



REVERENCE ENGINEERING

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PREPARED FOR:

MEGA LED TECHNOLOGY

PROJECT #:

2503169

CHURCH OF CHRIST LED SIGN

201 NW CHIPMAN RD
LEES SUMMIT, MO 64063

No: Issue/Revision: Date:

---- Initial Submittal 4-1-2025

- 1
2
3
4



1-Apr-25

SHEET TITLE: STRUCTURAL

SHEET: S.1

ORIGINAL SHEET SIZE: 11x17

GENERAL

- 1. ALL MATERIALS AND WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2018 INTERNATIONAL BUILDING CODE (IBC).
2. CONSTRUCTION METHODS AND PROJECT SAFETY: DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE METHODS, PROCEDURES, OR SEQUENCE OF CONSTRUCTION. TAKE NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE DURING CONSTRUCTION. THE EOR WILL NOT ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY DEVICES AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS.
3. VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS PRIOR TO THE START OF CONSTRUCTION AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES THAT ARE FOUND. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE DRAWINGS.
4. ALL OMISSIONS AND/OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND FIELD INSPECTOR. THE ENGINEER SHALL PROVIDE A SOLUTION PRIOR TO PROCEEDING WITH ANY WORK AFFECTED BY THE CONFLICT OR OMISSION.
5. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, USE THOSE FOR OTHER SIMILAR WORK.
6. WHEN A DETAIL IS IDENTIFIED AS TYPICAL, APPLY IN ESTIMATING AND CONSTRUCTION TO EVERY LIKE CONDITION WHETHER OR NOT THE REFERENCE IS REPEATED IN EVERY INSTANCE.
7. CHANGES TO THE DRAWINGS: OBTAIN PRIOR WRITTEN APPROVAL.
8. WORK PERFORMED IN CONFLICT WITH THE DRAWINGS OR APPLICABLE BUILDING CODE REQUIREMENTS SHALL BE CORRECTED AT THE EXPENSE OF THE CONTRACTOR.

DESIGN CRITERIA

- 1. STRUCTURE IS DESIGNED IN ACCORDANCE WITH ASCE 7-16: MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
2. WIND LOAD: BASIC WIND SPEED, VULT = 115 MPH MAXIMUM RISK CATEGORY: II EXPOSURE: C
3. SNOW LOAD: IMPORTANCE FACTOR, Is = 1.0 SURFACE ROUGHNESS: C EXPOSURE: C GROUND ROOF --- PSF MAXIMUM. --- PSF ROOF LIVE LOAD: --- PSF

STEEL

- 1. STEEL SHAPES SHALL CONFORM TO THE FOLLOWING (U.N.O.): RND. H55 ASTM A500, GR C Fy=46 KSI MIN. SQ/RECT. H55 ASTM A500, GR C Fy=50 KSI MIN. THREADED ROD ASTM A36 Fy=36 KSI MIN. STEEL PLATE ASTM A36 Fy=36 KSI MIN. ANGLE & CHANNEL ASTM A36 Fy=36 KSI MIN. STD. PIPE ASTM A53, GR B Fy=35 KSI MIN. STRUCT. PIPE ASTM A252, GR. 3 Fy=45 KSI MIN. WIDE FLANGE ASTM A992 Fy=50 KSI MIN.
2. MACHINE BOLTS SPECIFIED AS "A307" SHALL CONFORM TO ASTM A307 w/ NUTS PER ASTM A563A & WASHERS PER ASTM F844 (U.N.O.). THREADED PARTS, NUTS, AND WASHERS SHALL BE HDG OR ZP AS DEFINED HEREIN.
3. STRUCTURAL BOLTS SHALL CONFORM TO ASTM F3125 GRADES A325 OR A490 AS SPECIFIED ("A325" OR "A490") w/ NUTS PER ASTM A563DH & WASHERS PER ASTM F436. A. WHERE DESIGNATED AS "-X", CARE MUST BE TAKEN TO ENSURE THREADS ARE EXCLUDED FROM THE SHEAR PLANE(S). B. WHERE DESIGNATED AS "-N" OR IF NO DESIGNATION IS NOTED, THREADS MAY BE INCLUDED IN THE SHEAR PLANE(S). C. WHERE SPECIFIED, "A325" MAY BE HDG OR ZP AS DEFINED HEREIN. D. GRADE "A490" SHALL NOT BE HDG OR ZP AS DEFINED HEREIN.
4. ANCHORS CAST IN CONCRETE SHALL CONFORM TO ASTM F1554 GR. 36 (U.N.O.) w/ NUTS TO ASTM A563 AND WASHERS TO ASTM F436. PARTS SHALL BE HOT-DIP GALVANIZED (HDG) OR ZINC (MECHANICAL) PLATED (ZP). PARTS EMBEDDED ENTIRELY IN CONCRETE MAY BE PLAIN STEEL.
5. WHERE SPECIFIED FOR STEEL THREADED PARTS, NUTS, AND WASHERS, HOT-DIP GALVANIZING (HDG) SHALL CONFORM TO ASTM F2329 AND ZINC (MECHANICAL) PLATING (ZP) TO CLASS 55 PER ASTM B695.
6. PLAIN STEEL FASTENERS ARE NOT TO BE USED UNLESS SPECIFIED.
7. ZINC ELECTRO-PLATED FASTENERS PER ASTM F1941 MAY BE SUBSTITUTED FOR INTERIOR APPLICATIONS, BUT ARE OTHERWISE NOT TO BE USED UNLESS SPECIFIED.
8. NUTS AND WASHERS SHALL HAVE THE SAME COATING AS THE CORRESPONDING THREADED PART.
9. WHERE SPECIFIED, IRON AND STEEL HARDWARE SHALL BE HOT-DIP GALVANIZED PER ASTM A153.
10. STAINLESS STEEL (SS) BOLTS, STUDS, AND THREADED ROD SHALL CONFORM TO ASTM F593 AND BE ALLOY 304 OR 316 w/ NUTS TO ASTM F594. NUTS AND WASHERS SHALL MATCH THE ALLOY OF THE THREADED PART.
11. WELDING: A. WELD STRUCTURAL STEEL IN COMPLIANCE WITH ANS/AWS D1.1 AND AISC SPECIFICATION, CHAPTER J. WELDERS SHALL BE CERTIFIED AS REQUIRED BY THE LOCAL BUILDING AUTHORITY. WELDING SHALL BE DONE BY ELECTRIC ARC PROCESS USING LOW-HYDROGEN ELECTRODES WITH SPECIFIED TENSILE STRENGTH NOT LESS THAN 70 KSI UNLESS NOTED OTHERWISE. B. UNLESS A LARGER WELD SIZE IS INDICATED, PROVIDE MINIMUM SIZE WELD PER AISC SPECIFICATION, SECTION J2, TABLE J2.4.

ALUMINUM

- 1. FABRICATE AND ERECT ALUMINUM IN COMPLIANCE WITH THE 2015 ALUMINUM DESIGN MANUAL (ADM1), THE SPECIFICATIONS FOR ALUMINUM SHEET METAL WORK (ASM35), AND CHAPTER 20 OF THE BUILDING CODE.
2. ALUMINUM SHAPES SHALL CONFORM TO THE FOLLOWING: PIPE & TUBE 6061-T6 ASTM B429 Fy=35 KSI MIN. STRUCT. PROFILES 6061-T6 ASTM B308 Fy=35 KSI MIN. SHEET & PLATE 6061-T6 ASTM B209 Fy=35 KSI MIN. STAPLE TUBE 6063-T5 ASTM B221 Fy=16 KSI MIN.

- 3. ALL SHOP AND FIELD WELDS SHALL BE PERFORMED BY AN AISC QUALITY CERTIFIED FABRICATOR.
4. UNLESS A LARGER WELD SIZE IS INDICATED, PROVIDE MINIMUM SIZE WELD PER ADM 1.
5. FILLER SHALL BE 5556 ALLOY REGARDLESS OF MEMBER THICKNESS. NO OTHER FILLER ALLOY SHALL BE USED UNLESS NOTED OTHERWISE.

CONCRETE & REINFORCEMENT

- 1. MINIMUM 28-DAY COMPRESSIVE STRENGTH (fc) SHALL BE 2,500 PSI.
2. REINFORCEMENT TO BE ASTM A615 GR. 60, Fy=60 KSI UNO.
3. CALCIUM CHLORIDE OR ADDED CHLORIDE IS NOT PERMITTED.
4. ALL REINFORCED CONCRETE SHALL BE CONSOLIDATED WITH MECHANICAL VIBRATORS.
5. MINIMUM CONCRETE COVER: CAST AGAINST & EXPOSED TO EARTH 3" EXPOSED TO EARTH OR WEATHER 2"
6. CHAIRS AND SPACERS: AS REQUIRED TO MAINTAIN COVER.
7. SIGN MAY BE INSTALLED ON FOUNDATION AFTER A MINIMUM CURING TIME OF (14) DAYS PROVIDED CURING PROCESS IS PROPERLY MAINTAINED PER ACI 318.
8. GROUT SHALL BE NON-SHRINK AND NON-METALLIC WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT (1) DAY. MIX AND PLACE IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

FOUNDATIONS

- 1. DESIGN BEARING PRESSURES ARE PER IBC CLASS 4 PRESUMPTIVE VALUES (NO SPECIAL INSPECTION REQUIRED): LATERAL BEARING: 150 PSF/FT VERTICAL BEARING: 2,000 PSF

EXISTING CONDITIONS

- 1. ENGINEER WILL NOT BE PERFORMING ON-SITE INSPECTIONS OR VERIFICATIONS. IT IS THE RESPONSIBILITY OF THE INSTALLER AND OWNER(S) TO IDENTIFY EXISTING CONDITIONS AND CONTACT ENGINEER WITH ANY DISCREPANCIES OR CONCERNS.
2. EXISTING INFORMATION HAS BEEN FURNISHED BY THE ENTITY WHOM THIS DOCUMENT WAS PREPARED FOR. ENGINEER IN NO WAY CERTIFIES THIS INFORMATION AS "AS-BUILT".
3. FEATURES OF WORK ANNOTATED AS "VERIFY" (OR SIMILAR) MUST BE INSPECTED, VERIFIED AS SUCH, AND DOCUMENTED PRIOR TO FABRICATION AND INSTALLATION.
4. IF THERE IS ANY REASON TO BELIEVE THE EXISTING CONDITIONS DETAILED HEREIN ARE NOT ACCURATE, CONTRACTOR SHALL CEASE WORK AND NOTIFY ENGINEER IMMEDIATELY.
5. CONTRACTOR SHALL INSPECT AND CONFIRM THE QUALITY OF EXISTING STRUCTURE AS "IN GOOD REPAIR". STRUCTURE SHALL BE FREE OF CORROSION, DECAY, AND ANY OTHER MATERIAL, FABRICATION, ASSEMBLY, OR INSTALLATION DEFECT. IF THERE ARE ANY INDICATIONS THAT THIS IS NOT THE CASE, CONTRACTOR SHALL CEASE WORK IMMEDIATELY AND NOTIFY ENGINEER.

THIS AREA INTENTIONALLY LEFT BLANK

EVALUATION REPORT SCHEDULE

ANCHORS, FASTENERS, AND OTHER PRODUCTS SHALL CONFORM TO AND BE INSTALLED PER THEIR RESPECTIVE EVALUATION REPORT(S) AS FOLLOWS (NOT ALL APPLICABLE THIS PROJECT):

Table with 2 columns: ANCHOR TYPE, REPORT #. Lists various anchor types like HILTI KB-T22 and SIMPSON TITEN HD with their respective report numbers.

ABBREVIATIONS

Table with 3 columns: Abbreviation, Description, and Material/Type. Lists abbreviations like ABV., ADD'L., AFF, ALT., ALUM., A.O.R., ARCH., BTM., BKG.G., CIRC., CONC., CONN., CONT., CTR., DIA., DET., (E), EXIST., EA., E.W., ELEV., EMBED., E.O.R., FAB., FDN., FRMG., FTG., F.V., G.C., HDG., HOR., O.C., L.O.C., MAX., MIN., (N), N.T.E., O/, O.D., OPT., PENE., REINF., RND, RND, SIM., SS, STD, SUPP., SQ., T/O, TYP., THK., U.N.O., VERT., W/0, ZP.

MANUFACTURED SIGN CABINETS

UNLESS NOTED OTHERWISE, MANUFACTURED SIGN CABINETS SHALL BE DESIGNED BY THE MANUFACTURER/FABRICATOR OR OTHER COMPETENT PARTY AND FABRICATED IN ACCORDANCE WITH ALL APPLICABLE CODES, UL LISTINGS, LOCAL ORDINANCES, AND INDUSTRY STANDARDS. THIS INCLUDES FACES AND CLADDING, INTERNAL STRUCTURE, ELECTRICAL, AND ALL OTHER ACCESSORY COMPONENTS.

THE MANUFACTURER/FABRICATOR IS RESPONSIBLE FOR ENSURING ALL CABINETS ARE ASSEMBLED WITH ADEQUATE INTERNAL FRAMING AND STIFFNESS. CABINET FRAMING SHALL BE CAPABLE OF DELIVERING ALL IMPOSED DESIGN LOADS (WIND, SEISMIC, DEAD, SNOW, ETC.) DIRECTLY TO THE STRUCTURAL CONNECTIONS OR ELEMENTS DETAILED HEREIN. CABINET FRAMING SHALL LIMIT EXCESSIVE VIBRATION, DRIFT, OR DEFLECTION TO REASONABLE LEVELS.

FAILURE TO PROVIDE AN ADEQUATE LOAD PATH OR SUFFICIENT CABINET STIFFNESS MAY RESULT IN EXCESSIVE VIBRATION, DRIFT, OR DEFLECTION WHICH MAY YIELD SECOND-ORDER EFFECTS THAT CAN NEGATIVELY AFFECT THE PERFORMANCE OF THE STRUCTURAL CONNECTIONS OR ELEMENTS DETAILED HEREIN.

REVERENCE ENGINEERING MAKES NO CLAIMS AS TO THE SUITABILITY OF MANUFACTURED SIGN CABINETS IDENTIFIED AS "BY MFR." OR "BY FAB." WHICH HAVE NOT BEEN ENGINEERED, CERTIFIED, OR REVIEWED BY REVERENCE ENGINEERING UNLESS SPECIFICALLY CONTRACTED OTHERWISE AND DETAILED OR NOTED HEREIN.

DESIGN BY OTHERS NOTE

REVERENCE ENGINEERING IN NO WAY CERTIFIES OR MAKES CLAIMS TO THE SUITABILITY OF CONDITIONS OR ELEMENTS (EXISTING OR NEW) THAT ARE DESIGNED BY OTHERS. SUCH CONDITIONS AND ELEMENTS ARE IDENTIFIED AS "BY OTHERS" OR "DESIGNED BY OTHERS" AND ARE NOT ENGINEERED BY REVERENCE ENGINEERING.

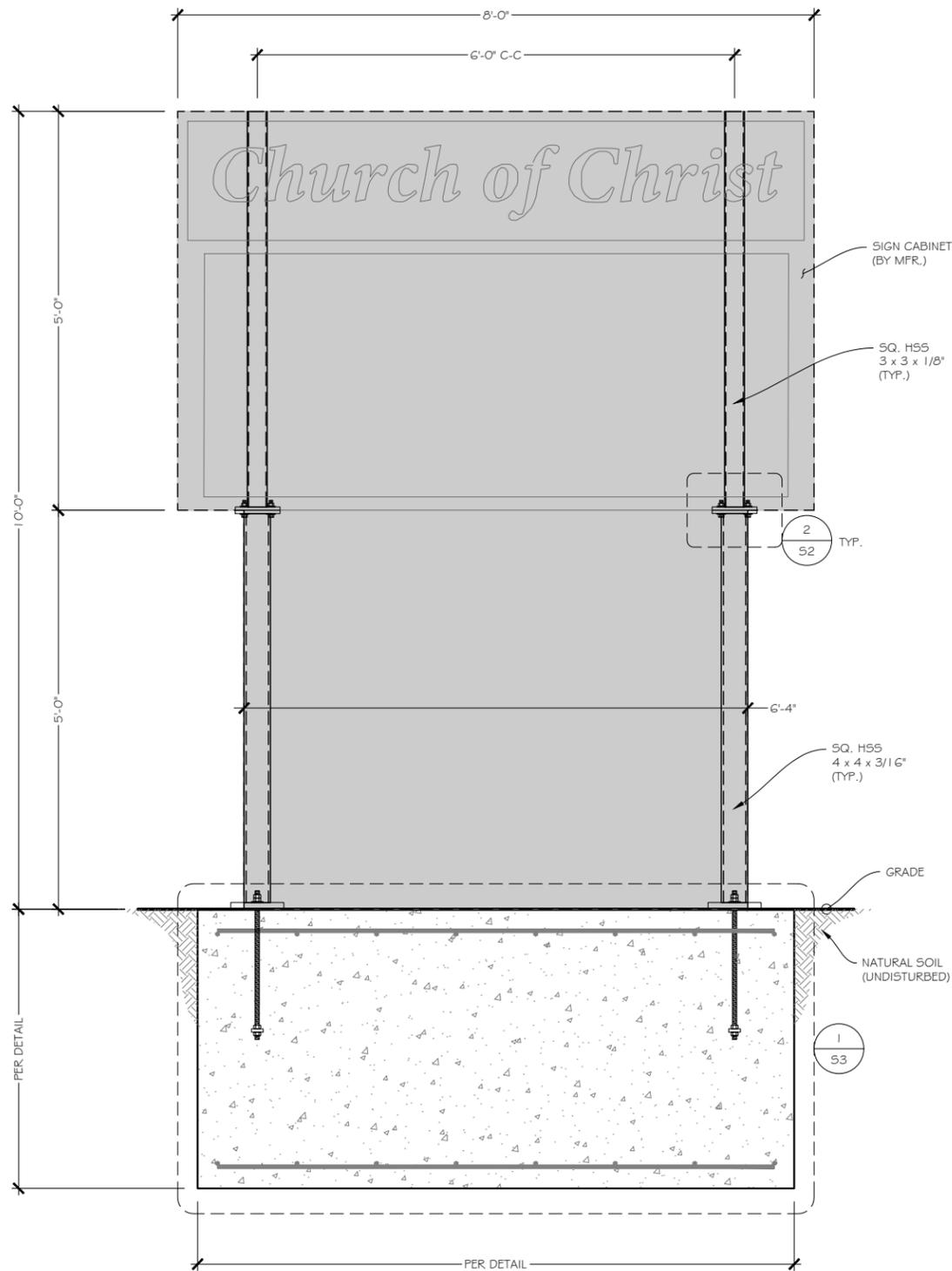
THE SCOPE OF ENGINEERING HEREIN ASSUMES THESE ELEMENTS HAVE BEEN, OR WILL BE, DESIGNED OR CHECKED FOR SUITABILITY BY A DESIGN PROFESSIONAL.

ELECTRICAL NOTE

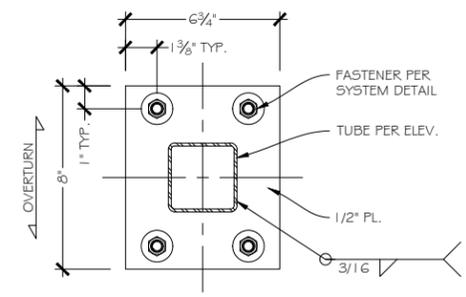
ELECTRIC COMPONENTS AND WIRING ARE NOT DESIGNED BY REVERENCE ENGINEERING. FABRICATOR AND INSTALLER SHALL COMPLY WITH THE CURRENT VERSION OF THE ADOPTED NATIONAL ELECTRIC CODE (NEC) AND ARTICLE 600: "ELECTRIC SIGNS AND OUTLINE LIGHTING".

Limits of liability extend only to the work detailed, for the quantity of assemblies indicated (1 unless noted otherwise), at the location specified, and by the client listed; use of these plans and/or corresponding structural calculations in violation of either voids all liability.

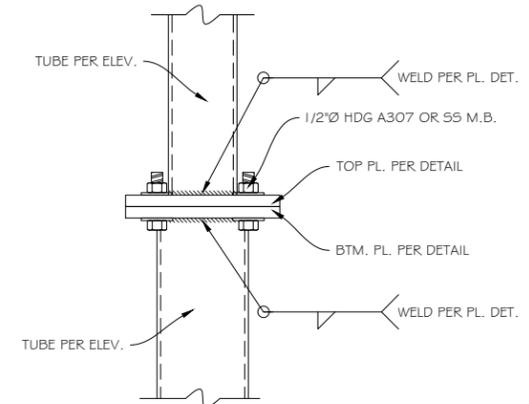
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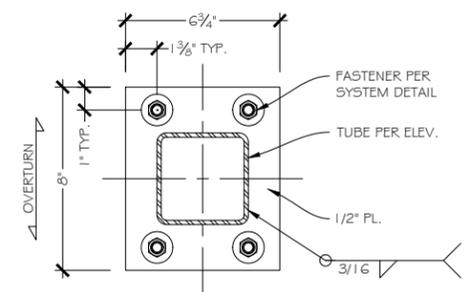
1 ELEVATION



TOP PLATE



SYSTEM DETAIL



BOTTOM PLATE

2 CONNECTION DETAIL



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PREPARED FOR:  
 MEGA LED TECHNOLOGY

PROJECT #:  
 2503169

CHURCH OF CHRIST  
 LED SIGN  
 201 NW CHIPMAN RD  
 LEE'S SUMMIT, MO 64063

No.	Issue/Revision:	Date:
---	Initial Submittal	4-1-2025

- 1
- 2
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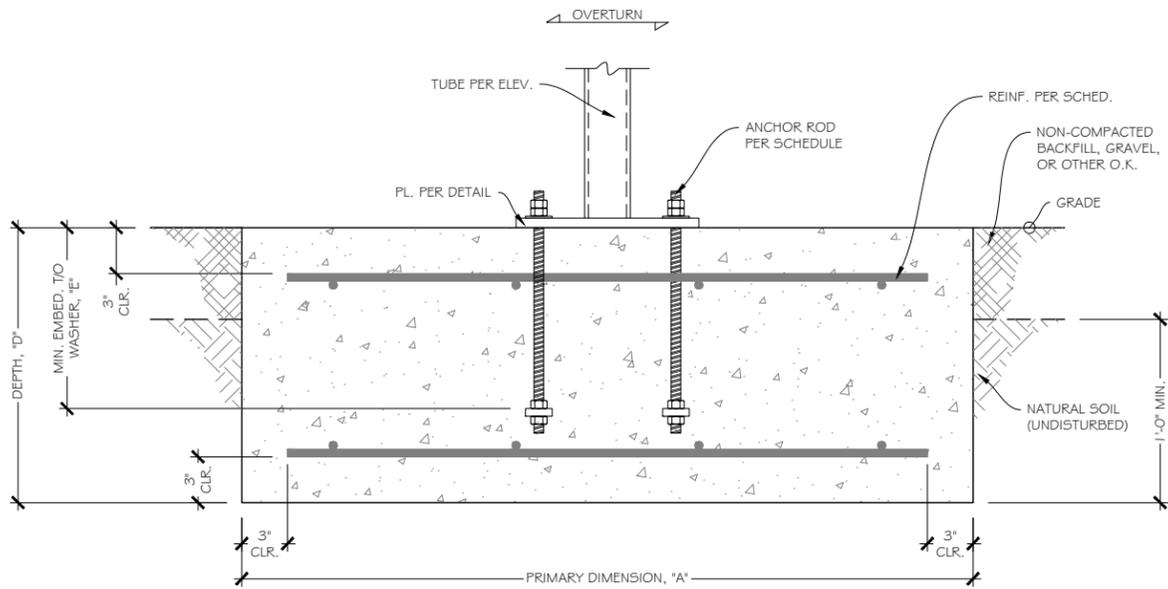


SHEET TITLE:  
 STRUCTURAL

SHEET:  
 S.2

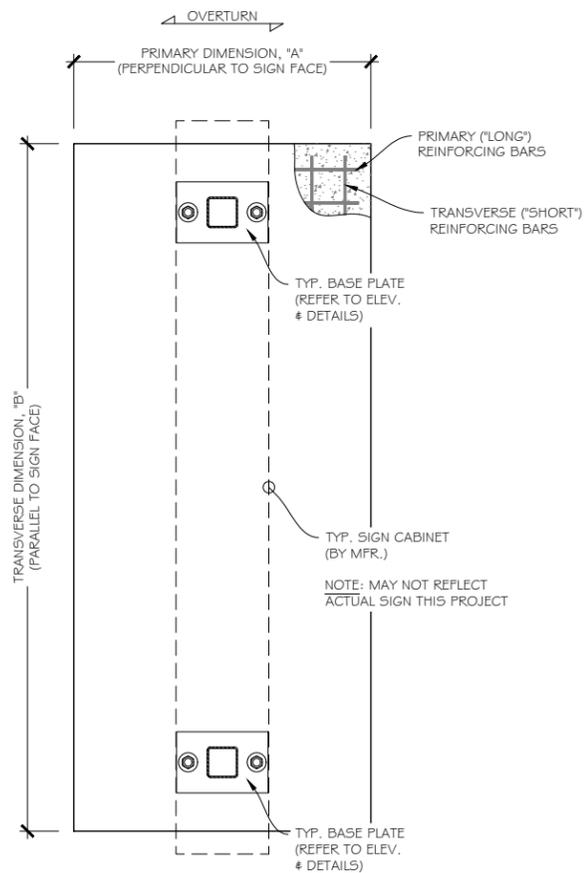
ORIGINAL SHEET SIZE: 11x17

Limits of liability extend only to the work detailed, for the quantity of assemblies indicated (1 unless noted otherwise), at the location specified, and by the client listed; use of these plans and/or corresponding structural calculations in violation of either voids all liability.



NOTE:  
THIS DETAIL IS TYPICAL, NOT TO SCALE,  
AND DOES NOT NECESSARILY REPRESENT  
SPECIFIC CONDITIONS. REFER TO SPREAD  
FOOTING SCHEDULE AND PLATE DETAIL  
FOR SPECIFIC INFORMATION.

TYP. SPREAD FOOTING DETAIL



NOTE:  
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TYP. SPREAD FOOTING PLAN

1 FOUNDATION DETAIL

SPREAD FOOTING SCHEDULE

FOUNDATION DESIGN

PRIMARY DIMENSION, "A" ... 3'-3"  
TRANSVERSE DIMENSION, "B" ... 7'-6"  
FOOTING DEPTH, "D" ... 3'-6"

BOTTOM MAT REINFORCEMENT

MAIN ... #5 BARS @ 12" O.C.  
TRANSVERSE ... #5 BARS @ 12" O.C.

TOP MAT REINFORCEMENT

MAIN ... #5 BARS @ 12" O.C.  
TRANSVERSE ... #5 BARS @ 12" O.C.

ANCHORAGE DESIGN

ANCHOR ROD SPEC. ... HDG SIMPSON FAB5H-24 (L=24")  
OR EQUIV. ALT. PER SUB. SCHED.  
GRADE 55 MIN. O.K.

ANCHOR EMBEDMENT, "E" ... 1'-6" MINIMUM

"PAB SUBSTITUTION SCHEDULE"

THE PURPOSE OF THE SUBSTITUTION TABLE IS TO PROVIDE FOR AN EQUIVALENT  
FABRICATED ANCHOR ASSEMBLY TO THE SIMPSON "PAB" SPECIFIED IN THE PLANS.

REFER TO PLANS FOR SPECIFIED ANCHOR BEFORE USING SUBSTITUTION TABLE.

HOW TO USE THE SUBSTITUTION TABLE

1. IDENTIFY THE SPECIFIED ANCHOR IN THE PLAN OR DETAILS.
2. LOCATE THE SPECIFIED ANCHOR IN THE FIRST COLUMN OF THE TABLE. USE ONLY THIS ENTRY.
3. IDENTIFY THE CORRESPONDING ANCHOR COMPONENTS FOR AN EQUIVALENT ASSEMBLY.
4. WHERE THE PLANS INDICATE (H), REFER TO TABLE NOTES.

SPECIFIED SIMPSON "PAB" L <sup>2</sup>	ROD DIA.	EQUIVALENT ASSEMBLY SQ. EMBED. WASHER SIZE	L
PAB4(H)-XX	1/2"	1 1/2" SQ. x 3/8"	1 1/2"
PAB5(H)-XX	3/8"	1 3/4" SQ. x 1/2"	1 3/8"
PAB6(H)-XX	3/4"	2 1/4" SQ. x 1/2"	1 1/2"
PAB7(H)-XX	7/8"	2 3/4" SQ. x 1/2"	1 3/8"
PAB8(H)-XX	1"	3" SQ. x 5/8"	1 7/8"
PAB9(H)-XX	1 1/8"	3 1/2" SQ. x 5/8"	2"
PAB10(H)-XX	1 1/4"	3 3/4" SQ. x 5/8"	2 1/4"

NOTES:  
1. WHERE SPECIFIED AS HIGH STRENGTH ("H"), USE W/ GR. 105 (U.N.O.); IF NO ("H"), USE GR. 36 MIN.  
2. "XX" IS THE TOTAL ROD LENGTH.  
3. WASHER SIZES ARE MINIMUMS.  
4. WASHERS AND BASE PLATES TO HAVE STD. HOLES.  
 $D_{HOLE} = D_{BOLT} + 1/16"$  for  $D_{BOLT} < 1 1/2"$   
 $D_{HOLE} = D_{BOLT} + 1/8"$  for  $D_{BOLT} \geq 1 1/2"$

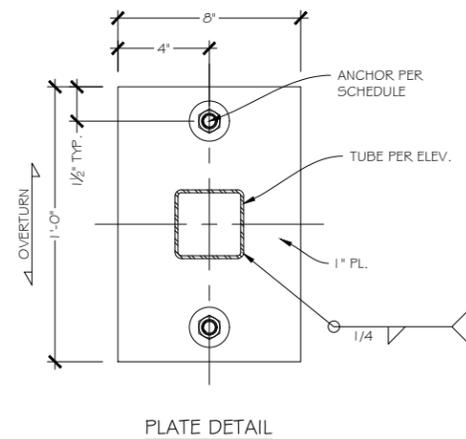
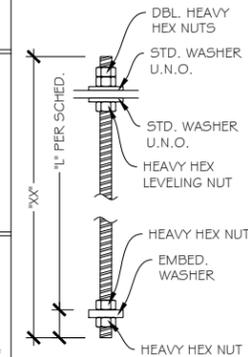


PLATE DETAIL



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1-Apr-25

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SHEET: S.3

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