LOAD:	40 PSF
LIVE LOAD OCCUPANCY:	MEP ROOM
WIND DESIGN LOADS:	
ULTIMATE (3-SEC GUST)	105 MPH
EXPOSURE CATEGORY:	C
SEISMIC DESIGN LOADS:	
Ss	0.525
S1	0.097
SEISMIC DESIGN CATEGORY	C
Ie	1

LEGEND:

- DISCONTINUOUS 2x6 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL SUPPORTING/BELOW THIS FLOOR/ROOF.
- DISCONTINUOUS 2x6 DF-L #2 @ 16" O.C. SHEAR WALL AND/OR LOAD BEARING WALL ABOVE THIS FLOOR/ROOF.
- DISCONTINUOUS COLUMN SUPPORTING THIS FLOOR/ROOF.
- STUB, SHORT,POST.
- [n] INDICATES SHEET NOTES.
- (Cn) INDICATES COLUMN MARK, REFER TO COLUMN SCHEDULE.
- n NUMERICAL VALUE, 1, 2, 3 ETC.

SHEET NOTES:

1. REFER TO S1 FOR STRUCTURAL GENERAL NOTES AND TO ROOF DETAIL SHEETS FOR CONSTRUCTION DETAILS.
2. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. DO NOT SCALE DRAWINGS.
3. PROVIDE MULTIPLE STUDS UNDER BEAMS OR TRUSSES TO MATCH WIDTH OF SUPPORTED MEMBER, TYP. STUDS SHALL BE CONTINUED IN LOWER FLOORS AND/OR CRAWL SPACE TO FOOTING, TYP.
4. ROOF DRAINAGE SHALL BE DIRECTED AWAY FROM FOUNDATION.
5. PROVIDE SOLID BLOCKING UNDER POSTS AND MULTIPLE STUDS TO TRANSFER LOADS TO POSTS/STUDS BELOW.
6. LAY FLOOR AND ROOF STRUCTURAL PANELS WITH THE LONG DIMENSION AT RIGHT ANGLE TO SUPPORTS AND CONTINUOUS OVER TWO OR MORE SPANS.
7. LIMIT LIVE LOAD DEFLECTION TO SPAN OVER 480 FOR RAFTERS, JOISTS, BEAMS.
8. FLOOR SHEATHING SHALL BE 3/4" OR MORE THICK APA T&G PLYWOOD OR OSB WITH 48"/24" SPAN RATING. USE 8d @ 4" O.C. (BN) AT EXTERIOR WALLS AND INTERIOR SHEAR WALLS. 8d @ 6" O.C. (FEN) ALONG PANEL EDGES AND 8d @ 10" O.C. AT INTERMEDIATE SUPPORTS, UON. MINIMUM PENETRATION IS 1 5/8" INTO FRAMING. USE GLUE.
9. FIELD GLUE FLOORS TO ALL SUPPORTS AND T&G EDGES PER APA, AFG-01. FRAMING SHALL BE FREE OF SURFACE MOISTURE AND DEBRIS PRIOR TO GLUING.
10. IF HEAVY EQUIPMENT (WEIGHING OVER 500LBS) IS PLACED OVER FINISHED FLOOR CONTACT EOR FOR REVIEW PRIOR TO INSTALLATION.
11. EXISTING CONTAINER FLOOR BEAMS/RAILS, JOISTS & FLOORING TO REMAIN UNMODIFIED U.N.O
12. EXISTING CONTAINER ROOF TO REMAIN UNMODIFIED U.N.O
13. CENTER FOOTING UNDER POSTS AND WALLS UNLESS OTHERWISE NOTED ON PLANS AND/OR DETAILS.
14. SHIPPING CONTAINER DOOR AND CORNER CASTING TO REMAIN.
15. LINE OF SHIPPING CONTAINER ABOVE
16. CONTRACTOR'S CHOICE:
    2x4 DF-L #1 CEILING JOIST @ 12" O.C. WITH 2x BLOCKING AT HALFWAY POINT AND WOOD SHIM ABOVE @ 1/3RD POINTS. REFER TO DETAIL 12/S2.1 FOR CONNECTION TO TOP RAIL OR
    2x4 DF-L #1 RAFTER @ 12" O.C. WITH 2x BLOCKING AT HALFWAY POINT. REFER TO DETAIL 13/S2.1 FOR CONNECTION TO TOP RAIL
17. CONTRACTOR TO ATTACH SHIPPING CONTAINER TO FOUNDATION BY OTHERS WITH BASE PLATE AS PER 8-9/S2.1 AT CORNERS AND MAXIMUM 14'-6" O.C. ALONG BOTTOM RAIL.
18. REINFORCE BOTTOM RAIL ALONG THIS LINE AS PER DETAIL 11/S2.1
19. CONTRACTOR SHALL VERIFY OPENING IN FLOOR. FLOOR OPENING SHALL BE REINFORCED WITH (2) L4x4x$\frac{1}{4}$" A36 ANGLE BETWEEN EXISTING FRAMING MEMBERS AND (2) 4"x$\frac{1}{4}$" A36 FLAT PLATE BETWEEN NEW 'L'-ANGLE
20. FOUNDATION NOT BY PSE. OWNER/CONTRACTOR TO HIRE LOCAL LICENSED ENGINEER OR PSE TO DESIGN FOUNDATION TO SUPPORT SHIPPING CONTAINER. CONTACT PSE FOR ADDITIONAL INFORMATION.

REVIEWED FOR CODE COMPLIANCE
10/10/2024

PSE Consulting Engineers, Inc.
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Construction Types:
Light Gauge Steel, Straw Bales, Bamboo, Log, Timber/Wood, Structural Insulated Panels/SIPs, Masonry, Steel, Concrete, Modular Homes/Factory Built Housing (FBH), ICF, Shipping Containers, and many more! Commercial or Residential. And Green/Sustainable!

Project:
AquaWorks DBO, Inc.
Shipping Container

22158 CR 12,
Phippsburg, CO

Owner / Client:
AquaWorks DBO, Inc.

8-19-24
COLORADO LICENSED
NABIL M. TAHA
30389
PROFESSIONAL ENGINEER
Expires 10/31/2025

MARK	DESCRIPTION	DATE
	REVISION SCHEDULE	

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

TITLE:
CONTAINER FLOOR PLANS

PAGE NO:
S2

PROJECT #:
AQUAWORKS DBO INC., 224-2001

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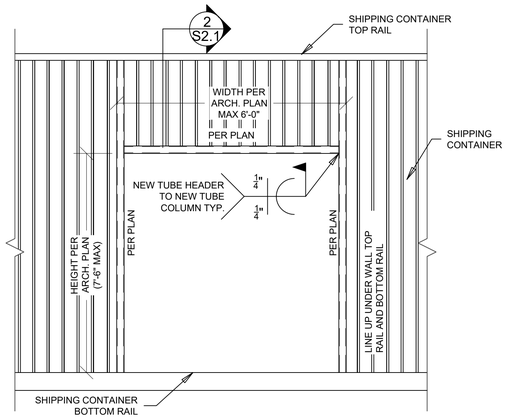
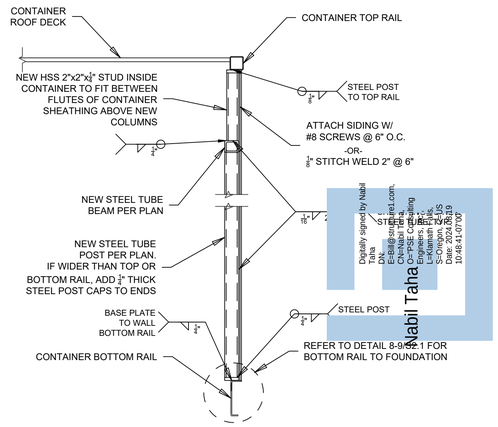
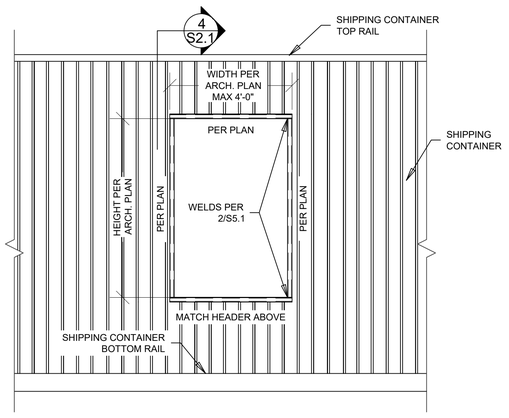


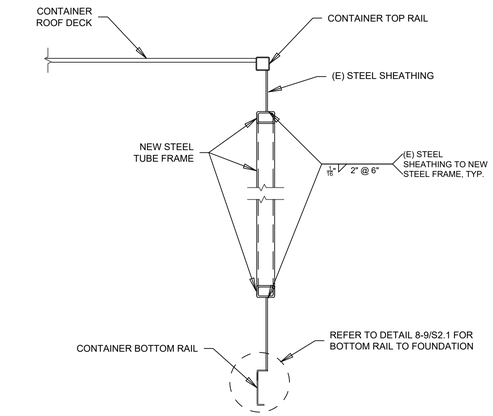
1 TYPICAL DOOR OPENING
N.T.S.



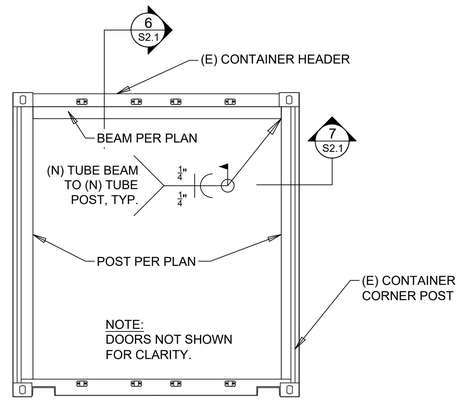
2 TYPICAL DOOR OPENING SECTION VIEW
N.T.S.



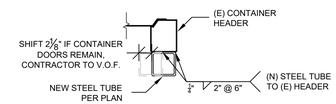
3 TYPICAL WINDOW OPENING
N.T.S.



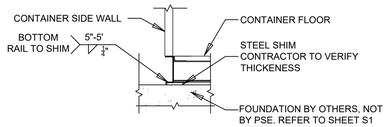
4 TYPICAL WINDOW OPENING SECTION VIEW
N.T.S.



5 NEW FRAME AT CONTAINER DOORWAY
N.T.S.



6 NEW HEADER AT CONTAINER DOORWAY
N.T.S.



8 BOTTOM RAIL TO FOOTING
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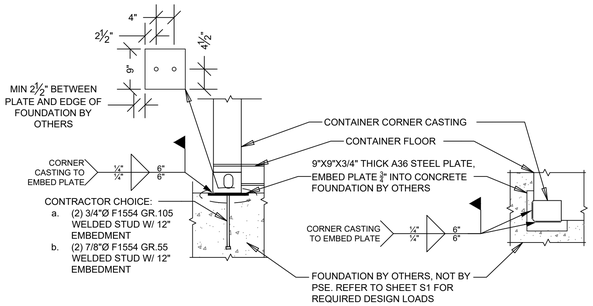
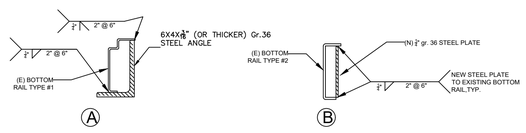
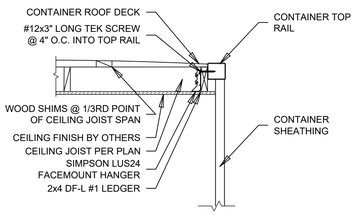


9 CORNER CASTING TO FOOTING
N.T.S.

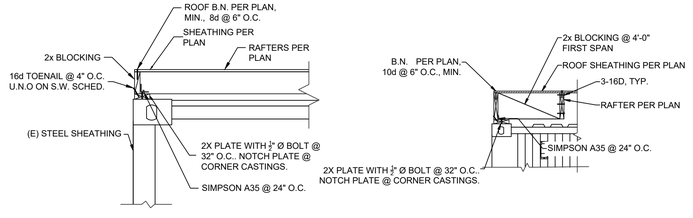
10 STANDARD SHIPPING CONTAINER MEMBER NOMENCLATURE
N.T.S.



11 REQUIRED BOTTOM RAIL REINFORCEMENT (CONTRACTOR CHOICE)
N.T.S.



12 CEILING JOIST TO TOP RAIL
N.T.S.



OPTIONAL DETAIL: RAFTER TO CONTAINER TOP RAIL
12 N.T.S.

REVIEWED FOR CODE COMPLIANCE
10/10/2024

Structural details for this project are for illustration only. They are not drawn to scale unless noted otherwise. Contractor must verify all dimensions before fabrication or construction. Do not scale drawings.

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Project:
AquaWorks DBO, Inc.
Shipping Container

22158 CR 12,
Phippsburg, CO

Owner / Client:
AquaWorks DBO, Inc.

8-19-24
COLORADO LICENSED
NABIL M. TAHA
30388
PROFESSIONAL ENGINEER
Expires 10/31/2025

MARK	REVISION SCHEDULE DESCRIPTION	DATE

DRAWN BY: M.R.D
DS. BY: M.R.D
CHK BY: N.T.
DATE: 2-02-2024

TITLE:
CONTAINER DETAILS

PAGE NO:
S2.1

PROJECT #:
AQUAWORKS DBO INC., 224-2001