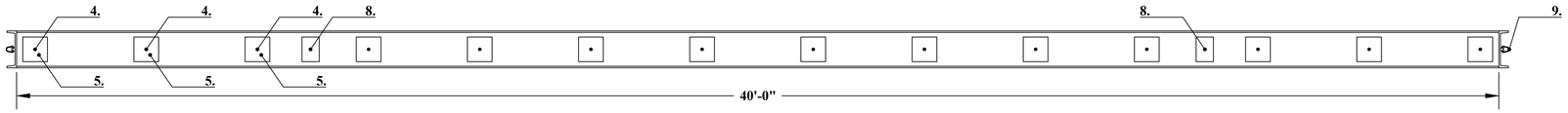
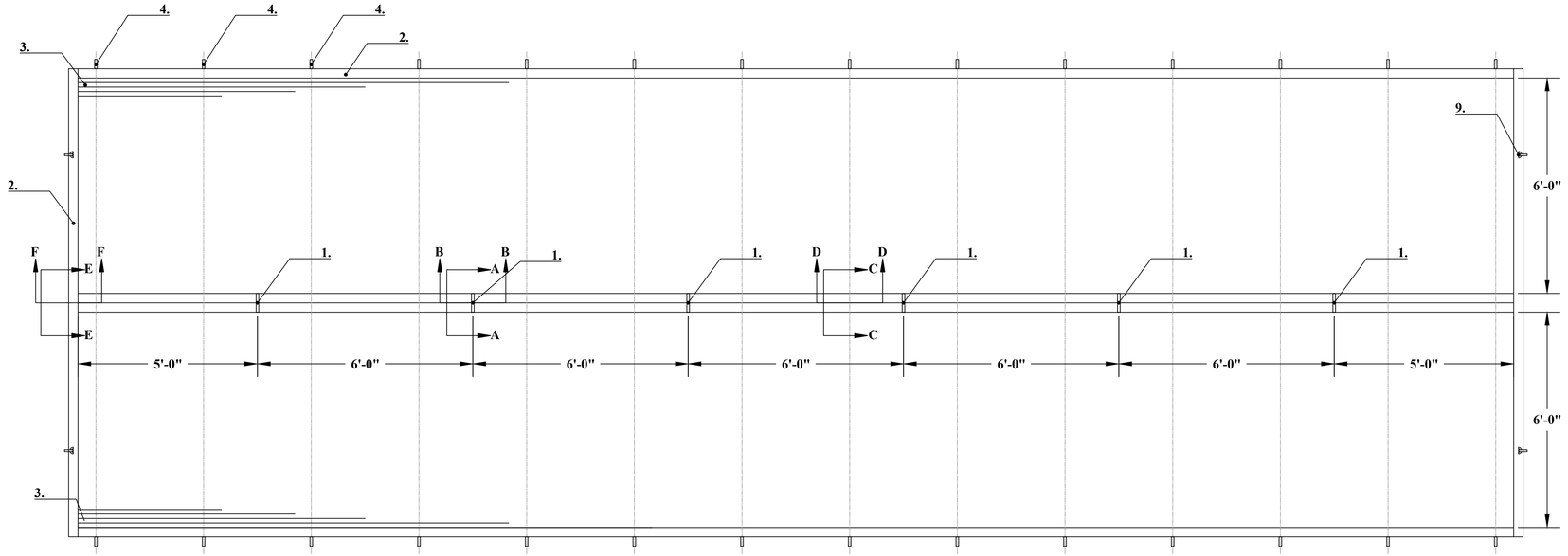
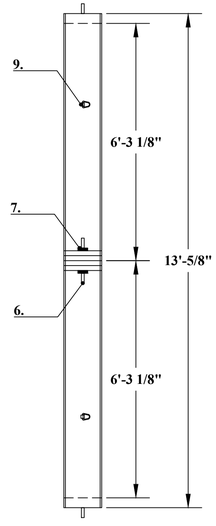


SIDE VIEW
SCALE: 1" = 2'



PLAN VIEW
SCALE: 1" = 2'



END VIEW
SCALE: 1" = 2'

LEGEND:
1. **STEEL SHEAR KEY**
2. **STEEL CHANNEL**
3. **WOOD DECK**
4. **THREAD ROD OR PRESTRESSING BAR**
5. **STEEL BEARING PLATE**
6. **THREADED ROD**
7. **HEXAGONAL NUT**
8. **LIFT EYES, 2 ON EACH SIDE**
9. **D-RINGS, 2 ON EACH END.**

NO.	BY	DATE	DESCRIPTION

ELLISON AND HANEY MANUFACTURING INC.
P.O. BOX 3810 CHARLESTON, WV 25338
PHONE: (304)344-9875
FAX: (304)344-0852
EMAIL: info@eandhmanufacturing.com
WEB SITE: www.eandhmanufacturing.com

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THE THRASHER GROUP INC.
CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
4150 BELDEN VILLAGE STREET, SUITE 101, CANTON, OH 44718
PHONE (330) 491-8170 • FAX (330) 491-8342

PHASE No.	
CONTRACT No.	
PROJECT No.	1-01-T80-11017

E&H MANUFACTURING INC.
CUSTOMER PLAN SHEETS
SL40-12-40
40' ENGINEERED BRIDGE
PLAN AND BUTT JOINT PATTERN

SHEET No.
1

LAYOUT TAB: 40 FT BRIDGE
CAD FILE: R:\080\T80-11017-PORTABLE TEMP BRIDGE-ELLISON & HANEY MANUFACTURING-\Drawing\2022 Drawings\SL40-12-40 & SL30-10-40 - Customer Copies.dwg
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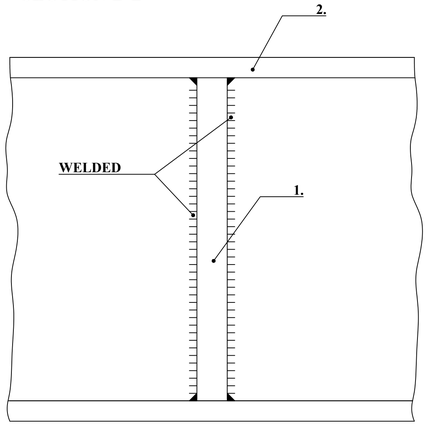
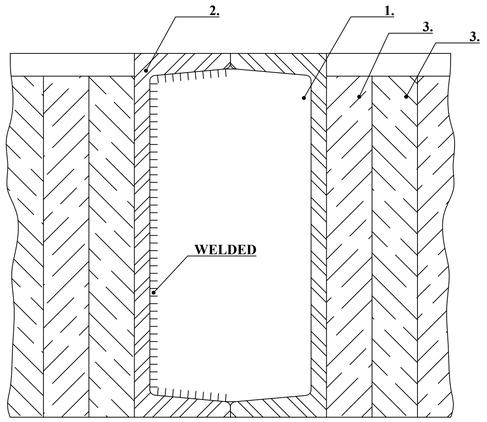
SECTION B-B



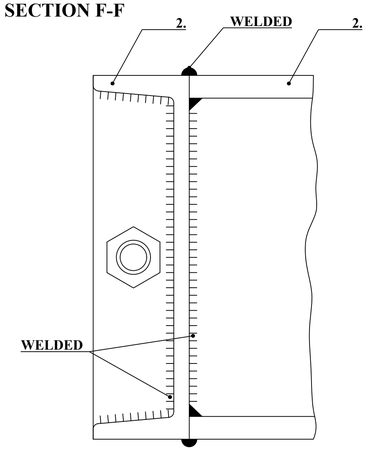
SECTION A-A



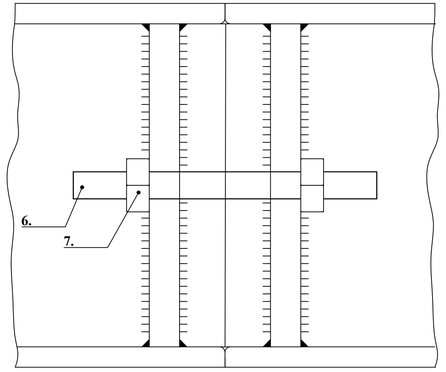
SHEAR KEY DETAIL

SCALE: 1" = 2.5"

SECTION F-F



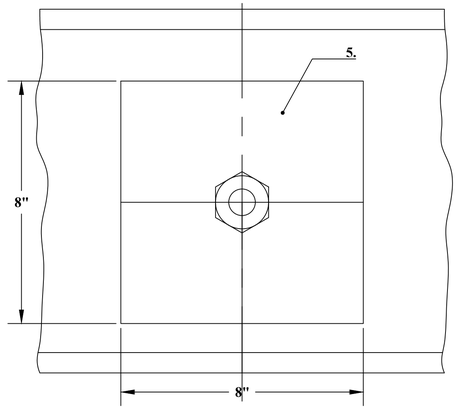
SECTION E-E



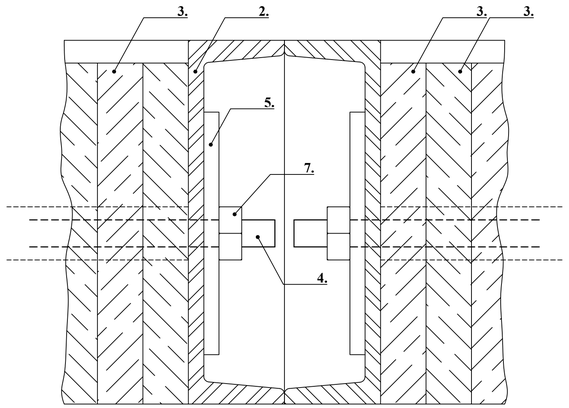
END BLOCK DETAIL

SCALE: 1" = 2.5"

SECTION D-D



SECTION C-C



BEARING PLATE DETAIL

SCALE: 1" = 2.5"

LEGEND:

1. STEEL SHEAR KEY
2. STEEL CHANNEL
3. WOOD DECK
4. THREADED ROD OR PRESTRESSING BAR
5. STEEL BEARING PLATE
6. CONTINUOUS V THREAD ROD
7. HEXAGONAL NUT

NO.	BY	DATE	DESCRIPTION

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PHONE: (304)344-9875
FAX: (304)344-0852
EMAIL: info@eandhmanufacturing.com
WEB SITE: www.eandhmanufacturing.com

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THE THRASHER GROUP INC.
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4150 BELDEN VILLAGE STREET, SUITE 101, CANTON, OH 44718
PHONE (330) 491-8170 • FAX (330) 491-8342

PHASE No.	
CONTRACT No.	
PROJECT No.	1-01-T80-11017

E&H MANUFACTURING INC.
CUSTOMER PLAN SHEETS
SL40-12-40
40' ENGINEERED BRIDGE
DETAILS

SHEET No. 2

LAYOUT TAB: 40 FT DETAILS
CAD FILE: R:\080\T80-11017-PORTABLE TEMP BRIDGE-ELLISON & HANEY MANUFACTURING-\Drawing\2022 Drawings\SL40-12-40 & SL30-10-40 - Customer Copies.dwg
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DESIGN

1. These drawings are for a longitudinal stress-laminated timber bridge deck. The decks consist of a series of nominal 2-in.-thick sawn lumber laminations that are placed on edge between supports and transversely compressed with high-strength steel bars. Deck laminations of various lengths may be placed in a repetitive butt joint pattern. Design truck loading is AASHTO HS 20-44 or 80,000 lb total. Live load deflection is not addressed for these structures.

2. The design complies with the AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017, except where noted. The design is based upon an interlaminar prestress of 100 lb/in² which has been shown to provide optimum field performance.

3. The design assumes a uniform bearing length of 5-ft. at both bridge ends and a span length measured between bearings. A longer bearing length will result in a slightly more conservative design.

4. Skewed crossings are limited to 15° maximum by AASHTO. Minimum bearing length is 5-ft on both sides of the bridge.

5. This bridge deck is designed with no asphalt wearing surface.

MATERIAL AND FABRICATION

Wood

6. Sawn lumber complies with the requirements of AASHTO M168 and is to be Southern Pine, Grade No. 1, treated with wood preservatives. The moisture content of lumber shall not exceed 19 percent at the time of installation.

Preservative Treatment

7. All lumber is treated in accordance with AASHTO M133 and AWPA Standard C14

8. Treated material follow post treatment requirements summarized in Best Management Practices for the Use of Treated Wood in Aquatic Environments (WWPI 1996) to ensure all surfaces are free of excess preservative and chemicals are fixated in the wood.

9. Preservative treatment is inspected and certified in accordance with AASHTO M133 and AWPA Standard M2.

Steel Fasteners and Hardware

10. Steel plates and shapes comply with the requirements of ASTM A36.

11. Stressing bars comply with the requirements of ASTM A722, with tensile strength of 150 ksi and yield strength of 120 ksi or B8S continuous threaded rods.

12. Bolts and lag screws comply with the requirements of ANSI/ASME Standard B18.2.1-1981, Grade 2.

13. Stressing bars are stainless steel. All other fasteners are plain steel.

14. Washers are provided under bolt and lag screw heads and under nuts that are in contact with wood. Washers may be omitted under heads of special timber bolts or dome-head bolts when the size and strength of the head is sufficient to develop connection strength without wood crushing.

CONSTRUCTION

15. Tensioning of the high-strength stressing bars is typically performed with a single hydraulic jack and steel stressing chair in a repetitive manner beginning at one end of the bridge. When initially tensioning bars, it is important that the full tension not be applied until all laminations are aligned and in full contact with adjacent laminations.

16. Stressing bars shall be fully tensioned to the values specified on the plans in accordance with the following sequence:
1. Stress to full design level at time of construction.
2. Restress to full design level not less than one week after the initial stressing.
3. Restress to full design level not less than 4 weeks after the second stressing.
It is recommended that the bars be checked and restressed as required, 1 year after construction and at 1-2 year intervals thereafter until the bar force stabilizes above 50 percent of the design level. If excess bar length is to be trimmed, leave a minimum of 8-in. beyond the anchor nut to allow for restressing.

17. All wood and metal components shall be handled and stored carefully so as not to damage the material. If damage does occur, exposed untreated wood shall be field treated in accordance with AASHTO M133.

18. Design Values for SL40-12-40
Prestressing design bar tension force: 40,500 lb.
Design Load: HS 20-44 and 80,000 lb.
Bridge Self Weight: 14,200 lb.

MAINTENANCE

19. Before each installation, and daily during use, the bridge modules should be visually inspected. Items to inspect include:
a. Stressing Rods. This 40-foot bridge contains fourteen (14) stressing rods. If rods are loose or broken or if the bridge is showing a permanent deformation (bending), DO NOT install or use the bridge under any circumstances. Permanent deformation may be an indication that the bridge has been over-loaded, been improperly installed, or that the required level of stress on the rods is not present.
b. Welds on the steel channel surrounding each bridge module must be intact at each corner.
c. Individual board deformation within a bridge module indicated by boards protruding significantly above or below the plane of the bridge module, should be minimal.
d. Welds at each paint-labeled lift eye must be intact.
e. All shear keys must be in place and all welds must be intact.
f. End connector plates must be in place and welds must be intact.
If an inspection indicates problems, DO NOT install or use the bridge under any circumstances. For assistance please contact E & H Manufacturing, Inc.

20. Restressing the Bridge - The strength of the bridge results from the friction created between the boards from the compression achieved by the stressing rods. Over time this compression may relax and needs to be regained. To recover the compression back to or near its original state, the rods will need to be restressed periodically.

Yearly, a torque wrench should be applied to the nuts on each stressing rod to a minimum torque value of 600 ft.-lb. Caution should be used to prevent the socket from slipping, and a restraint should be used to avoid accidentally falling off the bridge during tightening.

Every 5-10 years or when the bridge is moved from one site to another, prestressing equipment should be used to ensure the bars are restressed to full design levels given in note 18.

NO.	BY	DATE	DESCRIPTION

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PHONE: (304)344-9875
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EMAIL: info@eandhmanufacturing.com
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E&H MANUFACTURING INC.
CUSTOMER PLAN SHEETS
SL40-12-40
40' ENGINEERED BRIDGE
NOTES

SHEET No. **3**

LAYOUT TAB: 40 NOTES
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