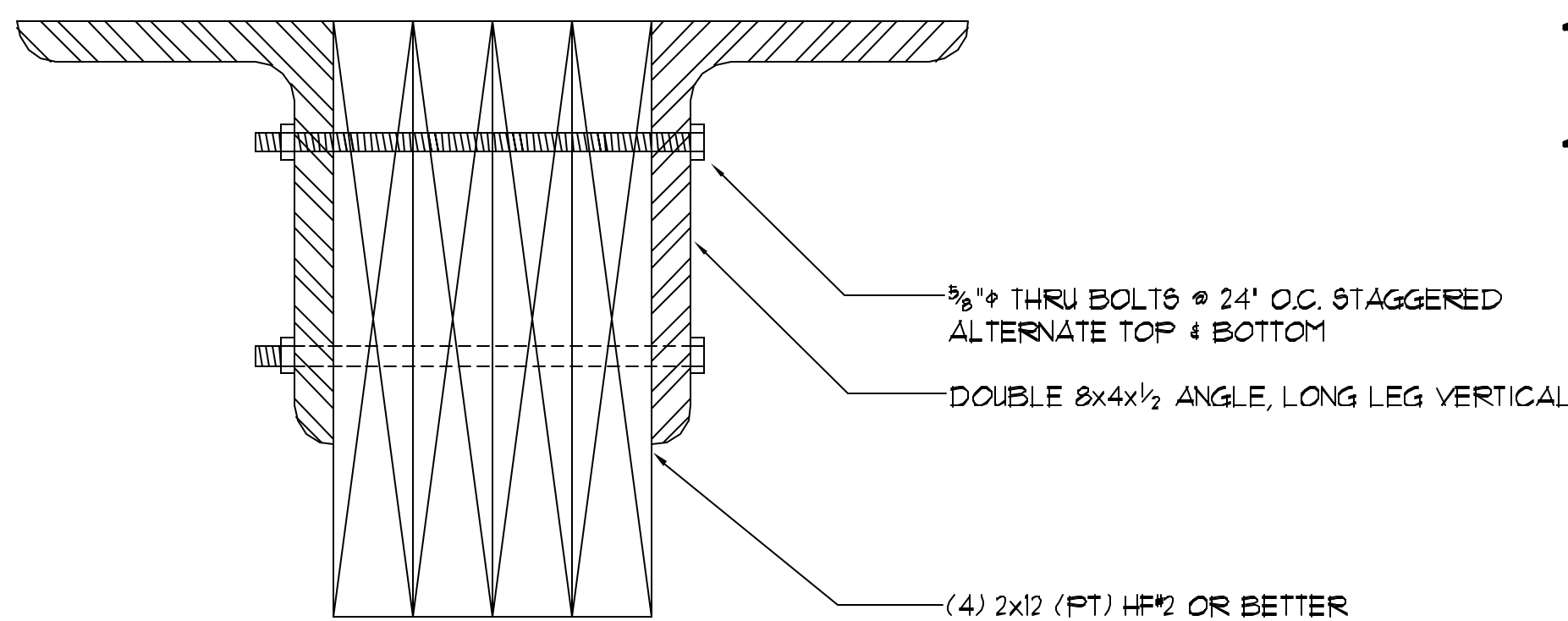
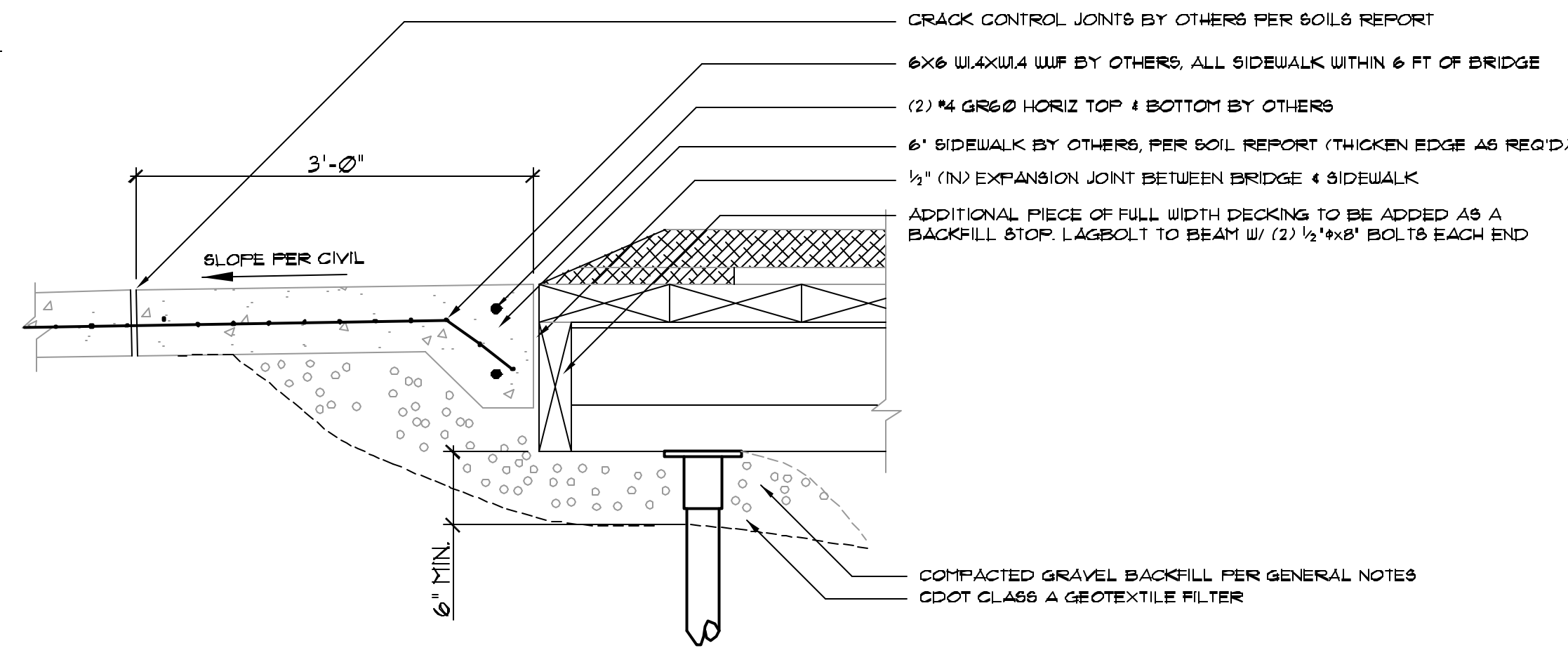


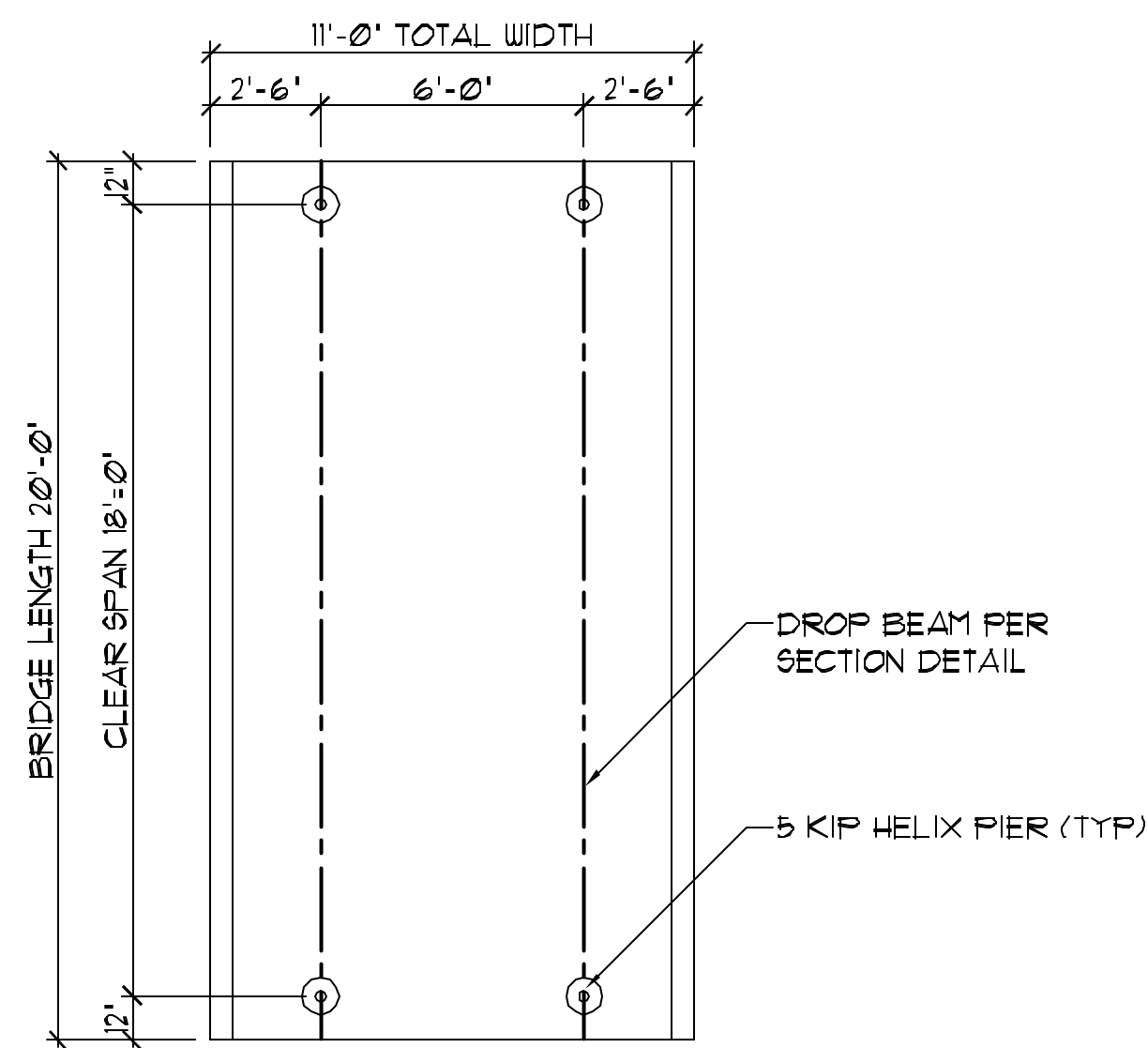
BRIDGE DETAIL - SECTION
NOT TO SCALE



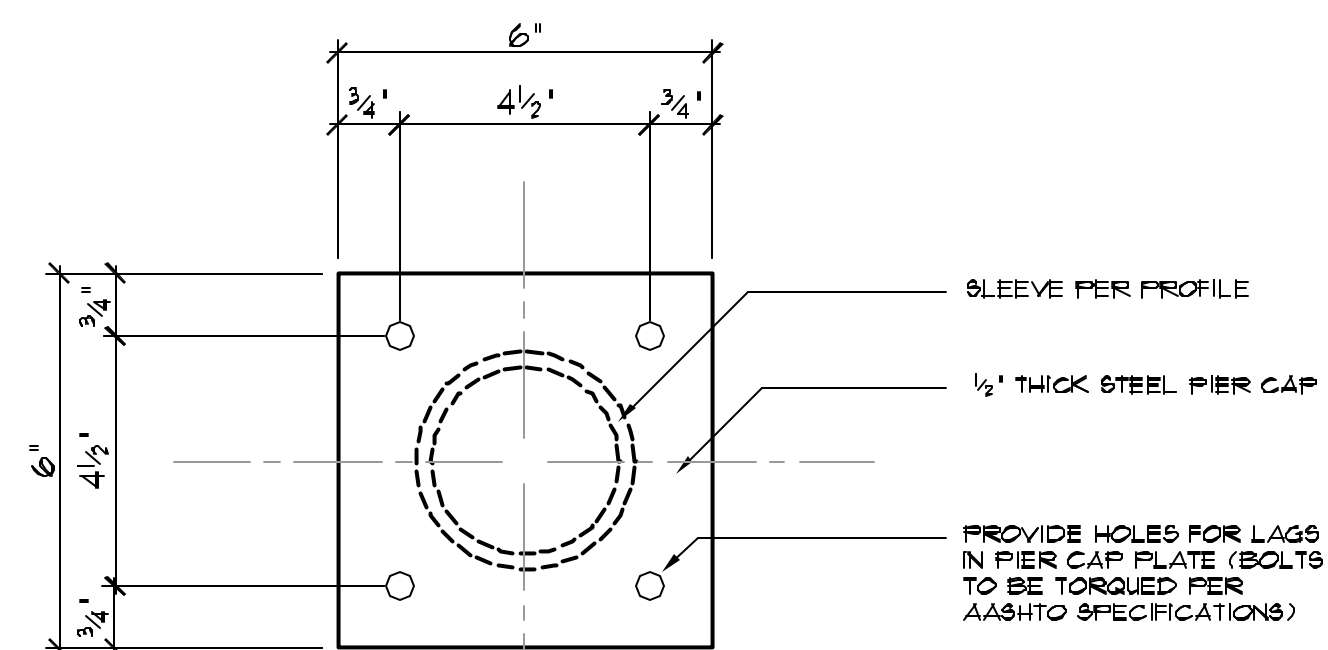
BUILT-UP BEAM DETAIL
NOT TO SCALE



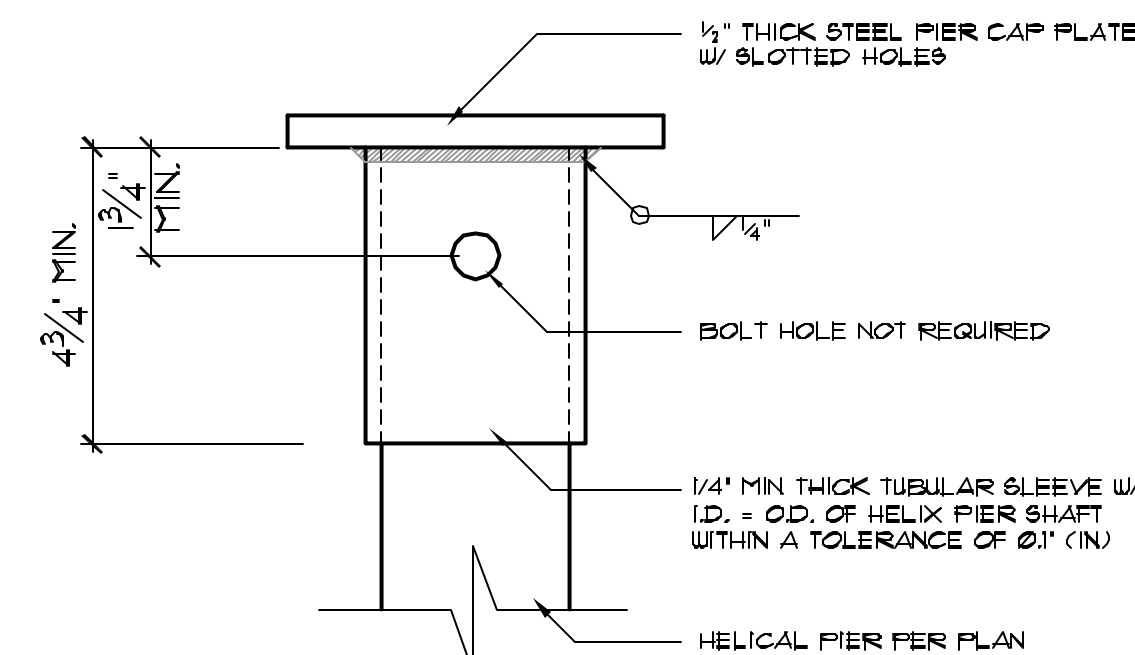
ABUTMENT DETAIL - PROFILE VIEW
NOT TO SCALE



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



PIER CAP DETAIL
NOT TO SCALE



PIER CAP DETAIL
NOT TO SCALE

General Notes:

1. 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.

2. Loads:
This plan is based upon the following load parameters:
Pedestrian: Live Load = 80 psf
Single Vehicle: Live Load = 5000 lbs
Wind: Live Load = 20 psf
Seismic: Zone 1

Soils report by: CIL THOMPSON
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) = 95 PCF

3. 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 unions shall be E70XX 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 $E = 1,300,000$ psi or better. Glued Laminated Lumber shall have an allowable flexural stress $F_b > 2400$ psi and Modulus of Elasticity of $E = 1,600,000$ psi or better.
Fasteners and connectors: All fasteners and connectors in contact with pressure treated lumber shall be G16 hot-dip galvanized, type 304 stainless steel or type 316 stainless steel.

4. Helix Piers:
Locate all utilities prior to excavation and installation of helix piers. All helix piers and pier caps shall be as manufactured by Magnus Piling, 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 depth. 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.

5. Tolerances:
The construction tolerances for the abutment 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.

6. Soils:
All recommendations contained in the soils report pertaining to backfill, drainage, etc. should be incorporated into the design of this project.

7. Backfill:
Backfill around the abutment should consist of CDOT No. 51 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.

8. Drainage:
The ground surface around the structures 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.

9. 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 SECURE. 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 |
| Ⓐ | PER PLAN | 12'-0" | H56 3/4" x 1/4" SHAFT OR EQUIV. | 130 IN ² | 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 POUNDS. 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.

EXAMPLE PREPARED BY:
SECURE CONSULTING ENGINEERS
211 W. Magnolia, Suite B
Fort Collins, CO 80521
P: (970) 472-6255
F: (970) 472-6256
www.secureengineer.com

DESIGN CHANGES: ANY CHANGES TO THIS PLAN SHALL BE MADE BY A REVISION OR ADDENDUM. NO CHANGES SHALL BE MADE TO THIS PLAN WITHOUT THE WRITTEN APPROVAL OF SECURE CONSULTING ENGINEERS, INC. OR ITS AUTHORIZED REPRESENTATIVE. ALL CHANGES SHALL BE MADE IN ACCORDANCE WITH THE 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.

GOVERNMENT BRIDGE

NO. DATE REVISION/ISSUE

EXAMPLE 2

DESIGNED BY: CDA/HAP, WMK
DATE: 07-29-05
AS SHOWN

SHEET S1 OF S1