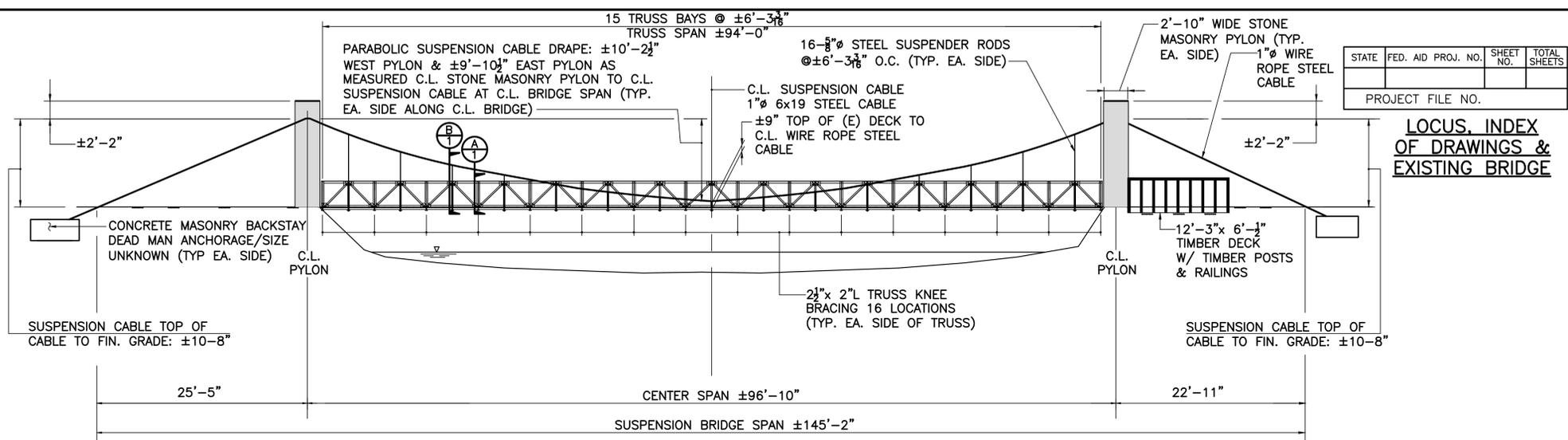
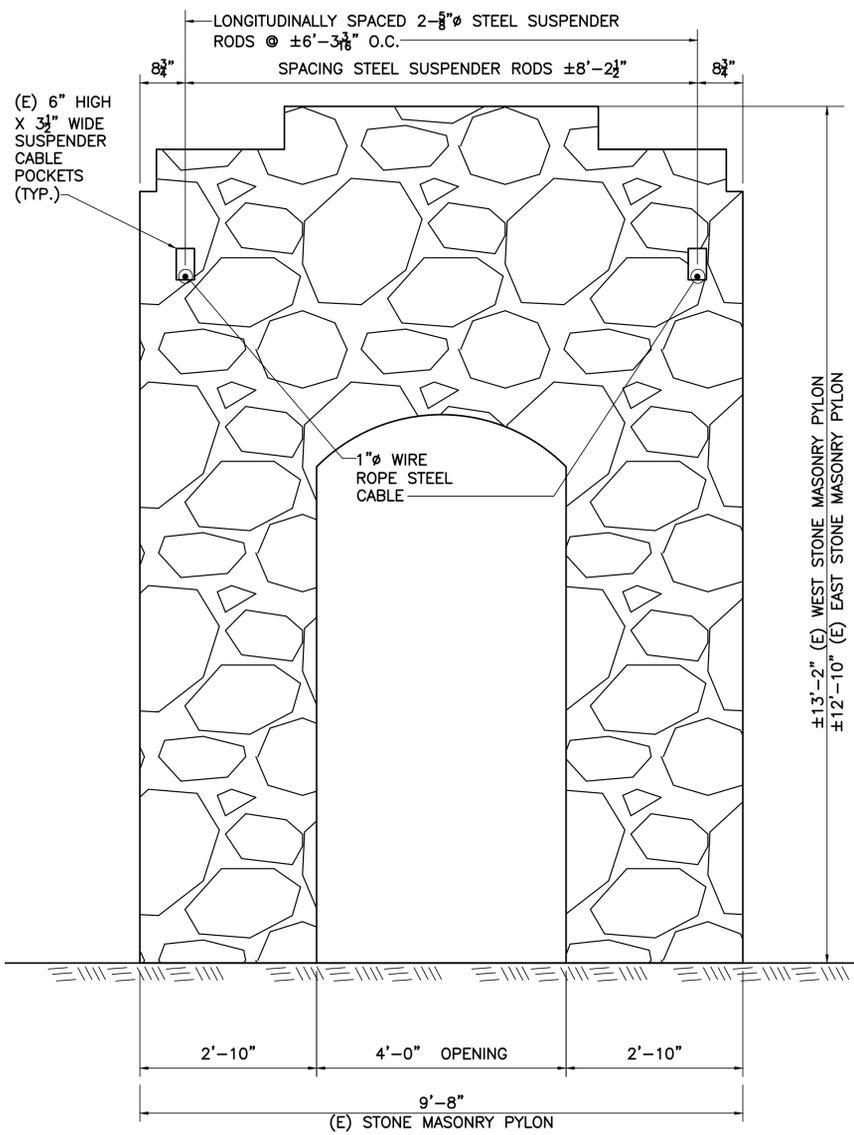


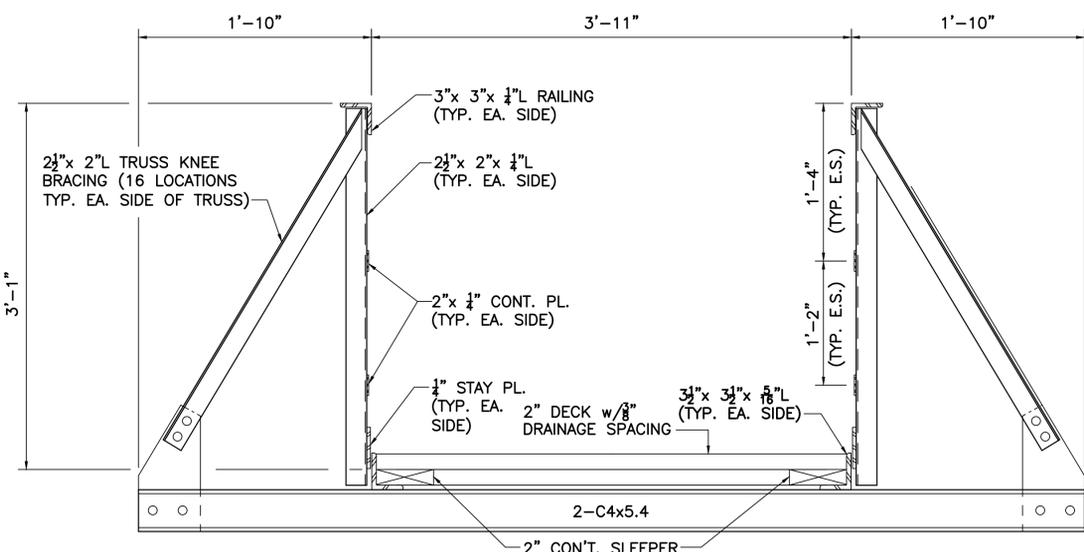
LOCUS
SCALE: 1" = 1,600 FT.
LOCATION OF MARY GOODRICH HOPKINS BRIDGE



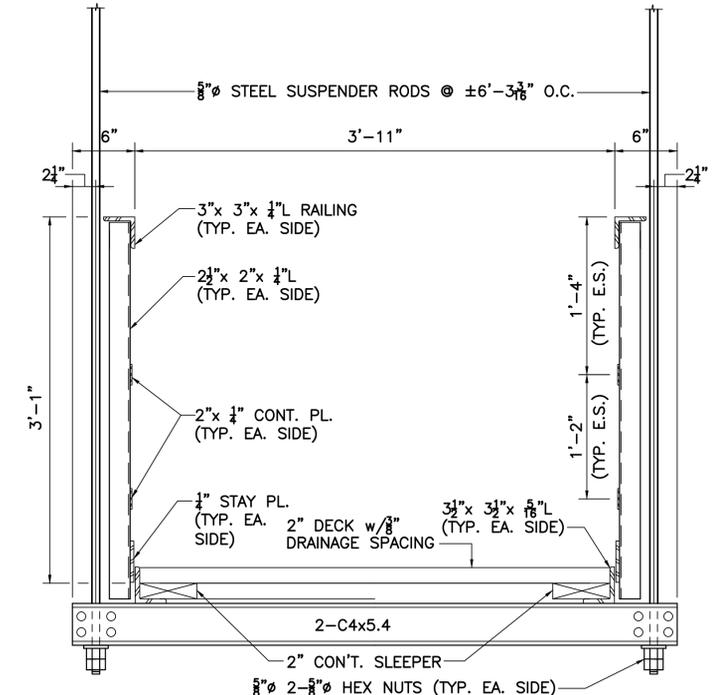
(E) MARY HOPKINS GOODRICH BRIDGE
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



(E) 2'-10" x 9'-8" BASE WEST ELEVATION STONE MASONRY PYLON
((E) EAST ELEVATION-SIMILAR)
SCALE: 3/4" = 1'-0"



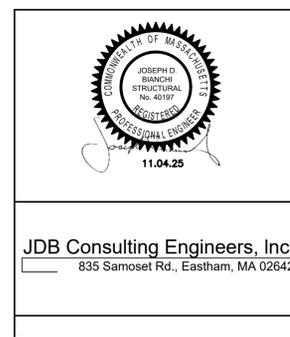
SECTION A: (E) LATERAL KNEE BRACE
SCALE: 1 1/2" = 1'-0"



SECTION B: (E) STEEL CABLE STAY
SCALE: 1 1/2" = 1'-0"



INDEX OF STRUCTURAL BRIDGE REHABILITATION DRAWINGS	
SHEET NO.	SHEET TITLE
S-1	LOCUS, INDEX OF DRAWINGS & EXISTING BRIDGE
S-2	GENERAL NOTES & WIRE ROPE HARDWARE AND DETAILS
S-3	BETTERMENT REPAIRS & DETAILS
S-4	BETTERMENT REPAIRS & DETAILS
S-5	BETTERMENT REPAIRS & DETAILS



11.04.25 ACCEPTED FOR CONSTRUCTION

PROPOSED BRIDGE BETTERMENTS

STOCKBRIDGE

MARY HOPKINS GOODRICH BRIDGE
OVER
HOUSATONIC RIVER

**TOWN OF STOCKBRIDGE
HIGHWAY DEPARTMENT**

Mary Hopkins Goodrich Bridge Structural Submittal - MARCH-2025

GENERAL NOTES

DESIGN

EVALUATION OF EXISTING REHABILITATED SUPERSTRUCTURE WAS IN ACCORDANCE WITH THE 2009 LRFD SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FOR PEDESTRIAN LOADING.

GENERAL

WORK PERFORMED AND MATERIALS TO BE PROVIDED AS SPECIFIED HEREIN SHALL CONFORM TO AND BE INSTALLED ACCORDING TO THE COMMONWEALTH OF MASSACHUSETTS MASSDOT "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES"

ALL DIMENSIONS, SECTIONS, DETAILS AND TYPICAL DETAILS SHOWN ON DRAWINGS SHOWN SHALL GOVERN CONSTRUCTION FOR ALL SIMILAR CONDITIONS UNLESS NOTED OTHERWISE. SECTIONS AND DETAILS SHOWN SHALL BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.

(E) AND (N) DENOTES EXISTING AND NEWLY PROPOSED CONSTRUCTION RESPECTIVELY.

EXISTING PLANS

EXISTING PLANS ARE NOT AVAILABLE.

EXISTING CONSTRUCTION

DIMENSIONS SHOWN ON EXISTING STRUCTURE AND RELATED DETAILS WERE TAKEN AT THE TIME OF FIELD INSPECTION AND SURVEY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL THE CONTRACTOR HAS MADE THE REQUIRED MEASUREMENTS ON THE EXISTING STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

FOUNDATIONS

MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED IN CONSTRUCTION WITH APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATION OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

STRUCTURAL STEEL

- ALL NEW STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 (ASTM A 709) GRADE 50 UNLESS NOTED OTHERWISE.
- ALL WELDING SHALL COMPLY WITH THE PROVISIONS OF AASHTO/AWS BRIDGE WELDING CODE (ANSI/AASHTO/AWS D1.5).
- ALL BOLTS AND RELATED HARDWARE SHALL BE HOT DIPPED GALVANIZED AND CONFORM TO THE REQUIREMENTS OF AASHTO M 164 (ASTM A 325) UNLESS NOTED OTHERWISE.
- NO FIELD WELDING SHALL BE ALLOWED UNLESS OTHERWISE NOTED.
- ALL NEW AND EXISTING STRUCTURAL STEEL SHALL BE PAINTED. ALL PAINT COATINGS SHALL BE APPLIED AS PER MANUF. SPECIFICATIONS AND THE GENERAL SPECIFICATIONS AS NOTED UNDER THE GENERAL NOTES.

CORED DRILLED & GROUTING DOWELS

GROUT TO BE USED FOR CORING DOWELS INTO THE EXISTING SUBSTRUCTURE SHALL BE SIKADUR 32, HI-MOD LPL AS MANUFACTURED BY SIKA CORPORATION. HOLE DIAMETERS AND DEPTHS SHALL BE AS SHOWN ON THE PLANS.

MAIN WIRE ROPE SUSPENSION CABLE

NEW 1"Ø WIRE ROPE SHALL BE 6x19 PRESTRETCHED GALVANIZED WITH A HARD (NON-JUTE) FIBER CORE CONSISTING OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 84,000 LBS. SHALL BE USED FOR THE MAIN SUSPENSION CABLE. FABRICATION AND CONSTRUCTION OF THE MAIN SUSPENSION CABLE SHALL CONFORM TO SECTION 2. WIRE ROPES AND SOCKETS OF THE AASHTO "STANDARD SPECIFICATIONS FOR MOVABLE HIGHWAY BRIDGES 1988"-AS SHOWN ON SHEET 4.

LUMBER

LUMBER SHALL CONFORM TO THE REQUIREMENTS OF STRUCTURAL GRADE NO. 2 AS PER A.S.T.M. C 245 AND A.S.T.M. D 2555 OF THE FOLLOWING SPECIES: SOUTHERN PINE. ALL LUMBER SHALL BE PRESSURE TREATED IMPREGNATED WITH CHROMATED COPPER ARSENATE IN ACCORDANCE WITH AWPA P 5, AWPA C14 AND AASHTO M 133-86.

ALL BOLTS AND NUTS USED IN TIMBER SHALL BE GALVANIZED AND CONFORM TO A.S.T.M. A 307 WITH A GALVANIZED WASHER UNDER EACH BOLT HEAD AND NUT.

CONSTRUCTION ACCESS

CONTRACTOR SHALL ACCESS TO THE BRIDGE SITE ONLY ALONG THE NEARBY PUBLIC ACCESS ROAD. AFTER BRIDGE REHABILITATION IS COMPLETED, THE CONTRACTOR SHALL REPAIR "IN KIND" THE ACCESS ROAD USED DURING BRIDGE CONSTRUCTION AS DETERMINED BY THE ENGINEER.

SCALES

SCALES AS NOTED ON PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. FOR 1/2 SIZE PRINTS DIVIDE SCALE BY TWO.

SUBMITTALS

PRIOR TO CONSTRUCTION SUBMIT THE FOLLOWING TO THE ENGINEER:

- MANUF. SPECIFICATIONS AND CONTRACTORS APPLICATION PROCEDURE (3 SETS)
 - STRUCTURAL STEEL SHOP AND FIELD PAINTING SYSTEM.
- SHOP DRAWINGS (3 SETS)-STRUCTURAL STEEL CABLE SEATS BEARING ON ALL FOUR STONE MASONRY PYLON CABLE POCKETS.
- MANUF. SPECIFICATIONS & ONE SAMPLE (PIECE) FOR:
 - CROSBY WIRE ROPE CLIP-SEE PLANS
 - CROSBY WIRE ROPE STOP CLIP-SEE PLANS
 - CROSBY FORGED EYE NUT-SEE PLANS
 - CROSBY WIRE ROPE THIMBLE-SEE PLANS
 - CROSBY TURNBUCKLE JAW END FITTING-SEE PLANS
 - CROSBY TURNBUCKLE BODY-SEE PLANS
 - WILLIAMS 8"x8"x 1" S1K-ROUND BEARING PLATE WITH 1 1/8" CENTER HOLE-SEE PLANS

CLEANING EXISTING STONE MASONRY PYLONS AND CEMENT CONCRETE MASONRY:

ALL LAITANCE SHALL BE REMOVED BY HAND OR MECHANICAL WIRE BRUSH CLEANING.

METHOD OF MEASUREMENT: MEASUREMENT SHALL BE MADE BY THE CLEANING OF THE ENTIRE AND EACH STONE MASONRY PYLON AND CONCRETE FACE ABOVE GROUND UNDER THE LUMP SUM BID COST FOR THIS PROJECT.

REPOINTING EXISTING STONE MASONRY PYLONS:

THE WORK TO BE PERFORMED UNDER THIS ITEM SHALL CONFORM TO THE RELEVANT PROVISIONS OF SECTION 690, WALLS REMOVED AND REBUILT, AMENDED AND SUPPLEMENTED AS FOLLOWS:

DESCRIPTION: THE WORK SHALL CONSIST OF CLEANING EXISTING MORTARED JOINTS AND PROVIDING AND PLACING NEW MORTAR ALONG ALL LOCATIONS ON THE EXISTING STONE MASONRY PIERS AS DIRECTED BY THE ENGINEER THAT HAVE ERODED DUE TO WEATHERING EXPOSURE ALONG BOTH EXISTING STONE MASONRY PYLONS.

MATERIALS: MORTAR SHALL BE CEMENT MORTAR IN ACCORDANCE WITH SUBSECTION M4.02.15.

METHOD OF CONSTRUCTION: MORTAR JOINTS TO BE REPOINTED, AT LOCATIONS AS DIRECTED BY THE ENGINEER, SHALL BE RAKED OUT OF ALL LOOSE EXISTING MORTAR TO A MINIMUM DEPTH OF TWO INCHES. NEW MORTAR SHALL BE PLACED IN ALL THE CLEARED-OUT JOINTS SO THAT THE PLANE OF THE FINISHED SURFACE MATCHES ADJACENT EXISTING MORTAR. THE FINISHED REPOINTED JOINT SHALL HAVE A SMOOTH SURFACE.

METHOD OF MEASUREMENT: MEASUREMENT SHALL BE MADE BY THE ENTIRE EXISTING STONE MASONRY SURFACE FACE ABOVE GROUND CONTAINING MORTAR JOINTS NEEDING TO BE REPOINTED UNDER THE LUMP SUM BID COST FOR THIS PROJECT.

STRUCTURAL STEEL PAINTING

NO. 1 AREAS AND SYSTEM USED TO BE PAINTED:

RD COATING: SURFACE PREPARATION COATING SCHEDULE ALONG EXISTING STRUCTURAL STEEL TRUSS WALKWAY (SEE NOTE 1).

SURFACE PREPARATION: PREPARE ALL STEEL SURFACES SCHEDULED FOR COATING BY PRESSURIZED WATER CLEANING WITH EQUIPMENT CAPABLE OF PRODUCING 4,000 PSI AT TIP (SEE NOTE 2). CLEANING UNIT SHALL ALSO BE EQUIPPED WITH A ZERO OSCILLATING TIP. FOLLOWING PRESSURIZED CLEANING, PREPARE ALL SURFACES WHERE LOOSE RUST, RUST SCALE, LOOSE PAINT AND UNDER FILM CORROSION EXISTS PER SSPC SP #3 STANDARD. PREPARE ALL SURFACES SCHEDULED FOR COATING BY REMOVING ALL VISIBLE OIL, GREASE, SOIL, DRAWING AND CUTTING COMPOUNDS, AND OTHER SOLUBLE CONTAMINANTS FROM STEEL SURFACES. LET SURFACE DRY BEFORE COATING.

RD COATING SCHEDULE: SPOT COAT: APPLY A SPOT COAT OF RD ELASTOMETAL TO ALL BARE METAL SURFACES OR AREAS OF VISIBLE CORROSION AT 7.0-8.0 MILS DFT.

INTERMEDIATE: APPLY ONE FULL COAT OF RD MONOGUARD TO ALL STEEL SURFACES SCHEDULED FOR COATING AT 3.0-3.5 MILS DFT.

FULL FINISH COAT: APPLY ONE FULL COAT OF RD MONOGUARD TO ALL STEEL SURFACES SCHEDULED FOR COATING AT 3.0-3.5 MILS DFT.

NO. 2 AREAS AND SYSTEM USED TO BE PAINTED:

RD COATING: SURFACE PREPARATION & COATING SCHEDULE ALONG NEW STEEL CABLES, CROSBY HARDWARE SHOWN ON SHEET 2, RODS & ALL FOUR (N) PYLON WIRE ROPE CABLE SEATS AS SHOWN ON SHEET 5 SECTION 1 ALONG PEDESTRIAN BRIDGE.

SURFACE PREPARATION: PREPARE ALL STEEL SURFACES SCHEDULED FOR COATING BY PRESSURIZED WATER CLEANING WITH EQUIPMENT CAPABLE OF PRODUCING 4,000 PSI AT TIP (SEE NOTE 2). CLEANING UNIT SHALL ALSO BE EQUIPPED WITH A ZERO OSCILLATING TIP. PREPARE ALL SURFACES SCHEDULED FOR COATING BY REMOVING ALL VISIBLE OIL, GREASE, SOIL, DRAWING AND CUTTING COMPOUNDS, AND OTHER SOLUBLE CONTAMINANTS FROM STEEL SURFACES. LET SURFACE DRY BEFORE COATING.

RD COATING SCHEDULE: PRIME COAT (FIELD APPLIED): APPLY ONE FULL COAT OF RD MONOGUARD TO ALL STEEL SURFACES SCHEDULED FOR COATING AT 3.0-3.5 MILS DFT.

FULL FINISH COAT (FIELD APPLIED): APPLY ONE FULL COAT OF RD MONOGUARD TO ALL STEEL SURFACES SCHEDULED FOR COATING AT 3.0-3.5 MILS DFT.

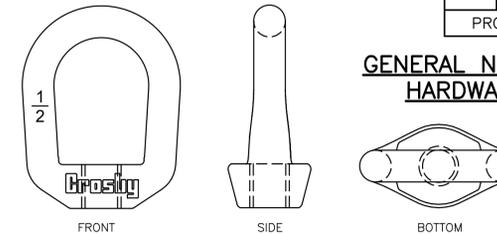
ALL PAINT SHALL BE MANUF. BY RD COATINGS USA, 300 LONG BEACH BLVD., SUITE 18 STRATFORD, CT. CONSISTING A RD COATING TOP COAT COLOR COAT OF: RA7004 SIGNAL GRAY.

NOTE 1:

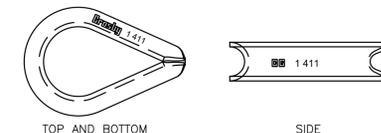
ENTIRE EXISTING STRUCTURAL STEEL TRUSS WALKWAY SHALL BE REMOVED FROM THE PRESENT SITE AND SURFACE PREPARED AND PAINTED AT OFF SITE LOCATION SELECTED BY THE CONTRACTOR.

NOTE 2:

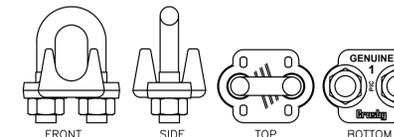
ALTERNATE COLORS TO ENSURE PROPER DFT COVERAGE.



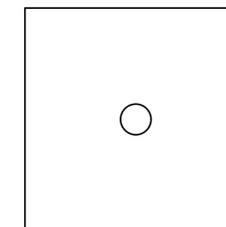
CROSBY G-400 EYE NUT
(SIZE NO. 4 / PART NO. 1090535)
SCALE: 1" = 1"



CROSBY G-411 STANDARD WIRE ROPE THIMBLE
(ROPE DIAMETER 1IN. / PART NO. 1037434)
SCALE: 3/4" = 1"



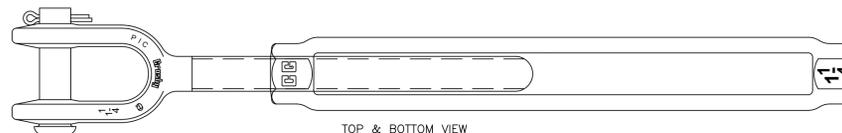
CROSBY G-450 WIRE ROPE CLIP
(ROPE SIZE 1IN. / PART NO. 1010239)
SCALE: 3/4" = 1"



WILLIAMS FORM ENGINEERING CORP.
GALVANIZED STEEL BEARING PLATE
(8"x 8"x 1" THICKNESS / 1 1/8" DIA. HOLE)
/ PART NO. SK1-ROUND)
SCALE: 3/4" = 1"

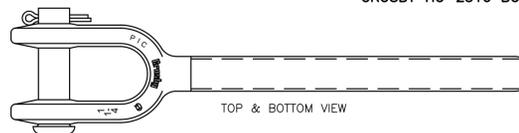
NOTE:

USE 1 1/2"Ø UNC THREADED STRUCTURAL STEEL TIE ROD / PART NO. B8S-10, 1 1/2"Ø, RF9 GALVANIZED HARDENED WASHER / PART NO. R9F-10-436 & 2-1 1/2"Ø H1F-HEAVY DUTY UNC HEX NUTS / PART NO. H1FN-10 MANUF. BY WILLIAMS FORM ENGINEERING CORP - SEE "BACKSTAY DEAD MAN ANCHORAGE" DETAIL SHEET 5 FOR ADD'L. INFORMATION.

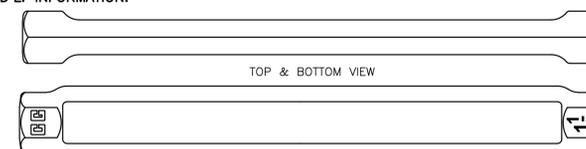


CROSBY TURNBUCKLE (BODY & JAW)
(1 1/2" SHANK DIA.)
SCALE: 3/4" = 1"

NOTE: SEE CROSBY HG-4037 RH JAW END FITTING & CROSBY HG-2510 BODY FOR ADD'L. INFORMATION.



CROSBY HG-4037 RH JAW END FITTING
(1 1/2" SHANK DIA. & 11 3/8" THREADED LENGTH)
/ PART NO. 1072699)
SCALE: 3/4" = 1"



CROSBY HG-2510 BODY
(1 1/2" SHANK DIA. & 18" INTERNAL TAKE UP / PART NO. 1034357)
SCALE: 3/4" = 1"

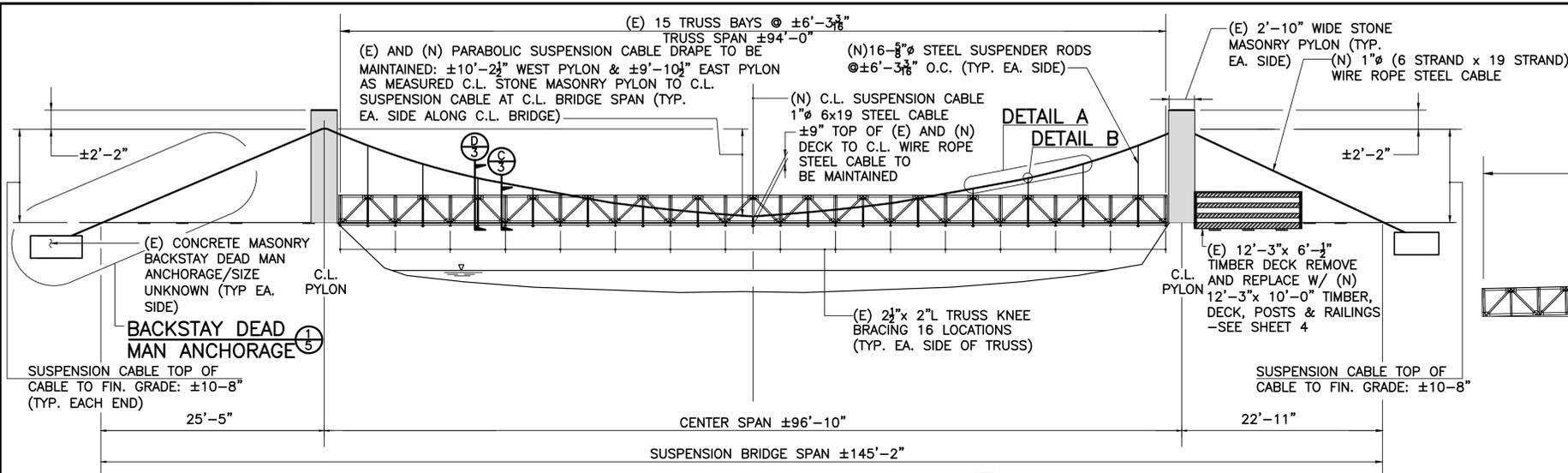
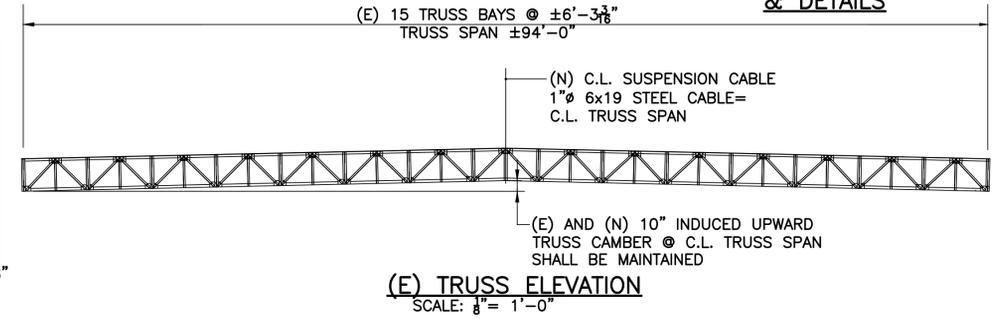
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PROJECT FILE NO.			

GENERAL NOTES & WIRE ROPE HARDWARE AND DETAILS

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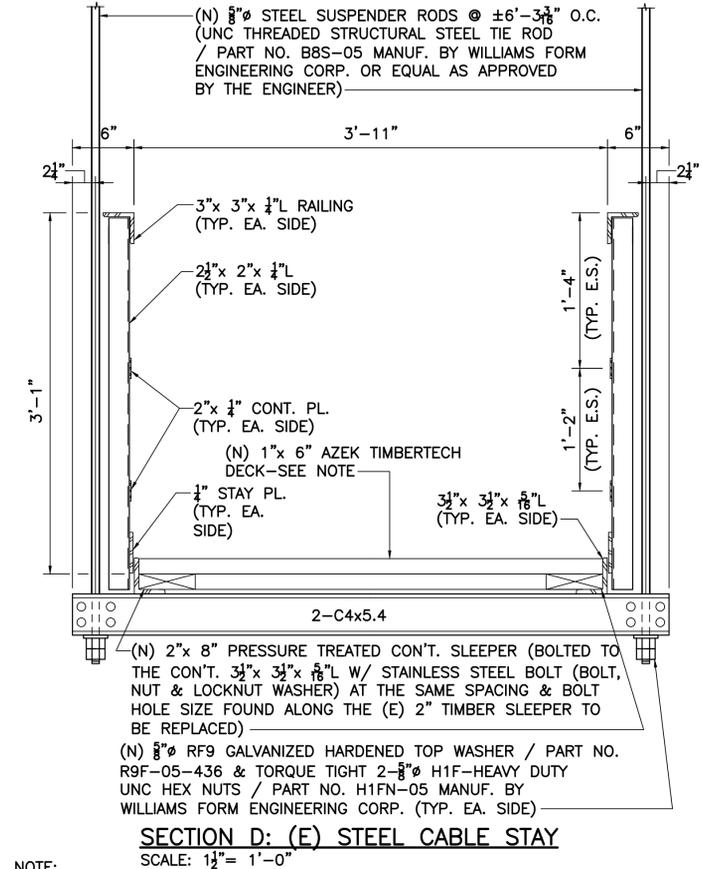
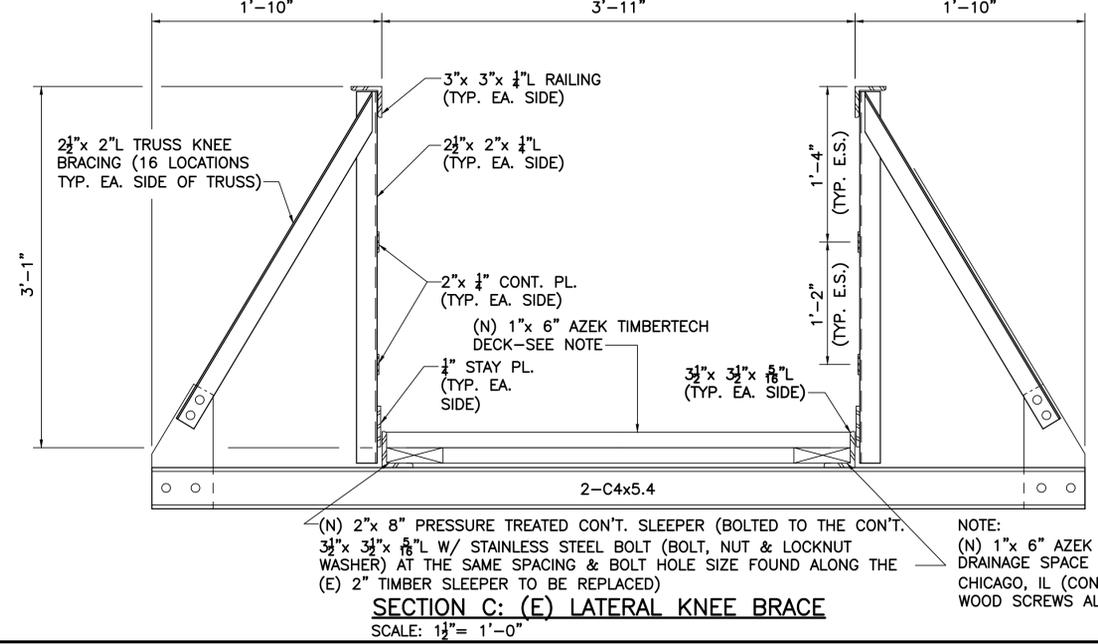
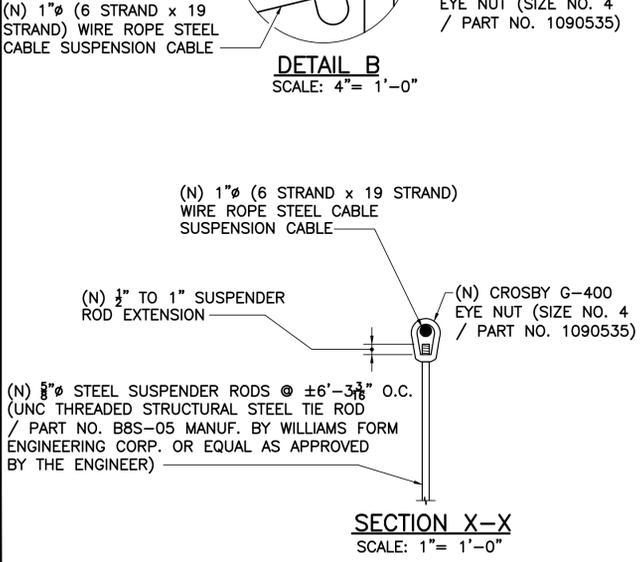
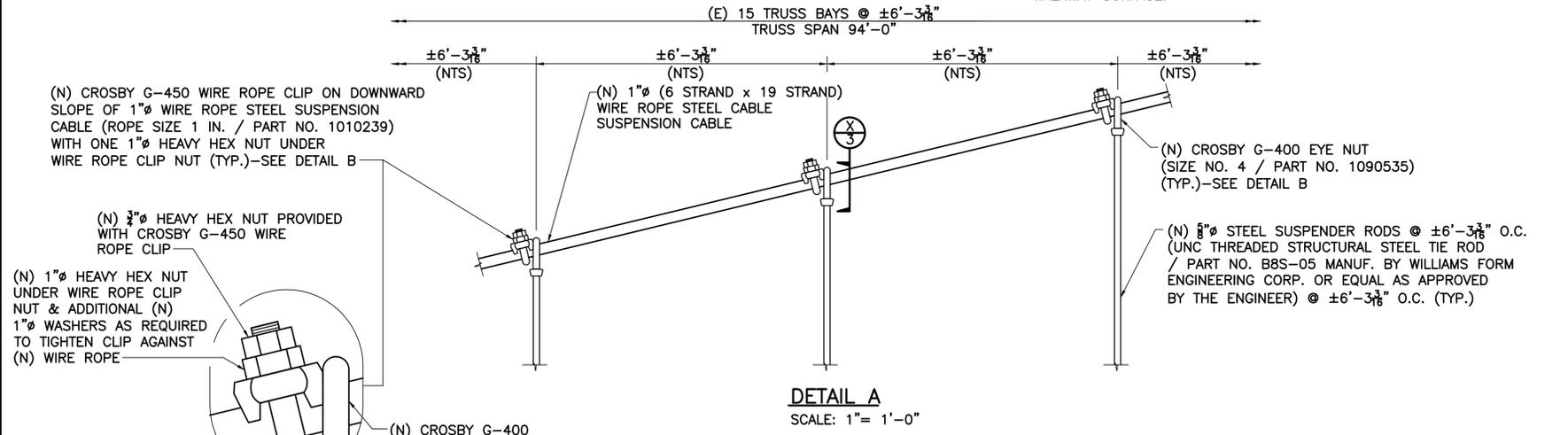
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
PROJECT FILE NO.			

BETTERMENT REPAIRS & DETAILS



**MARY HOPKINS GOODRICH BRIDGE
SOUTH ELEVATION**
SCALE: $\frac{1}{8}'' = 1'-0''$

- NOTES:
- 1.0 APPROXIMATE LENGTH'S OF (N) WIRE ROPE SUSPENSION CABLES BETWEEN EACH PYLON IS $\pm 98.9'$.
 - 2.0 TOTAL SAG DUE TO SUPERIMPOSED DEAD LOAD OF THE NEW WIRE ROPE ALONG THIS CROSSING IS APPROXIMATELY $\pm 1''$. ADJUST ALL (N) $\frac{3}{8}'' \phi$ VERTICAL SUSPENDER RODS AS NECESSARY TO MAINTAIN A HORIZONTAL WALKWAY SURFACE.



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2013 MASTER D REV. 11.04.25 DWG. Mary Hopkins Goodrich Bridge Structural Submittal MARCH-2025

**AASHTO
WIRE ROPES AND SOCKETS
STANDARD SPECIFICATIONS FOR
MOVABLE HIGHWAY BRIDGES
SECTION 2. WIRE ROPES
AND SOCKETS**

3.2.1. Manufacturer

Wire rope shall be made by a manufacturer whose facilities and experience are approved by the Engineer.

3.2.2. Diameter of Rope

The diameter of counterweight ropes shall be not less than 1 inch (25.4 mm) nor more than 2 1/2 inches (63.5mm). The diameter of operating ropes shall be not less than 3/4 in. (19.1mm).

The actual diameter of a wire rope (the diameter of the circumscribed circle) shall be measured when the rope is unstressed. The amount by which the actual diameter of a rope may differ from the nominal diameter shall be not greater than the following:

Nominal Diam. of Rope (Inches)(mm)	Undersize	Oversize (Inch)(mm)
5/8 to 3/4 (15.9 to 19.1)	0	1/32 (0.8)
13/16 to 1 1/8 (20.6 to 28.6)	0	3/64 (1.2)
1 1/8 to 1 1/2 (30.2 to 38.2)	0	1/16 (1.6)
1 1/2 to 2 (39.8 to 57.2)	0	3/32 (2.4)
2 1/8 to 2 1/2 (58.2 to 63.5)	0	1/8 (3.2)

3.2.3. Construction

All wire ropes shall be made of improved plow steel wire. All operating ropes shall be preformed wire rope.

All wire rope shall be 6 x 19 Class wire rope of 6 x 25 filler wire construction with hard fiber core. Each strand shall consist of 19 main wires and 6 filler wires fabricated in one operation, with all wires interlocking. There shall be four sizes of wires in each strand; 12 outer wires of one size, 6 filler wires of one size, 6 inner wires of one size and a core wire. Jute cores shall not be used.

Ropes shall be laid in accordance with the best practice. Every effort shall be made to obtain ropes of uniform physical properties. The ropes shall be fabricated in the greatest lengths practical, and all similar ropes for any one bridge shall be cut from ropes manufactured with one setting of one stranding machine and one setting of one closing machine.

3.2.4. Lay

All wire ropes, unless otherwise specified, shall be right regular lay, and the maximum length of rope lay shall be as follows:

Operating ropes	6 3/4 times nominal rope diameter.
Counterweight ropes	7 1/2 times nominal rope diameter.

The lay of the wires in the strands shall be such as to make the wires approximately parallel to the axis of the rope where they would come in contact with a circular cylinder circumscribed on the rope.

3.2.5. Lubrication During Fabrication

Manila and sisal fiber cores shall be thoroughly impregnated by the cordage manufacturer with a suitable lubricating compound free from acid. All portions of wire ropes—fiber centers, wires and strands—shall be lubricated during fabrication with a lubricant containing a rust inhibitor and approved by the Engineer.

3.2.6. Splices

No splicing of the ropes or individual strands will be permitted. Wire splices shall be securely and properly made by electric welding, and no two joints in any one strand shall be closer than 25 ft. (7.620m) apart, except for filler wires.

3.2.6. Splices

No splicing of the ropes or individual strands will be permitted. Wire splices shall be securely and properly made by electric welding, and no two joints in any one strand shall be closer than 25 ft. (7.620m) apart, except for filler wires.

3.2.7. Wire—Physical Properties

The wire from which wire ropes are made shall be tested in the presence of an inspector designated by the Engineer. Excepting that the filler wires may be made to the manufacturer's standards, the physical properties of the bright (uncoated) individual wires before fabricating into the rope shall be as follows:

Diam. of Wire (Inches)(mm)	Tensile Strength Minimum (psi)(MPa)
0.038-0.060 (0.97-1.52)	244,000 (1682.3)
0.061-0.100 (1.55-2.54)	237,000 (1634.1)
0.101-0.140 (2.57-3.56)	231,000 (1592.7)
0.141-0.190 (3.58-4.83)	223,000 (1537.5)

The test specimens of the wire shall be subjected to a torsion test in which the distance between the jaws of the testing machine is 8 inches (203.2mm). The number of complete successive turns of 360 deg. in one direction through which an 8 inch (203.2 mm) length wire can be twisted around its longitudinal axis without breaking or showing any signs of splitting or other defects shall be not less than the following:

Diam. of Wire (Inches)(mm)	Number of Turns
0.038-0.060 (0.97-1.52)	2.3 (58.5) divided by diam. of wire in inches (mm)
0.061-0.100 (1.55-2.54)	2.2 (55.9) divided by diam. of wire in inches (mm)
0.101-0.140 (2.57-3.56)	2.1 (53.5) divided by diam. of wire in inches (mm)
0.141-0.190 (3.58-4.83)	2.0 (50.8) divided by diam. of wire in inches (mm)

In this torsion test, one end of the wire is to be rotated with respect to the other end of the wire at continuous uniform speed until breakage occurs. During the test the applied tension shall be sufficient to straighten the wire. The speed of rotation shall not exceed 60 twists per minute. Such tests shall be carried out by a mechanically driven device, such as a motor or belt drive, in order to secure operation at constant uniform speed.

All of the tests specified above shall be made upon fair samples which may be taken from either end of any coil of wire, and such samples shall be taken from not less than 10 percent of the total number of coils.

The tolerance limits on diameters of like-positioned wires in the strands of wire ropes shall not exceed the following value:

Diameter Wires (Inches)(mm)	Total Variation (Inches)(mm)
0.038-0.060 (0.97-1.52)	0.002 (.05)
0.061-0.100 (1.55-2.54)	0.0025 (.06)
0.101-0.140 (2.57-3.56)	0.003 (.08)
0.141-0.190 (3.58-4.83)	0.0035 (.09)

3.2.8. Ultimate Strength

In order to demonstrate the strength of the rope and its fastenings, test pieces with a length between the sockets equal to not less than 25 rope diameters, and preferably not less than 50 rope diameters, shall be cut, and shall have sockets, selected at random from those to be used in filling the order, attached to their ends. The number of test pieces shall be not less than two from each original length in which the rope is fabricated, and not more than 10 percent of the total number of finished lengths of rope to be made for the order. The test pieces shall be taken from both ends of the original lengths in which the rope is fabricated. A suitable mark shall be placed around the rope near the end of the socket, so that any movement of the latter can be readily detected. These test pieces are to be stressed to destruction in a suitable testing machine, the first sample of each size being tested with the machine running at its slowest speed. The sockets used for these tests shall not be used in the structure. Under this stress, bright (uncoated) wire ropes shall develop the minimum ultimate strength given in the following table:

**ULTIMATE STRENGTH OF IMPROVED PLOW
STEEL ROPE, 6 STRANDS BY 19 WIRES**

Diam. of Rope in (Inches)(mm)	Approximate Area of Section 0.41D ²	Ultimate Strength (psi)(MPa)	Entire Rope (lb)(kN)
1/2 (12.7)	0.100 (64.55)	210,000 (1447.9)	21,000 (93.41)
5/8 (15.9)	0.156 (100.65)	210,000 (1447.9)	33,000 (146.8)
3/4 (19.1)	0.225 (145.16)	206,000 (1430.3)	46,000 (204.6)
7/8 (22.2)	0.306 (197.42)	205,000 (1413.4)	63,000 (280.2)
1 (25.4)	0.400 (258.06)	203,000 (1399.6)	81,000 (360.3)
1 1/4 (28.6)	0.506 (326.45)	203,000 (1399.6)	103,000 (458.1)
1 1/2 (31.8)	0.625 (403.23)	201,000 (1385.8)	126,000 (560.4)
1 3/4 (35.0)	0.756 (487.74)	200,000 (1379.0)	151,000 (671.6)
1 7/8 (38.2)	0.900 (580.64)	199,000 (1372.1)	179,000 (796.2)
2 (41.4)	1.056 (681.29)	198,000 (1365.2)	209,000 (929.6)
2 1/4 (44.5)	1.225 (790.32)	197,000 (1358.3)	242,000 (1076.4)
2 1/2 (47.7)	1.406 (907.09)	196,000 (1351.4)	275,000 (1223.2)
2 (50.8)	1.600 (1032.26)	195,000 (1344.5)	312,000 (1387.8)
2 1/2 (54.0)	1.806 (1165.16)	193,000 (1330.7)	349,000 (1552.4)
2 3/4 (57.2)	2.025 (1306.45)	192,000 (1323.8)	390,000 (1734.7)
2 3/4 (60.4)	2.256 (1455.48)	191,000 (1316.9)	432,000 (1921.5)
2 3/4 (63.5)	2.500 (1612.90)	190,000 (1310.0)	476,000 (2117.2)

3.2.9. Rejection

If the physical properties of the rope or of its individual wires fall below those specified, the entire length from which the test pieces were taken shall be replaced by the manufacturer with a new length, the physical qualities of which conform to those specified.

3.2.10. Prestretching

Each counterweight rope shall be prestretched using the following procedure: (1) Tension the rope to 40 percent of its ultimate strength as given in Art. 3.2.8 and hold that load for 5 minutes. (2) Reduce the load to 5 percent of the ultimate strength. (3) Repeat this load-unload cycle two more times. (4) Release the load completely.

3.2.11. Sockets

All sockets used with wire ropes shall conform to the requirements of Federal Specification RR-S-550, latest revision, except that sockets for 2 1/2 inch (63.5 mm) diameter ropes may be cast steel conforming to ASTM A148, Grade 80-50. The sockets shall be attached to the ropes by using zinc of a quality not less than that defined for High Grade in the current Specifications for Slab Zinc (Spelter) of the AASHTO Designation M 120, and using a reliable method that will not permit the rope, when stressed to 80 percent of its specified ultimate strength under the test specified in Art. 3.2.8 to slip more than 1/6 the nominal diameter of the rope. If a greater movement should occur, the method of attachment shall be changed until a satisfactory one is found.

The sockets shall be stronger than the rope with which they are used. If a socket should break during the test specified in Art. 3.2.8, two others shall be selected and attached to another piece of rope and the test repeated, and this process shall be continued until the inspector is satisfied of their reliability, in which case the lot shall be accepted. If, however, 10 percent or more of all the sockets tested break at a load less than the specified minimum ultimate strength, the entire lot shall be rejected, and new ones, made of stronger material or to a heavier design, shall be furnished. Pin and socket fits different from those specified by the Federal Specification may be specified by the Engineer.

Sockets shall be painted in the shop as specified for structural steel.

3.2.12. Facilities for Testing

The manufacturer shall provide proper facilities for making the tests, and shall make, at his own expense, the tests required. Tests shall be made in the presence of an inspector representing the Engineer.

3.2.13. Length

The length of each counterweight rope from inside of bearing to inside of bearing of sockets shall be determined, and a metal tag having this length stamped thereon shall be securely attached to the rope. While being measured, each rope shall be twisted to the correct lay, it shall be supported throughout its length in a straight line at points not more than 25 ft. (7.620 m) apart, and it shall be under a tension of 12 percent of its ultimate strength. (This corresponds approximately to the direct load on the rope.) A variation from the required length of not more than 1/4 in. in 100 ft. (0.21 mm/m) will be allowed. For block sockets which provide for the direct load on the rope to be transmitted by bearing on the front face of the socket, this permissible variation from the required length shall be corrected in the shop by permanently fastening steel shims to the bearing face of one socket so that the length from bearing face of one socket to bearing face of shim at the other socket corresponds exactly to the required length. No shim shall be less than 3/8 in. (9.5 mm) thick.

The Contractor shall verify the exact lengths to which the counterweight ropes shall be manufactured.

Each rope shall have a stripe painted on one side along its entire length at the time the measurement of length is made, to assure the correct alignment of the rope during the erection of the bridge.

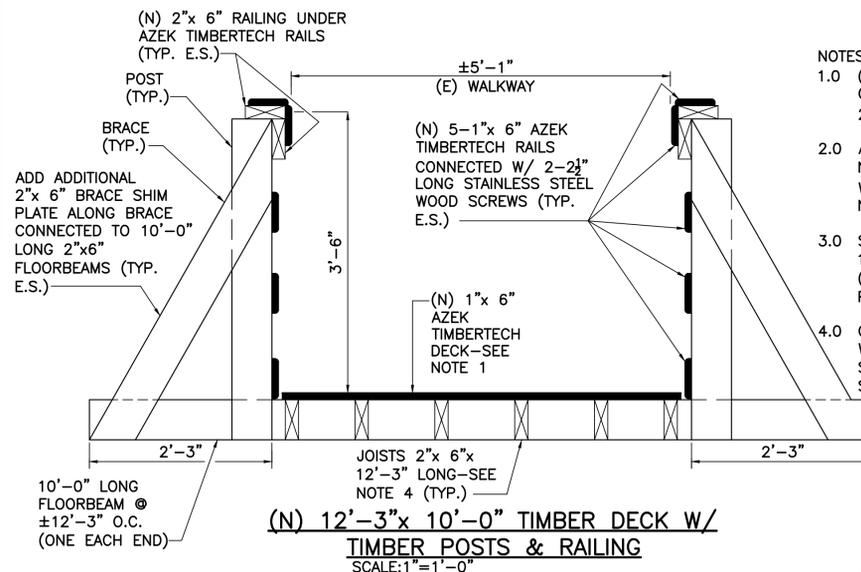
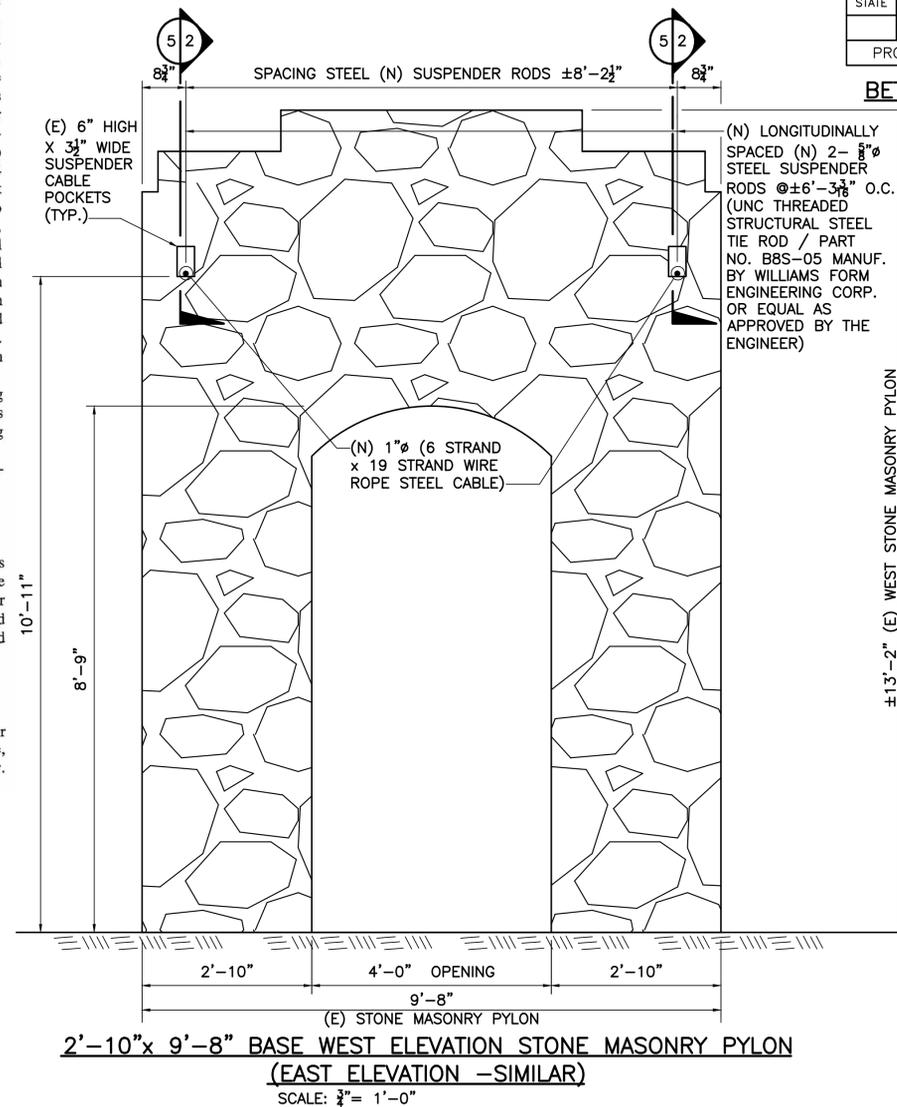
Ropes shall be suitably marked or tagged for identification during erection.

3.2.14. Operating Ropes

Ends of operation ropes when not provided with sockets shall be seized and shall have the wires composing the ropes welded together. This seizing shall be removed prior to making the attachments of the ropes to the drums and take-ups. The lengths of operating ropes to be furnished shall be determined by the contractor.

3.2.15. Shipping

All ropes shall be shipped on reels, the drum diameter of which is not less than 25 times the diameter of the rope, unless permission to ship in coils is specified in the order.

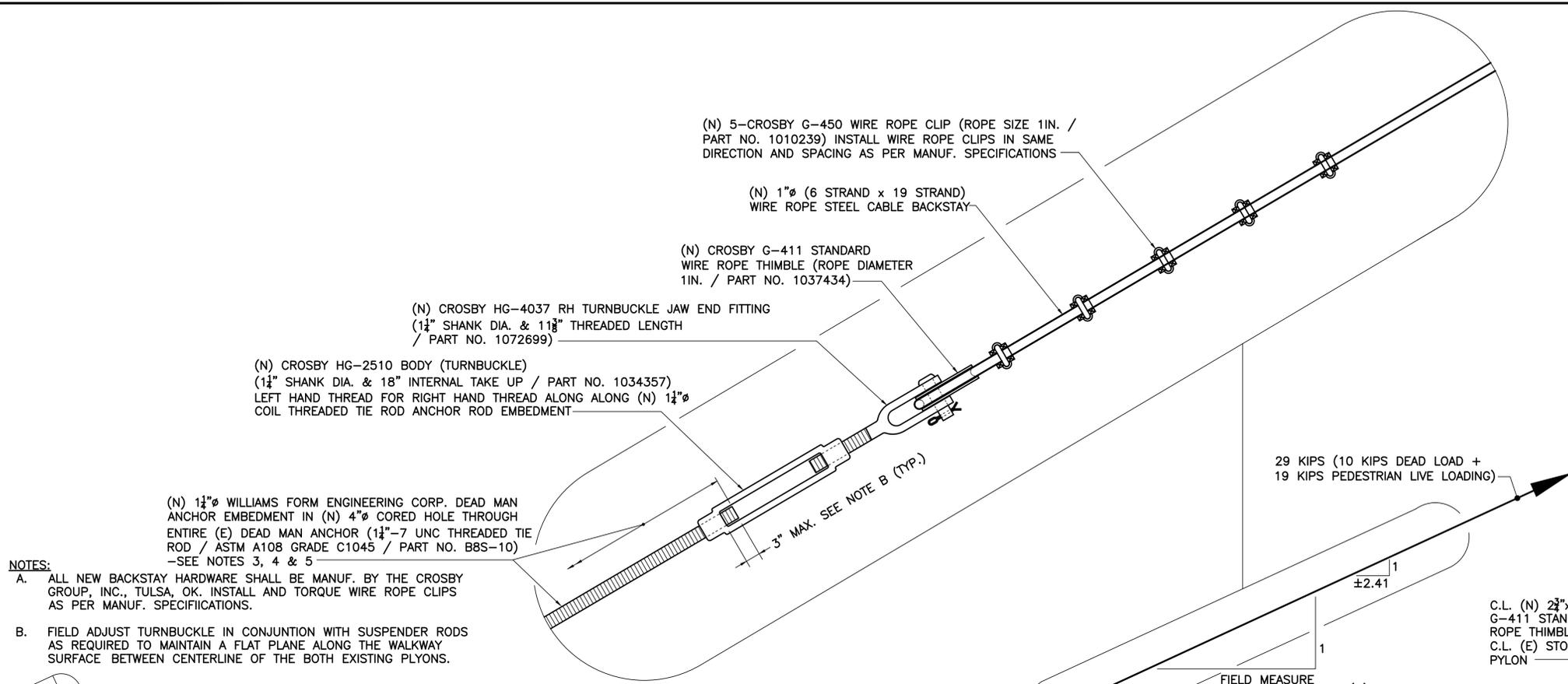


- NOTES:
- (N) 1"x 6" AZEK TIMBERTECH DARK COCOA DECK w/ 3/8" DRAINAGE SPACE OPENING MANUF. AZEK COMPANY INC., CHICAGO, IL (CONNECTED W/ 2-2 1/2" STAINLESS STEEL WOOD SCREWS ALONG EACH (N) 2"x 6" JOIST).
 - ALL MEMBERS (JOISTS, BRACES, SHIM PLATES, FLOORBEAMS & POSTS) UNLESS NOTED OTHERWISE SHALL BE 2"x 6" PRESSURE TREATED (CONNECTED W/ 2-2 1/2" LONG STAINLESS STEEL WOOD SCREWS) W/ ADD'L. PILOT HOLE IF NEEDED WITHOUT SPLITTING (N) TIMBER).
 - SEAT (N) TIMBER DECK ON (E) GRANITE TOP STEP NEXT (E) PYLON, AND 18"x 18'-0"x 18" (N) CRASHED STONE BEDDING ALONG OPPOSITE END OF (N) DECK AND 5'-0"x 2"x 6" PRESSURE TREATED TIMBER HORIZONTAL SHIM PLATES AS NEEDED UNDER EACH END OF (N) DECK.
 - CONNECT BOTH JOIST ENDS WITH LSU26 GALV. FACE MOUNTED JOIST HANGERS W/ 4-10d STAINLESS STEEL NAILS AS PER MANUF. SPECIFICATIONS, MANUF. SIMPSON STRONG-TIE CO., INC. W/ ADD'L. PILOT HOLE IF NEEDED WITHOUT SPLITTING (N) TIMBER FLOORBEAMS.

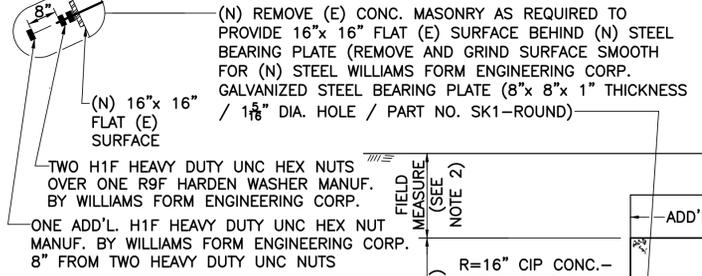
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	USE ONLY PRINTS OF LATEST DATE

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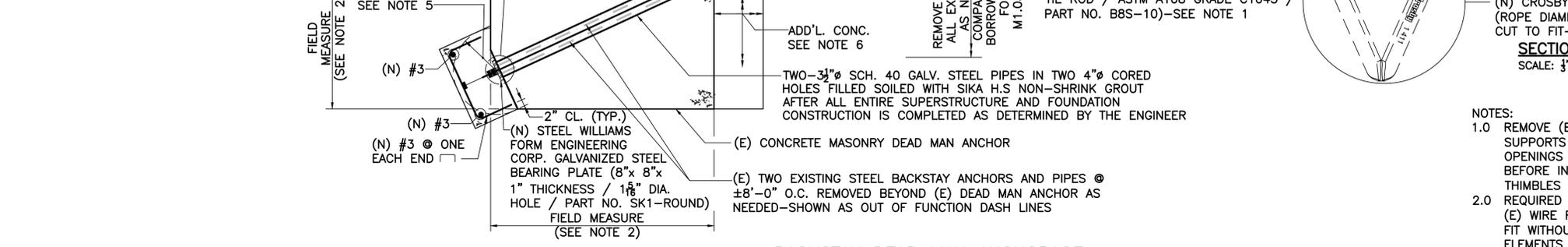
BETTERMENT REPAIRS & DETAILS



- NOTES:**
- ALL NEW BACKSTAY HARDWARE SHALL BE MANUF. BY THE CROSBY GROUP, INC., TULSA, OK. INSTALL AND TORQUE WIRE ROPE CLIPS AS PER MANUF. SPECIFICATIONS.
 - FIELD ADJUST TURNBUCKLE IN CONJUNCTION WITH SUSPENDER RODS AS REQUIRED TO MAINTAIN A FLAT PLANE ALONG THE WALKWAY SURFACE BETWEEN CENTERLINE OF THE BOTH EXISTING PLYONS.

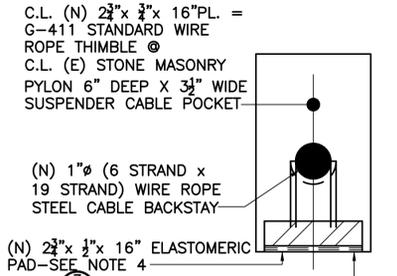


DETAIL C
SCALE: 1"=1'-0"

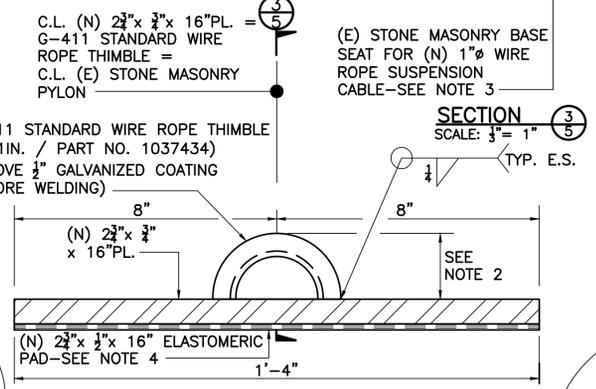


BACKSTAY DEAD MAN ANCHORAGE
SCALE: 1/2"= 1'-0"

- BACKSTAY: DO NOT KINK AND/OR BEND (N) BACKSTAY (TURNBUCKLE, JAW END FITTING, WIRE ROPE & WILLIAMS FORM ENGINEERING CORP. DEAD MAN CONNECTION AND ANCHOR EMBEDMENT ALONG CRITICAL POINT "A".
- FIELD MEASURE AFTER (E) WIRE ROPE SUSPENSION CABLE ARE REMOVED ALONG THE (E) BRIDGE SUPERSTRUCTURE.
- (E) BACKSTAY ANCHORS ALONG BOTH EXISTING STONE MASONRY PLYONS ARE HORIZONTALLY ±8'-0" APART.
- AFTER ALL EXISTING WIRE ROPE SUSPENSION CABLES ARE REMOVED WHEN AND AS DIRECTED BY THE ENGINEER REMOVE ALL FOUR EXISTING ANCHORED BACKSTAY'S CONNECTED TO (E) DEAD MAN BELOW THE EXISTING GRADE. INSTALL FOUR (N) WILLIAMS FORM ENGINEERING CORP. DEAD MAN ANCHOR EMBEDMENT IN (N) 4-4" CORED HOLES ±7'-6" APART THROUGH ENTIRE (E) DEAD MAN ANCHOR (1 1/2"-7 UNC THREADED TIE ROD / ASTM A108 GRADE C1045 / PART NO. B8S-10) INCLUDING ONE WILLIAMS FORM ENGINEERING CORP. GALVANIZED STEEL BEARING PLATE (8"x 8"x 1" THICKNESS / 1 1/8" DIA. HOLE / PART NO. SK1-ROUND) WITH TWO H1F HEAVY DUTY UNC HEX NUTS OVER ONE R9F HARDEN WASHER MANUF. BY WILLIAMS FORM ENGINEERING CORP.
- AFTER ALL NEW BRIDGE REHABILITATION CONSTRUCTION IS COMPLETED AS DETERMINED BY THE ENGINEER ALL (N) STRUCTURAL STEEL HARDWARE I.E. BACKSTAY HARDWARE, NUTS AND BEARING PLATE SHALL BE ENCASED WITH MASSDOT 5,000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE AT LEAST 16" OVER ALL (N) STRUCTURAL STEEL SURFACES BELOW GRADE AROUND ALL FOUR (N) BACKSTAY ANCHORS ALONG EACH (E) DEAD MAN ANCHOR EACH SIDE OF THE BRIDGE MAIN SPAN.
- BASED ON (E) DEAD MAN SIZE ADDITIONAL CONCRETE MASONRY SHALL BE ADDED ATOP THE EXISTING DEAD MAN AS DETERMINED BY THE ENGINEER WITH MASSDOT 5,000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE ALONG THE (E) DEAD MAN ANCHOR. A MAXIMUM CONCRETE QUANTITY OF 4 CUBIC YARDS OF CONCRETE PER EXISTING DEAD MAN ANCHOR INCLUSIVE AND INCLUDED IN THE LUMP SUM BID COST FOR THIS PROJECT.
- CRITICAL: PRIOR TO PROCEEDING AND COMPLETION OF ALL SIX ITEMS NOTED ABOVE THE CONTRACTOR SHALL PROVIDE THE ENGINEER A WRITTEN AND/OR GRAPHICAL SCHEMATIC OF THE SEQUENCE AND PROCEDURE OF ALL OPERATIONS REQUIRED TO COMPLETE ITEMS ONE TO SIX NOTED ABOVE BEFORE COMPLETING ALL SIX CONSTRUCTION OPERATIONS AS RELATED TO THE CONSTRUCTION PLANS INCLUDING ALL CHANGES AND/OR ALTERATIONS IF PROPOSED AND REQUESTED BY THE GENERAL CONTRACTOR.



SECTION 3
SCALE: 3/8"= 1"



SECTION WIRE ROPE BEARING SEAT
SCALE: 3/8"= 1"

- NOTES:**
- REMOVE (E) WIRE ROPE BASE SUPPORTS ALONG ALL (E) BASE SUPPORTS FOUND WITHIN ALL FOUR (E) 1" WIRE ROPE SUSPENDER OPENINGS ALONG BOTH PLYONS FOR FINAL APPROVAL BY THE ENGINEER BEFORE INSTALLATION OF ALL (N) CROSBY G-411 STANDARD WIRE ROPE THIMBLES (ROPE DIAMETER 1 IN. / PART NO. 1037434) SHOWN ABOVE.
 - REQUIRED DEPTH: TO BE FIELD MEASURED BASED ON FINAL (N) WIRE ROPE SIZE, (E) WIRE ROPE OPENING SIZE & FINAL (N) WIRE ROPE BACKSTAY GEOMETRY TO FIT WITHOUT INTERFERENCE ALONG THE ALL (N) AND (E) STRUCTURAL BRIDGE ELEMENTS TO REMAIN IN SERVICE
 - ENTIRE FINAL PYLON WIRE ROPE BEARING SEAT SHALL BE HOT-DIPPED GALVANIZED AND PAINTED PRIOR TO INSTALLATION-SEE SHEET 2 FOR SPECIFICATIONS.
 - NEW ELASTOMERIC PAD SHALL HAVE A HARDNESS OF 60 DUROMETER.
 - TEMPORARILY REMOVE (E) STONE MASONRY ALONG THE SIDES AND TOP OF EXISTING OPENING WIRE-ROPE OPENING TO INSTALL AND FIT-TIGHT (N) STRUCTURAL STEEL WIRE ROPE BEARING AS SEAT SHOWN. REINSTALL ALL (E) STONE MASONRY IN-KIND ALONG EACH EXISTING WIRE ROPE OPENING WITH RESPECT ORIGINAL FIELD CONDITION PRIOR TO THE START OF ALL NEW CONSTRUCTION.

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