

General Notes:

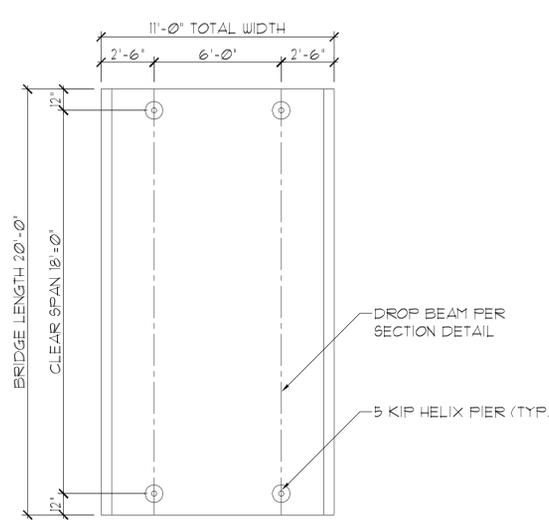
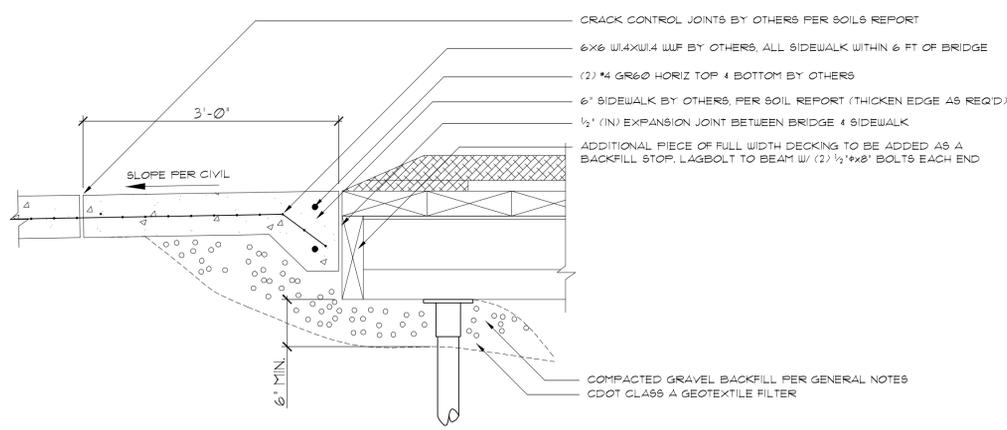
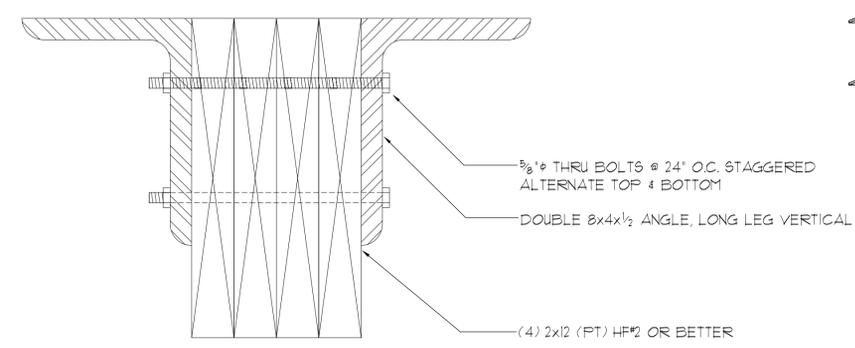
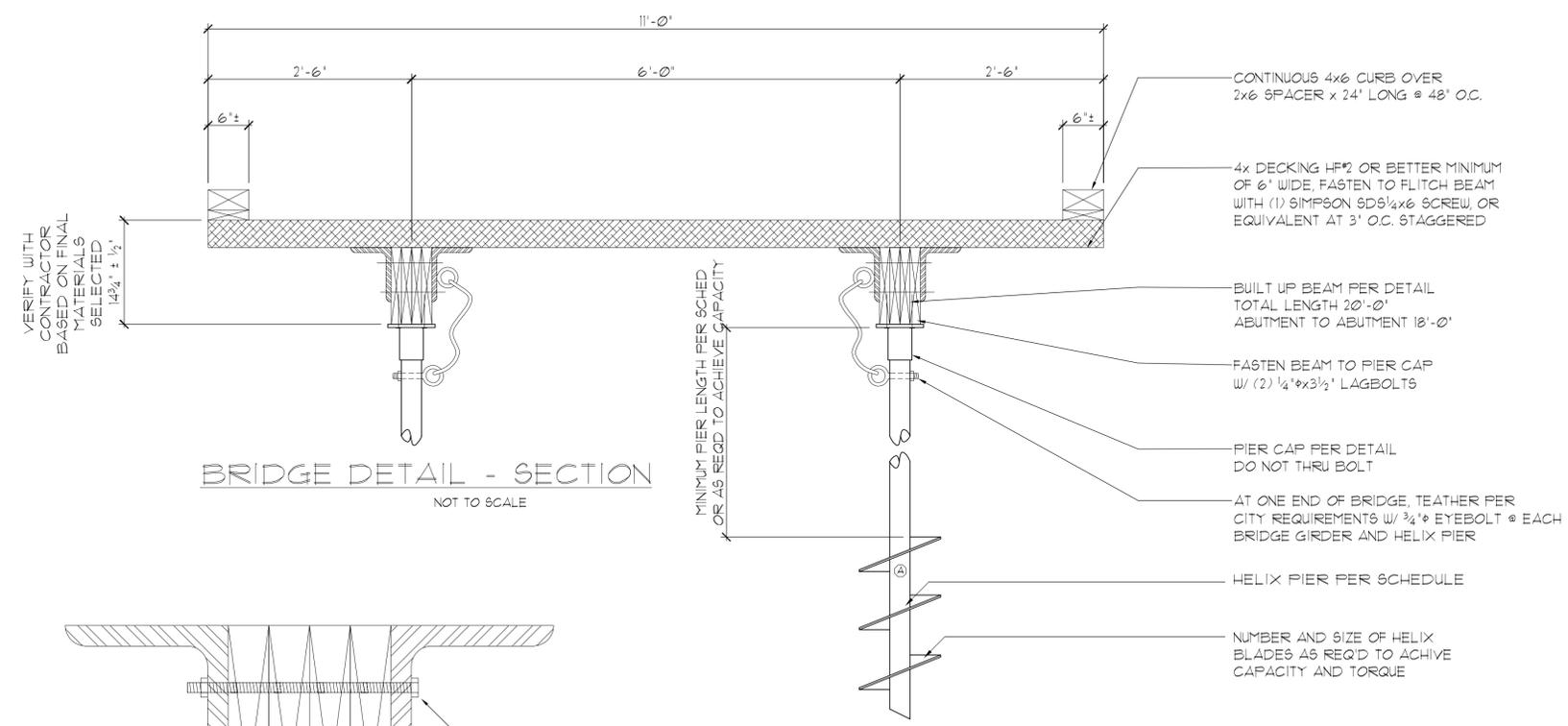
- Codes:**
 This plan was prepared based on AASHTO LRFD Bridge Design Specifications, 3rd Edition and portions of the most recent versions of AISC Allowable Stress Design ninth edition, and the NDS for wood construction.
- Loads:**
 This plan is based upon the following load parameters:
 Pedestrian Live Load = 85 psf
 Single Vehicle Live Load = 5000 lbs
 Wind Live Load = 20 psf
 Seismic Zone 1
 Soils report by: Soils Engineering Firm
 Recommended foundation design parameters:
 Recommended Foundation Option = Helix Piers
 Depth to Bedrock = 10 FT
 Minimum Helix Pier Length = 12 FT
 At-Rest Earth Pressure (Equivalent Fluid Density) = 55 PCF
- Materials:**
 This plan is based upon the following material properties:
Steel: All steel (helix piers, beams, plates, stiffeners, connectors, etc.) shall be protected from corrosion by hot-dip galvanizing per ASTM A153. Structural Steel Beams shall conform to ASTM A992 (Fy=50 ksi). Helix piers shall be per Note 4. Other misc plates shall be ASTM A36 or better. Structural steel beams shall conform to ASTM A992 (Fy=50 ksi).
Bolts: All bolts shall conform to ASTM A307 or SAE Grade 5.
Welds: All welding shall be in accordance with the Bridge Welding Code, AWS D15. Welding of galvanized steel can produce toxic gases and should be done in adequate ventilation and with adequate gas detection, breathing gear, and other safety equipment. All welds shown are to be E10XX, minimum.
Wood: All dimensional lumber shall be Hem Fir #2 or better unless noted on the plan. All Laminated Veneer Lumber shall have an allowable flexural stress $F_b = 2600$ psi and Modulus of Elasticity of $E = 1.8 \times 10^6$ psi or better. Glued Laminated Lumber shall have an allowable flexural stress $F_b = 2400$ psi and Modulus of Elasticity of $E = 1.8 \times 10^6$ psi or better.
Fasteners and connectors: All fasteners and connectors in contact with pressure treated lumber shall be G85 hot-dip galvanized, type 304 stainless steel or type 316 stainless steel.
- Helix Piers:**
 Locate all utilities prior to excavation and installation of helix piers. All helix piers and pier caps shall be as manufactured by Magnum Piersing, Inc. or equivalent. Helix pier installation should be observed by a representative from Secure Foundations, LLC (970) 472-6255 or other geotechnical engineer to verify installation torque and minimum depths. Provide a minimum of 24 hours notice prior to installation work. The loads shown on the plan are design allowable loads. All helix pier connector and top plate bolts shall be snug tight. All helix pier connectors shall be in-line, straight, and rigid. The manufacturer's recommendations should be followed regarding the torque and bearing capacity relationship for the particular helix pier selected. The ratio of required ultimate helix pier capacity to the total area of the helix blades shall not exceed the ultimate subsurface material bearing capacity provided by the geotechnical engineer.
Tolerances:
 The construction tolerances for the abutment piers are as follows:
 Angle of helix pier foundation from vertical = + 5°
 Location of helix piers = ± 1/4"
 Elevation of top of piers = ± 1/4"
 Minimal disturbance of ground around pier during installation.
- Soils:**
 All recommendations contained in the soils report pertaining to backfill, drainage, etc. should be incorporated into the design of this project.
- Backfill:**
 Backfill around the abutment should consist of DOT No. 57 coarse aggregate. Backfill should be tamped in place after bridge placement except for gravel mat beneath abutment. Backfill should be adequately graded to provide adequate drainage away from the foundation. See Soils Report for additional requirements. Construction shall be performed in a manner that minimizes disturbance to the site. See CIVIL plans for additional requirements regarding silt collection and disturbance/restoration of irrigation ditch banks.
- Drainage:**
 The ground surface around the structure, to provide adequate drainage away from the abutments, should be located such that they are, as far as practical, above normal canal water levels. Surface drainage should be monitored and maintained throughout the life of the structure. See CIVIL plans for site drainage plans.
- Limitations:**
 This plan is only a foundation and bridge structural design. All applicable building codes shall govern regarding railings, approach ramps, and other details not shown. It is the contractor/owner's responsibility to verify and coordinate all dimensions prior to construction. This foundation plan is based on the contractor/owner furnished plans and the above referenced specifications. Any discrepancies or changes should be brought to the attention of Magnum Piersing. Bridge is intended as a temporary structure with a design life span of 5 years. Bridge should be replaced at the end of the design period.

HELIX PIER SCHEDULE					
PIER TYPE	ALLOWABLE LOAD	MINIMUM LENGTH	MIN PIER DIMENSIONS	REQ'D SECTION MODULUS	OTHER NOTES
(A)	PER PLAN	12'-0"	488 3/8" x 1/2" SHIRT OR EQUIV.	130 IN ⁴	ADJUST ELEVATION OF TOP OF PIER PER CIVIL PLANS

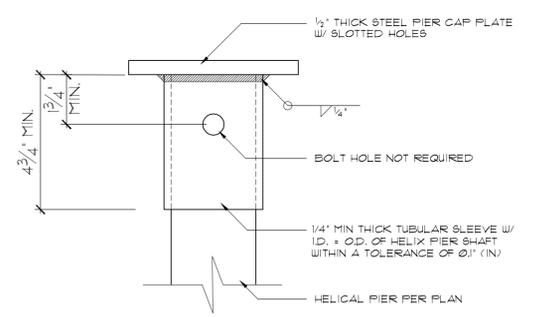
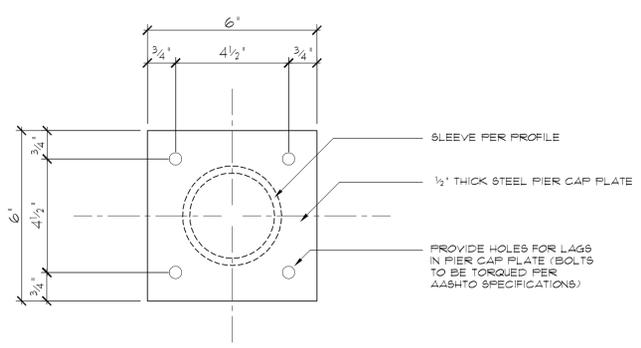
INSTALLATION TORQUE SHALL BE MONITORED THROUGHOUT HELIX PIER ADVANCEMENT. ALL HELIX PIER FOUNDATIONS SHALL BE ADVANCED UNTIL THE INSTALLATION TORQUE MEETS OR EXCEEDS THAT WHICH CORRESPONDS TO THE RECOMMENDED ALLOWABLE LOAD TIMES F.S. = 2.0. SEE GENERAL NOTES FOR MORE INFORMATION.

NOTE: BRIDGE IS DESIGNED FOR A MAXIMUM GROSS VEHICLE WEIGHT OF 5000 LBS. THIS WEIGHT RESTRICTION SHALL BE POSTED IN PLAIN SIGHT AT EACH ABUTMENT.

NOTE: LOCATE UTILITIES PRIOR TO EXCAVATION AND HELIX PIER INSTALLATION. ALL STEEL TO BE HOT-DIP GALVANIZED.



ABUTMENT DETAIL - PROFILE VIEW



PIER CAP DETAIL

PIER CAP DETAIL

THESE DRAWINGS AND DETAILS ARE PROVIDED FOR GENERAL INFORMATION ONLY AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM THE ENGINEER.