

SPECIFICATIONS:

GRADING

ALL DOUGLAS FIR-LARCH TO BE GRADED PER WCLIB STANDARD GRADING RULES.

MATERIALS & TREATMENT

TIMBER PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH CURRENT STATE AND/OR AASHTO SPECIFICATIONS. ALL TIMBER SHALL BE COPPER NAPHTHENATE TREATED UNLESS NOTED OTHERWISE.

ALL PILING IS TO BE IN ACCORDANCE WITH CURRENT STATE SPECIFICATIONS.

DECK TO BE 14" DOUGLAS FIR-LARCH, NO.1, S1S.

RAIL TO BE DOUGLAS FIR-LARCH, NO.1, S1S.

CURBS, SCUPPERS, RAILPOSTS, SPREADER BEAM, PILE CAPS TO BE DOUGLAS FIR - LARCH, NO.1.

SCUPPERS TO BE S2S (5 1/2").

BALANCE OF TIMBER TO BE DOUGLAS FIR - LARCH, COPPER NAPHTHENATE TREATED IN ACCORDANCE WITH DESIGN REQUIREMENTS.

MISCELLANEOUS

ALL TIMBER IS ROUGH UNLESS OTHERWISE NOTED.

ALL TIMBER TO BE CUT TO EXACT LENGTH, DRESSED TO SIZE REQUIRED AND ALL PRACTICAL FRAMING TO BE DONE PRIOR TO TREATMENT.

ALL DECK PLANKS SHALL BE PREDRILLED PRIOR TO TREATMENT.

ALL PLANK FOR DECK PANELS SHALL BE PRECISION END TRIMMED TO LENGTH WITH 1/4" UNDERLENGTH & NO OVERLENGTH TOLERANCE PERMITTED.

DECK PANELS SHALL BE ASSEMBLED WITH 3/8" DIAMETER RING SHANK DOWELS. ALL DOWELS ARE TO BE SIMULTANEOUSLY DRIVEN WITH EQUAL FORCE USING A MECHANICAL PRESS THE FULL LENGTH OF THE DECK, ENSURING ALL HEADS ARE FLUSH WITH THE SURFACE OF THE TIMBER PLANK. MULTIPLE IMPACT TOOLS ARE NOT TO BE USED TO SET DOWELS BECAUSE OF POTENTIAL FOR WOOD FIBER RUPTURE.

DECK PANELS WILL BE DELIVERED TO JOBSITE AFTER BEING FULLY ASSEMBLED AT FABRICATION PLANT.

ALL HARDWARE TO MEET ASTM A307-97 GALVANIZED TO A153. ALL HIGH STRENGTH HARDWARE TO MEET ASTM A325 OR A449 GALVANIZED TO A153. ALL STRUCTURAL STEEL TO MEET ASTM A36, GALVANIZED TO A123. 3/4" GALVANIZED CABLE TO BE ASTM A741-98.

CONSTRUCTION NOTES:

TIMBER DECK PANELS ARE MARKED IN THE SHOP FOR USE IN FIELD PLACEMENT OF THE PANELS ON THE CAPS, e.g. A1, B1, C1 FOR SPAN 1.

DOWEL LAMINATED DECK: PANEL "A" IS PLACED FIRST IN ITS FINAL POSITION ON THE CAPS. NEXT DRILL THE 11/16" DIA. HOLES THRU PANEL INTO CAP IN EACH END OF PANEL AT THE LOCATIONS SHOWN AND FASTEN THE 3/4" DIA. DM. HD. DR. SPKS. NEXT PLACE PANEL "C" SO THAT ITS UPPER SPLICE BLOCK IS DIRECTLY OVER THE LOWER SPLICE BLOCK ON PANEL "A" AND DRAW TIGHT TOGETHER. THEN DRILL THE 9/16" DIA. HOLES THRU LOWER SPLICE BLOCK AND DRIVE THE 5/8" DM. HD. DR. SPIKES IN LOCATIONS SHOWN. THEN DRILL HOLES THRU PANEL INTO CAP AND FASTEN THE 3/4" DM. HD. DR. SPKS. THEREAFTER, SUCCESSIVELY PLACE PANELS "C" AND "B" IN THE SAME MANNER, ENSURING ALL PANELS ARE DRAWN TIGHT TOGETHER BEFORE ANY FASTENING OCCURS.

STEEL BANDING ON PANELS IS TO BE REMOVED AFTER PANELS HAVE BEEN PLACED IN THEIR FINAL POSITION ON THE CAPS.

ALL HOLES DRILLED IN THE FIELD WHERE SPIKES ARE USED ARE TO BE 1/16" SMALLER THAN SPIKE SIZE.

ALL HOLES DRILLED FOR BOLTS ARE TO BE 1/16" LARGER THAN BOLT SIZE.

Engineers Review

- Approved
- Note Marking
- Rejected

Requires review and approval by other (_____)

Engineer's review is for general conformance with the design concept of the project and the information given in the contract documents. The contractor is solely responsible for, and this review does not include, confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work with the other trades and performing all work in a safe and satisfactory manner. Corrections or comments made on this submittal during this review do no relieve the contractor from compliance with the requirements of the contract documents or with its responsibilities listed above.

KPM Engineering

By: _____ Date: _____

HOLES DRILLED FOR 3/4" LAG BOLTS ARE TO BE 9/16" IN DIAMETER FOR THE THREADED PORTION OF THE BOLT AND 13/16" FOR THE SHANK.

ANY NUT OR MACHINE BOLT HEAD IN DIRECT CONTACT WITH TIMBER TO HAVE ONE PLATE WASHER BETWEEN NUT & TIMBER, OR BOLT HEAD & TIMBER.

ANY NUT OR MACHINE BOLT HEAD IN DIRECT CONTACT WITH STEEL TO HAVE ONE CUT WASHER BETWEEN NUT & STEEL, OR BOLT HEAD & STEEL.

SET THREADS ON ALL BOLTS AT NUT WITH A CENTER PUNCH AFTER TIGHTENING.

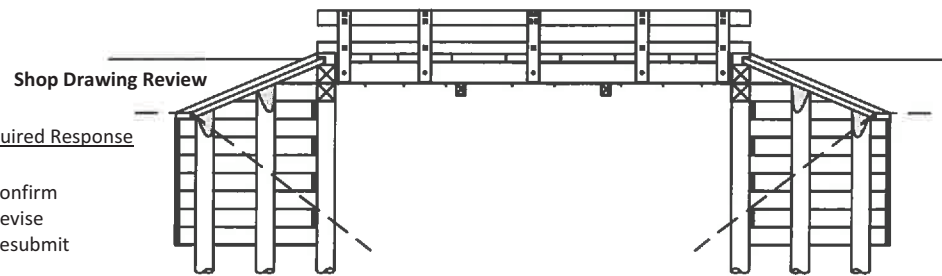
ABUTMENTS TO BE BACKFILLED WITH A CLEAN GRANULAR FILL.

ALL TIMBER CUT OR DRILLED IN THE FIELD SHALL BE TREATED WITH AN APPROVED PRESERVATIVE.

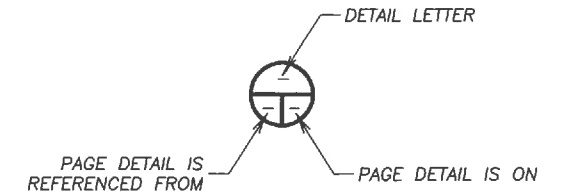
CONSTRUCTION REQUIREMENTS SHALL CONFORM TO STATE SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALTHOUGH ALL PRACTICAL PRE-FRAMING WILL BE DONE PRIOR TO TREATING, SOME CUTTING & DRILLING WILL BE REQUIRED IN THE FIELD.

BENZIE COUNTY, MICHIGAN HOOKER ROAD SINGLE SPAN PANEL-LAM BRIDGE



BRIDGE ELEVATION



CALLOUT LEGEND

DO NOT SCALE DRAWINGS

PLAN SHEET INDEX

SHEET	DESCRIPTION
1	COVER SHEET & SPECIFICATIONS
2	GENERAL BRIDGE PLAN & ELEVATION
3	ABUTMENT PLAN & ELEVATION
4	SECTIONS THRU

BRIDGE SPAN RATINGS

BRIDGE IS DESIGNED TO AASHTO HL-93 LOADING		
RATINGS BASED ON FLEXURE		
LOAD	HL93 RATING FACTOR	
INVENTORY	RF = 1.30	
OPERATING	RF = 1.68	

MICHIGAN OPERATING	129 US TONS
MICHIGAN OVERLOAD	CLASS A

TIMBER BARRIER DOES NOT MEET CRASH TEST STANDARDS OF NCHRP REPORT 350

REVISION	DESCRIPTION	DATE	INITIALS
△			
△			
△			

COVER SHEET & SPECIFICATIONS

**24'-0" TREATED TIMBER SPAN
26'-0" CLEAR ROADWAY
HOOKER ROAD
BENZIE COUNTY, MICHIGAN**

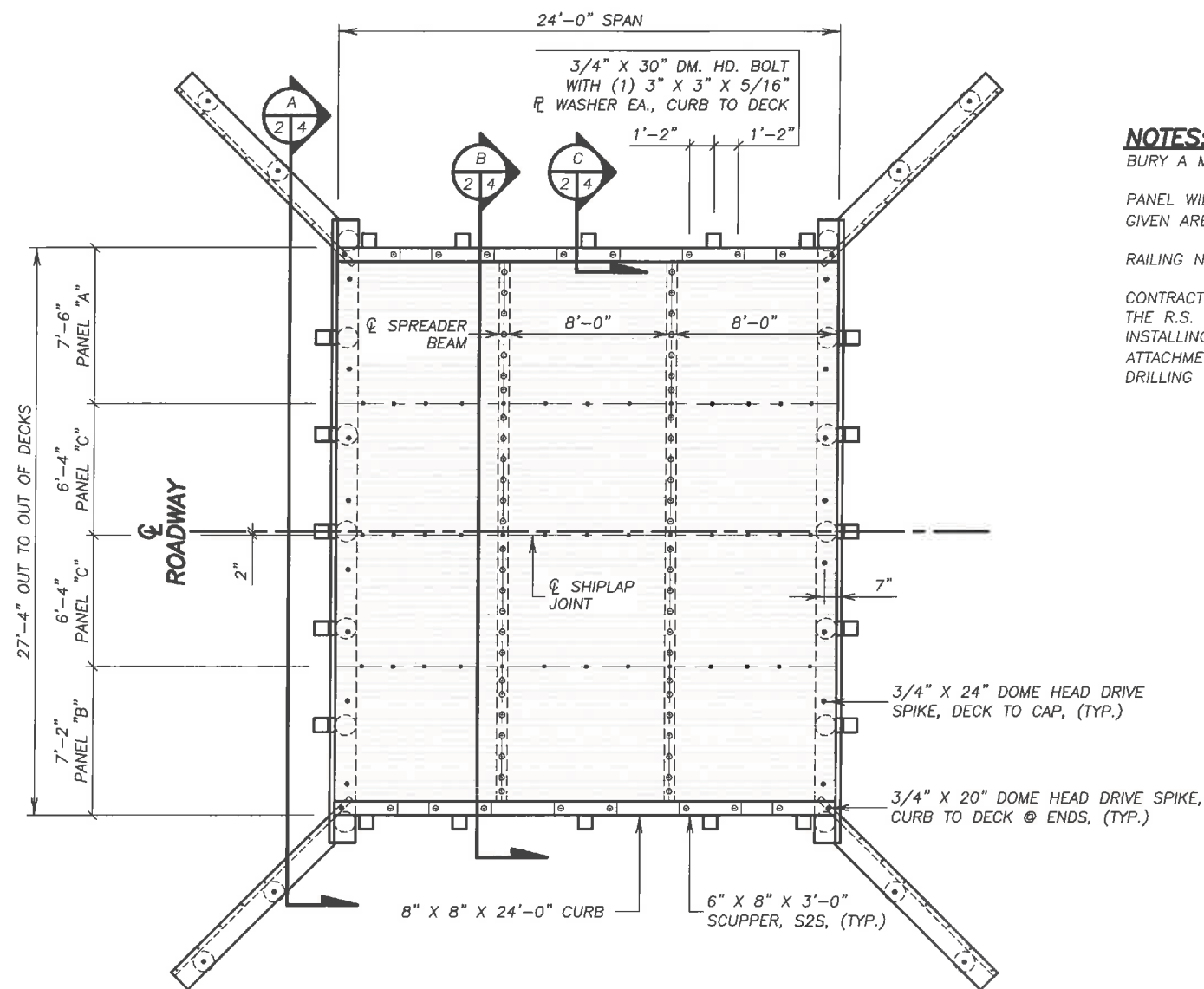


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Eden Prairie, MN 55344
952-929-7854
info@wheeler1892.com
wheeler1892.com

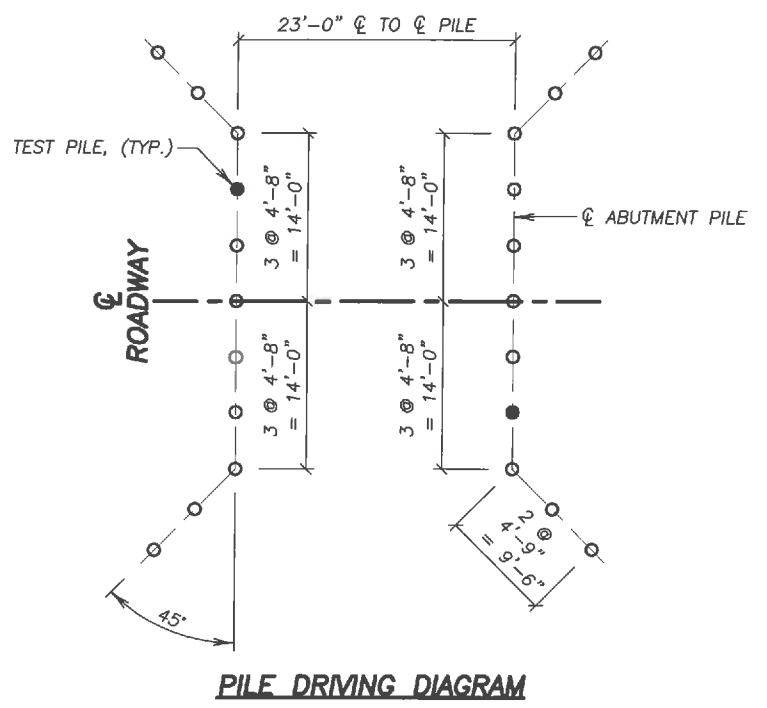


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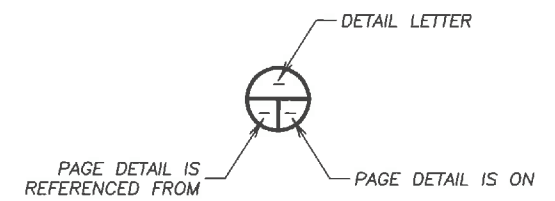
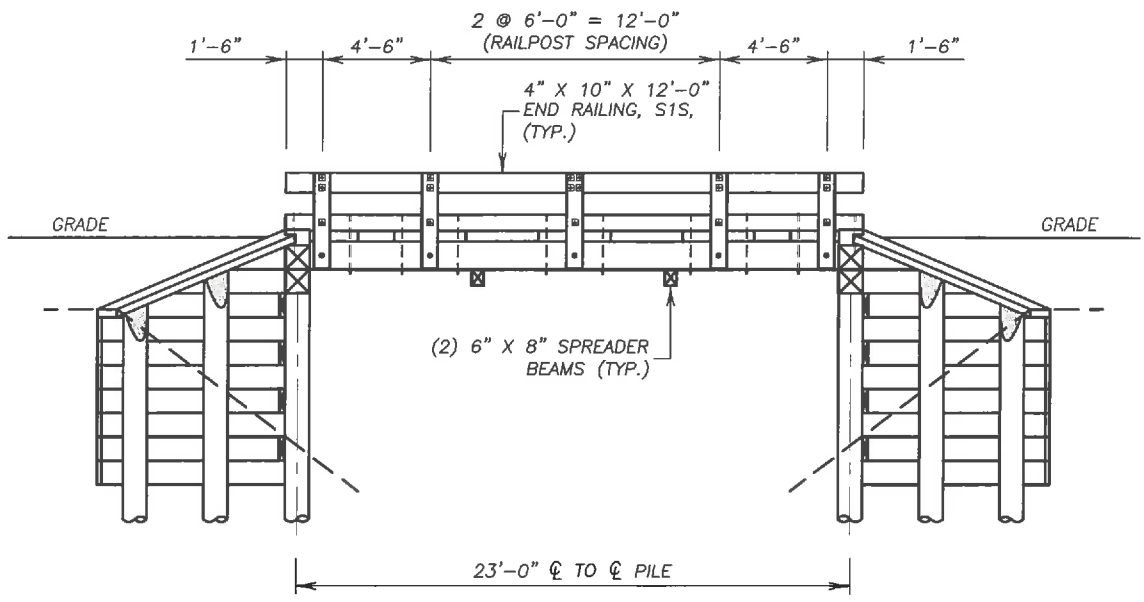
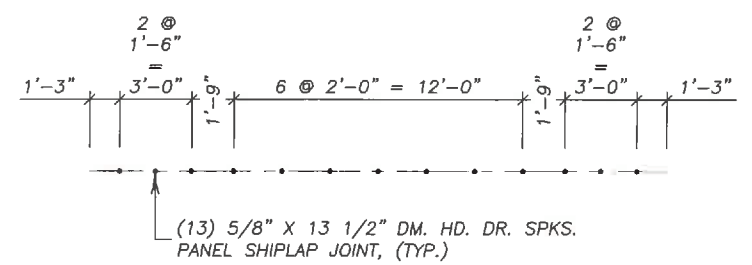
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NOTES:
 BURY A MINIMUM OF TWO BACKING PLANK AS SHOWN.
 PANEL WIDTHS SHOWN ARE APPROXIMATE. DIMENSIONS GIVEN ARE TO ϕ OF SHIPLAP JOINTS.
 RAILING NOT SHOWN ON PLAN VIEW FOR CLARITY.
 CONTRACTOR SHOULD BE AWARE OF THE POTENTIAL TO HIT THE R.S. NAILS IN THE PREFABRICATED DECK PANELS WHEN INSTALLING THE CURB BOLTS FOR THE CURB & SCUPPER ATTACHMENT. A 3/4" HOLE SAW IS RECOMMENDED IN DRILLING THROUGH THE R.S. NAILS FOR THIS ATTACHMENT.



ABUTMENT PILE CUT-OFF CALCULATIONS
 4 5/8" BITUMINOUS @ ϕ (ASSUMED)
 + 14" DECK PANEL
 12" CAP
 = 30 5/8" OR 2'-6 5/8"
 ADJUST IN FIELD AS NECESSARY



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STATE OF MICHIGAN
 DALE A. DRAVES
 ENGINEER
 No. 6201037850
 LICENSED PROFESSIONAL ENGINEER
 7-23-18

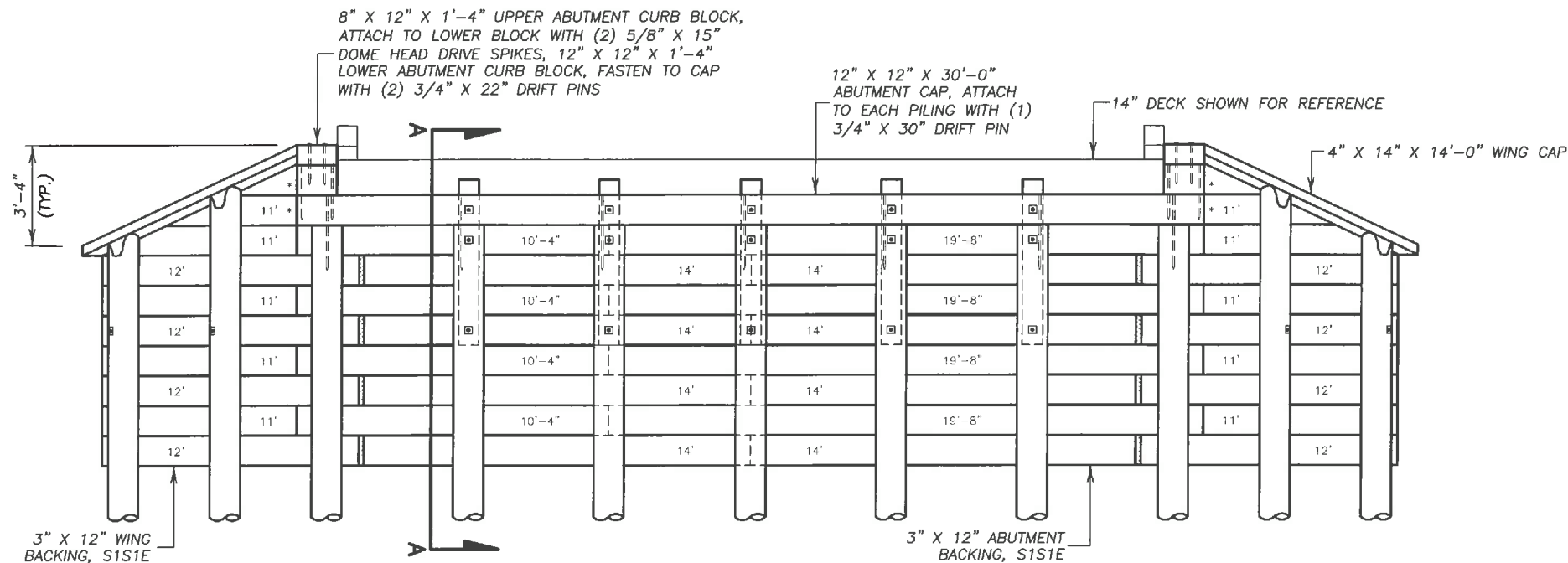
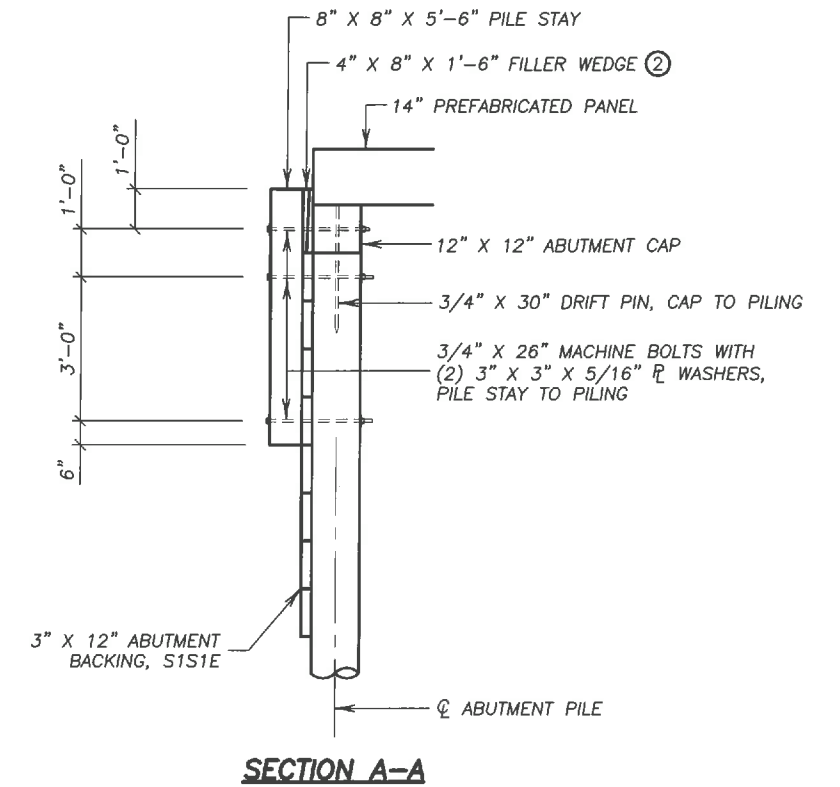
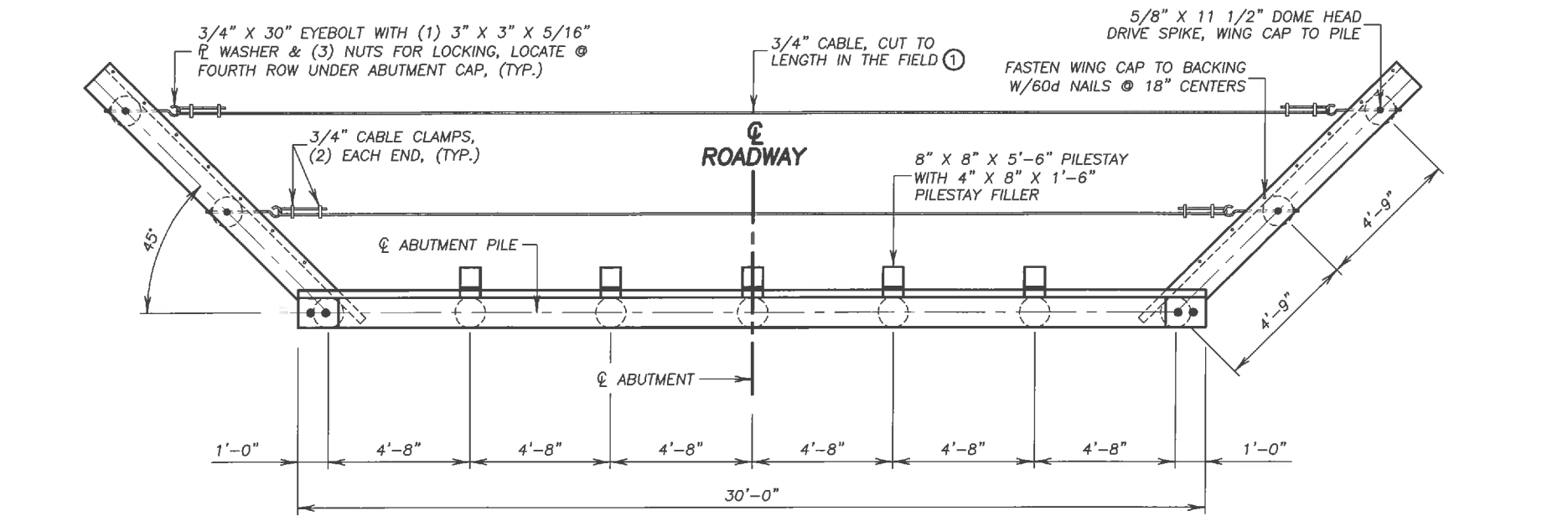
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GENERAL BRIDGE PLAN & ELEVATION
 HOOKER ROAD, BENZIE CO., MICHIGAN

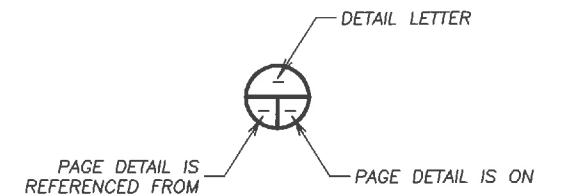
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ABUTMENT PLAN & ELEVATION



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ABUTMENT PILE NOTES:

- (8) Q-NAP WING PILES 20 FT. LONG
- (12) Q-NAP ABUTMENT PILES 25 FT. LONG
- (2) Q-NAP TEST PILES 35 FT. LONG

COMPUTED FACTORED DESIGN LOAD FOR THE ABUTMENT BEARING PILES IS 18 TONS EACH.

PILE LENGTHS SHOWN ARE ESTIMATED. ACTUAL LENGTHS ARE TO BE BASED ON TEST PILE DATA.

MINIMUM PILE PENETRATION TO BE 12 FT. BELOW GROUND LINE.

ABUTMENT NOTES:

FASTEN BACKING TO PILES WITH (2) 60d NAILS \odot EACH INTERSECTION.

GEOTEXTILE FABRIC TO BE STAPLED TO BACKSIDE OF ABUTMENTS & WINGS. STAPLES BY CONTRACTOR.

* CUT 2 FROM 1.

- ① TIGHTEN CABLE SO THERE IS NO VISIBLE SAGGING.
- ② ADDITIONAL FILLER WEDGES MAYBE NEEDED FOR DIRECT CONTACT WITH END OF DECK PANELS.

PILE CUT-OFFS TO BE FIELD TREATED WITH AN APPROVED PRESERVATIVE AND ONE COAT ASPHALT PAINT SUPPLIED BY BRIDGE MANUFACTURER.



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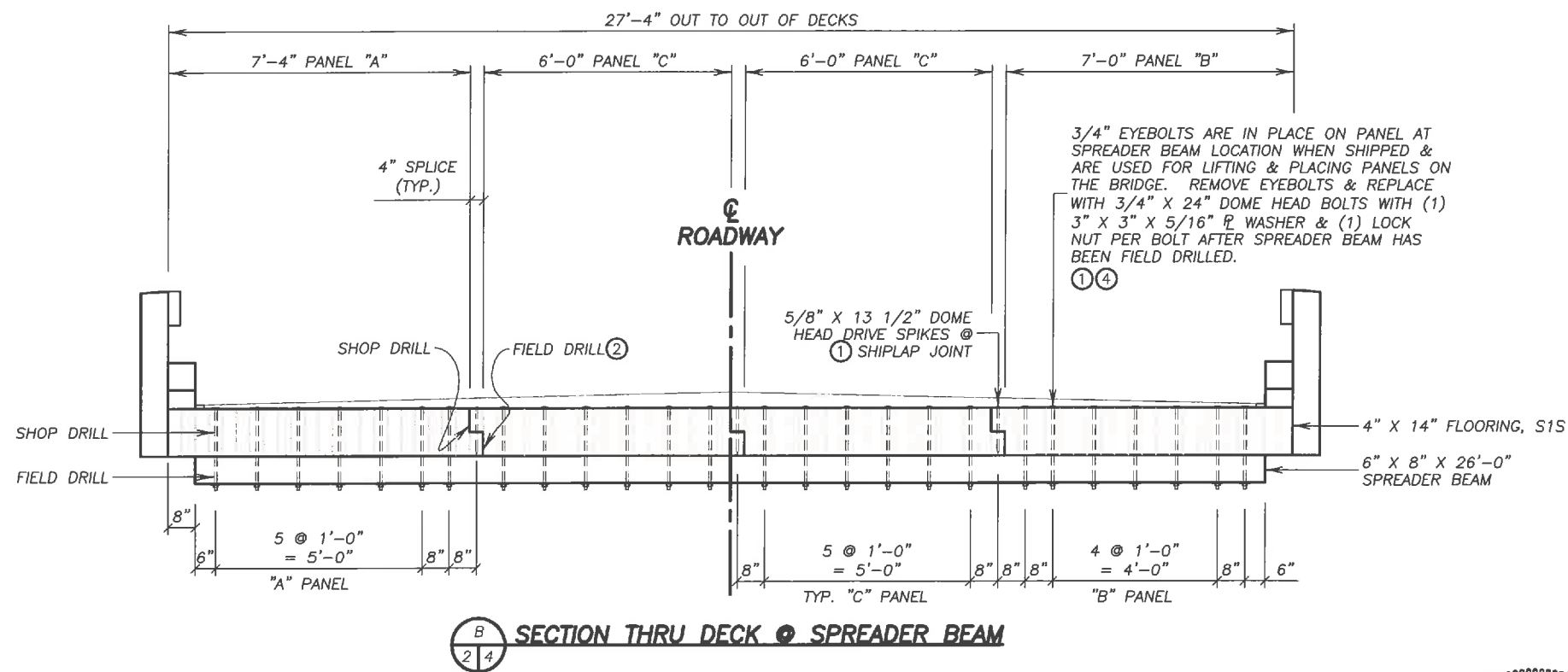
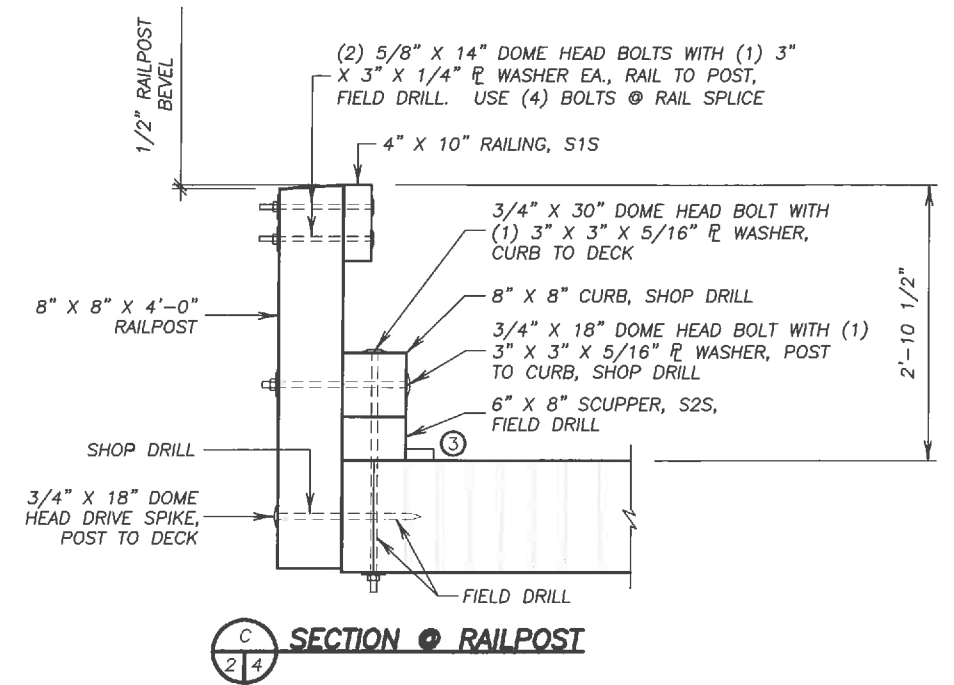
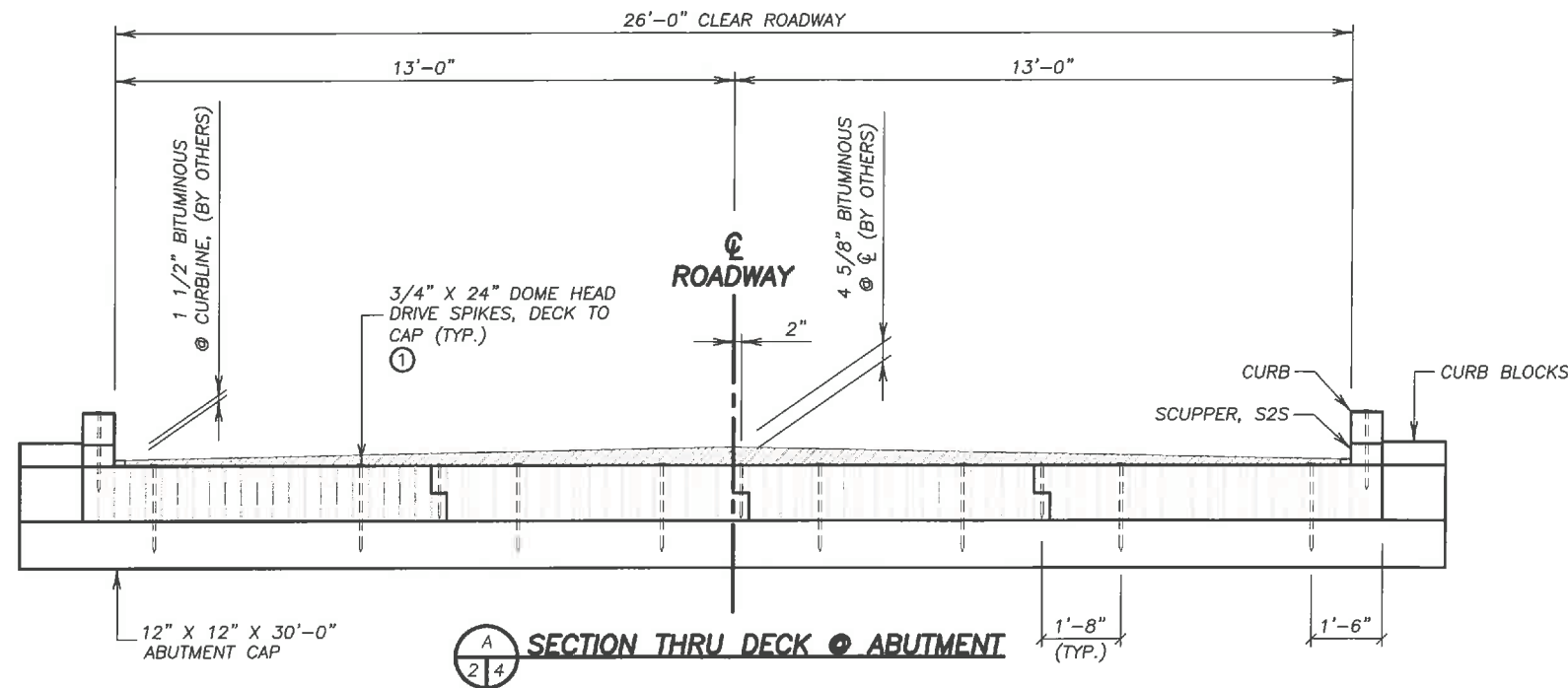
ABUTMENT PLAN & ELEVATION

HOOKER ROAD, BENZIE CO., MICHIGAN

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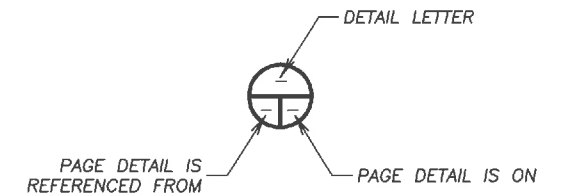
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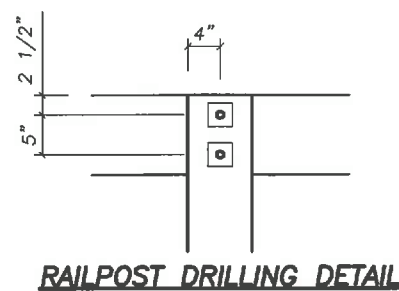
NOTES:

- ① ALL HARDWARE PENETRATING THE TOP OR BOTTOM EDGE OF THE DECK PLANK SHALL PASS THROUGH THE CENTER OF THAT EDGE DIMENSION.
- ② FIELD DRILLED HOLES IN THE LOWER SPLICE BLOCK OF EACH PANEL ARE TO BE DRILLED COMPLETELY THROUGH THE BLOCK TO PREVENT SPLITTING WHEN INSTALLING THE 5/8" DRIVE SPIKES.
- ③ FASTEN 2" X 4" PAVING STRIP, S4S, TO DECK WITH (2) 20d NAILS @ 18" CENTERS. PREDRILL HOLES TO AVOID SPLITTING.
- ④ THE CONTRACTOR SHALL INSTALL NELSON 8" COMPOSITE SHIMS (SUPPLIED BY BRIDGE MANUFACTURER) IN ALL LOCATIONS WHERE THE TOP OF THE SPREADER BEAM DOES NOT CONTACT THE BOTTOM OF THE DECK PANEL UPON TIGHTENING TO ENSURE SNUG FIT ACROSS ENTIRE DECK WIDTH. THE CONTRACTOR SHALL RETIGHTEN ALL NUTS ON THE LAST DAY OF CONSTRUCTION IN THE PRESENCE OF THE ENGINEER TO ENSURE ALL NUTS ARE PROPERLY TIGHTENED. SET THREADS ON ALL BOLTS AT NUT WITH A CENTER PUNCH AFTER TIGHTENING.

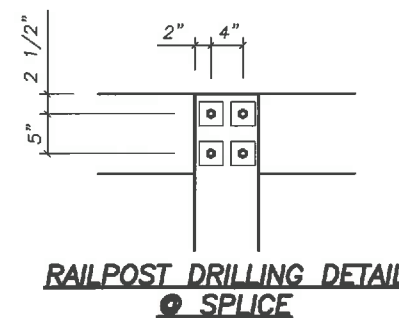


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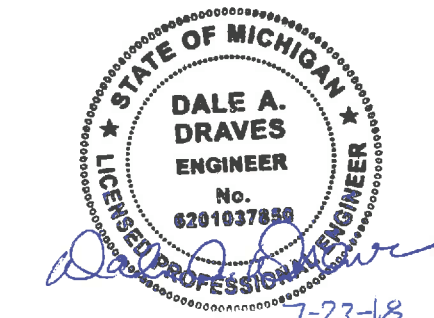
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RAILPOST DRILLING DETAIL



RAILPOST DRILLING DETAIL @ SPLICE



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