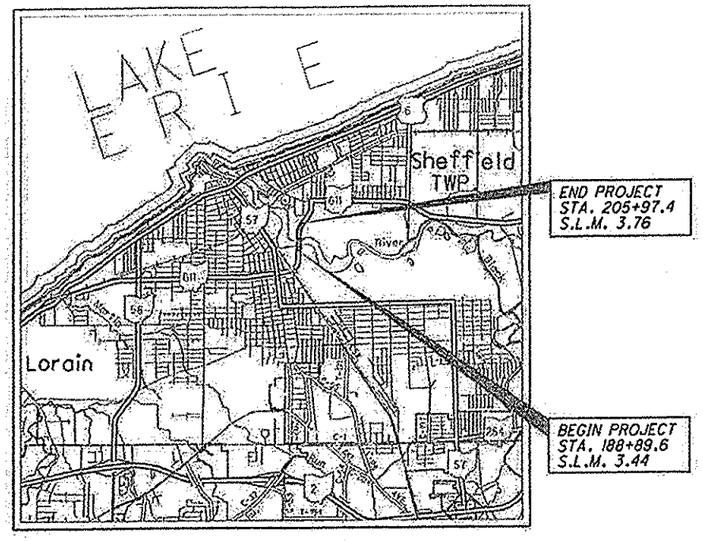

LOCATION MAP

LATITUDE: N 41°27'25" LONGITUDE: W 82°09'40"

SCALE IN MILES 0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2016)	14,500
DESIGN YEAR ADT (2036)	15,280
DESIGN HOURLY VOLUME (2036)	1,530
DIRECTIONAL DISTRIBUTION	52%
TRUCKS (24 HOUR B&C)	6%
DESIGN SPEED	35 MPH
LEGAL SPEED	35 MPH

DESIGN FUNCTIONAL CLASSIFICATION: URBAN PRINCIPAL ARTERIAL

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS PROTECTIVE SERVICE CALL: 1-800-925-0988

PREPARED AND RECOMMENDED BY:

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD OHIO 44902
PHONE: (419) 524-0074 FAX: (419) 524-1812

ENGINEERS SEAL:

STATE OF OHIO Kurt A. Kapustka PE-67087 REGISTERED PROFESSIONAL ENGINEER

SIGNED: Kurt A. Kapustka
DATE: September 30, 2015

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

LOR-611-3.44

CITY OF LORAIN

LORAIN COUNTY

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PROJECT DESCRIPTION

THE PROPOSED PROJECT IS REPAIR OF THE STEEL THROUGH TRUSS STRUCTURE INCLUDING STIFFENING TRUSS GUSSET PLATES; DECK JOINT REPLACEMENT; STEEL CRACK RETROFIT; CATWALK REPAIR; CATWALK REPLACEMENT; SPOT PAINTING AND CAULKING; CONCRETE PATCHING; WEARING SURFACE SEALING; OTHER MINOR BRIDGE REPAIRS; NAVIGATION LIGHT REPLACEMENT; APPROACH RETAINING WALL RECONSTRUCTION; AND APPROACH EMBANKMENT STABILIZATION.

PROJECT LENGTH 0.32 MILE

PROJECT EARTH DISTURBED AREA:	N/A (MAINTENANCE PROJECT)
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	N/A (MAINTENANCE PROJECT)
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A (MAINTENANCE PROJECT)

2013 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVED THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEET 14 , AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED
DATE 10/14/2015 DISTRICT DEPUTY DIRECTOR

APPROVED
DATE 10-23-15 DIRECTOR, DEPARTMENT OF TRANSPORTATION

STANDARD CONSTRUCTION DRAWINGS

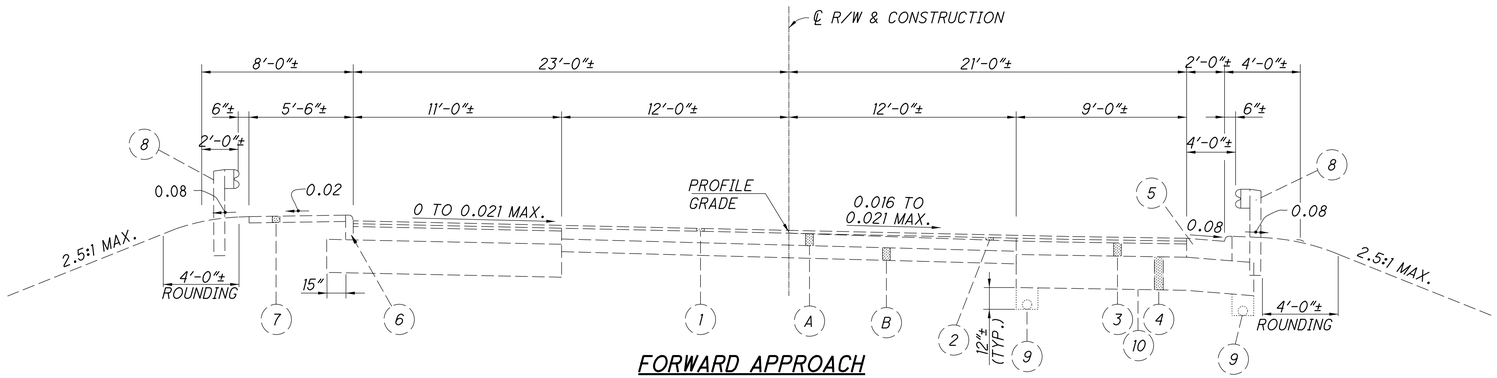
BP-3.1	7-18-14	MGS-1.1	7-19-13	MT-95.31	7-18-14	TC-41.20	10-18-13	EXJ-4-87	7-19-02				
BP-5.1	7-19-13	MGS-2.1	7-19-13	MT-95.32	7-18-14	TC-42.20	10-18-13						
		MGS-3.1	7-18-14	MT-95.41	7-18-14	TC-52.10	10-18-13						
F-1.1	7-19-13			MT-101.60	7-19-13	TC-52.20	7-18-14						
				MT-101.70	1-17-14	TC-61.30	7-18-14						
DM-1.1	1-18-13			MT-105.10	7-19-13								
DM-4.2	7-20-12			MT-110.10	7-19-13								
DM-4.3	7-19-13												
DM-4.4	7-20-12												
RM-4.2	4-18-14												

SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS
800	10-16-2015	
821	4-20-2012	
830	1-17-2014	
832	1-17-2014	
843	4-18-2003	
847	7-17-2015	
849	1-18-2013	
921	4-20-2012	

FEDERAL PROJECT NO. E140(707)
PID NO. 92009
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
LOR-611-3.44
1 / 234

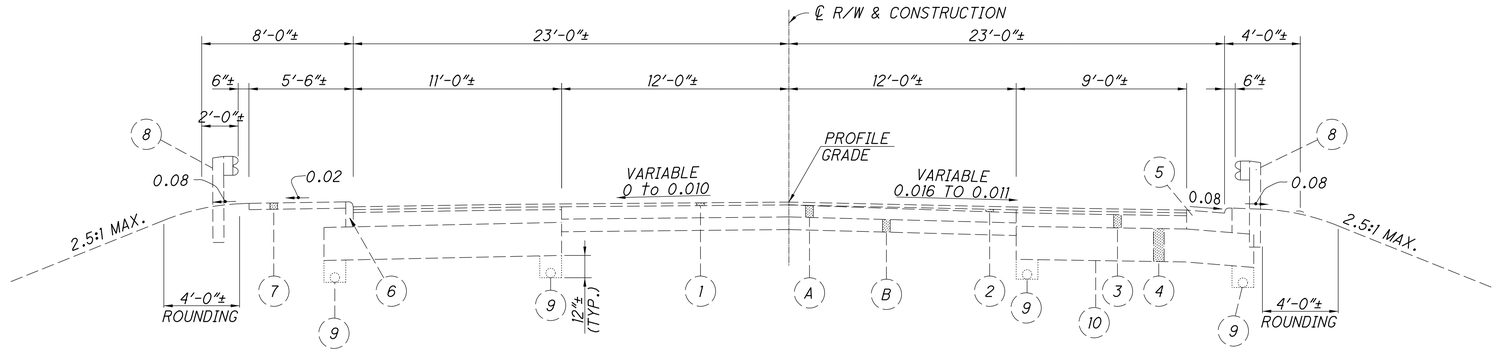
LOR - SR 611-03.44
160023 PID - 92009
Dist 3 1/14/2016

F:\2011\111048 LOR-611\92009\roadway\sheets\

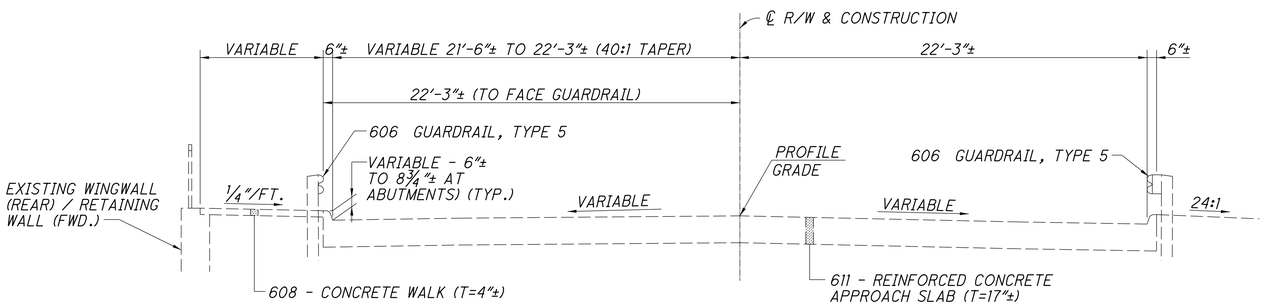


FORWARD APPROACH SUPERELEVATED SECTION

STA. 206+27.4 TO STA. 213+50 = 722.6 LIN. FT.



FORWARD APPROACH NORMAL SECTION



APPROACH SLAB SECTION

(1987 SPECIFICATIONS)

ORIGINAL CONSTRUCTION

(A) 11"± ASPHALT CONCRETE

(B) 8"± WATERBOUND MACADAM BASE

EXISTING ITEM LEGEND (1997 SPECIFICATIONS)

(1) 448 1 ¼"± ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-28

(2) 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-28

(3) 301 8"± BITUMINOUS AGGREGATE BASE, PG64-22

(4) 304 24"± AGGREGATE BASE

(5) 609 COMBINATION CURB AND GUTTER, TYPE 2

(6) 609 CURB, TYPE 6

(7) 608 4"± CONCRETE WALK

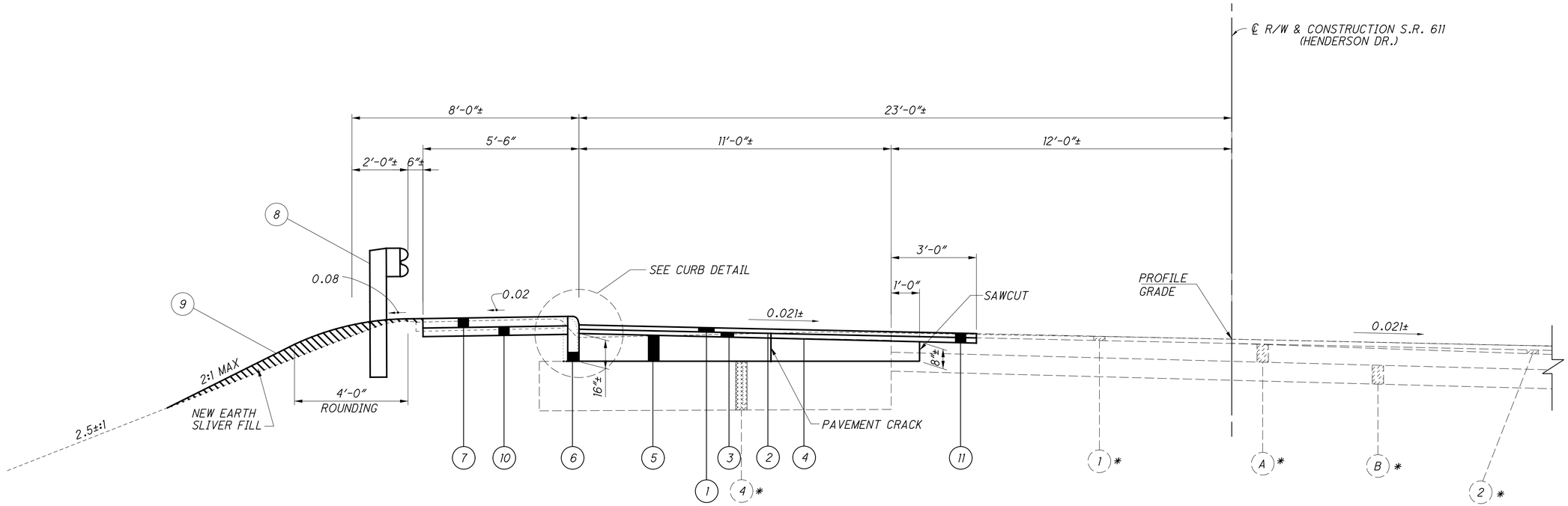
(8) 606 GUARDRAIL, TYPE 5

(9) 605 6"± SHALLOW PIPE UNDERDRAIN

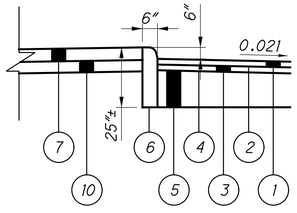
(10) SPECIAL GEOTEXTILE FABRIC, TYPE D

EXISTING TYPICAL SECTIONS

LOR-611-3.44



FORWARD APPROACH
SUPERELEVATED SECTION
STA. 209+72 TO 210+72



CURB DETAIL

PROPOSED LEGEND

(1) ITEM 441 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
(2) ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (APPLICATION RATE 0.04 GAL/S.Y.)
(3) ITEM 441 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)
(4) ITEM 407 TACK COAT (APPLICATION RATE 0.075 GAL/S.Y.)
(5) ITEM 301 ASPHALT CONCRETE BASE, PG64-22 (VARIABLE THICKNESS)
(6) ITEM 609 CURB, TYPE 6, AS PER PLAN
(7) ITEM 608 4" CONCRETE WALK
(8) ITEM 606 GUARDRAIL REBUILT, AS PER PLAN NO. 2 (TYPE 5)
(9) ITEM 659 SEEDING AND MULCHING
(10) ITEM 304 3" AGGREGATE BASE
(11) ITEM 254 PAVEMENT PLANING, ASPHALT CONCRETE (3" THICK)

NOTE:
*FOR EXISTING ITEM LEGEND SEE SHEET 2.

TYPICAL SECTIONS

LOR-611-3.44

CALCULATED JDL CHECKED TJF

GENERAL NOTES

ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ESTIMATED QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

ELECTRIC:

OHIO EDISON CO. (DISTRIBUTION)
6326 LAKE AVENUE
ELYRIA, OHIO 44035
ATTN.: JEFF HALL
(440) 326-3207

OHIO EDISON CO. (TRANSMISSION)
76 SOUTH MAIN STREET
AKRON, OHIO 44308
ATTN.: CARLOS MUNOZ
(330) 384-4835

COMMUNICATIONS:

CENTURYLINK
203 WEST 9TH STREET
LORAIN, OHIO 44052
ATTN.: ROBERT DAKIN
(440) 244-8330

CABLE:

TIME WARNER CABLE
576 TERNES AVE.
ELYRIA, OHIO 44035
ATTN.: DAVID SOBOTKA
(440) 366-0417

THERE ARE NO KNOWN UNDERGROUND UTILITIES ON THIS PROJECT.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S DATUM.

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: RTK VRS GPS
MONUMENT TYPE: B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: 12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83(2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONIC CONFORMAL
COORDINATE SYSTEM: OHIO STATE PLAN NORTH ZONE
COMBINED SCALE FACTOR: 0.999915937
ORIGIN OF COORDINATE SYSTEM: X=0, Y=0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

PROJECT BEARINGS

BEARINGS WERE TRANSFERRED BY RTK GLOBAL POSITIONING TRAVERSE ORIGINATING ON THE ODOT CORS VRS NETWORK, AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2011), NORTH ZONE.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

ITEM 659 - SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDING AREAS:

659, SOIL ANALYSIS TEST	2	EACH
659, TOPSOIL	301	C.Y.
659, SEEDING AND MULCHING	2711	S.Y.
659, REPAIR SEEDING AND MULCHING	136	S.Y.
659, INTER-SEEDING	136	S.Y.
659, COMMERCIAL FERTILIZER	0.37	TON
659, LIME	0.56	ACRE
659, WATER	16	M GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE OF THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR ITEM 659, SEEDING AND MULCHING, ARE BASED ON THESE LIMITS.

THE CLASS 3C CROWN VETCH MIXTURE SHALL BE USED ON ALL SLOPES STEEPER THAN 3:1.

FENCE LENGTHS

THE LENGTHS OF FENCE SHOWN IN THE PLANS ARE HORIZONTAL DIMENSIONS. MEASUREMENTS OF THE FINAL QUANTITIES WILL BE IN ACCORDANCE WITH ITEM 607.

ITEM 607 - FENCE REBUILT, TYPE CL, AS PER PLAN

REMOVE EXISTING, DAMAGED FENCE COMPONENTS AND CAREFULLY RECONDITION AND RE-ERECT FENCE AND COMPONENT PARTS AS DETAILED ON THE PLANS. DO NOT DAMAGE THE FENCE OR COMPONENT PARTS. ANY NEW PARTS WHICH ARE NEEDED, AS DETERMINED BY THE ENGINEER, WILL BE SUPPLIED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. FENCE ITEMS REMOVED THAT CAN NOT BE REUSED SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST.

THE AMOUNT OF REBUILT FENCE TO BE PAID FOR WILL BE THE NUMBER OF FEET REBUILT, COMPLETE IN PLACE AND MEASURED AS PROVIDED FOR IN 607.09.

PAYMENT FOR THE ABOVE WILL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR ITEM 607, FENCE REBUILT, TYPE CL, AS PER PLAN AND SHALL INCLUDE THE COSTS FOR REMOVAL AND REUSE OR DISPOSAL OF EXISTING FENCE AND ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM.

PROJECT CONTROL TABLE

POINT	STATION	OFFSET	NORTH	EAST	DESCRIPTION
PROJECT CONTROL - STATION/OFFSET TO CENTERLINE EXISTING R/W SR 611					
SV1	211+01.67	26.33' LT.	10,493.3742	10,637.1265	MAG NAIL IN SIDEWALK
SV2	208+24.51	26.68' LT.	10,229.4760	10,532.5842	MAG NAIL IN SIDEWALK
EXISTING CENTERLINE OF SR 611 - STATION OFFSET TO EXISTING CENTERLINE R/W SR 611					
P.O.T.	167+00.00	CL	7,190.2848	8,931.3907	
P.C.	174+91.56	CL	7,292.0151	9,716.3862	
P.I.	182+52.04	CL	7,389.7512	10,470.5602	
P.T.	187+48.67	CL	8,150.0155	10,488.6935	
P.C.	206+26.70	CL	10,027.5104	10,533.4744	
P.I.	209+44.50	CL	10,345.2274	10,541.0524	
P.T.	212+40.31	CL	10,595.0947	10,737.4394	
P.C.	219+73.72	CL	11,171.7142	11,190.6423	
P.I.	223+57.44	CL	11,473.4077	11,427.7628	
P.T.	227+14.28	CL	11,857.0557	11,435.4605	
P.O.T.	231+29.50	CL	12,272.1839	11,443.7898	

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN IN AASHTO M 180. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

ITEM 606 - GUARDRAIL REBUILT, AS PER PLAN NO. 1

THIS ITEM INCLUDES REMOVING THE EXISTING GUARDRAIL AS NECESSARY AT THE EAST FORWARD ABUTMENT PILASTER THAT WILL BE RECONSTRUCTED AND THE WEST FORWARD FENCE RAILING ON THE RECONSTRUCTED WALL TO ALLOW FOR PROPER CONSTRUCTION OF THESE PROPOSED ITEMS. ALL GUARDRAIL COMPONENTS SHALL BE STORED BY THE CONTRACTOR AND REINSTALLED WHEN THE ABOVE MENTIONED STRUCTURE ITEMS ARE COMPLETED. ANY ADDITIONAL OR REPLACEMENT HARDWARE AND MATERIAL SHALL BE INCLUDED AS PER CMS 606.05. GUARDRAIL ITEMS REMOVED THAT CAN NOT BE REUSED SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST.

PAYMENT SHALL BE MADE AT CONTRACT UNIT PRICE BID FOR ITEM 606 - GUARDRAIL REBUILT, AS PER PLAN NO. 1 AND SHALL INCLUDE ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM AS DESCRIBED ABOVE.

ITEM 606 - GUARDRAIL REBUILT, AS PER PLAN NO. 2

THIS ITEM INCLUDES REMOVING THE EXISTING GUARDRAIL AS SHOWN IN THE PLANS AT THE WEST END THROUGH THE LIMITS OF THE PAVEMENT REPAIR WORK TO ALLOW FOR PROPER CONSTRUCTION. ALL GUARDRAIL COMPONENTS SHALL BE STORED BY THE CONTRACTOR AND REINSTALLED WHEN THE ABOVE MENTIONED WORK IS COMPLETED. ANY ADDITIONAL OR REPLACEMENT HARDWARE AND MATERIAL SHALL BE INCLUDED AS PER CMS 606.05. GUARDRAIL ITEMS REMOVED THAT CAN NOT BE REUSED SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST.

PAYMENT SHALL BE MADE AT CONTRACT UNIT PRICE BID FOR ITEM 606 - GUARDRAIL REBUILT, AS PER PLAN NO. 2 AND SHALL INCLUDE ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM AS DESCRIBED ABOVE.

LOR-611-3.44

PROTECTION OF RIGHT-OF-WAY LANDSCAPING AREAS

PRIOR TO BEGINNING WORK, THE CONTRACTOR, THE PROJECT ENGINEER, AND A REPRESENTATIVE OF THE MAINTAINING AGENCY WILL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT OF WAY (BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS) A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEER'S FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE.

CONSTRICT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. USE OF THESE AREAS FOR DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED. THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER.

TOPSOIL

TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE EXCAVATED OR FILLED. ADDITIONAL SUITABLE MATERIAL REQUIRED TO FILL THE TOPSOIL STRIP AREA IN EMBANKMENT AREAS, TOPSOIL STRIPPING AND ANY STOCKPILING INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT BID ITEM 203 - EXCAVATION OR ITEM 203 - EMBANKMENT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED.

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. BENCH ALL OTHER SLOPED EMBANKMENT AREAS AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05.

EARTHWORK FOR PROJECT TRANSITION

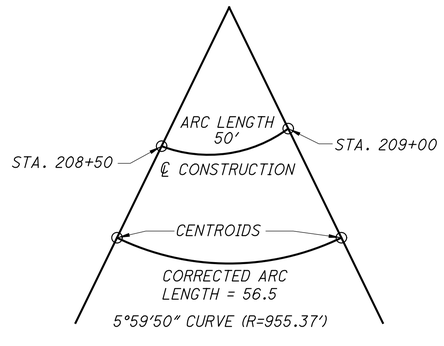
A ESTIMATED QUANTITY OF ITEM 203 - EMBANKMENT AND ITEM 203 - EXCAVATION IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO TAPER THE EARTHWORK INTO THE EXISTING AT THE BEGIN/END OF THE PROPOSED WORK.

203, EXCAVATION	50 C.Y.
203, EMBANKMENT	50 C.Y.

EARTHWORK CORRECTIONS FOR CURVATURE

IN CERTAIN AREAS, THE CURVATURE OF THE ROADWAY HAS A SIGNIFICANT EFFECT ON THE VOLUMES OF CUT AND FILL. THESE AREAS EXIST WHERE THE CENTROID OF EITHER AREA IS SIGNIFICANTLY DISPLACED FROM THE CENTERLINE (SEE EXAMPLE BELOW). WHENEVER THE TRUE VOLUME OF CUT OR FILL, BASED ON THE CENTROIDAL ARC LENGTH, DIFFERED BY ONE CUBIC YARD PER YARD OF DISTANCE BETWEEN ADJACENT CROSS SECTIONS FROM THE ESTIMATED VOLUMES BASED ON THE SURVEY LENGTH, A CORRECTION HAS BEEN MADE IN THE CROSS SECTIONS. THE EARTHWORK ADJUSTMENTS ARE LOCATED AT THE FOLLOWING LOCATIONS:

FROM STATION 208+50 TO STATION 211+50



EXAMPLE CALCULATIONS

ITEM 204 - GEOTEXTILE FABRIC, AS PER PLAN

THIS ITEM SHALL CONFORM TO CMS ITEM 204 WITH THE EXCEPTION THAT THE GEOTEXTILE FABRIC SHALL CONFORM TO CMS 712.09, TYPE B. THE DUMPED ROCK FILL, TYPE C SHALL BE WRAPPED IN ITS ENTIRETY ON THE TOP, THE BOTTOM AND AROUND (ALL SIDES). THIS ITEM SHALL BE PLACED AS SHOWN IN THE PLANS. GEOTEXTILE FABRIC SHALL BE PAID FOR AT THE UNIT PRICE BID PER SQUARE YARD FOR ITEM 204 - GEOTEXTILE FABRIC, AS PER PLAN. THIS PRICE SHALL INCLUDE THE COST FOR ALL MATERIAL, EQUIPMENT, LABOR, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK STATED ABOVE.

ITEM 301 - ASPHALT CONCRETE BASE, PG64-22 (VARIABLE THICKNESS)

AN ESTIMATED QUANTITY OF ITEM 301 - ASPHALT CONCRETE BASE, PG64-22 IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR ANY ADDITIONAL PAVEMENT REPAIR THICKNESS ABOVE WHAT IS PROVIDED IN THE CALCULATIONS TO PROPERLY CONSTRUCT THE PAVEMENT REPAIR WORK.

301, ASPHALT CONCRETE BASE, PG64-22 (VARIABLE THICKNESS)	25	C.Y.

ITEM 304 - AGGREGATE BASE

AN ESTIMATED QUANTITY OF ITEM 304 - AGGREGATE BASE IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR WALK TIE-INS AT THE BEGINNING AND END OF THE PAVEMENT REPAIR WORK.

304, 3" AGGREGATE BASE	2	C.Y.

ITEM 608 - CONCRETE WALK

AN ESTIMATED QUANTITY OF ITEM 608 - CONCRETE WALK IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR WALK TIE-INS TO EXISTING WALK AT THE BEGIN AND END OF THE PAVEMENT REPAIR WORK.

608, 4" CONCRETE WALK	200	S.F.

ITEM 304 - AGGREGATE BASE, AS PER PLAN

THIS ITEM SHALL CONFORM TO CMS SPECIFICATIONS FOR ITEM 304 - AGGREGATE BASE WITH THE EXCEPTION THAT ONLY CCS AND CRUSHED GRAVEL AS PER CMS 703.17 SHALL BE USED AND COMPACTION SHALL CONFORM TO CMS 203. THIS ITEM SHALL BE PLACED WHERE SHOWN IN THE PLANS AS PART OF THE EMBANKMENT STABILIZATION. THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID PER CUBIC YARD FOR ITEM 304 - AGGREGATE BASE, AS PER PLAN. THIS PRICE SHALL INCLUDE THE COST FOR ALL MATERIAL, EQUIPMENT, LABOR, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK STATED ABOVE.

ITEM 601 - DUMPED ROCK FILL, TYPE C, AS PER PLAN

THE DUMPED ROCK MATERIAL SHALL BE FREE DRAINING CRUSHED AGGEGATE WITH A MINIMIM UNIT WEIGHT OF 135 POUNDS PER CUBIC FOOT. THE MATERIAL SHALL BE A MIX OF LARGER AND SMALLER AGGREGATES WITH THE PREDOMINANT MATERIAL SIZE IN CONFORMANCE WITH CMS 703.19, TYPE C. SLAG AND CRUSHED CONCRETE SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL SUBMIT THE PROPOSED AGGREGATE AND MEASURED UNIT WEIGHT FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK.

PAYMENT SHALL BE MADE AT CONTRACT UNIT PRICE BID FOR ITEM 601 - DUMPED ROCK FILL, TYPE C, AS PER PLAN AND SHALL INCLUDE ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM AS DESCRIBED ABOVE.

ITEM 609 - CURB, TYPE 6, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT CMS AND SCD ITEM 609 - CURB, TYPE 6, AS PER PLAN SHALL BE 25 INCHES± IN HEIGHT AND SHALL BE PLACED AT THE BOTTOM OF THE NEW ASPHALT CONCRETE BASE AND ON TOP OF THE EXISTING AGGREGATE BASE. ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT THIS ITEM SHALL BE INCLUDED IN THE UNIT COST FOR ITEM 609 - CURB, TYPE 6, AS PER PLAN.

ITEM SPECIAL - PIPE CLEANOUT, 24" AND UNDER
ITEM 611 - CATCH BASIN, MISC.: CATCH BASIN CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS AND CATCH BASINS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER. CLEANOUT OF THE PIPE AND CATCH BASIN SHALL BE PAID FOR AT THE UNIT PRICE BID PER FOOT FOR ITEM SPECIAL - PIPE CLEANOUT, 24" AND UNDER AND PER EACH FOR ITEM 611 - CATCH BASIN, MISC.: CATCH BASIN CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR ALL MATERIAL, EQUIPMENT, LABOR, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK STATED ABOVE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER TO COMPLETE THE WORK DESCRIBED ABOVE:

SPECIAL, PIPE CLEANOUT, 24" AND UNDER	150	FT.
611, CATCH BASIN, MISC.: CATCH BASIN CLEANOUT	2	EACH

EXISTING UNDERDRAINS

PROVIDE UNOBSTRUCTED OUTLETS FOR ALL EXISTING UNDERDRAINS ENCOUNTERED DURING CONSTRUCTION.

PROVIDE AN OUTLET PER STANDARD CONSTRUCTION DRAWING DM-1.1 FOR ALL UNDERDRAINS THAT OUTLET TO A SLOPE.

UNDERDRAINS THAT CAN BE CONNECTED TO THE NEW OR EXISTING UNDERDRAINS AT THE END OF THE PROJECT LIMITS AS WELL AS ALL NECESSARY BENDS OR BRANCHES REQUIRED FOR CONNECTION ARE INCLUDED IN THE BASIS OF PAYMENT FOR UNCLASSIFIED PIPE UNDERDRAINS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY:

611, PRECAST REINFORCED CONCRETE OUTLET	1	EACH
611, 6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41	25	FT.
605, 6" UNCLASSIFIED PIPE UNDERDRAINS	25	FT.

BMP EROSION CONTROL

THE CONDITIONS OF THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT (SEE PERMIT) SHALL BE MET DURING ALL STAGES OF CONSTRUCTION. THE LOCATION AND TIMING OF ALL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE FIELD ADJUSTED TO PREVENT SIGNIFICANT IMPACTS ON RECEIVING WATERS. IMPLEMENTATION OF EROSION CONTROL ITEMS SHALL CONTINUE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL SUCH TIME THAT THE UPSLOPE DISTURBED AREAS ARE STABILIZED.

INSTALLATION OF SEDIMENT BASINS/DAMS, PERIMETER FILTER FABRIC FENCE, AND DITCH CHECKS SHALL BE AS PER CONSTRUCTION AND MATERIAL SPECIFICATION 832.04.

ALL REASONABLE ATTEMPTS SHALL BE MADE TO MINIMIZE THE TOTAL AREA OF DISTURBED LAND.

AREAS TO REMAIN DORMANT FOR MORE THAN 14 DAYS SHOULD BE IMMEDIATELY STABILIZED WITH CONSTRUCTION SEEDING AND MULCHING, EROSION CONTROL MATTING OR OTHER APPROPRIATE EROSION CONTROL MEASURES.

PRIOR TO CONSTRUCTION, THE CONTRACTOR IS TO IDENTIFY APPROPRIATE LOCATIONS FOR EROSION CONTROL ITEMS.

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

832, EROSION CONTROL	10000	EACH

ENVIRONMENTAL CONSIDERATIONS

AREAS TO REMAIN DORMANT FOR MORE THAN 14 DAYS SHOULD BE IMMEDIATELY STABILIZED WITH TEMPORARY SEEDING AND MULCHING, EROSION CONTROL MATTING OR OTHER APPROPRIATE EROSION CONTROL MEASURES.

THE PROJECT IS LOCATED WITHIN THE KNOWN SUMMER BREEDING RANGE OF THE INDIANA BROWN BAT, A FEDERALLY ENDANGERED SPECIES. THE SUMMER ROOSTING AND BROOD REARING HABITAT OF THIS SPECIES IS IN LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES. TREE REMOVAL WILL ONLY BE DONE PRIOR TO APRIL 15TH OR AFTER SEPTEMBER 15TH WHEN THIS SPECIES IS NOT USING SUCH HABITAT.

CALCULATED JDL CHECKED TJF

GENERAL NOTES

LOR-611-3.44

ITEM 614 - MAINTAINING TRAFFIC

STATE ROUTE 611:

TWO (2) LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES SUBJECT TO RESTRICTIONS AND EXCEPTIONS LISTED BELOW.

A MINIMUM OF ONE (1) LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED DURING THE FOLLOWING WORK OPERATIONS:

1) DURING STRUCTURAL REHABILITATION AND PAINTING OVER OR ADJACENT TO THE TWO DIRECTIONAL PAVEMENT LANES, THE TWO LANES WILL BE CLOSED TO TRAFFIC USING DRUMS AND PORTABLE CONCRETE BARRIER WITH TWO-WAY TRAFFIC MAINTAINED AS PER DETAILS ON SHEETS 8 TO 13 .

2) DURING RECONSTRUCTION OF THE FORWARD APPROACH EMBANKMENT SLOPES AND ADJACENT LANE, THE ADJACENT TWO DIRECTIONAL PAVEMENT LANES WILL BE CLOSED TO TRAFFIC USING DRUMS AND PORTABLE CONCRETE BARRIER WITH TWO-WAY TRAFFIC MAINTAINED ON THE OPPOSITE TRAFFIC LANES AS PER DETAILS ON SHEETS 8 TO 13 .

3) DURING OTHER PERIODS WHEN THE CONTRACTOR IS WORKING IN OR NEAR A TRAFFIC LANE, THE ADJACENT LANE SHALL BE CLOSED TO TRAFFIC DURING WORKING HOURS ONLY USING DRUMS AS PER STANDARD CONSTRUCTION DRAWINGS MT-95.31 OR MT-95.32.

SR 611 COMPLETE WEEKEND CLOSURE MAY BE IMPLEMENTED FOR INSTALLATION OF NEW BRIDGE DECK EXPANSION JOINTS THE FULL WIDTH OF THE BRIDGE ROADWAY. THE COMPLETE CLOSURE AND TRAFFIC DETOUR SHALL BE LIMITED TO TWO (2) WEEKENDS. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OHIO DEPARTMENT OF TRANSPORTATION, THE LORAIN CITY MAYOR, AND PROJECT ENGINEER A MINIMUM OF 1 WEEK IN ADVANCE OF THE ANTICIPATED DATE OF THE DETOUR. THE TWO (2) WEEKENDS CLOSURES SHALL NOT COINCIDE WITH PLANNED CLOSURES OR WORK ON THE U.S.R. 6 (ERIE AVE.) CHARLES BERRY MOVABLE BRIDGE. THE CLOSURE SHALL BE LIMITED TO A MAXIMUM DURATION OF 9:00 P.M. FRIDAY TO 5:00 A.M. MONDAY. WORK MUST BE CONTINUOUSLY PERFORMED WHILE THE LANES ARE CLOSED. IF THERE IS NO WORK BEING PERFORMED THE LANES MUST BE OPEN TO TRAFFIC. THE WEEKEND CLOSURE SHALL NOT BE SCHEDULED WHEN THERE IS A HOLIDAY OR SPECIAL EVENT RESTRICTION. SEE SHEET 14 FOR DETOUR PLAN.

NO WORK SHALL BE PERFORMED AND A MINIMUM OF ONE LANE IN EACH DIRECTION SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

CHRISTMAS	FOURTH OF JULY
NEW YEARS	LABOR DAY
MEMORIAL DAY	THANKSGIVING
	(OTHER HOLIDAY OR EVENT)

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY OR EVENT FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THIS PERIOD:

DAY OF HOLIDAY OR EVENT	TIME ALL LANES MUST BE OPEN
SUNDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00N FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00N MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 6:00 AM FRIDAY
THURSDAY (THANKSGIVING ONLY)	12:00N WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00N THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF $50 FOR EACH MINUTE THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

THE DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION ON MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS

LOCAL ACCESS:

ACCESS TO ALL EXISTING SIDE STREETS AND DRIVEWAYS WITHIN THE LIMITS OF THE M.O.T. OPERATIONS SHALL BE MAINTAINED AT ALL TIMES.

PEDESTRIANS:

DURING THE PERIODS WHEN THE LEFT (WEST) TRAFFIC LANES ARE CLOSED TO TRAFFIC, UNDER ITEM 1 AND 2 ABOVE, AND DURING ANY OTHER WORK PERIOD WHEN THERE IS POTENTIAL DANGER TO PEDESTRIANS, THE BRIDGE AND APPROACH SIDEWALK SHALL BE CLOSED TO PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND SUBSEQUENTLY REMOVE THE "SIDEWALK CLOSED" SIGNS AT THE LOCATIONS DETAILED ON SHEETS 8, 9 AND 14 .

THE CONTRACTOR SHALL NOTIFY IN WRITING THE OHIO DEPARTMENT OF TRANSPORTATION, THE LORAIN CITY MAYOR, AND PROJECT ENGINEER A MINIMUM OF 1 WEEK IN ADVANCE OF THE ANTICIPATED DATE OF THE SIDEWALK CLOSURE.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

SEQUENCE OF CONSTRUCTION

GENERAL ONE 11 FOOT TRAVEL LANE IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES EXCEPT FOR THE DURATION SPECIFIED ON SHEET 14 WHEN THE PROPOSED DETOUR MAY BE IMPLEMENTED. FOR DETAILS ON PROPOSED STRUCTURE WORK, SEE SHEET 48.

PROPOSED WORK ITEMS NOT SPECIFICALLY LISTED AND UNAFFECTED BY THE MOT PHASING CAN BE PLACED IN ANY PHASE AS APPROVED BY THE ENGINEER.

PHASE 1

1. MERGE THE INSIDE NORTHBOUND SR 611 TRAFFIC INTO THE EXISTING OUTSIDE NORTHBOUND SR 611 TRAVEL LANE. MERGE AND SHIFT THE SOUTHBOUND SR 611 TRAFFIC INTO THE EXISTING INSIDE NORTHBOUND SR 611 LANE.
2. PLACE 32" PORTABLE CONCRETE BARRIER IN THE EXISTING INSIDE SOUTHBOUND SR 611 TRAVEL LANE TO SEPARATE THE NORTHBOUND AND SOUTHBOUND TRAFFIC FROM THE PROPOSED WORK AREA.
3. CLOSE THE SIDEWALK ON THE WEST SIDE OF THE ROAD TO PEDESTRIAN TRAFFIC.
4. CONTRACTOR ACCESS SHALL BE PERMITTED ON THE NORTH AND SOUTH ENDS OF THE PROJECT.
5. COMPLETE PROPOSED TOE BERM CONSTRUCTION ON WEST SIDE OF ROADWAY.
6. COMPLETE PAVEMENT RECONSTRUCTION ON EXISTING OUTSIDE SOUTHBOUND LANE.
7. REPLACE CURB, SIDEWALK, AND GUARDRAIL ON WEST SIDE OF ROADWAY.
8. REPLACE CONCRETE CAP ON WEST SIDEWALK RETAINING WALL.
9. REMOVE AND REBUILD WEST WINGWALL AND WEST BUTTRESS AT FORWARD ABUTMENT.
10. ADD STIFFENING ANGLES TO GUSSET PLATES ON WEST TRUSS.
11. REPLACE PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT PANEL 35 WITHIN WORK AREA.
12. REPLACE PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT FORWARD ABUTMENT WITHIN WORK AREA.
13. PATCH DECK WEARING SURFACE WITHIN WORK AREA.
14. SEAL JOINTS BETWEEN DECK WEARING SURFACE AND WEST CURB.
15. SEAL BRIDGE DECK WITH HMWM MATERIAL WITHIN WORK AREA.
16. CAULK OPEN BOLT HOLES IN THE WEST CURB.
17. REPLACE MISSING BOLTS IN THE WEST ROADWAY RAILING.
18. SPOT PAINT WEST TRUSS MEMBERS ABOVE ROADWAY.
19. CAULK APPLICABLE WEST TRUSS MEMBERS.
20. REPLACE MISSING PIGEON DOORS ON WEST TRUSS MEMBERS.
21. REPAIR DAMAGED DEFLECTION JOINT ARMOR WITHIN WORK AREA.

PHASE 2

1. MAINTAIN NORTHBOUND SR 611 TRAFFIC IN OUTSIDE LANE FROM PHASE 1. MERGE THE INSIDE SOUTHBOUND SR 611 TRAFFIC INTO THE EXISTING OUTSIDE SOUTHBOUND SR 611 TRAVEL LANE.
2. PLACE 32" PORTABLE CONCRETE BARRIER IN THE EXISTING INSIDE NORTHBOUND AND SOUTHBOUND SR 611 LANES TO SEPARATE NORTHBOUND AND SOUTHBOUND TRAFFIC FROM THE PROPOSED WORK AREA.
3. CONTRACTOR ACCESS SHALL BE PERMITTED ON THE NORTH AND SOUTH ENDS OF THE PROJECT.
4. REPLACE PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT PANEL 35 WITHIN WORK AREA.
5. REPLACE PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT FORWARD ABUTMENT WITHIN WORK AREA.
6. SEAL BRIDGE DECK WITH HMWM MATERIAL WITHIN WORK AREA.

PHASE 3

1. MAINTAIN SOUTHBOUND SR 611 TRAFFIC IN OUTSIDE LANE FROM PHASE 2. MERGE AND SHIFT NORTHBOUND SR 611 TRAFFIC INTO EXISTING INSIDE SOUTHBOUND SR 611 TRAVEL LANE.
2. PLACE 32" PORTABLE CONCRETE BARRIER IN THE EXISTING NORTHBOUND SR 611 INSIDE LANE TO SEPARATE NORTHBOUND AND SOUTHBOUND TRAFFIC FROM THE PROPOSED WORK AREA.
3. CONTRACTOR ACCESS SHALL BE PERMITTED ON THE NORTH AND SOUTH ENDS OF THE PROJECT.
4. ADD STIFFENING ANGLES TO GUSSET PLATES ON EAST TRUSS.
5. REPLACE FINAL PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT PANEL 35 WITHIN WORK AREA.
6. REPLACE FINAL PORTION OF MODULAR ROADWAY DECK EXPANSION JOINT AT FORWARD ABUTMENT WITHIN WORK AREA.
7. PATCH DECK WEARING SURFACE WITHIN WORK AREA.
8. SEAL JOINTS BETWEEN DECK WEARING SURFACE AND EAST CURB.
9. SEAL BRIDGE DECK WITH HMWM MATERIAL WITHIN WORK AREA.
10. REPLACE MISSING AND BROKEN BOLTS IN EAST CURB.
11. REPLACE MISSING BOLTS IN THE EAST ROADWAY RAILING.
12. SPOT PAINT EAST TRUSS MEMBERS ABOVE ROADWAY.
13. CAULK APPLICABLE EAST TRUSS MEMBERS.
14. REPLACE MISSING PIGEON DOORS ON EAST TRUSS MEMBERS.
15. REPAIR DAMAGED DEFLECTION JOINT ARMOR WITHIN WORK AREA.
16. REPAIR DAMAGED SOUTH PORTAL STEELWORK.
17. RECONSTRUCT EAST BRIDGE TERMINAL ASSEMBLY ON FORWARD ABUTMENT.

POST - PHASE 3

1. PLACE FINAL PAVEMENT MARKINGS

ITEM 614 - BARRIER REFLECTORS AND OBJECT MARKERS

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL AND ON PERMANENT CONCRETE BARRIER (INCLUDING BRIDGE PARAPETS) LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE.

BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THE SPACING SHALL BE AS PER TRAFFIC SCD MT-101.70. OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO C&MS 614.03 AND SCD MT-101.70. WHEN THE PB CONTAINS GLARE SCREEN, ONE SET OF THREE VERTICAL STRIPES OF SHEETING SHALL BE CONSIDERED EQUIVALENT TO AN OBJECT MARKER, ONE-WAY.

QUANTITIES FOR THE FOLLOWING ITEMS HAVE BEEN INCLUDED IN THE MAINTENANCE OF TRAFFIC SUBSUMMARY ON SHEET 7 .

ITEM 614 - BARRIER REFLECTOR, TYPE B
ITEM 614 - OBJECT MARKER, ONE-WAY

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING EACH OF THE ABOVE ITEMS.

ITEM 614 - WORK ZONE IMPACT ATTENUATOR FOR 24" WIDE HAZARDS (UNIDIRECTIONAL OR BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A NON-GATING IMPACT ATTENUATOR. FURNISH AN IMPACT ATTENUATOR FROM THE OFFICE OF ROADWAY ENGINEERING'S APPROVED LIST FOR WORK ZONE IMPACT ATTENUATORS, FROM THE ROADWAY STANDARDS WEB PAGE FOR ROADWAY STANDARDS APPROVED PRODUCTS.

INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE CONTRACTOR SHALL REPAIR OR REPLACE A DAMAGED UNIT WITHIN 24 HOURS OF A DAMAGING IMPACT.

WHEN BIDIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS.

WHEN GATING IMPACT ATTENUATORS ARE DESIRED, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER FOR ACCEPTANCE.

THE COST FOR THE ADDITIONAL BARRIER REQUIRED FOR A GATING IMPACT ATTENUATOR SHALL BE INCLUDED IN THE COST OF THE GATING IMPACT ATTENUATOR.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT AND MAINTAIN A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS, TRANSITIONS, LEVELING PADS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

CALCULATED JDL CHECKED TJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

LOR-611-3.44

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

IN ADDITION TO THE REQUIREMENT OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHOULD BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS AS APPROVED BY THE ENGINEER:

FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP). IN GENERAL, LEOS SHOULD BE POSITIONED AT THE POINT OF LANE RESTRICTION OR ROAD CLOSURE AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH INTERSECTIONS IN WORK ZONES.

IN GENERAL, LEOS SHOULD BE POSITIONED IN ADVANCE OF AND ON THE SAME SIDE AS THE LANE RESTRICTION OR AT THE POINT OF ROAD CLOSURE, AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH SIGNALIZED INTERSECTIONS IN WORK ZONES.

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. ONCE THE LEO HAS COMPLETED THE DUTIES DESCRIBED ABOVE AND STILL HAS TIME REMAINING ON HIS/HER SHIFT, THE LEO MAY BE ASKED TO PATROL THROUGH THE WORK ZONE (WITH FLASHING LIGHTS OFF) OR BE PLACED AT A LOCATION TO DETER MOTORISTS FROM SPEEDING. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 60 HOURS

THE HOURS PAID SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

WORK ZONE MARKINGS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR TEMPORARY WORK ZONE PAVEMENT MARKINGS AS PER THE REQUIREMENTS OF CMS 614.04 AND 614.11:

614, WORK ZONE CENTERLINE (SOLID DOUBLE), CLASS I 0.67 MILE
614, WORK ZONE EDGE LINE, CLASS I 0.67 MILE
614, WORK ZONE LANE LINE, CLASS I 1.49 MILE

ITEM 614 - DETOUR SIGNING

SIZE AND PLACEMENT OF DETOUR SIGNS (M4-9) SHOULD FOLLOW THE REQUIREMENTS OF THE OMUTCD SECTION 6F.03, SECTION 2A.11 AND TABLE 6F.01.

PROPOSED DETOUR ROUTES AND SIGNING HAVE BEEN SHOWN ON SHEET 14 . THE DETOUR SIGNING SHOWN IN THE PLANS IS THE MINIMUM SIGNING REQUIRED AND ADDITIONAL SIGNING MAY BE NECESSARY AS DIRECTED BY THE ENGINEER BASED ON THE REQUIREMENTS BELOW.

DETOUR SIGNING SHALL PROVIDE DRIVERS ADEQUATE TIME TO CLEARLY READ THE SIGNS AND MAKE THE PROPER DECISIONS AT EACH REQUIRED TURNING MOVEMENT. THE DESIGNATED DETOUR ROUTE SHALL BE SIGNED IN ACCORDANCE WITH THE REQUIREMENTS BELOW:

- APPROXIMATELY 500 FEET PRIOR TO A REQUIRED TURN AT AN INTERSECTION NOT CONTROLLED BY A STOP SIGN (FOR 45 MPH OR HIGHER ONLY).
- AT OR NEAR THE EXISTING LANE ASSIGNMENT SIGN OR EXISTING ROUTE MARKER AT AN INTERSECTION.
- EVERY TWO MILES ALONG A TANGENT SECTION BETWEEN TURNING MOVEMENTS OUTSIDE A CITY.
- EVERY TWO BLOCKS ALONG A TANGENT SECTION BETWEEN TURNING MOVEMENTS WITHIN A CITY.
- AT ANY OTHER INTERSECTION OR DECISION POINT WHERE THE DETOUR ROUTE IS CONTRARY TO THE NORMAL, EXPECTED TURNING MANEUVER OR OTHERWISE UNCLEAR.

DETOUR SIGNS SHALL BE PLACED, WHEN POSSIBLE, NEXT TO BUT NOT BLOCKING EXISTING ROUTE MARKERS OR LANE ASSIGNMENT SIGNS. DETOUR SIGNS SHALL NOT OBSCURE OR BE OBSCURED BY OTHER EXISTING OR TEMPORARY SIGNS.

DETOUR SIGNS SHALL BE ERECTED AND/OR UNCOVERED PRIOR TO THE ROAD BEING CLOSED TO TRAFFIC BUT NO EARLIER THAN FOUR HOURS PRIOR TO THE CLOSURE. DETOUR SIGNS SHALL BE COVERED AND/OR REMOVED NO LATER THAN FOUR HOURS FOLLOWING THE ROAD RE-OPENING TO TRAFFIC.

PAYMENT FOR ACCEPTED QUANTITIES WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, PROPER SIGN PLACEMENT AND SIZING, TIMELY ERECTING AND/OR UNCOVERING OF SIGNS, MAINTAINING SIGNS, AND TIMELY COVERING AND/OR REMOVING SIGNS AND SUPPORTS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

614, DETOUR SIGNING = LUMP SUM

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES IN THE GENERAL SUMMARY.

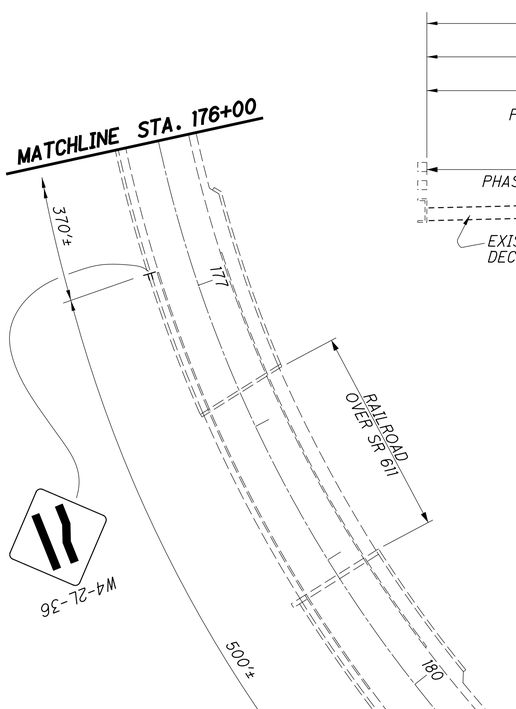
616, WATER 39 M. GAL.

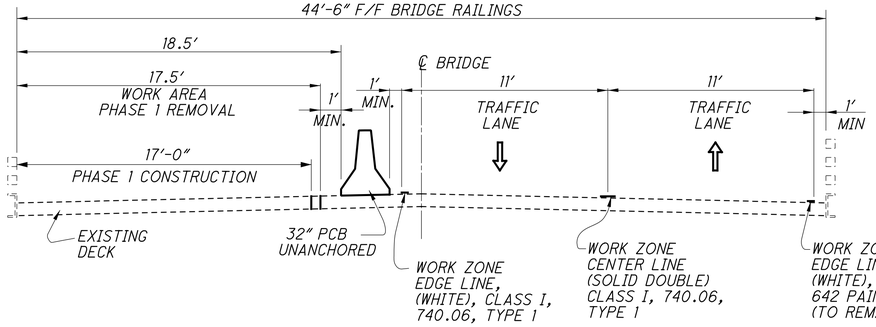
LOCATION	STATION		614								622
			WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL)	BARRIER RELECTOR, TYPE B	OBJECT MARKER, ONE WAY	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	WORK ZONE EDGE LINE, CLASS I, 642 PAINT	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I		WORK ZONE DOTTED LINE, CLASS I, 740.06, TYPE I	PORTABLE BARRIER, 32"
							WHITE	WHITE	YELLOW	WHITE	
	FROM	TO	EACH	EACH	EACH	MILE	MILE	MILE		FT.	EACH
SR 611											
PHASE 1 (SHEETS 8-9)	181+80.00	187+80.00							0.11		
	181+80.00	185+00.00								320	
	185+00.00	214+30.00					0.55				
	185+70.00	216+60.00				0.59					
	187+80.00	218+90.00						0.59			
	187+80.00	212+60.00	1	51	51						2480
	216+60.00	218+90.00								230	
PHASE 2 (SHEETS 10-11)	181+40.00	213+50.00							1.22		
	181+40.00	184+60.00								320	
	183+00.00	207+80.00					0.47				
	187+10.00	206+60.00	1	40	40						1950
	188+30.00	207+80.00	1	40	40						1950
	210+30.00	213+50.00								320	
PHASE 3 (SHEETS 12-13)	175+20.00	207+50.00						0.61			
	175+20.00	178+40.00								320	
	181+40.00	210+50.00				0.55					
	207+50.00	216+20.00							0.16		
	187+30.00	207+50.00	1	41	41						2020
	213+00.00	216+20.00								320	
SUBTOTALS			4	172	172	1.14	1.02	1.20	1.49	1830	8400
TOTALS CARRIED TO GENERAL SUMMARY			**4**	**172**	**172**	**1.14**	**1.02**	**2.69**		**1830**	**8400**

CALCULATED JDL CHECKED TJF

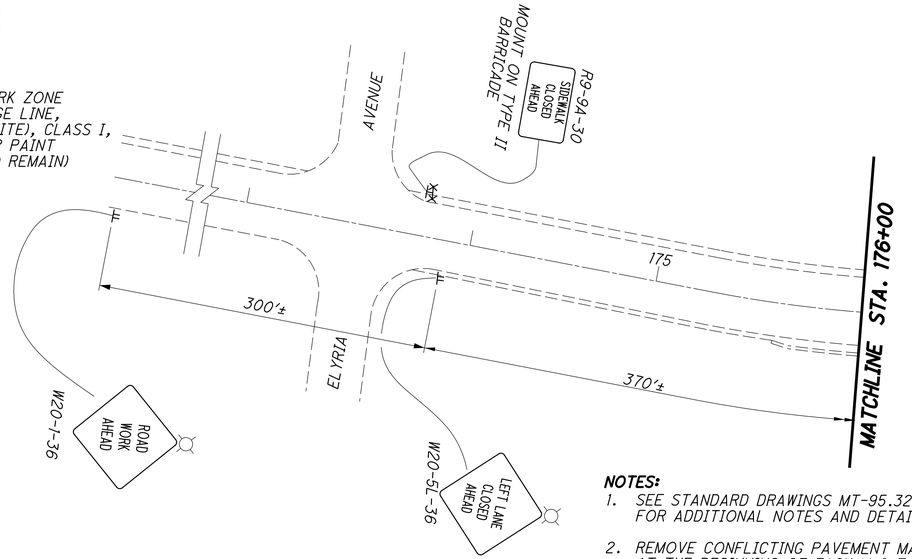
MAINTENANCE OF TRAFFIC GENERAL NOTES

LOR-611-3.44





BRIDGE REHABILITATION MAINTENANCE OF TRAFFIC PHASE 1 TYPICAL SECTION

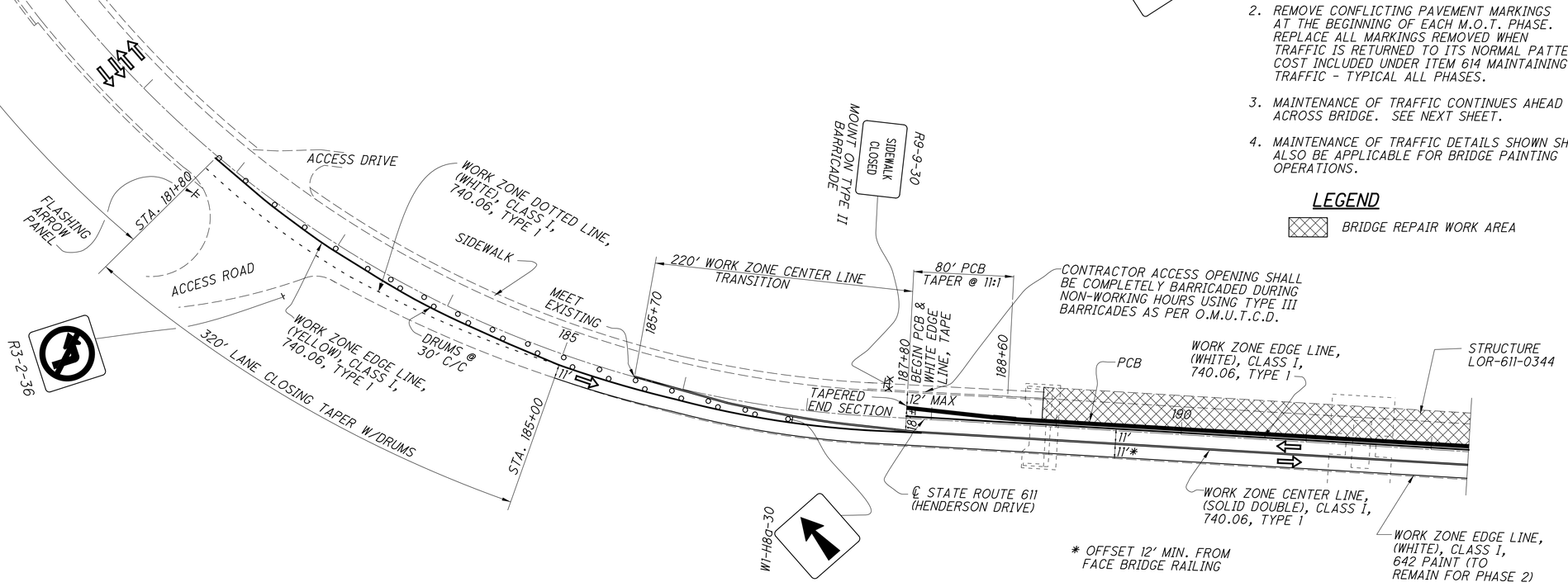


NOTES:

1. SEE STANDARD DRAWINGS MT-95.32 & MT-95.41 FOR ADDITIONAL NOTES AND DETAILS.
2. REMOVE CONFLICTING PAVEMENT MARKINGS AT THE BEGINNING OF EACH M.O.T. PHASE. REPLACE ALL MARKINGS REMOVED WHEN TRAFFIC IS RETURNED TO ITS NORMAL PATTERN, COST INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC - TYPICAL ALL PHASES.
3. MAINTENANCE OF TRAFFIC CONTINUES AHEAD ACROSS BRIDGE. SEE NEXT SHEET.
4. MAINTENANCE OF TRAFFIC DETAILS SHOWN SHALL ALSO BE APPLICABLE FOR BRIDGE PAINTING OPERATIONS.

LEGEND

BRIDGE REPAIR WORK AREA



* OFFSET 12' MIN. FROM FACE BRIDGE RAILING

HORIZONTAL SCALE IN FEET
0 50 100

CALCULATED JDL
CHECKED TJF

MAINTENANCE OF TRAFFIC PLAN PHASE 1

LOR-611-3.44

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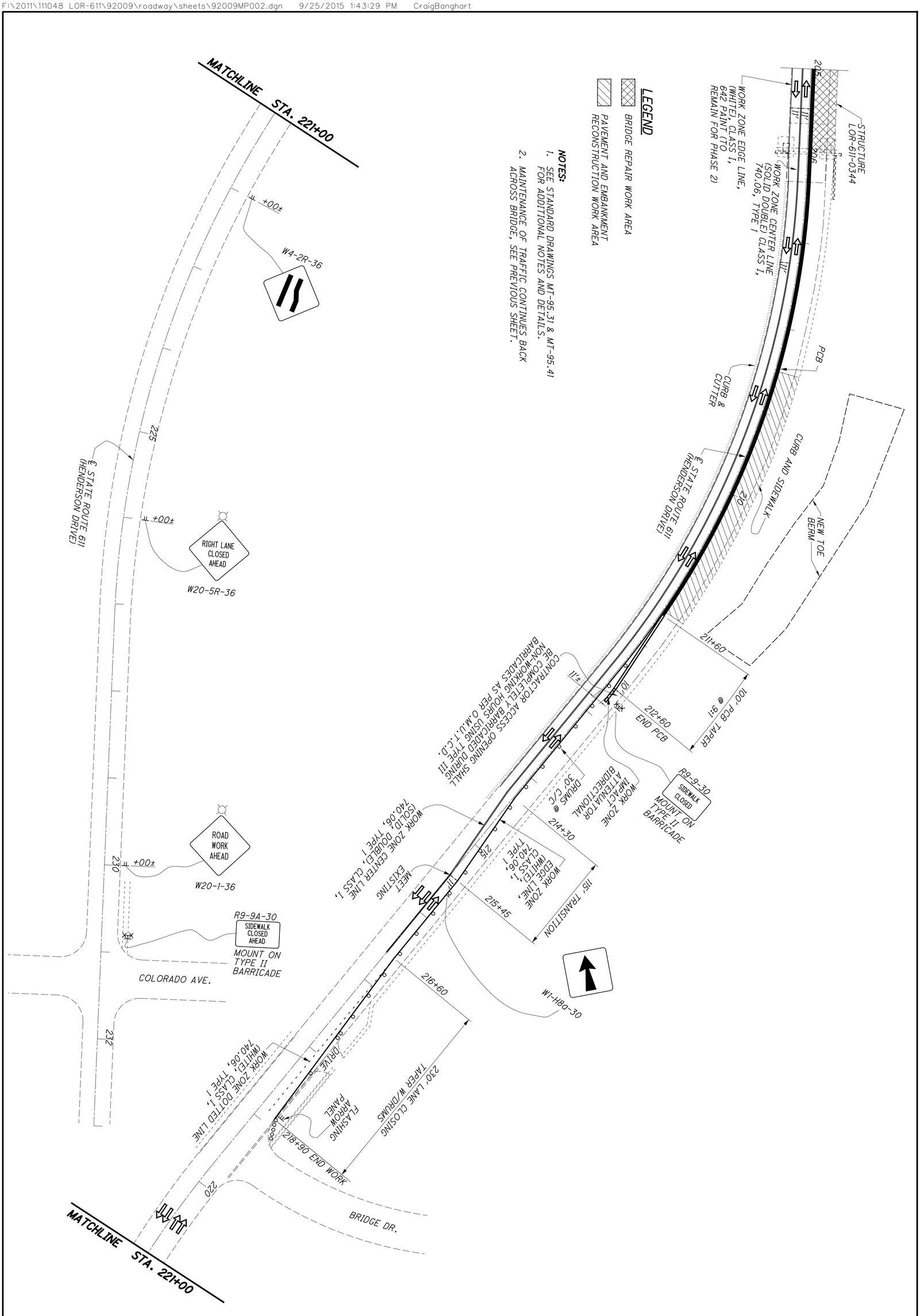
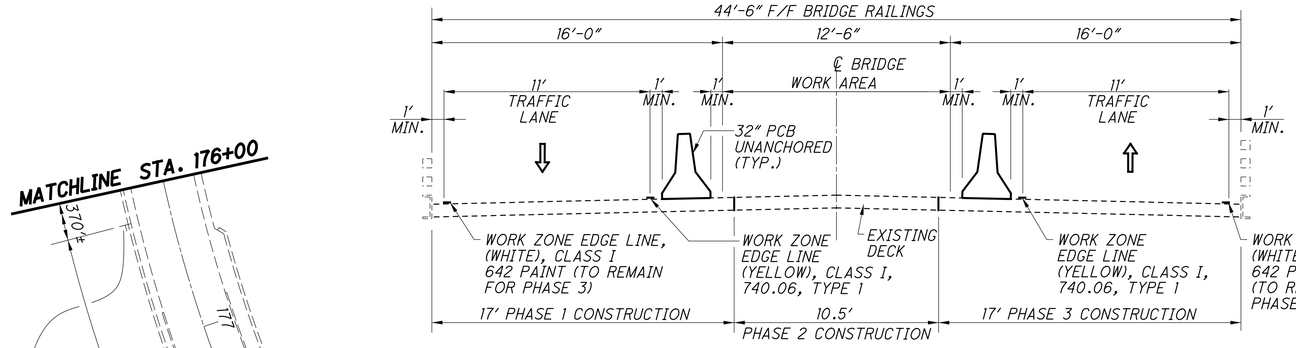
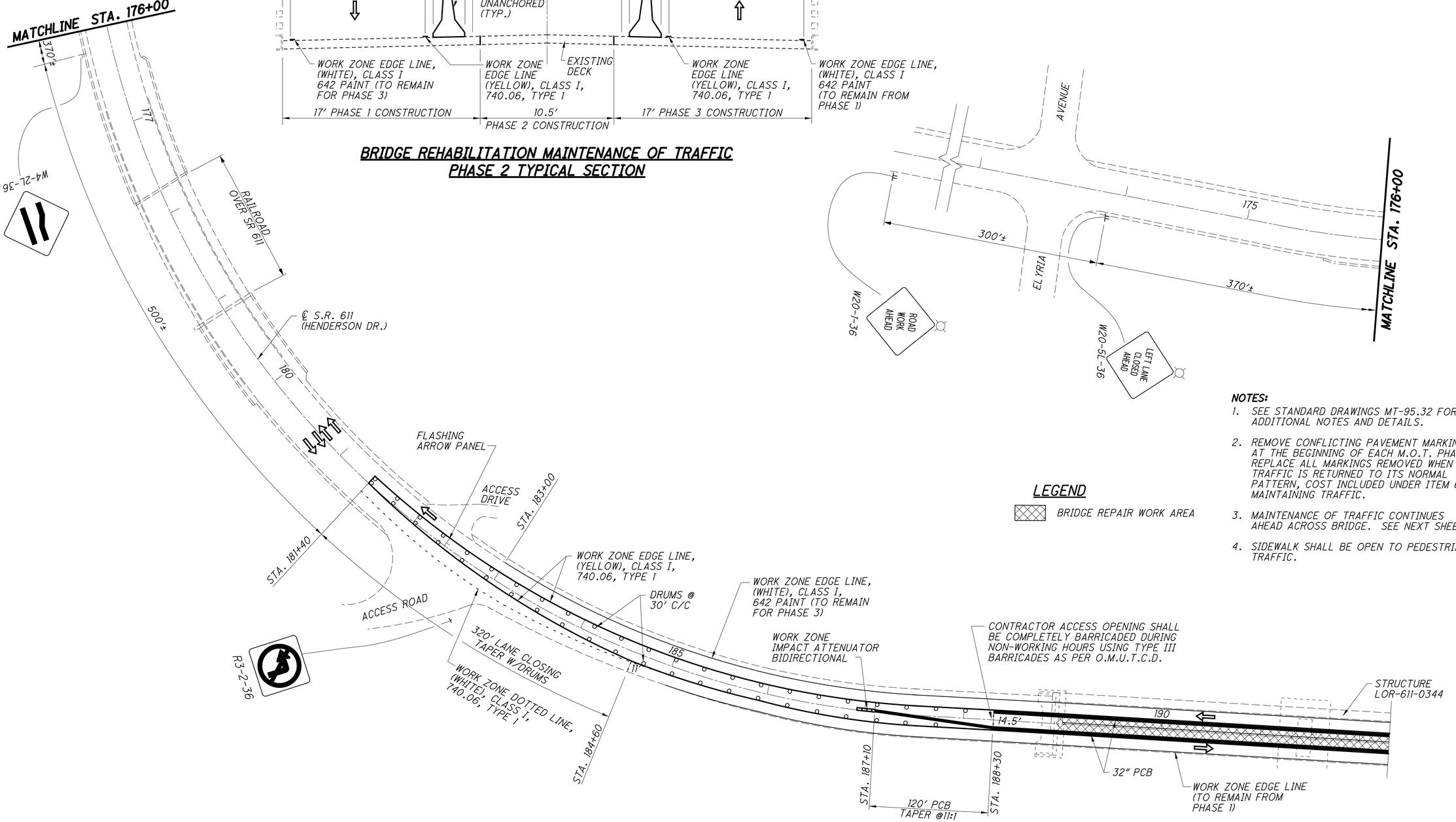


9 / 234	LOR-611-3.44	MAINTENANCE OF TRAFFIC PLAN PHASE 1	CALCULATED JDL / CHECKED TJF	0 50 100 HORIZONTAL SCALE IN FEET



BRIDGE REHABILITATION MAINTENANCE OF TRAFFIC PHASE 2 TYPICAL SECTION



LEGEND

BRIDGE REPAIR WORK AREA

NOTES:

1. SEE STANDARD DRAWINGS MT-95.32 FOR ADDITIONAL NOTES AND DETAILS.
2. REMOVE CONFLICTING PAVEMENT MARKINGS AT THE BEGINNING OF EACH M.O.T. PHASE. REPLACE ALL MARKINGS REMOVED WHEN TRAFFIC IS RETURNED TO ITS NORMAL PATTERN, COST INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.
3. MAINTENANCE OF TRAFFIC CONTINUES AHEAD ACROSS BRIDGE. SEE NEXT SHEET.
4. SIDEWALK SHALL BE OPEN TO PEDESTRIAN TRAFFIC.

HORIZONTAL SCALE IN FEET
0 50 100

CALCULATED JDL
CHECKED TJF

MAINTENANCE OF TRAFFIC PLAN PHASE 2

LOR-611-3.44

LEGEND

BRIDGE REPAIR WORK AREA

NOTES:

1. SEE STANDARD DRAWINGS MT-95.32 FOR ADDITIONAL NOTES AND DETAILS.
2. MAINTENANCE OF TRAFFIC CONTINUES BACK ACROSS BRIDGE, SEE PREVIOUS SHEET.
3. SIDEWALK SHALL BE OPEN TO PEDESTRIAN TRAFFIC.

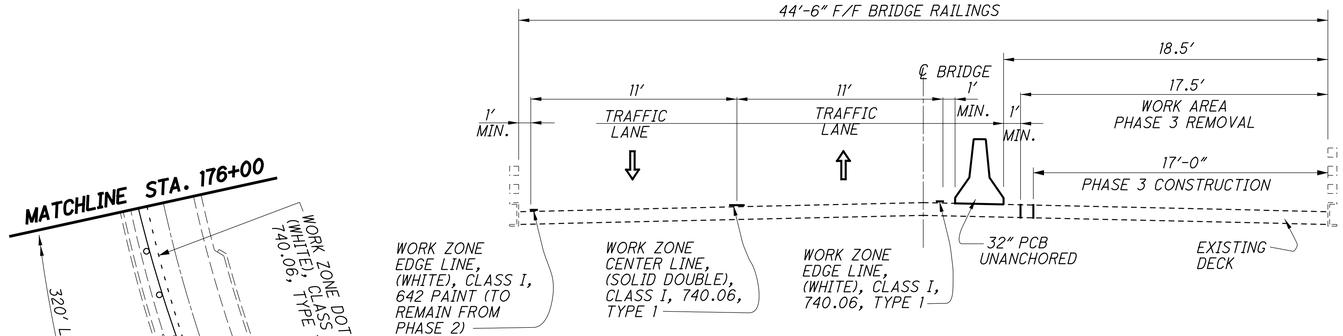
N

HORIZONTAL SCALE IN FEET
0 50 100

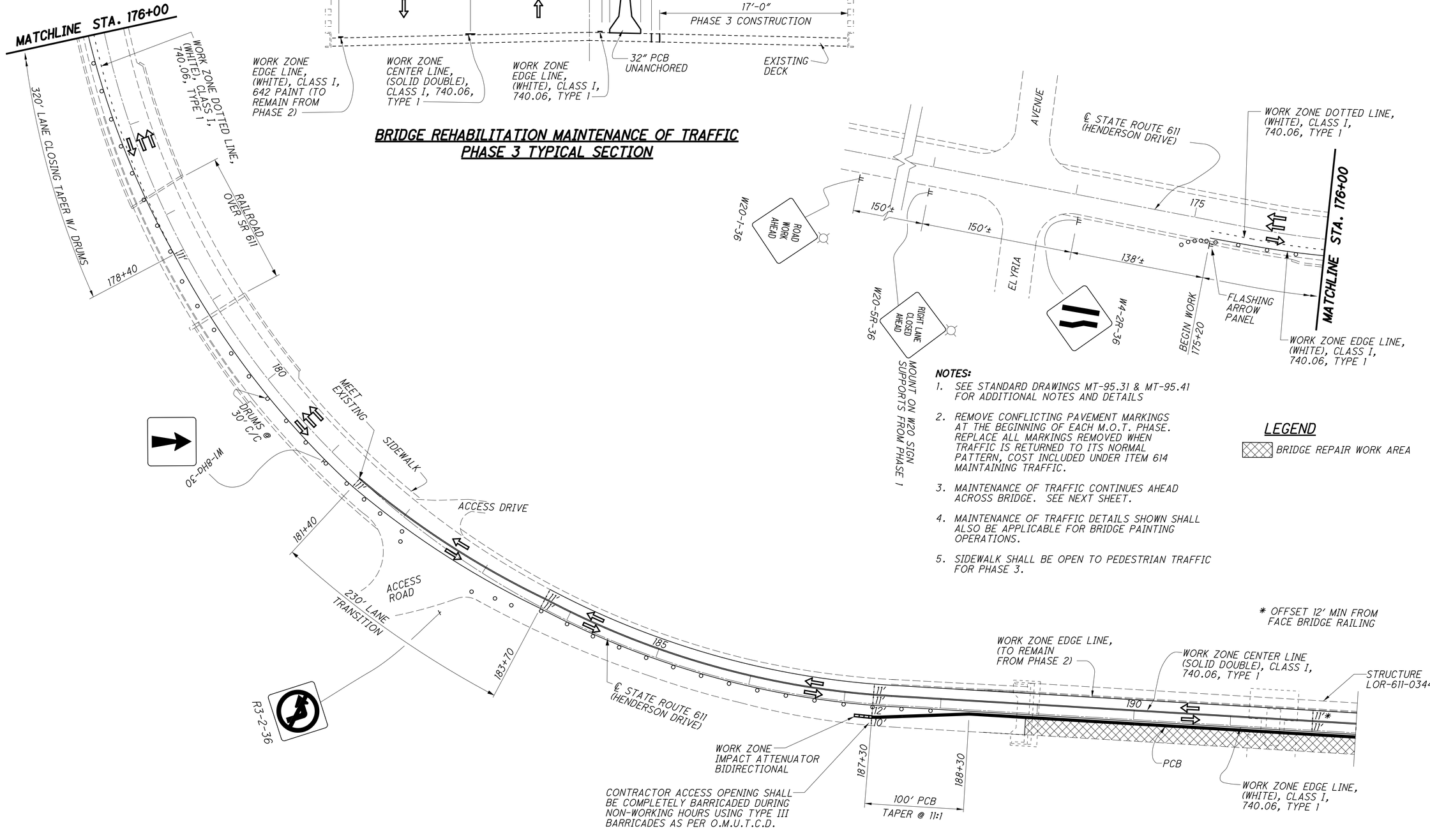
CALCULATED JDL
CHECKED TJF

MAINTENANCE OF TRAFFIC PLAN PHASE 2

LOR-611-3.44



BRIDGE REHABILITATION MAINTENANCE OF TRAFFIC PHASE 3 TYPICAL SECTION



NOTES:

1. SEE STANDARD DRAWINGS MT-95.31 & MT-95.41 FOR ADDITIONAL NOTES AND DETAILS
2. REMOVE CONFLICTING PAVEMENT MARKINGS AT THE BEGINNING OF EACH M.O.T. PHASE. REPLACE ALL MARKINGS REMOVED WHEN TRAFFIC IS RETURNED TO ITS NORMAL PATTERN, COST INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.
3. MAINTENANCE OF TRAFFIC CONTINUES AHEAD ACROSS BRIDGE. SEE NEXT SHEET.
4. MAINTENANCE OF TRAFFIC DETAILS SHOWN SHALL ALSO BE APPLICABLE FOR BRIDGE PAINTING OPERATIONS.
5. SIDEWALK SHALL BE OPEN TO PEDESTRIAN TRAFFIC FOR PHASE 3.

LEGEND

BRIDGE REPAIR WORK AREA

HORIZONTAL SCALE IN FEET
0 50 100

CALCULATED JDL
CHECKED TJF

MAINTENANCE OF TRAFFIC PLAN PHASE 3

LOR-611-3.44

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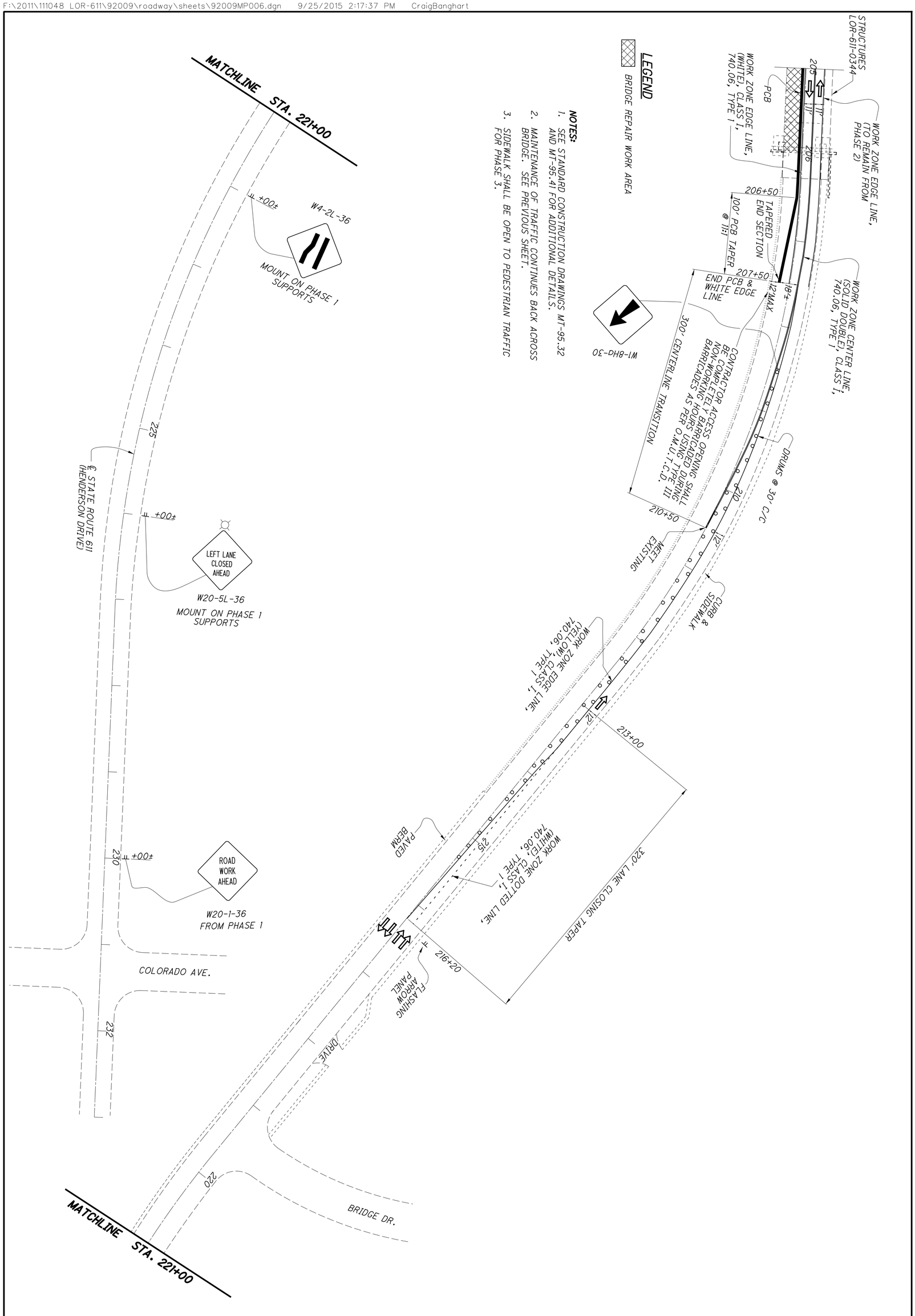


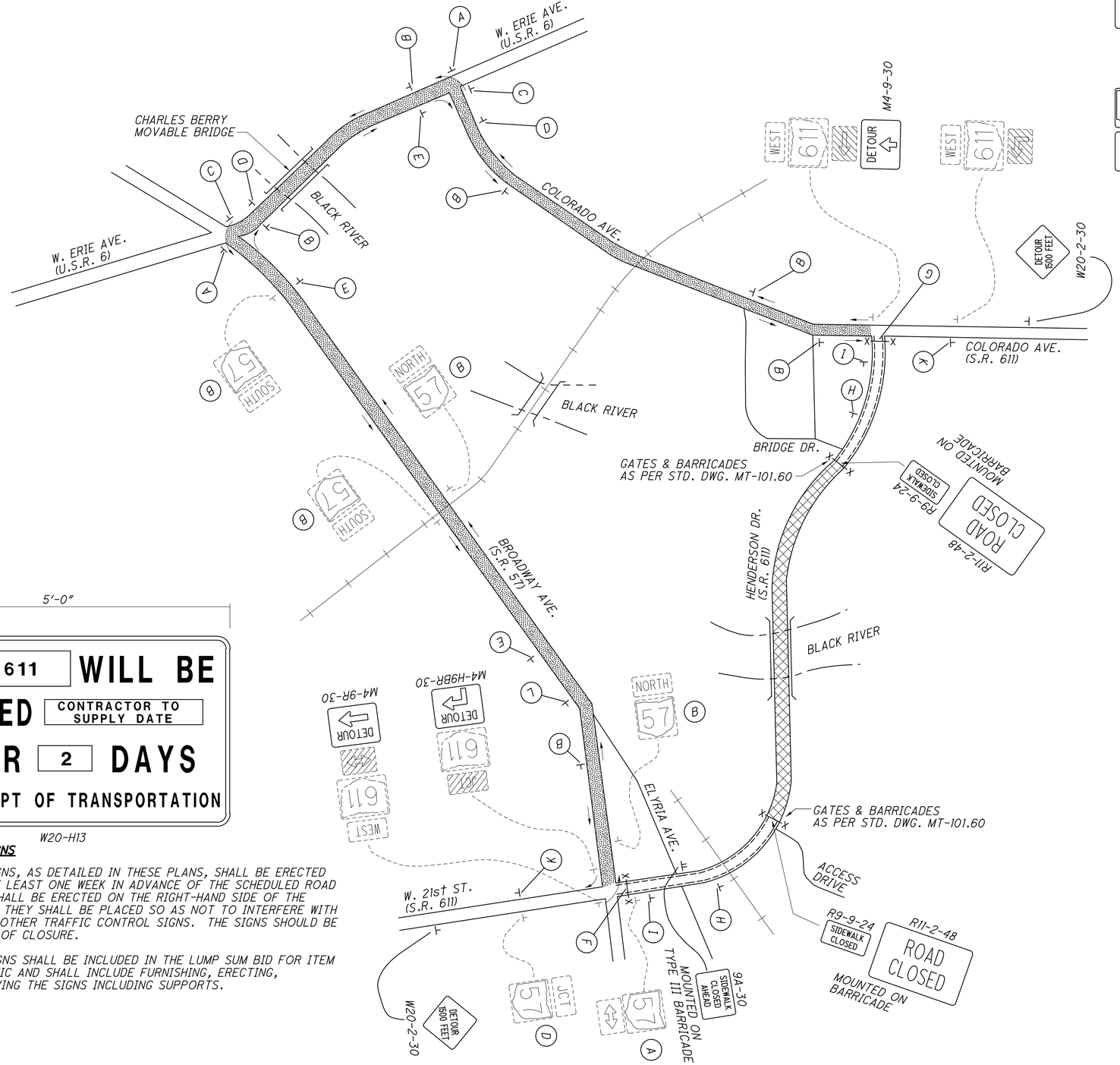
LOR-611-3.44

MAINTENANCE OF TRAFFIC PLAN
PHASE 3

CALCULATED JDL
CHECKED TJF

0 50 100
HORIZONTAL SCALE IN FEET

N



A — M1-5-3-30 / DETOUR M4-9L-30

B — M1-5-3-30 / DETOUR M4-9-30

C — M1-5-3-30 / DETOUR M4-9R-30

D — M1-5-3-30 / DETOUR M4-H9BL-30

E — M1-5-3-30 / DETOUR MH-H9BR-30

F — LIGHTS; ROAD CLOSED 0.25 MILES AHEAD LOCAL TRAFFIC ONLY; DETOUR
M4-10L MOUNTED ON GATES AND BARRICADES AS PER STD. DWG. MT-101.60

G — LIGHTS; ROAD CLOSED 0.23 MILES AHEAD LOCAL TRAFFIC ONLY; DETOUR
M4-10R MOUNTED ON GATES AND BARRICADES AS PER STD. DWG. MT-101.60

H — ROAD CLOSED 500 FEET
W20-3-36

I — ROAD CLOSED 1000 FEET
W20-3-36

J — NOT USED

K — END DETOUR
M4-8a-24

L — 611 M1-5-3-30; DETOUR
M4-H9 SPECIAL-30

5'-0"

3'-0"

SR 611 WILL BE CLOSED CONTRACTOR TO SUPPLY DATE FOR 2 DAYS
OHIO DEPT OF TRANSPORTATION

W20-H13

NOTICE OF CLOSURE SIGNS

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. THE SIGNS SHOULD BE ERECTED AT THE POINT OF CLOSURE.

PAYMENT FOR THESE SIGNS SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614, MAINTAINING TRAFFIC AND SHALL INCLUDE FURNISHING, ERECTING, MAINTAINING AND REMOVING THE SIGNS INCLUDING SUPPORTS.

LEGEND

- SIGN ON 1 SUPPORT
- SIGN ON 2 SUPPORTS
- GATES AND BARRICADES
- EXISTING ROUTE MARKER SIGN
- EXISTING SIGN TO BE COVERED OR OVERLAYED
- PROPOSED DETOUR ROUTE MARKER SIGN
- PORTION OF ROUTE TO BE CLOSED TO ALL TRAFFIC
- LOCAL TRAFFIC ONLY
- DETOUR ROUTE

DETOUR PLAN

LOR-611-3.44

SHEET NUMBER							PARTICIPATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		4-5	6-7	17-18	35	42	01/BRO/BR						
												ROADWAY	
		LS					LS	201	11000	LS		CLEARING AND GRUBBING	
				134			134	202	23010	134	SY	PAVEMENT REMOVED, ASPHALT	
				1073			1073	202	30000	1073	SF	WALK REMOVED	
				100			100	202	32000	100	FT	CURB REMOVED	
				66			66	202	38000	66	FT	GUARDRAIL REMOVED	
		150					150	SPECIAL	20270110	150	FT	PIPE CLEANOUT, 24" AND UNDER	5
				1			1	202	75250	1	EACH	GATE REMOVED	
		50		7	6691		6748	203	10000	6748	CY	EXCAVATION	
		50			2930		2980	203	20000	2980	CY	EMBANKMENT	
				3071			3071	204	50001	3071	SY	GEOTEXTILE FABRIC, AS PER PLAN	5
				207			207	304	20001	207	CY	AGGREGATE BASE, AS PER PLAN	5
				LS			LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
					3666		3666	601	27001	3666	CY	DUMPED ROCK FILL, TYPE C, AS PER PLAN	5
				12.5			12.5	606	15050	12.5	FT	GUARDRAIL, TYPE MGS	
				25			25	606	16001	25	FT	GUARDRAIL REBUILT, AS PER PLAN NO. 1	4
				100			100	606	16001	100	FT	GUARDRAIL REBUILT, AS PER PLAN NO. 2	4
				1			1	606	26150	1	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
				1			1	606	35050	1	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
				80			80	607	22001	80	FT	FENCE REBUILT, TYPE CL, AS PER PLAN	4
				1			1	607	50900	1	EACH	GATE, TYPE CL	
				80			80	607	70000	80	FT	FENCELINE SEEDING AND MULCHING	
		200		1073			1273	608	10000	1273	SF	4" CONCRETE WALK	
												EROSION CONTROL	
		2					2	659	00100	2	EACH	SOIL ANALYSIS TEST	
		301					301	659	00300	301	CY	TOPSOIL	
		2711					2711	659	10000	2711	SY	SEEDING AND MULCHING	
		136					136	659	14000	136	SY	REPAIR SEEDING AND MULCHING	
		136					136	659	15000	136	SY	INTER-SEEDING	
		0.37					0.37	659	20000	0.37	TON	COMMERCIAL FERTILIZER	
		0.56					0.56	659	31000	0.56	ACRE	LIME	
		16					16	659	35000	16	MGAL	WATER	
		10000					10000	832	30000	10000	EACH	EROSION CONTROL	
												DRAINAGE	
		25					25	605	13300	25	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
		25					25	611	00510	25	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41	
		2					2	611	98690	2	EACH	CATCH BASIN, MISC.: CATCH BASIN CLEANOUT	5
		1					1	611	99710	1	EACH	PRECAST REINFORCED CONCRETE OUTLET	
												PAVEMENT	
				334			334	254	01000	334	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
		25		45			70	301	46000	70	CY	ASPHALT CONCRETE BASE, PG64-22	
		2		7			9	304	20000	9	CY	AGGREGATE BASE	
				35			35	407	10000	35	GAL	TACK COAT	
				19			19	407	14000	19	GAL	TACK COAT FOR INTERMEDIATE COURSE	
				17			17	441	50000	17	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
				23			23	441	50300	23	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	
				100			100	609	26001	100	FT	CURB, TYPE 6, AS PER PLAN	5
												LIGHTING	
						LS	LS	SPECIAL	62540000	LS		MAINTAIN EXISTING LIGHTING	42
						6	6	625	98000	6	EACH	LIGHTING, MISC.: BRIDGE - MOUNTED MARINE NAVIGATION LIGHTING, LED	42
						LS	LS	625	98200	LS		LIGHTING, MISC.: REMOVAL OF EXISTING MARINE NAVIGATION LIGHTING SYSTEM	42

CALCULATED JDL
CHECKED TJF

GENERAL SUMMARY

LOR-611-3.44

15
234

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SHEET NUMBER							PARTICIPATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		4-5	6-7	17-18	35	42	01/ BRO/ BR						
												TRAFFIC CONTROL	
				3			3	626	00100	3	EACH	BARRIER REFLECTOR	
				15			15	630	04100	15	FT	GROUND MOUNTED SUPPORT, NO. 4 POST	
				1			1	630	85100	1	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
				1			1	630	86002	1	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
				0.67			0.67	642	00100	0.67	MILE	EDGE LINE, 4", TYPE 1	
				1.49			1.49	642	00200	1.49	MILE	LANE LINE, 4", TYPE 1	
				0.67			0.67	642	00300	0.67	MILE	CENTER LINE, TYPE 1	
												MAINTENANCE OF TRAFFIC	
			60				60	614	11110	60	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
			4				4	614	12338	4	EACH	WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL)	
			LS				LS	614	12420	LS		DETOUR SIGNING	
			172				172	614	13300	172	EACH	BARRIER REFLECTOR, TYPE B	
			172				172	614	13350	172	EACH	OBJECT MARKER, ONE WAY	
			1.49				1.49	614	20000	1.49	MILE	WORK ZONE LANE LINE, CLASS I	
			0.67				0.67	614	21000	0.67	MILE	WORK ZONE CENTER LINE, CLASS I	
			1.14				1.14	614	21200	1.14	MILE	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	
			0.67				0.67	614	22000	0.67	MILE	WORK ZONE EDGE LINE, CLASS I	
			1.02				1.02	614	22100	1.02	MILE	WORK ZONE EDGE LINE, CLASS I, 642 PAINT	
			2.69				2.69	614	22200	2.69	MILE	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	
			1830				1830	614	24400	1830	FT	WORK ZONE DOTTED LINE, CLASS I, 740.06, TYPE I	
			39				39	616	10000	39	MGAL	WATER	
			8400				8400	622	41000	8400	FT	PORTABLE BARRIER, 32"	
												FOR STRUCTURES OVER 20' SEE SHEET <u>56 & 57</u>	
												INCIDENTALS	
			LS				LS	614	11000	LS		MAINTAINING TRAFFIC	
							10	619	16020	10	MNTH	FIELD OFFICE, TYPE C	
							LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
							LS	624	10000	LS		MOBILIZATION	

CALCULATED JDL CHECKED TJF

GENERAL SUMMARY

LOR-611-3.44

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234

LINE	DESCRIPTION	CALCULATION												QUANTITY	
	PAVEMENT MARKING CALCULATIONS														
	ITEM 642 - EDGE LINE, 4", TYPE 1 (WHITE)														
1	STA.	188+59.60	LT./RT. TO	206+27.40	LT./RT.	=	3535.60	FT.	/	5280	FT./ MILE	=		0.67	MILE
2	TOTAL LINES				1							=		0.67	MILE
											TOTAL CARRIED TO GENERAL SUMMARY	**=**		**0.67**	**MILE**
	ITEM 642 - LANE LINE, 4", TYPE 1 (WHITE)														
3	STA.	175+20.00	RT. TO	216+60.00	RT.	=	4140.00	FT.	/	5280	FT./ MILE	=		0.78	MILE
4	STA.	181+40.00	LT. TO	218+90.00	LT.	=	3750.00	FT.	/	5280	FT./ MILE	=		0.71	MILE
5	TOTAL LINES				3 TO 4							=		1.49	MILE
											TOTAL CARRIED TO GENERAL SUMMARY	**=**		**1.49**	**MILE**
	ITEM 642 - CENTER LINE, TYPE 1 (YELLOW, DOUBLE SOLID)														
6	STA.	181+40.00	CL. TO	216+60.00	CL.	=	3520.00	FT.	/	5280	FT./ MILE	=		0.67	MILE
7	TOTAL LINES				6							=		0.67	MILE
											TOTAL CARRIED TO GENERAL SUMMARY	**=**		**0.67**	**MILE**
	PAVEMENT CALCULATIONS														
	SR 611 FULL DEPTH PAVEMENT AREAS														
1	STA.	209+72.00	LT. TO	210+72.00	LT.	=	100.00	FT.	X	12.00	FT.	=		1200.00	S.F.
2	LENGTH OF LINE				1		100.00	FT.							
	SR 611 RESURFACING AREAS														
3	STA.	208+50.00	LT. TO	209+72.00	LT.	=	122.00	FT.	X	14.00	FT.	=		1708.00	S.F.
4	STA.	210+72.00	LT. TO	211+50.00	LT.	=	78.00	FT.	X	14.00	FT.	=		1092.00	S.F.
5	STA.	209+72.00	LT. TO	210+72.00	LT.	=	100.00	FT.	X	2.00	FT.	=		200.00	S.F.
6	TOTAL LINES				3 TO 5							=		3000.00	S.F.
	ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE														
7	TOTAL LINES				6	=	3000.00	S.F.	/	9		=		333.33	S.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**334**	**S.Y.**
	ITEM 441 - 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22														
8	TOTAL LINES				1 AND 6	=	4200.00	S.F.	X	1¼"/12/27		=		16.20	C.Y
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**17**	**C.Y.**
	ITEM 441 - 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)														
9	TOTAL LINES				1 AND 6	=	4200.00	S.F.	X	1¾"/12/27		=		22.69	C.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**23**	**C.Y.**
	ITEM 301 - (8"-16") VARIABLE DEPTH ASPHALT CONCRETE BASE, PG64-22														
10	TOTAL LINES				1	=	1200.00	S.F.	X	((8"+16")/2)/12/27		=		44.44	C.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**45**	**C.Y.**
	ITEM 407 - TACK COAT														
11	TOTAL LINES				1 AND 6	=	4200.00	S.F.	/	9	X 0.075 GAL./S.Y.	=		35.00	GAL.
											TOTAL CARRIED TO THE GENERAL SUMMART	**=**		**35**	**GAL.**
	ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE														
12	TOTAL LINES				1 AND 6	=	4200.00	S.F.	/	9	X 0.04 GAL./S.Y.	=		18.67	GAL.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**19**	**GAL.**
	ITEM 609 - CURB, TYPE 6, AS PER PLAN														
13	TOTAL LINES				2	=	100.00	F.T.				=		100.00	FT.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**100**	**FT.**
	ITEM 202 - CURB REMOVED														
14	TOTAL LINES				2	=	100.00	F.T.				=		100.00	FT.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**100**	**FT.**
	ITEM 202 - PAVEMENT REMOVED, ASPHALT														
15	TOTAL LINES				1	=	1200.00	S.F.	/	9		=		133.33	S.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**134**	**S.Y.**
	TOE BERM CALCULATIONS														
	ITEM 503 - COFFERDAM AND EXCAVATION BRACING														
1	STA.	208+50.00	LT. TO	211+50.00	LT.							=		LS	
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**LS**	
	ITEM 204 - GEOTEXTILE FABRIC, AS PER PLAN (TYPE B)														
2	STA.	208+50.00	LT. TO	211+50.00	LT. SUM OF CORRECTED LENGTHS FROM CROSS SECTIONS	= 337.5	FT.	X	AVG. PERIMETER 80 FT. (ESTIMATED FROM CROSS SECTIONS)/ 9			=		3000.00	S.Y.
3	STA.	208+50.00	LT.	END AREA	(SEE CROSS SECTION SHEET 32)	= 309	S.F.	/	9			=		34.33	S.Y.
4	STA.	211+50.00	LT.	END AREA	(SEE CROSS SECTION SHEET 35)	= 323	S.F.	/	9			=		35.89	S.Y.
5	TOTAL LINES				2 TO 4							=		3070.22	S.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**3071**	**S.Y.**
	ITEM 304 - 6" AGGREGATE BASE, AS PER PLAN														
6	STA.	208+50.00	LT. TO	211+50.00	LT. CORRECTED LENGTHS FROM CROSS SE€TIONS	= 337.5	FT.	X	AVG. WIDTH 33 FT. X 6" (ESTIMATED FROM CROSS SECTIONS)/ 27			=		206.25	C.Y.
											TOTAL CARRIED TO THE GENERAL SUMMARY	**=**		**207**	**C.Y.**

CALCULATED JDL
CHECKED TJF

CALCULATIONS

LOR-611-3.44

LINE	DESCRIPTION	CALCULATION							QUANTITY	
	EROSION CONTROL CALCULATIONS									
	ITEM 659 SEEDING AND MULCHING									
1	STA. 205+90.00 LT. TO 207+00.00 LT.	=	110.00	FT.	X	10.00	FT. / 9 (RETAINING WALL & WALK RECONSTRUCTION)	=	122.22	SQ. YD.
2	AREA FROM CROSS SECTIONS SHEET 35	=	2464.00	S.Y.	+	124.00	S.Y.	=	2588.00	SQ. YD.
3	TOTAL LINES 1 TO 2	=						=	2710.22	SQ. YD.
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**2711**	**SQ. YD.**
	ITEM 659 COMMERCIAL FERTILIZER									
4	LINE 3 = 2710.22 SQ. YD. x 9 SQ. FT./SQ. YD. / 1000 x 30 LBS. / 2000 LBS./TON							=	0.366	TON
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**0.37**	**TON**
	ITEM 659 WATER									
5	LINE 3 = 2710.22 SQ. YD. x 9 SQ. FT./SQ. YD. / 1000 x 300 GALLONS x 2 APPLCATIONS / 1000							=	14.64	MGAL
6	LINE 11 = 135.51 SQ. YD. x 9 SQ. FT./SQ. YD. / 1000 x 300 GALLONS x 1 / 1000							=	0.37	MGAL
7	TOTAL LINES 5 TO 6							=	15.01	MGAL
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**16**	**MGAL**
	ITEM 659 TOPSOIL									
8	LINE 3 = 2710.22 SQ. YD. x 111 CU. YD. / 1000 SQ. YD.							=	300.83	CU. YD.
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**301**	**CU. YD.**
	ITEM 659 REPAIR SEEDING AND MULCHING									
9	LINE 3 = 2710.22 SQ. YD. x 5%							=	135.51	SQ. YD.
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**136**	**SQ. YD.**
	ITEM 659 LIME									
10	LINE 3 = 2710.22 SQ. YD. x 9 SQ. FT./SQ. YD. / 43560 SQ. FT./ACRE							=	0.56	ACRE
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**0.56**	**ACRE**
	ITEM 659 SOIL ANALYSIS TEST									
11	LINE 6 = 300.83 CU. YD. x 1 TEST / 10000 CU. YD. TOPSOIL							=	0.04	EACH
12	MINIMUM REQUIRED							=	2	EACH
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**2**	**EACH**
	ITEM 659 INTER-SEEDING									
13	LINE 3 = 2710.22 SQ. YD. x 5%							=	135.51	SQ. YD
							TOTAL CARRIED TO THE GENERAL NOTES	**=**	**136**	**SQ. YD.**
							TOTAL CARRIED TO THE GENERAL NOTES	=	136	SQ. YD.

ROADWAY SUBSUMMARY

REF NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	202 WALK REMOVED	202 GUARDRAIL REMOVED	202 GATE REMOVED	203 EXCAVATION	304 AGGREGATE BASE (3")	606 GUARDRAIL, TYPE MGS	606 GUARDRAIL REBUILT, AS PER PLAN NO. 1	606 GUARDRAIL REBUILT, AS PER PLAN NO. 2	606 ANCHOR ASSEMBLY, MGS TYPE E	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	607 FENCE REBUILT, TYPE CL, AS PER PLAN	607 GATE, TYPE CL	607 FENCELINE SEEDING AND MULCHING	608 4" CONCRETE WALK	626 BARRIER REFLECTOR	630 GROUND MOUNTED SUPPORT, NO. 4 POST	630 REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	630 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL
					SF	FT	EACH	CY	CY	FT	FT	FT	EACH	EACH	FT	EACH	FT	SF	EACH	FT	EACH	EACH
F-1	19	190+30.00±	190+50.00±	RT.											20		20					
F-2	20	194+50.00±	194+70.00±	RT.											20		20					
F-3	21	195+30.00±	195+50.00±	RT.											20		20					
F-4	23	204+91.50±	205+26.50±	LT.			1								20	1	20					
GR-1	23	205+98.13	206+84.84	LT.		66				12.5			1	1					2			
GR-2	23	206+47.65±	206+60.15±	LT.							12.5											
GR-3	23	205+96.94±	206+09.44±	RT.							12.5								1			
GR-4	25	209+72.00	210+72.00	LT.								100										
W-1	23	205+97.50	206+47.80	LT.	352													352				
W-2	23	206+47.80	206+90.00	LT.	221			2	2									221				
W-3	25	209+72.00	210+72.00	LT.	500			5	5									500				
S-1	25	209+79.00±		LT.																15.0	1	1
SUBTOTALS																						
TOTALS CARRIED TO GENERAL SUMMARY					**1073**	**66**	**1**	**7**	**7**	**12.5**	**25**	**100**	**1**	**1**	**80**	**1**	**80**	**1073**	**3**	**15.0**	**1**	**1**

CALCULATED JDL CHECKED TJF

CALCULATIONS

LOR-611-3.44

CURVE DATA - ℄ R/W S.R. 611
P.I. Sta. 182+52.04
Δ = 81° 14′ 59″ (LT)
Dc = 6° 27′ 48″
R = 886.49′
T = 760.48′
L = 1,257.11′
E = 281.50′
C = 1,154.39′
C.B. = N 41° 59′ 28″ E

CROSS REFERENCES	
2-3	TYPICAL SECTIONS
17-18	CALCULATIONS
46-234	STRUCTURE PLANS

BEGIN WORK
STA. 175+20.0

STA. 175+20.00
BEGIN LANE LINE RT.
(MATCH EXISTING)

STA. 181+40.00
BEGIN CENTERLINE & LANE LINE LT.
(MATCH EXISTING)

PT Sta. 187+48.67
℄ R/W & CONST.

BEGIN PROJECT
STA. 188+89.6
E140(707)

+59.60
BEGIN EDGE LINE LT. & RT.
(MATCH EXISTING)

℄ R/W & CONST. S.R. 611
(HENDERSON DR.)

N 1° 21′ 59″ E

MATCH LINE STA. 191+00

EX. CHAIN LINK FENCE
EX. CONCRETE DR.
EX. 14′ GATE
AGGREGATE DRIVE
SIDEWALK
EXISTING 84″ STORM SEWER
STRUCTURE LOR-611-0344
EXISTING 7.3′ x 7.5′ CONCRETE ARCH STORM SEWER
EXISTING CONCRETE MASONRY COLLAR
℄AERIAL POWER TRANSMISSION LINES
EXISTING BRIDGE LIMITS = 1707.8′±
APPROACH SLAB 30′-0″±
44′-6″ F/F BRIDGE RAILINGS
Ex R/W

W11-10
W16-SPEC
TRUCK XING 300 FT.
(TO REMAIN)
W3-4 (TO REMAIN)
R4-1 DO NOT PASS (TO REMAIN)
W2-2L
W16-8 ACCESS RD. (TO REMAIN)
W8-5 (TO REMAIN)
LOR 611 3.44 I-H25A (TO REMAIN)
OM-3R

PAVEMENT MARKING LEGEND

Ⓐ 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)
Ⓑ 642, LANE LINE, 4″, TYPE 1
Ⓒ 642, EDGE LINE, 4″, TYPE 1 (WHITE)

Ⓕ-1 FENCE REBUILT, TYPE CL, AS PER PLAN

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TJF

PLAN
STA. 187+00 TO STA. 191+00

LOR-611-3.44

19
234

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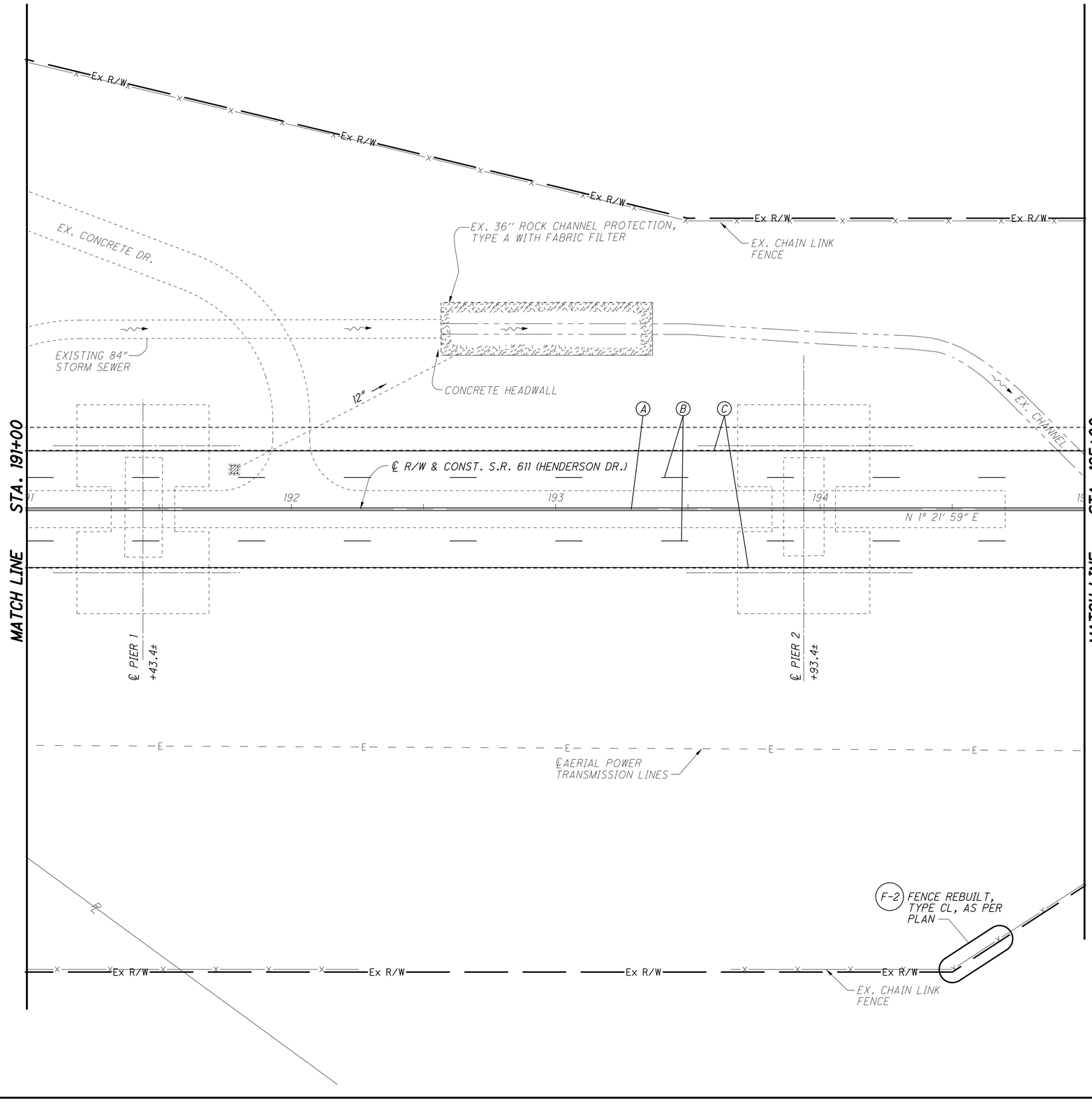
CROSS REFERENCES	
2-3	TYPICAL SECTIONS
17-18	CALCULATIONS
46-234	STRUCTURE PLANS



PAVEMENT MARKING LEGEND

- (A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)
- (B) 642, LANE LINE, 4", TYPE 1
- (C) 642, EDGE LINE, 4", TYPE 1 (WHITE)

EXISTING STRUCTURE

TYPE: CONCRETE FILLED STEEL GRID ROADWAY DECK AND SIDEWALK, CARRIED BY STEEL STRINGERS AND FLOORBEAMS, ON CANTILEVERED STEEL THROUGH TRUSSES, SUPPORTED ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 250'±, 250'±, 300'±, 400'±, 300'± & 200'±

ROADWAY: 44'-6"± F/F GUARDRAILS W/6'-0"± SIDEWALK

LOADING: HS 20-44 & ALTERNATE MILITARY LOADING AND 150% OHIO LEGAL.

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (30'-0" LONG)

YEAR BUILT: 1940, REHABILITATED 1989, 2006

STRUCTURE FILE NO.: 4707443

DISPOSITION: MINOR REHABILITATION

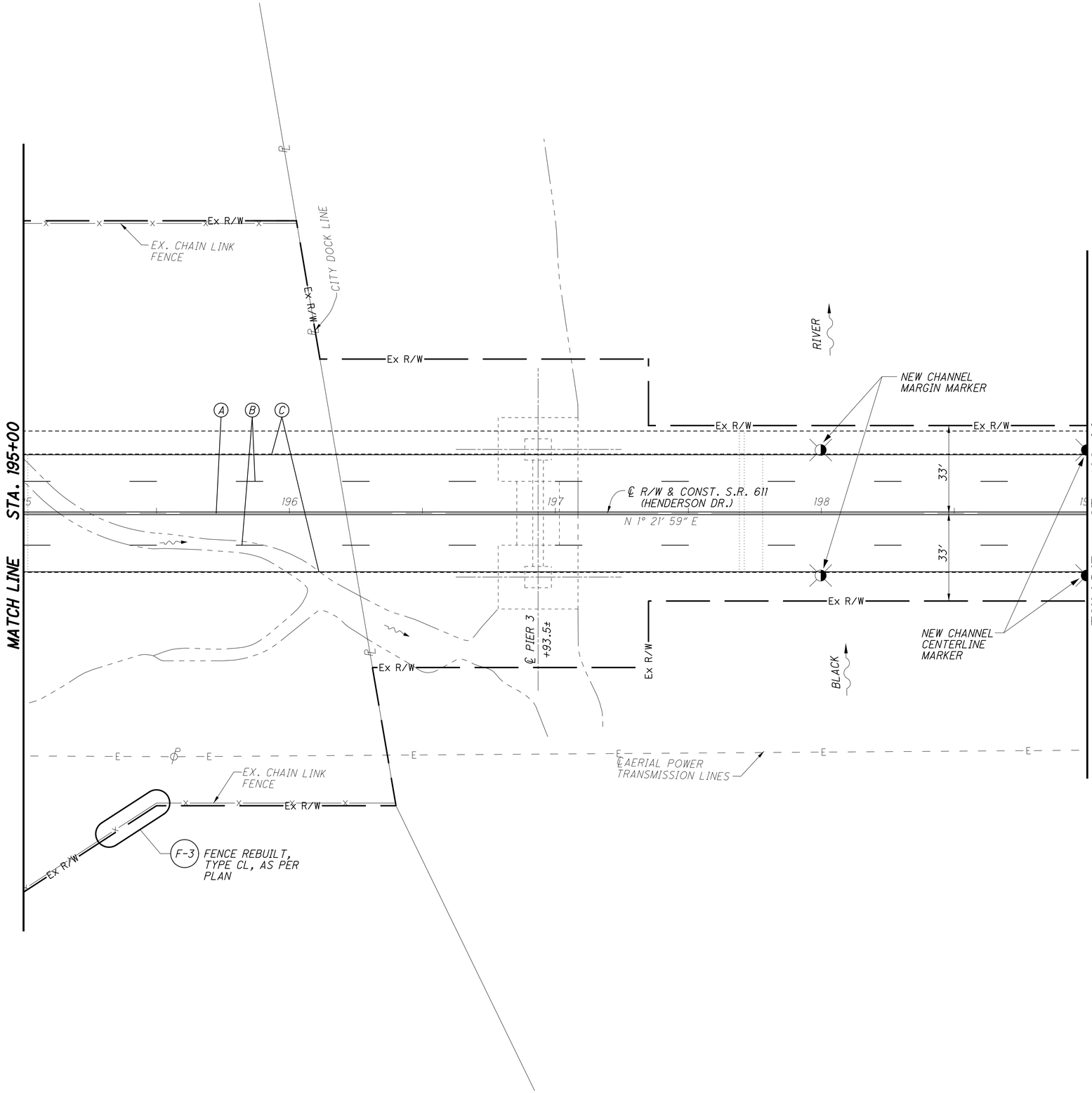
HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TJF

PLAN
STA. 191+00 TO STA. 195+00

LOR-611-3.44

CROSS REFERENCES	
2-3	TYPICAL SECTIONS
17-18	CALCULATIONS
42-45	NAVIGATION LIGHTING PLANS
46-234	STRUCTURE PLANS



PAVEMENT MARKING LEGEND

- (A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)
- (B) 642, LANE LINE, 4", TYPE 1
- (C) 642, EDGE LINE, 4", TYPE 1 (WHITE)

PROPOSED STRUCTURE

TYPE: CONCRETE FILLED STEEL GRID ROADWAY DECK AND SIDEWALK, CARRIED BY STEEL STRINGERS AND FLOORBEAMS, ON CANTILEVERED STEEL THROUGH TRUSSES, SUPPORTED ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

PROPOSED WORK: REPAIR OF EXISTING STRUCTURE INCLUDING STIFFENING TRUSS GUSSET PLATES; DECK JOINT REPLACEMENT; STEEL CRACK RETROFIT; ACCESS CATWALK REPAIR; REPLACE ACCESS CATWALK; SPOT PAINTING AND CAULKING; CONCRETE PATCHING; WEARING SURFACE SEALING; AND OTHER MINOR BRIDGE REPAIRS.

SPANS: 250'±, 250'±, 300'±, 400'±, 300'± & 200'±

ROADWAY: 44'-6"± F/F GUARDRAILS W/6'-0"± SIDEWALK

LOADING: HS 20-44 & ALTERNATE MILITARY LOADING AND 150% OHIO LEGAL.

SKEW: 0°±

ALIGNMENT: TANGENT

WEARING SURFACE: EXISTING

APPROACH SLABS: EXISTING

DESIGN AVERAGE DAILY TRAFFIC: 15,280 (2036)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 920 (2036)

HORIZONTAL SCALE IN FEET 0 20 40

CALCULATED JDL CHECKED TJF

PLAN STA. 195+00 TO STA. 199+00

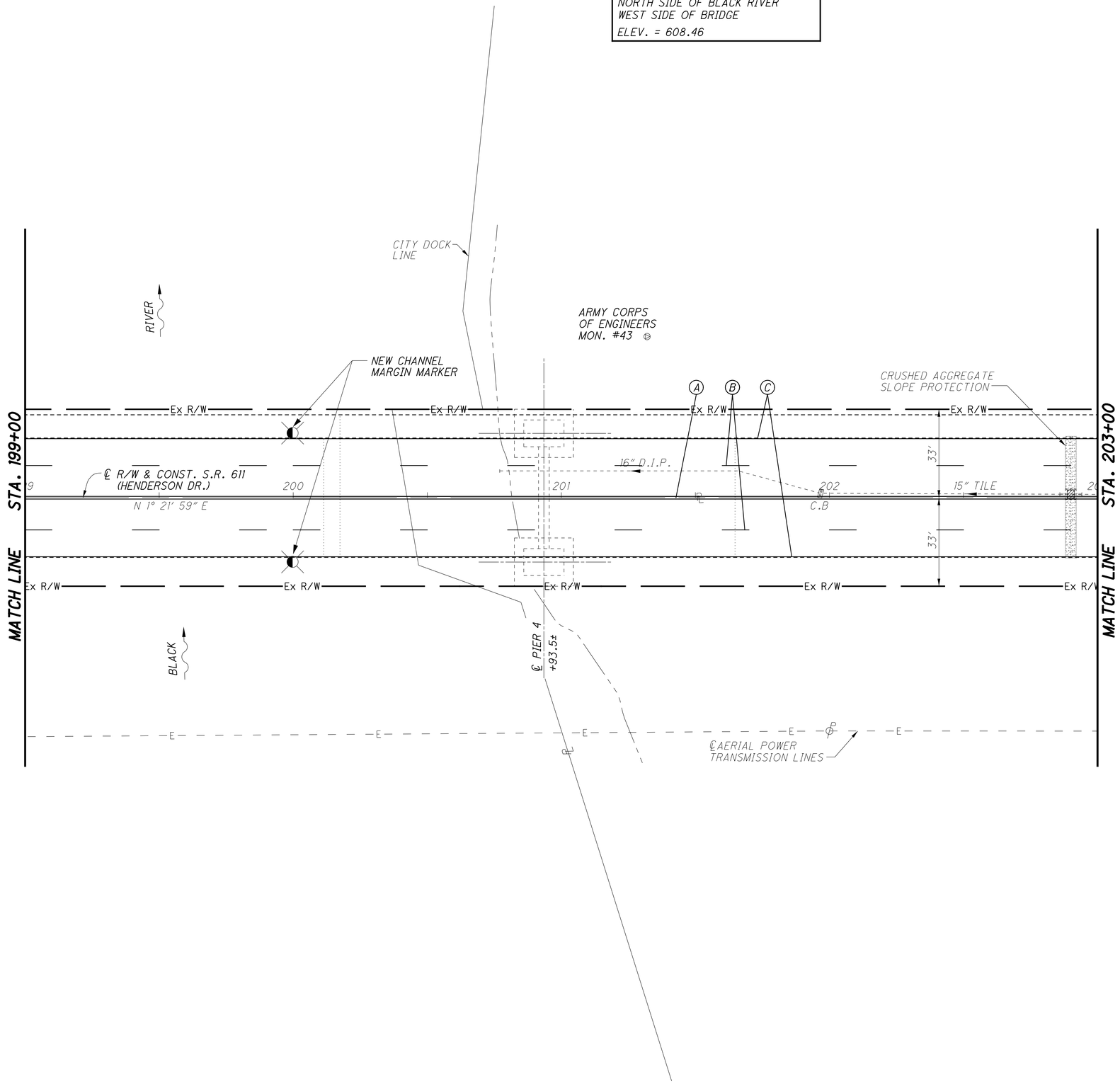
LOR-611-3.44

B.M.: STA. 201+31.98, 60.11' LT.
US ENGINEER #43 MON. BOX
NORTH SIDE OF BLACK RIVER
WEST SIDE OF BRIDGE
ELEV. = 608.46

CROSS REFERENCES	
2-3	TYPICAL SECTIONS
17-18	CALCULATIONS
42-45	NAVIGATION LIGHTING PLANS
46-234	STRUCTURE PLANS

PAVEMENT MARKING LEGEND

- (A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)
- (B) 642, LANE LINE, 4", TYPE 1
- (C) 642, EDGE LINE, 4", TYPE 1 (WHITE)



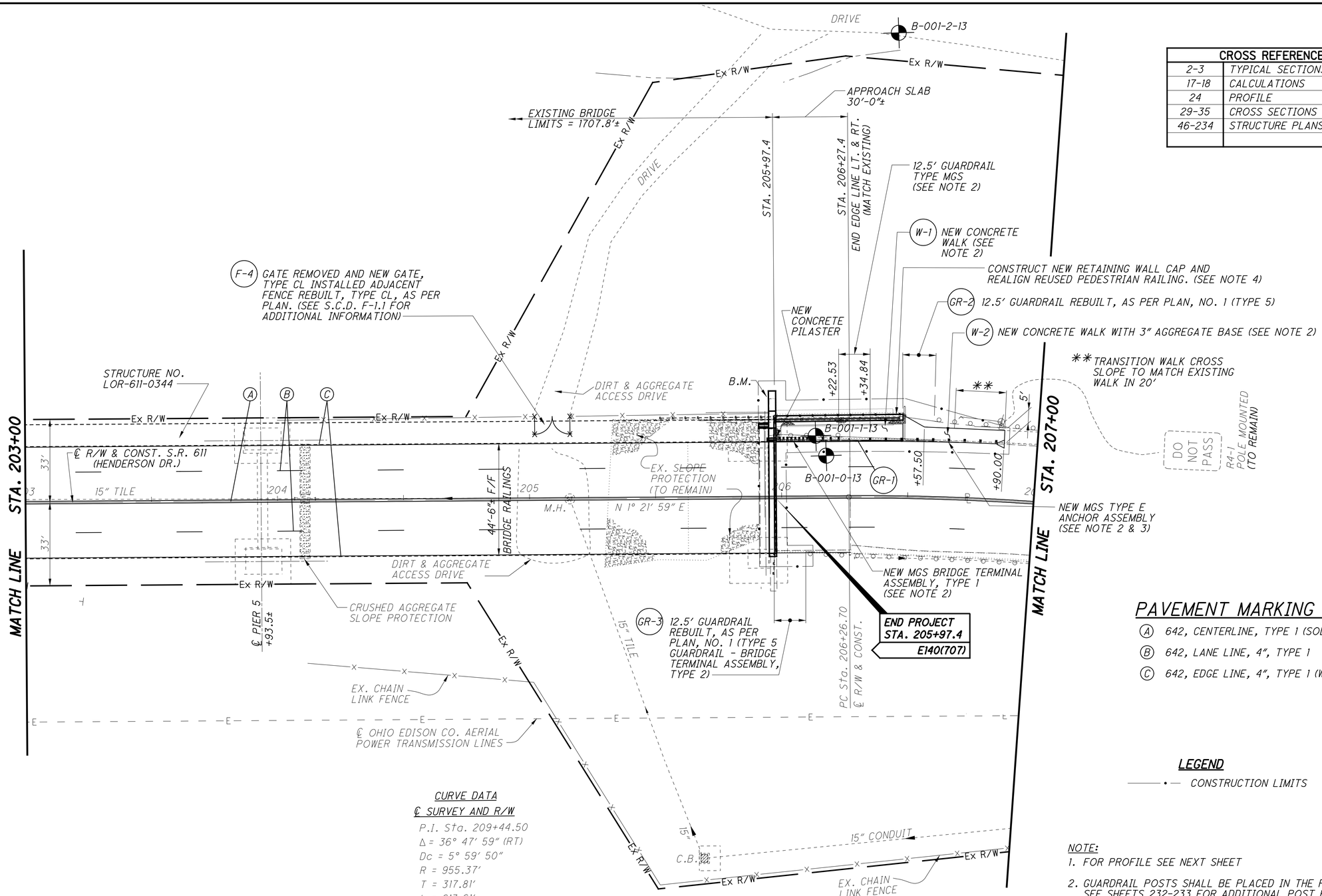
HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TLF

PLAN
STA. 199+00 TO STA. 203+00

LOR-611-3.44

CROSS REFERENCES	
2-3	TYPICAL SECTIONS
17-18	CALCULATIONS
24	PROFILE
29-35	CROSS SECTIONS
46-234	STRUCTURE PLANS



PAVEMENT MARKING LEGEND

- (A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)
- (B) 642, LANE LINE, 4", TYPE 1
- (C) 642, EDGE LINE, 4", TYPE 1 (WHITE)

LEGEND

——•— CONSTRUCTION LIMITS

CURVE DATA
℄ SURVEY AND R/W

P.I. Sta. 209+44.50
Δ = 36° 47' 59" (RT)
Dc = 5° 59' 50"
R = 955.37'
T = 317.81'
L = 613.61'
E = 51.47'
C = 603.12'
C.B. = N 19° 45' 58" E

B.M.: PK NAIL IN THE SOUTHWEST CORNER OF THE NORTHWEST ABUTMENT WINGWALL STA. 205+95.38, 39.08' LT. EL. 652.92

CONTRACTOR TO RELOCATE PRIOR TO DEMOLITION OF WINGWALL (INCLUDED IN ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING)

NOTE:

1. FOR PROFILE SEE NEXT SHEET
2. GUARDRAIL POSTS SHALL BE PLACED IN THE PROPOSED SIDEWALK. SEE SHEETS 232-233 FOR ADDITIONAL POST PLACEMENT AND WALK JOINT DETAILS.
3. THE FIRST 12.5' OF THE TYPE E ANCHOR ASSEMBLY SHALL BE FLARED @ 12:1 TO ACHIEVE A 6" MAX. OFFSET BETWEEN THE FACE OF RAIL AND FACE OF CURB. THE IMPACT HEAD SHALL NOT PROTRUDE BEYOND THE FACE OF CURB INTO THE ADJACENT TRAVEL LANE.
4. SEE SHEETS 232-233 FOR NEW RETAINING WALL CAP AND PEDESTRIAN RAILING DETAILS.
5. SEE SHEET 65 FOR NEW EAST PILASTER RECONSTRUCTION.
6. SEE SHEET 62 FOR NEW BACKWALL RECONSTRUCTION.

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TJF

PLAN
STA. 203+00 TO STA. 207+00

LOR-611-3.44

23
234

℄ PIER 5

BRIDGE LIMITS = 1707.8'

STA. 205+97.4

-4.00%

EXP.

EXP.

℄ FORWARD ABUTMENT

SPAN NO. 6

STA. 202+89, 1.0'± LT.
EX. C.B. NO. 5 W/O
CONCRETE APRON, W/ 12" SUMP
TOP OF GRATE EL. 611.15±
℄ EX. 15'' (N. & S.) EL. 600.5±
℄ EX. C.B. EL. 599.5±

STA. 204+11, 1.0'± LT.
EX. C.B. NO. 5 W/O
CONCRETE APRON, W/ 12" SUMP
TOP OF GRATE EL. 611.90±
℄ EX. 15'' (N. & S.) EL. 601.4±
℄ EX. C.B. EL. 600.4±

STA. 205+16±, ℄
EX. M.H.
EX. TOP OF GRATE EL. 615.0±
℄ EX. 15" (S.) EL. 602.0±
℄ EX. 15" (E.) EL. 602.0±

STA. 205+68±, 143'± RT.
EX. C.B. NO. 5
TOP OF GRATE EL. 609.2±
℄ EX. 15" EL. 603.9±

EX. 15"

EX. 15"

EX. 15"

690 685 680 675 670 665 660 655 650 645 640 635 630 625 620 615 610 605 600 595

612.48 612.47 612.92 613.48 613.86 625.11 651.94 649.79 647.78

203 204 205 206 207

CALCULATED JDL
CHECKED TJF

PROFILE
STA. 202+80 TO STA. 207+00

LOR-611-3.44

MAG NAIL FOUND IN SIDEWALK

26.68'

℄ S.R. 611

STA. 208+24.49

CONTROL POINT

CROSS REFERENCES	
2-3	TYPICAL SECTION
17-18	CALCULATIONS
26	PROFILE
29-35	CROSS SECTIONS

CONTRACTOR SHALL INSURE POSITIVE DRAINAGE WHEN REESTABLISHING EXISTING DITCH

B-003-1-13

Ex R/W

INCLINOMETER B-002-1-14

PIEZOMETER B-002-2-14

PIEZOMETER B-003-5-14

INCLINOMETER B-003-4-14

5'-0" MIN.

EXCAVATION LIMIT

NEW TOE BERM

S-1

W8-5-36 (TO BE REMOVED AND RERECTED) STA. 209+79

W3-H4B (YELLOW) (TO REMAIN)

WATCH FOR STOPPED TRAFFIC

INCLINOMETER B-003-3-14

NEW 6" CURB, TYPE 6, AS PER PLAN

GR-4 100' GUARDRAIL REBUILT, AS PER PLAN NO. 2

W-3 NEW 5' CONCRETE WALK WITH 3" AGGREGATE BASE

CONTROL POINT SV2

STA. 208+50 BEGIN PAVEMENT RESURFACING AND TOE BERM MATCH EXIST.

BUTT JOINT AS PER BP-3.1

+72 BEGIN PAVEMENT REPAIR

N 1°21'59" E

N 38°09'58" E

INCLINOMETER B002-0-13

PIEZOMETER B-004-0-13

+72 END PAVEMENT REPAIR

CONTROL POINT SV1

BUTT JOINT AS PER BP-3.1

STA. 211+50 END PAVEMENT RESURFACING AND TOE BERM MATCH EXIST.

ASPH. CONC. WALK

STA. 207+00

MATCH LINE

℄ R/W & CONST. S.R. 611 (HENDERSON DR.)

208

209

B003-0-13

11'-02'10"

210

211

B-005-0-13

14'

9'

STA. 212+00

MATCH LINE

INCLINOMETER B-003-2-13

PAVEMENT CRACKS OCTOBER 12, 2012

SAW CUT LINE

PAVEMENT CRACKS AUGUST 19, 2014

PROP. CATCH BASIN CLEANOUT

12" CONDUIT

℄ AERIAL POWER TRANSMISSION LINES

12" CONDUIT

DO NOT PASS R4-1 (TO REMAIN)

15" CONDUIT

C.B.

Ex R/W

PAVEMENT MARKING LEGEND

(A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)

(B) 642, LANE LINE, 4", TYPE 1

CURVE DATA
℄ SURVEY AND R/W

P.I. Sta. 209+44.50
Δ = 36° 47' 59" (RT)
Dc = 5° 59' 50"
R = 955.37'
T = 317.81'
L = 613.61'
E = 51.47'
C = 603.12'
C.B. = N 19° 45' 58" E

LEGEND

PLANING AND RESUFACING (3")

CONSTRUCTION LIMITS

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TJF

PLAN
STA. 207+00 TO STA. 211+00

LOR-611-3.44

25
234

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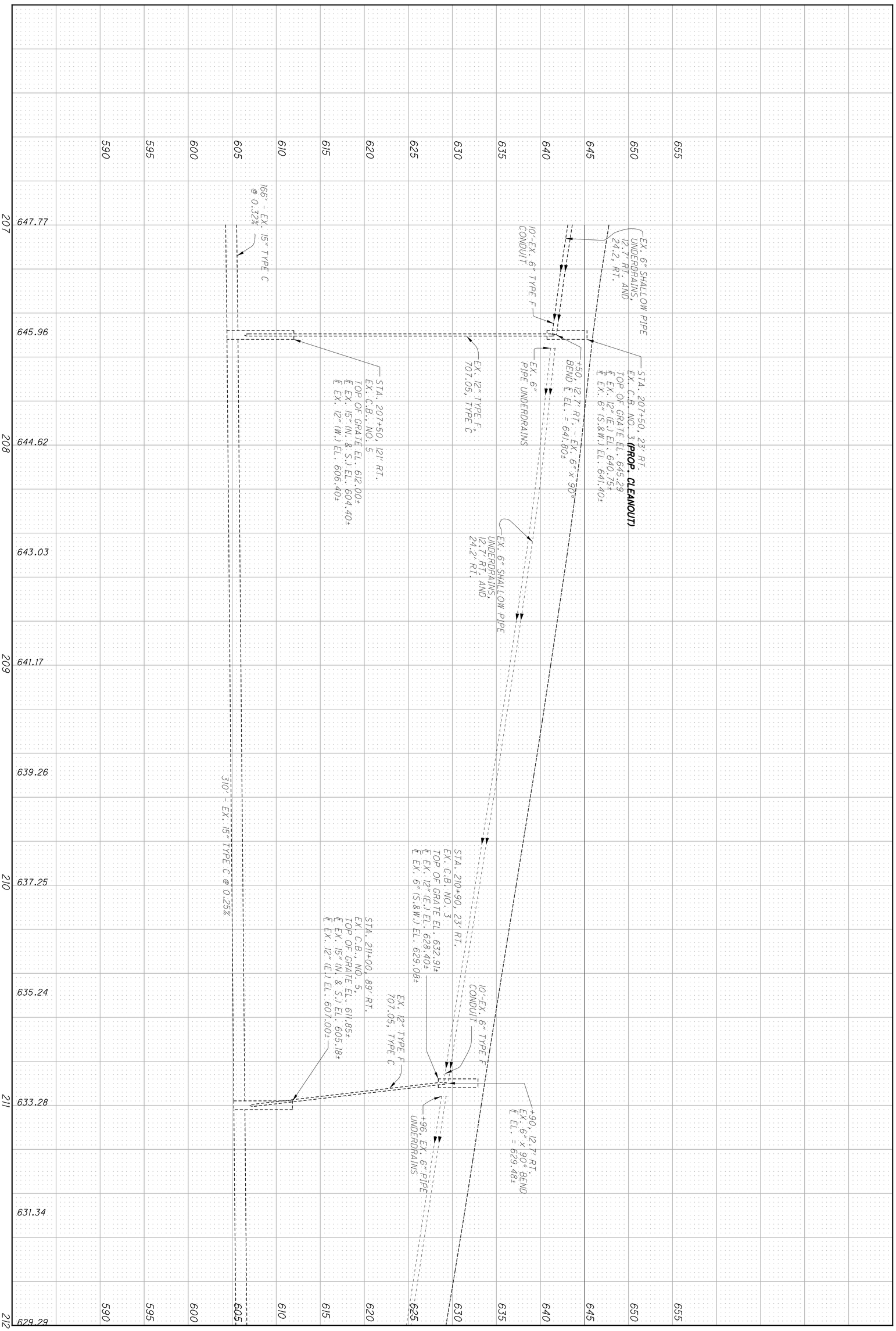


26 / 234	LOR-611-3.44	PROFILE STA. 207+00 TO STA. 212+00	CALCULATED JDL CHECKED TJF

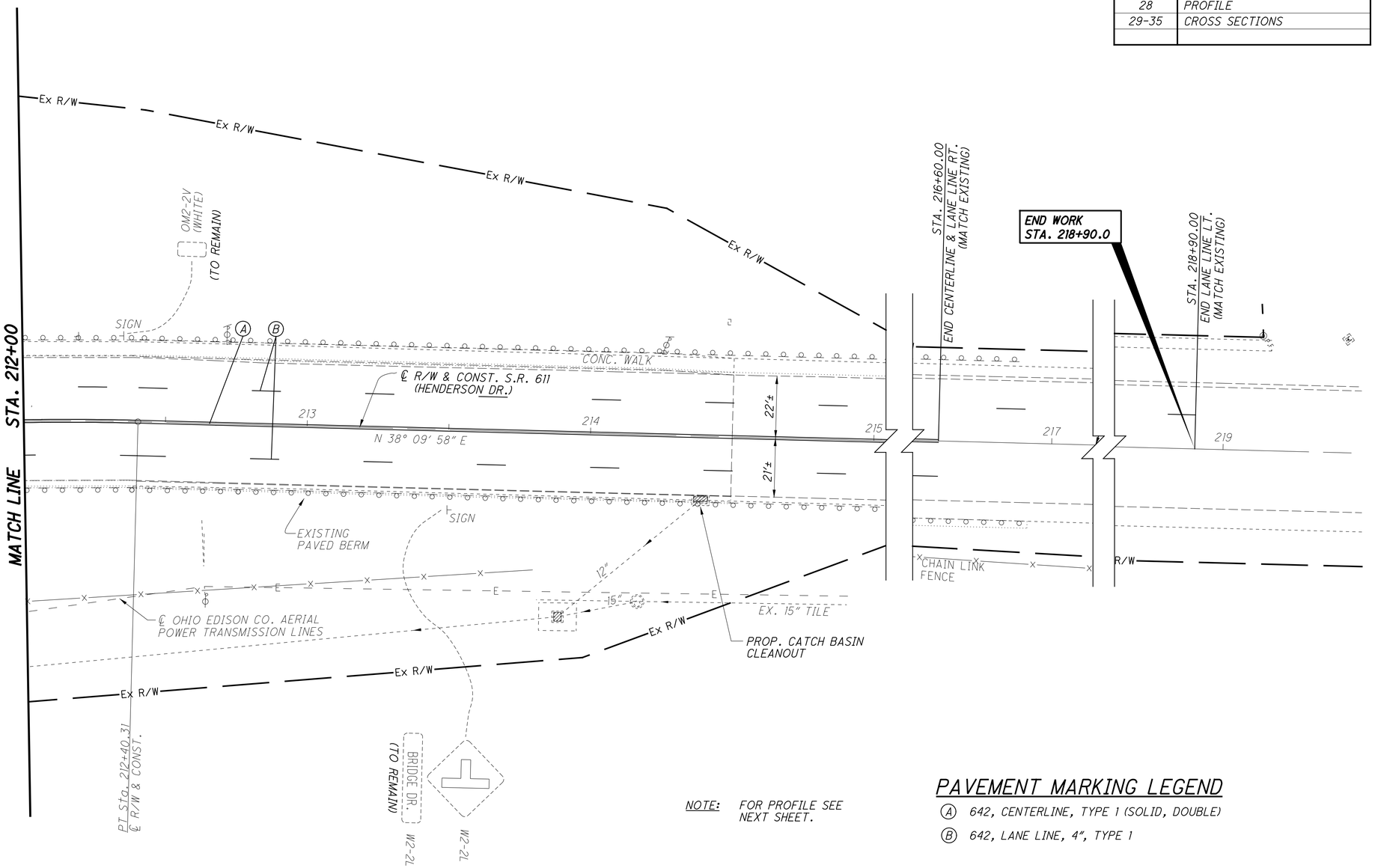
MAG NAIL FOUND
IN SIDEWALK

26.33'

℄ S.R. 611

STA. 211+01.65
CONTROL POINT

CROSS REFERENCES	
2-3	TYPICAL SECTION
17-18	CALCULATIONS
28	PROFILE
29-35	CROSS SECTIONS



NOTE: FOR PROFILE SEE NEXT SHEET.

PAVEMENT MARKING LEGEND

(A) 642, CENTERLINE, TYPE 1 (SOLID, DOUBLE)

(B) 642, LANE LINE, 4", TYPE 1

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED JDL
CHECKED TJF

PLAN
STA. 211+00 TO STA. 215+00

LOR-611-3.44

CALCULATED JDL
CHECKED TJF

PROFILE

STA. 212+00 TO STA. 216+00

LOR-611-3.44

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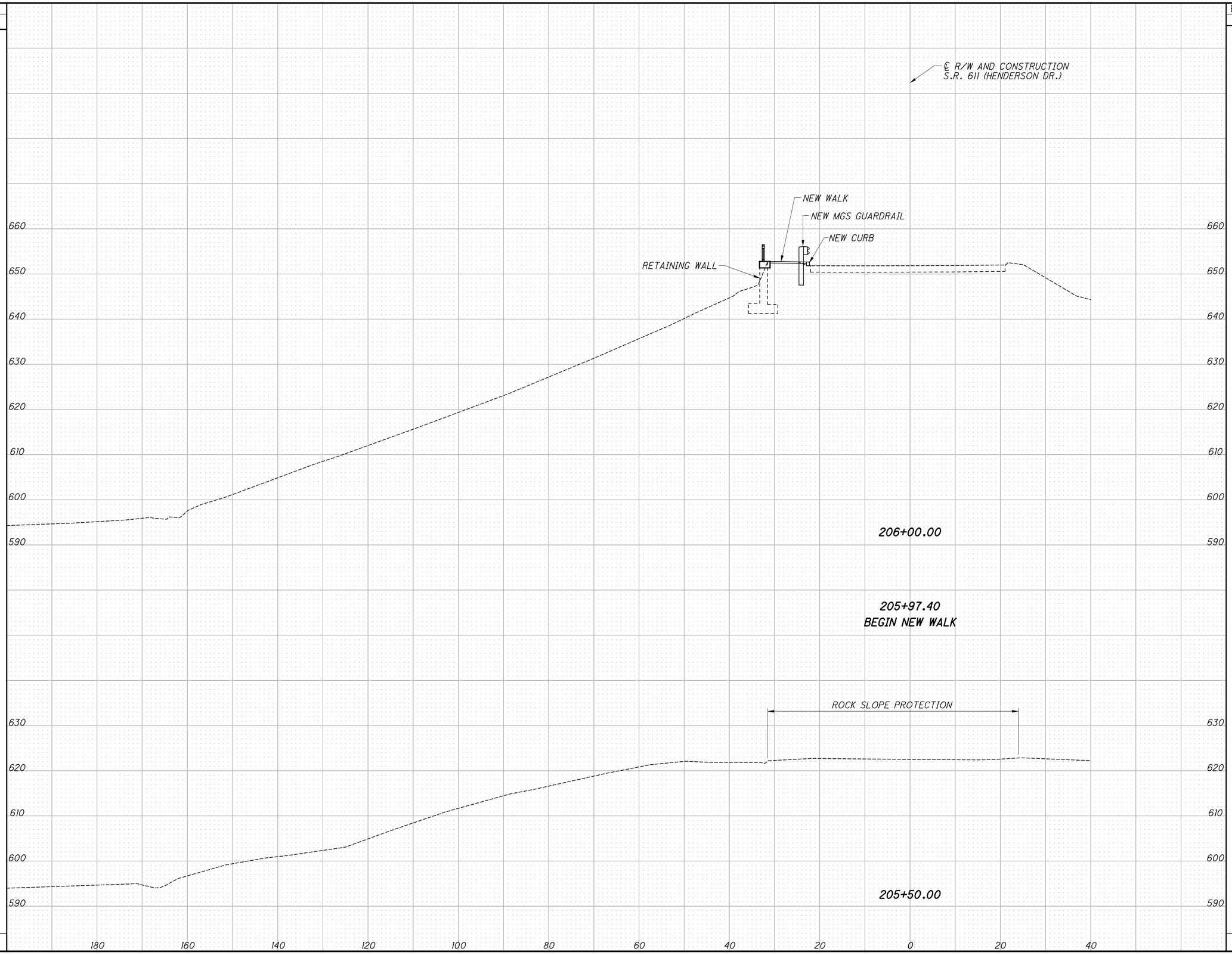
SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED JDL
CHECKED TJF



CROSS SECTIONS
STA. 205+50 TO STA. 206+00

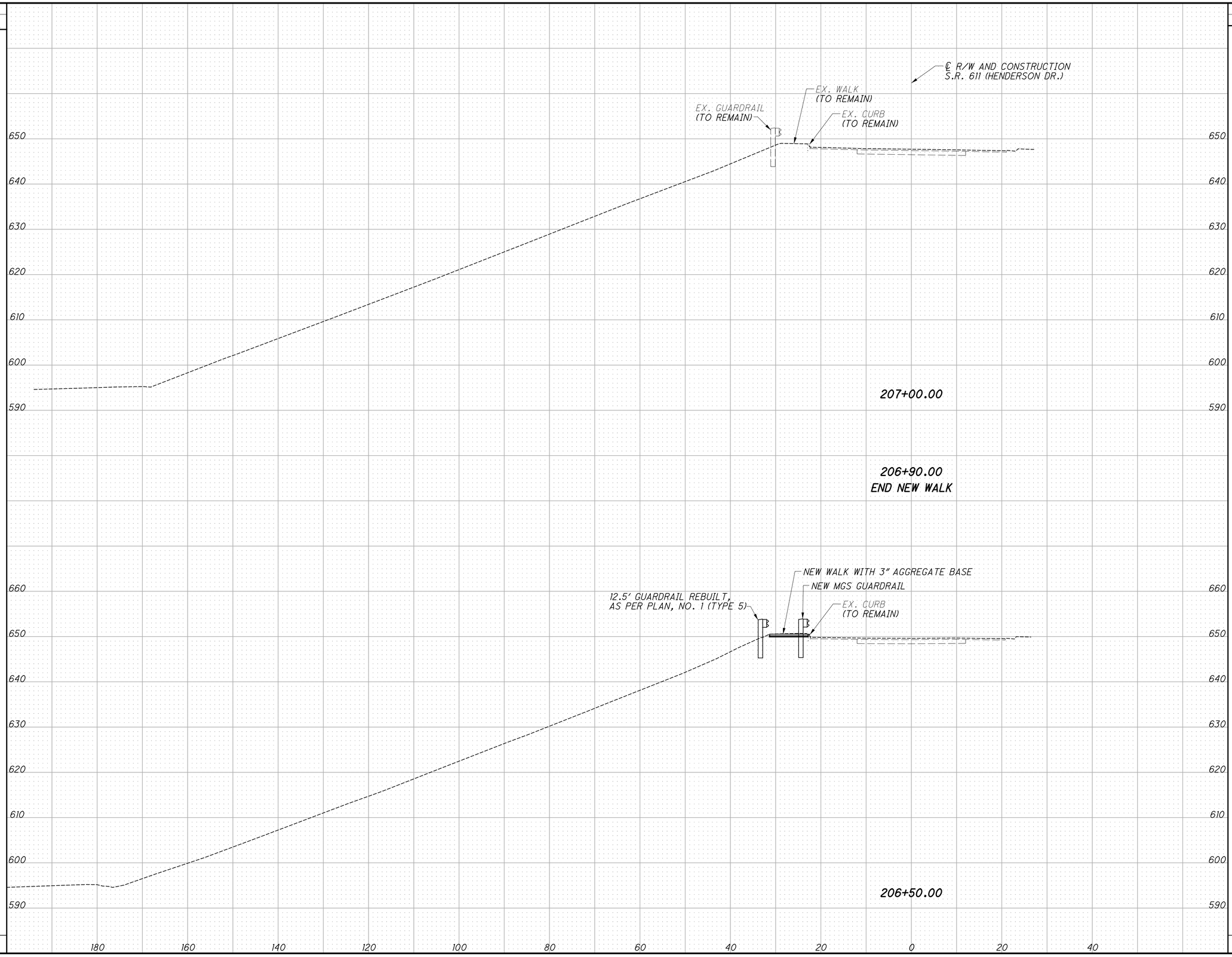
LOR-611-3.44

SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED JDL
CHECKED TJF



CROSS SECTIONS
STA. 206+50 TO STA. 207+00

LOR-611-3.44

SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED JDL

CHECKED TJF

℄ R/W AND CONSTRUCTION
S.R. 611 (HENDERSON DR.)

EX. GUARDRAIL
(TO REMAIN)

EX. WALK
(TO REMAIN)

EX. CURB
(TO REMAIN)

208+00.00

650
640
630
620
610
600
590

180 160 140 120 100 80 60 40 20 0 20 40

EX. GUARDRAIL
(TO REMAIN)

EX. WALK
(TO REMAIN)

EX. CURB
(TO REMAIN)

207+50.00

650
640
630
620
610
600
590

CROSS SECTIONS
207+50 TO STA. 208+00

LOR-611-3.44

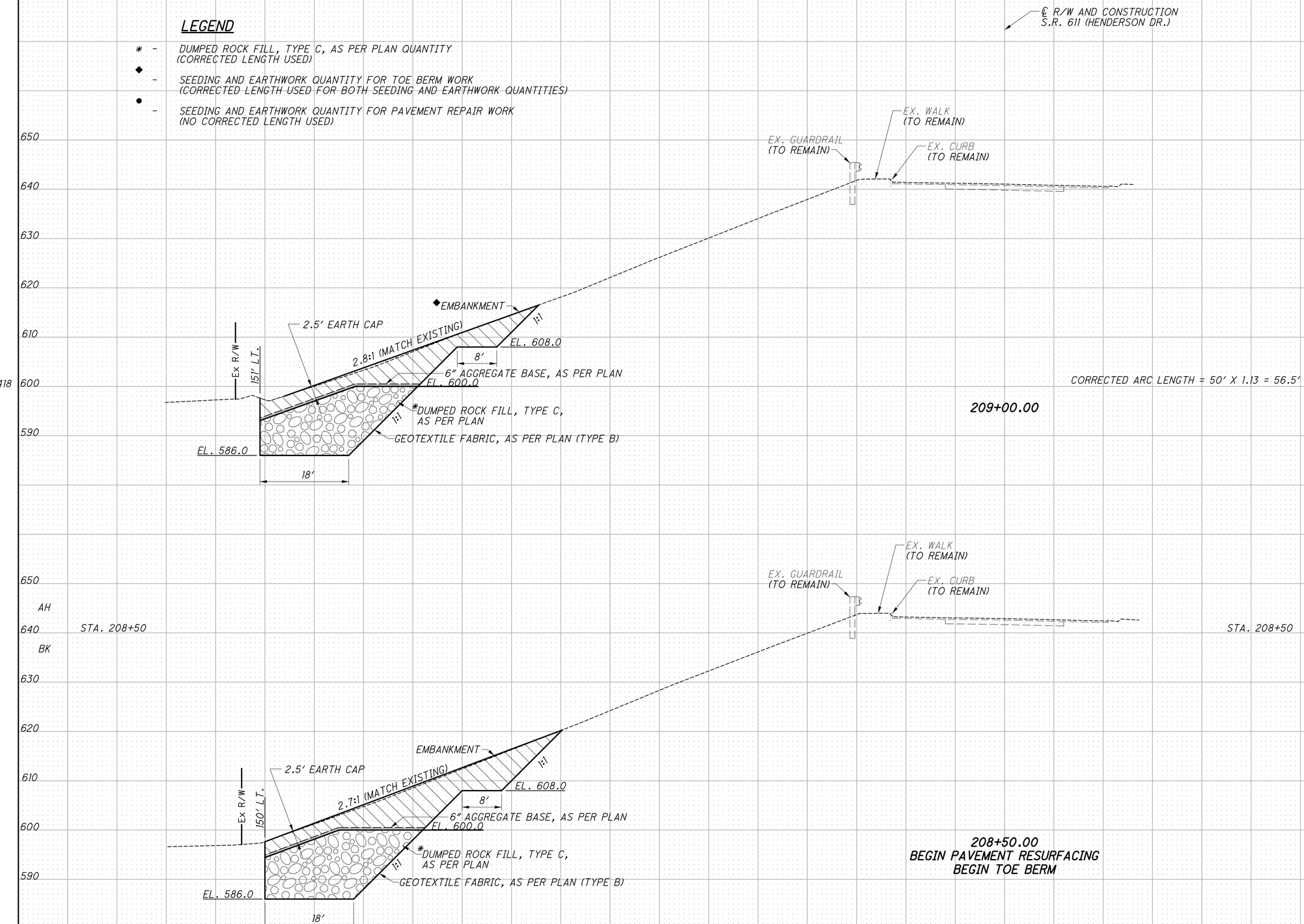
SEEDING	
END WIDTH	SQ. YDS.
◆64	
	◆418
◆69	
◆0	
	◆418

LEGEND

* - DUMPED ROCK FILL, TYPE C, AS PER PLAN QUANTITY (CORRECTED LENGTH USED)

◆ - SEEDING AND EARTHWORK QUANTITY FOR TOE BERM WORK (CORRECTED LENGTH USED FOR BOTH SEEDING AND EARTHWORK QUANTITIES)

● - SEEDING AND EARTHWORK QUANTITY FOR PAVEMENT REPAIR WORK (NO CORRECTED LENGTH USED)



END AREA		VOLUME	
CUT	FILL	CUT	FILL
◆502	◆213		
	*284		
		◆1162	◆533
			*621
◆608	◆296		
	*309		
◆0	◆0		
		◆1162	◆533
			*621

CALCULATED JDL
CHECKED TJF

CROSS SECTIONS
STA. 208+50 TO STA. 209+00

LOR-611-3.44

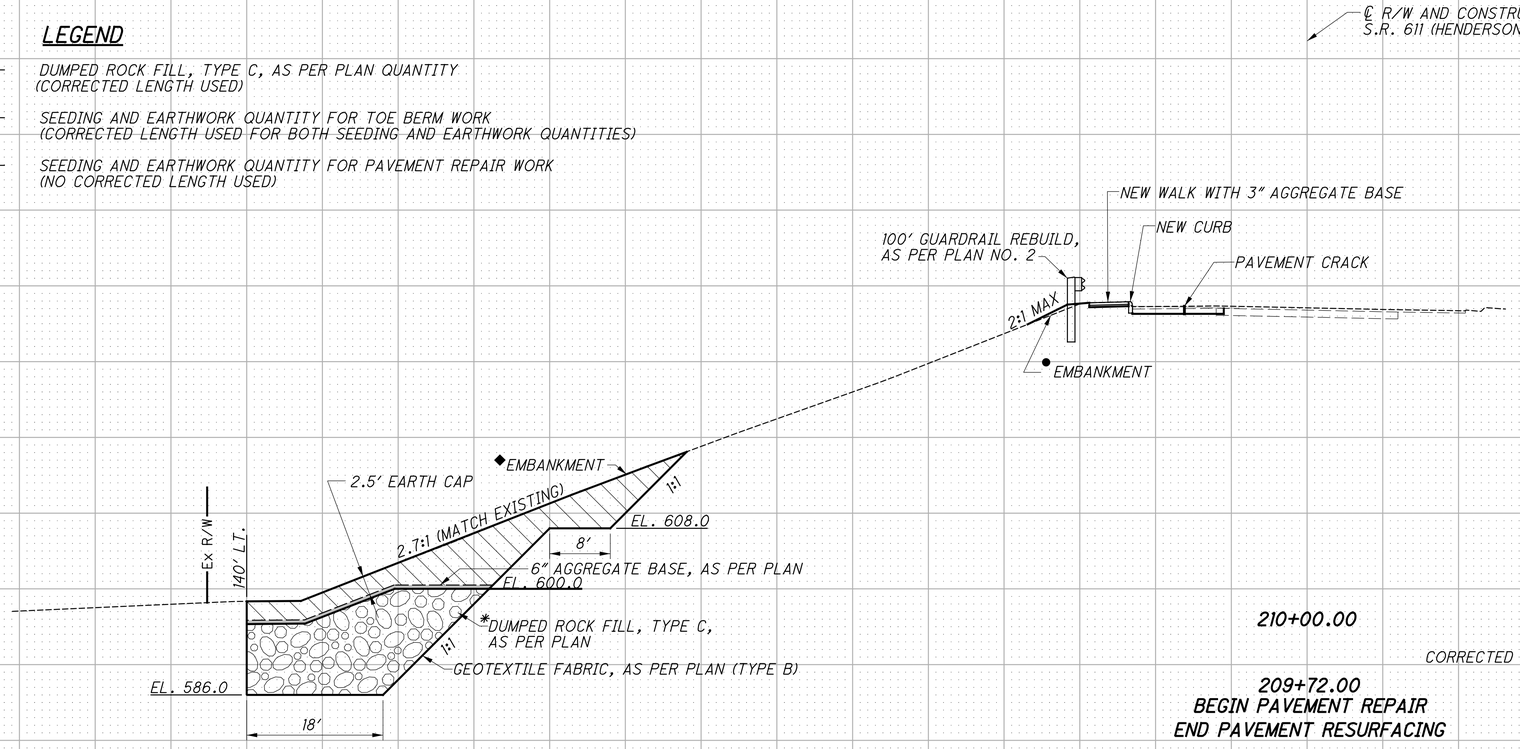
SEEDING	
END WIDTH	SQ. YDS.
11	
66	
0	
	35
11	
0	
	402
62	
64	
	801
	35
	399

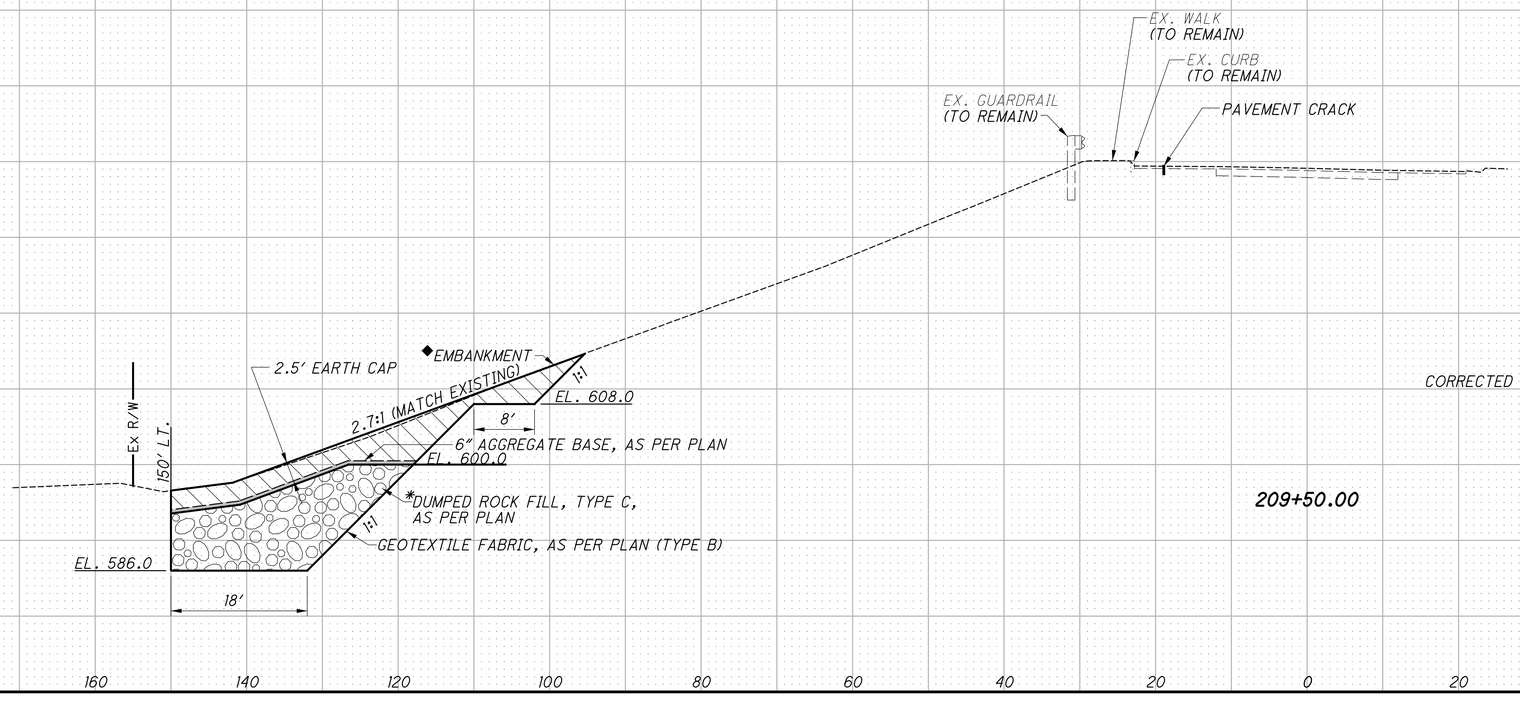
LEGEND

* - DUMPED ROCK FILL, TYPE C, AS PER PLAN QUANTITY (CORRECTED LENGTH USED)

◆ - SEEDING AND EARTHWORK QUANTITY FOR TOE BERM WORK (CORRECTED LENGTH USED FOR BOTH SEEDING AND EARTHWORK QUANTITIES)

● - SEEDING AND EARTHWORK QUANTITY FOR PAVEMENT REPAIR WORK (NO CORRECTED LENGTH USED)





END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	3		
531	233		
	*288		
		0	4
0	3		
0	0		
		1007	417
			*573
431	165		
	*259		
		985	399
			*574
502	213		
	*284		
		1992	816
			*1147
		0	4

CALCULATED JDL
CHECKED TJF

CROSS SECTIONS STA. 209+50 TO STA. 210+00

LOR-611-3.44

33
234

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LEGEND

* - DUMPED ROCK FILL, TYPE C, AS PER PLAN QUANTITY (CORRECTED LENGTH USED)

◆ - SEEDING AND EARTHWORK QUANTITY FOR TOE BERM WORK (CORRECTED LENGTH USED FOR BOTH SEEDING AND EARTHWORK QUANTITIES)

● - SEEDING AND EARTHWORK QUANTITY FOR PAVEMENT REPAIR WORK (NO CORRECTED LENGTH USED)

℄ R/W AND CONSTRUCTION
S.R. 611 (HENDERSON DR.)

EX. GUARDRAIL (TO REMAIN)
EX. WALK (TO REMAIN)
EX. CURB (TO REMAIN)

EMBANKMENT
2.5′ EARTH CAP
2.7:1 (MATCH EXISTING)
1:1
EL. 608.0
8′
6″ AGGREGATE BASE, AS PER PLAN
EL. 600.0
Ex R/W
130′ LT.
*DUMPED ROCK FILL, TYPE C, AS PER PLAN
1:1
GEOTEXTILE FABRIC, AS PER PLAN (TYPE B)
EL. 586.0
18′

CORRECTED ARC LENGTH = 50′ X 1.12 = 56′

211+00.00

210+72.00
BEGIN PAVEMENT RESURFACING
END PAVEMENT REPAIR

STA. 210+72

NEW WALK WITH 3″ AGGREGATE BASE
NEW CURB
PAVEMENT CRACK
100′ GUARDRAIL REBUILT, AS PER PLAN NO. 2
2:1 MAX
EMBANKMENT

EMBANKMENT
2.5′ EARTH CAP
2.6:1 (MATCH EXISTING)
1:1
EL. 608.0
8′
6″ AGGREGATE BASE, AS PER PLAN
EL. 600.0
Ex R/W
133′ LT.
*DUMPED ROCK FILL, TYPE C, AS PER PLAN
1:1
GEOTEXTILE FABRIC, AS PER PLAN (TYPE B)
EL. 586.0
18′

CORRECTED ARC LENGTH = 50′ X 1.12 = 56′

210+50.00

STA. 210+50
STA. 210+00

SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
◆65		◆544	◆226		
			*308		
	◆411			◆1152	◆491
					*635
AH		AH			
●0		●0	●0		
BK		BK			
●11		●1	●2		
	●27			●1	●2
◆67		◆566	◆247		
			*304		
●11		●1	●2		
	◆414			◆1138	◆498
	●62			●1	*614
					●5
◆66		◆531	◆233		
			*288		
●11		●0	●3		
	◆825			◆2290	◆989
					*1249
	●89			●2	●7

180 160 140 120 100 80 60 40 20 0 20 40

CALCULATED JDL
CHECKED TJF

CROSS SECTIONS
STA. 210+50 TO STA. 211+00

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SEEDING END WIDTH	SEEDING SQ. YDS.
	◆2464
	●124
	◆0
	◆71
	◆420
	◆65
	◆420

SEEDING TOTALS CARRIED TO CALCULATIONS SHEET 18

LEGEND

* - DUMPED ROCK FILL, TYPE C, AS PER PLAN QUANTITY (CORRECTED LENGTH USED)

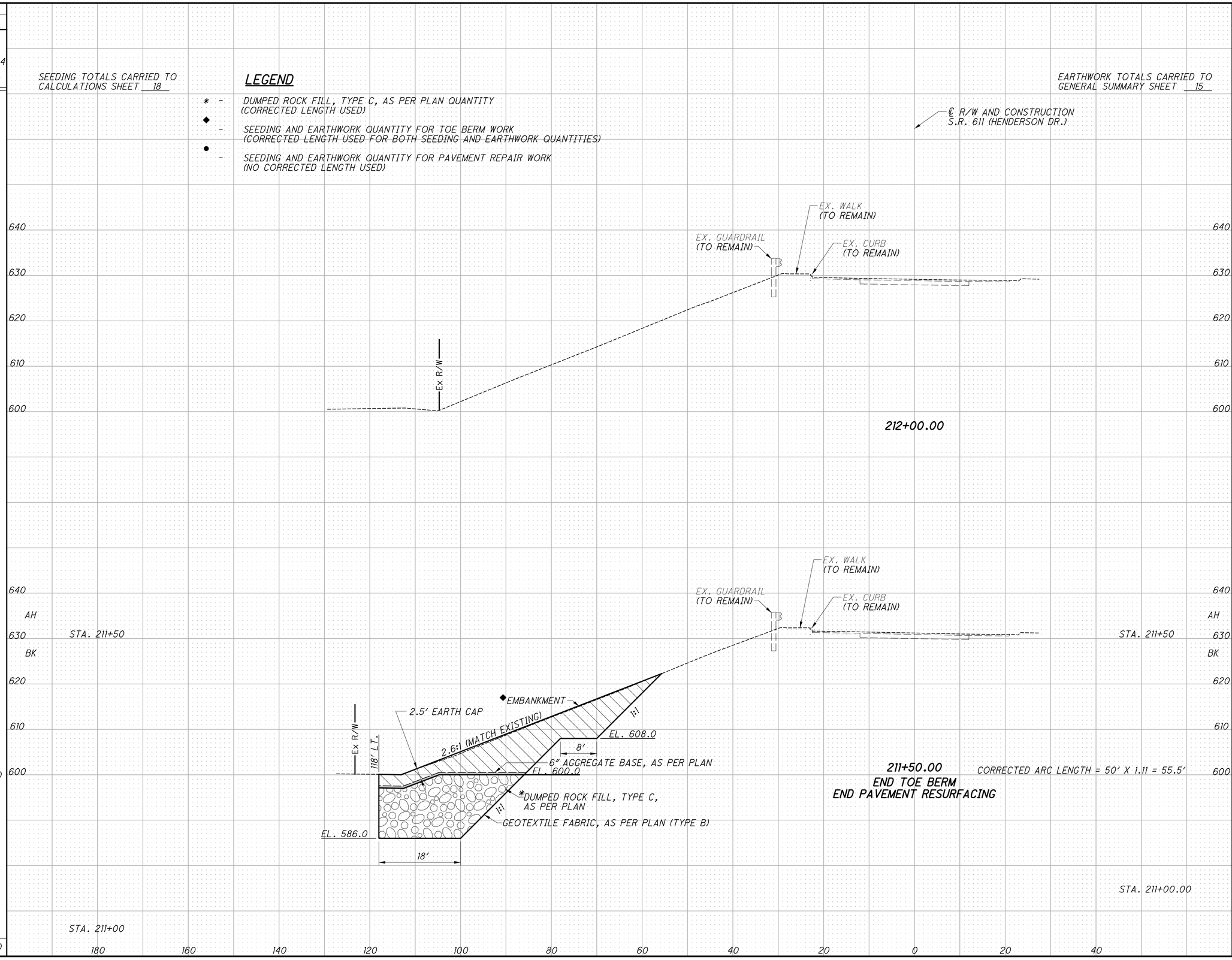
◆ - SEEDING AND EARTHWORK QUANTITY FOR TOE BERM WORK (CORRECTED LENGTH USED FOR BOTH SEEDING AND EARTHWORK QUANTITIES)

● - SEEDING AND EARTHWORK QUANTITY FOR PAVEMENT REPAIR WORK (NO CORRECTED LENGTH USED)

EARTHWORK TOTALS CARRIED TO GENERAL SUMMARY SHEET 15

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		◆6689	◆2919
			*3666
		●2	●11
		◆1245	◆581
			*649
		◆1245	◆581
			*649

CALCULATED JDL CHECKED TJF



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		◆0	◆0
			*0
		◆667	◆339
			*323
		◆544	◆226
			*308

CROSS SECTIONS STA. 211+50 TO STA. 212+00

LOR-611-3.44

NOTES

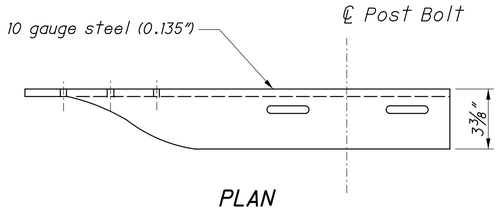
GENERAL: *Components shown on this drawing are used in a variety of guardrail systems. See individual guardrail drawing for specific applications.*

See CMS 606 for guardrail specifications not covered on these drawings.

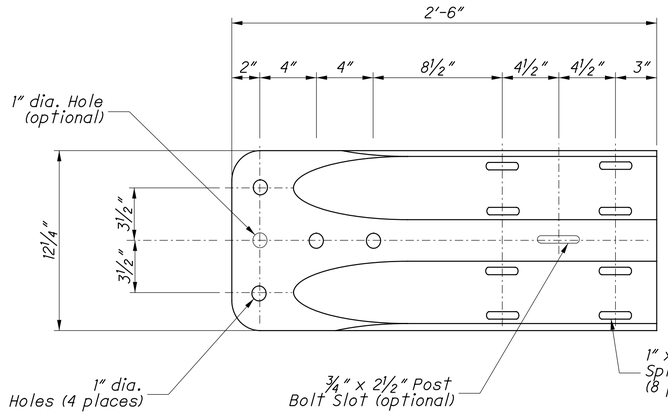
Refer to AASHTO M 180 for dimensional details of W-Beam and Thrie-Beam rail elements, related buffer and end sections, beam splices, post and splice bolts, nuts, and Type 1 W-Beam to Thrie-Beam Transition sections.

RAIL ELEMENTS: *W-Beam Rail has an effective length of 12'-6" unless otherwise specified, with ¾" x 2½" post bolt slots on 6'-3" centers regardless of post spacing. Field punch or drill bolt holes or slots for irregularly spaced posts as specified in CMS 606.04.*

RAIL SPLICES: *Lap splices between two rail elements or between a rail and terminal connector in the direction of traffic. Lap the buffer or flared end sections in the direction of traffic.*

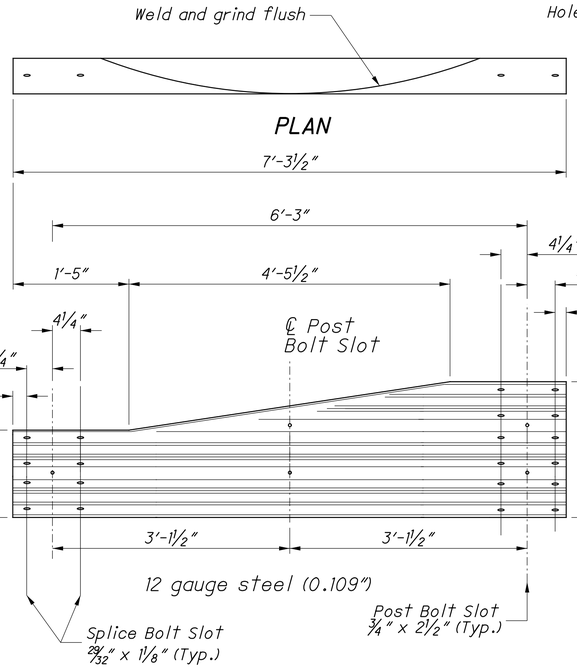


PLAN



ELEVATION

W-BEAM TERMINAL CONNECTOR

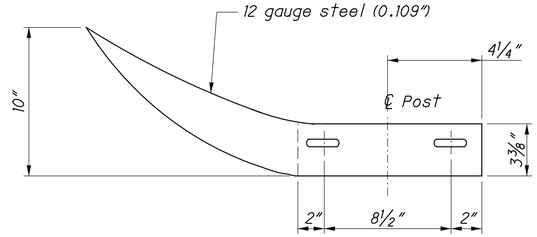


ELEVATION

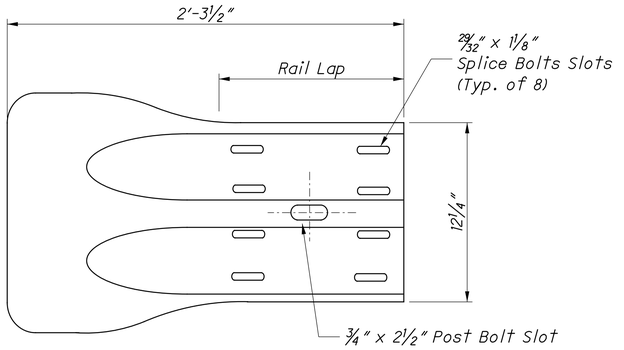
TYPE 2 TRANSITION SECTION

(Asymmetric W to Thrie-Beam)

For details of Type 1 Transition Section (Symmetric), refer to AASHTO M 180, Figure 4.

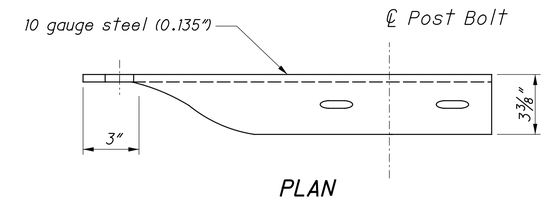


PLAN

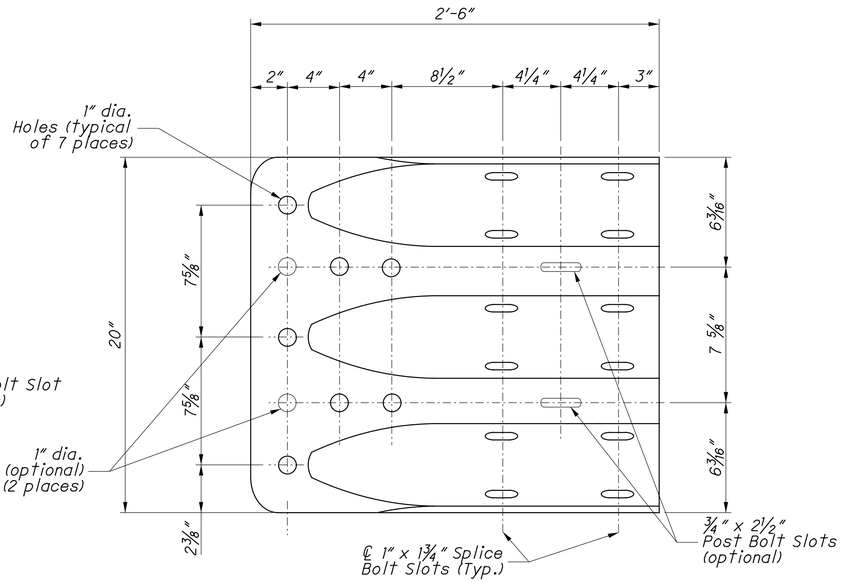


ELEVATION

W-BEAM FLARED END SECTION

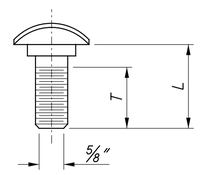


PLAN



ELEVATION

THRIE-BEAM TERMINAL CONNECTOR



GUARDRAIL BOLT
(For Post and Splice Bolts)

L	T min.	Bolt Use
18" (Standard Rail)	4"	Type 5: WP/WB, PB
26" (Barrier Rail)		
10"	4"	Type 5: SP/WB, PB
1¼"	1⅛"	Splice Bolt

WP = Wood Post WB = Wood Blockout
SP = Steel Post PB = Plastic Blockout

Longer Bolt may be needed for round Wood Post larger than 8" dia.

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DESIGNED | REVIEWED

REVISION DATE | CHECKED

PIS NUMBER GR-1.1

PLAN INSERT SHEET

GUARDRAIL DETAILS (Rail Components)

LOR-611-3.44

1 / 3

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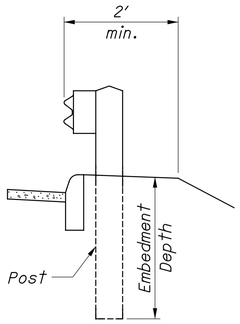
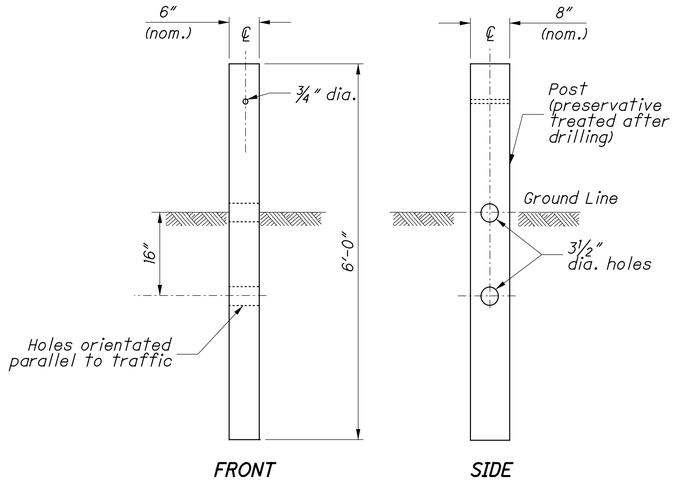
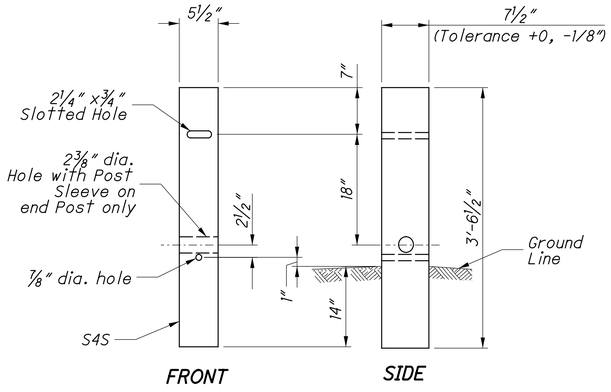


DETAIL A

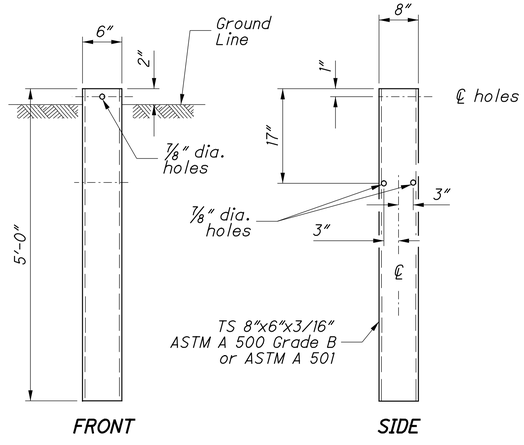
See POST EMBEDMENT DEPTH Note



TYPE 1 BREAKAWAY CRT POST



TYPE 2 BREAKAWAY CRT POST



STEEL GROUND TUBE

NOTES

GUARDRAIL HEIGHT: *For initial installation, construct the guardrail within ± 1″ of the standard height, h, or* ***29″*** *to the top of W-Beam rail. (See MEASURING GUARDRAIL HEIGHT Detail.)*
When subsequent projects, such as resurfacings, affect the height of existing guardrail, the finished height is to be within ±2.5″ of the standard height.

POST EMBEDMENT DEPTH: *Standard embedment is 3′-5″ min. Where less than 2′ of graded shoulder width (10:1 or flatter) exists, measured from the face of the guardrail (see DETAIL "A"), use longer posts so that a minimum of 5′-5″ embedment depth is provided. Payment for the longer posts will be made at the unit price bid for* ***ITEM 606 - GUARDRAIL POST, 9′, Each.***

SPECIAL POST MOUNTINGS: *Install posts located over a drainage inlet or structure as shown in the FOOTING ANCHOR Detail, or anchor per the details shown on* ***SCD GR-2.2.***

Install posts located over a footing with a cover of less than 2′-6″ with a footing anchor as detailed here. (A plate, as detailed on SECTION B-B of ***SCD GR-2.2****, may be used as an alternative attachment method.) Where the cover is between 2′-6″ and 3′-5″, the footing anchor may be omitted and the post encased instead with 4″ (min.) of concrete.*

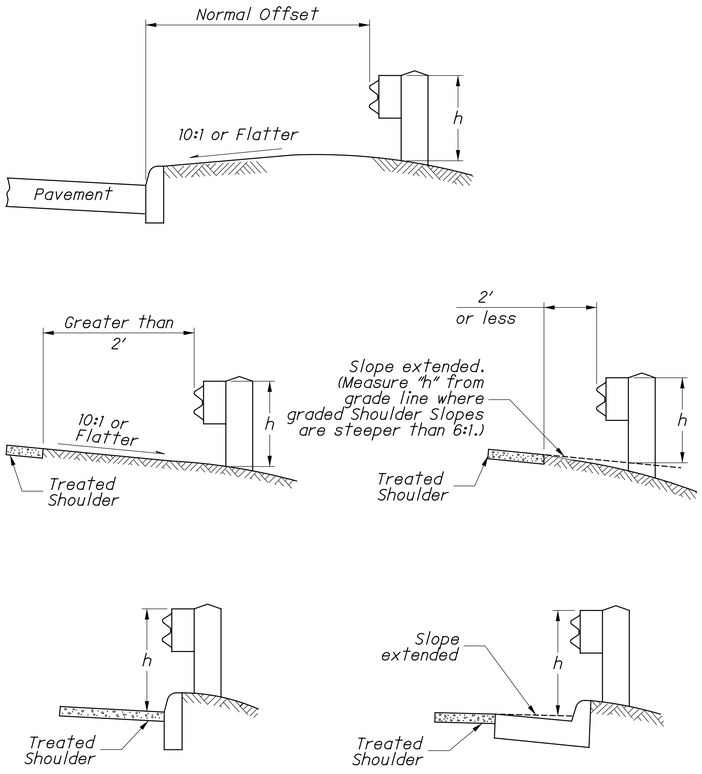
Do not drive posts located over a culvert with less than 4′-3″ of cover; instead set in drilled or dug holes. Where the available post embedment depth is less than 3′-5″, encase the post with a minimum of 4″ concrete.

All costs associated with special post mountings are included in the unit price bid of Item 606 Guardrail of the type specified in the plans.

ANCHORS: *Holes and grouting shall comply with CMS 510. Use either cement or non-shrink, nonmetallic grout.*

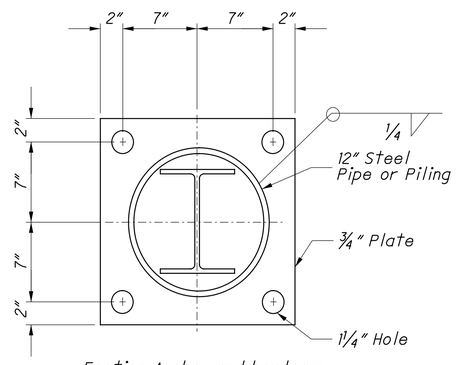
Expansion shield anchors as specified in CMS 712.01 may be substituted except where concrete deterioration has occurred, as determined by the Engineer. Where self-drilling anchors are used, drill the holes with the expansion shield (not by a drill bit) and install the shield flush with the concrete surface.

PROTECTIVE COATING: *In lieu of the complying with CMS 710.06, coat expansion shields, anchors and concrete insert anchor assemblies embedded in concrete in accordance with ASTM A 153 or be of stainless steel. Any bolts screwed into these devices shall meet CMS 710.06. (See sheet 3 for Concrete Insert Anchor Assembly Detail.)*



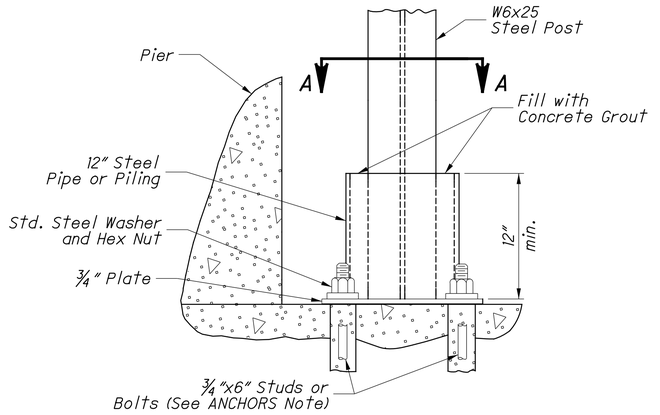
h = Standard Height (See GUARDRAIL HEIGHT Note)

MEASURING GUARDRAIL HEIGHT



Footing Anchor and hardware need not be galvanized

SECTION A-A



ELEVATION
FOOTING ANCHOR

See SPECIAL POST MOUNTINGS Note.

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DESIGNED | REVIEWED
REVISION DATE | CHECKED
PID NUMBER GR-1.1

PLAN INSERT SHEET
GUARDRAIL DETAILS (Rail Components)

LOR-611-3.44

2 / 3

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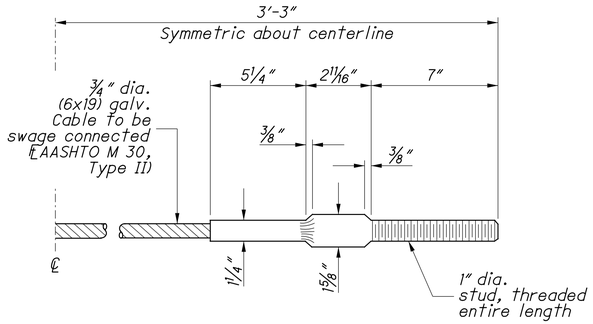
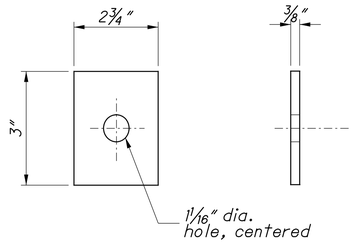
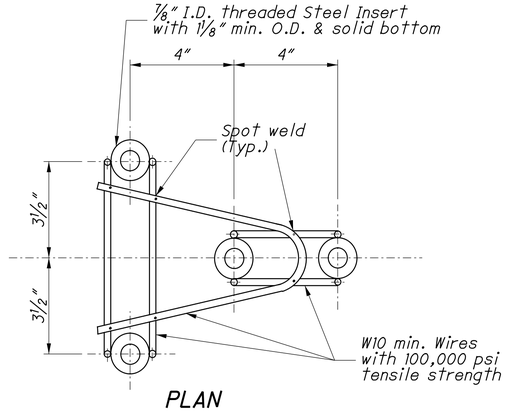


STANDARD SWAGED FITTING AND STUD

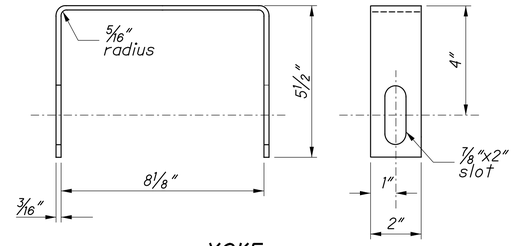
CABLE ANCHOR



END PLATE

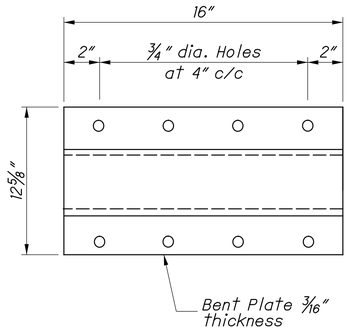


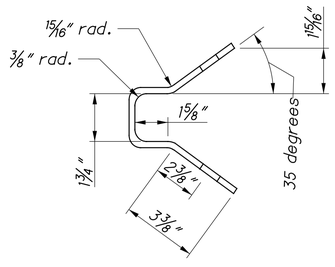
PLAN



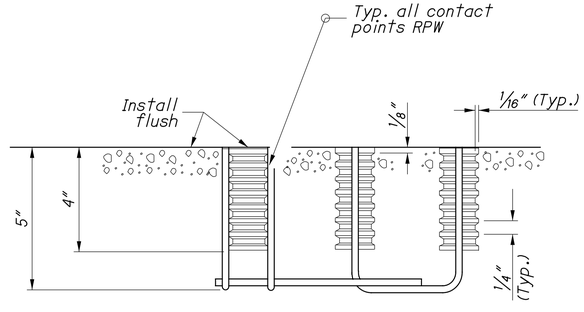
YOKE

Two required in Assembly





ANCHOR BRACKET

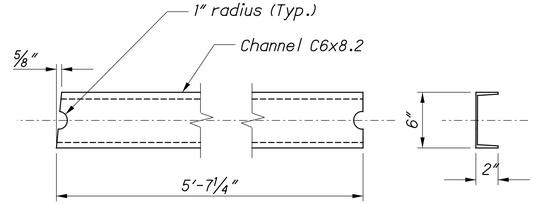


Four 7/8" Bolts required

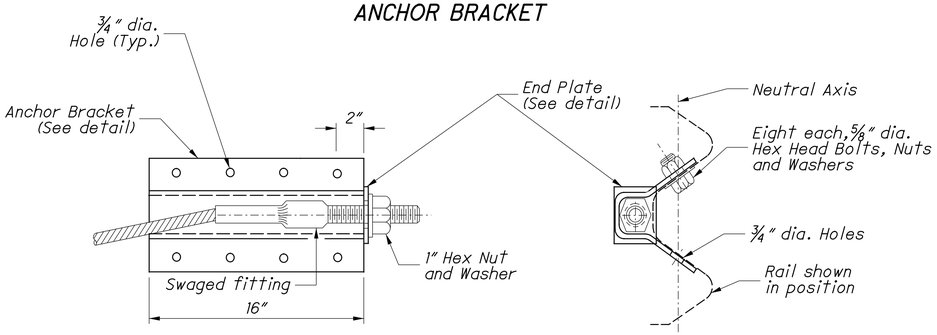
ELEVATION

CONCRETE INSERT ANCHOR ASSEMBLY (W-BEAM ONLY)

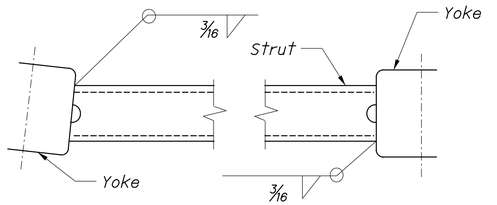
See ANCHORS and PROTECTIVE COATINGS Notes on Sheet 2



STRUT

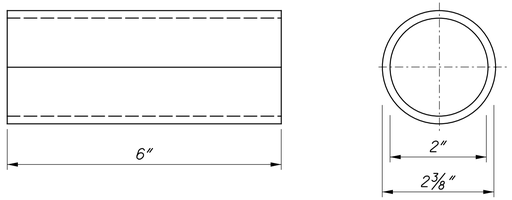


ANCHOR BRACKET ASSEMBLY DETAILS

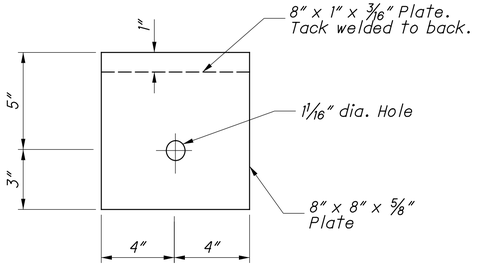


Channel legs shown down. For opposite hand, install Channel legs up.

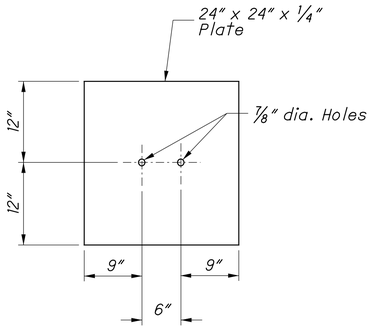
STRUT AND YOKE ASSEMBLY



POST SLEEVE



BEARING PLATE



SOIL PLATE

PLAN INSERT SHEET

GUARDRAIL DETAILS (Rail Components)

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

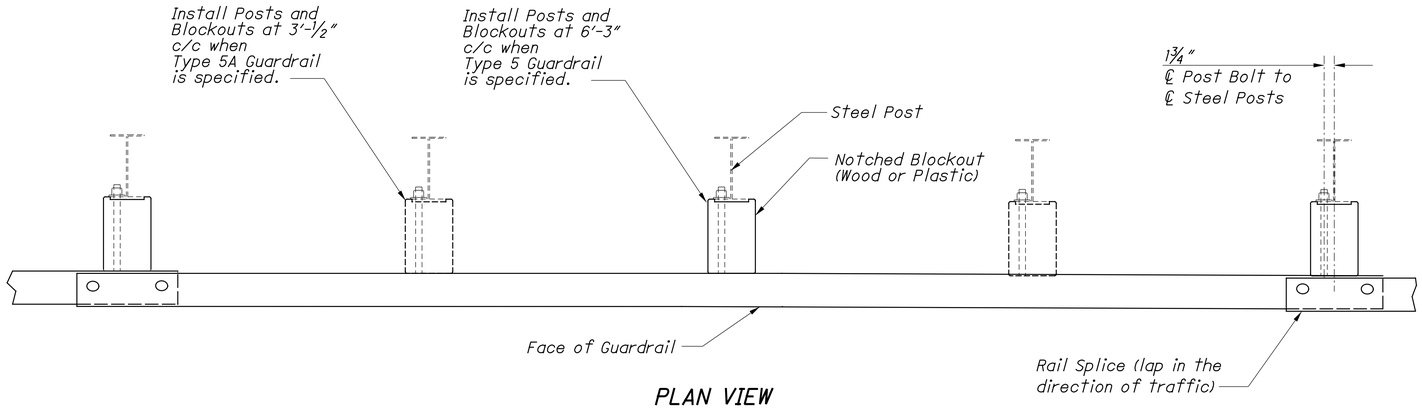
REVISION DATE | CHECKED

PIS NUMBER GR-1.1

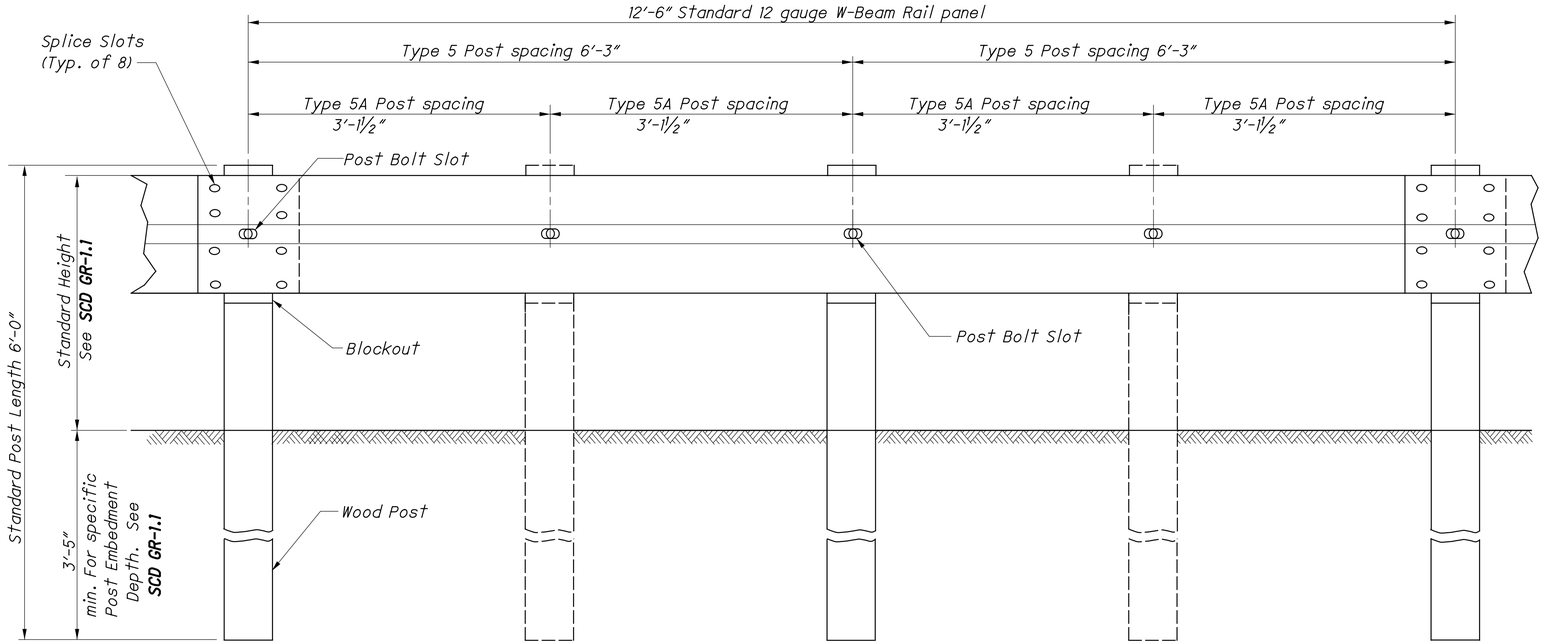
LOR-611-3.44

3 / 3

38 / 234



PLAN VIEW
(Steel Posts shown)



ELEVATION
(Wood Posts shown)

NOTES

RAIL: Use W-Beam rail meeting AASHTO M 180 Type II Class A, as specified in CMS 606.

POSTS: Posts may be constructed of wood or steel. Wood posts may be round or 6"x8" square-sawed.

Use round wood posts on runs of single-sided rail. The round posts shall be 8"±1 in diameter at the top and not more than 3" larger at the butt with a uniform taper.

Fabricated wood posts with square ends. Posts shall be pressure-treated as per CMS 710.14. Bore bolt holes and, if required, trim the tops of posts after the posts are set.

Steel posts are to be W6x9 or W6x8.5 galvanized steel. Use the same type of post throughout the length of the project unless otherwise specified in the plans or permitted by the Engineer.

All posts are 6'-0" long unless specified otherwise in the Contract Document. Posts may be set in drilled holes or may be driven to grade.

WELDED BEAM POSTS: Welded beam guardrail posts may be used for Item 606, Guardrail, provided the web and flange sizes are as shown here. Welding of the web to the flanges must comply with ASTM A 769, Class 1, using Grade 36 steel [250 MPa yield point] with the following exceptions:

Sec. 7.2 Test reports of tensile properties for each lot shall accompany each shipment.

Sec. 12 Beams that have imperfections repaired by welding shall not be accepted for use in Item 606.

Sec. 13 Random samples shall be tested by the Department from materials delivered to the project site, or other locations designated by the Laboratory.

ALTERNATE POSTS: Engineered guardrail posts having met NCHRP 350 criteria, and listed on the ***Office of Materials Management's*** Approved List are permitted as an equal alternate when installed according to the Manufacturer's instructions and within the limitations shown on the Approved List.

BLOCKOUTS: Blockout dimensions are dependent on post used. Wood Blockouts are to be pressure treated as specified in CMS 710.14. Bore bolt holes. Approved alternate blockouts may be used in lieu of the wood blockouts shown. The approved list is maintained by the ***Office of Roadway Engineering.***

WASHERS: Install appropriate sized standard galvanized steel washers on the nut side of bolts installed on wood posts.

DELINEATION: For barrier reflectors, see CMS 626.

MISCELLANEOUS: For other guardrail details, see ***SCD GR-1.1.***

STEEL BEAM POSTS (English)				
Size	**Beam depth**	**Flange width**	**Flange thickness**	**Web thickness**
Rolled W6x8.5	5.8"	3.94"	0.193"	0.170"
Rolled W6x9	5.9"	3.94"	0.215"	0.170"
Welded 6x8.5	6.0"	3.94"	0.193"	0.170"
Welded 6x9	6.0"	3.94"	0.215"	0.170"

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

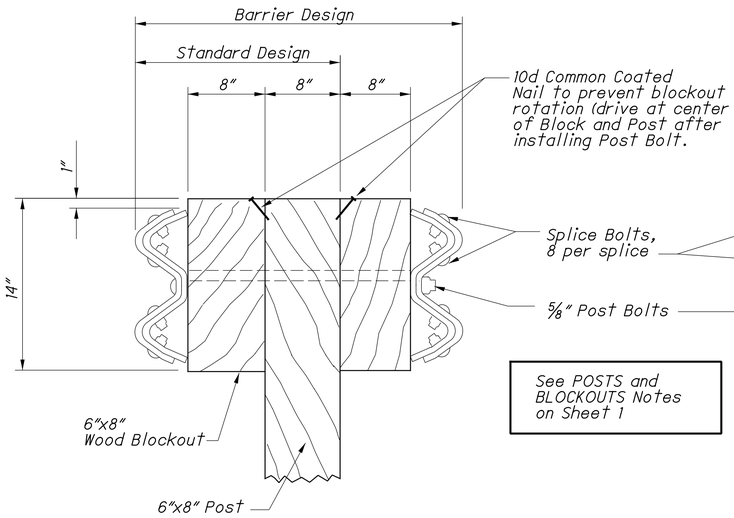
REVISION DATE | CHECKED

PTS NUMBER GR-2.1

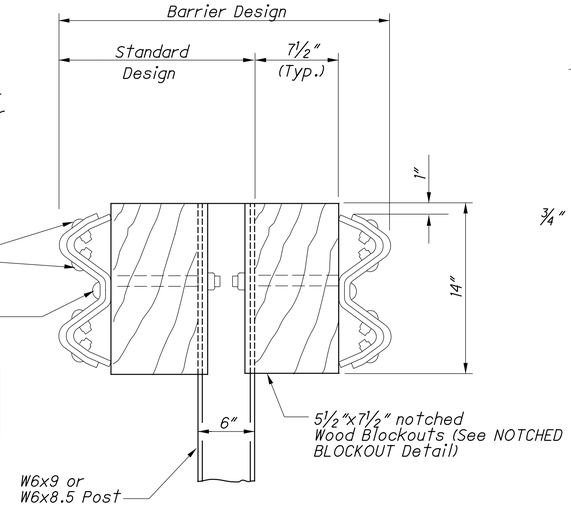
PLAN INSERT SHEET

GUARDRAIL TYPE 5 & 5A

LOR-611-3.44

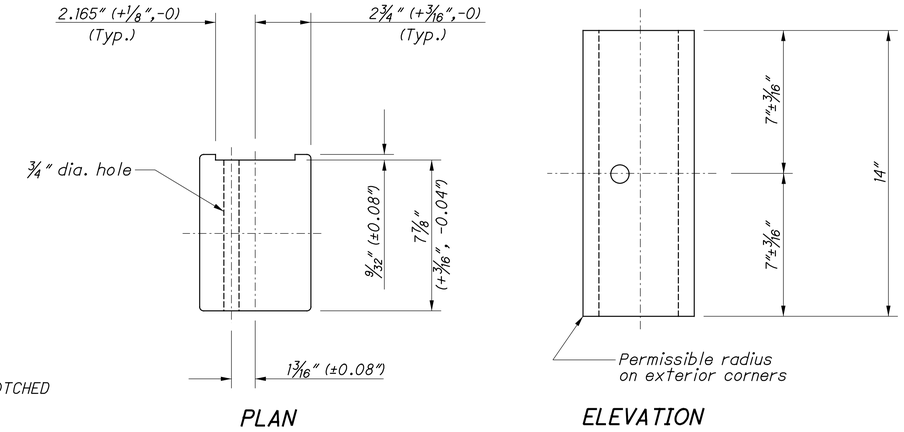


SQUARE WOOD POST



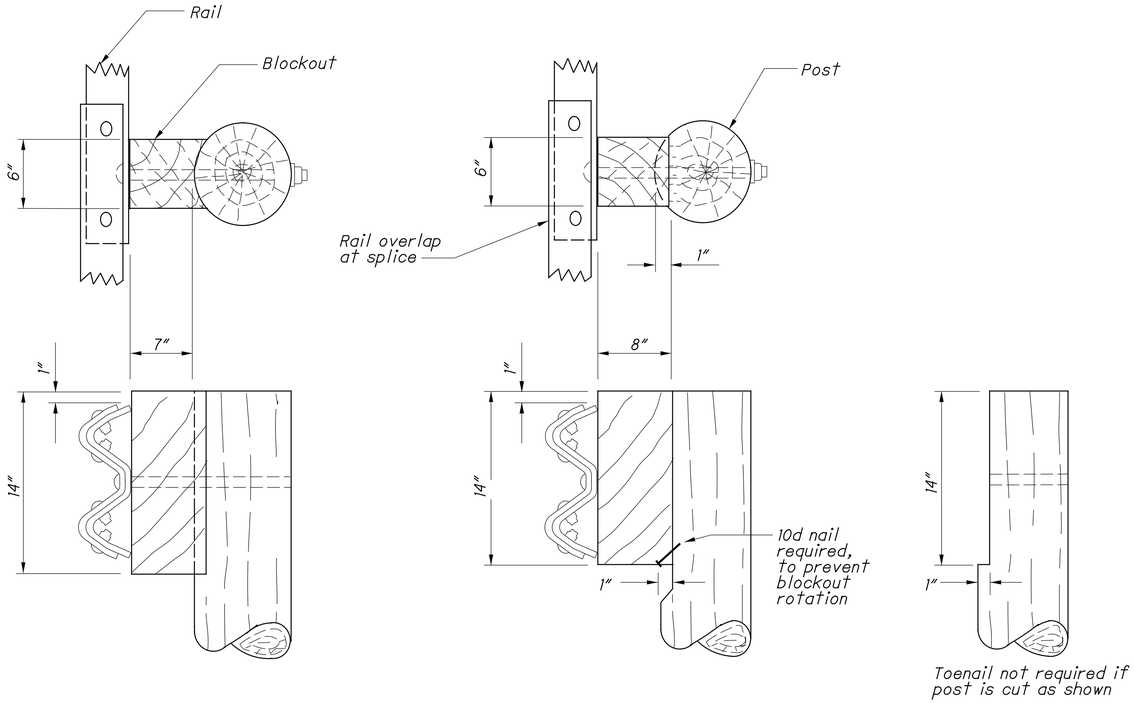
STEEL POST

See POSTS Note, Sheet 1



NOTCHED BLOCKOUTS FOR STEEL POSTS

See BLOCKOUTS Note on Sheet 1



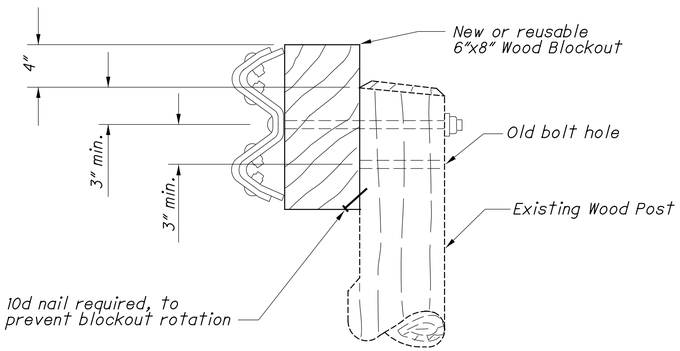
Method 1
Routed Blockout

Method 2
Notched Post

Alternate methods of placing the Blockouts on round Posts may be submitted for consideration and approved by the Engineer.

ROUND WOOD POSTS

Single Sided runs only (Standard Design)



WOOD POSTS WITH WOOD BLOCK RAISING EXISTING GUARDRAIL HEIGHT

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

REVISION DATE | CHECKED

PIS NUMBER GR-2.1

PLAN INSERT SHEET

TYPE 5 & 5A GUARDRAIL

LOR-611-3.44

2 / 2

40 / 234

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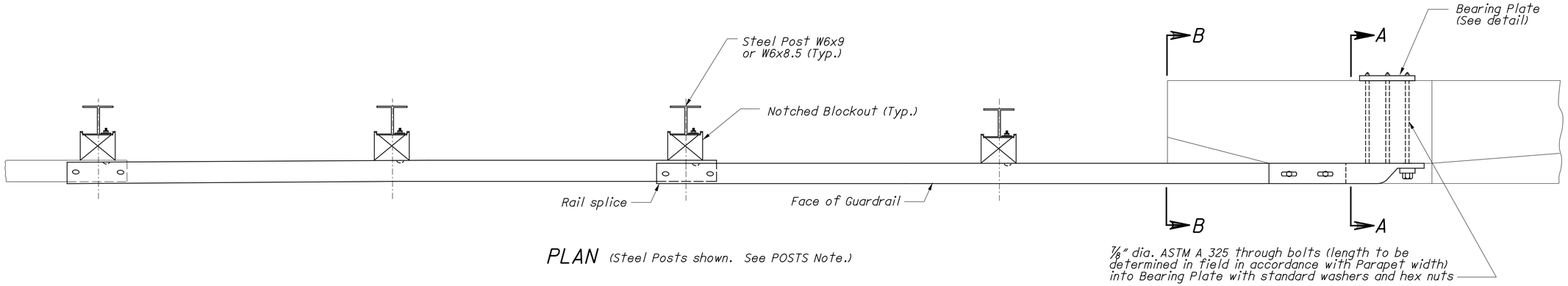
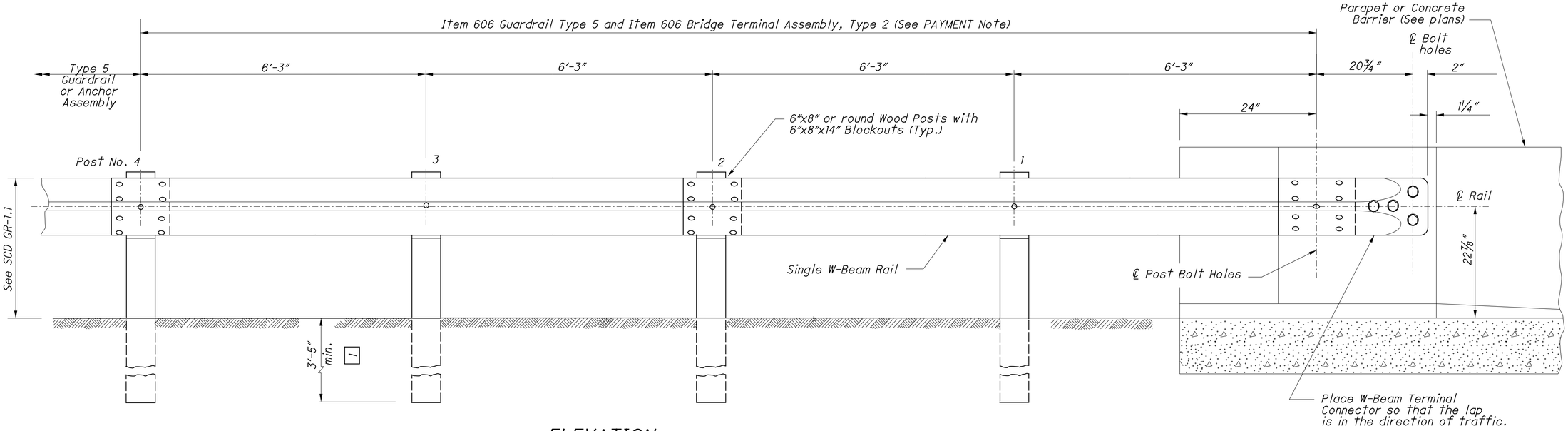
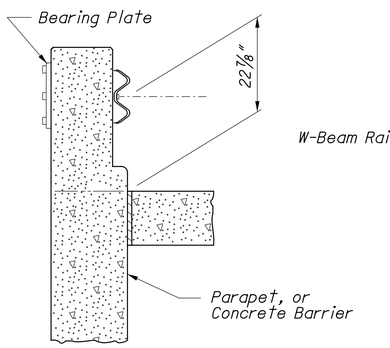


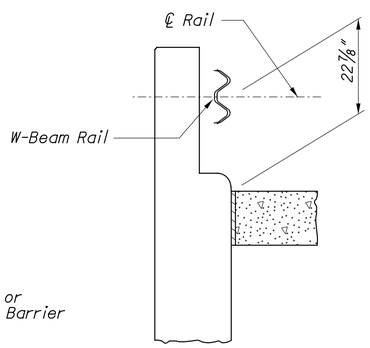
PLAN (Steel Posts shown. See POSTS Note.)



ELEVATION (Wood Posts shown. See POSTS Note.)



SECTION A-A



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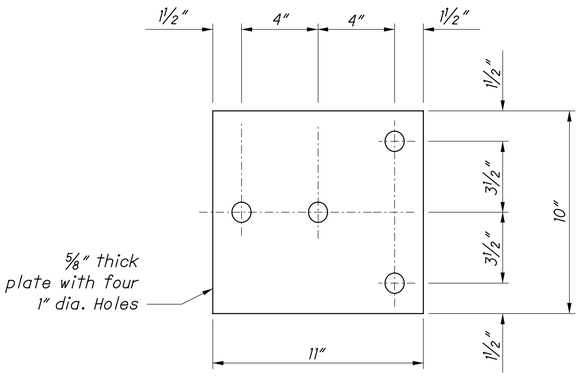


BEARING PLATE

NOTES

GENERAL: For additional rail and post details, see **SCD GR-1.1.**

APPLICATION: Use Type 2 Bridge Terminal Assembly to connect guardrail runs to the trailing end of Parapets or Concrete Barriers (see **SCD RM-4.6** for barrier) on one-directional roadways. Do not use if located within clear zone of opposing traffic.

POSTS: Posts shall be of standard size and material specified for the appropriate type of guardrail to be installed leaving the bridge or barrier. For Type 5 guardrail, see **SCD GR-2.1.**

BLOCKOUTS: Wood or plastic blockouts are permitted.

FLARED GUARDRAIL: Begin Standard Guardrail Flares as shown on **SCD GR-5.1,** preferably at or beyond Post No. 4, however, the flare may begin at Post No. 2.

PAYMENT: **Item 606 - Bridge Terminal Assembly, Type 2, Each.** includes the cost of extra components, in excess of normal guardrail for the Terminal connector, Bearing Plates, bolts, washers, nuts, and other hardware.

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

REVISION DATE | CHECKED

PIS NUMBER GR-3.2

PLAN INSERT SHEET

BRIDGE TERMINAL ASSEMBLY, TYPE 2

LOR-611-3.44

CALCULATED JDL
CHECKED TJF

PROPOSED WORK

THE FOLLOWING WORK ITEMS ARE PROPOSED:

1. MAINTAIN THE MARINE NAVIGATION LIGHTING THROUGHOUT THE DURATION OF THE PROJECT.

2. REMOVE AND DISPOSE OFTHE EXISTING MARINE NAVIGATION LIGHTING CHANNEL MARKERS, MOUNTING ASSEMBLY, MOUNTING BRACKETS, AND RETRIEVAL CHAIN. THE WIRING FROM THE CHANNEL MARKERS TO THE EXISTING PHOTOCELLS SHALL BE REMOVED AND DISPOSED OF. THE EXISTING CONDUIT, PULL BOXES, WEATHER HEADS, PHOTOCELLS, AND POWER SUPPLY SHALL REMAIN IN PLACE.

3. INSTALL NEW LED MARINE NAVIGATION LIGHTING, CHANNEL MARKERS, MOUNTING ASSEMBLIES, MOUNTING BRACKETS, RETRIEVAL CHAINS, AND WIRING BETWEEN THE NEW CHANNEL MARKERS AND THE EXISTING PHOTOCELLS.

ITEM SPECIAL - MAINTAIN EXISTING LIGHTING (NAVIGATION):

THE CONTRACTOR SHALL MAINTAIN THE EXISTING MARINE NAVIGATION LIGHTS AT ALL TIMES THROUGH THE USE OF THE EXISTING, TEMPORARY, OR PROPOSED LIGHTING FIXTURES. THE EXISTING WIRING SHALL BE MAINTAINED TO ALL NAVIGATION LIGHTS UNTIL THE PROPOSED NAVIGATION LIGHTS ARE FUNCTIONAL ON THE NEW WIRING CIRCUITS. BATTERY OR SOLAR POWERED LIGHTS MAY BE USED FOR TEMPORARY NAVIGATION LIGHTS SUBJECT TO THE APPROVAL OF THE ENGINEER. HOURS OF OPERATION SHALL BE FROM DUSK TO DAYLIGHT AND AS DIRECTED BY THE GOVERNING COAST GUARD DISTRICT.

ITEM 625 - LIGHTING, MISC.: BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING, LED

THIS ITEM CONSISTS OF INSTALLATION AND TESTING OF IALA/AISM-COMPLIANT, U.S. COAST GUARD APPROVED MARINE NAVIGATION LIGHTING FOR MARKING OF STRUCTURES OVER NAVIGABLE WATERS. LOCATION AND WIRING SHALL BE AS SHOWN IN THE NAVIGATION LIGHTING PLANS.

EACH MARINE NAVIGATION LAMP SHALL UTILIZE LIGHT EMITTING DIODES (LEDS). THE MARINE NAVIGATION LAMP SHALL HAVE A WRITTEN MINIMUM 5-YEAR MANUFACTURER WARRANTY. THE LAMP SHALL MEET THE U.S. COAST GUARD REQUIREMENTS FOR COLOR, BRIGHTNESS (RANGE), SECTORING, AND DIVERGENCE REQUIREMENTS AND AS APPROVED BY THE APPLICABLE COAST GUARD DISTRICT. THE LAMP SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING MANUFACTURERS OR AN APPROVED EQUAL:

1. TIDELAND SIGNAL CORPORATION, HOUSTON, TX
2. B&B ROADWAY, RUSSELLVILLE, AL
3. PHAROS MARINE AUTOMATIC POWER, HOUSTON TX

THE CONTRACTOR SHALL FULLY TEST THE SYSTEM AND ARRANGE FOR ACCEPTANCE INSPECTION OF THE MARINE NAVIGATION LIGHTING INSTALLATION BY ODOT DISTRICT 3 SIGNAL MAINTENANCE PERSONNEL AFTER THE SYSTEM IS OPERATIONAL. DURING ACCEPTANCE INSPECTION, THE CONTRACTOR SHALL DEMONSTRATE THE PROPER OPERATION OF ALL LAMPS AND PHOTOCELLS. THE CONTRACTOR SHALL PROVIDE WRITTEN MANUFACTURER WARRANTY AND ALL OPERATING MANUALS FOR MARINE NAVIGATION LIGHTING LAMPS TO ODOT DISTRICT 3 SIGNAL MAINTENANCE PERSONNEL AT THE TIME OF INSPECTION.

THE ELECTRICAL CABLE/WIRE FURNISHED SHALL CONFORM TO THE REQUIREMENTS FOR "SIGNAL CABLE" AS DEFINED IN CMS 632 AND 732.

THE DEPARTMENT SHALL MEASURE BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING BY EACH INDIVIDUAL MARINE NAVIGATION LIGHT, COMPLETE AND INSTALLED INCLUDING ANY CONTROL DEVICES, BRACKETS, HANGERS, WIRING, CONDUITS AND APPURTENANCES NECESSARY TO CONSTRUCT THIS ITEM AS SHOWN IN THESE PLANS.

ITEM 625 - LIGHTING, MISC.: REMOVAL OF EXISTING MARINE NAVIGATION LIGHTING SYSTEM

THIS ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING NAVIGATION LIGHTING FROM EXISTING PHOTOCELL AT PANEL 36 TO THE MARINE NAVIGATION LIGHT CHANNEL MARKERS, BRACKETS, HANGERS AND WIRING.

THE ELECTRICAL CABLE WIRE FURNISHED SHALL CONOM TO THE REQUIREMENTS FOR "SIGNAL CABLE" AS DEFINED IN CMS 632 AND 732.

PAYMENT WILL BE MADE AT THE LUMP SUM BID PRICE FOR CMS ITEM 625 - LIGHTING, MISC.: REMOVAL OF EXISTING MARINE NAVIGATION LIGHTING SYSTEM WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

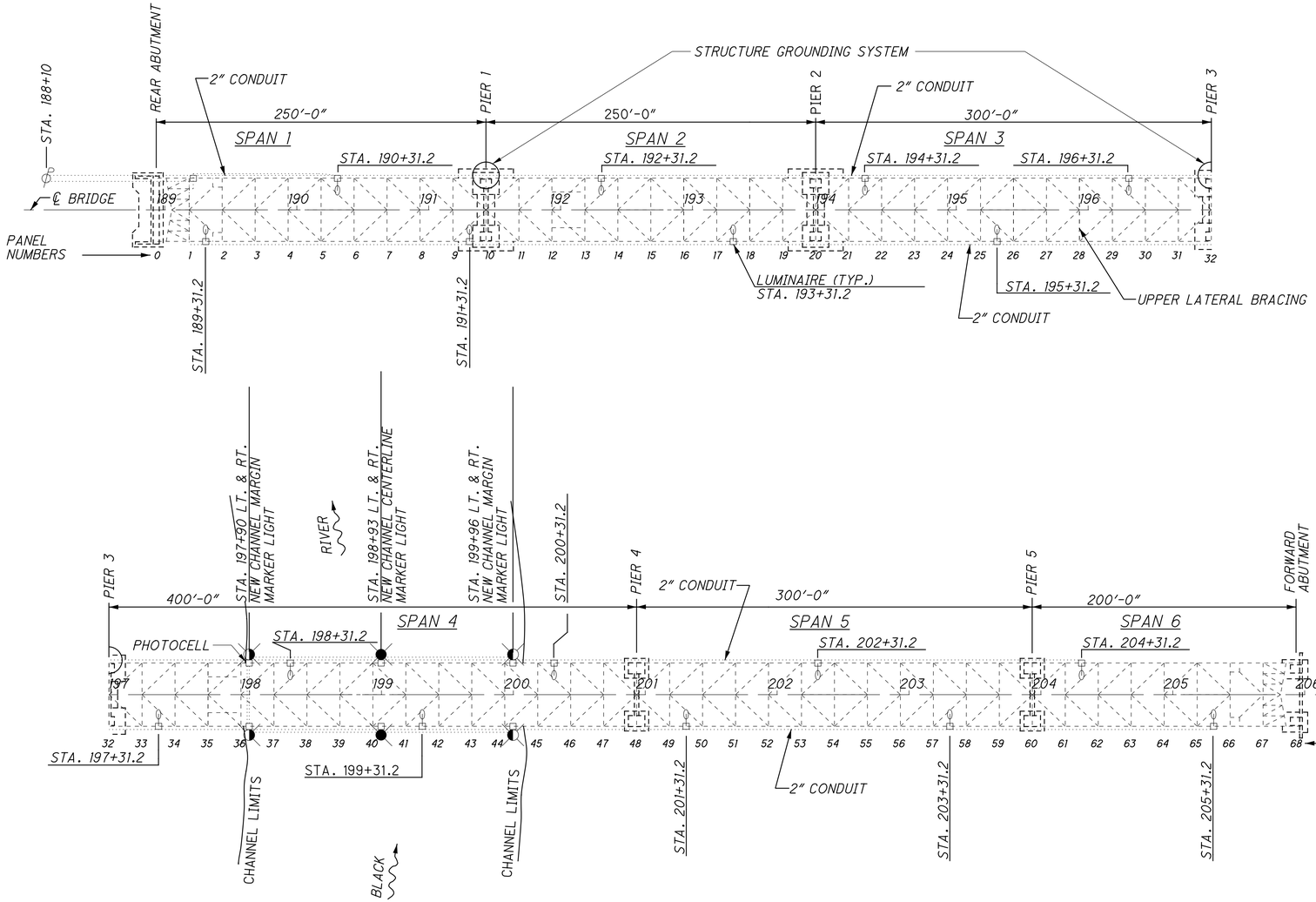
NAVIGATION LIGHTING SUBSUMMARY

ITEM	DESCRIPTION	QUANTITY	UNIT
SPECIAL	MAINTAIN EXISTING LIGHTING (NAVIGATION)	LUMP	
625	LIGHTING, MISC.: BRIDGE - MOUNTED MARINE NAVIGATION LIGHTING, LED	6	EACH
625	LIGHTING, MISC.: REMOVAL OF EXISTING MARINE NAVIGATION LIGHTING SYSTEM	LUMP	

THE ABOVE QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY

LIGHTING NOTES

LOR-611-3.44



LEGEND

- NEW CHANNEL CENTERLINE MARKER (GREEN, 360°)
- NEW CHANNEL MARGIN MARKER (RED, 180°)
- EXISTING JUNCTION BOX AT EXISTING LIGHT FIXTURE
- EXISTING JUNCTION BOX
- EXISTING POWER POLE
- EXISTING CIRCUIT

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

NAVIGATION LIGHTS SEE DETAIL SHEETS 44 & 45 .

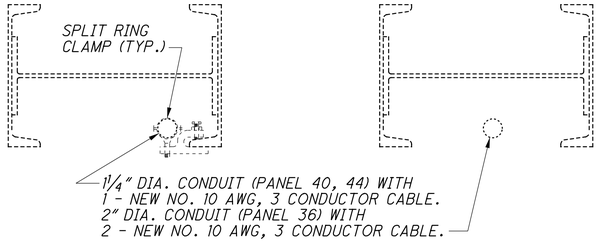
PROPOSED NAVIGATIONAL LIGHTING
WATTAGE: 10 W (MAX)
LIGHT OUT RELAYS
FRESNEL LENSES
OWNERSHIP: LORAIN COUNTY
EXISTING CIRCUIT VOLTAGE: 120V 2 WIRE

EXISTING STREET LIGHTING
EXISTING STREET LIGHTING
TYPE: MERCURY VAPOR
WATTAGE: 400 W
LUMEN RATING: 22500
OWNERSHIP: OHIO EDISON
EXISTING CIRCUIT VOLTAGE: 120/240V 3 WIRE

CALCULATED JDL
CHECKED TJF

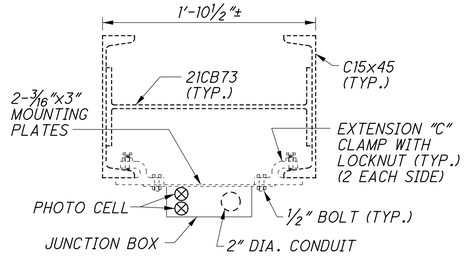
LIGHTING PLAN

LOR-611-3.58



SECTION A-A

SECTION B-B



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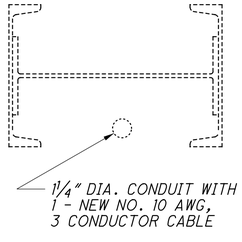

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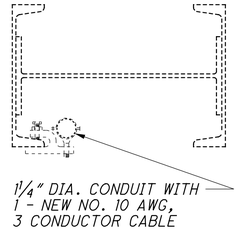

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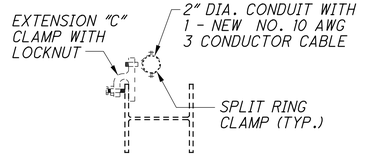
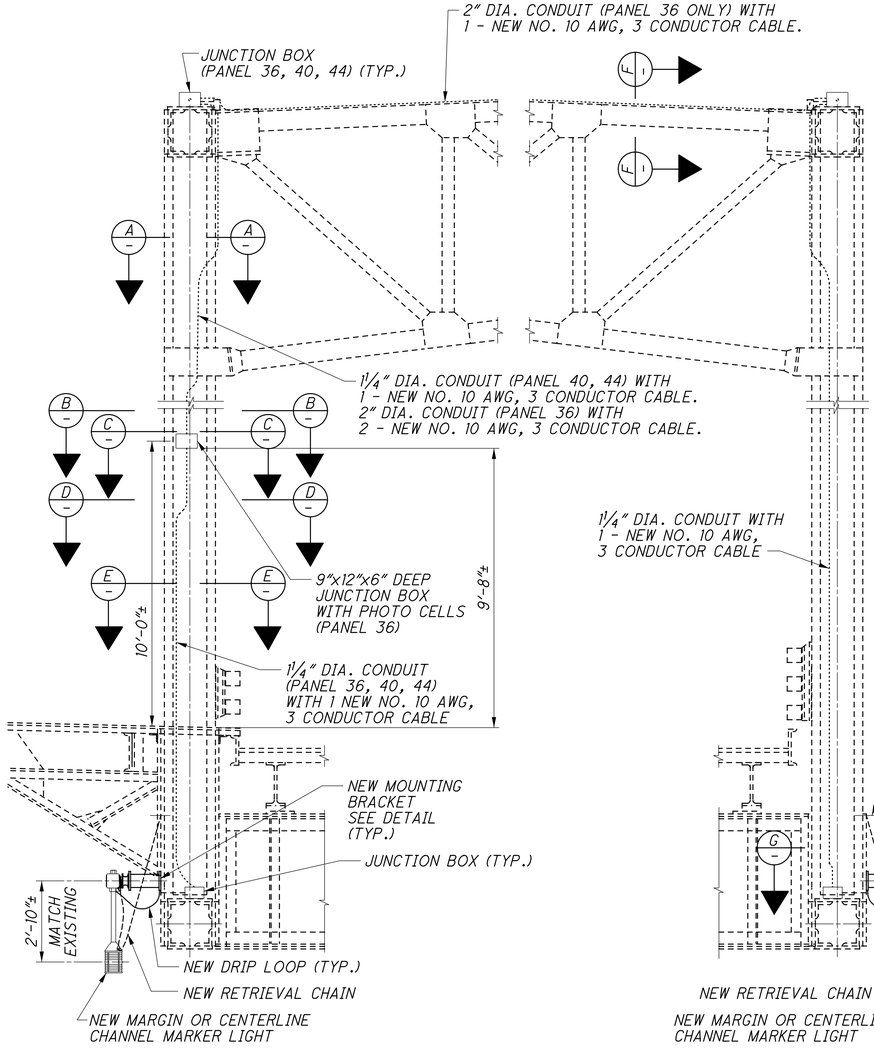
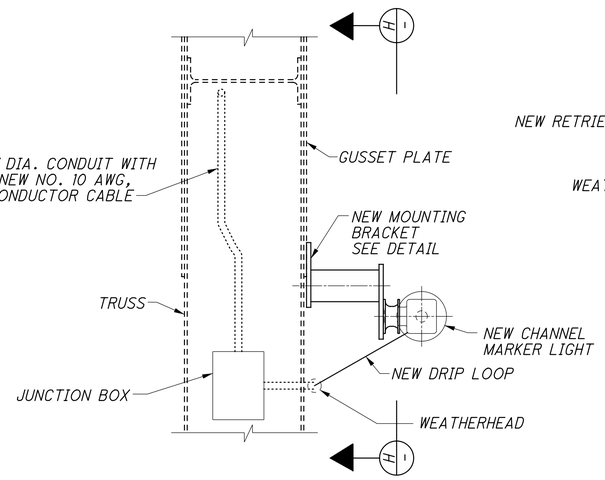


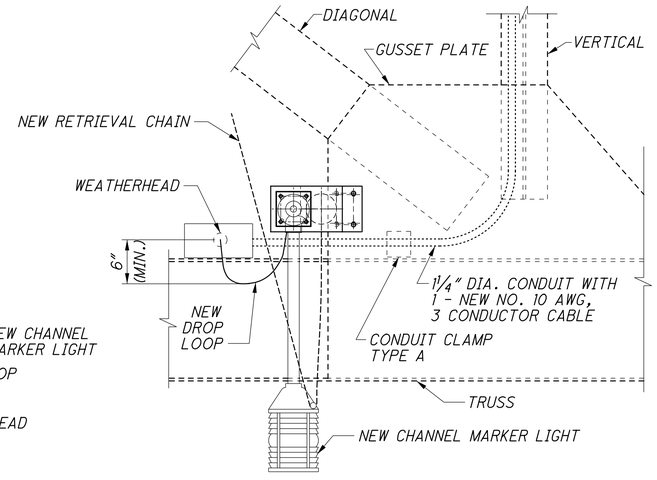
SECTION F-F
(PANEL 36 ONLY)



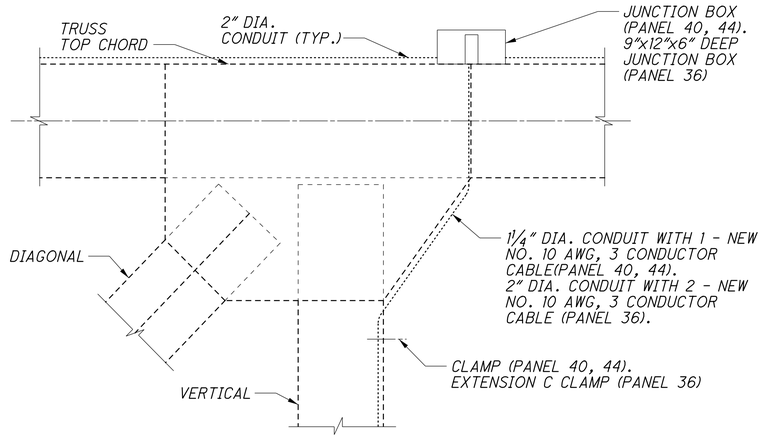
NEW NAVIGATION LIGHT FIXTURES AND SUPPORTS
(PANELS 36, 40 & 44)



SECTION G-G



VIEW H-H



TYPICAL ELEVATION AT CHANNEL MARKERS

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

DETAILS SHOWN ARE NOT TO SCALE.

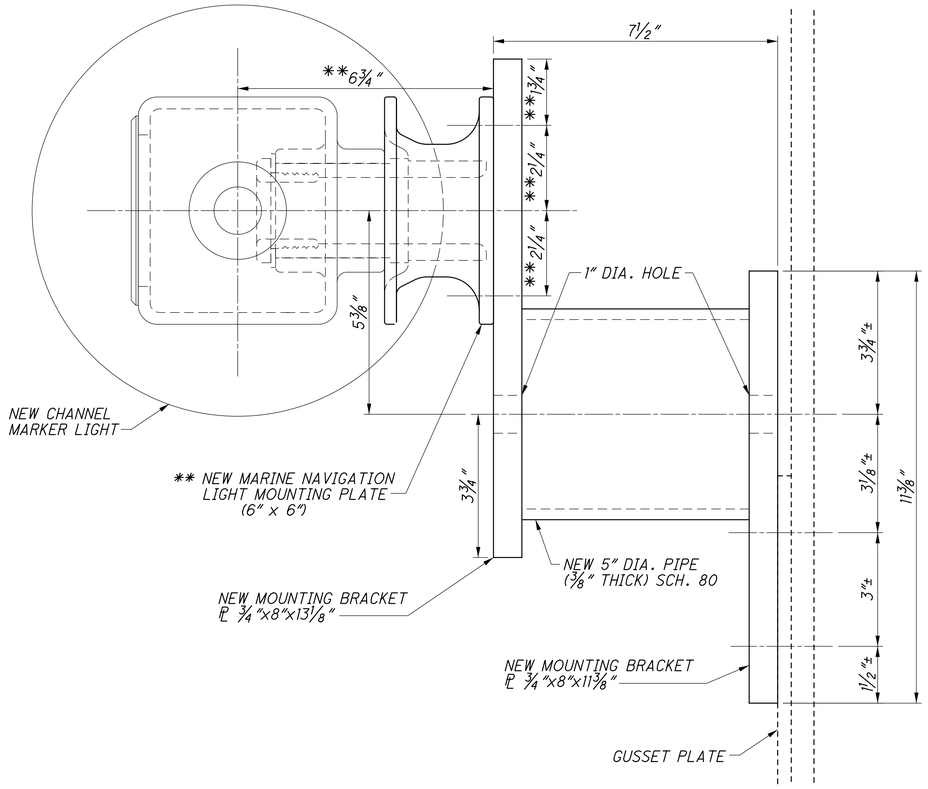
MOUNTING BRACKET DETAIL SEE SHEET 45 .

CABLE/WIRING SHALL CONFORM TO CMS 632 AND 732 SIGNAL CABLE REQUIREMENTS.

CALCULATED JDL
CHECKED TJF

LIGHTING - NAVIGATION LIGHTS

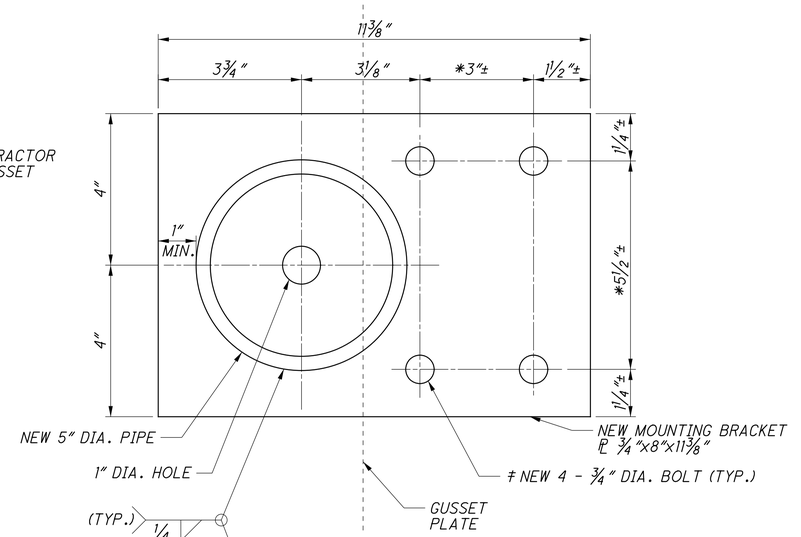
LOR-611-3.58



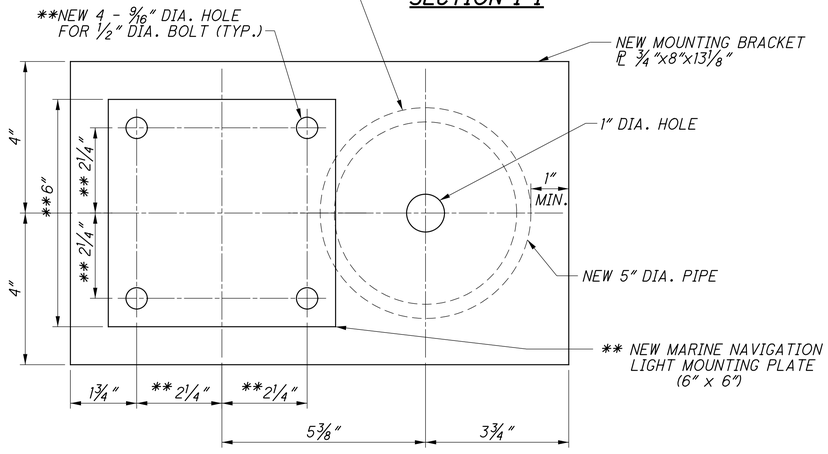
VIEW K-K
(BOLTS NOT SHOWN FOR CLARITY)

*CONTRACTOR TO VERIFY EXISTING BOLT PATTERN PRIOR TO FABRICATION OF MOUNTING BRACKET.

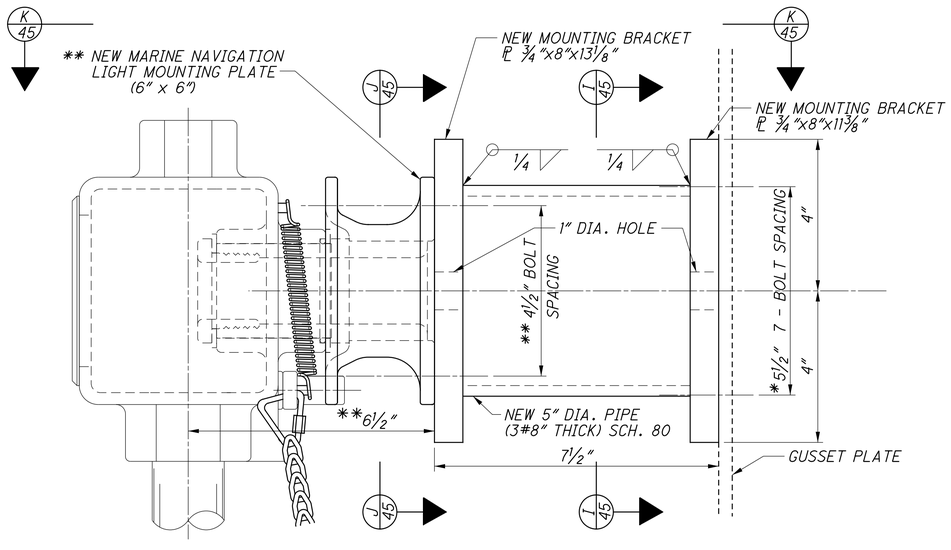
ǂEXISTING BOLTS ARE ⅝" DIA. THE CONTRACTOR SHALL DRILL OUT EXISTING HOLES IN GUSSET PLATE TO ACCEPT ¾" DIA. BOLTS.



SECTION I-I



SECTION J-J



MOUNTING BRACKET DETAIL
(BOLTS NOT SHOWN FOR CLARITY)

** MOUNTING SHOWN FOR CHANNEL MARKER LIGHTS MANUFACTURED BY B & B ROADWAY PART NO. PLP-LED BL 120 (R/S OR G/S). BRACKETS FOR OTHER MANUFACTURER'S FIXTURES SHALL BE SIZED TO FIT PARTICULAR FIXTURE, HOWEVER MATERIAL SIZES SHALL BE SIMILAR, SUBJECT TO THE APPROVAL OF THE ENGINEER.

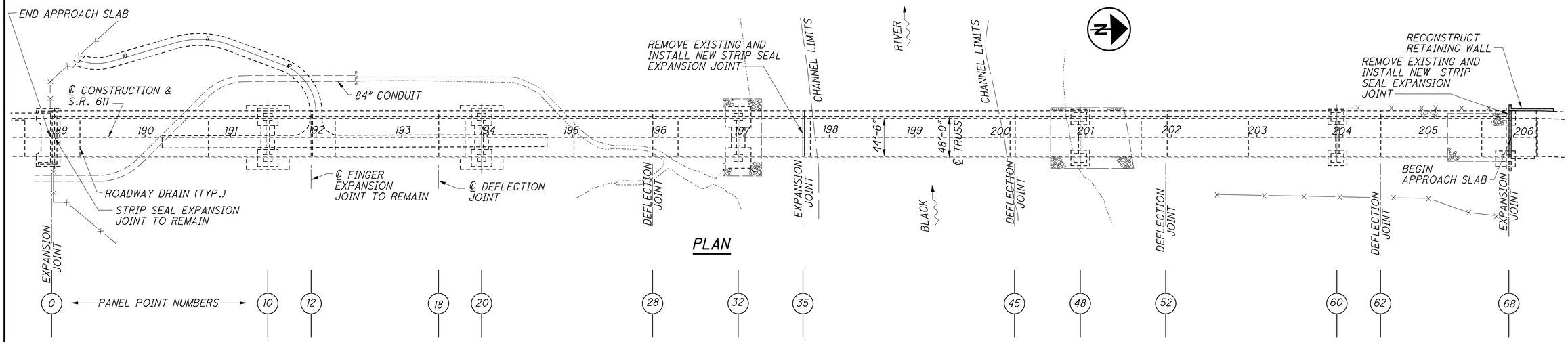
NOTE: MOUNTING BRACKETS, FASTENERS AND HARDWARE SHALL BE GALVANIZED STEEL PER 711.02, AND SHALL BE INCLUDED FOR PAYMENT AS INCIDENTAL TO THE PERTINENT, ITEM 625 - LIGHTING, MISC.: BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING, LED.

NOTES
MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

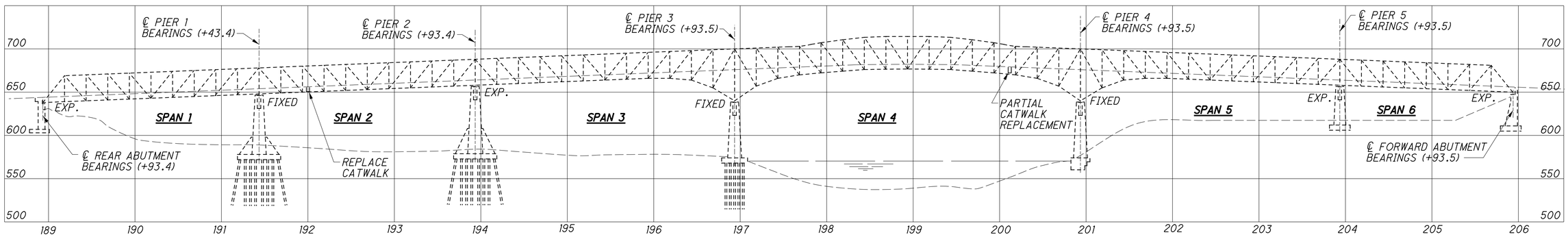
CALCULATED JDL
CHECKED BLN

LIGHTING - NAVIGATION LIGHTS

LOR-611-3.58



PLAN



ELEVATION

NOTES

PROPOSED WORK: SEE SHEET 3/189.

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

TRUSS ELEVATION: SEE SHEETS 48/189 AND 49/189.

DECK PLAN: SEE SHEETS 137/189 AND 138/189.

EXISTING STRUCTURE

TYPE: CONCRETE FILLED STEEL GRID ROADWAY DECK AND SIDEWALK, CARRIED BY STEEL STRINGERS AND FLOORBEAMS, ON CANTILEVERED STEEL THROUGH TRUSSES, SUPPORTED ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 250'±, 250'±, 300'±, 400'±, 300'± & 200'±

ROADWAY: 44'-6"± F/F GUARDRAILS W/6'-0"± SIDEWALK

LOADING: HS 20-44 & ALTERNATE MILITARY LOADING AND 150% OHIO LEGAL.

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (30'-0" LONG)

YEAR BUILT: 1940, REHABILITATED 1989, 2006

STRUCTURE FILE NO.: 4707443

DISPOSITION: MINOR REHABILITATION

PROPOSED STRUCTURE

TYPE: CONCRETE FILLED STEEL GRID ROADWAY DECK AND SIDEWALK, CARRIED BY STEEL STRINGERS AND FLOORBEAMS, ON CANTILEVERED STEEL THROUGH TRUSSES, SUPPORTED ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

PROPOSED WORK: REPAIR OF EXISTING STRUCTURE INCLUDING STIFFENING TRUSS GUSSET PLATES; DECK JOINT REPLACEMENT; STEEL CRACK RETROFIT; ACCESS CATWALK REPAIR; REPLACE ACCESS CATWALK; SPOT PAINTING AND CAULKING; CONCRETE PATCHING; WEARING SURFACE SEALING; AND OTHER MINOR BRIDGE REPAIRS.

SPANS: 250'±, 250'±, 300'±, 400'±, 300'± & 200'±

ROADWAY: 44'-6"± F/F GUARDRAILS W/6'-0"± SIDEWALK

LOADING: HS 20-44 & ALTERNATE MILITARY LOADING AND 150% OHIO LEGAL.

SKEW: 0°±

ALIGNMENT: TANGENT

WEARING SURFACE: EXISTING

APPROACH SLABS: EXISTING

DESIGN AVERAGE DAILY TRAFFIC: 15,280 (2036)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 920 (2036)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

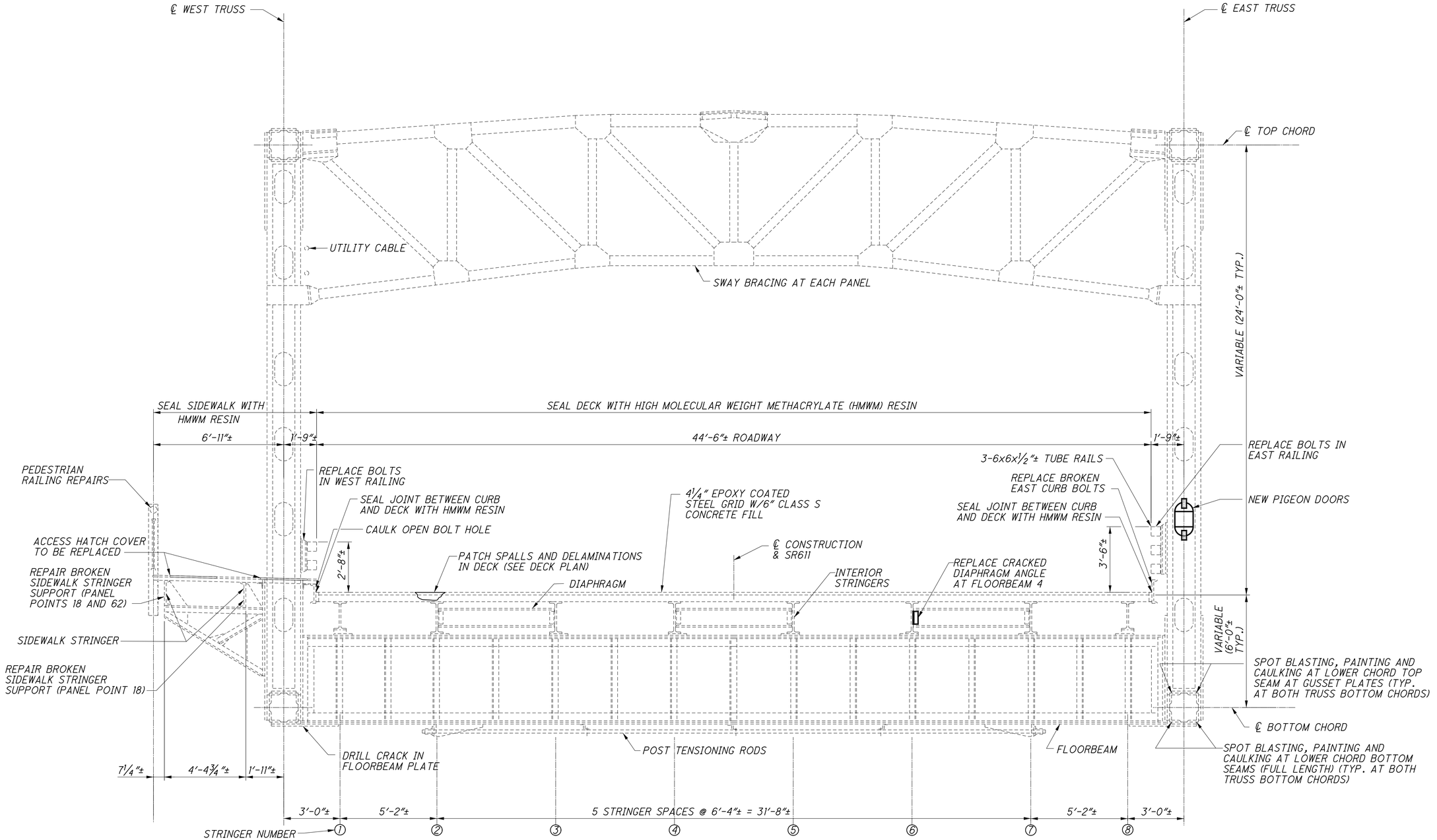
DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

GENERAL PLAN
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

1/189

46/234



TRANSVERSE SECTION

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

PROPOSED WORK: SEE SHEETS 3/189 .

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189 .

TRUSS ELEVATION: SEE SHEETS 48/189 AND 49/189 .

DECK PLAN: SEE SHEETS 137/189 AND 138/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

GENERAL PLAN TRANSVERSE SECTION
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

REFER:

TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

EXJ-4-87 (REVISED 7-19-02)

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

843 (DATED 4-18-2003)
847 (DATED 4-18-2014)
849 (DATED 1-18-2013)

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 17TH EDITION, 2002, INCLUDING ALL SUBSEQUENT INTERIM SPECIFICATIONS; AND THE 2004 ODOT BRIDGE DESIGN MANUAL INCLUDING QUARTERLY UPDATES.

DESIGN DATA

DESIGN LOADING HS20-44 AND THE ALTERNATE MILITARY LOADING

CONCRETE CLASS QC2 COMPRESSIVE STRENGTH
4,500 PSI (SUPERSTRUCTURE)

CONCRETE CLASS QC1 COMPRESSIVE STRENGTH
4,000 PSI (SUBSTRUCTURE)

REINFORCING STEEL ASTM A615 OR A996, GRADE 60
- WITH MINIMUM YIELD STRENGTH OF 60,000 PSI
- ALL REINFORCING STEEL SHALL BE EPOXY COATED PER CMS 709
- SPLICES INDICATED ARE FOR GRADE 60 STEEL

PROPOSED STRUCTURAL STEEL: ASTM 709, GRADE 50,
YIELD STRENGTH 50,000 PSI

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS, WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

ESTIMATED QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING THE COMPLETION OF THIS PROJECT.

EXISTING STRUCTURE PLANS

ORIGINAL CONSTRUCTION, SHOP DRAWINGS, AND REHABILITATION PLANS MAY BE VIEWED BY PROSPECTIVE BIDDERS AT THE ODOT DISTRICT 3 OFFICE, 906 NORTH CLARK STREET, ASHLAND, OHIO.

PROPOSED WORK (SEE SHEET 6 OF 234 FOR SPECIFIC PHASE CONSTRUCTION REQUIREMENTS)

1. ADD STIFFENING ANGLES TO BOWED PLATES, AND TO PLATE EDGES NOT MEETING AASHTO STIFFENING CRITERIA, AT UPPER AND LOWER TRUSS CHORD GUSSET PLATES.
2. REPLACE THE MODULAR ROADWAY DECK EXPANSION JOINT AT PANEL POINT 35 WITH A NEW STRIP SEAL EXPANSION JOINT WITH COVER PLATE. MODIFY THE CURB PLATE GAPS.
3. REPLACE THE MODULAR ROADWAY DECK EXPANSION JOINT AT THE FORWARD ABUTMENT WITH A NEW STRIP SEAL EXPANSION JOINT WITH COVER PLATE. REPLACE PORTION OF SIDEWALK SLIDING PLATE JOINT.
4. REPLACE JOINT BETWEEN ABUTMENT BACKWALL AND APPROACH SLAB WITH RUBBERIZED CRACK SEALER AT BOTH ABUTMENTS.
5. RECONSTRUCT THE APPROACH ROADWAY AT THE EAST AND WEST SIDE OF THE FORWARD ABUTMENT. RECONSTRUCT THE BRIDGE TERMINAL ASSEMBLY ON THE EAST SIDE. REPLACE THE BRIDGE TERMINAL, APPROACH GUARDRAIL, AND APPROACH SLAB CURB ON THE WEST SIDE.
6. REPLACE THE SIDEWALK AND ROADWAY DECK DEFLECTION JOINT COMPRESSION SEALS.
7. RETROFIT CRACKED FLOORBEAM TO WEST LOWER TRUSS CHORD BOTTOM CONNECTION PLATES.
8. REMOVE EXISTING AND INSTALL A NEW SHIM AT PANEL POINT 12 SIDEWALK STRINGER.
9. REPLACE THE BROKEN SIDEWALK STRINGER SUPPORT ANGLE AT PANEL POINTS 18 AND 62.
10. REPLACE BROKEN BOLTS IN STRINGER SUPPORT SLIDING BRONZE BEARINGS AT PANEL POINTS 12 AND 35.
11. REPLACE CATWALK AT EXPANSION JOINT AT PANEL POINT 12.
12. REPAIR CATWALK AT PANEL POINT 45.
13. PATCH DECK WEARING SURFACE.
14. SEAL JOINT BETWEEN DECK WEARING SURFACE AND CURB PLATES.
15. SEAL THE ENTIRE BRIDGE DECK AND SIDEWALK WITH HMWM MATERIAL.
16. CAULK OPEN BOLT HOLES IN THE WEST CURB.
17. REPLACE MISSING AND BROKEN BOLTS IN THE EAST CURB.
18. REPLACE MISSING BOLTS IN ROADWAY RAILING.
19. REPLACE SIDEWALK ACCESS HATCH COVERS.
20. REPAIR PEDESTRIAN RAILING DETERIORATION.
21. HAND TOOL CLEAN AND SPOT PAINT PEDESTRIAN RAILING.
22. PAINT SELECTED FLOORBEAM CONNECTIONS TO WEST LOWER TRUSS CHORD. ZONE PAINT LENGTHS OF THE WEST TRUSS LOWER CHORD WITH DETERIORATING PAINT BETWEEN THE FLOORBEAM CONNECTIONS.
23. ZONE PAINT STEEL AREAS BENEATH DECK JOINTS AND DECK DRAINS.
24. SPOT PAINT FAILURES ON TRUSS MEMBERS ABOVE ROADWAY.
25. CAULK BOTTOM CORNERS OF EAST AND WEST LOWER TRUSS CHORDS. CAULK TOP CORNERS OF EAST AND WEST LOWER TRUSS CHORDS AT TRUSS GUSSET PLATES. CAULK SELECTED SEAMS ON BUILT-UP TRUSS DIAGONAL AND VERTICAL MEMBERS AT OR BELOW THE ROADWAY.
26. REPLACE MISSING PIGEON DOORS ON TRUSS MEMBERS AFTER PAINTING.
27. INSTALL NEW NYLON REINFORCED NEOPRENE SHEET FLASHING BELOW DECK DRAINS AND AROUND LOWER LATERAL BRACING UNDER ROADWAY DRAINS AFTER PAINTING.
28. INSTALL NEW NYLON REINFORCED NEOPRENE SHEET FLASHING UNDER DECK EXPANSION AND DEFLECTION JOINTS AFTER PAINTING.
29. PATCH DETERIORATED CONCRETE SURFACES ON ABUTMENTS AND PIERS.
30. SEAL ABUTMENT SEAT AND BACKWALL PATCHES. SEAL NEW FORWARD ABUTMENT CONCRETE BELOW THE BRIDGE SUPERSTRUCTURE.
31. FILL DEPRESSIONS ON PIER CAPS 1 AND 2.
32. REPAIR DAMAGED STEEL DEFLECTION JOINT ARMOR IN DECK.
33. REPAIR DAMAGED SOUTH PORTAL STEELWORK.
34. REPLACE CRACKED STRINGER DIAPHRAGM CONNECTION AT FLOORBEAM 4.
35. REMOVE AND REPLACE CONCRETE CAP ON SIDEWALK RETAINING WALL AT THE FORWARD ABUTMENT. REUSE AND RESET EXISTING PEDESTRIAN RAILING ON NEW CAP. INCLUDE NEW DRAINAGE BEHIND WALL.
36. REMOVE AND REBUILD WEST WINGWALL AND WEST BUTTRESS AT FORWARD ABUTMENT.
37. PAINT ROADWAY RAILING AND CURBS.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN
ITEM 202 - REMOVAL MISC.; DAMAGED PORTAL MEMBER

PORTIONS OF STRUCTURE REMOVED AND REMOVAL MISC., ITEMS INCLUDE, BUT ARE NOT LIMITED TO:

- BRIDGE ROADWAY EXPANSION JOINT AND JOINT ARMOR AT PANEL POINT 35
- BRIDGE ROADWAY EXPANSION JOINT AND JOINT ARMOR AT FORWARD ABUTMENT
- DEFLECTION JOINT ELASTOMERIC SEALS
- PORTIONS OF FORWARD ABUTMENT
- DAMAGED SIDEWALK SUPPORT AT PANEL POINTS 18 AND 62
- DAMAGED SOUTH PORTAL MEMBER
- ACCESS HATCH COVERS
- BROKEN COUNTERSUNK BOLTS AT PANEL POINT 12 AND 35 STRINGER SUPPORTS
- PREFORMED ELASTOMERIC COMPRESSION SEAL AT THE ABUTMENT BACKWALL TO APPROACH SLAB JOINTS
- NYLON REINFORCED NEOPRENE SHEET (NRNS) FLASHING
- PORTIONS OF FORWARD APPROACH RETAINING WALL
- CAREFUL REMOVAL OF FORWARD APPROACH RETAINING WALL STEEL PEDESTRIAN RAILING FOR REUSE
- WEST FORWARD APPROACH SLAB CURB - FULL LENGTH
- EXISTING CATWALK AT PANEL POINT 12
- PORTIONS OF EXISTING CATWALK AT PANEL POINT 45
- PORTIONS OF STEEL CHANNEL REMOVAL AT DAMAGED DECK DEFLECTION JOINTS 28 AND 45
- EXISTING BOLTS DESIGNATED FOR REMOVAL IN THE ROADWAY RAILING AND CURB
- CRACKED STRINGER DIAPHRAGM CONNECTION ANGLE AT FLOORBEAM 4
- PORTIONS OF THE PEDESTRIAN RAILING TO BE REPLACED

THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED BY THE FOLLOWING NOTES. PERFORM WORK CAREFULLY DURING DECK AND JOINT REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITED. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

REMOVAL METHODS: THE CONTRACTOR MAY REMOVE CONCRETE BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. FOR REMOVALS OVER STRUCTURAL MEMBERS (I-BEAM, STEEL BEAM, STEEL GIRDER, ETC) THE CONTRACTOR MAY USE A HAMMER HEAVIER THAN 35 POUNDS BUT NOT TO EXCEED 90 POUNDS UNLESS APPROVED BY THE ENGINEER. REMOVAL METHODS OVER STRUCTURAL MEMBERS SHALL ENSURE ADEQUATE DEPTH CONTROL AND PREVENT NICKING OR GOUGING THE PRIMARY STRUCTURAL MEMBERS.

DUE TO THE POSSIBLE PRESENCE OF ATTACHMENTS TO EXISTING STRUCTURAL MEMBERS, PERFORM WORK CAREFULLY DURING DECK REMOVAL TO AVOID DAMAGING STRUCTURAL MEMBERS THAT ARE TO REMAIN. REPLACE OR REPAIR STRUCTURAL MEMBERS DAMAGED BY THE REMOVAL OPERATIONS AT NO COST TO THE PROJECT. AT LEAST 7 DAYS BEFORE PERFORMING REPAIR WORK, SUBMIT A PROPOSED REPAIR PLAN, DEVELOPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER TO THE DIRECTOR. OBTAIN THE DIRECTOR'S APPROVAL BEFORE PERFORMING REPAIR.

WELD MATERIAL ATTACHING EXISTING STEEL TO BE REMOVED TO EXISTING STEEL TO REMAIN ON THE BRIDGE SHALL BE GROUND COMPLETELY OFF THE STEEL TO BE PRESERVED.

CUT LINE CONSTRUCTION JOINT PREPARATION: SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

SUBSTRUCTURE CONCRETE REMOVAL: REMOVE CONCRETE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18-INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18-INCH LIMIT, THE CONTRACTOR MAY USE HAMMERS NOT EXCEEDING 90 POUNDS UPON THE APPROVAL OF THE ENGINEER. DO NOT PLACE PNEUMATIC HAMMERS IN DIRECT CONTACT WITH THE REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

EXISTING STEEL SHALL BE REMOVED BY REMOVING CONNECTION BOLTS OR RIVETS FROM MEMBERS THAT ARE TO REMAIN IN PLACE.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED REMOVALS AT THE CONTRACT PRICE FOR ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN, AND ITEM 202 - REMOVAL MISC.; DAMAGED PORTAL MEMBER (PORTAL ONLY).

GENERAL NOTES CONTINUED ON SHEET 4/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15 | CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

GENERAL NOTES - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

ITEM 202 - REMOVAL MISC.: RIVET

EXISTING RIVETS THAT ARE IN HOLES USED TO CONNECT NEW MATERIAL TO EXISTING MATERIAL, EXISTING RIVETS THAT MUST BE REMOVED TO REMOVE EXISTING STEEL, EXISTING RIVETS TO BE REPLACED WITH NEW HIGH STRENGTH BOLTS AND RIVETS DIRECTED TO BE REMOVED BY THE ENGINEER SHALL BE REMOVED WITH CARE IN ACCORDANCE WITH CMS SECTION 202.03.

NO MORE RIVETS SHALL BE REMOVED FROM AN AREA THAN ARE NECESSARY FOR CONNECTING EACH NEW MATERIAL PIECE. RIVETS SHALL BE REMOVED FROM ONLY ONE SIDE OF A MEMBER AT A TIME. SEE GENERAL NOTE "ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR" FOR SPECIFIC REQUIREMENTS.

ALL EXISTING RIVETS TO BE REMOVED SHALL FIRST HAVE THE HEADS CUT OFF AND THEN THE REMAINDER OF THE RIVET REMOVED BY DRILLING OR BURNING. SOME RIVETS TO BE REMOVED MAY HAVE COUNTERSUNK HEADS ON ONE OR BOTH ENDS. RIVETS THAT ARE COUNTERSUNK ON BOTH ENDS SHALL BE REMOVED BY DRILLING OR BURNING. PUNCHING MAY BE USED TO REMOVE LOOSE FITTING SHANKS. RIVET REMOVAL METHODS SHALL NOT DAMAGE BASE MATERIAL THAT IS TO REMAIN IN PLACE. THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED RIVET REMOVAL METHOD FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK. ANY DAMAGE TO EXISTING MATERIAL TO REMAIN IN PLACE, DUE TO THE CONTRACTOR'S REMOVAL OPERATION, SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE COST OF THE CONTRACTOR.

PAYMENT FOR STRUCTURAL STEEL REMOVAL SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

PAYMENT FOR RIVET REMOVAL SHALL BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: RIVET, PER EACH RIVET.

ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN

WORK UNDER THIS ITEM INCLUDES THE FURNISHING AND PLACEMENT OF NEW CONCRETE FOR THE PARTIALLY REPLACED BACKWALL; REPLACED WEST BUTTRESS WALL; REPLACED WEST WINGWALL; AND REPLACED ROADWAY GUARDRAIL TERMINAL ASSEMBLY PILASTERS AT THE FORWARD ABUTMENT.

INCIDENTAL WORK UNDER THIS ITEM INCLUDES THE CAREFUL REMOVAL, STORAGE AND RESETTING OF THE SINGLE PEDESTRIAN RAILING POST LOCATED ON THE FORWARD ABUTMENT BACKWALL, AND CAREFUL REMOVAL, STORAGE AND REINSTALLATION OF THE EXISTING RAILING ATTACHMENT PLATES IN THE NEW RAILING PILASTERS ON THE ABUTMENT BACKWALL. ALSO INCLUDED IS THE PLACEMENT OF THE SHEAR STUDS TO REPLACE THOSE PREVIOUSLY REMOVED FROM THE WEST FORWARD ABUTMENT EMBEDDED PLATE AS PER THE PLAN DETAILS. THE STUDS SHALL BE IN ACCORDANCE WITH CMS 513.

PAYMENT FOR THE CONCRETE AND MISCELLANEOUS WORK DESCRIBED ABOVE SHALL BE PER CUBIC YARD UNDER ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN.

ITEM 511 - CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK

WORK UNDER THIS ITEM INCLUDES PLACING CONCRETE IN THE AREAS BEHIND THE DECK JOINTS AND AREAS OF SIDEWALK REMOVAL AND REPAIR TO INSTALL THE NEW JOINTS. THIS WORK ALSO INCLUDES FILLING THE EXISTING ROADWAY AND SIDEWALK STEEL GRID DECK IN THESE AREAS AND SUPPLYING, INSTALLING AND WELDING REINFORCING STEEL TO THE EXISTING STEEL GRID DECK PER PLAN DETAILS. RELOCATING EXISTING $\frac{3}{4}$-INCH DIAMETER, 4-INCH LONG SHEAR STUDS CONNECTORS ON THE DIAPHRAGM BEAMS MAY BE REQUIRED IN SOME LOCATIONS AND IS ALSO INCLUDED. DEPENDING ON HOW MUCH AND BY WHAT MEANS THE STRUCTURE AROUND THE CURBS AND SIDEWALK AREAS IS REMOVED, ADDITIONAL PERMANENT STEEL PLATES AND BRACKETS TO FORM THE SIDEWALK CONCRETE REPAIRS MAY BE REQUIRED AND ARE INCLUDED IN THIS COST.

PAYMENT FOR THE CONCRETE AND ABOVE DESCRIBED WORK SHALL BE PER CUBIC YARD UNDER ITEM 511 - CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK.

ITEM 512 - SEALING CONCRETE BRIDGE DECKS WITH HMWM RESIN

PERFORM THIS WORK AFTER ALL CONCRETE PATCHING WORK IN THE DECK OR SIDEWALK IN EACH CONSTRUCTION PHASE IS COMPLETE.

ITEM SPECIAL - SEALING, MISC.: SEALING EDGES OF ROADWAY

THE WORK UNDER THIS ITEM SHALL INCLUDE THE SEALING OF THE JOINT BETWEEN THE CONCRETE DECK AND THE STEEL CURB CHANNEL ON BOTH SIDES OF THE BRIDGE ROADWAY WITH HIGH MOLECULAR WEIGHT METHACRYLATE AS DETAILED IN THE PLANS.

THE WORK SHALL BE ACCORDING TO CMS 512.04. THE WORK SHALL BE PERFORMED AFTER THE CURBS HAVE BEEN PAINTED. SURFACE PREPARATION WORK ON THE NEWLY PAINTED CURBS SHALL BE LIMITED TO REMOVING DIRT, GREASE OR OTHER FOREIGN MATERIAL BY PRESSURE WASHING OR WIPING. ABRASIVE BLASTING OF THE CURBS AS PREPARATION FOR THE HMWM APPLICATION IS NOT REQUIRED.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR SEALING THE JOINTS INCLUDING SURFACE PREPARATION SHALL BE INCLUDED IN THE LINEAL FOOT CONTRACT BID PRICE FOR ITEM SPECIAL - SEALING, MISC.: SEALING EDGES OF ROADWAY.

CONNECTION BOLTS:

CONNECTION BOLTS $\frac{5}{8}$-INCH DIAMETER AND LARGER SHALL BE ASTM A325 HIGH STRENGTH STEEL BOLTS, TYPE 1, UNLESS OTHERWISE NOTED.

ASTM A490 AND SAE J429 GRADE 8 HIGH STRENGTH STEEL BOLTS SHALL NOT BE GALVANIZED.

HEX HEAD BOLTS $\frac{1}{2}$-INCH DIAMETER AND SMALLER SHALL BE GALVANIZED SAE J429 GRADE 5 OR GALVANIZED ASTM A449, TYPE 1.

COUNTERSUNK HEAD BOLTS SHALL BE SAE J429 GRADE 5 OR ASTM A449, TYPE 1. COUNTERSUNK BOLTS SHALL HAVE SLOTTED HEADS AND CONFORM TO ANSI 18.5. COUNTERSUNK BOLTS SHALL BE PAINTED AND NOT GALVANIZED.

NEW CONNECTION BOLTS SHALL BE INCLUDED FOR PAYMENT WITH THE PERTINENT NEW MATERIAL PAY ITEM.

WELDING:

WELDING TO THE EXISTING STEEL SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER, EXCEPT WHERE DETAILED IN THE PLANS. TACK WELDING NEW OR EXISTING STEEL SHALL NOT BE PERMITTED.

WHERE WELDING IS DETAILED IN THE PLANS, TEST AN AREA FOR WELDABILITY PRIOR TO PERFORMING THE PROPOSED WORK.

BOLTED CONNECTION TO EXISTING STEEL:

AT LOCATIONS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER, NEW STRUCTURAL STEEL SHALL BE CONNECTED TO EXISTING STRUCTURAL STEEL USING EXISTING RIVET OR BOLT HOLES AND NEW BOLTS. RIVET AND BOLT REMOVAL PROCEDURES ARE DESCRIBED IN THE GENERAL NOTES. SEE GENERAL NOTE "ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 1, 2, 3, 4, 5, 6, 7, AND 8" FOR SPECIFIC REQUIREMENTS.

HOLES IN NEW MATERIAL SHALL BE MADE BY ANY OF THE FOLLOWING METHODS (TO BE SELECTED BY THE CONTRACTOR):

1. CAREFUL FIELD MEASUREMENT BY THE CONTRACTOR SHALL BE USED FOR LOCATING HOLES IN NEW MATERIAL TO BE SUBPUNCHED OR DRILLED UNDERSIZE IN THE SHOP. THE HOLE SHALL BE $\frac{3}{16}$-INCH LESS IN DIAMETER THAN THE NOMINAL DIAMETER OF THE NEW BOLT. THE HOLES SHALL BE REAMED TO PROPER SIZE IN THE FIELD AFTER FIT-UP TO THE EXISTING RIVET OR BOLT HOLES.

2. MAKE TEMPLATES IN THE FIELD OF HOLE PATTERNS AND LOCATIONS AFTER REMOVAL OF RIVETS OR BOLTS. USE THE FIELD TEMPLATES IN THE SHOP TO SUBPUNCH OR DRILL UNDERSIZE HOLES. THE HOLES SHALL BE REAMED IN THE FIELD AFTER FIT-UP TO THE EXISTING RIVET OR BOLT HOLES.

3. FURNISH NEW STRUCTURAL STEEL WITHOUT SHOP HOLES FOR RECONNECTION TO EXISTING RIVET OR BOLT HOLES. HOLES IN NEW MATERIAL TO BE FIELD DRILLED AND REAMED TO MATCH EXISTING RIVET OR BOLT LOCATION.

RIVET HOLES NOT USED FOR BOLTED CONNECTIONS OF NEW STRUCTURAL STEEL SHALL BE FILLED WITH A BOLT UNLESS OTHERWISE NOTED.

EXISTING MATERIAL WITHOUT HOLES FOR CONNECTION TO NEW MATERIAL SHALL BE FIELD DRILLED.

ALL HOLES THROUGH NEW AND EXISTING MATERIAL SHALL BE REAMED AFTER ASSEMBLY. THE FINAL HOLES SHALL BE STANDARD SIZE, $\frac{1}{16}$-INCH LARGER IN DIAMETER THAN THE NOMINAL BOLT DIAMETER, UNLESS OTHERWISE NOTED.

ADDITIONAL REQUIREMENTS FOR HOLES SHALL BE PER CMS 513.19. SHOP FABRICATED HOLES THAT DO NOT MATCH EXISTING RIVET HOLE LOCATIONS SHALL BE FIELD DRILLED AT THE LOCATION TO MATCH THE EXISTING HOLES.

THE COST OF ALL LABOR, MATERIAL, AND EQUIPMENT FOR CONNECTING NEW MATERIAL TO EXISTING MATERIAL, INCLUDING REAMING NEW OR EXISTING HOLES, AND DRILLING NEW HOLES, SHALL BE INCLUDED AS INCIDENTAL TO THE PERTINENT NEW MATERIAL PAY ITEM.

PENCIL ABRASIVE BLASTING

THE PENCIL ABRASIVE BLASTING REFERRED TO IN THE VARIOUS NOTES AND REPAIR ITEMS IN THESE PLANS SHALL CONFORM TO THE FOLLOWING:

CLEAN THE DESIGNATED AREAS OF ALL PAINT, RUST, AND FOREIGN MATERIAL BY ABRASIVE BLASTING TO A SURFACE QUALITY EQUAL TO SSPC-SP10 PREPARATION GRADE SA 2 ACCORDING TO AND AS SHOWN IN SSPC-VIS 1-89. PERFORM THE ABRASIVE BLASTING USING A MAXIMUM COMPRESSED AIR PRESSURE OF 100 PSI, A HOSE NOZZLE DIAMETER OF $\frac{1}{4}$-INCH (+/- $\frac{1}{16}$-INCH), AND A GRADE 30/60 COAL SLAG ABRASIVE OR EQUIVALENT. DO NOT USE BLASTING ABRASIVES CONTAINING MORE THAN ONE-PERCENT FREE SILICA. BLASTERS USED FOR SURFACE PREPARATION FOR STRUCTURAL STEEL COATING CANNOT BE USED FOR PENCIL BLASTING. AFTER THE ABRASIVE BLASTING IS COMPLETE, AIR BLOW THE AREA CLEAN.

THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER THAT PENCIL ABRASIVE BLASTING CAN SATISFACTORILY BE PERFORMED ACCORDING TO THESE SPECIFICATIONS PRIOR TO THE START OF THE WORK. THE COST OF THE PENCIL ABRASIVE BLASTING SHALL BE INCLUDED FOR PAYMENT IN THE APPROPRIATE REPAIR ITEMS.

GENERAL NOTES CONTINUED ON SHEET 5/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GENERAL NOTES - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

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ITEM 513 - STRUCTURAL STEEL, MISC.:

ALL STEEL MEMBERS INCLUDED IN THESE ITEMS SHALL BE FABRICATED UNDER CMS 513 UF LEVEL OF FABRICATION.

ITEM 513 - STRUCTURAL STEEL, MISC.: SHIM SIDEWALK STRINGER BEARING

WORK UNDER THIS ITEM SHALL CONSIST OF THE JACKING AND TEMPORARY SUPPORT OF THE SIDEWALK STRINGER AT PANEL POINT 12 AND THE INSTALLATION OF A NEW STAINLESS STEEL SHIM IN THE GAP BETWEEN THE STRINGER AND ITS BEARING. THE EXISTING SHIM IS NO LONGER CONNECTED TO THE BRIDGE AND REMOVAL OF THE EXISTING SHIM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

THE STAINLESS STEEL SHIM SHALL CONFORM TO CMS 730.09.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION AND OPERATION OF AN ADEQUATE JACKING SYSTEM, INCLUDING ANY TEMPORARY OR PERMANENT SUPPORTS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE PROJECT PLANS. THREE (3) SETS OF JACKING PLANS, WHICH INCLUDE THE INFORMATION DESCRIBED IN THIS NOTE, SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL AT LEAST THIRTY (30) DAYS BEFORE ACTUAL WORK IS TO BEGIN. THE PLANS SHALL BE PREPARED AND STAMPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER.

JACKING SUBMITTALS SHALL INCLUDE AT LEAST THE FOLLOWING:

1. THE SIGNATURE AND NUMBER, OR PROFESSIONAL SEAL, OF THE OHIO REGISTERED PROFESSIONAL ENGINEER WHO PREPARED THE SUBMITTAL.
2. CALCULATIONS AND ANALYSES OF THE STRUCTURE TO DETERMINE AND DEFINE THE ACTUAL LOADING APPLIED AT THE CONTRACTOR'S SELECTED JACKING POINTS.
3. A DRAWING SHOWING THE PHYSICAL AND DIMENSIONAL POSITION OF THE JACKS WITH RESPECT TO THE STRUCTURE INCLUDING CLEARANCES AND CENTER OF LIFT.
4. A SCHEMATIC LAYOUT OF JACKS, CHECK VALVES, PUMPS WITH 3 WAY RETRACTOR VALVE, PRESSURE GAGES, FLOW CONTROL VALVES, ETC. IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. ANALYSIS AND CALCULATIONS OF THE STRESSES INDUCED OR CREATED IN THE STRUCTURE AND ANY TEMPORARY OR PERMANENT SUPPORTS. DESIGN CALCULATIONS FOR ANY TEMPORARY OR PERMANENT SUPPORTS.
6. PHYSICAL DIMENSIONS, MATERIALS, AND FABRICATION DETAILS OF ANY TEMPORARY OR PERMANENT SUPPORTS. HORIZONTAL AND VERTICAL MOVEMENT RESTRAINT SHALL BE PROVIDED.
7. A STEP BY STEP PROCEDURE DETAILING ALL STEPS IN THE JACKING OPERATION.
8. METHOD OF ATTACHMENT TO STRUCTURAL MEMBERS. WELDING TO TENSION AREAS WILL NOT BE PERMITTED.

THE ENTIRE SYSTEM INCLUDING JACKS SHALL HAVE 20% MORE CAPACITY THAN REQUIRED BASED ON CALCULATED LOADS. THE ESTIMATED LOAD IS 2 TONS.

JACKS SHALL HAVE A SWIVEL LOAD CAP, A DOMED PISTON HEAD, OR SOME OTHER DEVICE TO PROTECT AGAINST THE EFFECTS OF SIDE LOAD ON THE JACK.

JACKS ALONE MAY BE USED TO SUPPORT LOADS DURING THE INSTALLATION OF THE SHIM.

SINGLE ACTING RAMS WITH NO OVER-TRAVEL PROTECTION SYSTEM SHALL NOT BE USED.

THE JACKING HEIGHT SHALL NOT EXCEED 3/8-INCH.

LUMP SUM PAYMENT FOR ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO INSTALL THE SHIM WILL BE MADE UNDER ITEM SPECIAL - STRUCTURE, MISC.: SHIM SIDEWALK STRINGER BEARING.

ITEM 513 - STRUCTURAL STEEL, MISC.: SIDEWALK SUPPORT REPAIR

WORK UNDER THIS ITEM INCLUDES INSTALLATION OF NEW STEEL ANGLES UNDER THE SIDEWALK AT PANEL POINTS 18 AND 62 TO REPLACE CRACKED ANGLES AS DETAILED IN THE PLANS.

CAREFUL REMOVAL OF THE EXISTING DAMAGED SUPPORT SHALL BE INCLUDED WITH ITEM 202 - REMOVAL MISC.: RIVET; AND ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY BRACING NEEDED TO KEEP THE SIDEWALK AND THE SIDEWALK SUPPORTS ALIGNED AND STABLE WHEN THE ANGLE IS REMOVED AND THE NEW ANGLE INSTALLED.

BOTH STRINGER SUPPORTS AT THE L18 DEFLECTION JOINT REQUIRE REPLACEMENT. REMOVAL, TEMPORARY SUPPORT AND INSTALLATION AT NEW ANGLES SHALL NOT BE PERFORMED CONCURRENTLY AT BOTH STRINGER SUPPORTS.

NEW MATERIAL SHALL BE ASTM A709, GRADE 50. NEW BOLTS SHALL MATCH EXISTING RIVET OR BOLT SIZES. NEW MATERIALS SHALL BE CERTIFIED PER CMS 501.06.

FAYING SURFACES BETWEEN EXISTING STEEL AND NEW STEEL SHALL BE PREPARED IN ACCORDANCE WITH THE "PENCIL ABRASIVE BLASTING" GENERAL NOTE PRIOR TO INSTALLATION OF NEW MATERIAL. NEW MATERIAL SHALL BE PRIME PAINTED.

THE STRUCTURAL STEEL WILL NOT REQUIRE SHOP DRAWINGS PRIOR TO FABRICATION. THE CONTRACTOR SHALL MAKE THE NECESSARY MEASUREMENTS AND PREPARE SKETCHES, DRAWINGS, AND TABLES. THE ENGINEER SHALL HAVE THE AUTHORITY AND RESPONSIBILITY FOR ENSURING THAT THE FABRICATED STEEL IS ACCEPTABLE. TECHNICAL ASSISTANCE WILL BE PROVIDED ON REQUEST BY THE OFFICE OF STRUCTURAL ENGINEERING. MILL TEST REPORTS AND SHIPPING DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INCORPORATING THE STEEL ITEMS INTO THE WORK, AS REQUIRED BY CMS 501.06. AFTER FABRICATION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL TO ENSURE THAT THE DRAWINGS DEPICT THE STEEL AS ACTUALLY INCORPORATED INTO THE WORK. THE ENGINEER WILL THEN SEND ONE APPROVED SET OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING FOR INFORMATION. THE FABRICATOR SHALL FURNISH THE DIRECTOR A DIGITAL MEDIA COPY OF EACH APPROVED SHOP DRAWING. THE DIGITAL MEDIA SHALL BE AS SPECIFIED IN CMS 501.04.

NEW MATERIAL MAY BE SHOP FABRICATED OR FIELD FABRICATED AT A FACILITY APPROVED BY THE ENGINEER. NO SHOP CERTIFICATION IS REQUIRED. NEW ANGLE DIMENSIONS SHOWN ON THE PLANS ARE TAKEN FROM THE ORIGINAL SHOP DRAWINGS. RETAIN THE EXISTING ANGLES TO ACT AS TEMPLATES FOR THE EXACT MEASUREMENTS AND BOLT HOLE LOCATIONS.

PAYMENT FOR ALL LABOR, MATERIALS, EQUIPMENT, AND TEMPORARY BRACING FOR FURNISHING AND ERECTING THE NEW SIDEWALK SUPPORT SHALL BE INCLUDED IN THE LUMP SUM CONTRACT BID PRICE FOR ITEM 513 - STRUCTURAL STEEL, MISC.: SIDEWALK SUPPORT REPAIR.

ITEM 513 - STRUCTURAL STEEL, MISC.: PORTAL MEMBER REPLACEMENT

WORK UNDER THIS ITEM INCLUDES REPLACEMENT OF THE DAMAGED SOUTH PORTAL BRACING MEMBER OVER THE NORTHBOUND LANES WITH NEW MATERIAL. EXISTING CONNECTION PLATES TO BE REUSED SHALL BE STRAIGHTENED TO PROVIDE PROPER CONNECTION ALIGNMENT FOR THE NEW MEMBER.

CAREFUL REMOVAL OF THE EXISTING DAMAGED PORTAL MEMBER SHALL BE INCLUDED WITH ITEM 202 - REMOVAL MISC.: RIVET; AND ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

STRAIGHTENING OF CONNECTION PLATES TO REMAIN SHALL BE PERFORMED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 849 - HEAT STRAIGHTENING OF DAMAGED STRUCTURAL STEEL. HEAT STRAIGHTENING OF EXISTING MEMBERS SHALL BE PERFORMED IF NECESSARY TO ALIGN THE NEW AND EXISTING MEMBERS FOR BOLTED CONNECTION. THIS MAY REQUIRE TOLERANCES STRICTER THAN THOSE SPECIFIED IN SS 849.16.

NEW STEEL SHALL BE ASTM A709, GRADE 50, FABRICATED AND SHOP PRIME PAINTED IN ACCORDANCE WITH CMS 513. SHOP DRAWINGS ARE REQUIRED.

EXISTING CONNECTION PLATES REUSED IN THE REPAIR SHALL BE FIELD PREPPED AND PAINTED PER CMS 514. THE FIELD WORK TO PREP (WHERE APPLICABLE) AND PAINT THE EXISTING NEW MEMBERS SHALL BE PAID UNDER THE PAINTING ITEMS OUTLINED IN THESE PLANS.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR FURNISHING AND ERECTING THE NEW STEEL PORTAL MEMBER, INCLUDING STRAIGHTENING OF EXISTING MEMBERS TO REMAIN, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT BID PRICE FOR ITEM 513 - STRUCTURAL STEEL, MISC.: PORTAL MEMBER REPLACEMENT.

ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 12 CATWALK REPLACEMENT

WORK UNDER THIS ITEM INCLUDES THE FURNISHING AND INSTALLATION OF A NEW CATWALK ADJACENT TO THE FINGER EXPANSION JOINT AT PANEL POINT 12. THE NEW CATWALK WILL REPLACE THE EXISTING CATWALK AND WILL BE INSTALLED AT THE SAME LOCATION.

THE EXISTING CATWALK SHALL BE REMOVED IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN. CAREFUL RIVET REMOVAL SHALL BE IN ACCORDANCE WITH ITEM 202 - REMOVAL MISC.: RIVET.

NEW STRUCTURAL STEEL SHALL BE ASTM A709, GRADE 50 STEEL.

PAYMENT FOR ALL LABOR, TOOLS, MATERIALS AND INCIDENTALS REQUIRED FOR THE INSTALLATION OF THE CATWALK SHALL BE MADE PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 12 CATWALK REPLACEMENT.

ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 45 PARTIAL CATWALK REPLACEMENT

WORK UNDER THIS ITEM INCLUDES THE FURNISHING AND INSTALLATION OF PORTIONS OF A NEW CATWALK ADJACENT TO THE DEFLECTION JOINT AT PANEL POINT 45. PORTIONS OF THE CATWALK TO BE REPLACED ARE DESIGNATED IN THE PLAN DETAIL SHEETS.

PORTIONS OF THE EXISTING CATWALK SHALL BE REMOVED IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN. CAREFUL RIVET REMOVAL SHALL BE IN ACCORDANCE WITH ITEM 202 - REMOVAL MISC.: RIVET.

NEW STRUCTURAL STEEL SHALL BE ASTM A709, GRADE 50 STEEL.

THIS ITEM WILL ALSO INCLUDE PROVIDING TEMPORARY SUPPORT FOR THE DRAIN TROUGH COLLECTING WATER THROUGH THE DECK DRAIN IN PANEL 45. SEVERAL TROUGH SUPPORTS ARE CONNECTED TO CATWALK MEMBERS DESIGNATED FOR REMOVAL AND REPLACEMENT. THE CONTRACTOR SHALL SUPPORT THE TROUGH AS-NEEDED UNTIL IT CAN BE ATTACHED TO THE NEW CATWALK MEMBERS.

PAYMENT FOR ALL LABOR, TOOLS, MATERIALS AND INCIDENTALS, INCLUDING TEMPORARY SUPPORT OF THE DRAIN TROUGH, REQUIRED FOR THE INSTALLATION OF PORTIONS OF THE INSPECTION ACCESS CATWALK SHALL BE MADE PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 45 PARTIAL CATWALK REPLACEMENT.

ITEM 513 - STRUCTURAL STEEL, MISC.: STRINGER DIAPHRAGM CONNECTION REPAIR

WORK UNDER THIS ITEM INCLUDES THE REPLACEMENT OF A CRACKED STRINGER DIAPHRAGM CONNECTION ANGLE BETWEEN STRINGERS 6 AND 7 AT FLOORBEAM 4.

NEW STRUCTURAL STEEL SHALL BE ASTM A709, GRADE 50 STEEL. NEW MATERIAL MAY BE SHOP FABRICATED OR FIELD FABRICATED AT A FACILITY APPROVED BY THE ENGINEER. NO SHOP CERTIFICATION IS REQUIRED. NEW MEMBER SHALL BE FIELD OR SHOP PAINTED PER 514.

CAREFUL REMOVAL OF THE EXISTING DAMAGED ANGLE SHALL BE INCLUDED WITH ITEM 202 - REMOVAL MISC.: RIVET; AND ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR FURNISHING AND ERECTING THE NEW STRINGER DIAPHRAGM SHALL BE INCLUDED IN THE LUMP SUM CONTRACT BID PRICE FOR ITEM 513 - STRUCTURAL STEEL, MISC.: STRINGER DIAPHRAGM CONNECTION REPAIR.

GENERAL NOTES CONTINUED ON SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GENERAL NOTES - 3
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ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 1, 2, 3, 4, 5, 6, 7, AND 8

WORK UNDER THIS ITEM INCLUDES INSTALLATION OF NEW STEEL ANGLES ON EXISTING GUSSET PLATES TO REINFORCE BOWED AREAS AND STIFFEN UNSUPPORTED EDGES.

MATERIAL

1. NEW MATERIAL SHALL BE ASTM A709, GRADE 50.

2. NEW BOLTS FOR THE SINGLE BOLT METHOD SHALL BE ASTM A325, TYPE 1.

3. NEW BOLTS FOR THE DOUBLE NUT METHOD SHALL BE ASTM A490, TYPE 3. THE BOLTS SHALL UTILIZE HARDENED WASHERS PER ASTM F436, PLACED UNDER BOTH THE BOLT HEAD AND ALL NUTS. THE NUT USED FOR THE ASTM A490 BOLTS SHALL BE IN ACCORDANCE WITH ASTM A563. ALL HEAVY HEX HEAD NUTS SHALL BE TYPE DH3. NEW ⅞-INCH DIAMETER ASTM A490 BOLTS SHALL BE TENSIONED TO A MINIMUM OF 49 KIPS. NEW 1-INCH DIAMETER ASTM A490 BOLTS SHALL BE TENSIONED TO A MINIMUM OF 64 KIPS. THE TURN-OF-NUT REQUIREMENTS SPECIFIED IN TABLE 513.20-3 MAY BE USED TO ACHIEVE THE BOLT PRE-TENSION.

4. NEW BOLTS SHALL MATCH EXISTING RIVET SIZES.

5. NEW MATERIALS SHALL BE CERTIFIED PER CMS 501.06.

STEEL SURFACE PREPARATION

FAYING SURFACES BETWEEN EXISTING STEEL AND NEW STEEL SHALL BE PREPARED IN ACCORDANCE WITH THE "PENCIL ABRASIVE BLASTING" GENERAL NOTE PRIOR TO INSTALLATION OF NEW MATERIAL. NEW MATERIAL SHALL BE PRIME PAINTED.

SHOP DRAWINGS

STRUCTURAL STEEL ANGLES WILL NOT REQUIRE SHOP DRAWINGS PRIOR TO FABRICATION. THE CONTRACTOR SHALL MAKE THE NECESSARY MEASUREMENTS AND PREPARE SKETCHES, DRAWINGS, AND TABLES. THE ENGINEER SHALL HAVE THE AUTHORITY AND RESPONSIBILITY FOR ENSURING THAT THE FABRICATED STEEL IS ACCEPTABLE. TECHNICAL ASSISTANCE WILL BE PROVIDED ON REQUEST BY THE OFFICE OF STRUCTURAL ENGINEERING. MILL TEST REPORTS AND SHIPPING DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INCORPORATING THE STEEL ITEMS INTO THE WORK, AS REQUIRED BY CMS 501.06. AFTER FABRICATION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL TO ENSURE THAT THE DRAWINGS DEPICT THE STEEL AS ACTUALLY INCORPORATED INTO THE WORK. THE ENGINEER WILL THEN SEND ONE APPROVED SET OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING FOR INFORMATION. THE FABRICATOR SHALL FURNISH THE DIRECTOR A DIGITAL MEDIA COPY OF EACH APPROVED SHOP DRAWING. THE DIGITAL MEDIA SHALL BE AS SPECIFIED IN CMS 501.04.

FABRICATION

1. NEW MATERIAL MAY BE SHOP FABRICATED OR FIELD FABRICATED AT A FACILITY APPROVED BY THE ENGINEER. NO SHOP CERTIFICATION IS REQUIRED. WELDERS SHALL BE PREQUALIFIED.

2. FABRICATE NEW STIFFENING ANGLES AS SHOWN IN THE DESIGN DRAWINGS.

3. NEW ANGLE MATERIAL SHALL BE DEFLECTED TO CONFORM TO SHAPES IN THE DESIGN DRAWINGS. ANGLE LEGS CUT TO FACILITATE THIS SHALL BE RE-ATTACHED WITH COMPLETE PENETRATION GROOVE WELDS GROUND SMOOTH ON THE OUTSIDE OF THE ANGLE LEG THAT WILL BE ATTACHED TO THE EXISTING GUSSET PLATE.

4. EDGE DISTANCE FROM THE CENTER OF A FASTENER TO THE FIELD CUT EDGE OF THE NEW MATERIAL SHALL BE 2 INCHES UNLESS NOTED OTHERWISE. THE MINIMUM EDGE DISTANCE IS 1½-INCHES.

CONSTRUCTION

1. REMOVE EXISTING RIVETS FOR ONLY ONE NEW ANGLE STIFFENER AT ANY TIME, UNLESS NOTED OTHERWISE. INSTALL AND FULLY TIGHTEN ALL NEW BOLTS IN A NEW STIFFENER ANGLE PRIOR TO WORK ON ADDITIONAL NEW REMOVALS AND INSTALLATIONS. INSTALL NEW BOLTS IN EXISTING RIVET HOLES BEFORE DRILLING NEW HOLES IN EXISTING GUSSET PLATES.

2. IF SPECIFIED ON THE INDIVIDUAL DESIGN SHEETS, INSTALL NEW STIFFENER ANGLES IN THE ORDER SHOWN. NEW ANGLES ON DESIGN SHEETS WITHOUT AN ORDER SPECIFIED MAY BE INSTALLED IN ANY ORDER.

3. THE NEW L4x4 ANGLES MAY REQUIRE A REVISED STANDARD GAGE FOR THE CONNECTION BOLTS TO FIT THE ANGLES BETWEEN EXISTING RIVETS. IN AREAS WHERE THERE ARE NO EXISTING RIVETS AND NEW BOLTS ARE BEING ADDED TO NEW FIELD DRILLED HOLES, THE CONTRACTOR MAY USE THE STANDARD 2½-INCH GAGE IN THE ANGLE LEGS TO INSTALL THE NEW BOLTS. AN EXAMPLE AREA WOULD BE ON THE GUSSET PLATE ABOVE THE LOWER CHORD AWAY FROM THE STIFFENED GUSSET EDGE AND AWAY FROM THE TRUSS VERTICAL OR DIAGONAL.

BOLT INSTALLATION

WHERE PRACTICABLE, INSTALL THE HEAD OF THE NEW BOLT TO OUTSIDE OF THE GUSSET PLATE. THE OUTSIDE FACES OF THE GUSSET PLATES ARE CONSIDERED AWAY FROM THE CENTERLINE OF THE EAST TRUSS WHEN WORKING ON THE EAST TRUSS AND AWAY FROM THE WEST TRUSS CENTERLINE WHEN WORKING ON THE WEST TRUSS.

PIGEON DOORS

INSTALLATION OF THE NEW ANGLES ON THE GUSSET PLATES AT THE BUILT- UP TRUSS CHORDS WILL REQUIRE TEMPORARY REMOVAL AND REPLACEMENT OF THE PLYWOOD PIGEON DOORS AT THE PANEL POINT BEING WORKED ON. PAYMENT FOR THE REMOVAL, STORAGE AND REINSTALLATION OF THE DOORS SHALL BE CONSIDERED INCIDENTAL TO THE TRUSS GUSSET REPAIR WORK.

IN THE EVENT THAT THE EXISTING DOOR IS DETERMINED TO BE UNSALVAGEABLE BY THE ENGINEER, THROUGH NO FAULT OF THE CONTRACTOR, A REPLACEMENT DOOR WILL BE FURNISHED AND PAID FOR UNDER THE ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS PAY ITEM.

ANGLE INSTALLATION REPAIR:

GUSSETS WITH ANGLE INSTALLATION CAN BE APPLIED AT A MAXIMUM OF TWO PANEL POINTS ON THE SAME TRUSS SPAN AT ONE TIME. CONSECUTIVE PANEL POINT WORK SHOULD BE AVOIDED. REPAIRS MAY BEGIN OR BE ON GOING ON THE OTHER TRUSS IN THE SAME SPAN AT THE SAME TIME.

SINGLE NUT ANGLE INSTALLATION SEQUENCE

GENERAL: WHILE WORKING AT A PANEL POINT, LIMIT REMOVALS AND CONSTRUCTION TO ONE GUSSET PLATE ON ONE TRUSS AT ANY ONE TIME. THE INSTALLATION SEQUENCE FOR THE NEW MATERIAL TO BE ADDED ON THE INTERIOR AND EXTERIOR GUSSET IS DETAILED BELOW. THE SEQUENCE SHALL BE COMPLETED AT ONE ANGLE LOCATION PRIOR TO BEGINNING CONSTRUCTION ON THE NEXT NEW ANGLE.

PERFORM THE INSTALLATION ON ONE TRUSS AS FOLLOWS. INSTALL NEW EDGE ANGLE ON THE INSIDE AND OUTSIDE GUSSET PLATES PER THE FOLLOWING INSTRUCTIONS:

A. PREPARE FAYING SURFACES IN ACCORDANCE WITH "PENCIL ABRASIVE BLASTING" REQUIREMENTS.

B. REMOVE NO MORE RIVETS FROM A CONNECTION THAN ARE NECESSARY FOR CONNECTING EACH NEW MEMBER PIECE.

C. FABRICATE NEW ANGLE.

D. ERECT NEW STIFFENING ANGLE.

E. SECURE NEW ANGLE WITH PROPERLY TENSIONED NUTS WITH WASHERS ON THE NEW BOLTS.

F. FIELD DRILL ONE NEW STANDARD SIZE BOLT HOLE FOR NEW BOLT THROUGH THE NEW ANGLE AND EXISTING GUSSETS, ANGLES AND CHORD MEMBERS.

G. INSTALL PROPERLY TENSIONED BOLT AT THE NEW HOLE LOCATION.

H. REPEAT "F" AND "G" AS NEEDED FOR EACH OF THE NEW BOLT HOLES TO BE FIELD DRILLED IN EXISTING MATERIAL.

DOUBLE NUT ANGLE INSTALLATION SEQUENCE

GENERAL: WHILE WORKING AT A PANEL POINT, LIMIT REMOVALS AND CONSTRUCTION TO ONE GUSSET PLATE ON ONE TRUSS AT ANY ONE TIME. THE INSTALLATION SEQUENCE FOR THE NEW MATERIAL TO BE ADDED ON THE INTERIOR AND EXTERIOR GUSSET IS DETAILED BELOW. THE SEQUENCE SHALL BE COMPLETED AT ONE ANGLE LOCATION PRIOR TO BEGINNING CONSTRUCTION ON THE NEXT NEW ANGLE.

PERFORM THE INSTALLATION ON ONE TRUSS AS FOLLOWS:
(SEE DOUBLE NUT CONNECTION DETAIL)

A. PREPARE FAYING SURFACES IN ACCORDANCE WITH "PENCIL ABRASIVE BLASTING" REQUIREMENTS.

B. REMOVE A SINGLE RIVET.

C. IN THE OPEN RIVET HOLE, INSTALL A NEW PROPERLY TENSIONED BOLT WITH GRIP SUFFICIENT TO ACCOMMODATE THE EXISTING GUSSETS, ANGLES, CHORD MEMBERS AND NEW FILL PLATE AND ANGLE. THE THREAD LENGTH MUST BE SUFFICIENT TO ALLOW FOR THE DOUBLE NUT CONNECTION METHOD.

D. REPEAT "B" AND "C" FOR ALL EXISTING RIVETS TO BE REMOVED TO CONNECT THE NEW ANGLE AND FILL PLATES.

E. FABRICATE NEW FILL PLATES WITH HOLES AS DETAILED TO FIT AROUND THE NEW NUTS AND WASHERS. ERECT NEW FILL PLATES.

F. ERECT NEW STIFFENING ANGLE WITH OVERSIZE BOLT HOLES TO FIT THE NEWLY INSTALLED BOLTS.

G. SECURE NEW ANGLE AND FILLS WITH PROPERLY TENSIONED NUTS WITH WASHERS ON THE NEW BOLTS.

H. FIELD DRILL ONE NEW STANDARD SIZE BOLT HOLE FOR NEW BOLT THROUGH THE NEW ANGLE, NEW FILL PLATES AND EXISTING GUSSETS, ANGLES AND CHORD MEMBERS.

I. INSTALL PROPERLY TENSIONED BOLT AT THE NEW HOLE LOCATION.

J. REPEAT "H" AND "I" AS NEEDED FOR EACH OF THE NEW BOLT HOLES TO BE FIELD DRILLED IN EXISTING MATERIAL.

PAYMENT

PAYMENT FOR CAREFUL RIVET REMOVAL SHALL BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: RIVET - PER EACH.

PAYMENT FOR FURNISHING ALL LABOR, EQUIPMENT AND MATERIAL NECESSARY TO INSTALL NEW TRUSS GUSSET PLATE REPAIRS INCLUDING NEW ANGLES, FILL PLATES, AND CONNECTION BOLTS; SURFACE PREPARATION OF EXISTING STEEL; CAULKING; AND FABRICATION SHALL BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR:

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 1 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 2 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 3 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 4 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 5 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 6 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 7 - PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 8 - PER EACH.

GENERAL NOTES CONTINUED ON SHEET 7/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GENERAL NOTES - 4
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ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT

THIS WORK CONSISTS OF DRILLING HOLES AT THE ENDS OF CRACKS, GRINDING TO SMOOTH HOLES, AND NON-DESTRUCTIVE TESTING (NDT) IN THE BOTTOM FLOORBEAM CONNECTION PLATE AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.

DRILL HOLES TO REMOVE ENTIRE CRACKS OR THE APPARENT ENDS OF THE CRACKS REVEALED BY THE INITIAL NDT OR VISUAL INSPECTION AT LOCATIONS INDICATED IN THE PLANS. GRIND SMOOTH THE EXPOSED CIRCUMFERENCE OF EACH DRILLED HOLE AND CAREFULLY INSPECT FOR CRACKS AROUND THE PERIMETER OF THE HOLE USING MAGNETIC PARTICLE EXAMINATION AND/OR DYE PENETRATION. CONTINUE DRILLING, GRINDING, AND TESTING UNTIL ALL CRACK ENDS ARE REMOVED.

CRACK ENDS SHALL BE REMOVED BY A SINGLE HOLE WHEN PRACTICAL. ENDS OF CRACKS SHALL BE DRILLED WITH MINIMUM 1-INCH DIAMETER DRILL BIT.

DRILL HOLES IN THE BOTTOM FLOORBEAM CONNECTION PLATE ONLY. FOR LOCATIONS IN WHICH THE HOLE WILL BE LOCATED BENEATH AN UNCRACKED PLATE, TAKE CARE TO STOP DRILLING AT THE INTERFACE BETWEEN THE BOTTOM FLOORBEAM CONNECTION PLATE AND THE ADJACENT PLATE.

THE LOCATION OF ALL HOLES SHALL BE DETERMINED BY AND DRILLED UNDER THE DIRECTION OF THE ENGINEER.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING DRILLING, GRINDING, AND TESTING SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FLOORBEAM LOCATION FOR ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT.

ITEM 513 - STRUCTURAL STEEL, MISC.: ACCESS HATCH COVER

WORK UNDER THIS ITEM INCLUDES REPLACEMENT OF THE SIDEWALK ACCESS HATCH COVERS WITH NEW MATERIALS. THE WORK SHALL INCLUDE ALL NEW ACCESS COVER LIDS, HINGES, AND HANDLES.

CAREFUL REMOVAL OF THE EXISTING ACCESS HATCH COVERS SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

THE EXISTING ACCESS HATCHES ARE NEENAH FOUNDRY COMPANY CAST IRON NO. R-6662-KH. THE NEW COVER LIDS SHALL BE FROM THE SAME COMPANY; AND HAVE NEW STAINLESS STEEL HINGE PINS AND A NEW STAINLESS STEEL TYPE "C" DROP HANDLE. THE NEW COVER LIDS SHALL FIT IN THE EXISTING CAST IRON FRAMES AND HINGE PIN RECESSES.

PAINT THE HATCH COVERS PER CMS 514. PAINTING SHALL BE CONSIDERED INCIDENTAL TO THE WORK.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING PAINTING, FOR REPLACING THE ACCESS HATCH COVERS WITH NEW MATERIALS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH ACCESS HATCH FOR ITEM 513 - STRUCTURAL STEEL, MISC.: ACCESS HATCH COVER.

ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT

WORK UNDER THIS ITEM INCLUDES INSTALLATION OF NEW BOLTS TO REPLACE BROKEN OR MISSING BOLTS IN THE BRIDGE ROADWAY RAILING.

CAREFUL REMOVAL OF ANY EXISTING BROKEN BOLT PIECES SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW BOLTS SHALL BE GALVANIZED ASTM A325, TYPE 1. NEW BOLTS SHALL MATCH EXISTING BOLT SIZES. NEW MATERIALS SHALL BE CERTIFIED PER CMS 501.06.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR FURNISHING AND INSTALLING THE NEW BOLTS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT.

ITEM 513 - STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB)

WORK UNDER THIS ITEM INCLUDES INSTALLATION OF NEW COUNTERSUNK BOLTS TO REPLACE BROKEN OR MISSING BOLTS, OR OTHER BOLTS DESIGNATED FOR REPLACEMENT IN THE BRIDGE ROADWAY CURB CHANNEL.

CAREFUL REMOVAL OF ANY EXISTING BROKEN BOLT PIECES OR EXISTING CAULK SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW BOLTS SHALL BE COUNTERSUNK HEAD SAE J429 GRADE 5 OR ASTM A449, TYPE 1 WITH SLOTTED HEADS. NEW BOLTS SHALL MATCH EXISTING BOLT SIZES. NEW MATERIALS SHALL BE CERTIFIED PER CMS 501.06.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR FURNISHING AND INSTALLING THE NEW BOLTS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM 513 - STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB).

ITEM 513 - STRUCTURAL STEEL, MISC.: COUNTERSUNK BOLT REPLACEMENT AT STRINGER BEARINGS

WORK UNDER THIS ITEM INCLUDES INSTALLATION OF NEW COUNTERSUNK BOLTS TO REPLACE BROKEN BOLTS AT STRINGER SUPPORTS AT PANEL POINTS 12 AND 35 AS DETAILED IN THE PLANS.

CAREFUL REMOVAL OF THE EXISTING BROKEN BOLT PIECES SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW BOLTS SHALL BE COUNTERSUNK HEAD SAE J429 GRADE 5 OR ASTM A449, TYPE 1 WITH SLOTTED HEADS. NEW BOLTS SHALL MATCH EXISTING BOLT SIZES. NEW MATERIALS SHALL BE CERTIFIED PER CMS 501.06.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR FURNISHING AND INSTALLING THE NEW BOLTS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM 513 - STRUCTURAL STEEL, MISC.: COUNTERSUNK BOLT REPLACEMENT AT STRINGER BEARINGS.

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE A

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE B

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE C

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE D

WORK UNDER THESE ITEMS SHALL CONSIST OF ALL LABOR, TOOLS, AND MATERIALS REQUIRED TO REPLACE OR REPAIR DAMAGED STEEL COMPONENTS ON THE PEDESTRIAN RAILING. LOCATIONS AND DETAILS OF THE REPAIRS ARE LOCATED ON THE PEDESTRIAN RAILING SHEETS.

THE STEEL SHALL BE PER CMS 513 EXCEPT AS MODIFIED HEREIN. THE ENGINEER SHALL BE RESPONSIBLE FOR ENSURING ANY SHOP OR FIELD FABRICATED STEEL SUPPLIED UNDER THESE BID ITEMS IS ACCEPTABLE. THE REQUIREMENTS FOR SUBMITTAL OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING IS WAIVED. THE CONTRACTOR SHALL EITHER SUPPLY THE ENGINEER WITH SHOP DRAWINGS, REQUIRED IN SECTION 501.04, PRIOR TO INCORPORATION OF SHOP FABRICATED STEEL AT THE PROJECT; OR SUPPLY THE ENGINEER WITH "AS-FABRICATED" DRAWINGS, MEETING 501.04. AFTER COMPLETION OF FIELD FABRICATION, THE ENGINEER SHALL ASSURE THE SUBMITTED DRAWINGS MATCH THE FINAL AS-BUILT STEEL INCORPORATED INTO THE WORK. IF THE ENGINEER IS SATISFIED WITH THE DRAWINGS AND THE DELIVERED MATERIALS, THE CONTRACTOR SHALL SUPPLY A COPY SET, STAMPED AND DATED PER 501.04, TO THE PROJECT ENGINEER FOR RECORD PURPOSES.

ANY PORTIONS OF EXISTING STEEL TO BE REMOVED, SUCH AS CRACKED RAILING VERTICALS, SHALL BE PERFORMED IN ACCORDANCE WITH THE ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN GENERAL NOTE AND SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS. SURFACE PREPARATION OF EXISTING STEEL, SUCH AS PAINT REMOVAL OR GRINDING FOR WELDED REPAIRS, SHALL BE CONSIDERED PART OF THE PAY ITEMS.

THE NEW STEEL MATERIAL INCORPORATED INTO THE REPAIRS SHALL BE PRIME PAINTED PER 513.27. THE STEEL SHALL ALSO RECEIVE INTERMEDIATE AND FINISH COATS IN ACCORDANCE WITH 514 AND THE ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN GENERAL NOTE. EXISTING COATINGS DAMAGED BY REPAIR WELDING SHALL BE ALSO RECEIVE THE OZEU THREE COAT SYSTEM. SURFACE PREPARATION OF THE EXISTING STEEL SHALL BE BY GRINDING, WIRE BRUSHING OR OTHER MEANS ACCEPTABLE TO THE ENGINEER. ALL PAINTING SHALL BE CONSIDERED INCIDENTAL TO THE REPAIR ITEMS.

PAYMENT FOR THE PEDESTRIAN RAILING REPAIRS, PER EACH, SHALL BE MADE UNDER:

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE A

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE B

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE C

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RAILING REPAIR TYPE D

ITEM 514 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

ESTIMATED QUANTITIES SHALL BE PAID PER SQUARE FOOT FOR THESE ITEMS AND IS BASED ON THE FOLLOWING PAINTING AREAS:

1. SELECTED WEST TRUSS LOWER CHORD, FLOORBEAM CONNECTIONS, AND DIAGONALS AND VERTICALS BENEATH THE SIDEWALK. (NOTE THERE IS A SEPARATE SURFACE PREPARATION AND PRIME COAT PAY ITEM FOR THE SURFACES WITHIN THE BOX-TYPE LOWER CHORD.)
2. ALL STEELWORK BENEATH SELECTED ROADWAY DRAINS.
3. ALL STEELWORK BENEATH SELECTED DEFLECTION JOINTS.
4. ALL STEELWORK BENEATH THE EXPANSION JOINT AT PANEL POINT 12, INCLUDING SIDEWALK.
5. ALL STEELWORK BENEATH THE EXPANSION JOINT AT PANEL POINT 35.
6. SELECTED SPOT AREAS OF DETERIORATION SHOWN IN THE PLANS.
7. NEW ANGLES ADDED TO THE GUSSET PLATES FOR BOWING AND EDGE STIFFENING.
8. NEW PORTAL MEMBER
9. EXPOSED SURFACES OF THE NEW EXPANSION JOINTS AT PANEL POINT 35 AND FORWARD ABUTMENT BOTH ABOVE AND BELOW ROADWAY SURFACE.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

THE COLOR OF THE FINISH COAT ON THE STEELWORK SHALL BE GREEN TO MATCH THE EXISTING GREEN FINISH PAINT, EXCEPT FOR THE ROADWAY CURBS, AND TOP, BOTTOM AND VEHICULAR TRAFFIC-FACING SIDES OF THE ROADWAY RAILINGS. THE FINISH COAT ON THESE ITEMS SHALL BE OSHA SAFETY YELLOW.

THE CONTRACTOR SHALL SUBMIT DRIED PAINT SAMPLES OF THE PROPOSED FINAL GREEN PAINT COLOR AND SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO THE START OF PAINTING. THE PROPOSED GREEN SHALL CLOSELY MATCH THE CURRENT COLOR OF THE BRIDGE ON THE STEELWORK ABOVE THE ROADWAY.

ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS

ITEM 514 - FIELD PAINTING, MISC.: FIELD PAINTING OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS, PRIME COAT

WORK UNDER THIS ITEM INCLUDES THE SURFACE PREPARATION AND PRIME PAINTING OF THE BOX-SHAPED TRUSS MEMBERS DESIGNATED FOR PAINTING IN THE PLANS. THESE AREAS ARE ACCESSED THROUGH MANHOLES ON THE TRUSS MEMBERS AND ARE CONSIDERED IMPRACTICAL FOR BLASTING AND PAINTING PER CMS 514.

THE SURFACE PREPARATION FOR THE INTERIOR SURFACES OF THE BOX-SHAPED MEMBERS SHALL CONSIST OF COMMERCIAL BLAST CLEANING (SSPC SP6). THE PRIME COAT SHALL BE AN ALUMINUM-FILLED EPOXY MASTIC PRIMER, SUCH AS "CARBOMASTIC 15", AS MANUFACTURED BY CARBOLINE COMPANY; "EPOXY MASTIC ALUMINUM II", AS MANUFACTURED BY THE SHERWIN-WILLIAMS COMPANY; OR AN APPROVED EQUIVALENT. THE ESTIMATED BUILD-UP OF THE EPOXY MASTIC PRIME IS TO BE 8-10 MILS.

INTERMEDIATE COAT WITHIN THE BOX-SHAPED MEMBERS SHALL BE PER 514. FINISH COAT SHALL BE PER ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN GENERAL NOTE.

THE AREAS TO BE PAINTED ARE DEFINED IN THE PLANS AND ARE GENERALLY DESCRIBED AS SELECTED LENGTHS OF WEST TRUSS LOWER CHORD, INCLUDING PANEL POINTS WHERE FLOORBEAMS; SIDEWALK BRACKETS; AND TRUSS DIAGONALS AND VERTICALS FRAME INTO GUSSET-PLATED CONNECTIONS.

PAYMENT FOR THE SURFACE PREPARATION AND PRIME COATING WITHIN THE BOX-SHAPED MEMBERS SHALL BE PAID FOR PER SQUARE FOOT UNDER ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS; AND ITEM 514 - FIELD PAINTING, MISC.: FIELD PAINTING OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS, PRIME COAT.

GENERAL NOTES CONTINUED ON SHEET 8/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15
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GENERAL NOTES - 5
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEANING, SYSTEM OZEU

WORK UNDER THIS ITEM INCLUDES SOLVENT CLEANING ON THE GALVANIZED ROADWAY RAILING AND ROADWAY CURBS DESIGNATED FOR TOP FINISH COAT. PERFORM THE WORK IN ACCORDANCE WITH SSPC-SP 1 TO REMOVE AREAS WITH OIL, GREASE, ASPHALT CEMENT, DIESEL FUEL PRODUCTS AND OTHER PETROLEUM PRODUCTS AND CONTAMINATION. PAYMENT WILL BE MADE PER SQUARE FOOT FOR THE COMPLETE LENGTH OF THE ROADWAY RAILINGS AND CURBS.

ITEM 514 - FIELD PAINTING, MISC.: HIGH PRESSURE WATER CLEANING OF GALVANIZED STEEL

WORK UNDER THIS ITEM INCLUDES HIGH PRESSURE WATER CLEANING OF THE GALVANIZED STEEL ROADWAY RAILING AND CURBS DESIGNATED FOR TOP FINISH COAT. ALL SURFACES TO BE PAINTED WILL BE CLEANED WITH AT LEAST 3000 PSI WATER PRESSURE AT A DISTANCE OF 2 TO 4 INCHES. THE INTENT OF THE HIGH PRESSURE WATER CLEANING IS TO REMOVE LOOSE COATS OF PAINT WITHOUT DAMAGING THE GALVANIZED SURFACES. PAYMENT WILL BE MADE PER SQUARE FOOT FOR THE COMPLETE LENGTH OF THE ROADWAY RAILINGS AND CURBS.

ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING GALVANIZED CURBS

WORK UNDER THIS ITEM INCLUDES THE ABRASIVE BLASTING OF THE GALVANIZED ROADWAY CURBS IN AREAS WHERE THE GALVANIZING HAS CONSISTENTLY FAILED AND THE STEEL IS RUSTING. THESE AREAS INCLUDE THE TRAFFIC-FACING SIDE OF THE CURBS IMMEDIATELY ABOVE THE CONCRETE ROADWAY DECK THE FULL LENGTH OF THE BRIDGE. WORK SHALL BE PERFORMED IN ACCORDANCE WITH 514.13. THE ESTIMATED HEIGHT OF THE DETERIORATION IS 3 INCHES, EXTENDING FROM THE CONCRETE DECK UP THE FACE OF THE CURB CHANNELS. THE ESTIMATED QUANTITY OF THE SURFACE PREPARATION SHALL BE PAID PER SQUARE FOOT AND IS BASED ON THE LIMITS DESCRIBED ABOVE.

ITEM 514 - FIELD PAINTING, MISC.: EPOXY INTERMEDIATE COAT ON GALVANIZED ROADWAY RAILING AND CURBS

WORK UNDER THIS ITEM INCLUDES THE APPLICATION OF A NEW EPOXY INTERMEDIATE COAT TO THE ROADWAY RAILING TUBES AND CURBS IN AREAS WHERE THE PAINT HAS BEEN COMPLETELY REMOVED FROM THE GALVANIZED RAILING AND CURBS BY PRESSURE WASHING OR OTHER DAMAGE. THE AREAS OF THE RAILING AND CURBS TO RECEIVE THE INTERMEDIATE COAT INCLUDE THE TOP, BOTTOM AND TRAFFIC-FACING SIDE OF THE RAILS AND POTENTIALLY INCLUDES THE FULL LENGTH OF THE BRIDGE. AT THE TIME OF THE PLAN DEVELOPMENT, THE EXISTING PAINT GENERALLY APPEARED TO BE TIGHTLY ADHERED TO THE GALVANIZED RAILING OUTSIDE OF AREAS SCRAPED BY VEHICLES. MUCH OF THE PAINT ON THE GALVANIZED CURBS HAS FAILED AND IS MISSING. THE QUANTITY OF INTERMEDIATE COAT IS BASED ON AN ESTIMATED 15% OF THE TOTAL SURFACE AREA OF THE RAILING TO RECEIVE TOP FINISH COAT, PLUS THE FULL HEIGHT AND LENGTH OF THE TRAFFIC-FACING SIDES OF THE ROADWAY CURBS. PAYMENT WILL BE MADE PER SQUARE FOOT FOR THE ACTUAL APPLIED AREA OF INTERMEDIATE COAT.

ITEM 514 - FIELD PAINTING, MISC.: TOP FINISH COAT ON GALVANIZED ROADWAY RAILING AND CURBS

WORK UNDER THIS ITEM INCLUDES THE APPLICATION OF A NEW URETHANE FINISH COAT TO THE ROADWAY RAILING TUBES AND ROADWAY CURBS THE FULL LENGTH OF THE BRIDGE WITHIN THE LIMITS SHOWN IN THE PLANS. THE SAFETY YELLOW COLOR OF THE FINISH COAT ON THE RAILINGS SHALL BE FEDERAL STANDARD 595 COLOR 13591.

THE CONTRACTOR SHALL CHECK THE COMPATIBILITY OF THE NEW TOP FINISH COAT PAINT WHEN PAINTING OVER THE EXISTING PAINT. THE EXISTING TOP COAT ON THE ROADWAY RAILING AND CURB IS URETHANE. THE CONTRACTOR SHALL APPLY A TEST COAT ON A MINIMUM OF TWO PAINTED LOCATIONS AS DIRECTED BY THE ENGINEER BEFORE ORDERING PAINT. A CROSS-CUT TAPE TEST PER ASTM D3359 SHALL BE PERFORMED; WITH A MINIMUM ADHESION CLASSIFICATION OF 3B AFTER THE TEST PAINT AREA HAS CURED IN ACCORDANCE TO THE MANUFACTURER'S RECOMMENDATIONS.

PAYMENT WILL BE MADE PER SQUARE FOOT FOR THE COMPLETE LENGTH OF THE ROADWAY RAILINGS AND CURBS.

ITEM 514 - FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB)

WORK UNDER THIS ITEM SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT, AND MATERIALS REQUIRED TO FILL OPEN BOLT HOLES IN THE WEST ROADWAY CURB.

OPEN HOLES SHALL BE COMPLETELY FILLED WITH CAULKING MATERIAL CONFORMING TO CMS 514.02. APPLY CAULK BETWEEN THE APPLICATION OF THE INTERMEDIATE AND FINISH PAINT COATS ON THE CURB.

PAYMENT FOR THE ABOVE REFERENCED WORK SHALL BE MADE PER EACH PER ITEM 514 - FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB).

ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL PRIME COAT FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL INTERMEDIATE COAT FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL FINISH COAT FOR CAULKING

WORK UNDER THESE ITEMS INCLUDES SURFACE PREPARATION (ABRASIVE BLASTING) AND PAINTING OF ISOLATED BUILT-UP SEAMS ON THE TRUSS STEELWORK AT LOCATIONS SHOWN IN THE PLANS. THE ITEMS ARE WORKED IN CONJUNCTION WITH THE SEAM CAULKING DETAILED IN THE ITEM 514 - FIELD PAINTING, MISC.: CAULKING GENERAL NOTE. THE WORK WILL BE PERFORMED IN ACCORDANCE WITH CMS 514 AND THE FOLLOWING SPECIFICATIONS:

DESCRIPTION

THESE ITEMS SHALL BE PERFORMED WITHIN THE LIMITS SHOWN IN THE PLAN DETAILS AND CAULKING GENERAL NOTES. MINIMUM SURFACE PREPARATION LIMITS ADJACENT TO TYPICAL SEAMS ARE DEFINED IN THE PLAN DETAILS.

PACK RUST REPAIRS AT THE SEAM TO BE CAULKED AND PAINTED SHALL BE COMPLETED PRIOR TO ABRASIVE BLASTING. ABRASIVE BLASTING, PRIME AND INTERMEDIATE PAINTING SHALL BE COMPLETED PRIOR TO CAULKING. THE FINISH COAT OF PAINT SHALL BE APPLIED AFTER THE APPLIED CAULK HAS CURED PER THE MANUFACTURER'S RECOMMENDATIONS.

THE INTERMEDIATE COAT PAY ITEM DESCRIBED WILL NOT INCLUDE CAULKING REPAIR OF GAPS GREATER THAN 1/8-INCH AS DESCRIBED IN 514.19 AS CAULKING ASSOCIATED WITH THE PAINTING IN THIS NOTE IS PAID FOR SEPARATELY.

THE FINISH COAT SHALL BE AS PER ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN.

AREAS TO BE PAINTED UNDER THESE ITEMS

THE AREAS OF THE TRUSS TO BE PAINTED UNDER THESE ITEMS ARE DESCRIBED IN CAULKING GENERAL NOTE AND SHOWN IN THE PLAN DETAILS. THE AREAS ARE GENERALLY DESCRIBED AS: BOTH BOTTOM SEAMS OF BOTH BOTTOM CHORDS; THE TOP SEAMS OF BOTH BOTTOM CHORDS WITHIN THE LIMITS OF TRUSS GUSSET PLATES; AND SEAMS OF BUILT-UP TRUSS DIAGONALS AND VERTICALS AS SHOWN ON THE PLANS; THE ITEM SHOULD EXCLUDE AREAS OF THE TRUSS/FLOORBEAM CONNECTION BLASTED AND PAINTED, AND PAID PER SQUARE FOOT UNDER THE TYPICAL SURFACE PREPARATION AND OZEU PAINTING ITEM. PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT NEEDED FOR THE SURFACE PREPARATION AND THREE-COAT OZEU PAINT SYSTEM FOR CAULKING SHALL BE MADE PER LINEAL FOOT UNDER:

WHILE CAULKING THE EAST LOWER CHORDS, COMPLETELY SEAL AND PAINT OPEN CORROSION HOLES AT THE LOWER SEAMS L0-L1 AND L43-L44. THIS ADDITIONAL WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAINTING AND CAULKING ITEMS.

ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL PRIME COAT FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL INTERMEDIATE COAT FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: EXISTING STEEL FINISH COAT FOR CAULKING

ITEM 514 - FIELD PAINTING, MISC.: CAULKING

WORK UNDER THIS ITEM INCLUDES SURFACE PREPARATION, INCLUDING PACK RUST REMOVAL, AND CAULKING BUILT-UP SEAMS ON THE TRUSS AT LOCATIONS SHOWN IN THE PLANS. CAULKING WILL BE PERFORMED IN ACCORDANCE WITH CMS 514 AND THE FOLLOWING SPECIFICATIONS:

DESCRIPTION

THIS ITEM SHALL INCLUDE THE REMOVAL OF EXISTING CAULK, REPAIR OF PACK RUSTED AREAS AND THE CAULKING OF JOINTS BETWEEN ADJACENT STEEL PIECES OF BUILT-UP MEMBERS AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.

EXISTING CAULK SHALL BE REMOVED PRIOR TO ABRASIVE BLASTING. ABRASIVE BLASTING OF THE MEMBER SHALL BE SUBSTANTIALLY COMPLETED BEFORE PACK RUST REPAIR AND CAULKING IS PERFORMED. PACK RUST REPAIRS SHALL COMMENCE PRIOR TO PAINTING. CAULKING SHALL TAKE PLACE AFTER THE PRIME AND INTERMEDIATE COATS HAVE CURED, BUT BEFORE THE FINISH COAT OF PAINT HAS BEEN APPLIED.

SURFACE PREPARATION

PACK RUST SHALL BE REMOVED FROM THE JOINTS BY CHIPPING, HAMMERING, PUNCHING, CHISELING, OR BY OTHER SUITABLE MEANS TO A DEPTH AT LEAST EQUAL TO THE WIDTH OF THE GAP. WITH ANY METHOD USED, THE FINAL SURFACE SHALL BE GROUND IN THE DIRECTION OF THE STRESS. ALL JOINTS SHALL THEN BE VACUUMED WITH A COMMERCIAL VACUUM CLEANER HAVING A NOZZLE OPENING OF 1-INCH TO 1½-INCH. SURFACES TO BE CAULKED SHALL BE CLEAN, DRY, SOUND AND ABOVE THE CAULKING MANUFACTURER'S TEMPERATURE RECOMMENDATION.

APPLICATION

THE CAULKING SHALL BE APPLIED EVENLY TO THE AREAS AS DEPICTED IN TYPICAL PLAN DETAILS. VOIDS SHALL BE COMPLETELY FILLED WITH CAULK WHICH SHALL BE APPLIED BY TROWEL OR CAULKING GUN AND SHALL BE SPREAD SMOOTHLY USING HEAVY PRESSURE TO DISPLACE AIR BUBBLES. EXCESS MATERIAL SHALL BE REMOVED IMMEDIATELY. ALL PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF THE CAULKING MANUFACTURER, WHO SHALL PROVIDE A TECHNICAL REPRESENTATIVE AT THE SITE.

AREAS TO BE REPAIRED AND CAULKED UNDER THIS ITEM

BOTH BOTTOM SEAMS OF BOTH BOTTOM CHORDS. (APPROXIMATE LENGTH = 6908 FT)

WHILE CAULKING THE EAST LOWER CHORDS, COMPLETELY SEAL AND PAINT OPEN CORROSION HOLES AT THE LOWER SEAMS L0-L1 AND L43-L44. THIS ADDITIONAL WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAINTING AND CAULKING ITEMS.

THE TOP SEAMS OF BOTH BOTTOM CHORDS WITHIN THE LIMITS OF TRUSS GUSSET PLATES. (APPROX. LENGTH = 1127 FT) (A DEDUCTION FOR INACCESSIBLE AREAS BETWEEN TRUSS VERTICALS AND DIAGONALS HAS BEEN INCLUDED IN THE QUANTITY.)

SEAMS OF BUILT-UP TRUSS DIAGONALS AND VERTICALS AS SHOWN ON THE PLANS (APPROX. LENGTH = 8161 FT)

A QUANTITY OF 500 FT IS INCLUDED IN THE PLANS FOR USE AS DIRECTED BY THE ENGINEER. THIS SHALL BE CONSIDERED FOR USE ON BUILT-UP STEELWORK SEAMS NOT DETAILED IN THE PLANS. EXAMPLE AREAS MAY INCLUDE, BUT ARE NOT LIMITED TO: AREAS ALONG THE TOP SEAMS OF THE TRUSS LOWER CHORDS IDENTIFIED AS "INACCESSIBLE", BUT CAN BE REACHED; TOP SEAMS OF THE WEST TRUSS LOWER CHORD OUTSIDE OF THE GUSSET FOOTPRINT WITH PACK RUST GAPS 3/8-INCH WIDE OR GREATER; SEAMS BETWEEN THE TRUSS GUSSETS AND TRUSS MEMBERS WITH PACK RUST 3/8-INCH WIDE OR GREATER.

THE ADDITIONAL QUANTITY IS INTENDED TO BE APPLIED WITHIN THE LIMITS OF AREAS IN THE PLANS DESIGNATED FOR COMPLETE BLASTING AND PAINTING. IT IS NOT THE INTENT TO DIRECT THE CONTRACTOR TO MAKE ADDITIONAL PAINTING SET-UPS FOR CAULKING OUTSIDE OF THE LIMITS SHOWN IN THE PLANS. THIS ADDITIONAL QUANTITY REQUIRES THE EXTRA SURFACE PREPARATION EFFORT AND IS RESERVED FOR GAPS 3/8-INCH OR WIDER. CAULKING OF GAPS GREATER THAN 1/8-INCH WITHIN THE PAINTING LIMITS, BUT NOT REQUIRING THE PACK RUST REMOVAL AS SHOWN IN THE PLANS, IS REQUIRED PER CMS 514.19 AND WILL BE PAID AS PART OF THE INTERMEDIATE PAINTING COAT PER 514.24

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR CAULKING SHALL BE MADE PER LINEAL FOOT FOR ITEM 514 - FIELD PAINTING, MISC.: CAULKING.

ITEM 514 - FIELD PAINTING, MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP

WORK UNDER THIS ITEM INCLUDES THE BRUSH APPLICATION OF ALUMINUM FILLED EPOXY MASTIC PRIMER TO THE AREAS OF PEDESTRIAN RAILING AND RETAINING WALL RAILING THAT HAVE BEEN POWER TOOL CLEANED UNDER ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING.

AN ALUMINUM-FILLED EPOXY MASTIC PRIMER, SUCH AS "CARBOMASTIC 15", AS MANUFACTURED BY CARBOLINE COMPANY; "EPOXY MASTIC ALUMINUM II", AS MANUFACTURED BY THE SHERWIN-WILLIAMS COMPANY; OR AN APPROVED EQUIVALENT SHALL BE USED. THE ESTIMATED BUILD-UP OF THE EPOXY MASTIC PRIME IS TO BE 8-10 MILS.

THE PRIMED AREAS OF THE RAILING SHALL BE COVERED WITH URETHANE TOP COAT AS DESCRIBED IN THE ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN GENERAL NOTE.

LUMP SUM PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR COATING THE PEDESTRIAN RAILING SHALL BE BASED ON THE TIME REQUIRED TO APPLY THE TWO COATS TO DAMAGED AREAS PREPARED FOR PAINTING UNDER THE ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING GENERAL NOTE. PAYMENT SHALL BE MADE UNDER ITEM 514 - FIELD PAINTING, MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP.

GENERAL NOTES CONTINUED ON SHEET 9/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
KAK	SCB	DLR	9/25/15
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GENERAL NOTES - 6
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44 PID No. 92009

ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING

WORK UNDER THIS ITEM INCLUDES THE SURFACE PREPARATION OF COATING-DAMAGED AREAS OF THE PEDESTRIAN RAILING AND RETAINING WALL RAILING.

THE WORK INCLUDES THE REMOVAL OF LOOSE SURFACE RUST FROM AREAS OF THE PEDESTRIAN RAILING USING ROTARY OR IMPACT POWER TOOLS PER STEEL STRUCTURES PAINTING COUNCIL SSPC-SP3, "POWER TOOL CLEANING". AREAS OF THE RAILING INACCESSIBLE FOR CLEANING WITH POWER TOOLS, WITH THE APPROVAL OF THE ENGINEER, MAY BE CLEANED PER STEEL STRUCTURE PAINTING COUNCIL SSPC-SP2, "HAND TOOL CLEANING".

THE POWER TOOL CLEANING SHALL ONLY BE APPLIED TO ACTUAL AREAS OF CORROSION OR DETERIORATION ON THE BRIDGE RAILING AND APPROACH RAILING. SEVERAL RAILING POSTS AND VERTICALS ARE IDENTIFIED IN THE PLANS TO RECEIVE CLEANING. AFTER THIS WORK IS PERFORMED, ADDITIONAL LOCATIONS OF THE CORRODED OR DAMAGED AREAS ALONG THE RAILING SHALL BE IDENTIFIED AND MARKED BY THE ENGINEER FOR POWER TOOL CLEANING. MOST AREAS ARE DESCRIBED AS NICKS OR SMALL GOUGES INFLICTED BY PEDESTRIANS AND HAVE A SURFACE AREA OF LESS THAN 1 SQUARE INCH. THE ENGINEER SHALL ASSIGN HIGHEST PRIORITY TO ANY DAMAGED AREAS EXCEEDING ½-INCH x ½-INCH, WITH SECONDARY PRIORITY GIVEN TO CORRODED SURFACES FACING THE SIDEWALK.

THE LUMP SUM PAYMENT OF THIS PREPARATION WORK SHALL BE BASED ON THE ASSUMPTION OF ONE MAN FOR TWO EIGHT-HOUR DAYS GRINDING ONLY THE CORRODED STEEL SURFACES. THE PLAN INTENT IS TO PERFORM THE MAXIMUM AMOUNT OF REPAIR IN THE ALLOTTED TIMEFRAME. DEPENDING ON THE SEVERITY OF DAMAGE AT THE TIME OF THE PROJECT, ALL CORRODED AREAS MAY NOT BE ADDRESSED.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR CLEANING PEDESTRIAN RAILING SHALL BE MADE PER LUMP SUM AND SHALL BE INCLUDED WITH ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING.

ITEM 514 - FIELD PAINTING, MISC.: FIELD TOUCH-UP OF NEW AND EXISTING PAINT

WORK UNDER THIS ITEM INCLUDES THE FIELD PAINTING OF SMALL QUANTITIES OF NEW STEEL INSTALLED ON THE STRUCTURE AND REPAIR TO EXISTING PAINTED AREAS DAMAGED AS PART OF THE WORK ON THE REPAIR ITEMS. THE AREAS TO BE COATED UNDER THIS ITEM INCLUDE:

PROPOSED STRUCTURE WORK ITEM # SEE SHEET 3/189	DESCRIPTION
7	CRACK ARRESTING HOLES DRILLED INTO EXISTING STEEL FLOORBEAM CONNECTION PLATES
9	NEW SIDEWALK SUPPORT ANGLES AT PANEL POINTS L18 AND L62
10	COUNTERSINK BOLT REPLACEMENT AT STRINGER BEARINGS
18	NEW BOLTED CONNECTION OF ROADWAY RAILING
34	NEW STRINGER DIAPHRAGM AND CONNECTOR AT FLOORBEAM 4

THE FIELD TOUCH-UP SHALL INCLUDE THE FOLLOWING WORK:

1. REMOVE ALL DIRT, DEBRIS, OIL AND GREASE FROM THE AREAS TO BE PAINTED PER SSPC SP1.
2. REMOVE ALL LOOSE MILL SCALE, RUST OR PAINT FROM THE AREAS TO BE PAINTED WITH HAND TOOLS PER SSPC SP2.
3. BRUSH APPLY AN ALUMINUM-FILLED EPOXY MASTIC PRIMER. THE ALUMINUM-FILLED EPOXY PRIMER SHALL BE "CARBOMASTIC 15" AS MANUFACTURED BY CARBOLINE COMPANY, EPOXY-MASTIC ALUMINUM II AS MANUFACTURED BY THE SHERWIN WILLIAMS COMPANY, OR AN APPROVED EQUIVALENT. THE ESTIMATED BUILD OF EPOXY MASTIC PRIME IS TO BE 8-10 MILS.
4. BRUSH APPLY A URETHANE FINISH COAT. THE URETHANE FINISH COAT SHALL CONFORM TO 708.02 AND THE ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN GENERAL NOTE. THE DRY FILM COATING THICKNESS SHOULD BE 2.0 TO 4.0 MILS. THE FINISH COAT SHALL BE GREEN TO CLOSELY MATCH THE GREEN FINISH PAINT.

TEMPERATURE, RELATIVE HUMIDITY AND CURE TIME LIMITATIONS FOR THE VARIOUS TYPES OF PAINT SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS.

PAYMENT FOR THE INCIDENTAL PAINTING IN THE AREAS DESCRIBED ABOVE SHALL BE MADE PER LUMP SUM UNDER ITEM 514 - FIELD PAINTING, MISC.: FIELD TOUCH-UP OF NEW AND EXISTING PAINT.

ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5" OR 7"), AS PER PLAN

THE STRIP SEAL EXPANSION JOINT INCLUDING THE REMOVABLE COVER PLATE SHALL BE CONSTRUCTED AS DETAILED IN THE PLANS. SUPPLY A JOINT STRIP SEAL THAT IS CONTINUOUS ACROSS THE JOINT FROM CURB TO CURB. FIELD FABRICATED SPLICES ARE NOT PERMITTED. THE CONTRACTOR SHALL INSTALL A SEAL ACROSS THE FULL WIDTH OF EACH PHASED CONSTRUCTION SEGMENT BEFORE COMMENCING THE NEXT PHASE BY EITHER TEMPORARILY INSTALLING A SEAL OR BY PARTIALLY INSTALLING PORTIONS OF THE FULL LENGTH SEAL AT EACH PHASE. IF THE CONTRACTOR ELECTS TO USE THE CONTINUOUS STRIP SEAL, INSTALLING THE APPROPRIATE PORTION AT THE END OF EACH PHASE, THEN HE SHALL ERECT A STABLE PLATFORM IN THE STEELWORK AT EACH JOINT CAPABLE OF FULLY SUPPORTING AND PROTECTING THE UNUSED JOINT SEAL BELOW THE DECK. THE UNUSED SEAL SHALL NOT BE ALLOWED TO HANG FROM THE JOINT, NOR SHALL IT BE SUBJECTED TO DECK RUN-OFF FROM THE EDGE OF THE JOINT. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED METHOD OF PROTECTION TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLING THE SEAL.

ADDITIONAL DRAINAGE WORK AT THE CURBS CONSISTING OF SHORT STRIP SEALS, DRAINAGE PIPES, ANCHORS AND FLASHING IS ALSO INCLUDED AND CONSIDERED INCIDENTAL TO THE STRUCTURAL EXPANSION JOINT. THIS WORK SHALL BE COMPLETED WITH EACH APPLICABLE PHASE.

JOINTS SHALL NOT BE OPEN TO TRAFFIC WITHOUT THE STEEL COVER PLATES IN PLACE.

SHOP PRIME THE STEEL IN ACCORDANCE WITH 513.27.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR INSTALLATION OF THE STEEL EXPANSION JOINT, STRIP SEAL, AND COVER PLATE SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER FOOT FOR ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN; OR ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN.

ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE

WORK UNDER THIS ITEM INCLUDES REPLACING AND RESETTING THE BACKWALL PORTION OF THE SLIDING PLATE JOINT AT THE FORWARD ABUTMENT AFTER THE BACKWALL IS REMOVED PER PLAN DETAILS. THE SUPERSTRUCTURE SIDE OF THE JOINT SHALL BE REMOVED AS NEEDED TO ACCOMPLISH THE WORK.

SHOP PRIME THE STEEL IN ACCORDANCE WITH 513.27.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR INSTALLATION OF THE STEEL SLIDING PLATE AND ANCHORS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER LINEAL FOOT FOR ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE.

ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: REPAIR DAMAGED DEFLECTION JOINT STEEL FLANGE

WORK UNDER THIS ITEM INCLUDES REPLACING THE DAMAGED CHANNEL TOP FLANGES BY WELDING ON MATERIAL AND ATTACHING IT TO THE TOP OF THE EXISTING STEEL GRID. TWO CONCEPTUAL REPAIR METHODS ARE SHOWN IN THE PLANS. THE CONTRACTOR MAY SUBMIT ADDITIONAL METHODS FOR APPROVAL.

REMOVAL OF THE CONCRETE AND STEEL TO FACILITATE THE JOINT REPAIR SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW CONCRETE TO REPLACE THE CONCRETE REMOVED FROM THE DECK TO FACILITATE REPAIR OF THE DAMAGED JOINT FLANGE SHALL BE MICROSILICA MODIFIED CONCRETE AS DESCRIBED IN THE GENERAL NOTE FOR ITEM SPECIAL PATCHING CONCRETE BRIDGE DECK. PAYMENT FOR THE CONCRETE PATCHING IS MADE UNDER THE PATCHING CONCRETE BRIDGE DECK ITEM.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR INSTALLATION AND WELDING CHANNEL FLANGES AND ANCHOR PLATES SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER LINEAL FOOT FOR ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: REPAIR DAMAGED DEFLECTION JOINT STEEL FLANGE.

ITEM 516 - JOINT SEALER, AS PER PLAN

WORK UNDER THIS ITEM INCLUDES JOINT PREPARATION AND INSTALLATION OF HOT APPLIED JOINT SEALER PER 516.06 AT THE ABUTMENT BACKWALL TO APPROACH SLAB JOINT AT THE LOCATIONS DETAILED IN THE PLANS.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR THE NEW JOINT SEALER SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER LINEAL FOOT FOR ITEM 516 - JOINT SEALER, AS PER PLAN.

ITEM 517 - RAILING, MISC.: RETAINING WALL STEEL PEDESTRIAN RAILING REUSED

WORK UNDER THIS ITEM INCLUDES REFURBISHING EXISTING MEMBERS, REPLACEMENT OF DETERIORATED MEMBERS, AND REINSTALLATION OF THE STEEL PEDESTRIAN RAILING ON THE FORWARD APPROACH RETAINING WALL. THE WORK SHALL INCLUDE ALL NEW SWEDGED ANCHOR BOLTS, NEW STEEL POST, AND RE-ERECTION OF THE RAILING.

CAREFUL REMOVAL OF THE EXISTING RAILING TO BE REUSED SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW STEEL SHALL BE ASTM A709, GRADE 50, FABRICATED AND SHOP PAINTED IN ACCORDANCE WITH CMS 513.

FIELD PAINTING OF THE STEEL PEDESTRIAN RAILING SHALL BE INCLUDED WITH ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING AND ITEM 514 - FIELD PAINTING, MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR REFURBISHING AND RE-ERECTING THE STEEL PEDESTRIAN RAILING SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER LINEAL FOOT FOR ITEM 517 - RAILING, MISC.: RETAINING WALL STEEL PEDESTRIAN RAILING REUSED.

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS, ROADWAY DRAINS, OR DEFLECTION JOINTS)

WORK UNDER THIS ITEM INCLUDES REPLACEMENT OF EXISTING NYLON REINFORCED NEOPRENE SHEET (NRNS) FLASHING BENEATH THE EXPANSION JOINTS AT PANEL POINTS 12 AND 35; BENEATH THE ROADWAY DRAINS IN PANELS 36 AND 45; AND BENEATH THE DEFLECTION JOINTS AT PANEL POINTS 18, 28, 45, 52 AND 62. THE WORK ALSO INCLUDES THE INSTALLATION OF NEW NRNS BELOW THE ROADWAY DRAINS IN PANELS 2, 8, 14, 20, 25, 30, 51, 56, 61, AND 67.

THE EXISTING NYLON REINFORCED NEOPRENE SHEET FLASHING HAS BEEN IN PLACE FOR APPROXIMATELY 20 YEARS. THE EXISTING BOLTS AND CLAMP BARS WILL BE REMOVED AND THE NEW SHEETS PLACED AS DETAILED IN THE PLANS. THE EXISTING BOLTS WILL BE REPLACED WITH NEW MATERIAL. THE CLAMP BARS WILL BE REUSED. CAREFUL REMOVAL OF THE EXISTING NRNS MATERIAL BY REMOVING BOLTS AND CLAMP BARS SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NEW NRNS SHALL BE INSTALLED IN THE SAME ARRANGEMENT AS THE EXISTING SHEETING, WITH SINGLE INDIVIDUAL SHEETS PLACED BETWEEN THE ROADWAY STRINGERS AND ANCHORED TO THE FLOORBEAM STIFFENERS BELOW THE STRINGERS. NEW BOLT HOLES SHALL BE DRILLED INTO THE BOTTOMS OF THE DRAIN CASTINGS IN PANELS 2, 8, 14, 20, 25, 30, 51, 56, 61, AND 67.

THE NRNS MATERIAL SHALL BE PER CMS 705.13. NEW STAINLESS STEEL BOLTS AND HARDWARE SHALL BE PER CMS 730.10.

ADHESIVES FOR BONDING NRNS MATERIAL SHALL BE AS RECOMMENDED BY THE NRNS MANUFACTURER. THE ADHESIVE SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL SURFACES WHERE ADHESIVE IS TO BE PLACED SHALL BE THOROUGHLY CLEANED OF ALL RUST, DIRT, WATER AND OTHER FOREIGN MATERIALS BEFORE ADHESIVE IS APPLIED. ALL SPLICES SHALL BE LAPPED AS DETAILED ON THE PLANS. PRESSURE SHALL BE APPLIED TO JOINED PIECES UNTIL ADHESIVE SETS.

FABRICATION, HANDLING, SPLICING AND INSTALLATION OF THE NRNS SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PAYMENT FOR THE NRNS MATERIAL, SUPPORTS, FABRICATION AND INSTALLATION SHALL BE INCLUDED IN THE PRICE BID PER FOOT OF DRAIN OR JOINT (AS MEASURED PERPENDICULAR TO THE ROADWAY CENTERLINE) FOR:

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS)

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (ROADWAY DRAINS)

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (DEFLECTION JOINTS).

GENERAL NOTES CONTINUED ON SHEET 10/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15 | CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

GENERAL NOTES - 7

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (LOWER LATERAL BRACING)

WORK UNDER THIS ITEM INCLUDES REPLACEMENT OF EXISTING NYLON REINFORCED NEOPRENE SHEET (NRNS) FLASHING PROTECTING THE LOWER LATERAL SWAY BRACING BENEATH THE ROADWAY DRAINS.

REMOVAL OF THE EXISTING NRNS MATERIAL SHALL BE INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

THE NRNS MATERIAL SHALL BE PER CMS 705.13. NEW STAINLESS STEEL BOLTS AND HARDWARE SHALL BE PER CMS 730.10.

FABRICATION, HANDLING, AND INSTALLATION OF THE NRNS SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PAYMENT FOR THE NRNS MATERIAL, FABRICATION AND INSTALLATION SHALL BE INCLUDED IN THE PRICE BID PER FOOT FOR ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (LOWER LATERAL BRACING).

ITEM 519 - PATCHING CONCRETE STRUCTURE

CONCRETE DETERIORATION IDENTIFIED ON PIERS 4 AND 5 DURING THE OCTOBER 2013 FIELD INSPECTION WAS DETERMINED TO BE MINOR IN NATURE. NO PATCHING ON THESE PIERS IS TO BE PERFORMED.

ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK

WORK UNDER THIS ITEM SHALL CONSIST OF PATCHING THE CONCRETE BRIDGE DECK AT SPALLS AND AT THE STEEL CHANNEL DEFLECTION JOINT REPAIRS OUTLINED IN THE PLANS.

THE WORK WILL BE PERFORMED IN ACCORDANCE WITH ITEM 519 EXCEPT AS FOLLOWS:

THE EXISTING CONCRETE REMOVED TO FACILITATE THE REPAIRS OF THE DAMAGED DEFLECTION JOINT CHANNEL FLANGES IS NOT NECESSARILY "UNSOUND". ADDITIONAL EFFORT WILL BE NEEDED TO REMOVE THIS CONCRETE.

THE CONTRACTOR SHALL EMPLOY SAWCUTS AT THE EDGES OF THE DECK CONCRETE REPAIRS TO PROVIDE NEAT EDGES FOR THE PATCHING. THE MINIMUM DEPTH OF CONCRETE PATCH SHALL BE 1¼-INCHES.

A CONCRETE BONDING AGENT CONFORMING TO ASTM A881, TYPE V, WILL BE USED TO ADHERE FRESH CONCRETE TO THE EXISTING DECK. SURFACE PREPARATION OF THE EXISTING CONCRETE DECK SHALL BE PER THE BONDING AGENT'S RECOMMENDATIONS.

THE PATCHING MATERIAL SHALL BE MICROSILICA MODIFIED CONCRETE AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 847. SECTIONS 847.04, 847.07, 847.11, 847.22, 847.23, 847.24, 847.26 AND 847.27 SHALL APPLY. NO FINISHING MACHINE IS REQUIRED PER 847.09 AND 847.10; NO TEST SLAB IS REQUIRED PER 847.14 AND NO MANUFACTURER'S REPRESENTATIVE FOR THE MICRO-SILICA SUPPLIER IS REQUIRED PER 847.26.

A CONTINGENCY QUANITITY OF 3 SQUARE YARDS SHALL BE INCLUDED WITH THIS ITEM FOR PAYMENT.

ALL WORK UNDER THIS ITEM SHALL BE PAID FOR PER SQUARE YARD UNDER ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK.

ITEM 526 - APPROACH SLABS, MISC.: REPLACE CURB

WORK UNDER THIS ITEM INCLUDES REPLACEMENT OF EXISTING CONCRETE CURB WITH NEW CONCRETE CURB ON THE FORWARD APPROACH SLAB AT THE LOCATION DETAILED IN THE PLANS. THE WORK SHALL INCLUDE NEW DOWEL HOLES, EPOXY COATED REINFORCING STEEL, AND CLASS QC2 CONCRETE.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR CURB REPLACEMENT INCLUDING DOWEL HOLES, REINFORCING STEEL, AND CONCRETE SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER LINEAL FOOT FOR ITEM 526 - APPROACH SLABS, MISC.: REPLACE CURB.

ITEM SPECIAL - STRUCTURE, MISC.: LEVELING DEPRESSIONS IN PIER CAP

WORK UNDER THIS ITEM INCLUDES THE REMOVAL OF EXISTING PATCHING MATERIAL AND INSTALLATION OF NEW PATCHING MATERIAL FROM WATER-POOLING DEPRESSIONS ON THE TOP OF THE PIER CAPS AT PIER 1 AND 2. THE DEPRESSIONS ARE THE RESULT OF PREVIOUS REHABILITATIONS REQUIRING GRINDING DOWN PORTIONS OF THE PIER CAPS FOR JACKING THE TRUSS.

THE EXISTING LEVELING COMPOUND HAS FAILED OR DID NOT COMPLETELY FILL THE DEPRESSIONS. ALL EXISTING LEVELING COMPOUND SHALL BE REMOVED BY HAND CHIPPING, COMPRESSED AIR, HIGH PRESSURE WATER BLAST, OR OTHER MEANS THAT WILL NOT DAMAGE THE SURROUNDING CONCRETE.

THE REMAINING WORK SHALL BE PERFORMED PER SUPPLEMENTAL SPECIFICATION 843 - PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, EXCEPT AS MODIFIED HEREIN.

THE EXISTING DEPRESSIONS SHALL BE PREPARED PER SUPPLEMENTAL SPECIFICATION 843 EXCEPT THAT SOUND CONCRETE BELOW THE DEPRESSIONS SHALL BE REMOVED AS NEEDED TO PROVIDE AT LEAST ONE INCH OF DEPTH FOR THE NEW PATCH. THE INTENT IS TO PROVIDE DEEP ENOUGH PATCH TO PROVIDE CONCRETE DURABILITY, BUT NOT TO REMOVE ENOUGH CONCRETE TO EXPOSE THE TOP LAYER OF PIER STEEL REINFORCEMENT. THE EDGES OF THE DEPRESSIONS SHALL BE SAWCUT TO PROVIDE NEAT EDGES FOR THE PATCHES.

THE TOP SURFACE OF THE NEW CONCRETE PATCHES SHALL BE FINISHED TO DEFLECT WATER AWAY FROM THE CENTER OF THE PIER TOWARD THE EDGES.

PAYMENT FOR THE CLEANING AND FILLING WILL BE PER LUMP SUM FOR ITEM SPECIAL - STRUCTURE, MISC.: LEVELING DEPRESSIONS IN PIER CAP.

ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED

AREAS DESIGNATED IN THE PLANS FOR BLAST CLEANING AND PAINTING WILL REQUIRE THE REMOVAL OF EXISTING PLYWOOD PIGEON DOORS. THESE AREAS INCLUDE, BUT ARE NOT LIMITED TO, THE BOTTOM CHORD OF THE WEST TRUSS.

THE PIGEON DOORS SHALL BE CAREFULLY REMOVED AND STORED UNTIL BLASTING AND PAINTING OPERATIONS NO LONGER REQUIRE ACCESS TO THE INTERIORS OF BUILT-UP TRUSS MEMBERS. THE PIGEON DOORS SHALL THEN BE REINSTALLED.

PRIOR TO REINSTALLATION, THE ENGINEER SHALL INSPECT THE CONDITION OF THE PIGEON DOORS. DAMAGED PLYWOOD DOORS, AS DETERMINED BY THE ENGINEER, SHALL BE REPLACED WITH NEW DOORS AND PAID FOR UNDER ITEM SPECIAL - STRUCTURE, MISC.; PLYWOOD PIGEON DOORS.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT TO REMOVE, STORE, AND REINSTALL THE PIGEON DOORS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED.

ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS

NEW PLYWOOD PIGEON DOORS SHALL BE INSTALLED AT LOCATIONS DESIGNATED IN THE PLANS WHERE PLYWOOD PIGEON DOORS ARE MISSING OR DESIGNATED BY THE ENGINEER TO BE REPLACED.

THE PLYWOOD SHALL MEET THE REQUIREMENTS OF CMS 730.25. THE PLYWOOD SHALL BE SEALED WITH THREE (3) COATS OF EPOXY AND PAINTED WITH THE URETHANE FINISH COAT WHICH IS TO BE USED ON THE BRIDGE. THE EPOXY SHALL BE SUPPLIED FROM ONE OF THE FOLLOWING MANUFACTURERS:

GOUGEON BROTHER'S INC.
100 PATTERSON AVE.
P.O. BOX 908
BAY CITY MI 48707 USA
PHONE: 989-684-7286
1-866-937-8797
EPOXY RESIN 105
HARDENER 205

SYSTEM THREE RESINS, INC.
3500 W. VALLEY HIGHWAY N., SUITE 105
AUBURN WA 98001-2436
SILVER TIP RESIN

LBI INC.
973 NORTH ROAD
ROUTE 117 DEPT. 207
GROTON CT 06340
PHONE: 1-800-231-6537
LBI EPOXY 1101
LBI HARDENER 2105

EQUIVALENT MATERIALS FROM OTHER MANUFACTURERS ARE ACCEPTABLE WITH THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR MAY TRIM THE PIGEON DOORS, IF NECESSARY, TO FACILITATE PLACEMENT. ALL EDGES WHICH ARE TRIMMED SHALL BE RESEALED WITH THREE (3) COATS OF THE EPOXY AND PAINTED AS REQUIRED ABOVE.

THE PIGEON DOORS SHALL BE INSTALLED AFTER ALL PAINTING WORK NEAR THE INSTALLATION AREA IS COMPLETE.

PAINTING OF THE DOORS SHALL BE CONSIDERED AS INCIDENTAL TO THIS ITEM. REMOVAL OF ANY EXISTING PIGEON DOOR SPECIFICALLY DESIGNATED FOR REMOVAL IN THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED PAY ITEM.

A CONTINGENCY OF 20 PIGEON DOORS IS INCLUDED IN THE ESTIMATED QUANTITY. THIS CONTINGENCY SHALL BE USED AT THE ENGINEER'S DISCRETION TO REPLACE DETERIORATED PIGEON DOORS OR DOORS DAMAGED DURING REMOVAL.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT TO FABRICATE, PAINT, AND INSTALL THE PLYWOOD PIGEON DOORS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS.

ITEM SPECIAL - STRUCTURE, MISC.: STEEL PIGEON DOORS

NEW STEEL PIGEON DOORS SHALL BE INSTALLED AT LOCATIONS DESIGNATED IN THE PLANS WHERE STEEL PIGEON DOORS ARE MISSING. THE STEEL PIGEON DOORS SHALL BE FABRICATED UNDER CMS 513 UF LEVEL OF FABRICATION.

ALL SECTIONS OF CMS 513 APPLY EXCEPT AS REVISED HEREIN. THE ENGINEER IS RESPONSIBLE FOR ENSURING ANY SHOP OR FIELD FABRICATED STEEL SUPPLIED UNDER THIS BID ITEM IS ACCEPTABLE. THE REQUIREMENTS FOR SUBMITTAL OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING IS WAIVED. AT THE ENGINEER'S OPTION, THE CONTRACTOR SHALL EITHER SUPPLY THE ENGINEER WITH SHOP DRAWINGS, REQUIRED IN SECTION 501.04, PRIOR TO ANY INCORPORATION OF SHOP FABRICATED STEEL AT THE PROJECT, OR SUPPLY THE ENGINEER WITH "AS FABRICATED" DRAWINGS, MEETING 501.04. THE ENGINEER SHALL HAVE THE AUTHORITY AND RESPONSIBILITY FOR ENSURING THAT THE FABRICATED STEEL IS ACCEPTABLE. TECHNICAL ASSISTANCE WILL BE PROVIDED ON REQUEST BY THE OFFICE OF STRUCTURAL ENGINEERING. MILL TEST REPORTS AND SHIPPING DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INCORPORATING THE STEEL ITEMS INTO THE WORK, AS REQUIRED BY CMS 501.06. AFTER FABRICATION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL TO ENSURE THAT THE DRAWINGS DEPICT THE STEEL AS ACTUALLY INCORPORATED INTO THE WORK. THE ENGINEER WILL THEN SEND ONE APPROVED SET OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING FOR INFORMATION. THE FABRICATOR SHALL FURNISH THE DIRECTOR A DIGITAL MEDIA COPY OF EACH APPROVED SHOP DRAWING. THE DIGITAL MEDIA SHALL BE AS SPECIFIED IN CMS 501.04.

PRIME PAINT, INTERMEDIATE, AND FINISH TOP COAT IN SHOP WITH SAME MATERIALS AS BRIDGE. PAINTING OF THE DOORS SHALL BE CONSIDERED AS INCIDENTAL TO THIS ITEM.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT TO FABRICATE, PAINT, AND INSTALL THE STEEL PIGEON DOORS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FOR ITEM SPECIAL - STRUCTURE, MISC.: STEEL PIGEON DOORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

GENERAL NOTES - 8
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

ESTIMATED QUANTITIES

CALCULATED RWC DATED 7/20/15
CHECKED TWG/KAK/DHT DATED 7/20/15

ITEM	ITEM EXT.	02/BRO/BR SUBTOTAL	01/BRO/BR SUBTOTAL	QUANTITY TOTAL	UNIT	DESCRIPTION	SUPERSTRUCTURE 02/BRO/BR SUBTOTAL	SUPERSTRUCTURE 01/BRO/BR SUBTOTAL	ABUTS.	PIER	RET. WALL	GEN'L	SEE SHEET X / 189	PROPOSED STRUCTURE WORK ITEM # SEE SHEET 3 / 189
202	11203		LS	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN		LS	LS		LS		3, 15, 16, 28, 29, 31, 32, 40, 41, 45, 48, 49, 135, 137-143, 149, 150, 160 161, 168-171, 184-189	2-6, 9-12, 17-19, 27, 28, 32-36
202	98000	LS		LS		REMOVAL MISC.: DAMAGED PORTAL MEMBER	LS							
202	98100	60	584	644	EACH	REMOVAL MISC.: RIVET	60	584					4, 28, 29, 31, 32, 41, 45, 48-135	1, 9, 11, 12, 33, 34
503	11100	-	LS	LS		COFFERDAMS AND EXCAVATION BRACING			LS		LS		15-21, 187-188	35, 36
503	21300	-	LS	LS		UNCLASSIFIED EXCAVATION			LS		LS		15-21, 187-188	35, 36
509	10000	-	4433	4433	LB	EPOXY COATED REINFORCING STEEL			3687		746		17-21, 188	5, 35, 36
510	09950	-	12	12	EACH	DOWEL HOLES WITH CEMENT GROUT			12				18-19	36
511	45711	-	26	26	CY	CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN			26				4, 15-21	5, 36
511	46010	-	8	8	CY	CLASS QC1 CONCRETE, RETAINING WALL					8		187-189	35
511	53012	-	9	9	CY	CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK		9					4, 137, 138, 143-155	2, 3
512	10100	-	32	32	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)			32				13, 15, 18, 19	30, 36
512	10300	-	9829	9829	SY	SEALING CONCRETE BRIDGE DECKS WITH HMWM RESIN		9829					2, 4	15
SPECIAL	51275000	-	3409	3409	FT	SEALING, MISC.: SEALING EDGES OF ROADWAY		3409					2, 4, 139	14
513	95020	-	LS	LS		STRUCTURAL STEEL, MISC.: SHIM SIDEWALK STRINGER BEARING		LS					5, 28, 30	8
513	95020	-	LS	LS		STRUCTURAL STEEL, MISC.: SIDEWALK SUPPORT REPAIR		LS					5, 28, 29, 31	9
513	95020	LS	-	LS		STRUCTURAL STEEL, MISC.: PORTAL MEMBER REPLACEMENT	LS						5, 48, 135	33
513	95020	-	LS	LS		STRUCTURAL STEEL, MISC.: PANEL POINT 12 CATWALK REPLACEMENT		LS					5, 28, 41-44	11
513	95020	-	LS	LS		STRUCTURAL STEEL, MISC.: PANEL POINT 45 PARTIAL CATWALK REPLACEMENT		LS					5, 29, 45-47	12
513	95020	-	LS	LS		STRUCTURAL STEEL, MISC.: STRINGER DIAPHRAGM CONNECTION REPAIR		LS					5, 28, 32	34
513	95030	-	63	63	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 1		63					5, 6, 48-134	1
513	95030	-	2	2	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 2		2					5, 6, 48-134	1
513	95030	-	19	19	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 3		19					5, 6, 48-134	1
513	95030	-	4	4	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 4		4					5, 6, 48-134	1
513	95030	-	8	8	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 5		8					5, 6, 48-134	1
513	95030	-	9	9	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 6		9					5, 6, 48-134	1
513	95030	-	7	7	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 7		7					5, 6, 48-134	1
513	95030	-	410	410	EACH	STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 8		410					5, 6, 48-134	1
513	95030	-	11	11	EACH	STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT		11					7, 28, 29, 33-39	7
513	95030	-	8	8	EACH	STRUCTURAL STEEL, MISC.: ACCESS HATCH COVER		8					7, 137, 138, 161	19
513	95030	-	26	26	EACH	STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT		16				10	7, 137, 138, 140	18
513	95030	-	52	52	EACH	STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB)		47				5	7, 137-139	17
513	95030	-	18	18	EACH	STRUCTURAL STEEL, MISC.: COUNTERSUNK BOLT REPLACEMENT AT STRINGER BEARINGS		18					7, 28, 29, 40	10
513	95030	-	33	33	EACH	STRUCTURAL STEEL, MISC.: PEDESTRIAN RAILING REPAIR TYPE A		33					7, 156-160	20
513	95030	-	55	55	EACH	STRUCTURAL STEEL, MISC.: PEDESTRIAN RAILING REPAIR TYPE B		55					7, 156-160	20
513	95030	-	1	1	EACH	STRUCTURAL STEEL, MISC.: PEDESTRIAN RAILING REPAIR TYPE C		1					7, 156-160	20
513	95030	-	1	1	EACH	STRUCTURAL STEEL, MISC.: PEDESTRIAN RAILING REPAIR TYPE D		1					7, 156-160	20
514	00050	37	35,242	35,279	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	37	35,242					7, 135, 162-172	22-24, 33
514	00056	37	35,242	35,279	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	37	35,242					7, 135, 162-172	22-24, 33
514	00060	109	43,681	43,790	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	109	43,681					7, 41-135, 144-155, 162-172	1-3, 11, 12, 22-24, 33
514	00067	109	43,681	43,790	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN	109	43,681					7, 41-135, 144-155, 162-172	1-3, 11, 12, 22-24, 33
514	00504	1	66	67	MN HR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL	1	66					7, 135, 162-172	22-24, 33

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RIVET AND BOLT LEGEND

- FIELD BOLT, NUT AND FULL HEAD. NEW MATERIAL TO NEW MATERIAL.
- FIELD DRILL EXISTING MATERIAL FOR NEW CONNECTION BOLT. NEW OR EXISTING MATERIAL TO EXISTING MATERIAL.
- REMOVE EXISTING RIVET OR BOLT FOR NEW BOLTED CONNECTION. NEW OR EXISTING MATERIAL TO EXISTING MATERIAL.
- EXISTING RIVET OR BOLT TO REMAIN IN PLACE.
- FIELD BOLT, NUT AND COUNTERSUNK HEAD NEAR SIDE. NEW MATERIAL TO NEW MATERIAL.
- FIELD BOLT, NUT AND COUNTERSUNK HEAD FAR SIDE. NEW MATERIAL TO NEW MATERIAL.
- COUNTERSUNK BOLT OR RIVET TO REMAIN IN PLACE.
- REMOVE EXISTING COUNTERSUNK RIVET OR BOLT FOR NEW COUNTERSUNK BOLTED CONNECTION. NEW OR EXISTING MATERIAL.

NOTATION

ABUTS. - ABUTMENTS
RET. - RETAINING

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | CHECKED BLN | REVIEWED DLR | DATE 9/25/15 | STRUCTURE FILE NUMBER 4707443

ESTIMATED QUANTITIES - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

ESTIMATED QUANTITIES

CALCULATED RWC DATED 7/2015
CHECKED TWG/KAK/DHT DATED 7/2015

ITEM	ITEM EXT.	02/BRO/BR SUBTOTAL	01/BRO/BR SUBTOTAL	QUANTITY TOTAL	UNIT	DESCRIPTION	SUPERSTRUCTURE 02/BRO/BR SUBTOTAL	SUPERSTRUCTURE 01/BRO/BR SUBTOTAL	ABUTS.	PIER	RET. WALL	GEN'L	SEE SHEET X / 189	PROPOSED STRUCTURE WORK ITEM # SEE SHEET 3 / 189
514	100000	1	50	51	EACH	FINAL INSPECTION REPAIR	1	50					7, 41-47, 135, 162-172	1-3, 11-12, 22-24, 33
514	27700	-	5242	5242	SF	FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS		5242					7, 162-172	22
514	27700	-	5242	5242	SF	FIELD PAINTING, MISC.: FIELD PAINTING OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS, PRIME COAT		5242					7, 162-172	22
514	27700	-	15,570	15,570	SF	FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEANING, SYSTEM OZEU		15,570					8, 162	37
514	27700	-	15,570	15,570	SF	FIELD PAINTING, MISC.: HIGH PRESSURE WATER CLEANING OF GALVANIZED STEEL		15,570					8, 162	37
514	27700	-	850	850	SF	FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING GALVANIZED STEEL CURBS		850					8, 162	37
514	27700	-	4732	4732	SF	FIELD PAINTING, MISC.: EPOXY INTERMEDIATE COAT OF GALVANIZED ROADWAY RAILING AND CURBS		4732					8, 162	37
514	27700	-	15,570	15,570	SF	FIELD PAINTING, MISC.: TOP FINISH COAT ON GALVANIZED ROADWAY RAILING AND CURBS		15,570					8, 162	37
514	27702	-	7	7	EACH	FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB)		7					8, 137-139	16
514	27710	-	14,500	14,500	FT	FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL FOR CAULKING		14,500					8, 162-165, 173-183	25
514	27710	-	14,500	14,500	FT	FIELD PAINTING, MISC.: EXISTING STEEL PRIME COAT FOR CAULKING		14,500					8, 162-165, 173-183	25
514	27710	-	14,500	14,500	FT	FIELD PAINTING, MISC.: EXISTING STEEL INTERMEDIATE COAT FOR CAULKING		14,500					8, 162-165, 173-183	25
514	27710	-	14,500	14,500	FT	FIELD PAINTING, MISC.: EXISTING STEEL FINISH COAT FOR CAULKING		14,500					8, 162-165, 173-183	25
514	27710	-	16,700	16,700	FT	FIELD PAINTING, MISC.: CAULKING		16,200				500	8, 163-165, 173-183	25
514	27800	-	LS	LS		FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING		LS					9, 156-160, 187-189	21, 35
514	27800	-	LS	LS		FIELD PAINTING, MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP		LS					8, 156-160, 187-189	21, 35
514	27800	-	LS	LS		FIELD PAINTING, MISC.: FIELD TOUCH-UP OF NEW AND EXISTING PAINT		LS					9, 28-30, 31-47	7, 9, 10, 18, 34
516	10000	-	230	230	FT	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (2 1/2")		230					137, 138, 142	6
516	10000	-	32	32	FT	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (1 3/4")		32					137, 138, 142	6
516	11211	-	46	46	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN		46					9, 137, 138, 143-149	2
516	11211	-	47	47	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN		47					9, 137, 138, 150-155	3
516	14600	-	7	7	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE		7					9, 138, 150-155	3
516	14600	-	12	12	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: REPAIR DAMAGED DEFLECTION JOINT STEEL FLANGE		12					9, 137, 138, 141	32
516	31001	-	89	89	FT	JOINT SEALER, AS PER PLAN						89	9, 137, 138	4
517	76300	-	50	50	FT	RAILING, MISC.: RETAINING WALL STEEL PEDESTRIAN RAILING REUSED					50		9, 187-189	35
518	21200	-	33	33	CY	POROUS BACKFILL WITH FILTER FABRIC			3		30		18, 19, 187-189	35
518	40000	-	51	51	FT	6" PERFORATED CORRUGATED PLASTIC PIPE					51		187-189	35
518	40010	-	13	13	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS					13		187-188	35
518	62100	-	109	109	FT	STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS)		109					9, 28, 29, 170, 171, 184, 185	28
518	62100	-	231	231	FT	STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (DEFLECTION JOINTS)		231					9, 28, 29, 168, 184	28
518	62100	-	504	504	FT	STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (ROADWAY DRAINS)		504					9, 28, 29, 169, 184, 186	27
518	62100	-	160	160	FT	STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (LOWER LATERAL BRACING)		160					10, 28, 29, 184	27
519	11100	-	1597	1597	SF	PATCHING CONCRETE STRUCTURE			231	1366			10, 13-16, 22-27	29
SPECIAL	51912510	-	19	19	SY	PATCHING CONCRETE BRIDGE DECK		16				3	10, 137, 138	13, 32
526	98200	-	30	30	FT	APPROACH SLABS, MISC.: REPLACE CURB						30	10, 187	5
SPECIAL	53000200	-	LS	LS		STRUCTURE, MISC.: LEVELING DEPRESSIONS IN PIER CAP				LS			10, 22, 24	31
SPECIAL	53000400	-	138	138	EACH	STRUCTURE, MISC.: PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED		138					10, 136	22
SPECIAL	53000400	-	25	25	EACH	STRUCTURE, MISC.: PLYWOOD PIGEON DOORS		5				20	10, 48, 49, 136	26
SPECIAL	53000400	-	3	3	EACH	STRUCTURE, MISC.: STEEL PIGEON DOORS		3					10, 48, 49, 136	26

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15
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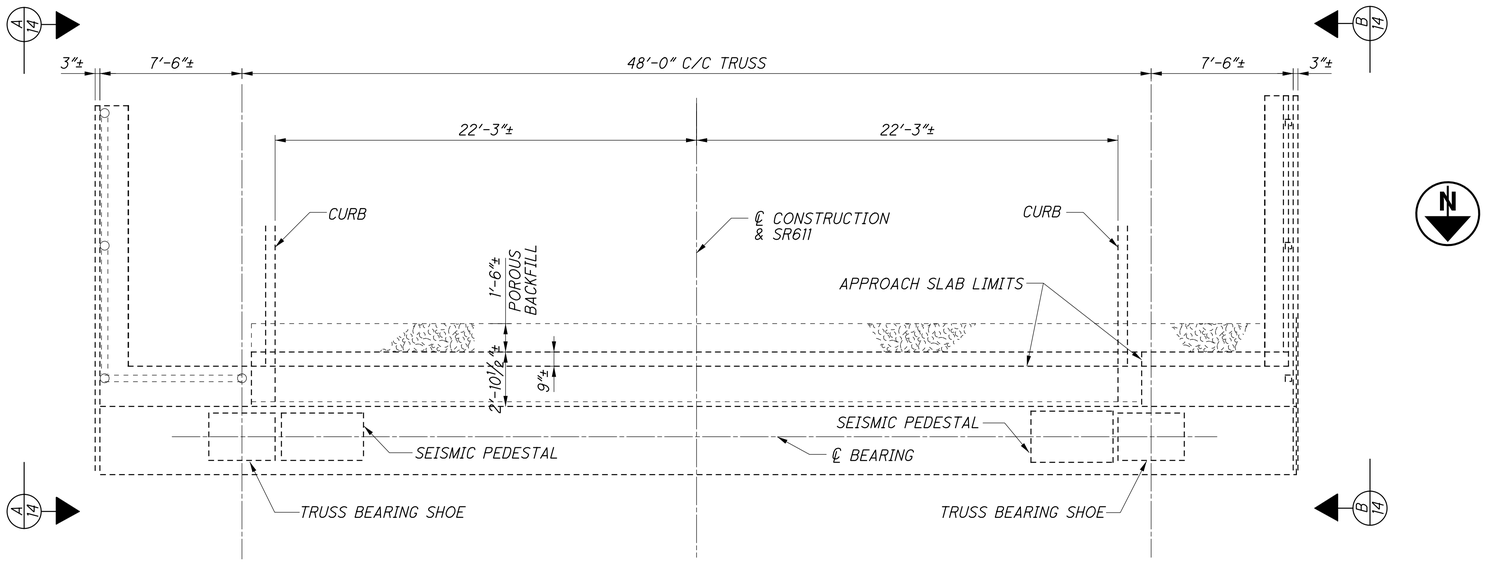
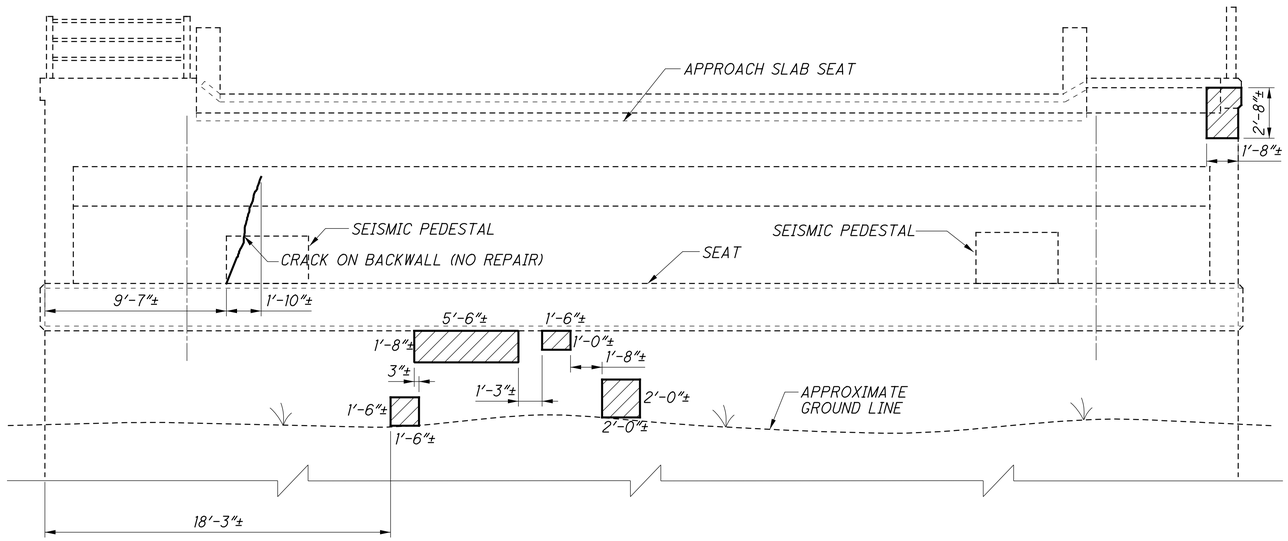
ESTIMATED QUANTITIES - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



PLAN



ELEVATION

SUMMARY OF REAR ABUTMENT PATCHING QUANTITIES

LOCATION	UNIT	MEASURED QUANTITY	ESTIMATED QUANTITY	REPAIR QUANTITY
PLAN	SF	-	-	
ELEVATION	SF	22	27	
TOP VIEW	SF	-	-	
VIEW A-A	SF	3	4	
VIEW A-A (TOP VIEW)	SF	4	5	
VIEW B-B	SF	23	28	
VIEW B-B (TOP VIEW)	SF	35	42	
CONTINGENCY	SF	-	21	
SUB TOTAL	**SF**	**87**	**127**	

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

REPAIR QUANTITY TO BE FILLED IN BY THE PROJECT ENGINEER.

SEAL PATCHED CONCRETE SURFACES THAT HAVE BEEN PREVIOUSLY SEALED ONLY.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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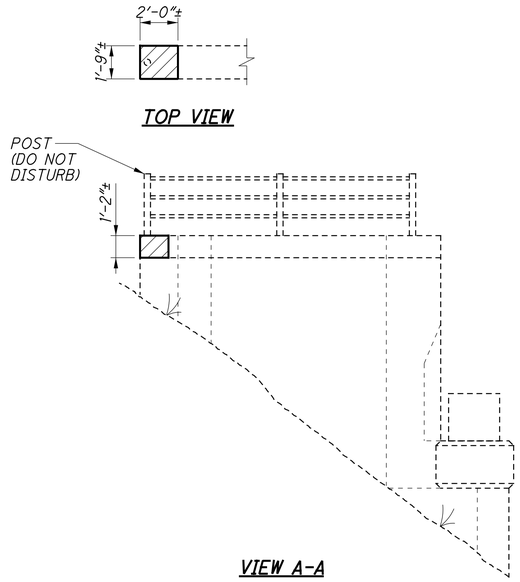
REAR ABUTMENT PATCHING

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

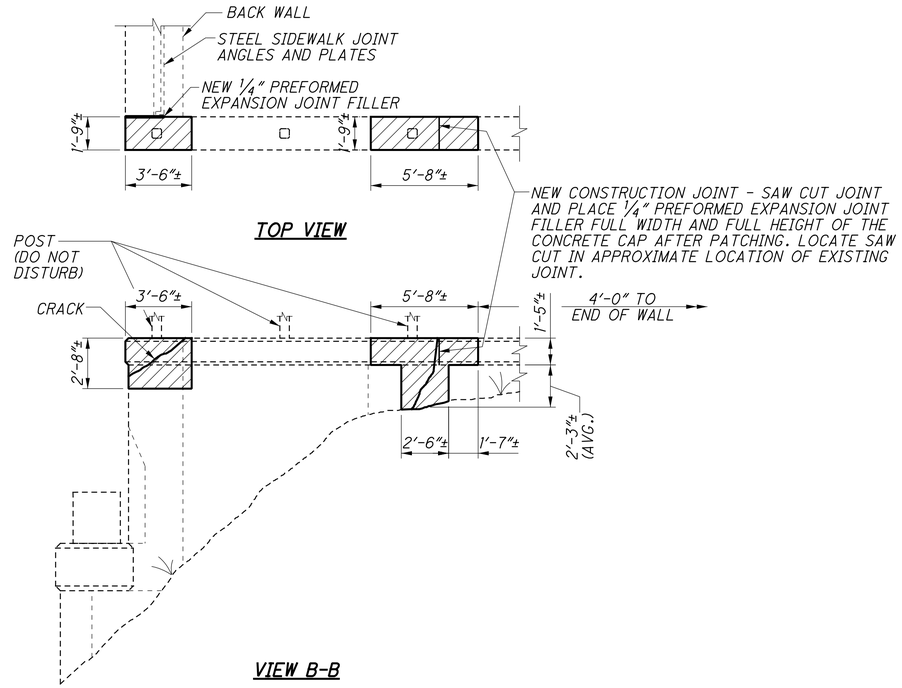
LOR-611-3.44
PID No. 92009

13/189
58/234



VIEW A-A

REAR ABUTMENT - EAST WINGWALL



VIEW B-B

REAR ABUTMENT - WEST WINGWALL

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

VIEWS A-A & B-B: FOR LOCATION SEE SHEET 13/189.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

NEW CONSTRUCTION JOINT - THE SAW CUT; AND FURNISHING AND INSTALLATION OF THE PREFORMED EXPANSION JOINT FILLER SHALL BE CONSIDERED INCIDENTAL TO THE PATCHING QUANTITY AND INCLUDED IN THE BID PRICE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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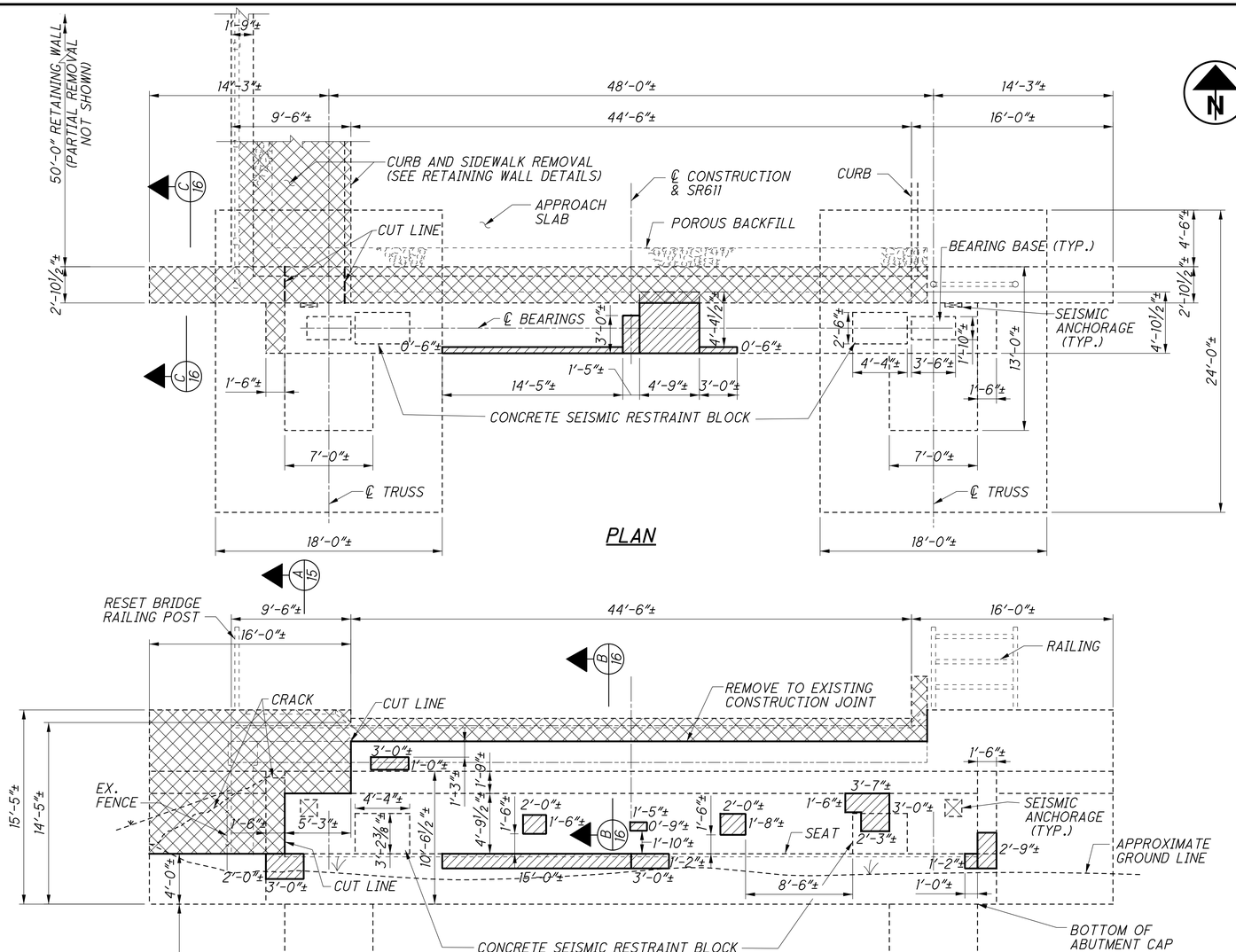
BLN		4707443	

REAR ABUTMENT PATCHING DETAILS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



SUMMARY OF FORWARD ABUTMENT PATCHING QUANTITIES

LOCATION	UNIT	MEASURED QUANTITY	ESTIMATED QUANTITY	REPAIR QUANTITY
PLAN	SF	37	45	
ELEVATION	SF	52	63	
SECTION A-A	SF	-	-	
CONTINGENCY	SF	-	22	
SUB TOTAL	**SF**	**89**	**130**	

LEGEND

- INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE AND SEALED PER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).
- INDICATES REMOVALS PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

RETAINING WALL DETAILS: SEE SHEET 187/189.

EXISTING REINFORCING STEEL TO REMAIN: FOR DETAIL SEE SHEET 17/189.

ADDITIONAL FORWARD ABUTMENT JOINT REMOVAL DETAILS: SEE SHEET 150/189.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

REPAIR QUANTITY TO BE FILLED IN BY THE PROJECT ENGINEER.

SEAL PATCHED CONCRETE SURFACES THAT HAVE BEEN PREVIOUSLY SEALED ONLY.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | CHECKED KAK | REVIEWED DLR | DATE 9/25/15 | STRUCTURE FILE NUMBER 4707443 | REVISED

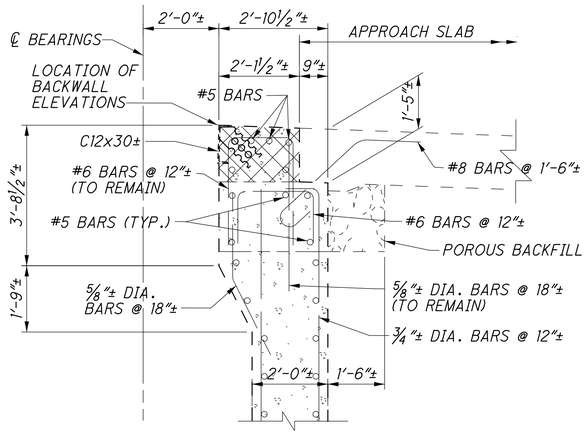
FORWARD ABUTMENT REMOVAL AND PATCHING

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

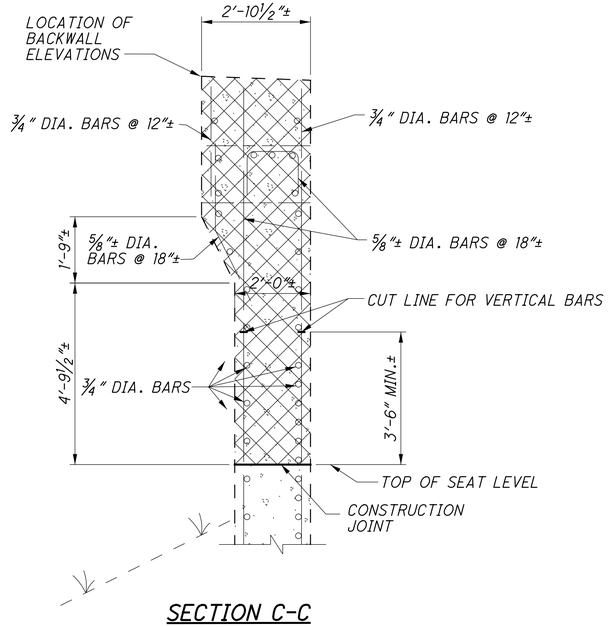
LOR-611-3.44
PID No. 92009

15 / 189

60 / 234



SECTION B-B



SECTION C-C

LEGEND

▨ - INDICATES REMOVALS PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SECTIONS B-B AND C-C: FOR LOCATIONS SEE SHEET 15/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

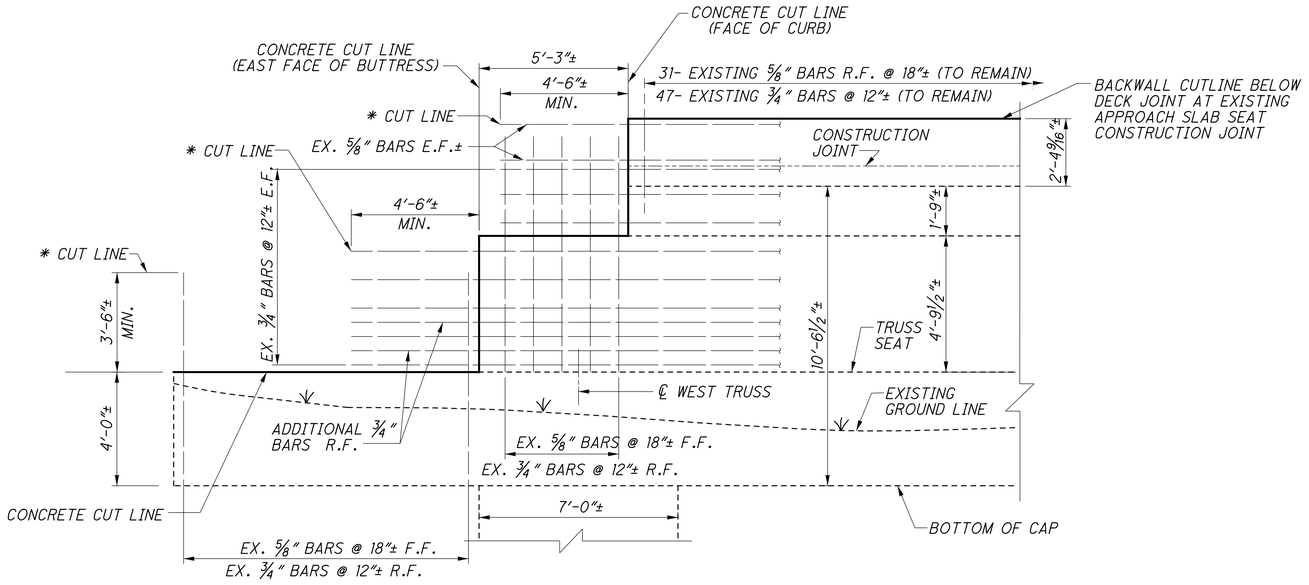
FORWARD ABUTMENT REMOVAL DETAILS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

16/189

61/234



EXISTING FORWARD ABUTMENT ELEVATION AT WEST WINGWALL

(EXISTING REBAR CUT LINE)

* EXISTING REINFORCING CUT LINE

NOTES

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

NOTATION:
R.F. - REAR FACE
F.F. - FRONT FACE
E.F. - EACH FACE

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29 NORTH PARK STREET
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KAK		4707443	

FORWARD ABUTMENT EXISTING REINFORCING STEEL CUTLINES

BRIDGE NO. LOR-611-0344
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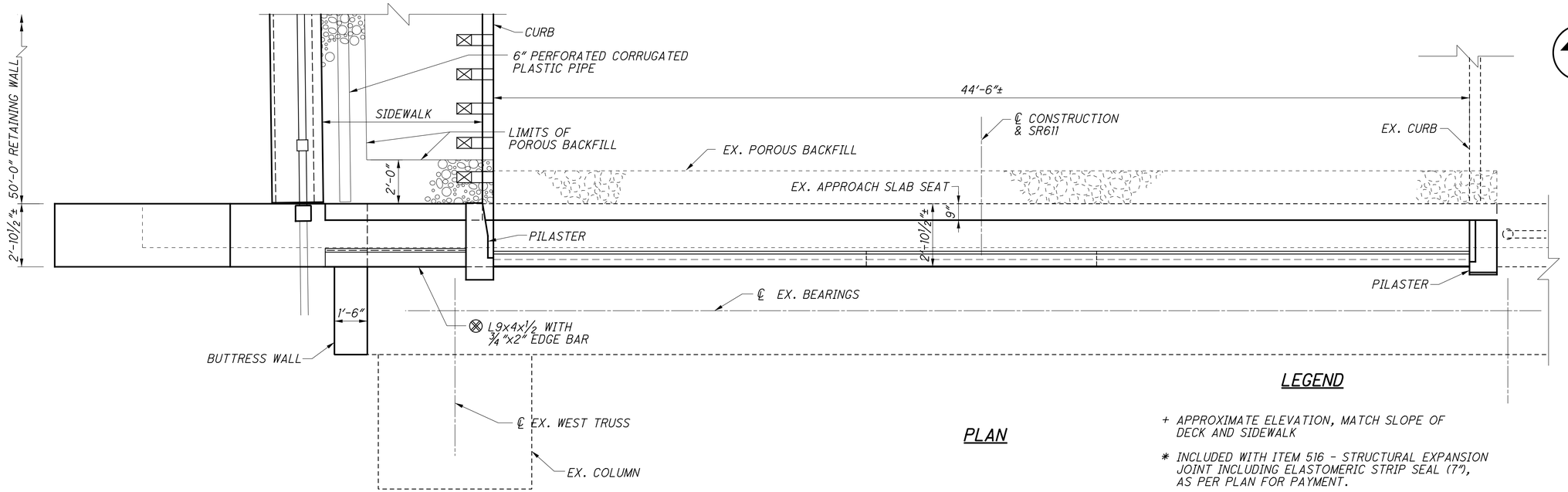
PID No. 92009



PLAN

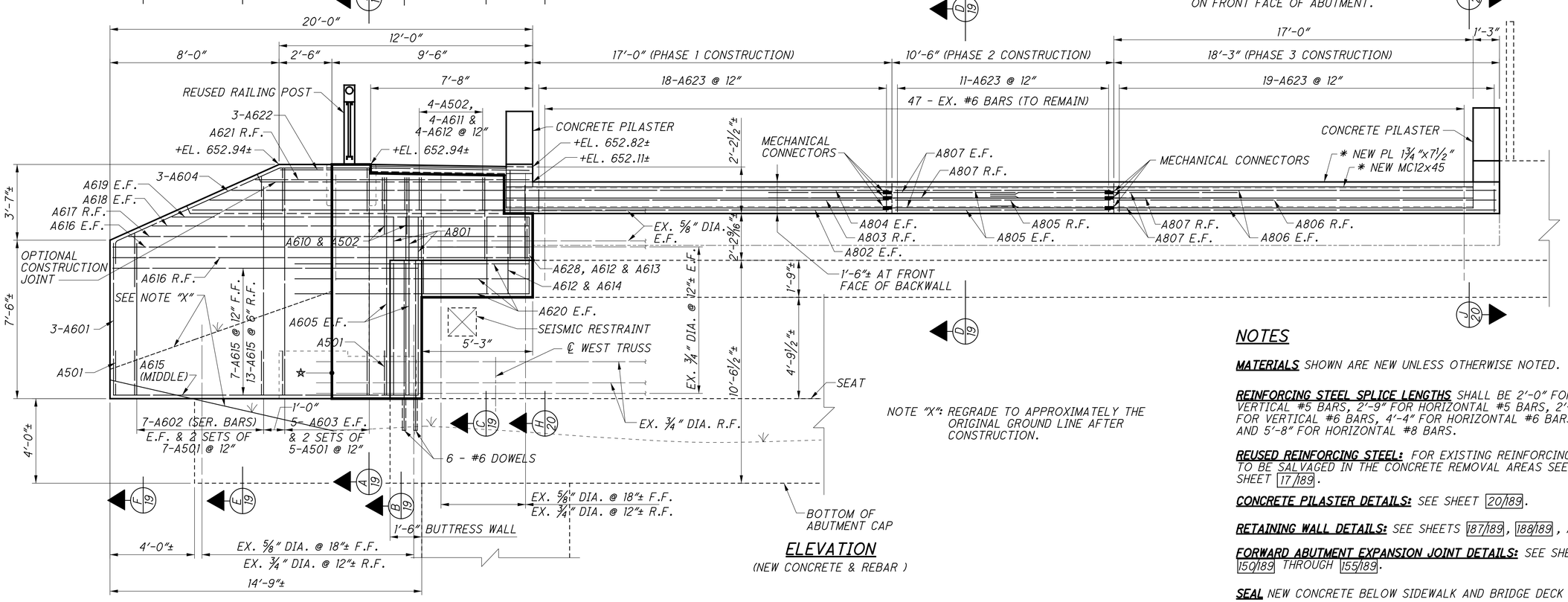
LEGEND

+ *APPROXIMATE ELEVATION, MATCH SLOPE OF DECK AND SIDEWALK*

* *INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.*

⊗ *INCLUDED WITH ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE FOR PAYMENT.*

☆ *INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) ON FRONT FACE OF ABUTMENT.*



ELEVATION

(NEW CONCRETE & REBAR)

NOTE "X": REGRADE TO APPROXIMATELY THE ORIGINAL GROUND LINE AFTER CONSTRUCTION.

NOTES

MATERIALS *SHOWN ARE NEW UNLESS OTHERWISE NOTED.*

REINFORCING STEEL SPLICE LENGTHS *SHALL BE 2'-0" FOR VERTICAL #5 BARS, 2'-9" FOR HORIZONTAL #5 BARS, 2'-4" FOR VERTICAL #6 BARS, 4'-4" FOR HORIZONTAL #6 BARS, AND 5'-8" FOR HORIZONTAL #8 BARS.*

REUSED REINFORCING STEEL: *FOR EXISTING REINFORCING STEEL TO BE SALVAGED IN THE CONCRETE REMOVAL AREAS SEE SHEET 17/189.*

CONCRETE PILASTER DETAILS: *SEE SHEET 20/189.*

RETAINING WALL DETAILS: *SEE SHEETS 187/189, 188/189, AND 189/189.*

FORWARD ABUTMENT EXPANSION JOINT DETAILS: *SEE SHEETS 150/189 THROUGH 155/189.*

SEAL *NEW CONCRETE BELOW SIDEWALK AND BRIDGE DECK ONLY.*

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

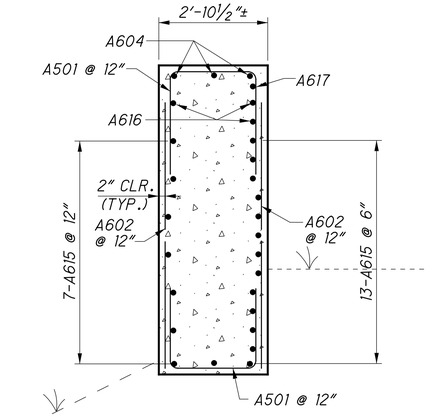
FORWARD ABUTMENT PLAN AND ELEVATION
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

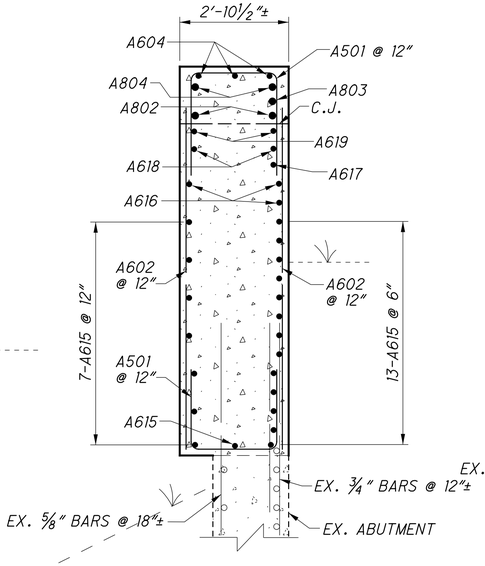
18 / 189

63 / 234

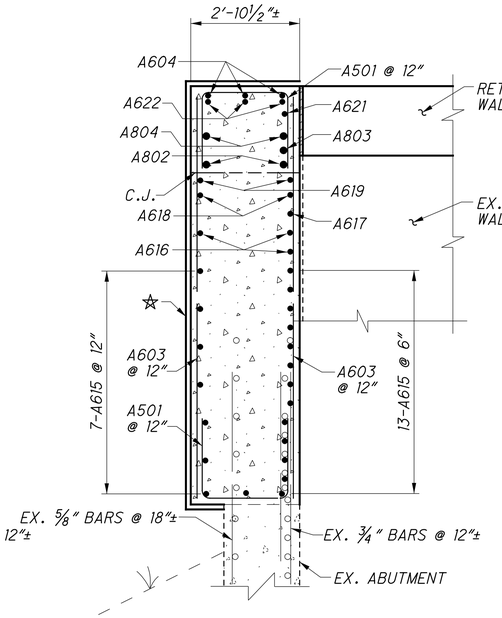
F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048AF003.dgn 9/28/2015 8:10:10 AM JeremyBurns



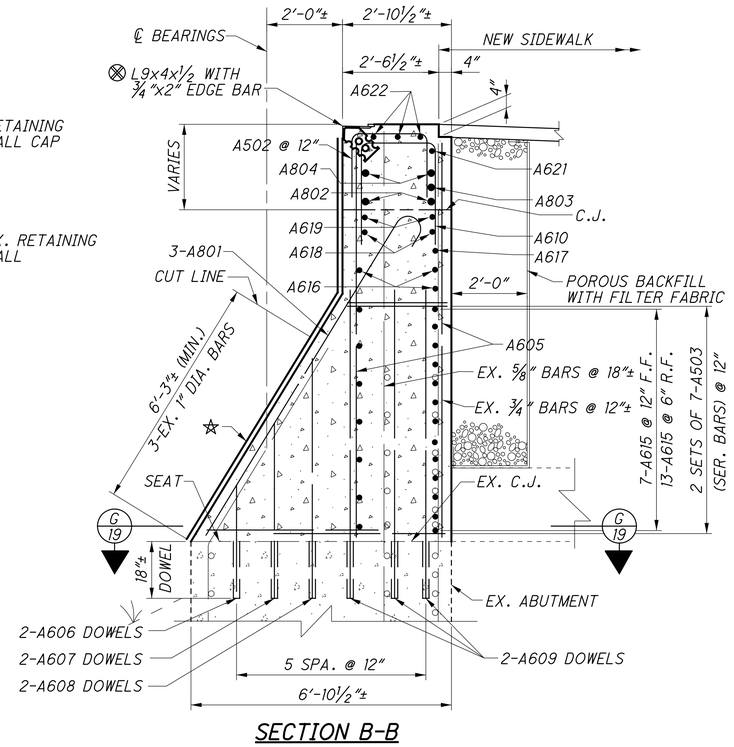
SECTION F-F



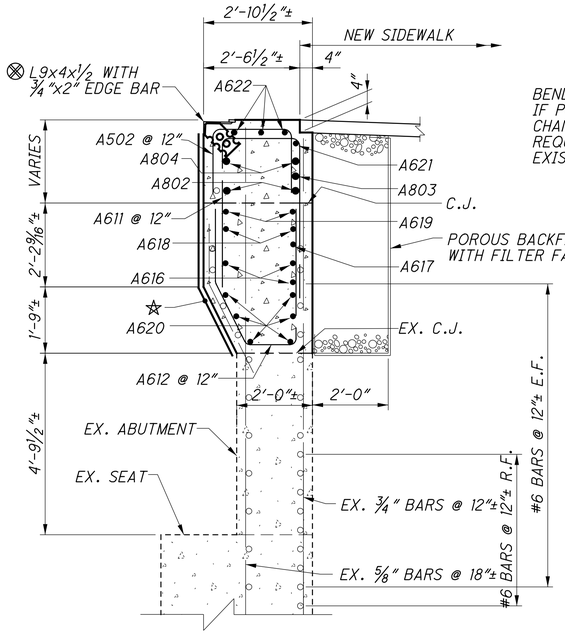
SECTION E-E



SECTION A-A



SECTION B-B



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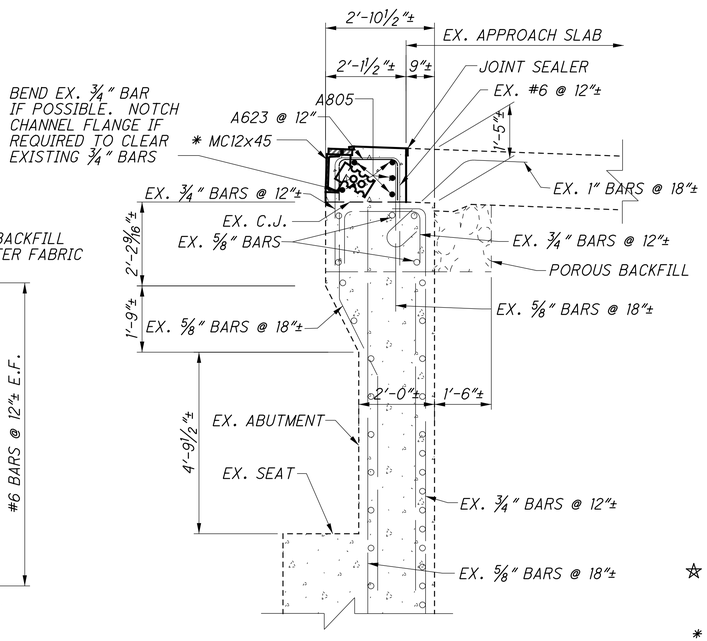

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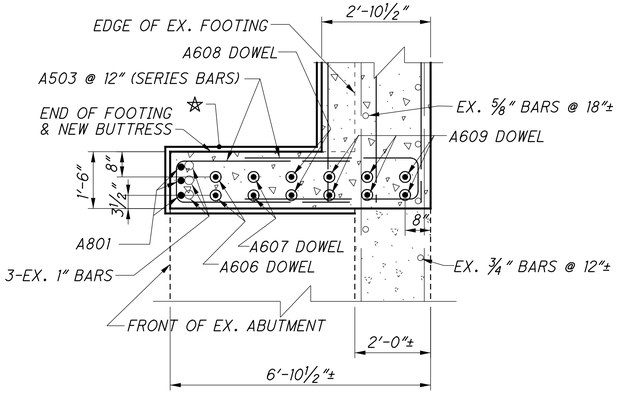

SECTION G-G

LEGEND

☆ INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

⊗ INCLUDED WITH ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE FOR PAYMENT.

NOTES

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

NOTATION:
R.F. - REAR FACE
F.F. - FRONT FACE
E.F. - EACH FACE
C.J. - CONSTRUCTION JOINT

SECTIONS A-A, B-B, C-C, D-D, E-E & F-F: FOR LOCATIONS SEE SHEET 18/189.

ADDTIONAL NOTES: SEE SHEET 18/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DLR	9/25/15
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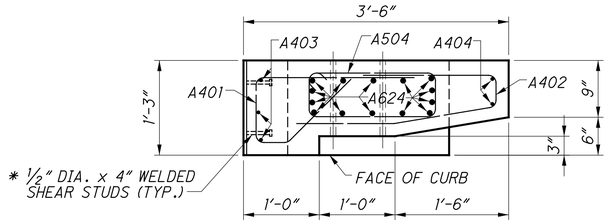
KAK		4707443	

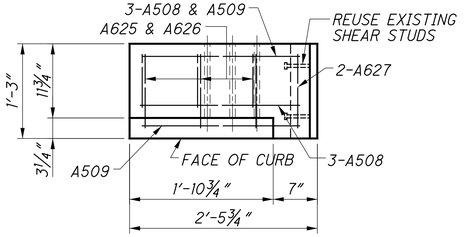
FORWARD ABUTMENT SECTIONS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

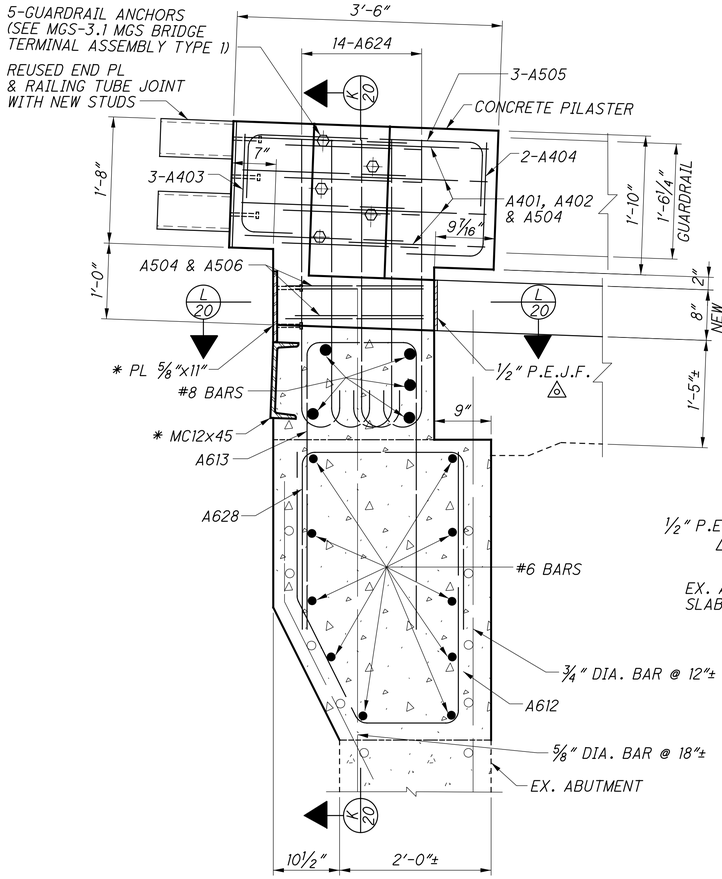
LOR-611-3.44
PID No. 92009



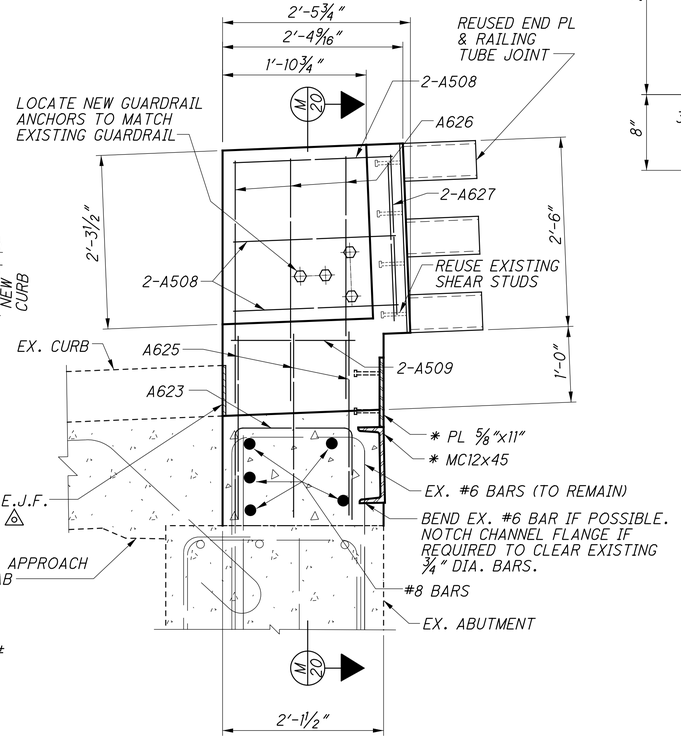
PLAN - WEST PILASTER



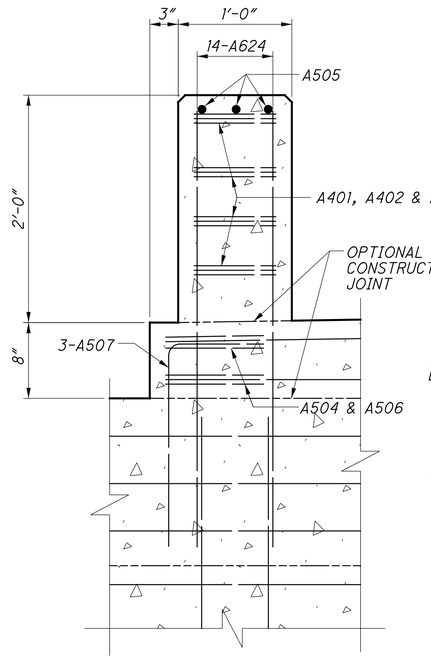
PLAN - EAST PILASTER



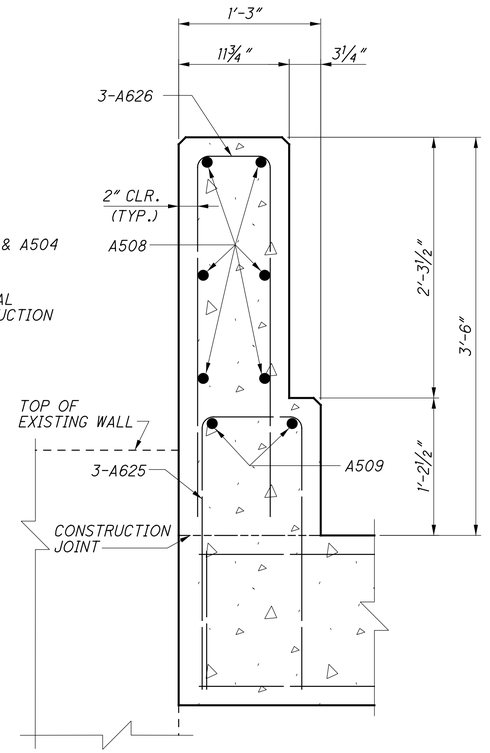
SECTION H-H



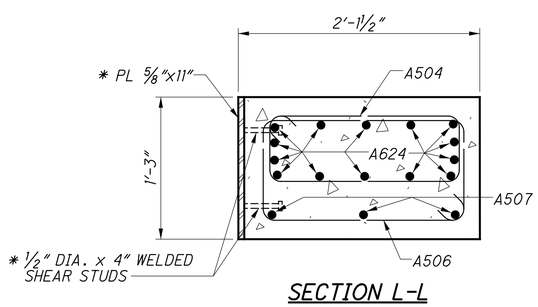
SECTION J-J



SECTION K-K



SECTION M-M



SECTION L-L

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

△ INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN FOR PAYMENT.

NOTES

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

SECTIONS H-H & J-J: FOR LOCATIONS SEE SHEET 18/189.

WEST PILASTER END PLATE WELDED STUDS: SEE RAILING REPAIR DETAIL ON SHEET 155/189.

ADDITIONAL NOTES: SEE SHEET 18/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 4707443

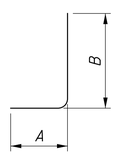
FORWARD ABUTMENT DETAILS - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

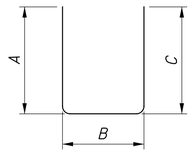
LOR-611-3.44
PID No. 92009

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
FORWARD ABUTMENT									CALCULATED JLS CHECKED BLN		DATE T/14 DATE 2/15
A401	4	4′-4″	12	12	0′-10″	0′-10″	0′-5″	0′-11″	2′-1″		
A402	4	4′-8″	13	14	2′-0″	0′-4″	0′-2¾″	1′-3″	1′-3″		
A403	3	1′-11″	4	1	1′-4″	0′-8″					
A404	2	2′-5″	3	1	1′-6″	1′-0″					
A501	26	6′-3″	170	2	2′-0″	2′-6″	2′-0″				
A502	6	4′-9″	30	2	1′-6″	2′-0″	1′-6″				
	2 SR	6′-3″			2′-8″		2′-8″				
A503	OF	TO	119	2	TO	1′-2″	TO				0′-3¾″
	7	10′-1″			4′-7″		4′-7″				
A504	6	5′-1″	32	3	1′-8″	0′-7″					
A505	3	4′-5″	14	2	0′-10″	3′-0″	0′-10″				
A506	2	6′-0″	13	3	1′-9″	0′-11″					
A507	3	2′-5″	8	1	1′-9″	0′-10″					
A508	6	2′-0″	13	STR							
A509	2	1′-4″	3	STR							
A601	3	7′-2″	32	STR							
	2 SR	7′-2″									
A602	OF	TO	180	STR							0′-5½″
	7	9′-11″									
A603	10	10′-8″	160	STR							
A604	3	13′-8″	62	20	1′-8½″	3′-9½″	8′-7″	0′-11″	0′-5″		
A605	4	10′-3″	62	STR							
A606	2	3′-0″	9	STR							
A607	2	4′-7″	14	STR							
A608	2	6′-4″	19	STR							
A609	6	8′-2″	74	STR							
A610	2	7′-4″	22	2	2′-8″	2′-4″	2′-8″				
A611	4	10′-0″	60	2	3′-10″	2′-4″	4′-2″				
A612	6	8′-8″	78	14	3′-7″	1′-7″	0′-10″	1′-8″	1′-11″		
A613	1	8′-9″	13	2	3′-9″	1′-7″	3′-9″				
A614	1	10′-6″	16	2	4′-3″	2′-4″	4′-3″				
A615	21	14′-5″	455	STR							
A616	3	19′-8″	89	STR							
A617	1	18′-11″	28	STR							
A618	2	17′-10″	54	STR							
A619	2	16′-10″	51	STR							
A620	6	11′-1″	100	STR							
A621	1	12′-11″	19	STR							
A622	3	11′-9″	53	STR							
A623	48	3′-2″	228	2	1′-0″	1′-6″	1′-0″				
A624	14	4′-6″	95	16	3′-10″						
A625	3	5′-3″	24	2	2′-4″	0′-11″	2′-4″				
A626	3	6′-7″	30	2	3′-2″	0′-7″	3′-2″				
A627	2	4′-7″	14	2	2′-0″	0′-11″	2′-0″				
A628	1	6′-6″	10	2	2′-3″	2′-4″	2′-3″				
A801	3	10′-11″	87	16	10′-0″						
A802	2	32′-11″	176	STR							
A803	1	32′-1″	86	STR							
A804	2	31′-1″	166	STR							
A805	5	10′-2″	136	STR							
A806	5	17′-11″	239	STR							
A807 *	10	11′-8″	312	35	5′-10″						
		TOTAL	3687								

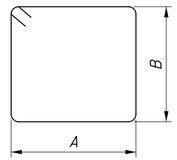
* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTOR.



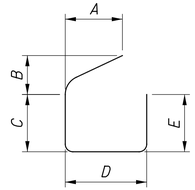
TYPE-1



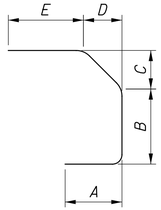
TYPE-2



TYPE-3



TYPE-12



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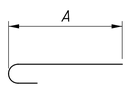

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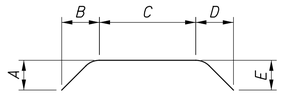

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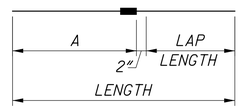

TYPE-35

BENDING DIAGRAM

NOTES

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION. THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.

EXAMPLE: 511
A = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT)
5 = BAR SIZE DESIGNATION
11 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL TO BE EPOXY COATED, PER CMS 709.00.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
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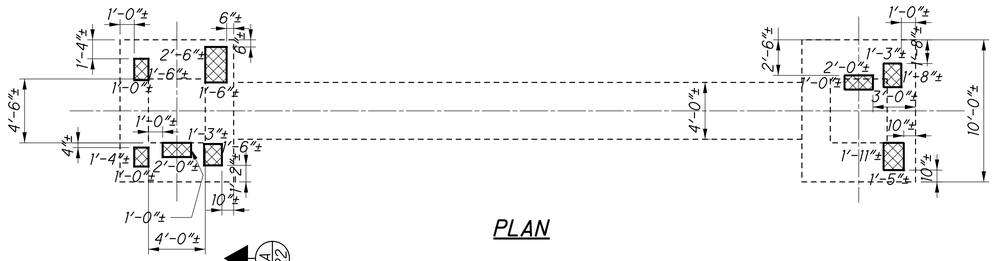
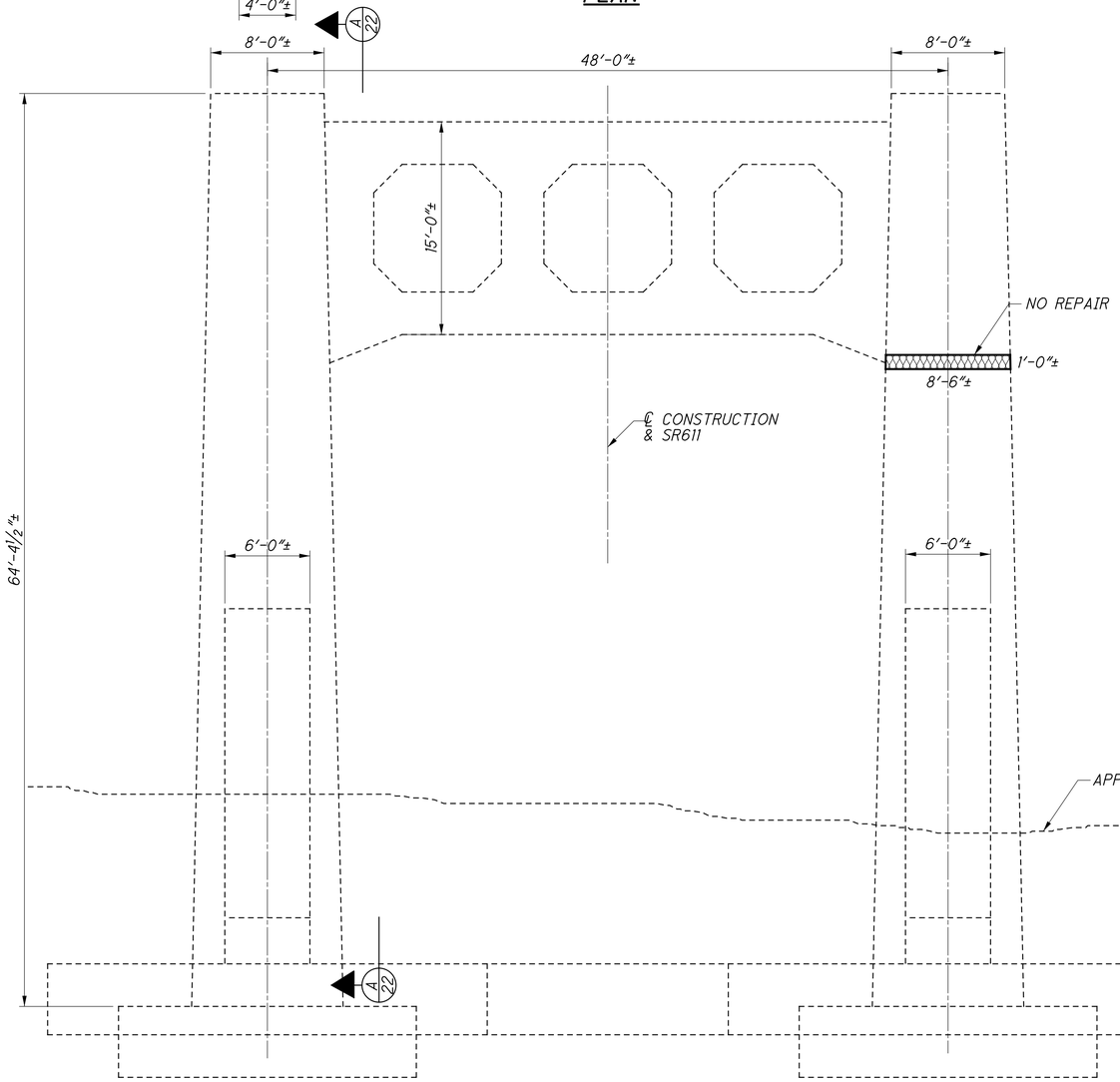
FORWARD ABUTMENT REINFORCING STEEL LIST

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

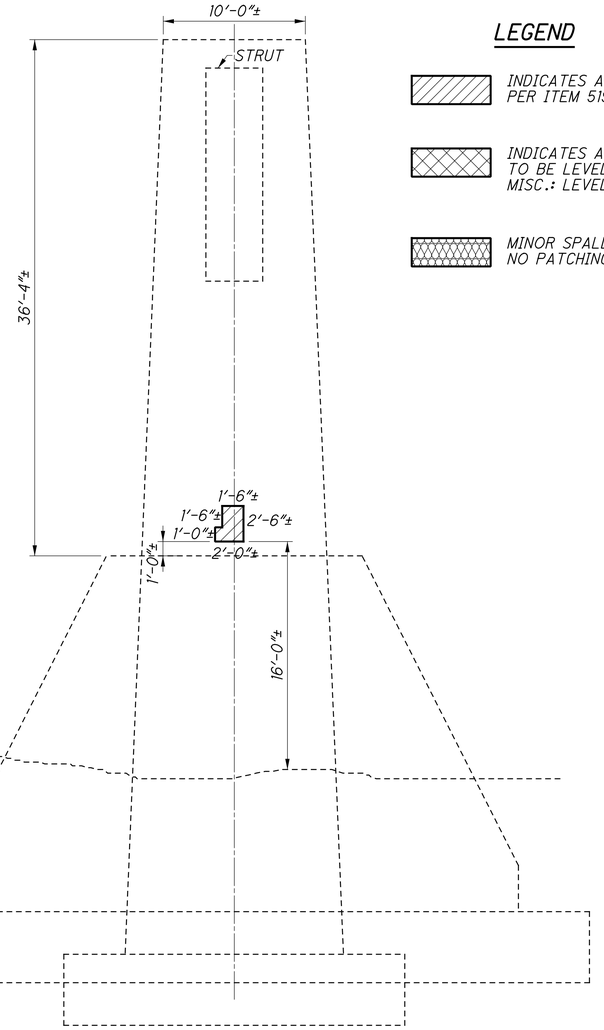
LOR-611-3.44
PID No. 92009



PLAN



SOUTH ELEVATION
PIER 1



VIEW A-A

SUMMARY OF PIER 1 PATCHING QUANTITIES

LOCATION	UNIT	MEASURED QUANTITY	ESTIMATED QUANTITY	REPAIR QUANTITY
SOUTH ELEVATION	SF	-	-	
VIEW A-A	SF	5	6	
NORTH ELEVATION	SF	-	-	
VIEW B-B	SF	36	44	
CONTINGENCY	SF	-	10	
SUB TOTAL	**SF**	**41**	**60**	

LEGEND

- INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.
- INDICATES APPROXIMATE AREA OF DEPRESSIONS TO BE LEVELED WITH ITEM 530 - STRUCTURE, MISC.: LEVELING DEPRESSIONS IN PIER CAP.
- MINOR SPALL OR DELAMINATION. NO PATCHING REQUIRED

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

REPAIR QUANTITY TO BE FILLED IN BY THE PROJECT ENGINEER.

RICHLAND ENGINEERING LIMITED
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MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
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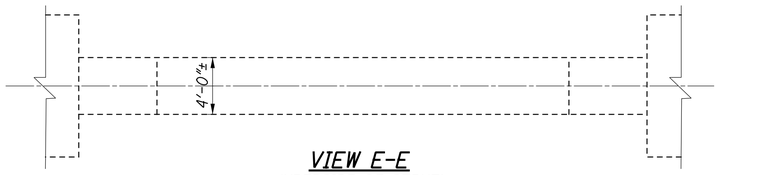
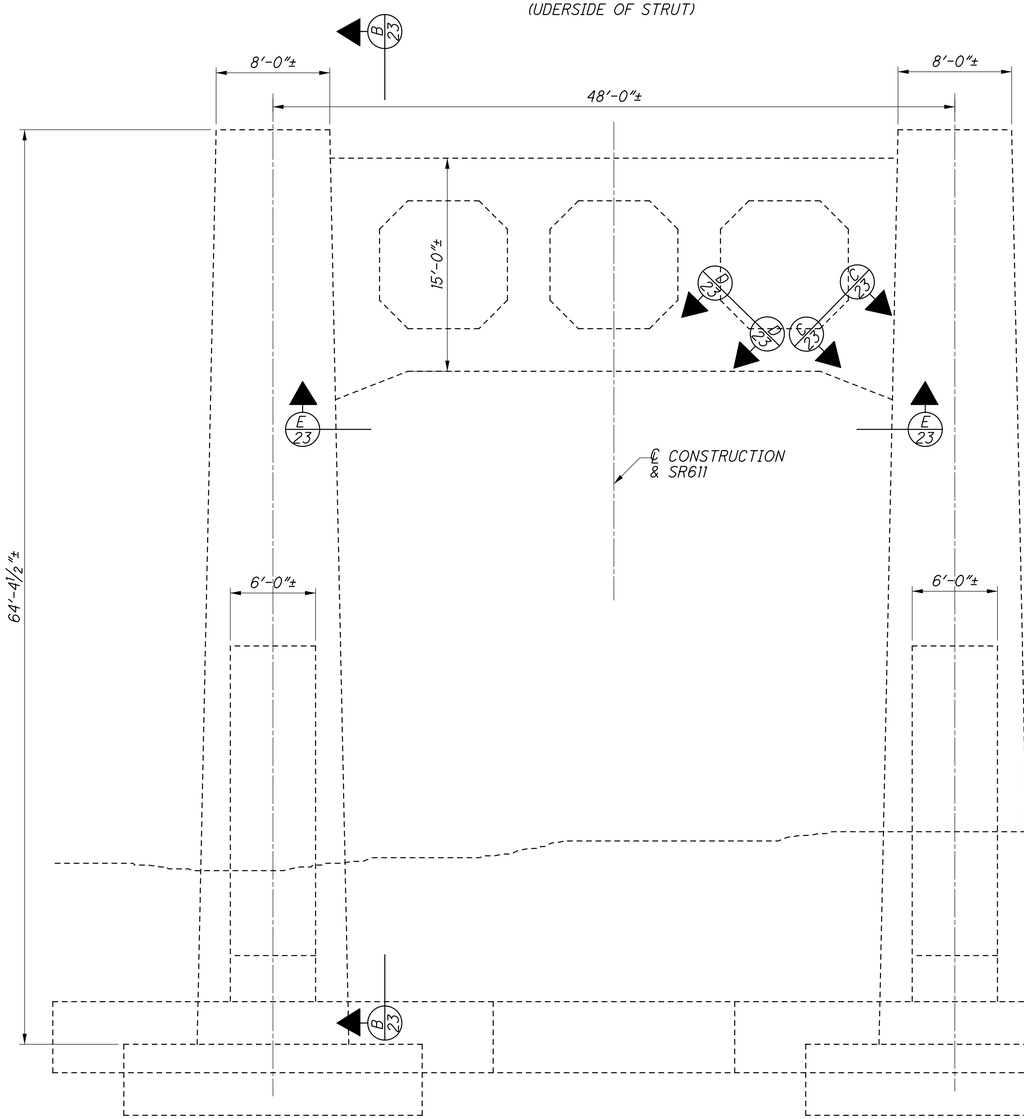
PIER 1 PATCHING - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

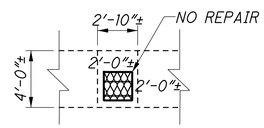
LOR-611-3.44
PID No. 92009



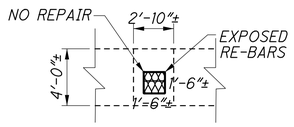
VIEW E-E
(UDERSIDE OF STRUT)



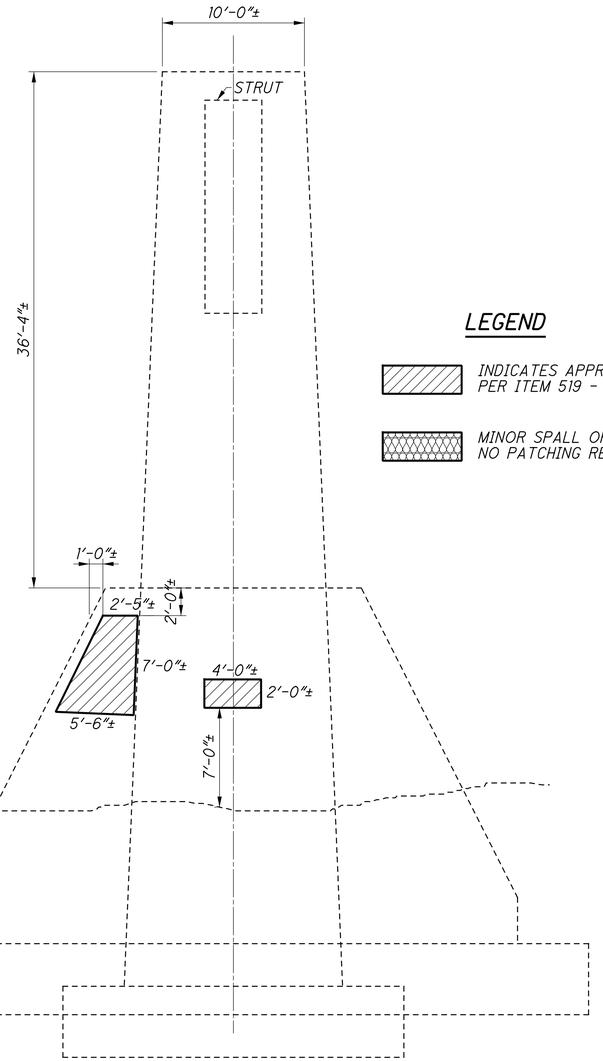
NORTH ELEVATION
PIER 1



VIEW D-D



VIEW C-C



VIEW B-B

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

MINOR SPALL OR DELAMINATION. NO PATCHING REQUIRED

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SUMMARY OF PIER 1 PATCHING QUANTITIES: SEE SHEET 22/189.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2013.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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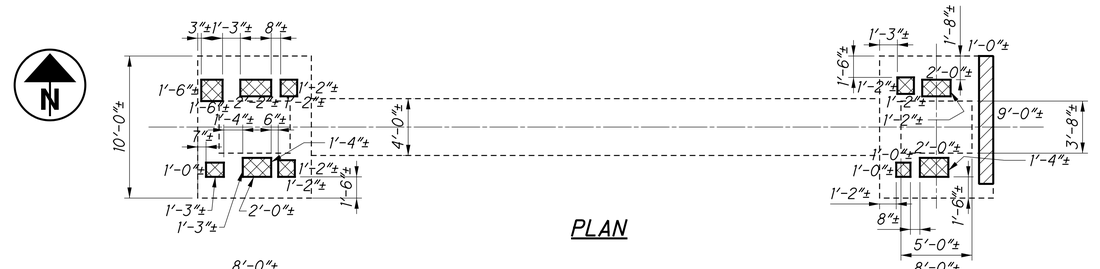
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

PIER 1 PATCHING - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

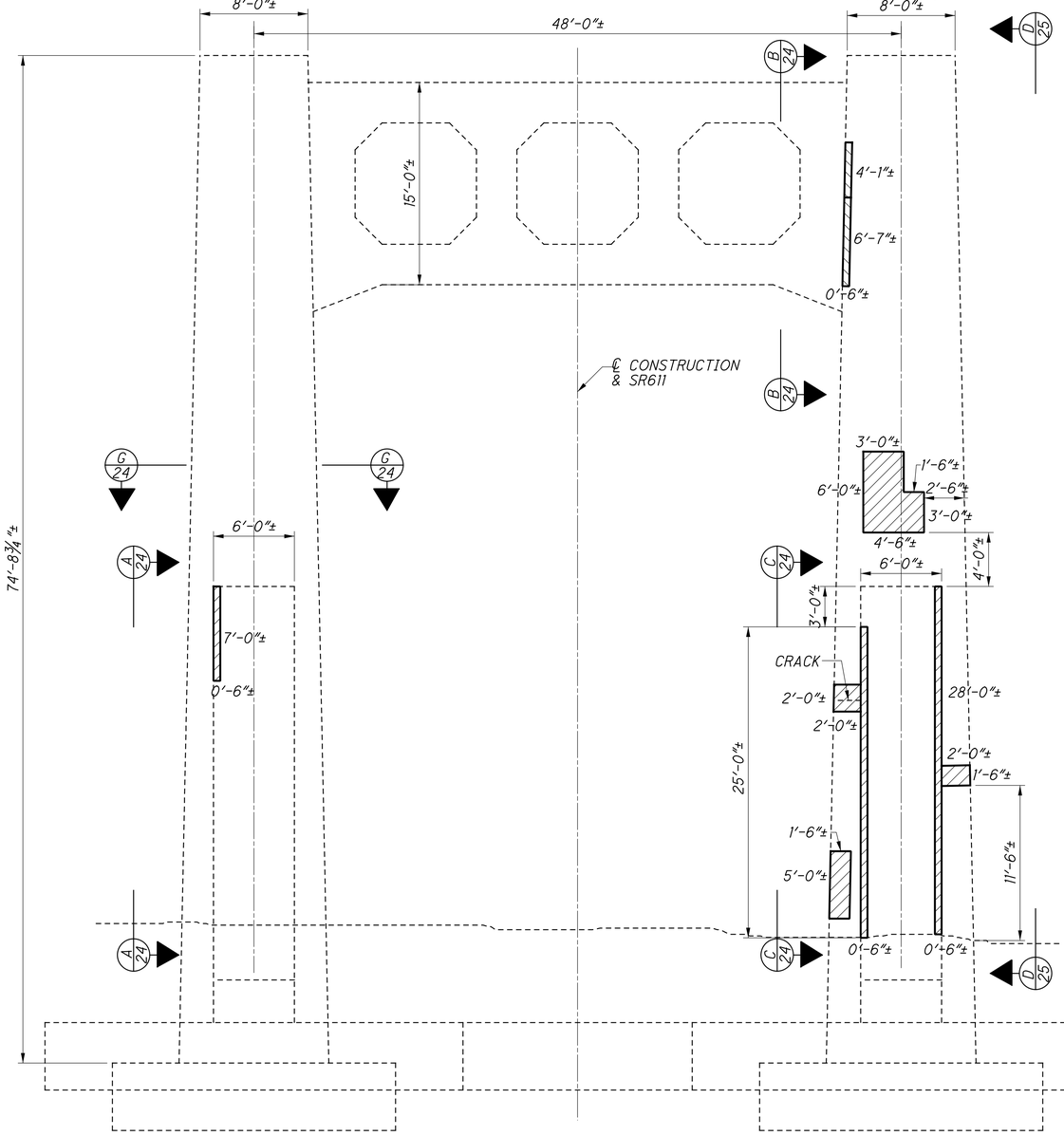
LOR-611-3.44
PID No. 92009

23/189

68/234



PLAN



SOUTH ELEVATION PIER 2

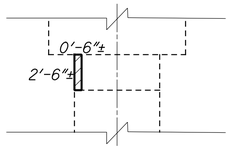
LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

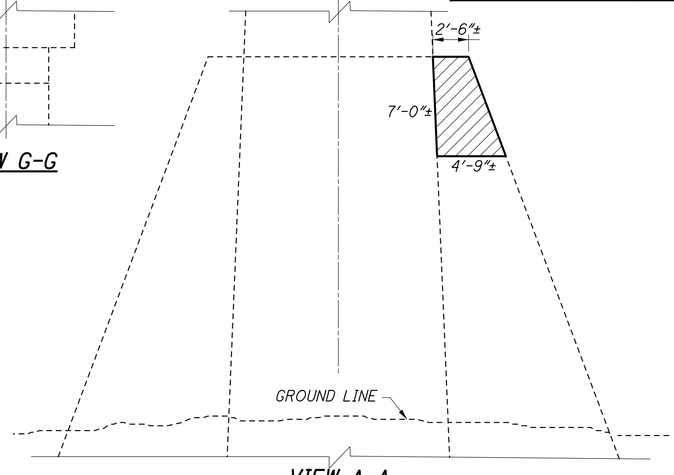
INDICATES APPROXIMATE AREA OF DEPRESSIONS TO BE LEVELED WITH ITEM 530 - STRUCTURE, MISC.: LEVELING DEPRESSIONS IN PIER CAP.

SUMMARY OF PIER 2 PATCHING QUANTITIES

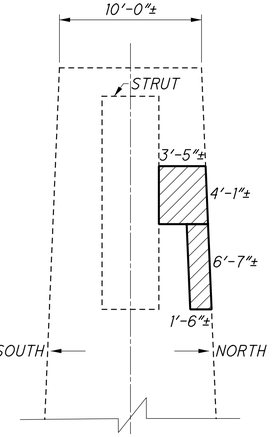
LOCATION	UNIT	MEASURED QUANTITY	ESTIMATED QUANTITY	REPAIR QUANTITY
PLAN	SF	9	11	
SOUTH ELEVATION	SF	73	88	
VIEW A-A	SF	26	32	
VIEW B-B	SF	24	29	
VIEW C-C	SF	206	248	
NORTH ELEVATION	SF	14	16	
VIEW D-D	SF	209	251	
VIEW F-F	SF	6	8	
VIEW G-G	SF	2	3	
VIEW H-H	SF	2	3	
CONTINGENCY	SF	-	138	
SUB TOTAL	**SF**	**571**	**827**	



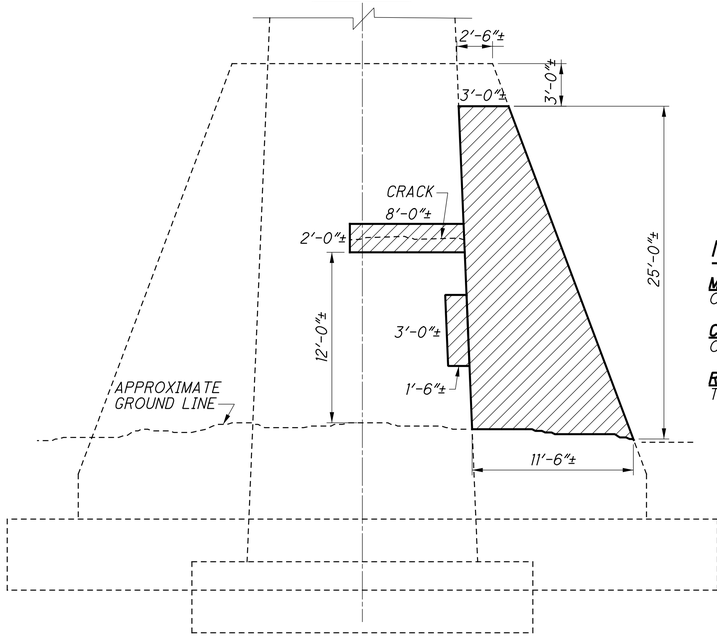
VIEW G-G



VIEW A-A



VIEW B-B



VIEW C-C

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

REPAIR QUANTITY TO BE FILLED IN BY THE PROJECT ENGINEER.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

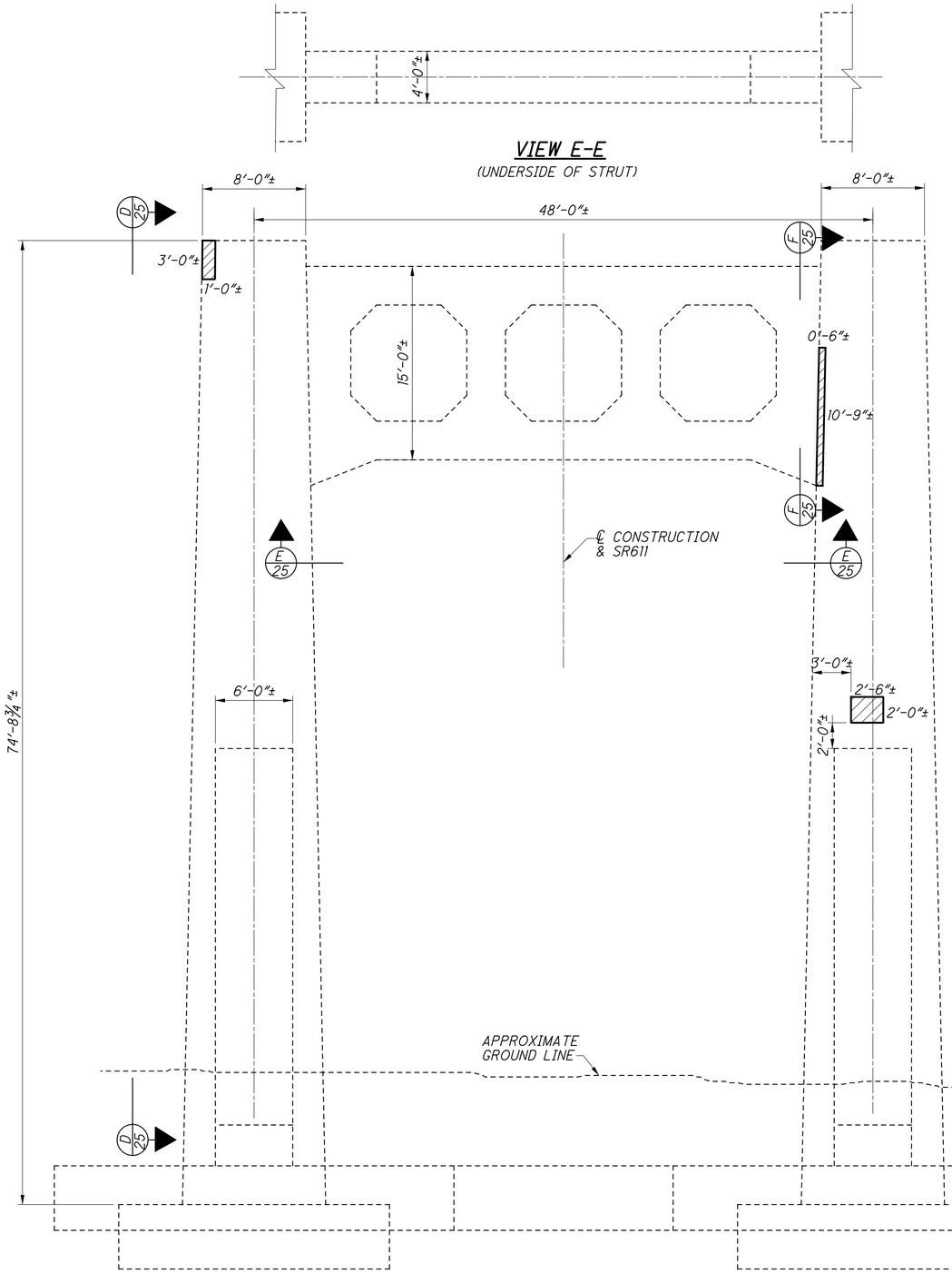
DESIGNED KAK | DRAWN TWH | CHECKED BLN | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

PIER 2 PATCHING - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

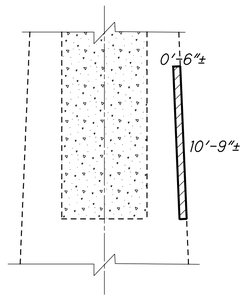
24/189

69/234

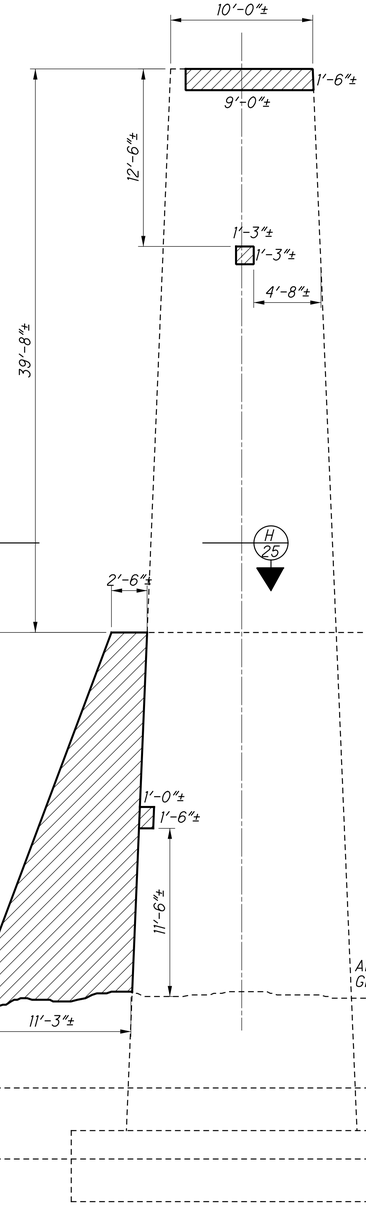


VIEW E-E
(UNDERSIDE OF STRUT)

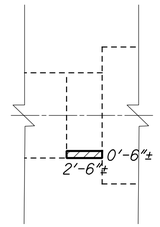
NORTH ELEVATION
PIER 2



VIEW F-F



VIEW D-D



VIEW H-H

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

VIEW D-D: FOR LOCATION, SEE ALSO SHEET 24/189.

SUMMARY OF PIER 2 PATCHING QUANTITIES: SEE SHEET 24/189.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

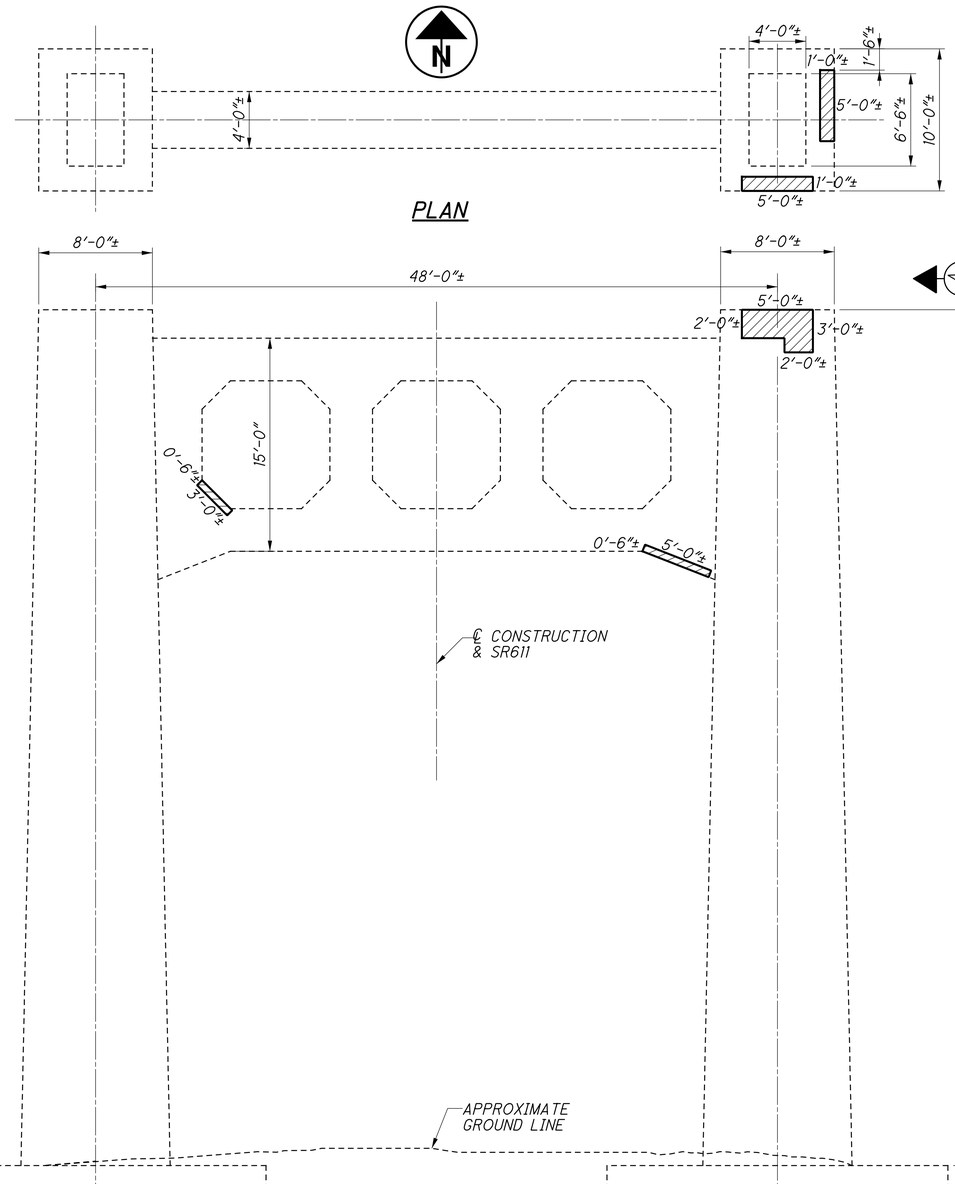
DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

PIER 2 PATCHING - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

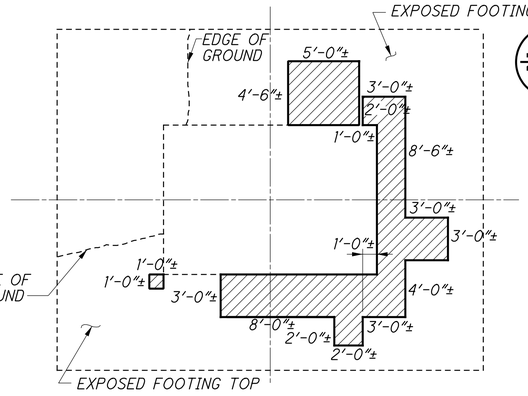
LOR-611-3.44
PID No. 92009

25/189

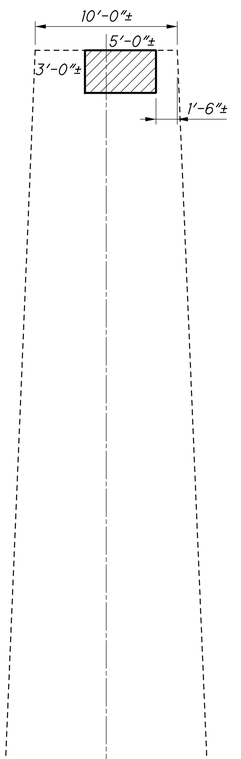
70/234

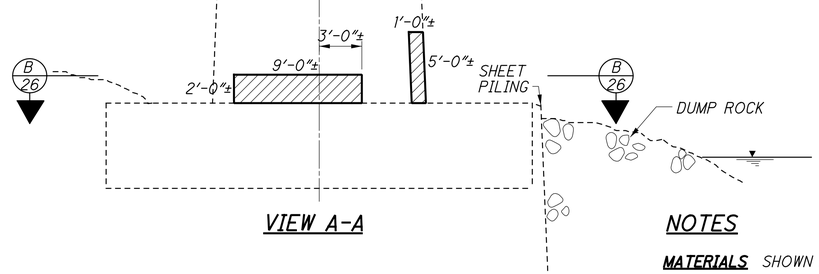


SOUTH ELEVATION
PIER 3



VIEW B-B





VIEW A-A

SUMMARY OF PIER 3 PATCHING QUANTITIES

LOCATION	UNIT	MEASURED QUANTITY	ESTIMATED QUANTITY	REPAIR QUANTITY
SOUTH ELEVATION	SF	16	20	
PLAN TOP OF CAP	SF	10	12	
VIEW A-A	SF	38	46	
VIEW B-B	SF	103	124	
NORTH ELEVATION	SF	50	60	
VIEW C-C	SF	12	15	
VIEW D-D	SF	71	86	
VIEW E-E	SF	5	6	
VIEW F-F	SF	20	24	
VIEW G-G	SF	5	6	
CONTINGENCY	SF	-	73	
SUB TOTAL	**SF**	**330**	**479**	

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

REPAIR QUANTITY TO BE FILLED IN BY THE PROJECT ENGINEER.

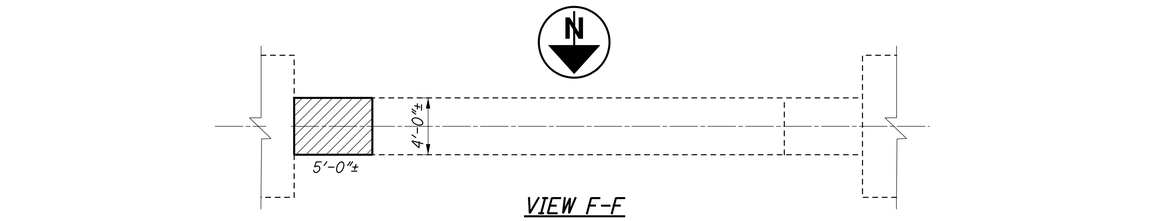
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

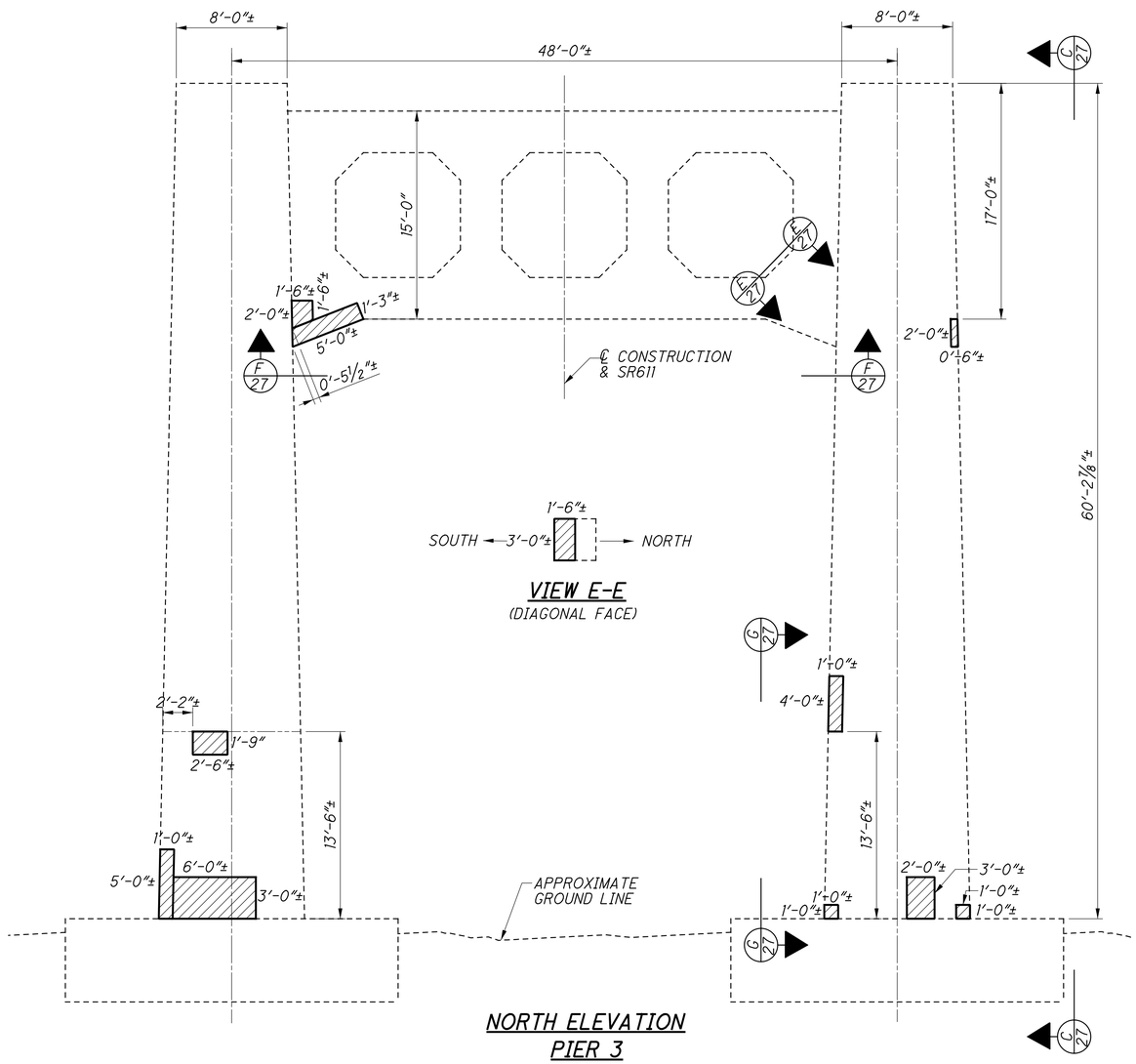
PIER 3 PATCHING - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048P1003.dgn 9/28/2015 11:24:57 AM CraigBanghart

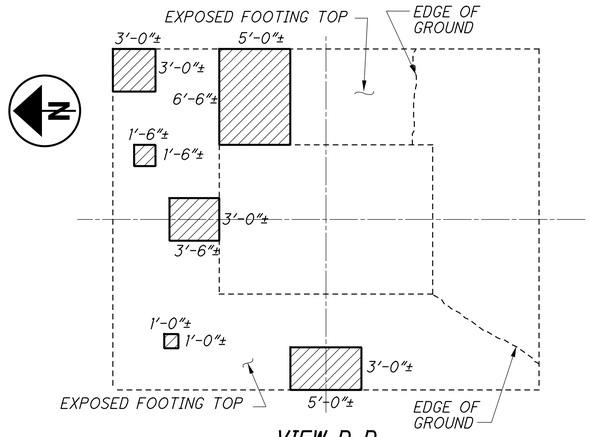


VIEW F-F

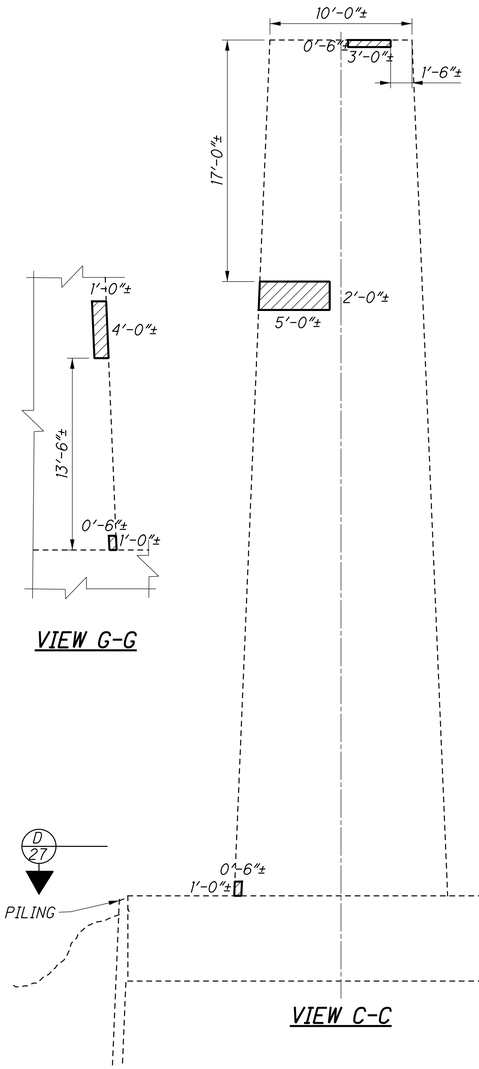


VIEW E-E
(DIAGONAL FACE)

NORTH ELEVATION
PIER 3



VIEW D-D



VIEW G-G

VIEW C-C

LEGEND

INDICATES APPROXIMATE AREA TO BE REPAIRED PER ITEM 519 - PATCHING CONCRETE STRUCTURE.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SUMMARY OF PIER 3 PATCHING QUANTITIES: SEE SHEET 26/189.

CONCRETE DETERIORATION INVENTORY: OCTOBER 2014.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

PIER 3 PATCHING - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

27/189

72/234

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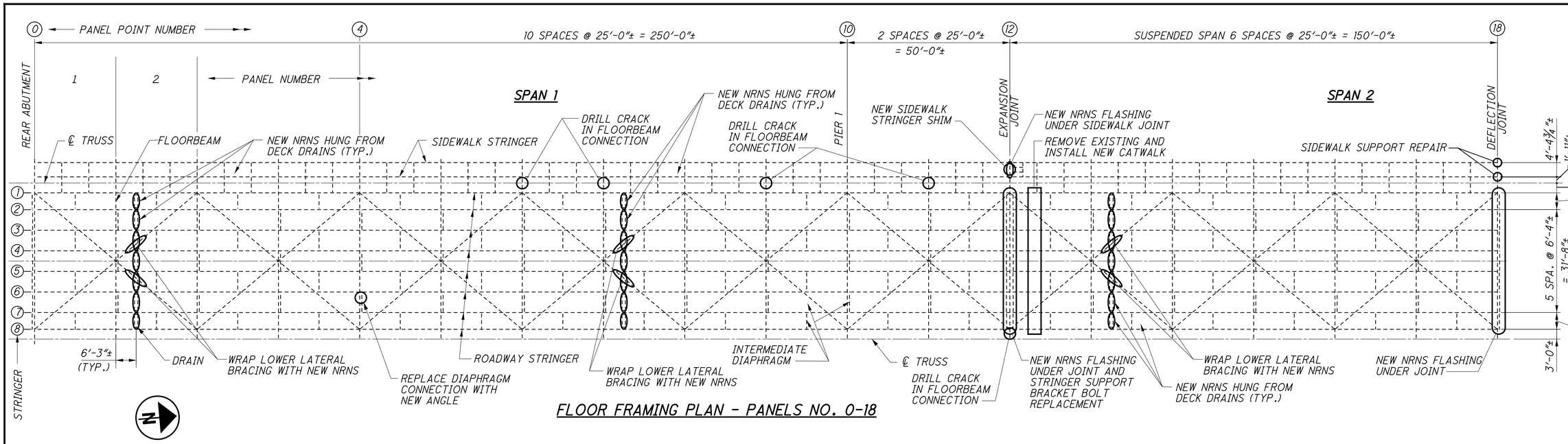
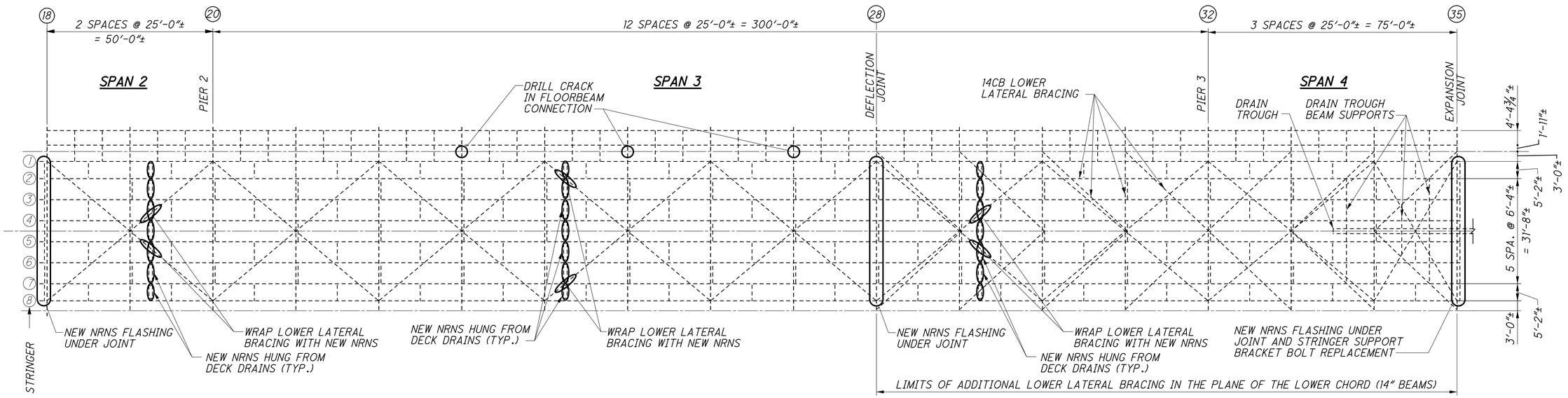


FLOOR FRAMING PLAN - PANELS NO. 0-18



FLOOR FRAMING PLAN - PANELS NO. 18-35

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

FLOORBEAM CONNECTION REPAIR: SEE SHEET 33/189 TO 39/189.

CATWALK DETAILS: SEE SHEETS 41/189 TO 44/189.

NRNS FLASHING: SEE SHEETS 184/189 TO 186/189.

DIAPHRAGM CONNECTION DETAIL: SEE SHEET 32/189.

NRNS: NYLON REINFORCED NEOPRENE SHEETING

SIDEWALK STRINGER SHIM: SEE SHEET 30/189.

STRINGER BEARING BOLT REPLACEMENT: SEE SHEET 40/189.

SIDEWALK SUPPORT REPAIR: SEE SHEET 31/189.

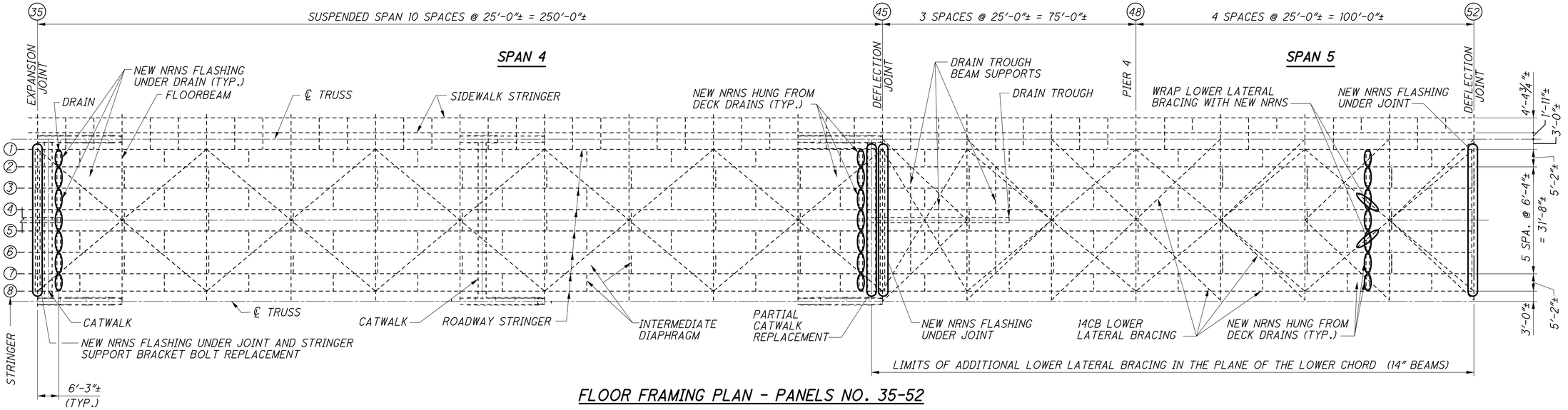
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN TWH | CHECKED BLN | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

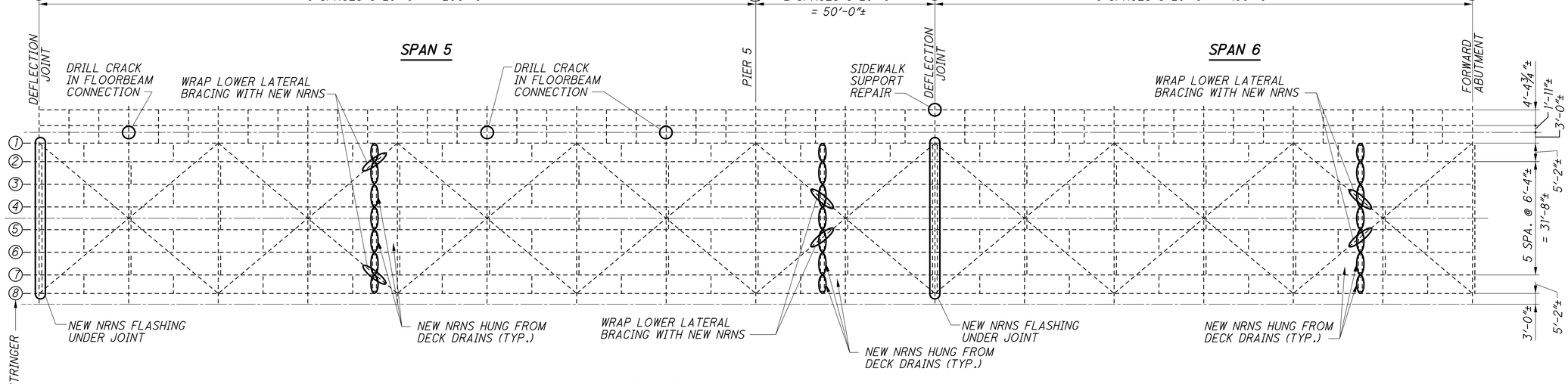
FRAMING PLAN - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



FLOOR FRAMING PLAN - PANELS NO. 35-52



FLOOR FRAMING PLAN - PANELS NO. 52-68

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

SIDEWALK SUPPORT REPAIR: SEE SHEET 31/189.

FLOORBEAM CONNECTION REPAIR: SEE SHEET 33/189 TO 39/189.

CATWALK DETAILS: SEE SHEETS 45/189 TO 47/189.

NRNS FLASHING: SEE SHEETS 184/189 TO 186/189.

NRNS: NYLON REINFORCED NEOPRENE SHEETING

STRINGER BEARING BOLT REPLACEMENT: SEE SHEET 40/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

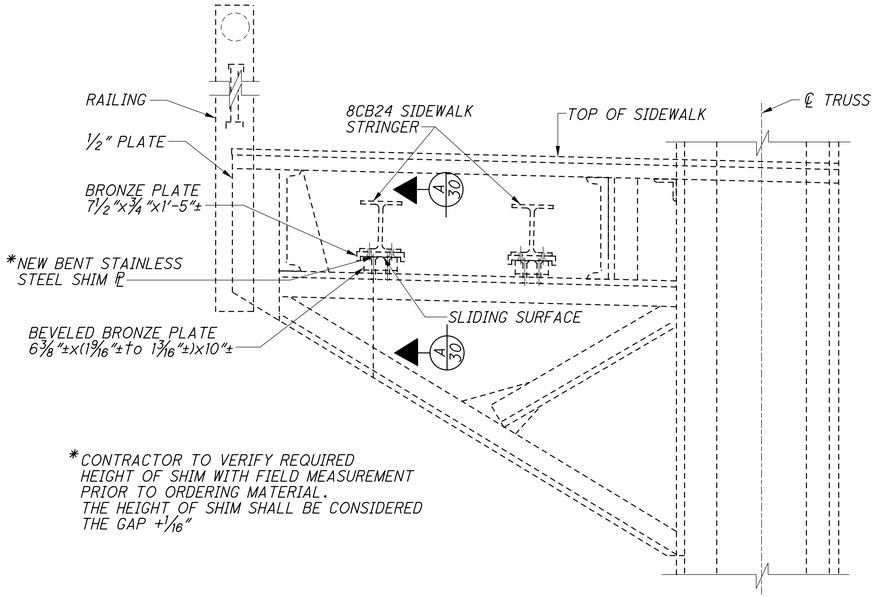
DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

FRAMING PLAN - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

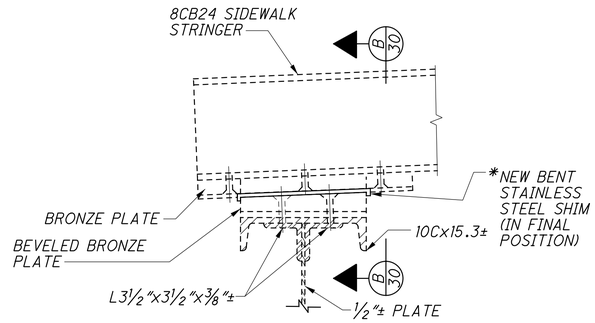
LOR-611-3.44
PID No. 92009

29/189

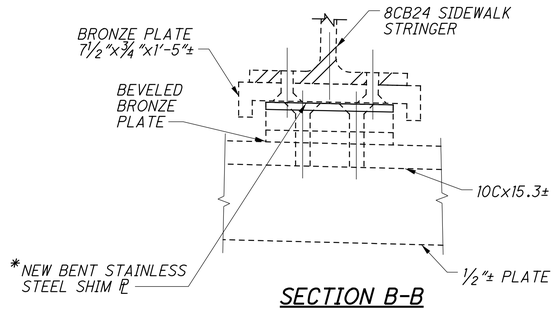
74/234



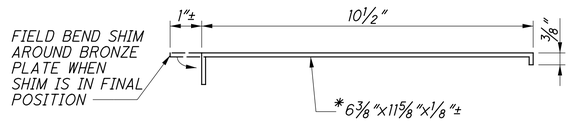
TRANSVERSE SECTION AT PANEL POINT 12



VIEW A-A



SECTION B-B



BENT STAINLESS STEEL SHIM PLATE DETAIL

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

ITEM SPECIAL - STRUCTURE MISC.: SHIM SIDEWALK STRINGER BEARING
SEE GENERAL NOTE SHEET 8/189 .

FOR LOCATION: *SEE FRAMING PLAN SHEET* 28/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

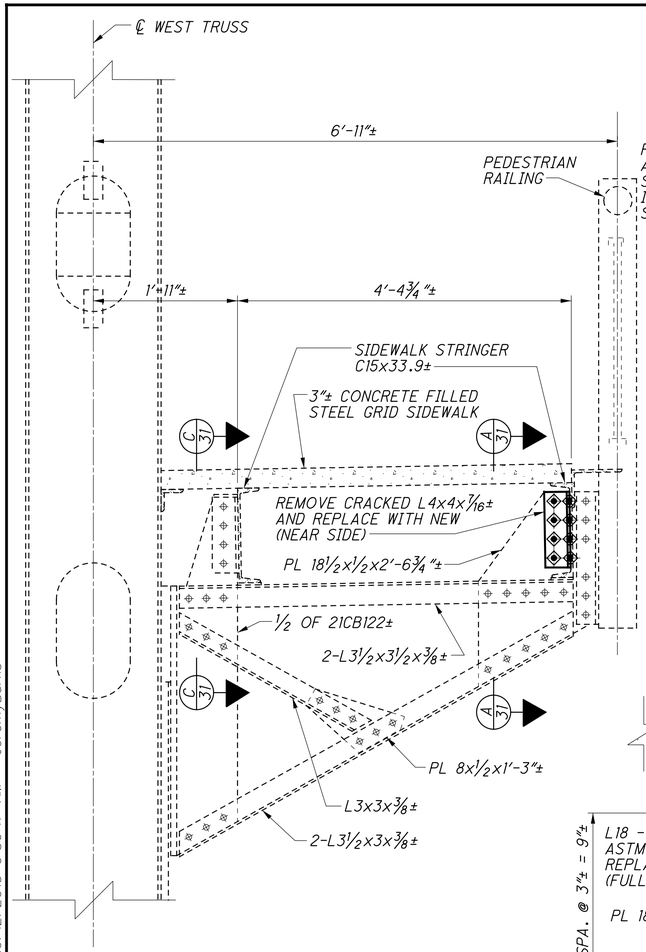
DESIGNED DAP | DRAWN JLS | CHECKED KAK | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

SIDEWALK STRINGER BEARING SHIM AT L12 WEST
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

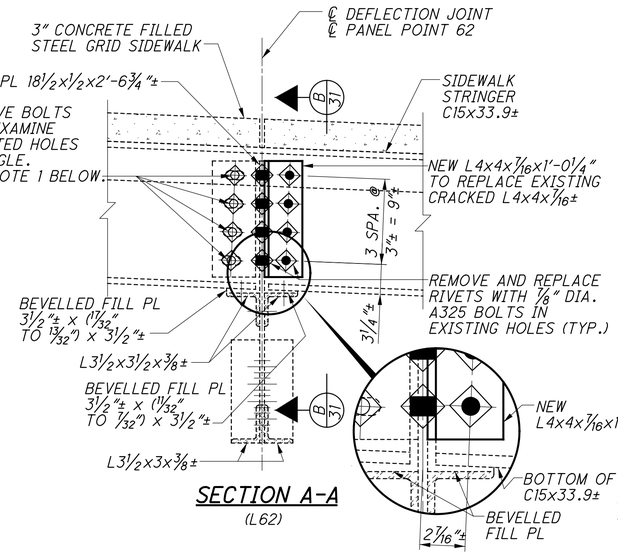
30/189

75/234



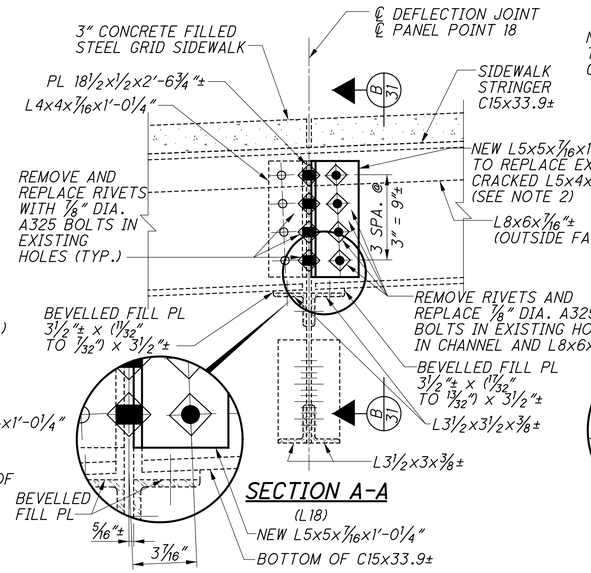
L18 & L62 WEST SIDEWALK ELEVATION

(L62 SHOWN - LOOKING SOUTH)



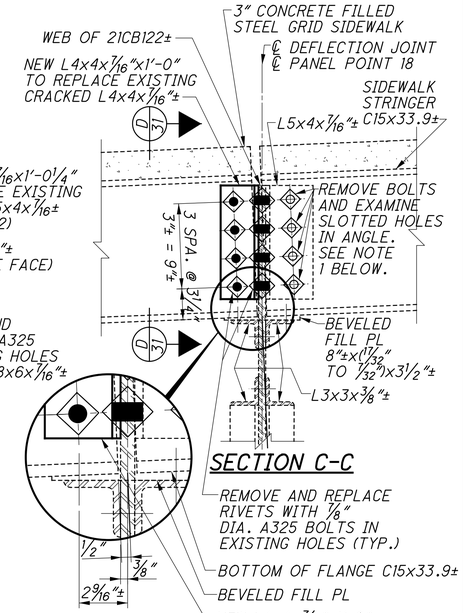
SECTION A-A

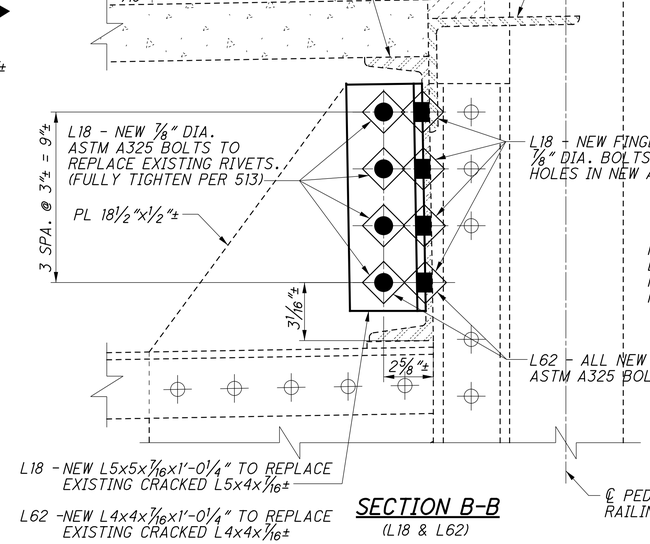
(L62)



SECTION A-A

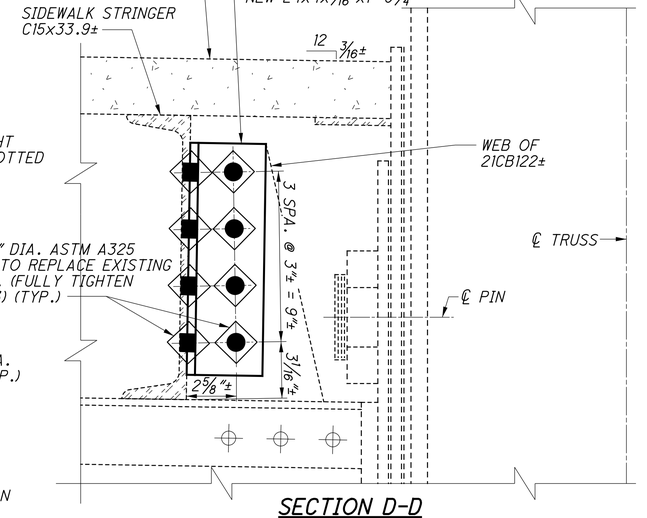
(L18)



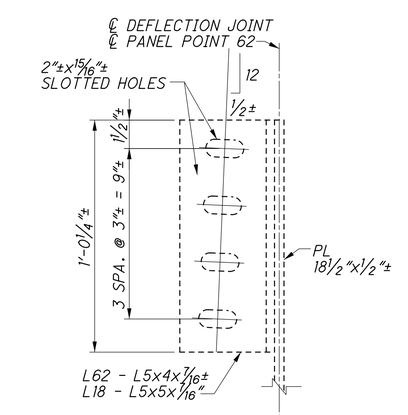


SECTION B-B

(L18 & L62)



SECTION D-D



SLOTTED HOLE DETAIL IN EXISTING AND PROPOSED ANGLES

(L62 SHOWN; L18 NEW AND OPPOSITE HAND)

NOTES

NOTE 1 - EXISTING SLOTTED HOLES INSPECTION: AFTER CAREFUL REMOVAL OF THE EXISTING BOLTS, THE ENGINEER SHALL INSPECT THE EXPOSED SLOTTED HOLES IN THE L5x4x7/16". THE HOLES SHOULD BE IN CLOSE CONFORMANCE TO THOSE SHOWN ON THE "SLOTTED HOLE DETAIL" ON THIS SHEET. HOLES WARPED OR WORN BY THE EXISTING CONNECTORS, OR HOLES WITH CRACKS ALONG THE EDGE SHALL BE REASON TO REPLACE THE ANGLE. THE CONTRACTOR SHALL REMOVE ANY PACK RUST INHIBITING MOVEMENT OF THE BOLTS WITHIN THE SLOTTED HOLES.

IF THE EXISTING ANGLE IS FOUND TO BE ACCEPTABLE TO THE ENGINEER FOR REUSE, THE EXISTING BOLTS SHALL BE REINSTALLED TO A FINGER TIGHT CONDITION.

IF THE EXISTING ANGLE IS DEEMED TO BE REPLACED, THE CONTRACTOR SHALL FURNISH A NEW ANGLE AS DETAILED ON THIS SHEET. THE ANGLE SHALL BE FABRICATED IN ACCORDANCE WITH 513-LEVEL UF. THE FURNISHING, FABRICATION, AND INSTALLATION OF A NEW ANGLE SHALL BE CONSIDERED INCIDENTAL TO THE SIDEWALK SUPPORT REPAIR. THE EXISTING BOLTS SHALL BE REINSTALLED TO A FINGER TIGHT CONDITION.

NOTE 2 - NEW ANGLE WITH SLOTTED HOLES REPLACEMENT: AFTER CAREFUL REMOVAL OF THE EXISTING BOLTS, THE CONTRACTOR SHALL REMOVE ANY ACCUMULATED PACK RUST BETWEEN MEMBERS THAT INHIBITS MOVEMENT OF THE BOLTS IN THE SLOTTED HOLES.

THE NEW ANGLE SHALL BE FABRICATED AND EXISTING FAYING SURFACE PREPARED IN ACCORDANCE WITH "SIDEWALK SUPPORT REPAIR" GENERAL NOTE. NEW CONNECTION BOLTS IN THE NEW SLOTTED HOLES SHALL BE TIGHTENED TO A FINGER TIGHT CONDITION.

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

FRAMING PLAN: SEE SHEET 29/189.

ITEM 513 - STRUCTURAL STEEL, MISC.: SIDEWALK SUPPORT REPAIR:
SEE GENERAL NOTE SHEET 5/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:
SEE GENERAL NOTE SHEET 3/189.

ITEM 202 - REMOVAL MISC.: EXISTING RIVET
SEE GENERAL NOTE SHEET 4/189.

ITEM 514 - FIELD PAINTING, MISC.: FIELD TOUCH-UP OF NEW AND EXISTING PAINT:
SEE GENERAL NOTE SHEET 9/189.

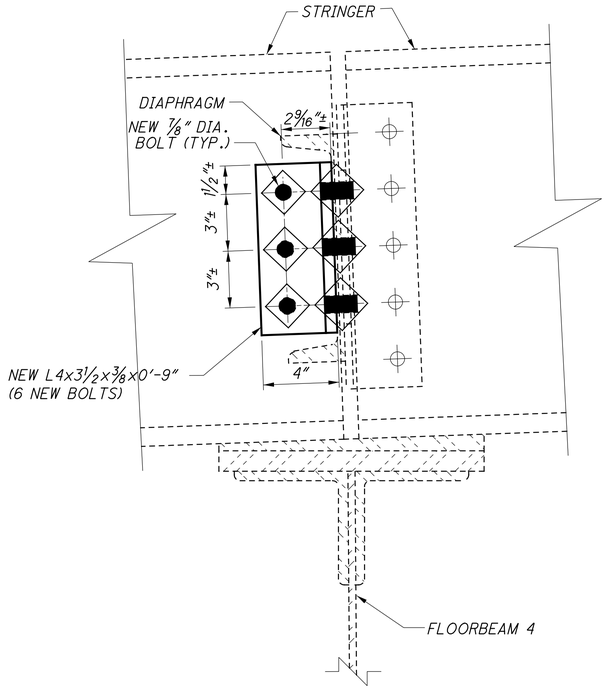
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	SJK	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

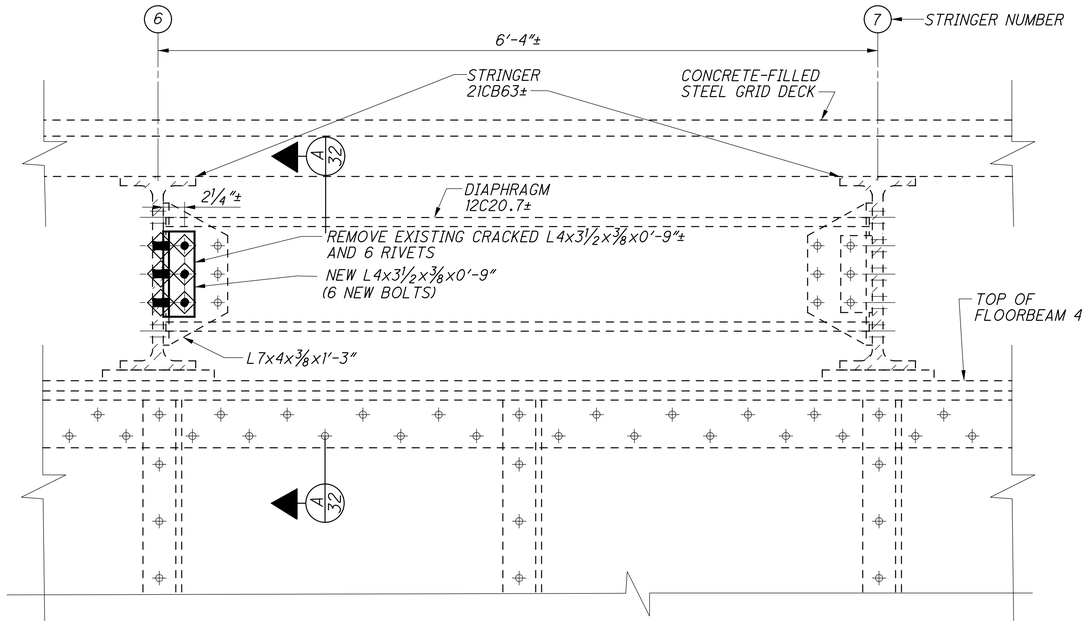
SIDEWALK SUPPORT REPAIR AT L18 WEST AND L62 WEST

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



SECTION A-A



PARTIAL TRANSVERSE SECTION

NOTES

MATERIALS SHOW ARE EXISTING UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

ITEM 513 - STRUCTURAL STEEL, MISC: STRINGER DIAPHRAGM CONNECTION REPAIR: SEE GENERAL NOTE SHEET 5/189.

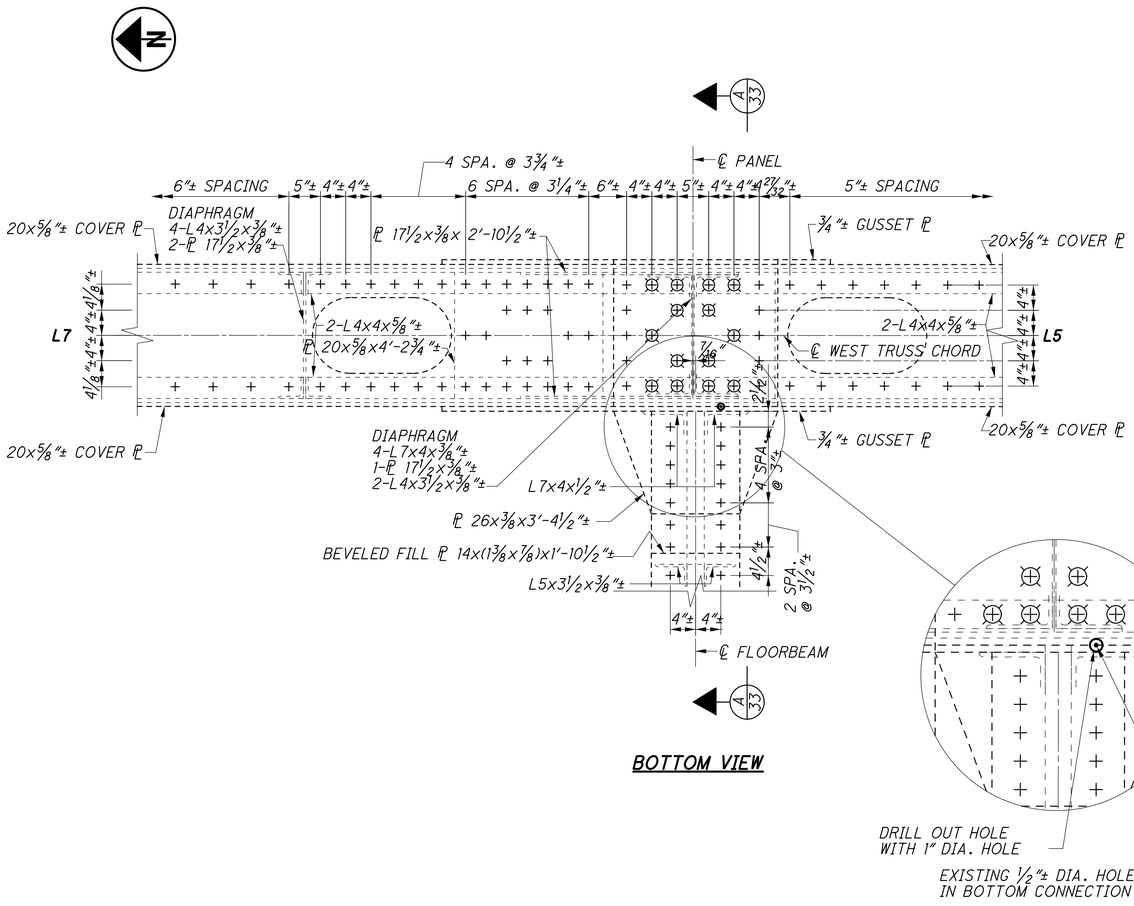
FRAMING PLAN SEE SHEET 28/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

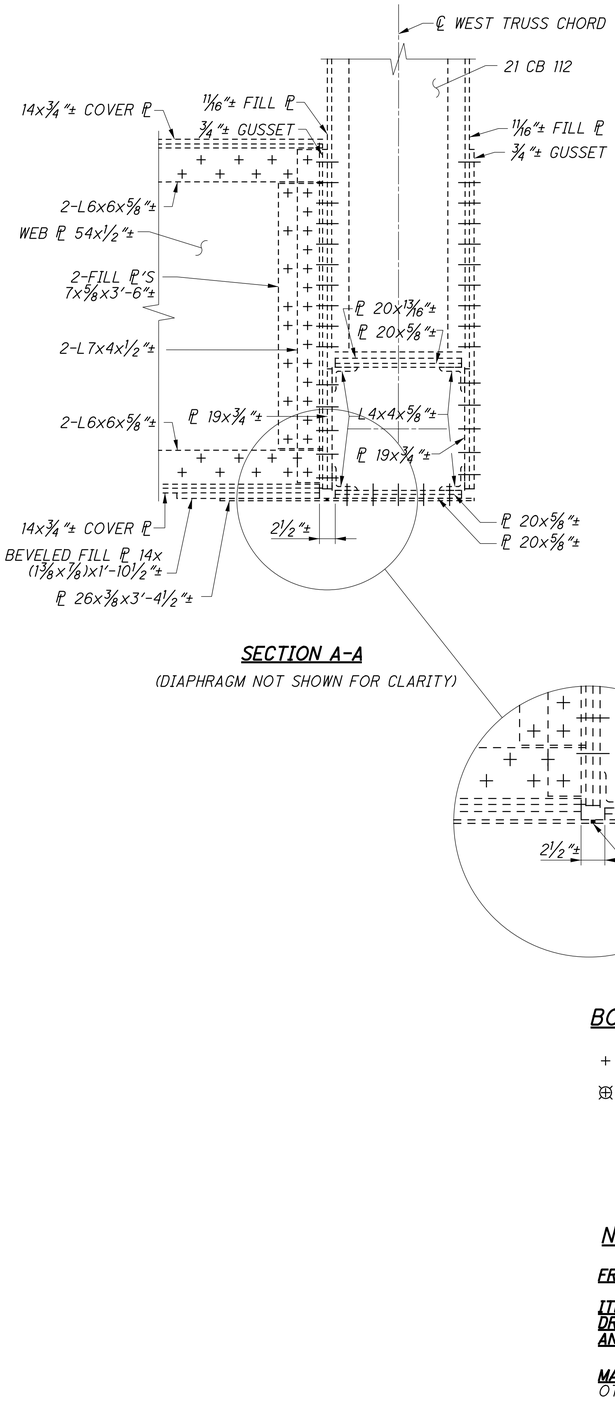
DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

STRINGER DIAPHRAGM CONNECTION REPLACEMENT AT FLOORBEAM 4
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L6 - WEST TRUSS



BOLT & RIVET LEGEND

\+ - EXISTING RIVET

⊠ - COUNTERSUNK BOLT - NEAR SIDE

NOTES

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189.

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	DPH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
ALP		4707443	

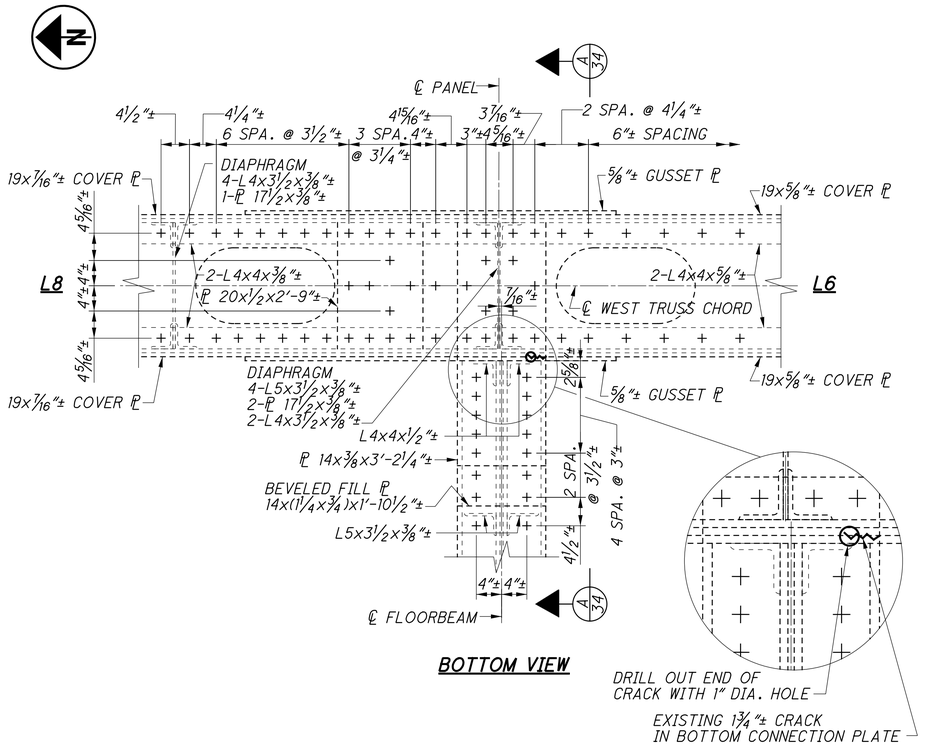
BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L6W

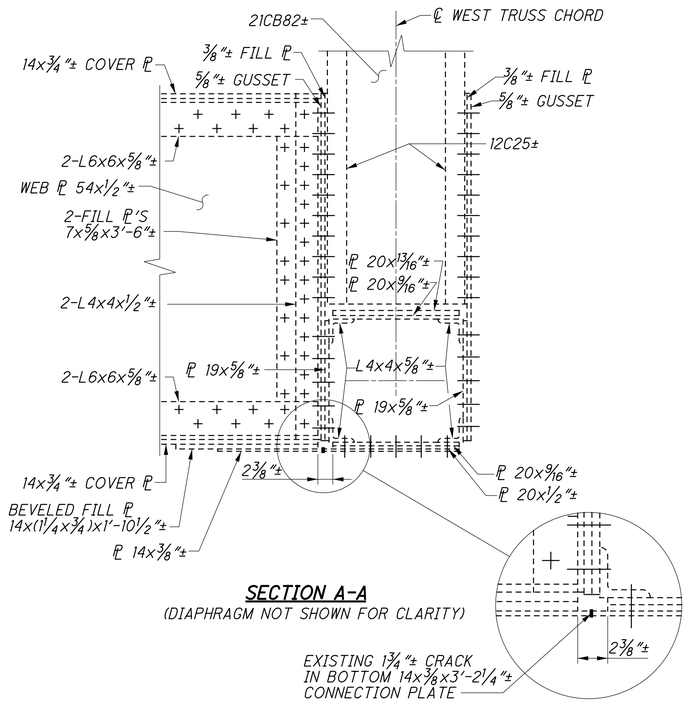
BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

33/189

78/234





L7 - WEST TRUSS

BOLT & RIVET LEGEND

\+ - EXISTING RIVET

NOTES

ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING AND NDT: SEE GENERAL NOTE SHEET 7/189.

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

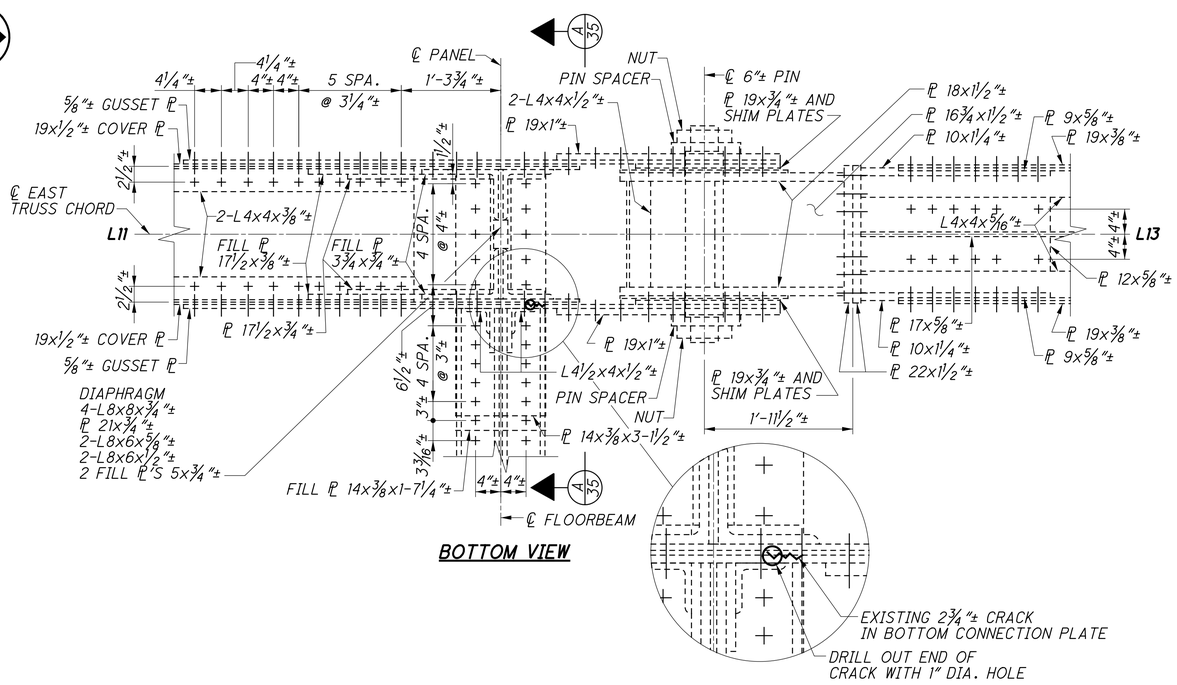
MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

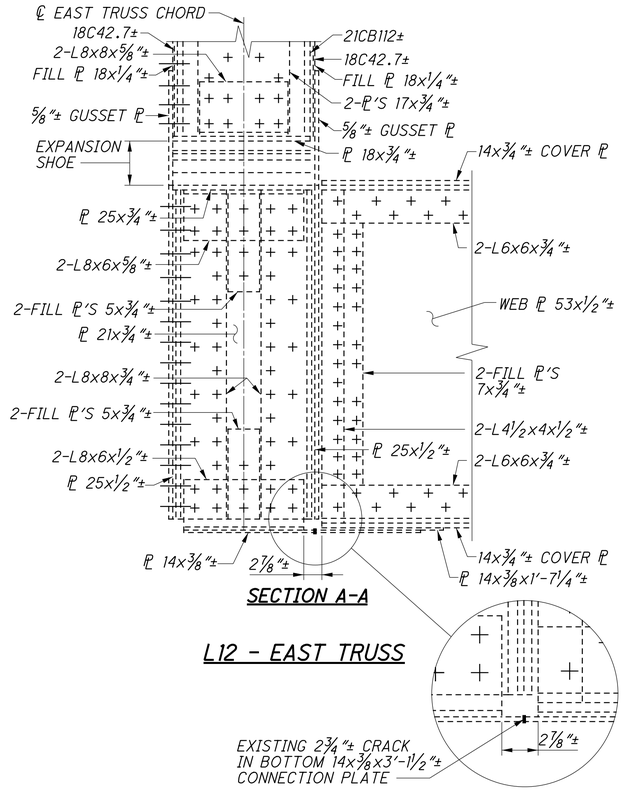
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	SJK	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L7W
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009





BOLT & RIVET LEGEND

+ - EXISTING RIVET

NOTES

ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189.

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

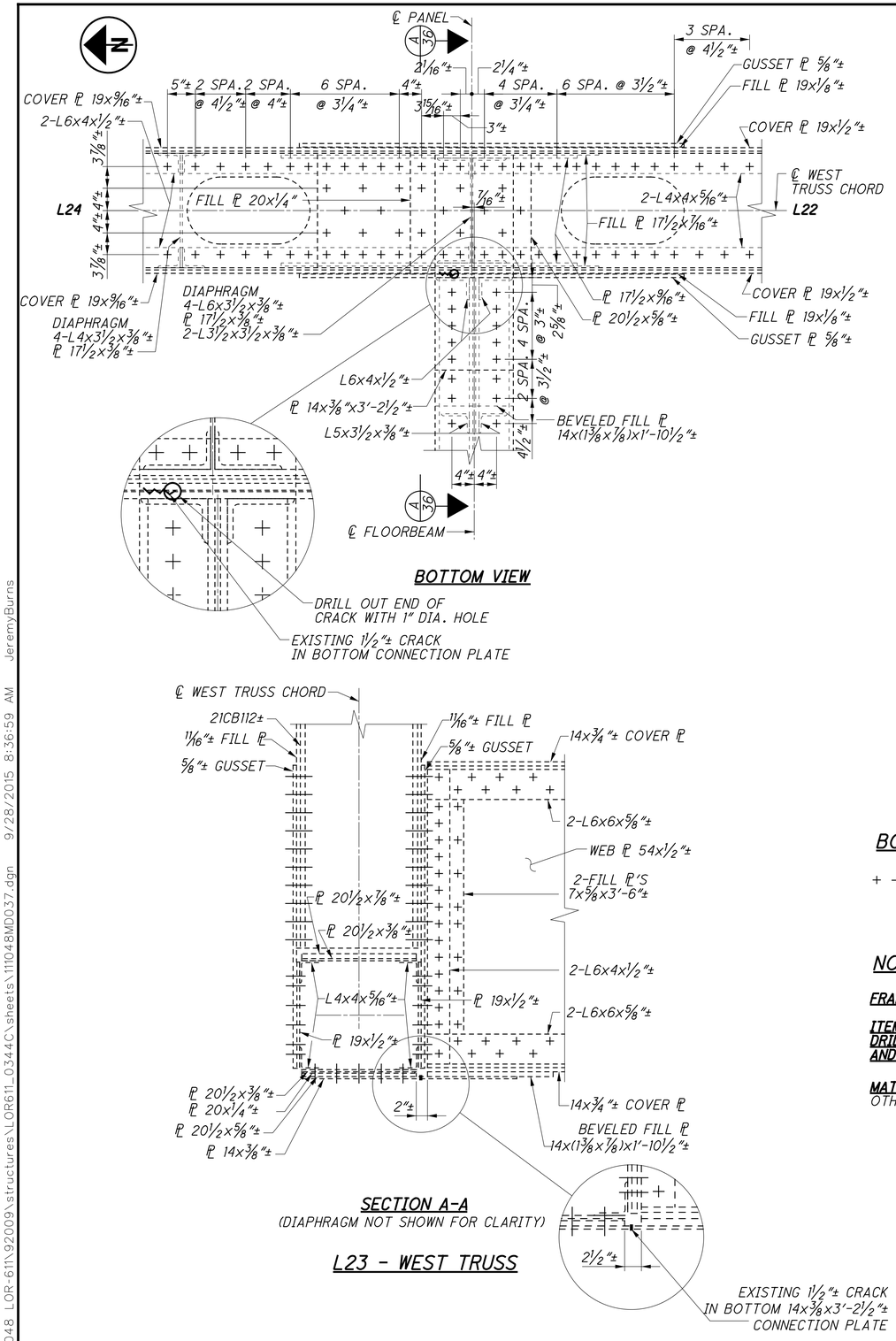
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

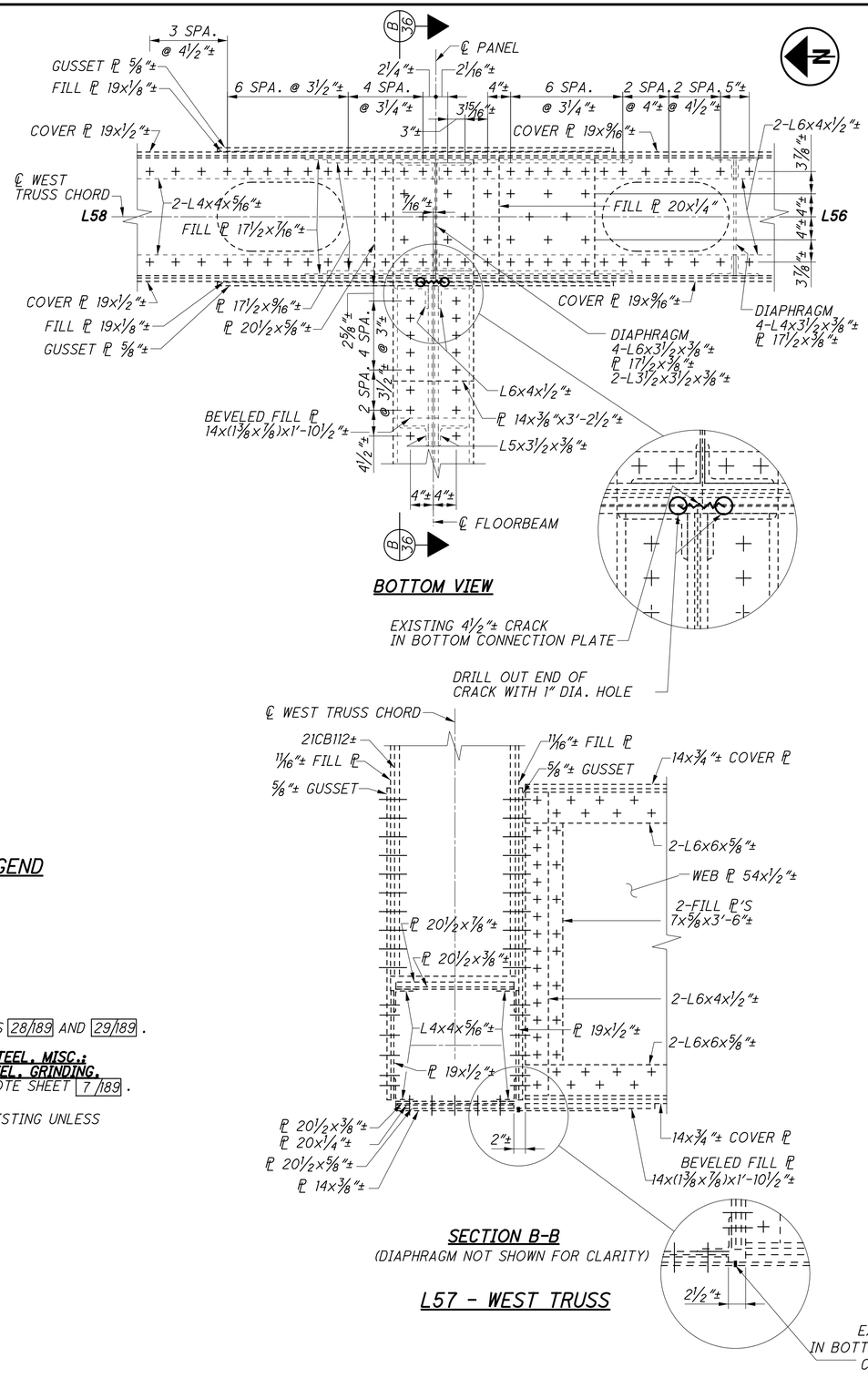
DESIGNED KAK | DRAWN SJK | REVIEWED DLR | DATE 9/25/15
CHECKED ALP | REVISED | STRUCTURE FILE NUMBER 4707443

BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L12E

BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009





BOLT & RIVET LEGEND

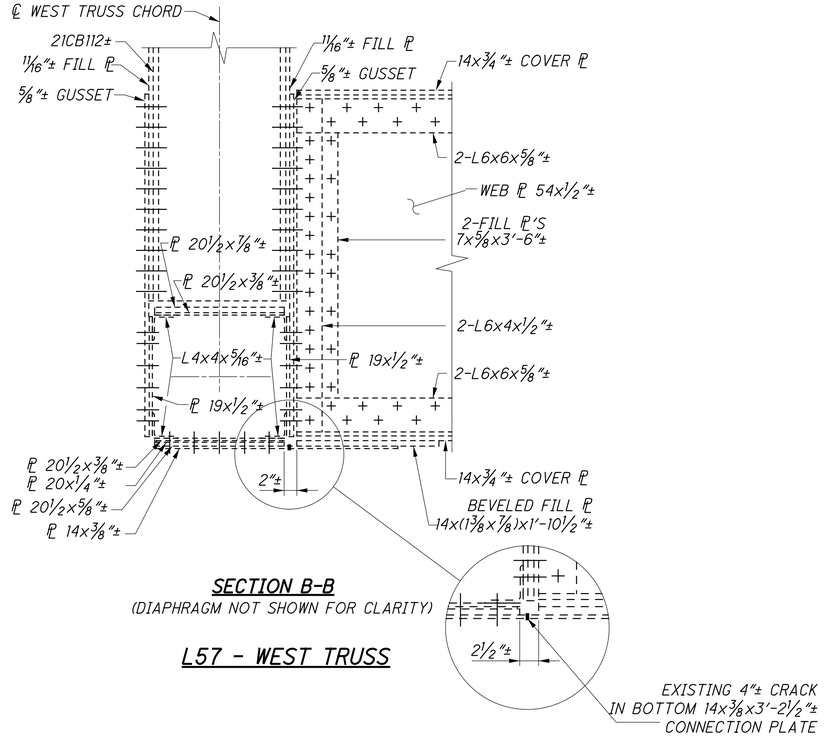
\+ - EXISTING RIVET

NOTES

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189 .

ITEM 513 - STRUCTURAL STEEL, MISC.; DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189 .

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.



RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	SJK	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
ALP		4707443	

BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L23W & L57W

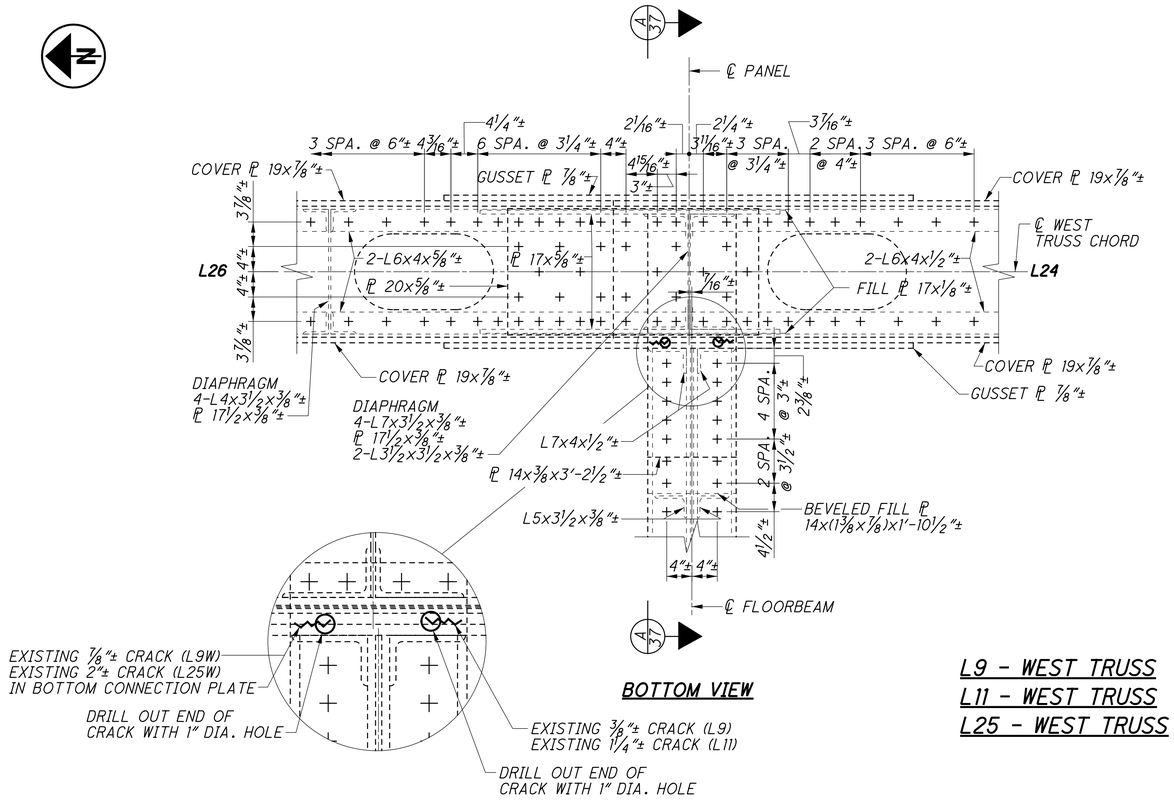
BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

36/189

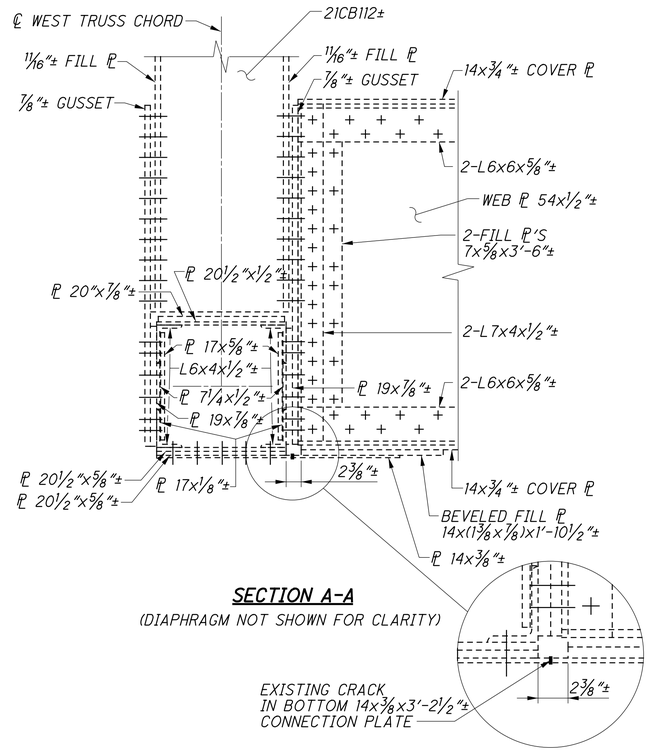
81/234

F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048MD037.dgn 9/28/2015 8:36:59 AM JeremyBurns



BOTTOM VIEW

L9 - WEST TRUSS
L11 - WEST TRUSS
L25 - WEST TRUSS



SECTION A-A
(DIAPHRAGM NOT SHOWN FOR CLARITY)

BOLT & RIVET LEGEND

\+ - EXISTING RIVET

NOTES

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

ITEM 513 - STRUCTURAL STEEL, MISC.; DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189.

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

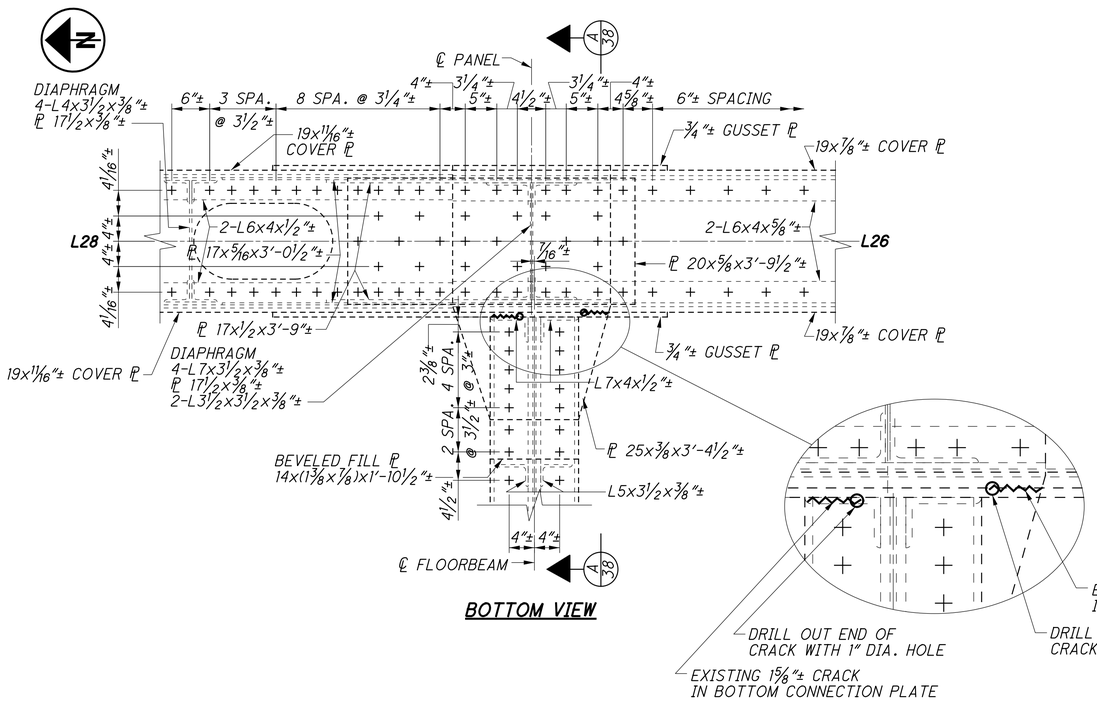
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

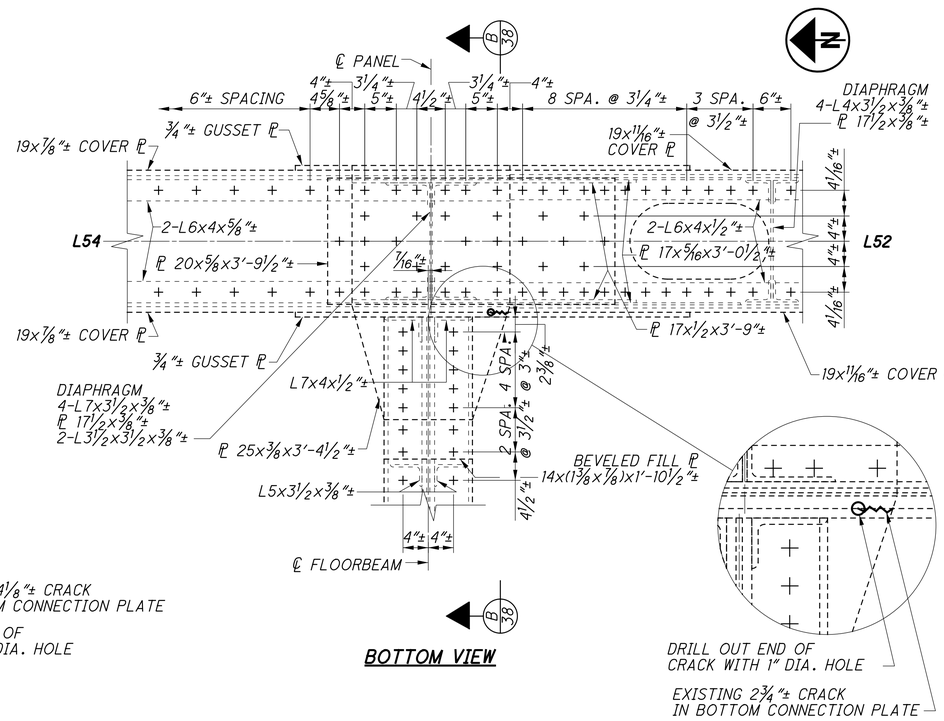
DESIGNED	DRAWN	REVIEWED	DATE
KAK	SJK	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
ALP		4707443	

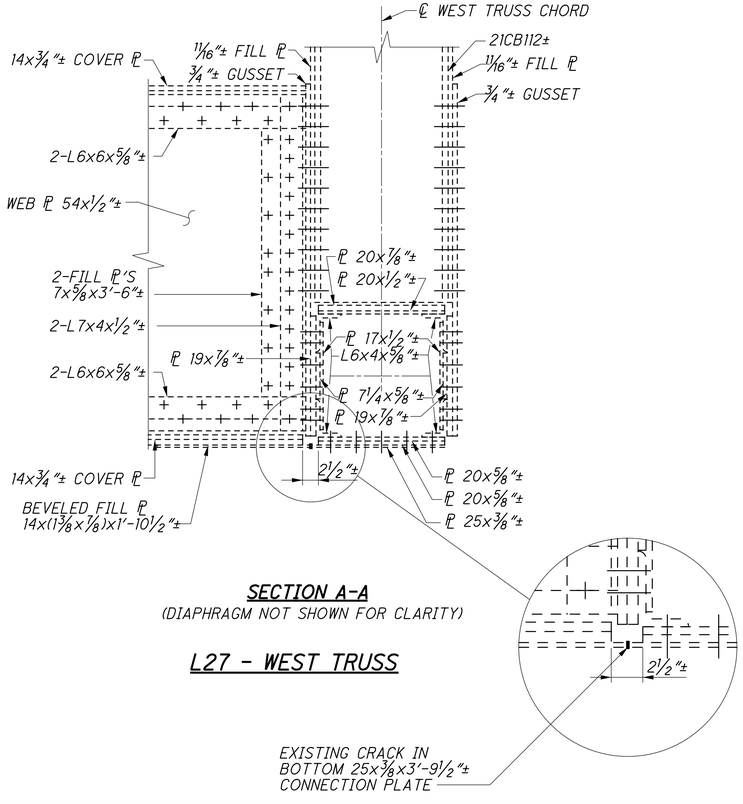
BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L9W, L11W AND L25W
BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

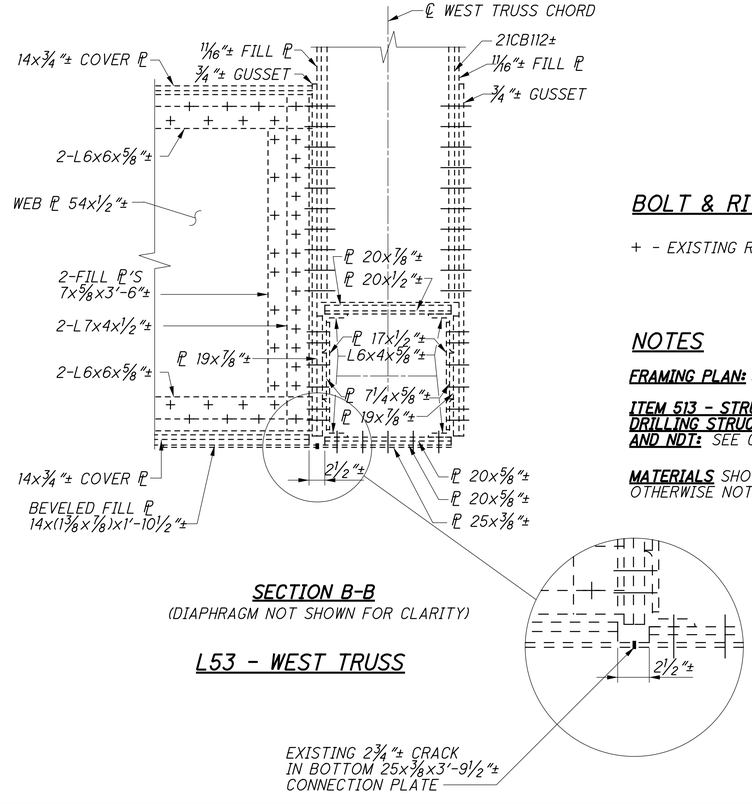
LOR-611-3.44
PID No. 92009

37/189
82/234









BOLT & RIVET LEGEND

+ - EXISTING RIVET

NOTES

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

ITEM 513 - STRUCTURAL STEEL, MISC.; DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189.

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

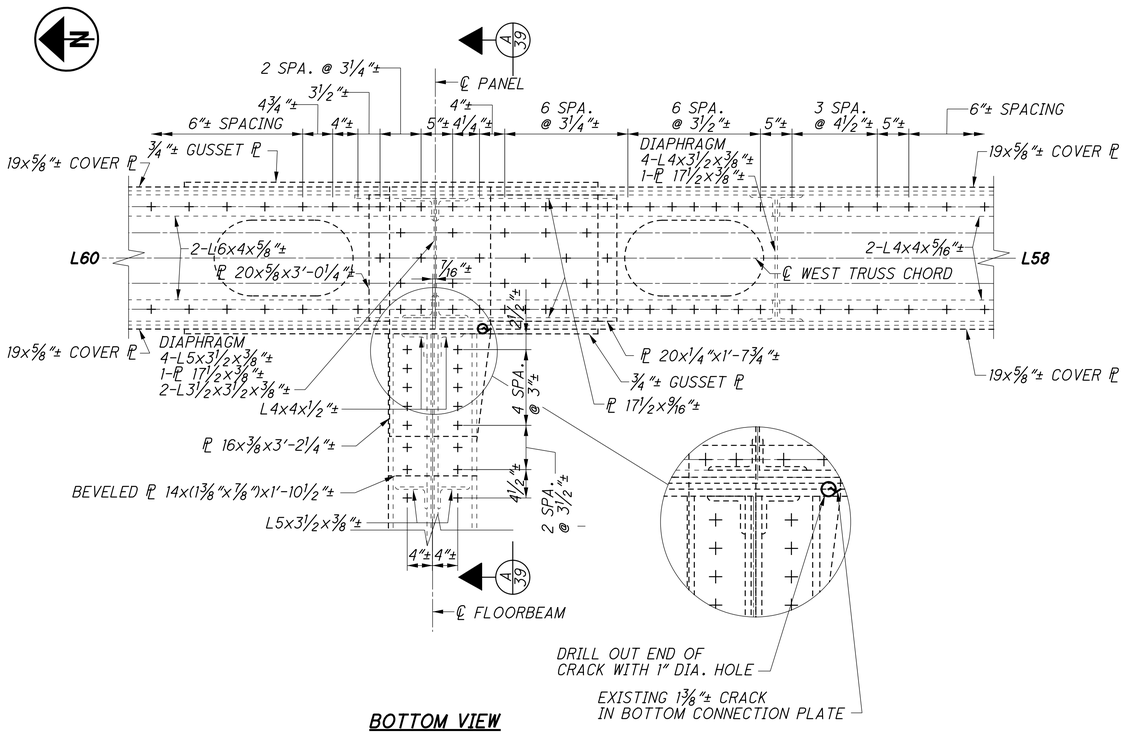
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SJK | REVIEWED DLR | DATE 9/25/15
CHECKED ALP | REVISED | STRUCTURE FILE NUMBER 4707443

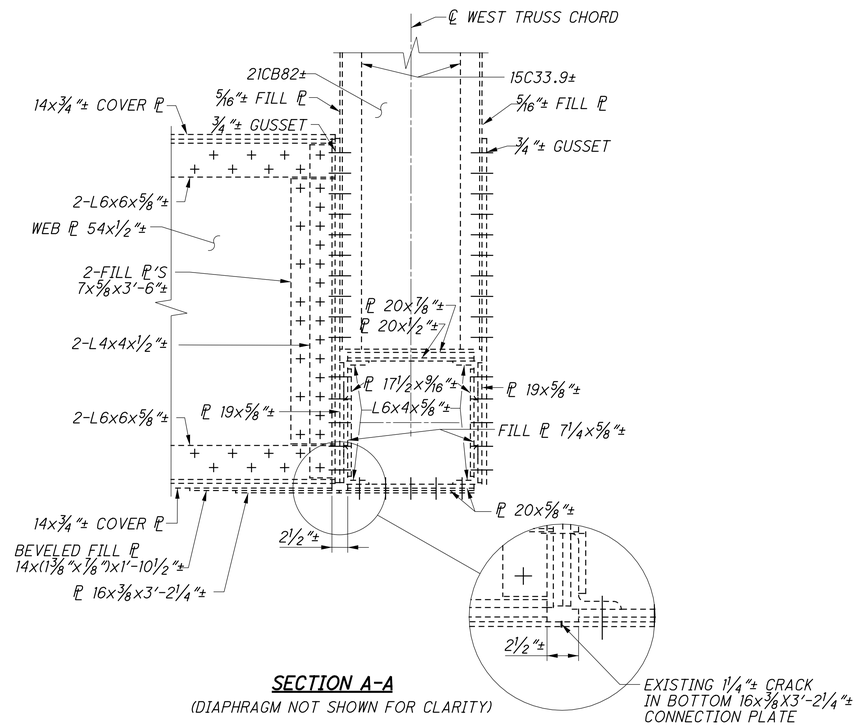
BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L27W & L53W

BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



BOTTOM VIEW



SECTION A-A

(DIAPHRAGM NOT SHOWN FOR CLARITY)

L59 - WEST TRUSS

BOLT & RIVET LEGEND

+ - EXISTING RIVET

NOTES

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189.

ITEM 513 - STRUCTURAL STEEL, MISC.; DRILLING STRUCTURAL STEEL, GRINDING, AND NDT: SEE GENERAL NOTE SHEET 7/189.

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	DPH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
ALP		4707443	

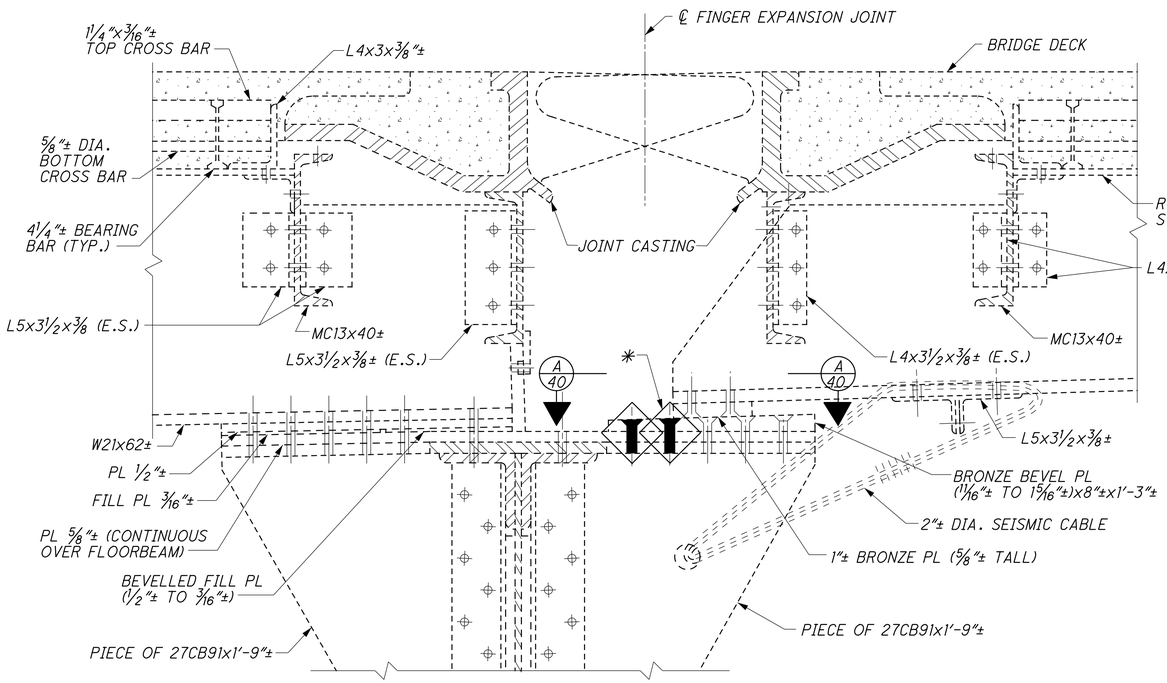
BOTTOM FLOORBEAM CONNECTION PLATE REPAIR - L59W

BRIDGE NO. LOR-611-0358
OVER BLACK RIVER

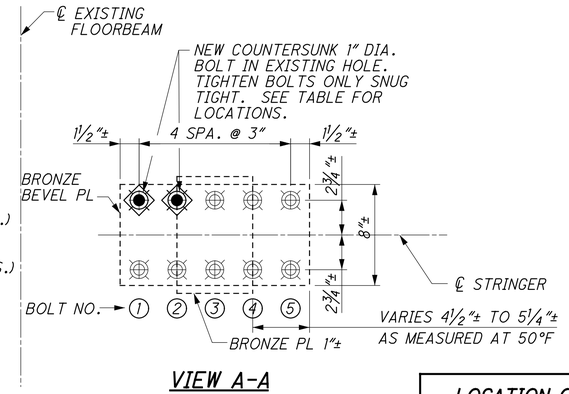
LOR-611-3.44
PID No. 92009

39/189

84/234



FLOORBEAM 12
(INTERIOR STRINGER SHOWN)

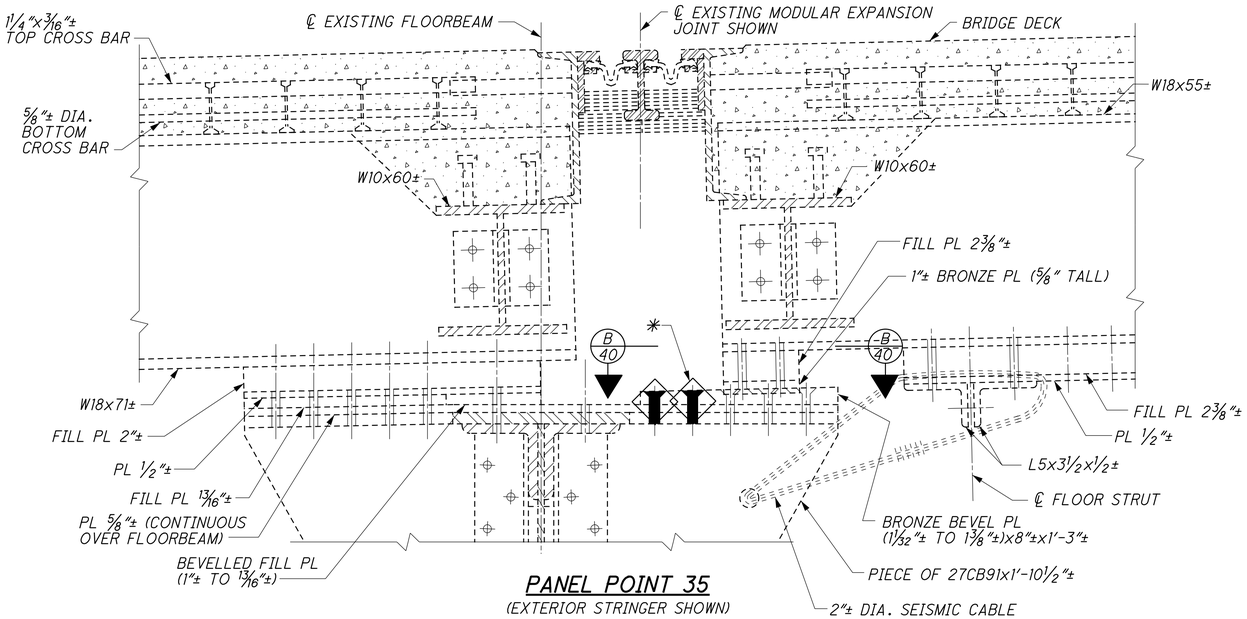


VIEW A-A

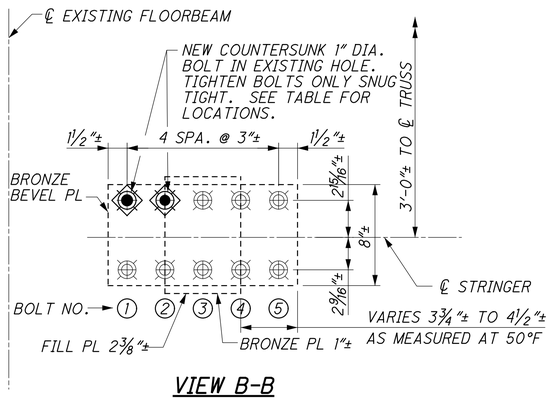
LOCATION OF BOLT REPLACEMENT

PANEL POINT	STRINGER	SIDE OF KNEE BRACE	BOLT NUMBER
12	1	WEST	1
12	2	WEST	1
12	3	WEST	1 & 2
12	4	EAST	1 & 2
12	5	EAST	1
12	6	WEST	1, 2 & 5
12	7	EAST	3
12	7	WEST	1
35	1	WEST	1 & 2
35	7	WEST	1 & 2
35	8	WEST	1
35	8	WEST	4

* SOME BOLT LOCATIONS MAY NOT BE ACCESSIBLE DEPENDING ON TEMPERANCE AND EXPANSION OF THE BRIDGE AT THE TIME OF REPAIR. WORK WILL BE NONPERFORMED IF THE BOLT HOLE IS COVERED BY THE BRONZE SLIDER PLATE OR STRINGER FLANGE.



PANEL POINT 35
(EXTERIOR STRINGER SHOWN)



VIEW B-B

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

NOTATION: E.S. - EACH SIDE

BOLT LEGEND: SEE SHEET 11/189.

COUNTERSUNK HEAD BOLTS SHALL BE SAE J429 GRADE 5 OR ASTM A449 TYPE 1, WITH SLOTTED HEADS.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:
SEE GENERAL NOTE SHEET 3/189.

ITEM 513 - STRUCTURE STEEL, MISC.: COUNTERSUNK BOLTS REPLACEMENT AT STRINGER BEARINGS:
SEE GENERAL NOTE SHEET 7/189.

FOR LOCATIONS: FRAMING PLAN SHEETS 28/189 AND 29/189 .

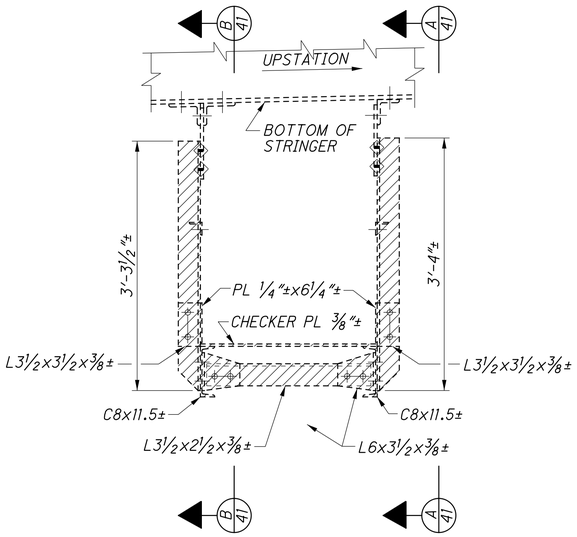
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

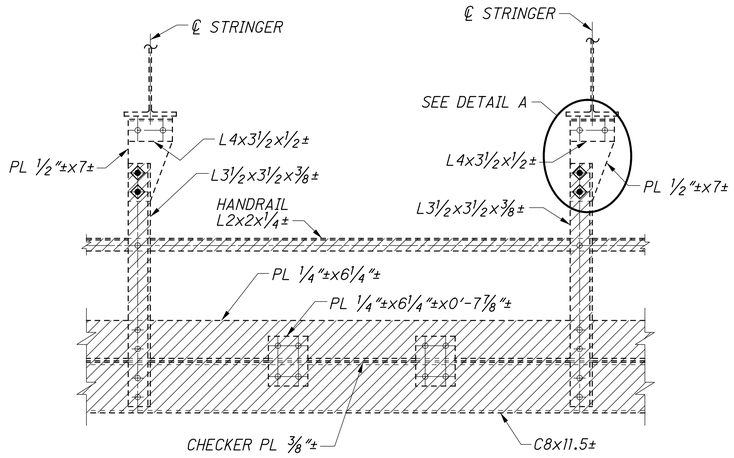
STRINGER BOLT REPLACEMENT AT EXPANSION JOINTS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

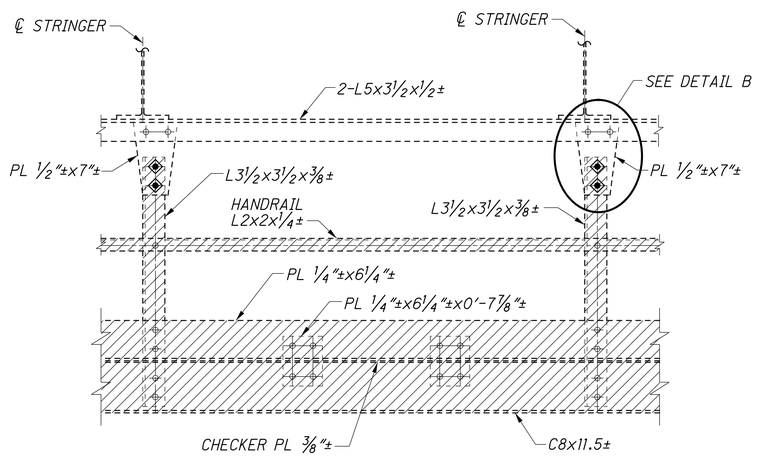
LOR-611-3.44
PID No. 92009



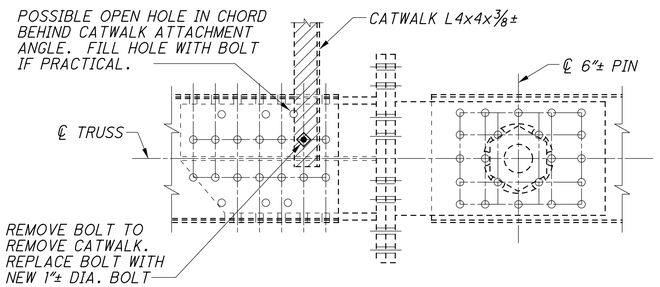
ELEVATION



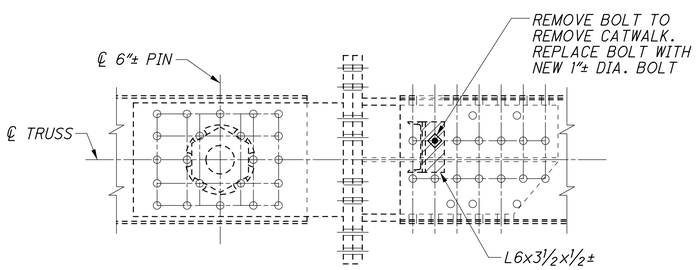
VIEW A-A



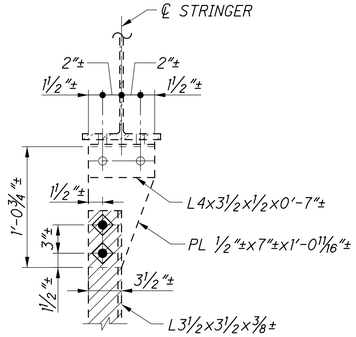
VIEW B-B



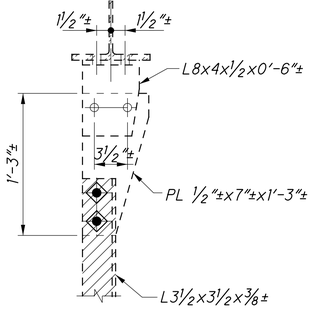
CATWALK ATTACHMENT AT EAST LOWER CHORD



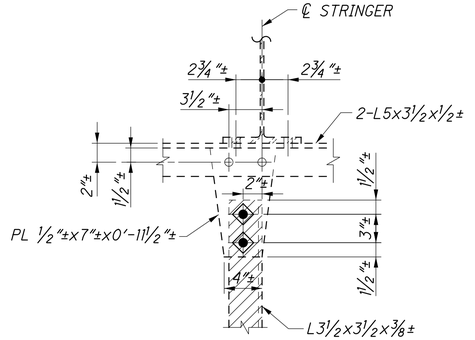
CATWALK ATTACHMENT AT WEST LOWER CHORD



DETAIL A
INTERIOR STRINGER



DETAIL A
EXTERIOR STRINGER



DETAIL B

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN: SEE GENERAL NOTE SHEET 3/189.

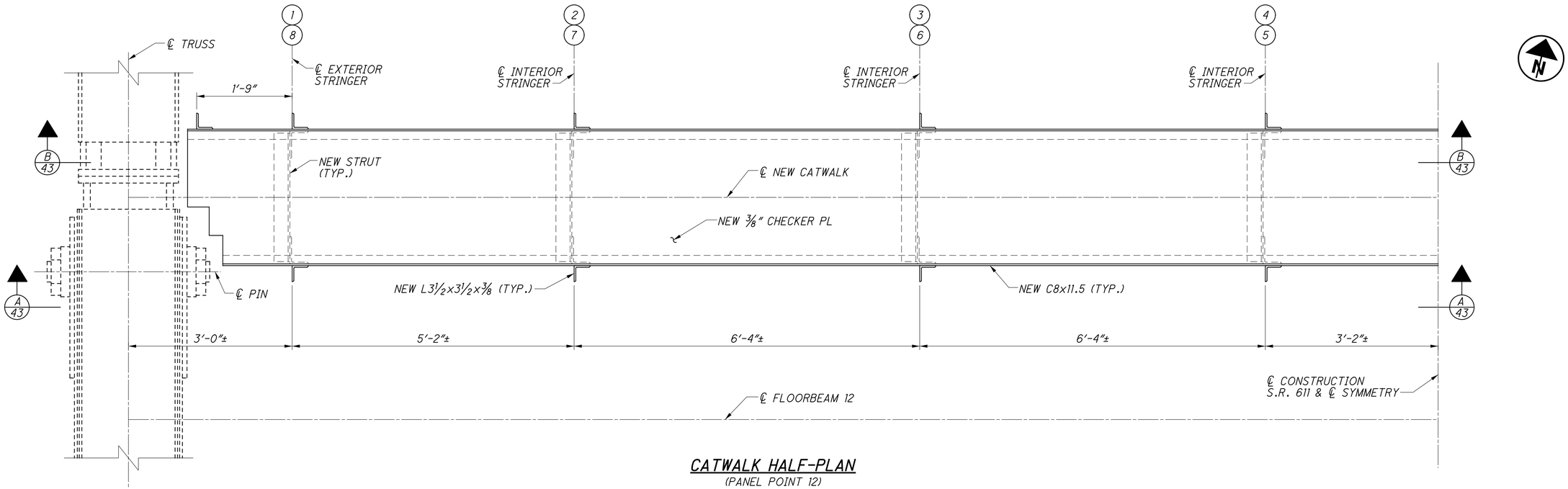
ITEM 202 - REMOVAL MISC.: EXISTING RIVET
SEE GENERAL NOTE SHEET 4/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

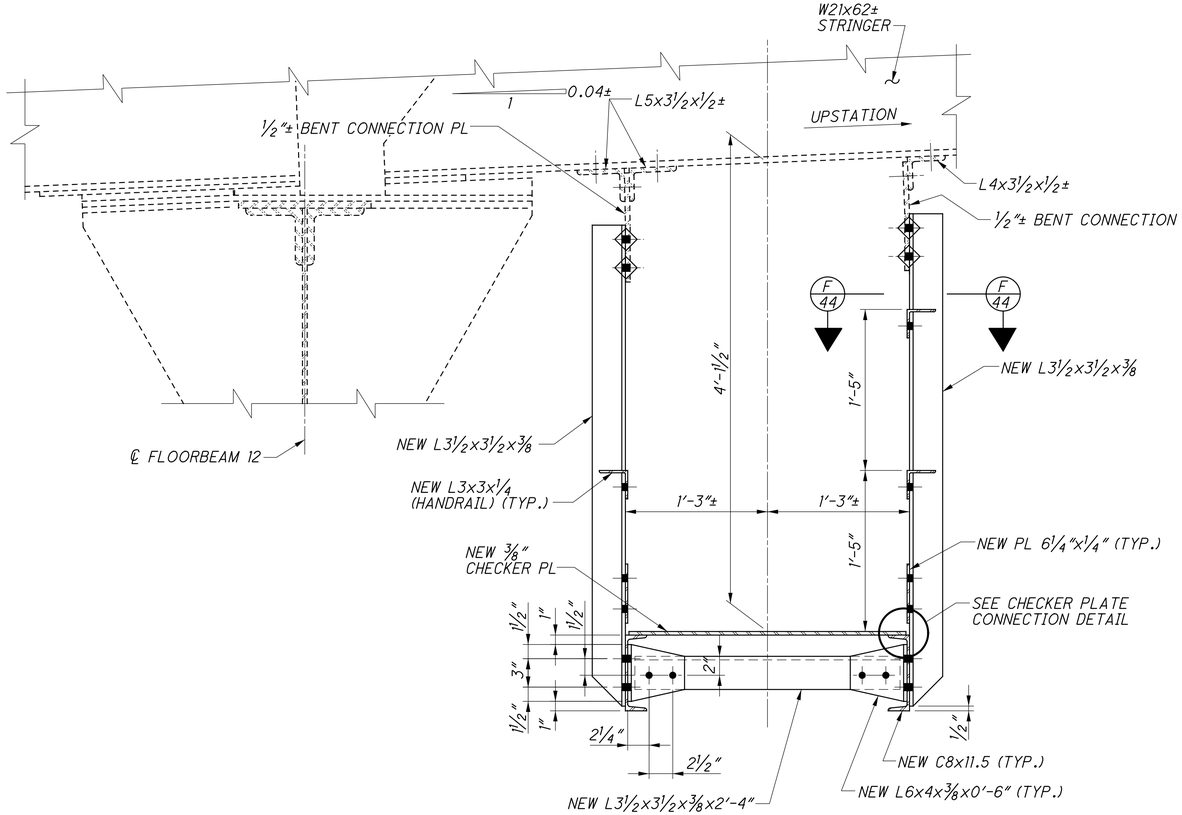
PANEL POINT 12 CATWALK REMOVAL
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

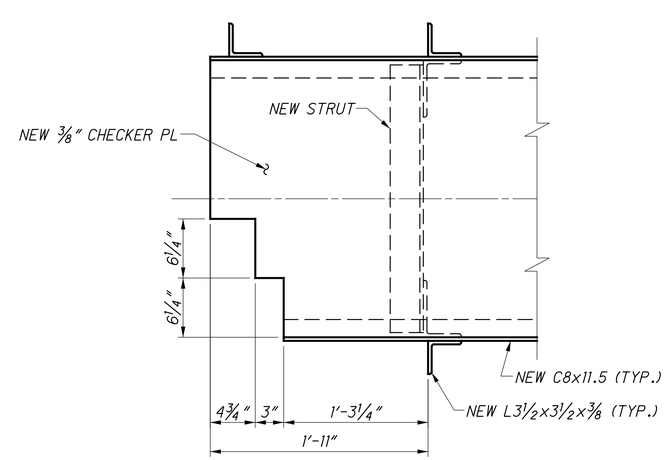


CATWALK HALF-PLAN

(PANEL POINT 12)



TYPICAL CATWALK SECTION



CATWALK END DETAIL

(WEST END - SHOWN)
(EAST END - OPPOSITE HAND)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLTS SHALL BE ¾" DIAMETER ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CHECKER PLATE CONNECTION DETAIL: SEE SHEET 44/189.

EXISTING CATWALK REMOVAL DETAILS: SEE SHEET 41/189.

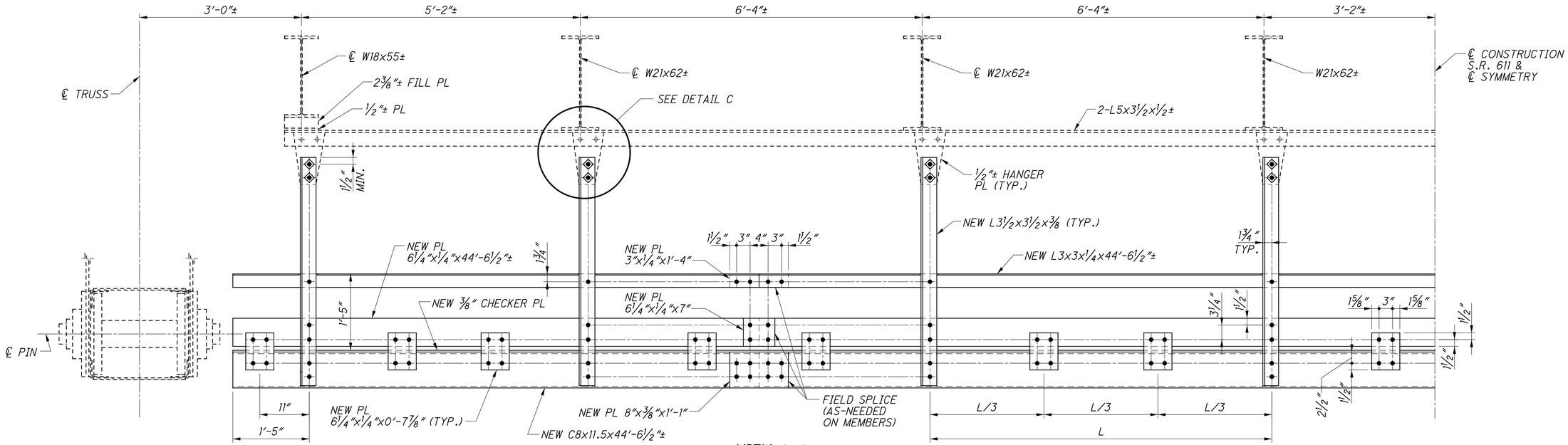
ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 12 REPLACEMENT:
SEE GENERAL NOTE SHEET 11/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

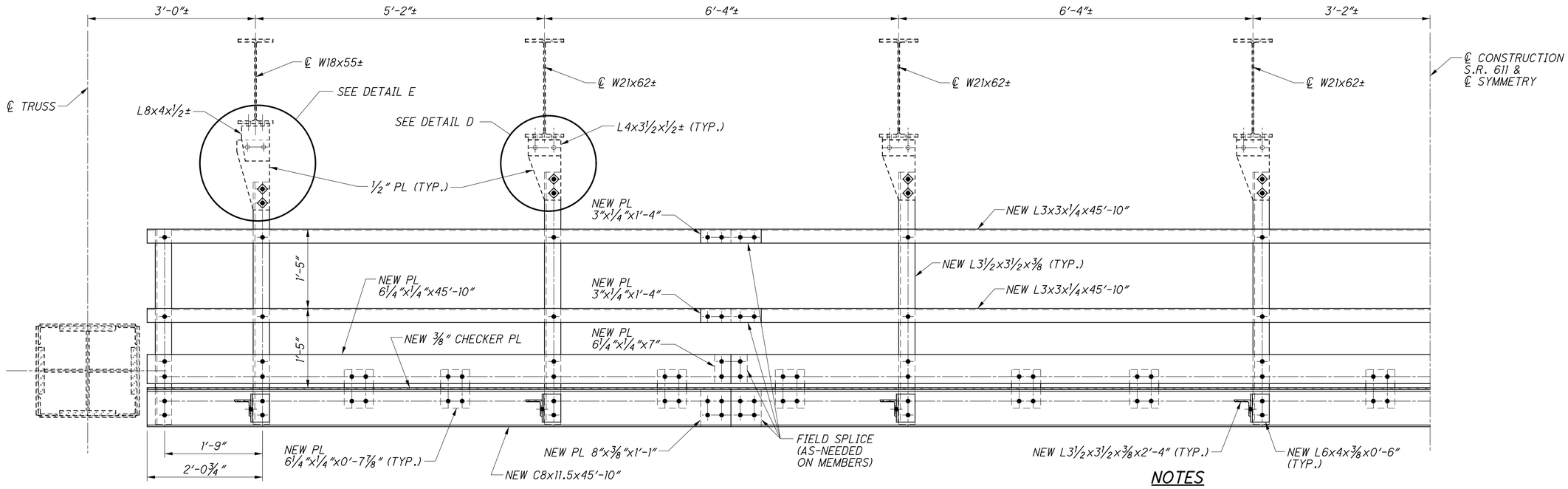
DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

CATWALK AT PANEL POINT 12
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



VIEW A-A



SECTION B-B

CATWALK *SHALL HANG FROM EXISTING HANGER PLATES ON STRINGERS. THE FLOOR SHALL BE HORIZONTAL. THE CONTRACTOR SHALL MATCH EXISTING HOLES IN HANGER PLATES IN NEW L3½x3½x⅜ TO PROVIDE ADEQUATE EDGE DISTANCES ON MEMBERS AND A LEVEL WALKING SURFACE.*

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

BOLTS *SHALL BE ¾" DIAMETER ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.*

BOLT LEGEND: *SEE SHEET* 11/189.

DETAILS C, D & E: *FOR LOCATIONS SEE SHEET* 44/189.

VIEW A-A & SECTION B-B: *FOR LOCATIONS SEE SHEET* 42/189.

ADDITIONAL NOTES: *SEE SHEET* 42/189.

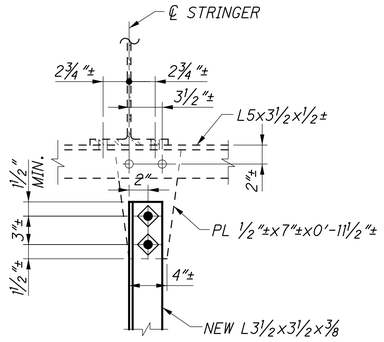
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

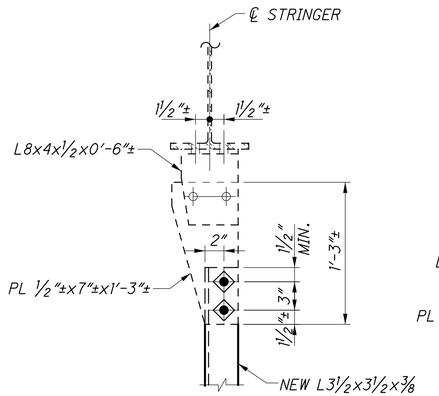
CATWALK AT PANEL POINT 12 DETAILS - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

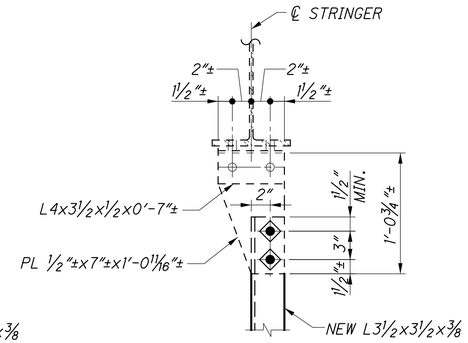
LOR-611-3.44
PID No. 92009



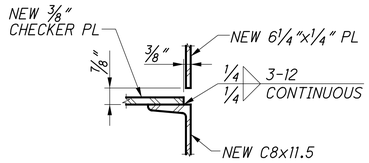
DETAIL C



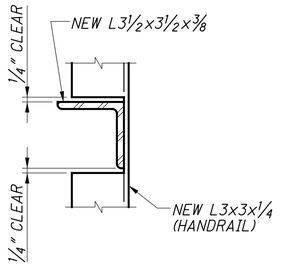
DETAIL E



DETAIL D



CHECKER PLATE CONNECTION DETAIL



SECTION F-F

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

DETAILS C, D & E: FOR LOCATIONS SEE SHEET 43/189.

SECTION F-F: FOR LOCATIONS SEE SHEET 42/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

CATWALK AT PANEL POINT 12 DETAILS - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

44/189

89/234

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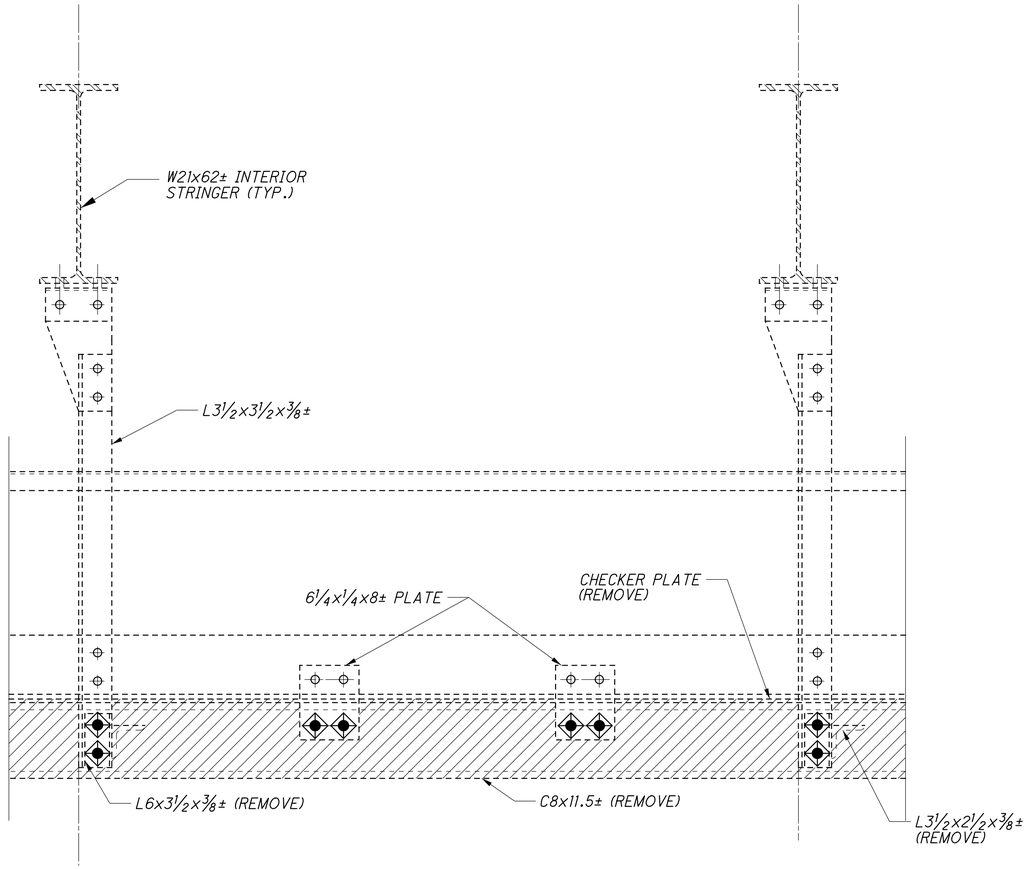
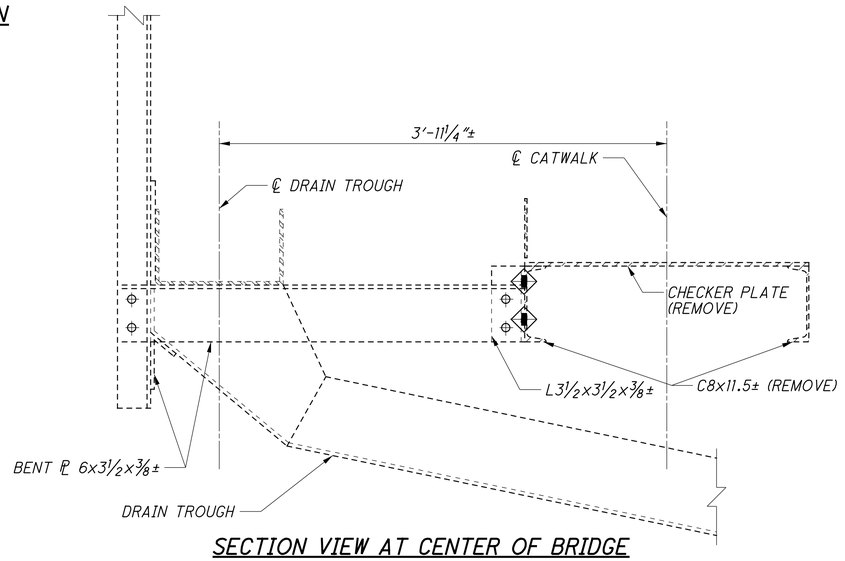
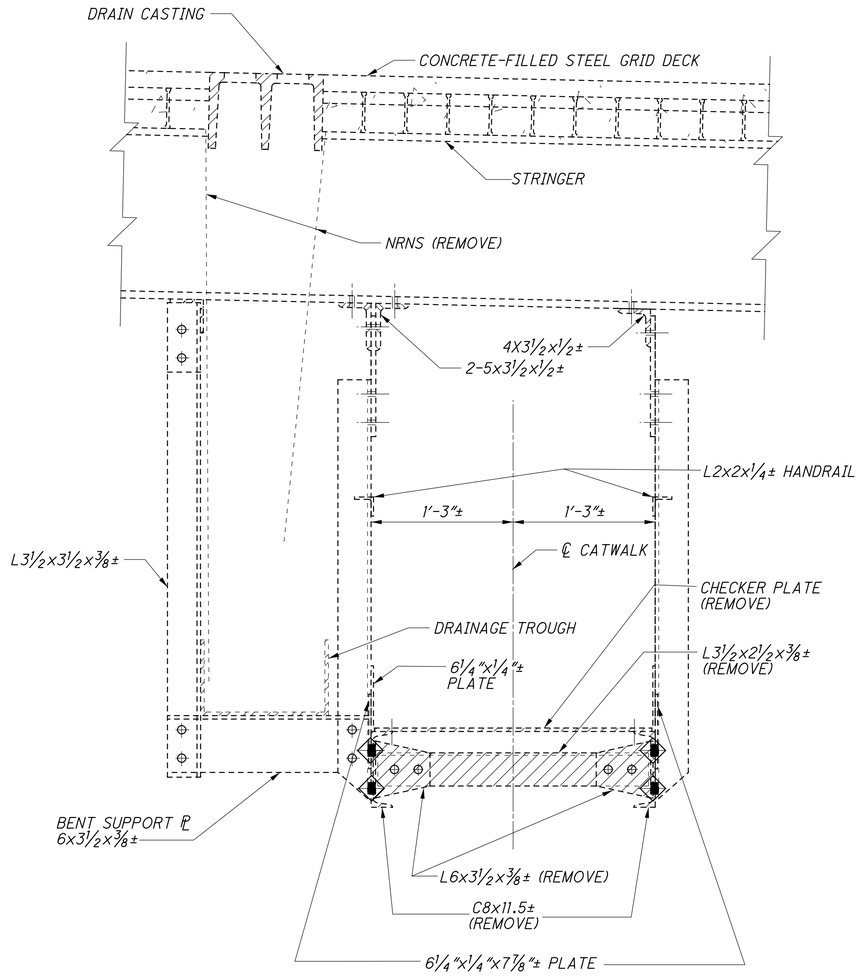


PARTIAL ELEVATION



SECTION VIEW AT CENTER OF BRIDGE



SECTION VIEW NEAR CENTER OF BRIDGE

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11/189.

NRNS - NYLON REINFORCED NEOPRENE SHEETING

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN: SEE GENERAL NOTE SHEET 3/189.

ITEM 202 - REMOVAL, MISC.: RIVET: SEE GENERAL NOTE SHEET 4/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

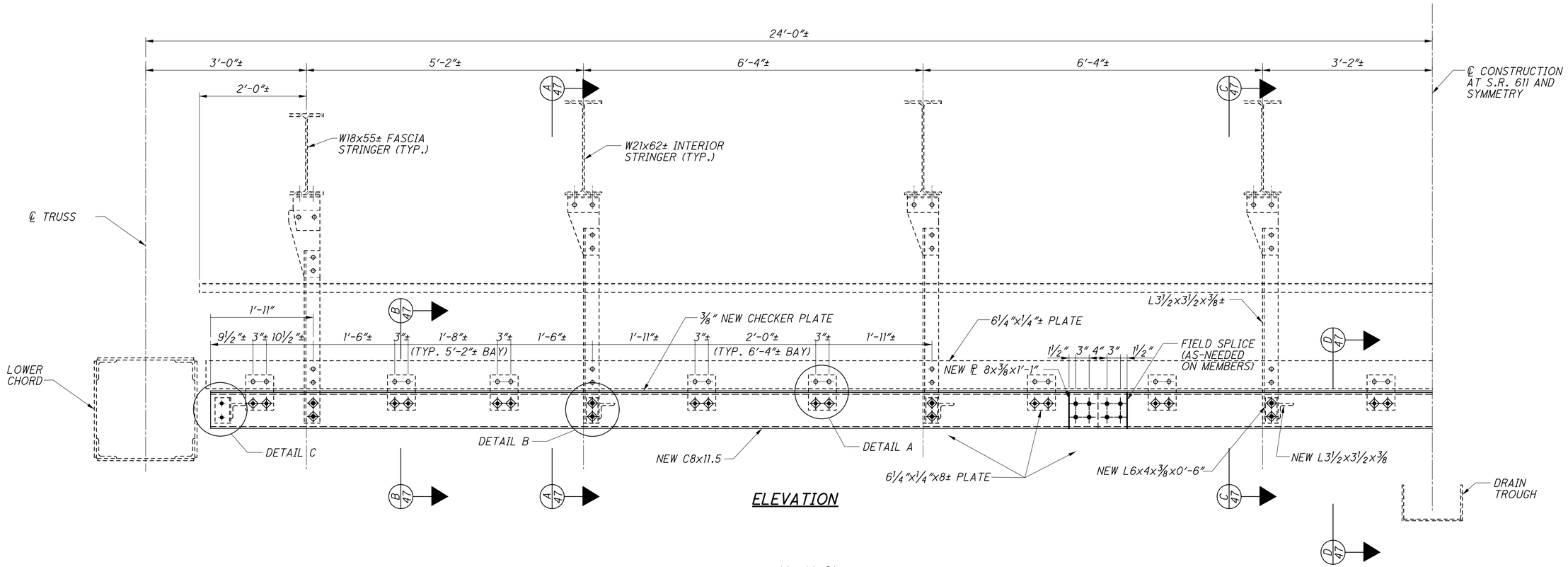
PANEL POINT 45 CATWALK REMOVAL

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

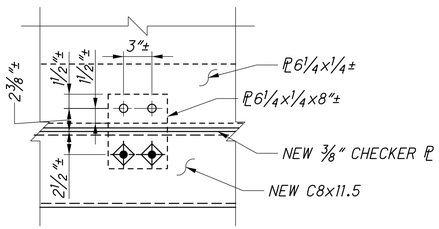
LOR-611-3.44
PID No. 92009

45/189

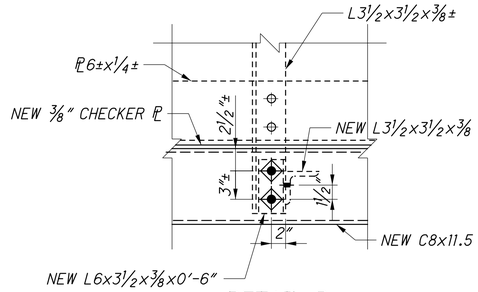
90/234



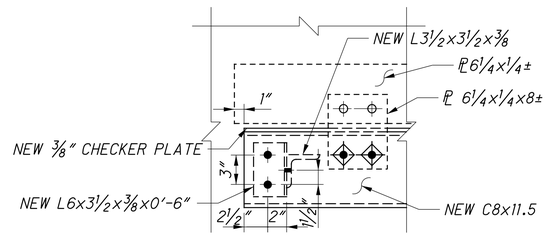
ELEVATION



DETAIL A



DETAIL B



DETAIL C

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

BOLTS *SHALL BE ¾" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.*

BOLT LEGEND: *SEE SHEET 11/189.*

FRAMING PLAN: *SEE SHEET 29/189.*

TRANSVERSE DRAIN TROUGH SUPPORTS *CONNECTIONS TO CATWALK ARE NOT SHOWN.*

EXISTING CATWALK REMOVAL DETAILS: *SEE GENERAL NOTE SHEET 45/189.*

ITEM 513 - STRUCTURAL STEEL, MISC.: PANEL POINT 45 PARTIAL CATWALK REPLACEMENT: *SEE GENERAL NOTE SHEET 5/189.*

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

CATWALK AT PANEL POINT 45
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

46/189

91/234

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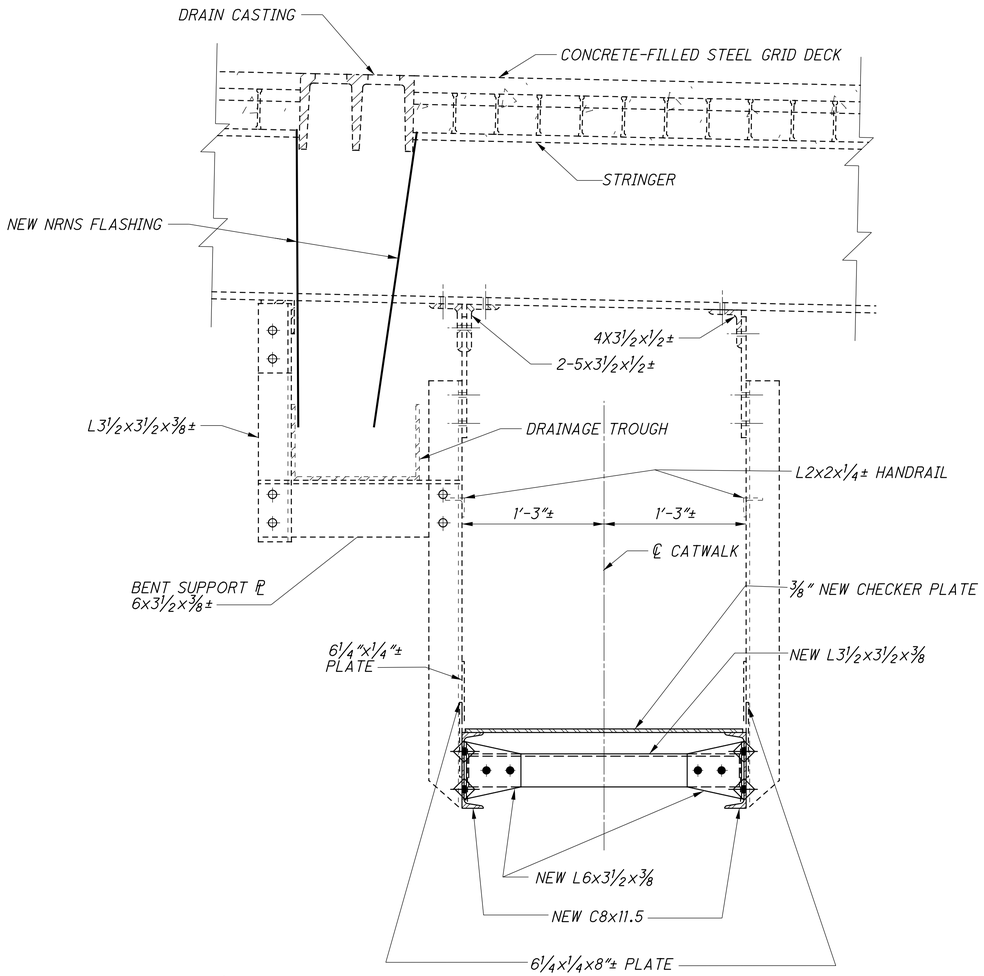
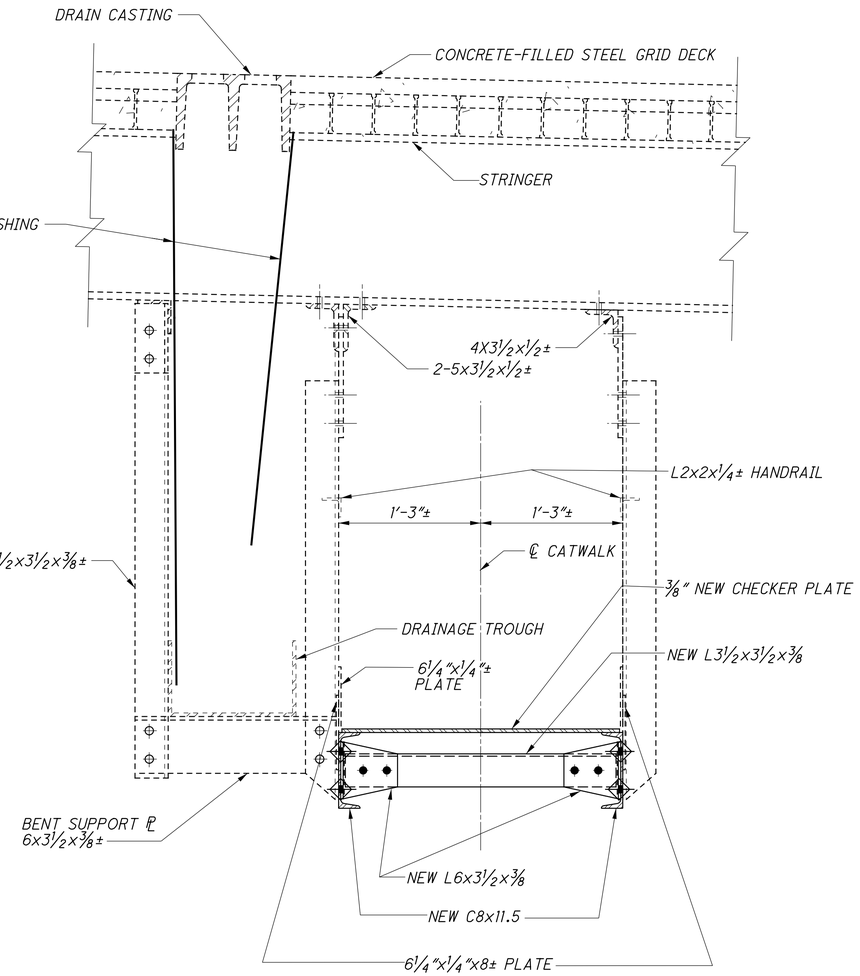
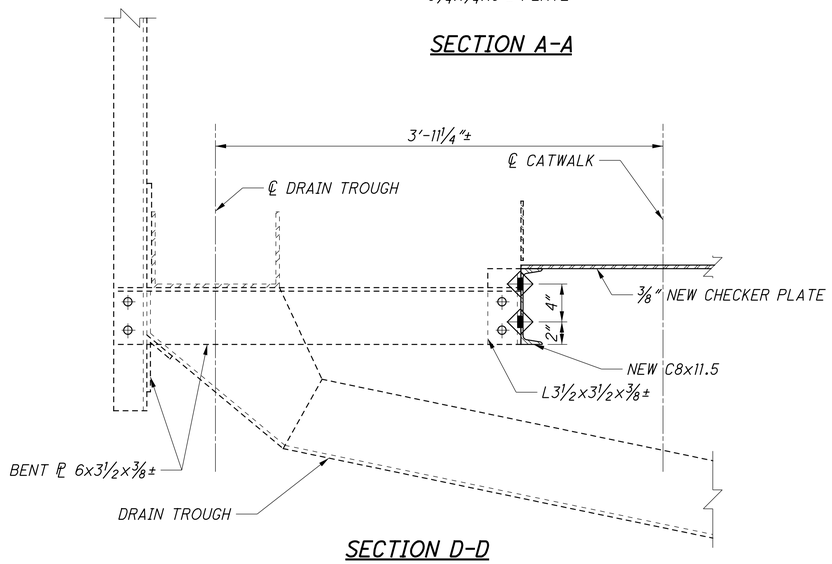


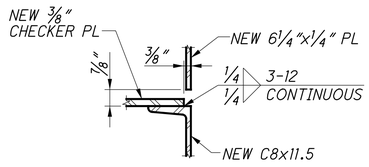
SECTION A-A



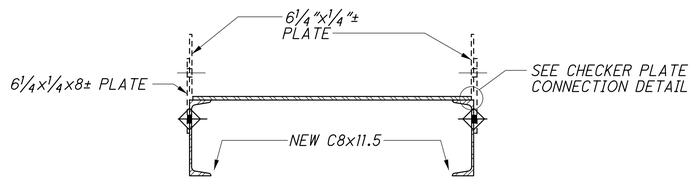
SECTION C-C



SECTION D-D



CHECKER PLATE CONNECTION DETAIL



SECTION B-B

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLTS SHALL BE ¾" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

FRAMING PLAN: SEE SHEET 29/189.

NRNS - NYLON REINFORCED NEOPRENE SHEETING

NRNS SHEETING DETAILS: SEE SHEET 184/189.

SECTION A-A, B-B, C-C & D-D: SEE SHEET 46/189.

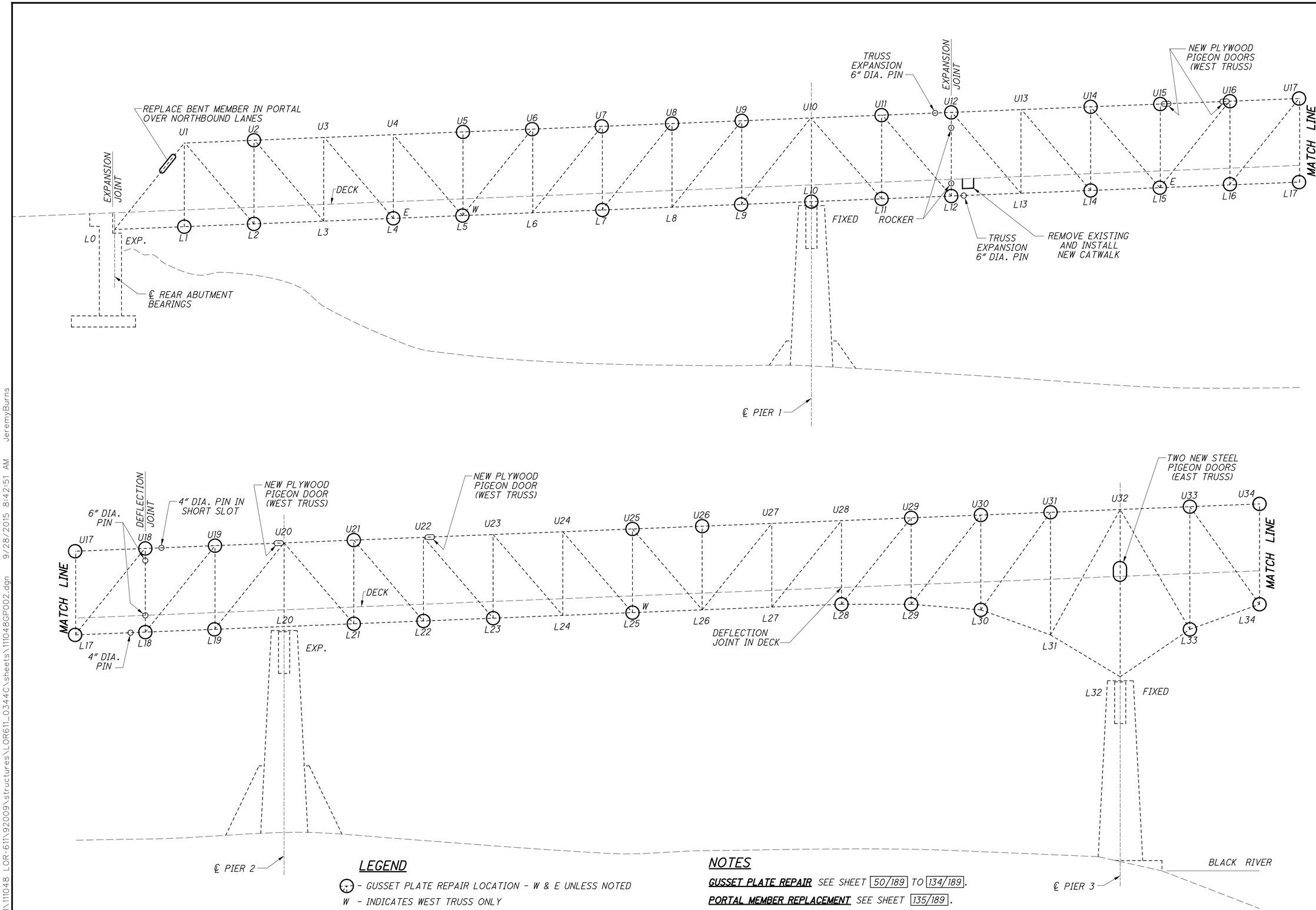
ADDITIONAL NOTES: SEE SHEET 46/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

CATWALK DETAILS AT PANEL POINT 45
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



LEGEND

- ⊕ - GUSSET PLATE REPAIR LOCATION - W & E UNLESS NOTED
- W - INDICATES WEST TRUSS ONLY
- E - INDICATES EAST TRUSS ONLY

NOTES

GUSSET PLATE REPAIR SEE SHEET 50/189 TO 134/189.

PORTAL MEMBER REPLACEMENT SEE SHEET 135/189.

PIGEON DOORS SEE SHEET 136/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

TRUSS ELEVATION - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

48/189
93/234

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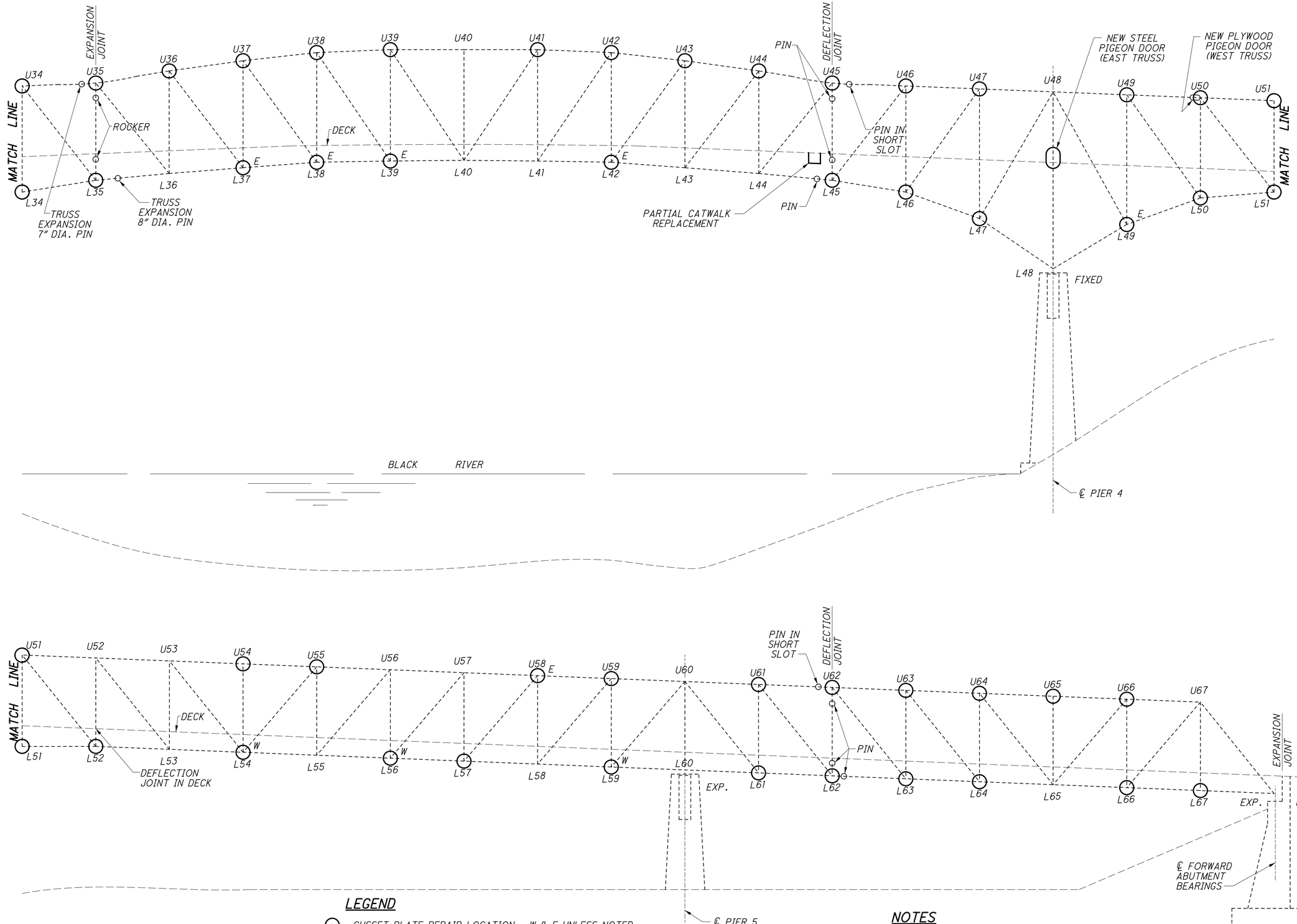

LEGEND

- ⊕ - GUSSET PLATE REPAIR LOCATION - W & E UNLESS NOTED
- W - INDICATES WEST TRUSS ONLY
- E - INDICATES EAST TRUSS ONLY

NOTES

GUSSET PLATE REPAIR SEE SHEET 50/189 TO 134/189.

PIGEON DOORS SEE SHEET 136/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

TRUSS ELEVATION - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

49/189
94/234

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GUSSET PLATE REPAIR TABLE

LOWER CHORD

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
1	L1	403	WEST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	58
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	59
1	L2	403	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
1	L4	404	EAST TRUSS	INSIDE	1	-	-	-	-	-	-	-	60
1	L5	405	WEST TRUSS	OUTSIDE	-	-	1	-	-	-	-	-	61
1	L7	406	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
1	L9	407	WEST TRUSS	OUTSIDE	1	-	-	-	-	1	-	-	62
			EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	63
1/2	L10	408	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	64
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	1	-	-	-	-	-	-	1	65
			EAST TRUSS	OUTSIDE	2	-	-	-	-	-	-	-	66
2	L11	408	WEST TRUSS	OUTSIDE	1	-	-	-	1	1	-	1	67
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	OUTSIDE	2	-	-	-	1	-	-	1	68
2	L12	409	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	L14	507	WEST TRUSS	OUTSIDE	-	-	1	-	-	-	-	2	69
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	1	-	-	-	-	2	70
2	L15	501	EAST TRUSS	OUTSIDE	2	-	-	-	-	-	-	-	71
2	L16	501	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
2	L17	501	WEST TRUSS	OUTSIDE	-	-	2	-	-	-	-	1	72
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
2	L18	202	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	L19	202	WEST TRUSS	OUTSIDE	2	-	1	1	-	1	-	-	73
			WEST TRUSS	INSIDE	2	-	-	1	-	1	-	-	74
			EAST TRUSS	INSIDE	2	-	-	1	-	1	-	-	75
			EAST TRUSS	OUTSIDE	2	-	-	1	-	1	-	-	76

GUSSET PLATE REPAIR TABLE

LOWER CHORD (CONTINUED)

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
3	L21	203	WEST TRUSS	OUTSIDE	-	-	-	-	1	-	-	-	77
			EAST TRUSS	OUTSIDE	-	-	-	-	1	-	-	-	78
3	L22	204	WEST TRUSS	OUTSIDE	2	-	1	-	-	-	-	-	79
			EAST TRUSS	OUTSIDE	1	-	1	-	-	-	-	-	80
3	L23	204	WEST TRUSS	OUTSIDE	1	-	1	-	-	-	-	1	81
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	L25	205	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	82
3	L28	207	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	83
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	84
3	L29	207	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	85
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
3	L30	208	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
4	L33	210AB	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	L34	210B	WEST TRUSS	OUTSIDE	2	-	-	-	-	-	-	-	86
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
4	L35	210B	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	1	-	-	-	-	-	-	-	87
			EAST TRUSS	INSIDE	-	-	-	-	1	-	-	1	88
			EAST TRUSS	OUTSIDE	-	-	-	-	1	-	-	1	89
4	L37	304	EAST TRUSS	OUTSIDE	-	-	-	-	-	1	-	-	90
4	L38	305	EAST TRUSS	INSIDE	1	-	-	-	-	-	-	-	91
4	L39	305	EAST TRUSS	INSIDE	1	-	-	-	-	-	-	-	92
4	L42	305	EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	93
4	L45	210B	WEST TRUSS	OUTSIDE	-	-	-	-	1	-	-	1	94
			WEST TRUSS	INSIDE	-	-	-	-	1	-	-	1	95
			EAST TRUSS	INSIDE	1	-	-	-	-	-	-	-	96
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	L46	210B	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
4	L47	210AB	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	97
			WEST TRUSS	INSIDE	1	-	-	-	-	-	-	1	98
			EAST TRUSS	INSIDE	-	1	-	-	-	-	-	1	99
			EAST TRUSS	OUTSIDE	-	1	-	-	-	-	-	1	100

GUSSET PLATE REPAIR TABLE

LOWER CHORD (CONTINUED)

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
5	L49	209	EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	101
5	L50	208	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
5	L51	207	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	1	-	1	-	-	-	-	-	102
5	L52	207	WEST TRUSS	OUTSIDE	1	-	1	-	-	-	-	-	103
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	1	-	-	-	-	-	-	-	104
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
5	L54	206	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	105
5	L56	205	WEST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	106
5	L57	204	WEST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	107
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
5	L59	203	WEST TRUSS	OUTSIDE	-	-	-	-	-	1	-	-	108
6	L61	202	WEST TRUSS	OUTSIDE	3	-	-	-	-	1	-	-	109
			WEST TRUSS	INSIDE	3	-	-	-	-	-	-	-	110
			EAST TRUSS	INSIDE	3	-	1	-	-	-	-	-	111
			EAST TRUSS	OUTSIDE	3	-	1	-	-	-	-	-	112
6	L62	202	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	113
6	L63	109	WEST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	114
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	115
6	L64	109	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	1	-	-	-	-	1	116
6	L66	108	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
6	L67	108	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
LOWER CHORD REPAIR SUBTOTALS					56	2	19	4	8	9	0	160	

LEGEND

\+ - TYPE 1 BOW REPAIR IS BLOCKED BY BRACING CONNECTION ON CHORD AND TYPE 1 WILL NOT BE USED. ADDRESS BOW USING TYPE 8 EDGE STIFFENING ANGLE.

✳ - TYPE 1 BOW REPAIR CANNOT ATTACH TO TOP CHORD AT EXPANSION JOINT AND TYPE 1 WILL NOT BE USED. ADDRESS BOWS USING TYPE 8 EDGE STIFFENING ANGLE.

X - TYPE 1 BOW REPAIR ADDRESSED BY EDGE STIFFENING ANGLE AND TYPE 1 WILL NOT BE USED. ADDRESS BOWS USING TYPE 8 EDGE STIFFENING ANGLE.

NOTES

REPAIR TYPES: GUSSET PLATE REPAIR TYPES 1-7 ADDRESS FIELD-MEASURED BOWS OR SECTION LOSS IN PLATES. REPAIR TYPE 8 ADDRESSES INADEQUATE UNSUPPORTED EDGE STIFFENING TO PLATE THICKNESS RATIOS AS DEFINED PER AASHTO.

GENERAL LOCATIONS OF WORK: SEE SHEETS 48/189 & 49/189.

GUSSET PLATE ANGLE REPAIR TYPES: SEE SHEET 52/189.

GUSSET PLATE EDGE STIFFENING TABLE: SEE SHEETS 53/189 THROUGH 56/189.

GUSSET PLATE UPPER CHORD REPAIR TABLE: SEE SHEET 51/189.

ITEM 513 - STRUCTURAL STEEL, MISC.: TRUSS GUSSET REPAIR TYPE 1, 2, 3, 4, 5, 6, 7 AND 8
SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR SUMMARY TABLE - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

GUSSET PLATE REPAIR TABLE

UPPER CHORD

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
1	U2	410	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	2	-	-	-	-	-	-	-	117
1	U5	412	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
1	U6	412	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
1	U7	413	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
1	U8	413	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
1	U9	414	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	2	118
2	U11	415	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
			WEST TRUSS	INSIDE	+	-	-	-	-	-	-	3	119
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
2	U12	415	WEST TRUSS	OUTSIDE	*	-	-	-	-	-	-	2	120
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	*	-	-	-	-	-	-	2	121
2	U14	502	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	U15	112	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
2	U16	112	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	U17	113	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	U18	113	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
2	U19	212	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	U21	213	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	U25	215	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	

GUSSET PLATE REPAIR TABLE

UPPER CHORD (CONTINUED)

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
3	U26	215	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	-
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	U29	217	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	U30	217	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
3	U31	218	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
4	U33	219	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
4	U34	219	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
4	U35	211	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	2	1	122
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	1	1	123
4	U36	301	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U37	301	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U38	302	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U39	302	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U41	302	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U42	302	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U43	301	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U44	301	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
4	U45	211	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	1	1	124
			WEST TRUSS	INSIDE	-	-	-	-	-	-	1	1	125
			EAST TRUSS	INSIDE	-	-	-	-	-	-	2	1	126
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	

GUSSET PLATE REPAIR TABLE

UPPER CHORD (CONTINUED)

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	REPAIR TYPES 1	2	3	4	5	6	7	8	SEE SHEET
4	U46	219	WEST TRUSS	OUTSIDE	X	-	-	-	-	-	-	3	127
			WEST TRUSS	INSIDE	X	-	-	-	-	-	-	3	128
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	3	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	3	
4	U47	219	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
5	U49	218	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
5	U50	217	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
5	U51	217	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
5	U54	215	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
5	U55	215	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	1	129
5	U58	213	EAST TRUSS	OUTSIDE	1	-	-	-	-	-	-	-	130
5	U59	213	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	+	-	-	-	-	-	-	1	131
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
6	U61	212	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	X	-	-	-	-	-	-	2	132
6	U62	113	WEST TRUSS	OUTSIDE	*	-	-	-	-	-	-	1	133
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
6	U63	113	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
6	U64	112	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
6	U65	112	WEST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	2	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	2	
6	U66	111	WEST TRUSS	OUTSIDE	2	-	-	-	-	-	-	-	134
			WEST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	INSIDE	-	-	-	-	-	-	-	1	
			EAST TRUSS	OUTSIDE	-	-	-	-	-	-	-	1	
UPPER CHORD REPAIR SUBTOTALS					**7**	**0**	**0**	**0**	**0**	**0**	**7**	**250**	
LOWER CHORD REPAIR SUBTOTALS					**56**	**2**	**19**	**4**	**8**	**9**	**0**	**160**	
GUSSET PLATE REPAIR TOTALS					**63**	**2**	**19**	**4**	**8**	**9**	**7**	**410**	

NOTE

GUSSET PLATE LOWER CHORD REPAIR TABLE AND NOTES: SEE SHEET 50/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DLR | DATE 9/25/15 | STRUCTURE FILE NUMBER 4707443 | CHECKED DAP | REVISED

GUSSET PLATE REPAIR SUMMARY TABLE - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

51/189

96/234

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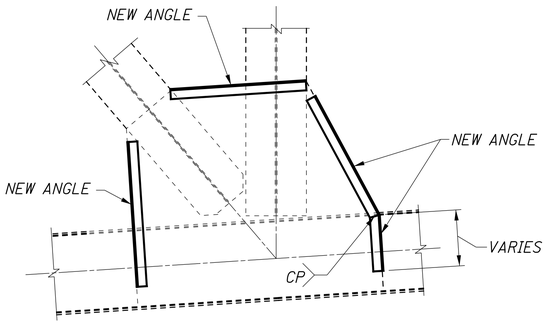
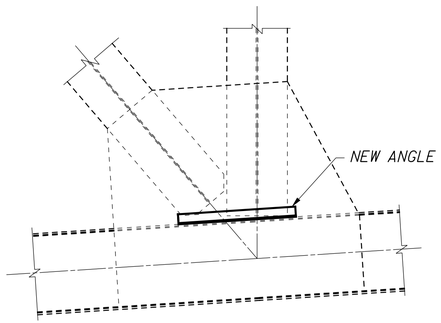


- NO EXISTING EDGE STIFFENING ANGLE
- NO DOUBLE NUT METHOD

REPAIR TYPE ①

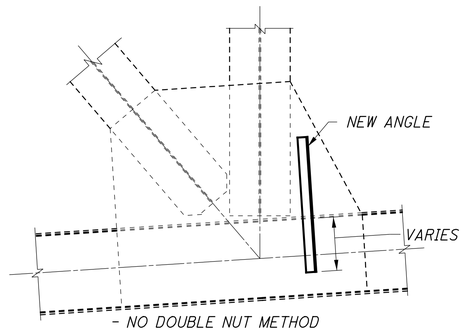
TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼"; 3 OR FEWER EXISTING CONNECTION RIVETS REMOVED PER TRUSS MEMBER; UP TO FOUR TYPE 1 ANGLES PER GUSSET PLATE



- NO DOUBLE NUT METHOD
- HORIZONTAL ANGLE BETWEEN DIAGONAL AND VERTICAL

REPAIR TYPE ②

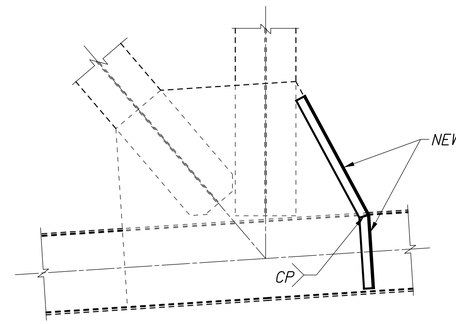
TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼"; 3 OR FEWER EXISTING CONNECTION RIVETS REMOVED PER TRUSS MEMBER; UP TO ONE TYPE 2 PER GUSSET PLATE



- NO DOUBLE NUT METHOD
- VERTICAL ANGLE AT INTERMEDIATE LOCATION ON PLATE, NOT ON EDGE

REPAIR TYPE ③

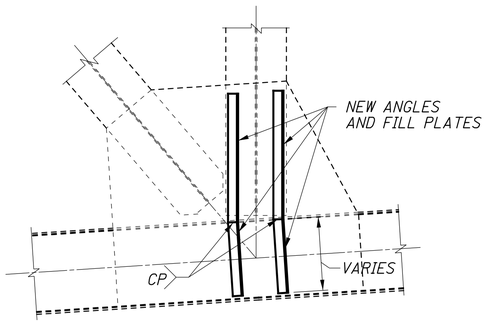
TRUSS GUSSET PLATE HAS EXCESSIVE SECTION LOST AT SEAM ABOVE LOWER CHORD, OR BOW ≥ ¼" AT LOCATION; 3 OR FEWER EXISTING RIVETS REMOVED PER TRUSS MEMBER; UP TO TWO TYPE 3 ANGLES PER GUSSET PLATE



- NO EXISTING EDGE STIFFENING ANGLE
- DOUBLE NUT METHOD

REPAIR TYPE ④

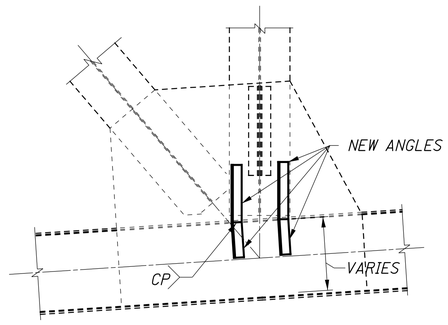
TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼" AT LOCATION; 4 OR MORE EXISTING CONNECTION RIVETS REMOVED PER TRUSS MEMBER; UP TO ONE TYPE 4 ANGLE PER GUSSET PLATE



- DOUBLE NUT METHOD
- AT OR NEAR TRUSS VERTICAL
- FULL OR PARTIAL HEIGHT

REPAIR TYPE ⑤

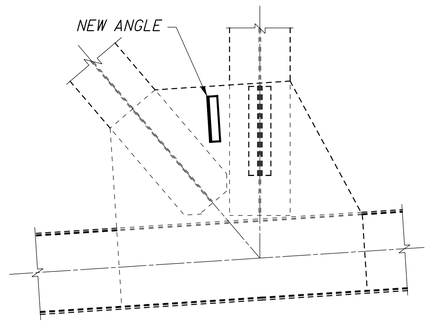
TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼"; 4 OR MORE EXISTING CONNECTION RIVETS REMOVED PER TRUSS MEMBER; UP TO ONE TYPE 5 ANGLES PER GUSSET PLATE



- NO DOUBLE NUT METHOD
- AT OR NEAR TRUSS VERTICAL
- FULL OR PARTIAL HEIGHT

REPAIR TYPE ⑥

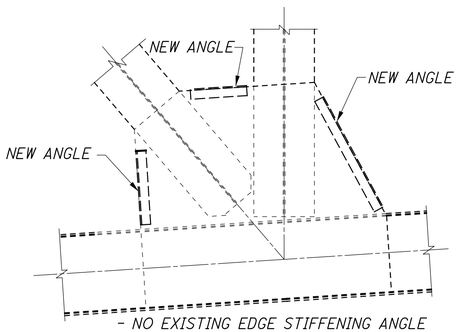
TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼"; 3 OR FEWER EXISTING CONNECTION RIVETS REMOVED PER TRUSS MEMBER; UP TO ONE TYPE 6 ANGLE PER GUSSET PLATE



- NO DOUBLE NUT METHOD
- VERTICAL ANGLE BETWEEN DIAGONAL AND VERTICAL

REPAIR TYPE ⑦

TRUSS GUSSET PLATE HAS BOW IN EXISTING GUSSET PLATE ≥ ¼"; NO EXISTING RIVETS REMOVED; UP TO TWO TYPE 7 ANGLE PER GUSSET PLATE



- NO EXISTING EDGE STIFFENING ANGLE
- NO DOUBLE NUT METHOD
- NON-STRUCTURAL ERECTION RIVET REMOVAL AT SEVERAL PANEL POINTS
- NEW ANGLES TO INSIDE FACES OF GUSSETS UNLESS NOTED OTHERWISE

REPAIR TYPE ⑧

ANGLES ADDED TO MEET AASHTO EDGE STIFFENING REQUIREMENTS; UP TO FOUR TYPE 8 ANGLES PER GUSSET PLATE

NOTES

LOWER CHORD GUSSET PLATE SHOWN, UPPER CHORD GUSSET SIMILAR.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GUSSET PLATE ANGLE REPAIR TYPES

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

GUSSET PLATE REPAIR TYPE 8 TABLE - REPAIRS BASED ON EDGE STIFFENING REQUIREMENTS ONLY

LOWER CHORD

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	# OF TYPE 8 REPAIRS PER GUSSET PLATE	TOTAL EDGES TO TO BE STIFFENED	SEE SHEET /189	LONGEST GUSSET PLATE EDGE INFORMATION: LOCATION OF EDGE ON PLATE	LONGEST GUSSET PLATE EDGE INFORMATION: EST. ANGLE LENGTH	LONGEST GUSSET PLATE EDGE INFORMATION: ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	LONGEST GUSSET PLATE EDGE INFORMATION: COMMENT	EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION: LOCATION OF EDGE ON PLATE	EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION: EST. ANGLE LENGTH	EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION: ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION: COMMENT	TOP GUSSET PLATE EDGE INFORMATION: ESTIMATED ANGLE LENGTH	TOP GUSSET PLATE EDGE INFORMATION: ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	TOP GUSSET PLATE EDGE INFORMATION: COMMENT	PROP-OSED BOLT GRIP (IN.)	NOTE
1	L1	403	WEST	OUT	1	1	58	-	-	-	SEE L1W OUTSIDE BOW REPAIR	FORWARD	1'-1"	3 @ 5"	SEE L1W BOW REPAIR	-	-	-	1"	NOTE 1
			WEST	IN	2	2	-	REAR	1'-8 7/8"	4 @ 5 5/8"	-	FORWARD	1'-1"	3 @ 5"	SEE L1W BOW REPAIR	-	-	-	1"	
			EAST	IN	2	2	-	REAR	1'-8 7/8"	4 @ 5 5/8"	-	FORWARD	1'-1"	3 @ 5"	SEE L1W BOW REPAIR	-	-	-	1"	
			EAST	OUT	1	1	59	-	-	-	SEE L1E OUTSIDE BOW REPAIR	FORWARD	1'-1"	3 @ 5"	SEE L1E OUTSIDE	-	-	-	1"	NOTE 1
1	L2	403	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-1 3/4"	5 @ VARIES	SEE NOTE 2	-	-	-	-	-	-	-	1 1/8"	
1	L7	406	EAST/WEST	IN/OUT	1	4	-	REAR	1'-8 7/8"	4 @ 5 5/8"	-	-	-	-	-	-	-	-	1 1/8"	
1/2	L10	408	WEST	OUT	1	1	64	REAR	2'-1"	5 @ 5 1/4"	SEE L10W OUT. BOW REPAIR - S. EDGE	-	-	-	-	-	-	-	1"	NOTE 1
			WEST	IN	2	2	-	REAR	2'-1"	5 @ 5 1/4"	SEE L10W OUT. BOW REPAIR - S. EDGE	FORWARD	2'-1"	5 @ 5 1/4"	SEE L10E IN. BOW REPAIR - N. EDGE	-	-	-	1"	
			EAST	IN	1	1	65	-	-	-	SEE L10E INSIDE BOW REPAIR	FORWARD	2'-1"	5 @ 5 1/4"	SEE L10E IN. BOW REPAIR - N. EDGE	-	-	-	1"	NOTE 1
2	L11	408	WEST	OUT	1	1	67	-	-	-	SEE L11W OUTSIDE BOW REPAIR	-	-	-	SEE L11W OUTSIDE BOW REPAIR	1'-10"	5 @ 4 1/2"	SEE NOTE 13	1"	NOTE 1
			EAST/WEST	IN	3	6	-	FORWARD	2'-5"	6 @ 5"	PUT ANGLE ON OUTSIDE OF GUSSET	REAR	2'-0"	5 @ 5"	SEE L11E OUT. BOW REPAIR - S. EDGE	1'-10"	5 @ 4 1/2"	SEE NOTE 13	1"	
			EAST	OUT	1	1	68	-	-	-	SEE L11E OUTSIDE BOW REPAIR	REAR	2'-0"	5 @ 5"	SEE L11E OUT. BOW REPAIR - S. EDGE	-	-	SEE L11E OUT. BOW REPAIR	1"	NOTE 1
2	L12	409	EAST/WEST	IN/OUT	1	4	-	-	-	-	-	REAR	2'-7 1/2"	6 @ 5 1/2"	-	-	-	-	1 1/8"	
2	L14	507	WEST	OUT	2	2	69	FORWARD	2'-5 1/2"	6 @ VARIES	SEE NOTE 4	REAR	1'-9 1/4"	4 @ 5 3/4"	SEE L14W OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
			EAST/WEST	IN	2	4	-	FORWARD	2'-5 1/2"	6 @ VARIES	SEE NOTE 4	REAR	1'-9 1/4"	4 @ 5 3/4"	SEE L14W OUTSIDE BOW REPAIR	-	-	-	1"	
			EAST	OUT	2	2	70	FORWARD	2'-5 1/2"	6 @ VARIES	SEE NOTE 5	REAR	1'-9 1/4"	4 @ 5 3/4"	SEE L14E OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
2	L16	501	EAST/WEST	IN/OUT	2	8	-	REAR	1'-11"	5 @ 4 3/4"	-	FORWARD	1'-8 1/2"	4 @ 5 1/2"	SEE L64E OUTSIDE BOW REPAIR	-	-	-	1"	
2	L17	501	WEST	OUT	1	1	72	-	-	-	SEE L17W OUTSIDE BOW REPAIR	FORWARD	1'-10"	4 @ 6"	SEE L17W OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
			WEST	IN	2	2	-	REAR	2'-0"	5 @ 5"	-	FORWARD	1'-10"	4 @ 6"	SEE L17W OUTSIDE BOW REPAIR	-	-	-	1"	
			EAST	IN/OUT	2	4	-	REAR	2'-0"	5 @ 5"	-	FORWARD	1'-10"	4 @ 6"	SEE L17W OUTSIDE BOW REPAIR	-	-	-	1"	
2	L18	202	EAST/WEST	IN/OUT	1	4	-	REAR	3'-8"	9 @ 5"	SEE L62E OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/8"	
3	L23	204	WEST	OUT	1	1	81	FORWARD	2'-5"	6 @ VARIES	SEE NOTE 6	-	-	-	-	-	-	-	1 1/8"	NOTE 1
			WEST	IN	1	1	-	FORWARD	2'-5"	6 @ VARIES	SEE NOTE 6	-	-	-	-	-	-	-	1 1/8"	
			EAST	IN/OUT	1	2	-	FORWARD	2'-5"	6 @ VARIES	SEE NOTE 6	-	-	-	-	-	-	-	1 1/8"	
3	L28	207	WEST	OUT	1	1	83	REAR	3'-4"	7 @ 6"	SEE L28W OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/4"	NOTE 1
			EAST/WEST	IN	2	2	-	REAR	3'-4"	7 @ 6"	SEE L28W OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/4"	
3	L29	207	WEST	OUT	1	1	85	REAR	3'-1 1/4"	8 @ 4 3/4"	SEE L29W OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/4"	NOTE 1
			WEST	IN	2	2	-	REAR	3'-1 1/4"	8 @ 4 3/4"	SEE L29W OUTSIDE BOW REPAIR	FORWARD	2'-10 3/4"	7 @ 5 1/8"	-	-	-	-	1 1/4"	
			EAST	IN/OUT	2	4	-	REAR	3'-1 1/4"	8 @ 4 3/4"	SEE L29W OUTSIDE BOW REPAIR	FORWARD	2'-10 3/4"	7 @ 5 1/8"	-	-	-	-	1 1/4"	
3	L30	208	EAST/WEST	IN/OUT	2	8	-	REAR	4'-8 3/8"±	10 @ 5 7/8"	-	FORWARD	3'-11"	9 @ 5 3/8"	-	-	-	-	1 3/8"	

EDGE STIFFENING REPAIR SUBTOTAL CARRIED TO SHEET 54 | 79

TABLE NOTES

1) GUSSET PLATE HAS ADDITIONAL STIFFENING REPAIRS DUE TO BOWING.
2) REMOVE UP TO 3 EXISTING RIVETS TO FIT NEW ANGLE. INCORPORATE ONE EXISTING RIVET HOLE INTO NEW ANGLE, VARYING SPACING OF NEW BOLT TO FIT. APPROXIMATE SPACING IS 5 1/2".
3) SEE L9W OUTSIDE BOW REPAIR - NEW ANGLE TO OUTSIDE OF GUSSET.
4) SEE L14W OUTSIDE BOW REPAIR - NORTH SIDE - REMOVE UP TO 3 RIVETS TO FIT NEW ANGLE. INCORPORATE ONE EXISTING RIVET HOLE INTO NEW ANGLE.
5) SEE L14E OUTSIDE BOW REPAIR - NORTH SIDE - REMOVE UP TO 3 RIVETS TO FIT NEW ANGLE. INCORPORATE ONE EXISTING RIVET HOLE INTO NEW ANGLE.
6) SEE L23W OUTSIDE BOW REPAIR - NORTH SIDE - REMOVE UP TO 3 RIVETS TO FIT NEW ANGLE. INCORPORATE ONE EXISTING RIVET HOLE INTO NEW ANGLE.
13) SEE L11W OUTSIDE BOW REPAIR - PLACE ANGLE ON OUTSIDE OF GUSSET.

NOTES

GENERAL LOCATIONS OF WORK: SEE SHEETS 48/189 & 49/189 .

GENERAL PLATE ANGLE REPAIR TYPES: SEE SHEET 52/189 .

TYPE 8 EDGE STIFFENING ANGLE REPAIRS SHALL HAVE 7/8" DIA. ASTM A325 BOLTS UNLESS NOTED OTHERWISE.

SAMPLE TYPE 8 REPAIR ANGLE LAYOUT CALCULATION: SEE SHEET 57/189 .

RICHLAND ENGINEERING LIMITED
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GUSSET PLATE STIFFENING REPAIR TYPE 8 TABLE - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

GUSSET PLATE REPAIR TYPE 8 TABLE - REPAIRS BASED ON EDGE STIFFENING REQUIREMENTS ONLY

LOWER CHORD

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	# OF TYPE 8 REPAIRS PER GUSSET PLATE	TOTAL EDGES TO TO BE STIFFENED	SEE SHEET /189	LONGEST GUSSET PLATE EDGE INFORMATION: LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION: LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	TOP GUSSET PLATE EDGE INFORMATION: ESTIMATED ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	PROP-OSED BOLT GRIP (IN.)	NOTE
4	L33	210AB	EAST/WEST	IN/OUT	1	4	-	FORWARD	3'-3"	8 @ 5"	SEE L47 BOW REPAIRS	-	-	-	-	-	-	-	1¼"	
4	L34	210B	WEST	IN	2	2	-	FORWARD	3'-6½"	8 @ 5½"	-	REAR	3'-10"	8 @ 6"	-	-	-	-	1⅜"	
			EAST	IN/OUT	2	4	-	FORWARD	3'-6½"	8 @ 5½"	-	REAR	3'-10"	8 @ 6"	-	-	-	-	1⅜"	
4	L35	210B	WEST	OUT	1	1	-	-	-	-	-	REAR	3'-5⅝"	8 @ 5⅜"	SEE L35E OUTSIDE BOW REPAIR	-	-	-	1⅛"	NOTE 1
			EAST	IN/OUT	1	2	88, 89	-	-	-	-	REAR	3'-5⅝"	8 @ 5⅜"	SEE L35E OUTSIDE BOW REPAIR	-	-	-	1⅛"	
4	L45	210B	WEST	IN/OUT	1	2	94, 95	-	-	-	-	FORWARD	3'-4"	7 @ 6"	SEE L45W IN./OUT. BOW REPAIRS	-	-	-	1⅛"	NOTE 1
			EAST	OUT	1	1	-	-	-	-	-	FORWARD	3'-4"	7 @ 6"	SEE L45W IN./OUT. BOW REPAIRS	-	-	-	1⅛"	
4	L46	210B	EAST/WEST	IN/OUT	2	8	-	REAR	3'-6½"	8 @ 5½"	SEE L34W INSIDE GUSSET PLATE	FORWARD	3'-10"	8 @ 6"	SEE L34W INSIDE GUSSET PLATE	-	-	-	1⅜"	
4	L47	210AB	EAST/WEST	IN/OUT	1	4	97-100	REAR	3'-3"	8 @ 5"	SEE L47 BOW REPAIRS	-	-	-	-	-	-	-	1¼"	
5	L50	208	EAST/WEST	IN/OUT	2	8	-	FORWARD	4'-8⅞"	10 @ 5⅛"	-	REAR	3'-11"	9 @ 5⅜"	-	-	-	-	1⅜"	
5	L51	207	WEST	IN/OUT	2	4	-	FORWARD	2'-11½"	7 @ 5¼"	-	REAR	2'-10¾"	7 @ 5⅛"	-	-	-	-	1¼"	
			EAST	IN	2	2	-	FORWARD	2'-11½"	7 @ 5¼"	-	REAR	2'-10¾"	7 @ 5⅛"	-	-	-	-	1¼"	
5	L52	207	WEST	IN	1	1	-	FORWARD	3'-2½"	7 @ 5¾"	-	-	-	-	-	-	-	-	1¼"	
			EAST	OUT	1	1	-	FORWARD	3'-2½"	7 @ 5¾"	-	-	-	-	-	-	-	-	1¼"	
5	L57	204	WEST	OUT	1	1	107	FORWARD	2'-6⅜"	6 @ VARIES	SEE NOTE 14	-	-	-	-	-	-	-	1⅛"	NOTE 1
			WEST	IN	1	1	-	FORWARD	2'-6⅜"	6 @ VARIES	SEE NOTE 14	-	-	-	-	-	-	-	1⅛"	
			EAST	IN/OUT	1	2	-	FORWARD	2'-6⅜"	6 @ VARIES	SEE NOTE 14	-	-	-	-	-	-	-	1⅛"	
6	L62	202	WEST	IN/OUT	1	2	-	FORWARD	3'-8"	9 @ 5"	SEE L62E OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	
			EAST	IN	1	1	-	FORWARD	3'-8"	9 @ 5"	SEE L62E OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	
			EAST	OUT	1	1	113	FORWARD	3'-8"	9 @ 5"	SEE L62E OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	NOTE 1
6	L63	109	WEST	OUT	1	1	114	-	-	-	-	REAR	1'-10"	4 @ 6"	SEE L63W OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
			EAST/WEST	IN	2	4	-	FORWARD	1'-11½"	5 @ 4⅞"	-	REAR	1'-10"	4 @ 6"	SEE L63 BOW REPAIRS	-	-	-	1"	
			EAST	OUT	1	1	115	-	-	-	-	REAR	1' -10"	4 @ 6"	SEE L63E OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
6	L64	109	WEST	IN/OUT	2	4	-	FORWARD	1'-11"	5 @ 4¾"	-	REAR	1'- 8½"	4 @ 5½"	SEE L64E OUTSIDE BOW REPAIR	-	-	-	1"	
			EAST	IN	2	2	-	FORWARD	1'-11"	5 @ 4¾"	-	REAR	1'- 8½"	4 @ 5½"	SEE L64E OUTSIDE BOW REPAIR	-	-	-	1"	
			EAST	OUT	1	1	116	-	-	-	-	REAR	1'- 8½"	4 @ 5½"	SEE L64E OUTSIDE BOW REPAIR	-	-	-	1"	NOTE 1
6	L66	108	EAST/WEST	IN/OUT	2	8	-	REAR	2'-5⅝"	6 @ 5⅛"	-	FORWARD	1'- 8⅞"	4 @ 5⅝"	-	-	-	-	1"	
6	L67	108	EAST/WEST	IN/OUT	2	8	-	FORWARD	1'-8⅞"	4 @ 5⅝"	-	REAR	1'- 1"	3 @ 5"	SEE L1W OUTSIDE GUSSET PLATE	-	-	-	1"	

EDGE STIFFENING REPAIR SUBTOTAL FROM THIS SHEET	81
EDGE STIFFENING REPAIR SUBTOTAL CARRIED FROM SHEET 53	79
LOWER CHORD EDGE STIFFENING REPAIR SUBTOTAL	160

TABLE NOTES

1) GUSSET PLATE HAS ADDITIONAL STIFFENING REPAIRS DUE TO BOWING.

14) SEE L57W OUTSIDE BOW REPAIR - SOUTH SIDE - REMOVE UP TO 3 RIVETS TO FIT NEW ANGLE. INCORPORATE ONE EXISTING RIVET HOLE INTO NEW ANGLE IF PRACTICABLE.

NOTES

GENERAL LOCATIONS OF WORK: SEE SHEETS 48/189 & 49/189 .

GENERAL PLATE ANGLE REPAIR TYPES: SEE SHEET 52/189 .

TYPE 8 EDGE STIFFENING ANGLE REPAIRS SHALL HAVE ⅞" DIA. ASTM A325 BOLTS UNLESS NOTED OTHERWISE.

SAMPLE TYPE 8 REPAIR ANGLE LAYOUT CALCULATION: SEE SHEET 57/189 .

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DESIGNED KAK | DRAWN RJH | REVIEWED DLR | DATE 9/25/15 | CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE STIFFENING REPAIR TYPE 8 TABLE - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

GUSSET PLATE REPAIR TYPE 8 TABLE - REPAIRS BASED ON EDGE STIFFENING REQUIREMENTS ONLY

UPPER CHORD

								LONGEST GUSSET PLATE EDGE INFORMATION				EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION				TOP GUSSET PLATE EDGE INFORMATION				
SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	# OF TYPE 8 REPAIRS PER GUSSET PLATE	TOTAL EDGES TO TO BE STIFFENED	SEE SHEET /189	LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	ESTIMATED ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	PROP-OSED BOLT GRIP (IN.)	NOTE
1	U2	410	WEST	IN/OUT	1	2	-	REAR	1'-4¾"	4 @ 4¼"	-	-	-	-	-	-	-	-	1"	
			EAST	IN	1	1	-	REAR	1'-4¾"	4 @ 4¼"	-	-	-	-	-	-	-	-	1"	
1	U5	412	EAST/WEST	IN/OUT	2	8	-	FORWARD	1'-7"	4 @ 5"	-	REAR	1'-8⅛"	4 @ 5⅜"	-	-	-	-	1"	
1	U6	412	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-3"	5 @ 5¾"	SEE NOTE 7	-	-	-	-	-	-	-	1⅛"	
1	U7	413	EAST/WEST	IN/OUT	2	8	-	FORWARD	2'-7½"	6 @ 5½"	SEE NOTE 7	REAR	1'-11"	5 @ 4¾"	-	-	-	-	1"	
1	U8	413	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-8⅛"	6 @ 5⅝"	-	-	-	-	-	-	-	-	1⅛"	
1	U9	414	WEST	IN/OUT	3	6	-	FORWARD	2'-6¼"	6 @ 5¼"	SEE U9 BOW REPAIR	REAR	2'-1"	5 @ 5¼"	-	1' -9"	5 @ 4¼"	SEE U9 BOW REPAIR	1"	
			EAST	IN	3	3	-	FORWARD	2'-6¼"	6 @ 5¼"	SEE U9 BOW REPAIR	REAR	2'-1"	5 @ 5¼"	-	1' -9"	5 @ 4¼"	SEE U9 BOW REPAIR	1"	
			EAST	OUT	2	2	118	FORWARD	2'-6¼"	6 @ 5¼"	SEE U9 BOW REPAIR	-	-	-	-	1' -9"	5 @ 4¼"	SEE U9 BOW REPAIR	1"	NOTE 1
2	U11	415	EAST/WEST	IN/OUT	3	12	119	REAR	2'-6¼"	6 @ 5¼"	SEE U11 BOW REPAIR	FORWARD	2'-3"	5 @ 5¾"	SEE U11 BOW REPAIR	2' - 2"	5 @ 5½"	SEE U11 BOW REPAIR	1"	
2	U12	415	EAST/WEST	IN/OUT	2	8	120, 121	REAR	3'-10"	8 @ 6"	SEE U12 BOW REPAIR	FORWARD	2'-5"	6 @ 5"	SEE U12 BOW REPAIR	-	-	-	1⅛"	
2	U14	502	EAST/WEST	IN/OUT	1	4	-	REAR	1'-10"	4 @ 6"	-	-	-	-	-	-	-	-	1"	
2	U15	112	EAST/WEST	IN/OUT	2	8	-	FORWARD	1'-9¼"	4 @ 5¾"	-	REAR	1'-10½"	5 @ 4⅝"	-	-	-	-	1"	
2	U16	112	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-6¼"	6 @ 5¼"	-	-	-	-	-	-	-	-	1"	
2	U17	113	EAST/WEST	IN/OUT	1	4	-	FORWARD	1'-7⅜"	4 @ 5⅛"	SEE NOTE 8	-	-	-	-	-	-	-	1"	
2	U18	113	EAST/WEST	IN/OUT	1	4	-	FORWARD	3'-9⅝"	10 @VARIES	SEE U62 BOW REPAIR	-	-	-	-	-	-	-	1⅛"	
2	U19	212	EAST/WEST	IN/OUT	1	4	-	FORWARD	1'-10"	4 @ 6"	SEE NOTE 9	-	-	-	-	-	-	-	1"	
3	U21	213	EAST/WEST	IN/OUT	1	4	-	REAR	2'-4"	5 @ 6"	SEE U59E INSIDE BOW REPAIR	-	-	-	-	-	-	-	1¼"	
3	U25	215	EAST/WEST	IN/OUT	1	4	-	REAR	2'-0"	5 @ 5"	SEE U55E OUT. BOW REPAIR - N. EDGE	-	-	-	-	-	-	-	1"	
3	U26	215	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-6¼"	6 @ 5¼"	-	-	-	-	-	-	-	-	1⅛"	
3	U29	217	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-2½"	5 @ 5⅝'	SEE NOTE 7	-	-	-	-	-	-	-	1⅛"	
3	U30	217	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-11½"	7 @ 5¼"	-	-	-	-	-	-	-	-	1¼"	
3	U31	218	EAST/WEST	IN/OUT	2	8	-	FORWARD	2'-6⅞"	6 @ 5⅜"	-	REAR	2'-3"	5 @ 5¾"	-	-	-	-	1⅛"	
4	U33	219	EAST/WEST	IN/OUT	2	8	-	REAR	3'-10"	8 @ 6"	SEE NOTE 11/NOTE 10	FORWARD	3'-8¼"	8 @ 5¾"	SEE NOTE 10	-	-	-	1¼"	
4	U34	219	EAST/WEST	IN/OUT	3	12	-	REAR	4'-1"	9 @ 5⅝"	SEE U46W OUT. BOW REPAIR/NOTE 10	FORWARD	3'-10"	8 @ 6"	SEE U46W OUT. BOW REPAIR/NOTE 10	2' - 7½"	6 @ 5½"	SEE U46W OUT. BOW REPAIR	1⅛"	
4	U35	211	WEST	OUT	1	1	122	REAR	2'-10"	6 @ 6"	SEE U35W OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	
			EAST/WEST	IN	1	2	-	REAR	3'-10"	8 @ 5¼"	SEE U35E OUSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	NOTE 1
			EAST	OUT	1	1	123	REAR	3'-10"	8 @ 5¼"	SEE U35E OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1⅛"	NOTE 1
4	U 36	301	EAST/WEST	IN/OUT	1	4	-	REAR	2'-7½"	6 @ 5½'	SEE NOTE 12	-	-	-	-	-	-	-	1⅛"	NOTE 1
			EDGE STIFFENING REPAIR SUBTOTAL CARRIED TO SHEET 56			142														

TABLE NOTES

1) GUSSET PLATE HAS ADDITIONAL STIFFENING REPAIRS DUE TO BOWING.
7) REMOVE UP TO 3 EXISTING RIVETS TO FIT NEW ANGLE. INCORPORATE EXISTING RIVETS HOLES INTO NEW ANGLE IF PRACTICABLE.
8) REMOVE UP TO 2 EXISTING RIVETS TO FIT NEW ANGLE.
9) SEE U61E OUTSIDE BOW REPAIR - VERTICAL ANGLE ONLY.
10) DOCUMENT THE PERMANENT POSITION OF THE UTILITY LINES CROSSING GUSSET. REDUCE ANGLE LENGTH AS-NEEDED TO PROVIDE 1" CLEARANCE WITH UTILITY LINES IN PERMANENT POSITION.
11) TRIM NEW ANGLE TO AVOID EXISTING RIVETS AT PLATE EDGE.
12) PLACE ANGLE TO OUTSIDE OF PLATE ON WEST TRUSS TO AVOID CONDUIT.

NOTES

GENERAL LOCATIONS OF WORK: SEE SHEETS 48/189 & 49/189 .

GENERAL PLATE ANGLE REPAIR TYPES: SEE SHEET 52/189 .

TYPE 8 EDGE STIFFENING ANGLE REPAIRS SHALL HAVE ⅞" DIA. ASTM A325 BOLTS UNLESS NOTED OTHERWISE.

SAMPLE TYPE 8 REPAIR ANGLE LAYOUT CALCULATION: SEE SHEET 57/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GUSSET PLATE STIFFENING REPAIR TYPE 8 TABLE - 3

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

GUSSET PLATE REPAIR TYPE 8 TABLE - REPAIRS BASED ON EDGE STIFFENING REQUIREMENTS ONLY

UPPER CHORD

SPAN	PANEL POINT	SHOP DRAWING MARK	EAST/WEST TRUSS	INSIDE/ OUTSIDE PLATE	# OF TYPE 8 REPAIRS PER GUSSET PLATE	TOTAL EDGES TO TO BE STIFFENED	SEE SHEET /189	LONGEST GUSSET PLATE EDGE INFORMATION				EDGE OPPOSITE OF LONGEST GUSSET PLATE EDGE INFORMATION				TOP GUSSET PLATE EDGE INFORMATION			PROP-OSED BOLT GRIP (IN.)	NOTE
								LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	LOCATION OF EDGE ON PLATE	EST. ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT	ESTIMATED ANGLE LENGTH	ESTIMATED NUMBER OF NEW CONNECTION BOLTS AND ESTIMATED SPACING	COMMENT		
4	U 37	301	EAST/WEST	IN/OUT	1	4	-	REAR	2'-8 1/8"	6 @ 5 5/8"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 38	302	EAST/WEST	IN/OUT	1	4	-	REAR	2'-7 1/2"	6 @ 5 1/2"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 39	302	EAST/WEST	IN/OUT	1	4	-	REAR	2'-6 7/8"	6 @ 5 3/8"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 41	302	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-6 7/8"	6 @ 5 3/8"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 42	302	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-7 1/2"	6 @ 5 1/2"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 43	301	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-8 1/8"	6 @ 5 5/8"	-	-	-	-	-	-	-	-	1 1/4"	
4	U 44	301	EAST/WEST	IN/OUT	1	4	-	FORWARD	2'-7 1/2"	6 @ 5 1/2"	-	-	-	-	-	-	-	-	1 1/8"	
4	U 45	211	WEST	OUT	1	1	124	FORWARD	3'-7 3/8"	8 @ 5 5/8"	SEE U45W - OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/8"	NOTE 1
			EAST/WEST	IN	1	2	125, 126	FORWARD	2'-6 1/4"	6 @ 5 1/4"	SEE U45E - INSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/8"	NOTE 1
			EAST	OUT	1	1	-	FORWARD	3'-7 3/8"	8 @ 5 5/8"	SEE U45W - OUTSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/8"	
4	U 46	219	EAST/WEST	IN/OUT	3	12	127, 128	FORWARD	4'-1"	9 @ 5 5/8"	SEE U46W OUTSIDE BOW REPAIR/NOTE 10	REAR	3'-10"	8 @ 6"	SEE U46W OUTSIDE BOW REPAIR/NOTE 10	2'-7 1/2"	6 @ 5 1/2"	SEE U46W OUT. BOW REPAIR	1 1/8"	
4	U 47	219	EAST/WEST	IN/OUT	2	8	-	FORWARD	3'-10"	8 @ 6"	SEE NOTE 11/NOTE 10	REAR	3'-8 1/4"	8 @ 5 3/4"	SEE NOTE 10	-	-	-	1 1/4"	
5	U 49	218	EAST/WEST	IN/OUT	2	8	-	REAR	2'-6 7/8"	6 @ 5 3/8"	-	FORWARD	2'-3"	5 @ 5 3/4"	-	-	-	-	1 1/8"	
5	U 50	217	EAST/WEST	IN/OUT	1	4	-	REAR	2'-11 1/2"	7 @ 5 1/4"	-	-	-	-	-	-	-	-	1 1/4"	
5	U 51	217	EAST/WEST	IN/OUT	1	4	-	REAR	2'-2 1/2"	5 @ 5 5/8"	SEE NOTE 7	-	-	-	-	-	-	-	1 1/8"	
5	U 54	215	EAST/WEST	IN/OUT	1	4	-	REAR	2'-6 1/4"	6 @ 5 1/4"	-	-	-	-	-	-	-	-	1 1/8"	
5	U 55	215	WEST	IN/OUT	1	2	-	FORWARD	2'-0"	5 @ 5"	SEE U55E OUT. BOW REPAIR - N. EDGE	-	-	-	-	-	-	-	1"	
			EAST	IN	1	1	-	FORWARD	2'-0"	5 @ 5"	SEE U55E OUT. BOW REPAIR - N. EDGE	-	-	-	-	-	-	-	1"	
			EAST	OUT	1	1	129	FORWARD	2'-0"	5 @ 5"	SEE U55E OUT. BOW REPAIR - N. EDGE	-	-	-	-	-	-	-	1"	NOTE 1
5	U 59	213	EAST/WEST	IN/OUT	1	4	131	FORWARD	2'-4"	5 @ 6"	SEE U59E INSIDE BOW REPAIR	-	-	-	-	-	-	-	1 1/4"	
6	U 61	212	WEST	OUT	1	1	-	REAR	1'-10"	4 @ 6"	SEE U61E OUT. BOW REPAIR-VERT. ANGLE	-	-	-	-	-	-	-	1"	
			EAST/WEST	IN	1	2	-	REAR	1'-10"	4 @ 6"	SEE U61E OUT. BOW REPAIR-VERT. ANGLE	-	-	-	-				1"	
			EAST	OUT	2	2	132	REAR	1'-10"	4 @ 6"	SEE U61E OUTSIDE BOW REPAIR	-	-	-	-	1 -4"	3 @ 6"	SEE U61E OUT. BOW REPAIR	1"	NOTE 1
6	U 62	113	EAST/WEST	IN/OUT	1	4	133	REAR	3'-9 5/8"	10 @ VARIES	SEE NOTE 15	-	-	-	-	-	-	-	1 1/8"	
6	U 63	113	EAST/WEST	IN/OUT	1	4	-	REAR	1'-7 3/8"	4 @ 5 1/8"	SEE NOTE 11	-	-	-	-	-	-	-	1"	
6	U 64	112	EAST/WEST	IN/OUT	1	4	-	REAR	2'-6 1/4"	6 @ 5 1/4"	-	-	-	-	-	-	-	-	1"	
6	U 65	112	EAST/WEST	IN/OUT	2	8	-	REAR	1'-9 1/4"	4 @ 5 3/4"	-	FORWARD	1'-10 1/2"	5 @ 4 5/8"	-	-	-	-	1"	
6	U 66	111	WEST	IN	1	1	-	FORWARD	1'-9 5/8"	4 @ 5 7/8"	-	-	-	-	-	-	-	-	1"	
			EAST	IN/OUT	1	2	-	FORWARD	1'-9 5/8"	4 @ 5 7/8"	-	-	-	-	-	-	-	-	1"	

EDGE STIFFENING REPAIR SUBTOTAL FROM THIS SHEET _____	108
EDGE STIFFENING REPAIR SUBTOTAL CARRIED FROM SHEET 55	142
TOP CHORD EDGE STIFFENING REPAIR SUBTOTAL	250
BOTTOM CHORD EDGE STIFFENING REPAIR SUBTOTAL CARRIED FROM SHEET 54	160
EDGE STIFFENING REPAIR TOTAL	410

TABLE NOTES

1) GUSSET PLATE HAS ADDITIONAL STIFFENING REPAIRS DUE TO BOWING.
7) REMOVE UP TO 3 EXISTING RIVETS TO FIT NEW ANGLE. INCORPORATE EXISTING RIVETS HOLES INTO NEW ANGLE IF PRACTICABLE.
10) DOCUMENT THE PERMANENT POSITION OF THE UTILITY LINES CROSSING THE GUSSET.
REDUCE ANGLE LENGTH AS NEEDED TO PROVIDE 1" CLEARANCE WITH UTILITY LINES IN PERMANENT POSITION.
11) TRIM NEW ANGLE TO AVOID EXISTING RIVETS AT PLATE EDGE.
15) SEE U62W OUTSIDE BOW REPAIR - SOUTH SIDE - REMOVE 2 RIVETS TO FIT ANGLE. INCORPORATE TWO EXISTING RIVET HOLES INTO NEW ANGLE.

NOTES

GENERAL LOCATIONS OF WORK: SEE SHEETS 48/189 & 49/189 .

GENERAL PLATE ANGLE REPAIR TYPES: SEE SHEET 52/189 .

TYPE 8 EDGE STIFFENING ANGLE REPAIRS SHALL HAVE 7/8" DIA. ASTM A325 BOLTS UNLESS NOTED OTHERWISE.

SAMPLE TYPE 8 REPAIR ANGLE LAYOUT CALCULATION: SEE SHEET 57/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN RJH | REVIEWED DLR | DATE 9/25/15
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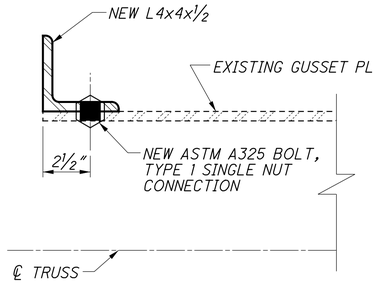
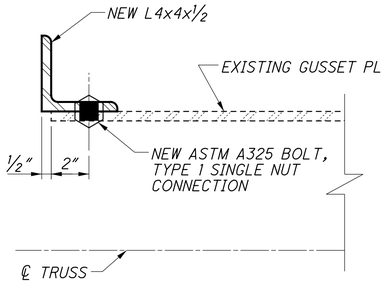
GUSSET PLATE STIFFENING REPAIR TYPE 8 TABLE - 4

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

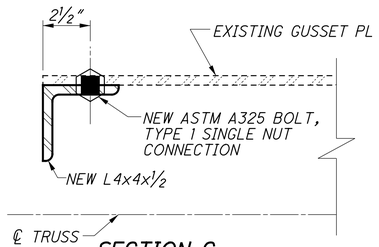
LOR-611-3.44
PID No. 92009



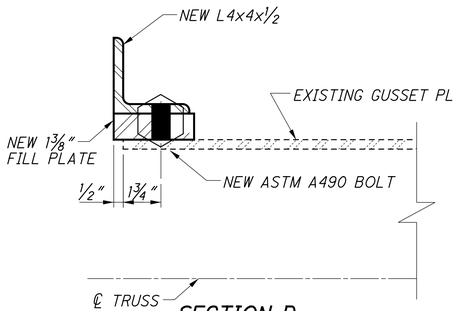
SECTION A



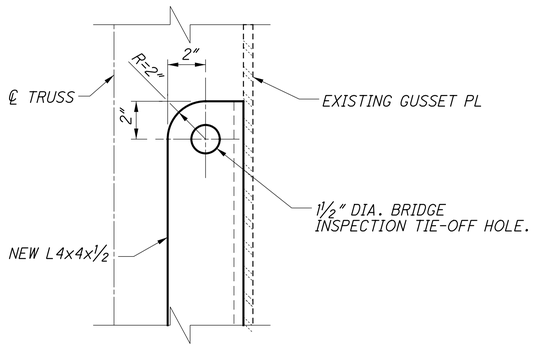
SECTION B



SECTION C

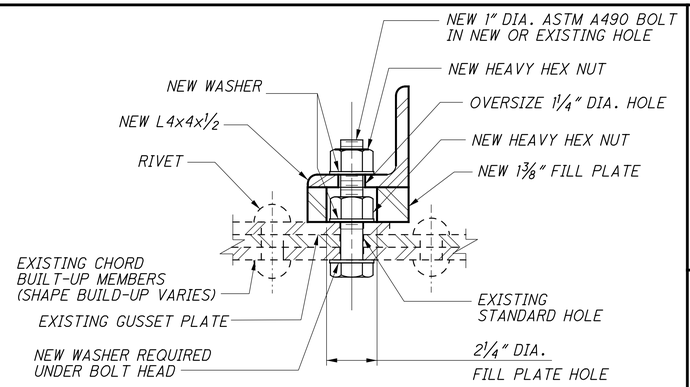


SECTION D

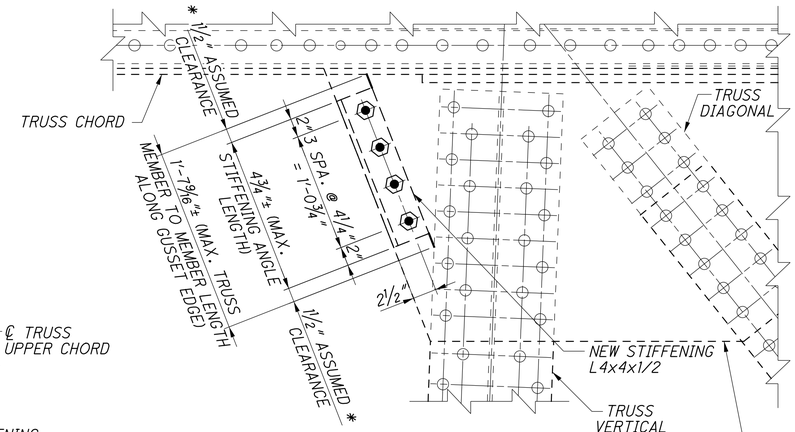


VIEW P-P

(DETAIL SHOWN FOR ANGLES AT L34W - OUTSIDE, L47 AND L49. APPLY THIS DETAIL TO TYPE 8 REPAIR ANGLES AT L30, L33, L34W - INSIDE, L34E - INSIDE/OUTSIDE, L46 AND L50)



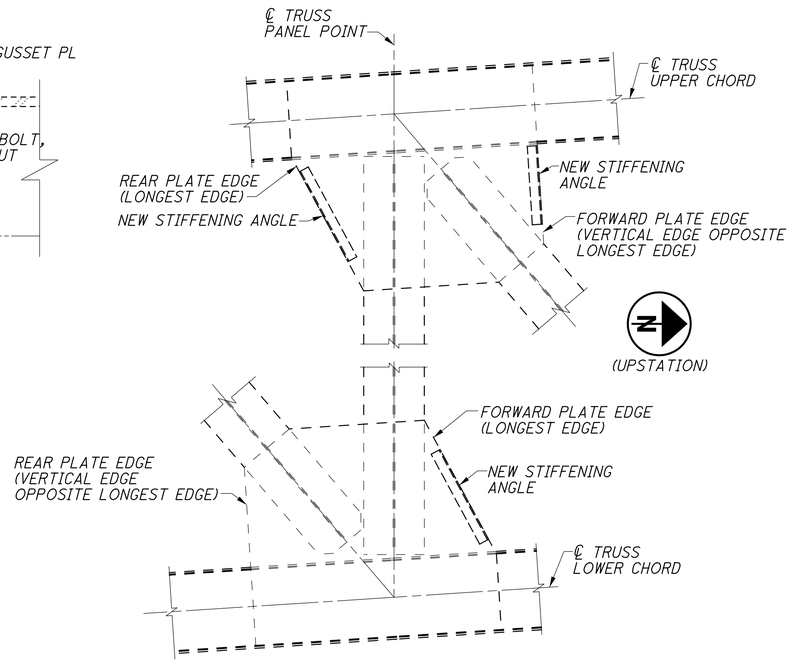
NEW DOUBLE NUT
L4x4x½ CONNECTION DETAIL
(TYPICAL)



* - FIELD LOCATE TYPE 8 ANGLE REPAIR ON EDGE USING THESE APPROXIMATE DIMENSIONS. THE CONTRACTOR MAY ADJUST THESE AS-NEEDED TO FIT ANGLE.

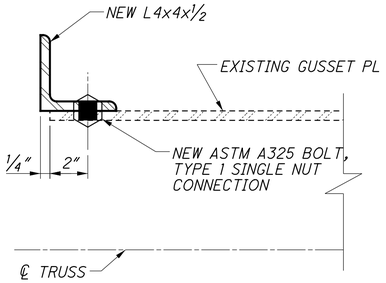
SAMPLE ESTIMATED
QUANTITY CALCULATION
FOR REPAIR TYPE 8 (AASHTO EDGE STIFFENING)

(PANEL POINT U2 SHOWN - SEE GUSSET PLATE STIFFENING REPAIR TABLES)

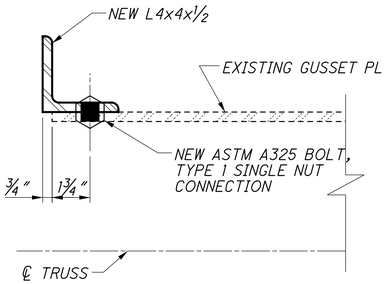


REPAIR TYPE 8
(AASHTO EDGE STIFFENING)
PLATE EDGE TO BE STIFFENED LOCATION

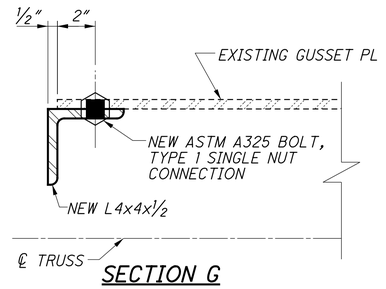
(WORK WITH EDGE STIFFENING REPAIR TABLES)



SECTION E



SECTION F



SECTION G

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

CONNECTION BOLT "GRIP": THE "GRIP" IS THE THICKNESS OF THE CONNECTED MATERIAL INCLUDING ANGLES, FILL PLATES, GUSSET PLATES, CHORD MEMBERS, AND SPLICE PLATES. THE "GRIP" DOES NOT INCLUDE WASHERS, NUTS, OR BOLT STICK THROUGH. THE "GRIP" DOES NOT INCLUDE PACK RUST OR GUSSET PLATE DEFORMATIONS AT SPECIFIC LOCATIONS THAT MAY REQUIRE LONGER BOLTS.

SECTION LOCATIONS: SEE SHEETS 58/189 THROUGH 134/189. OTHER, NON-TYPICAL, SECTIONS ARE SHOWN ON INDIVIDUAL PLAN SHEETS.

EDGE STIFFENING REPAIR TABLES: SEE SHEETS 53/189 THROUGH 56/189.

VIEW P-P IS LOCATED ON MULTIPLE SHEETS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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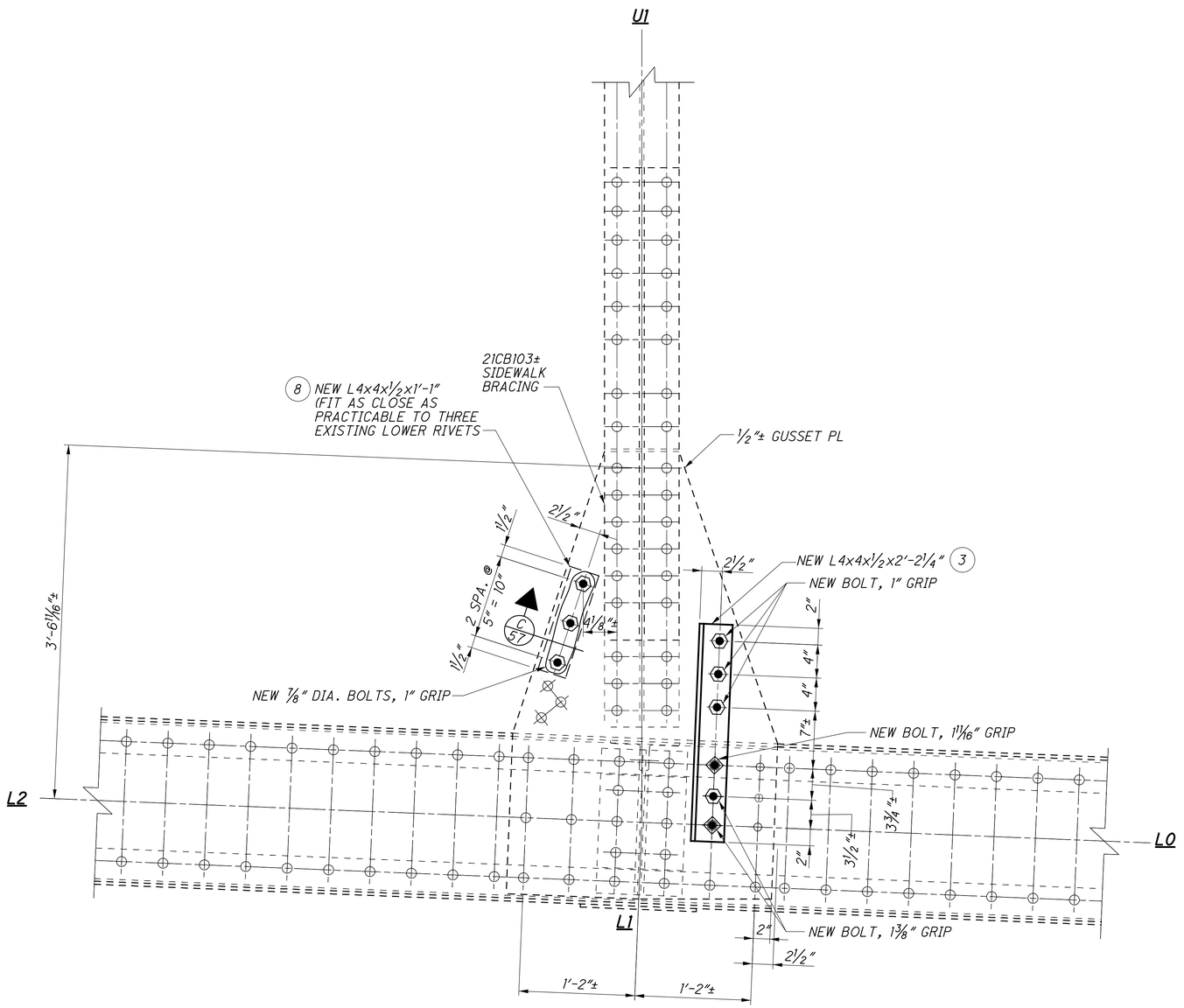
DAP		4707443	

TYPICAL GUSSET REPAIR SECTIONS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L1
SPAN 1 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 403
SPAN 1 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP COMPLETE PENETRATION (ANGLES ONLY)

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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DAP		4707443	

GUSSET PLATE REPAIR L1W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

58/189

103/234

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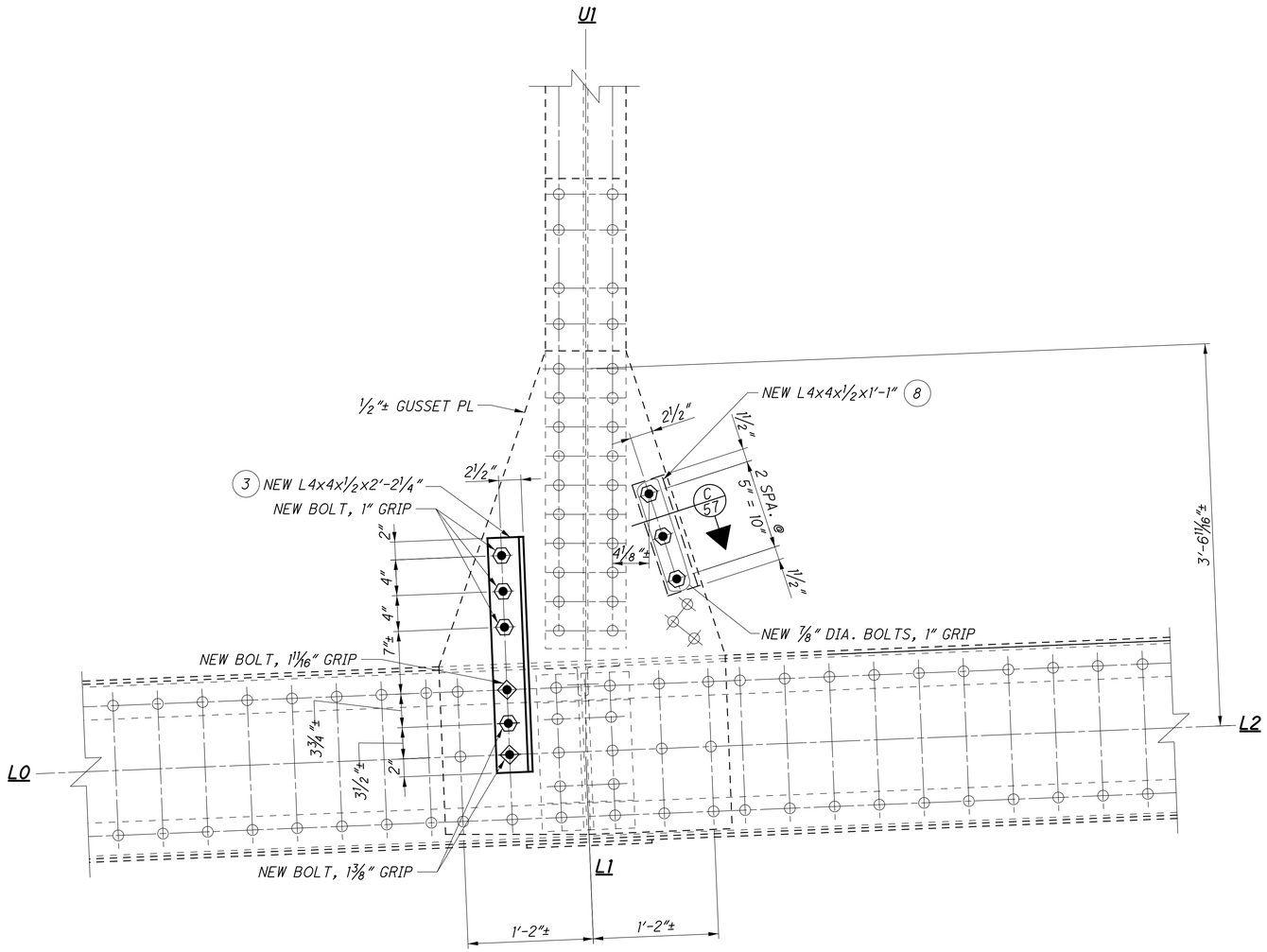

L1
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 403
SPAN 1 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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DAP		4707443	

GUSSET PLATE REPAIR LIE OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

59/189

104/234

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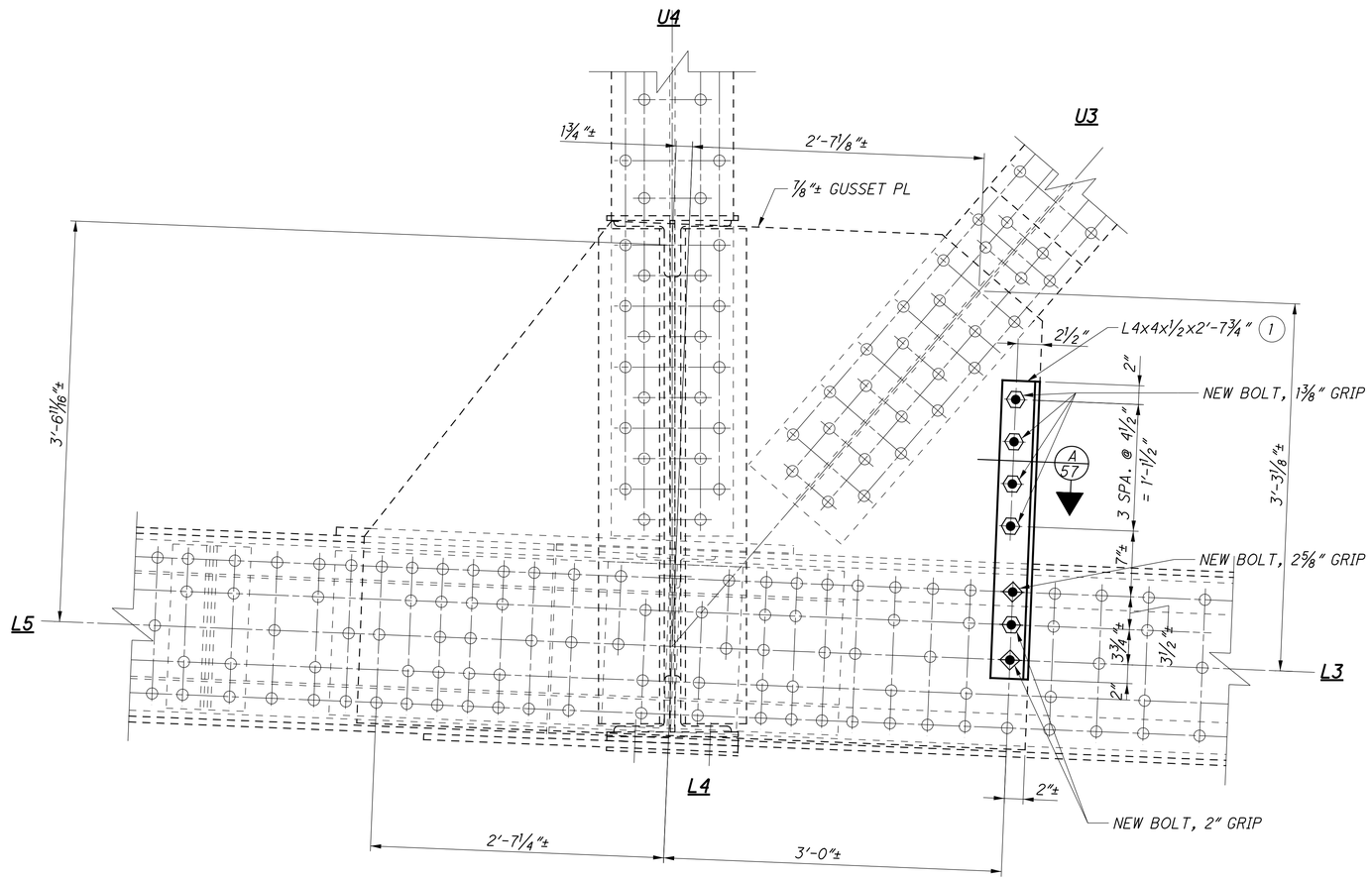

L4
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 404
SPAN 1 - PANEL POINT L4)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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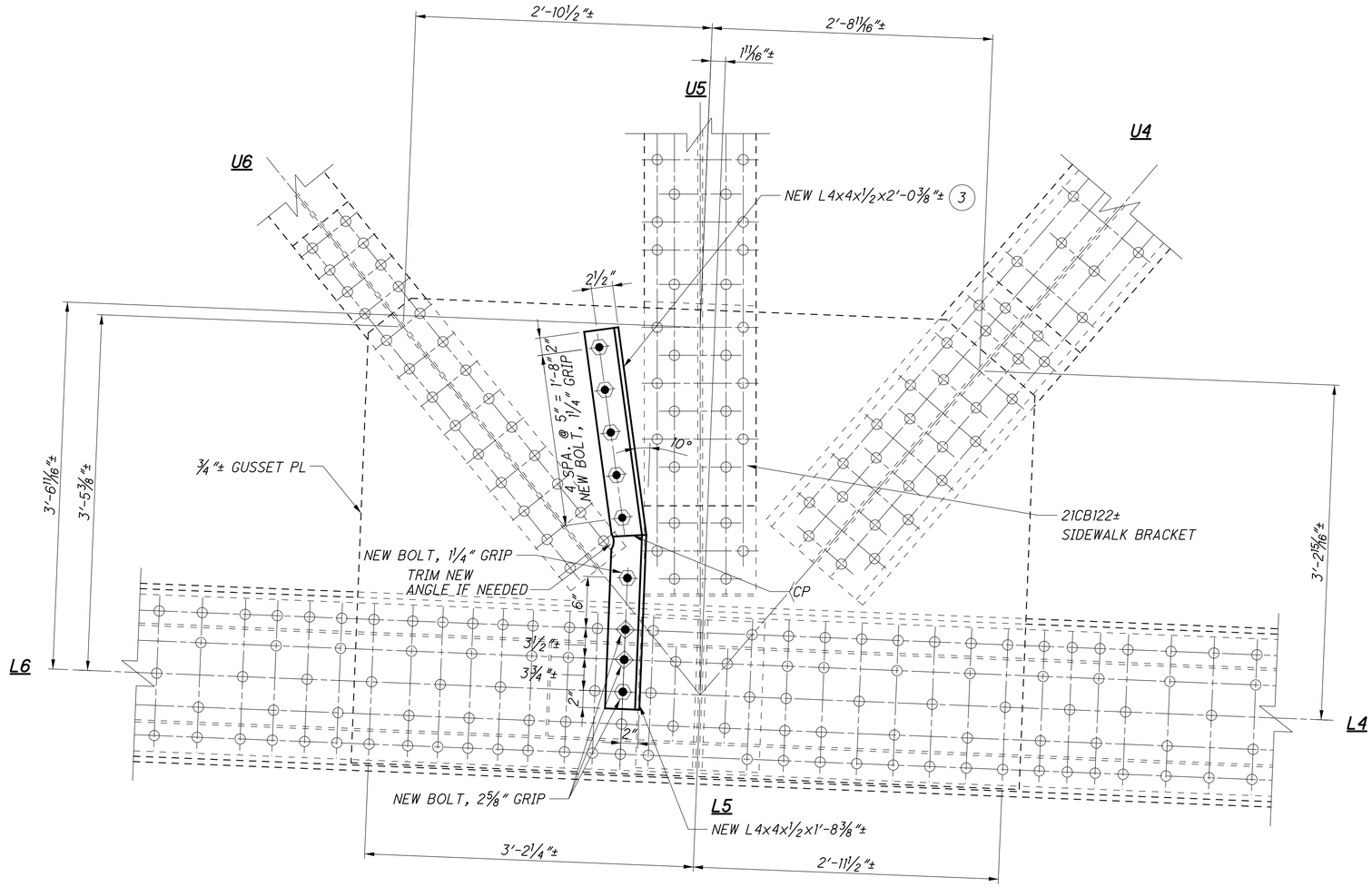
GUSSET PLATE REPAIR L4E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L5
SPAN 1 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 405
SPAN 1 - PANEL POINT L5)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L5W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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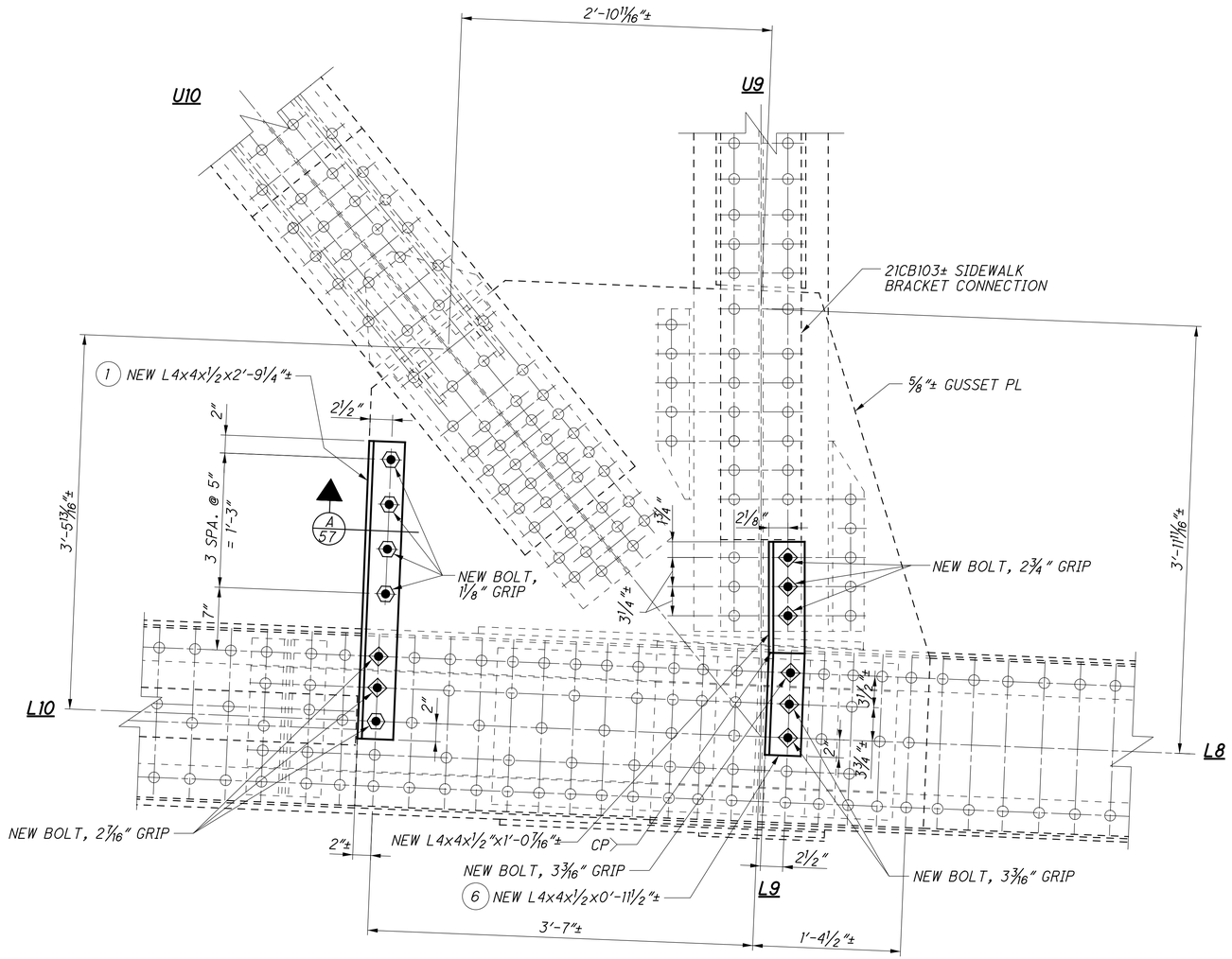

L9
SPAN 1 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 407
SPAN 1 - PANEL POINT L9)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L9W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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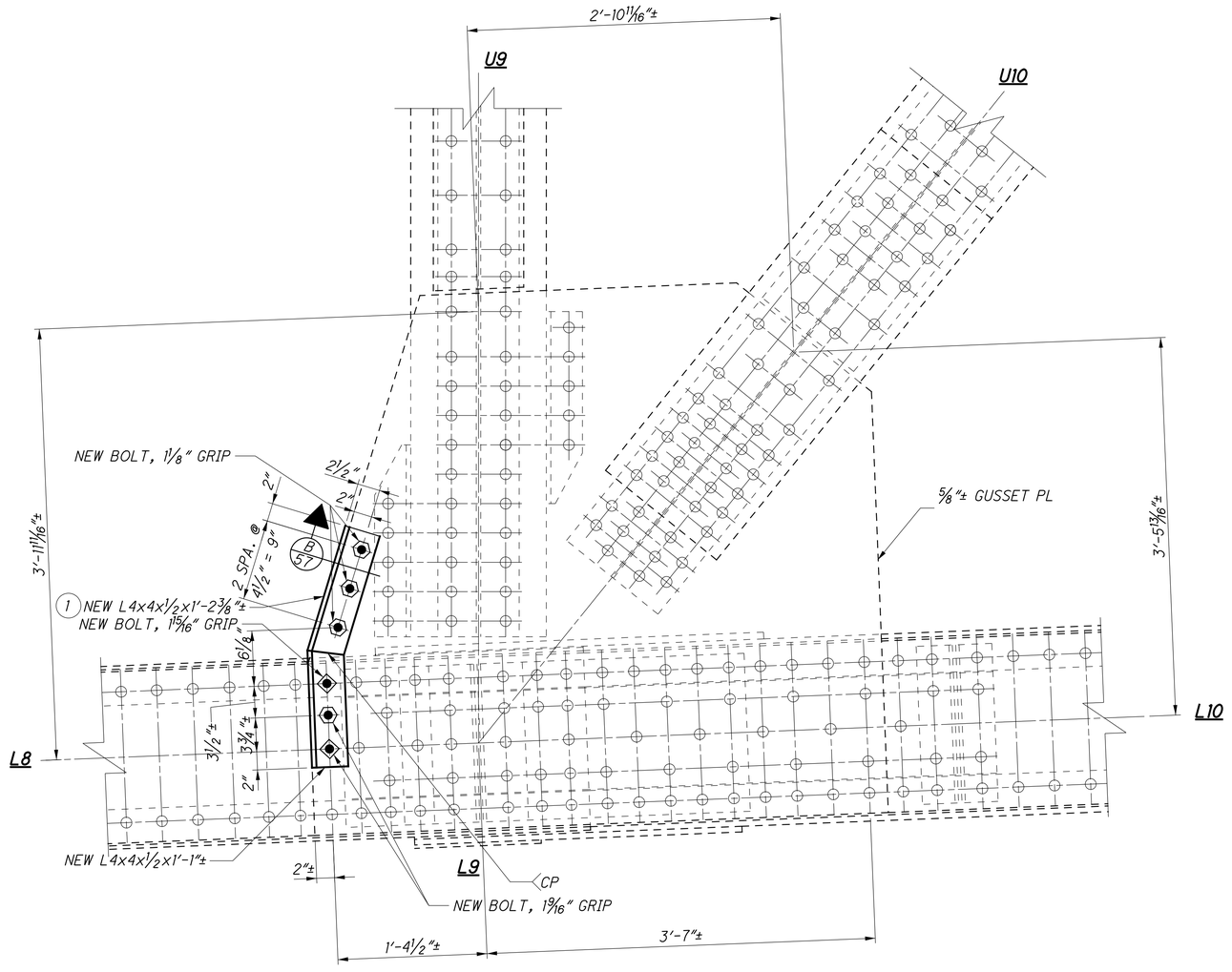

L9
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 407
SPAN 1 - PANEL POINT L9)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L9E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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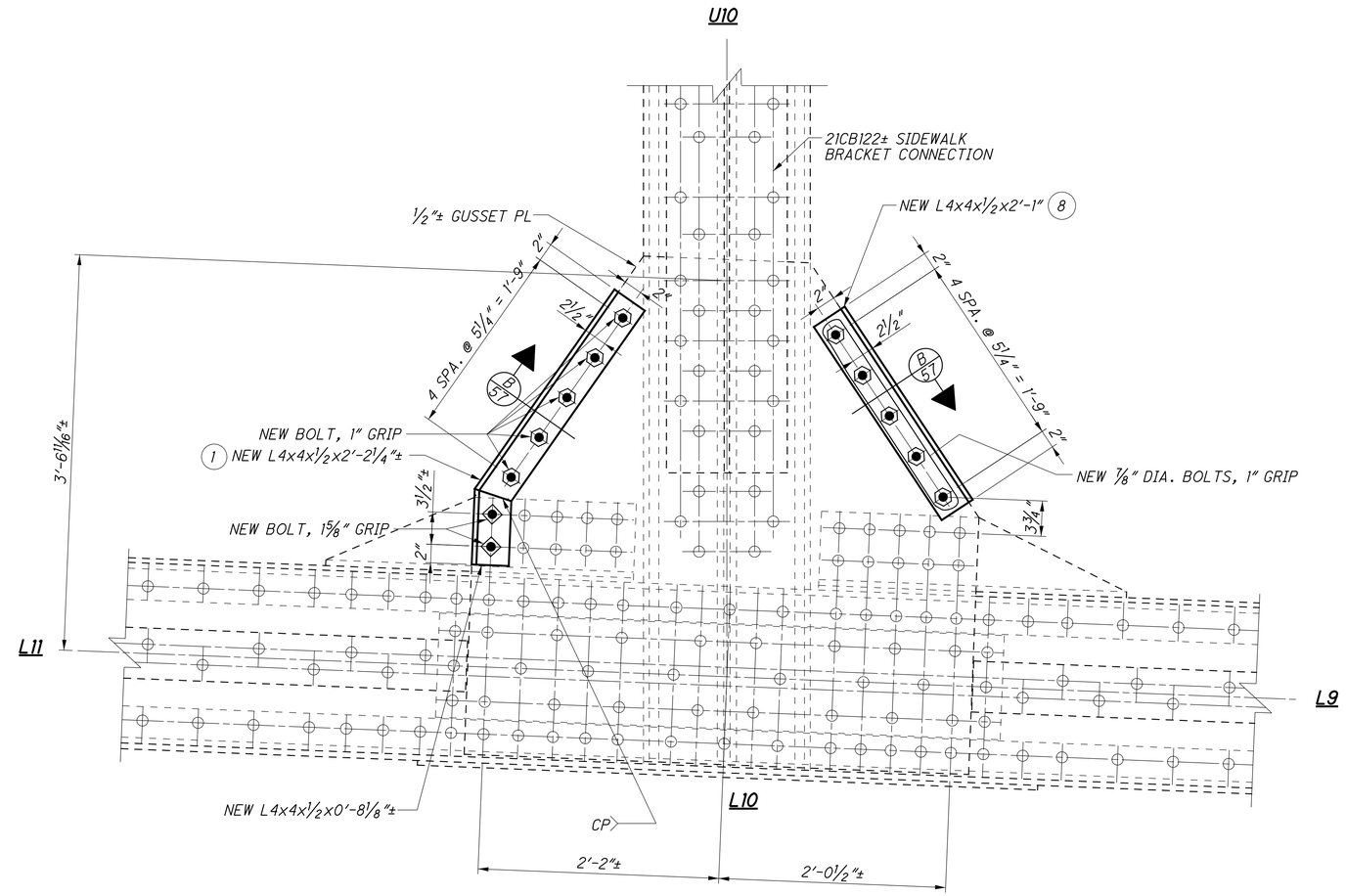

L10
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 408
SPAN 1 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L10W OUTSIDE
BRIDGE NO. LOR-611-0344
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LOR-611-3.44
PID No. 92009

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109/234

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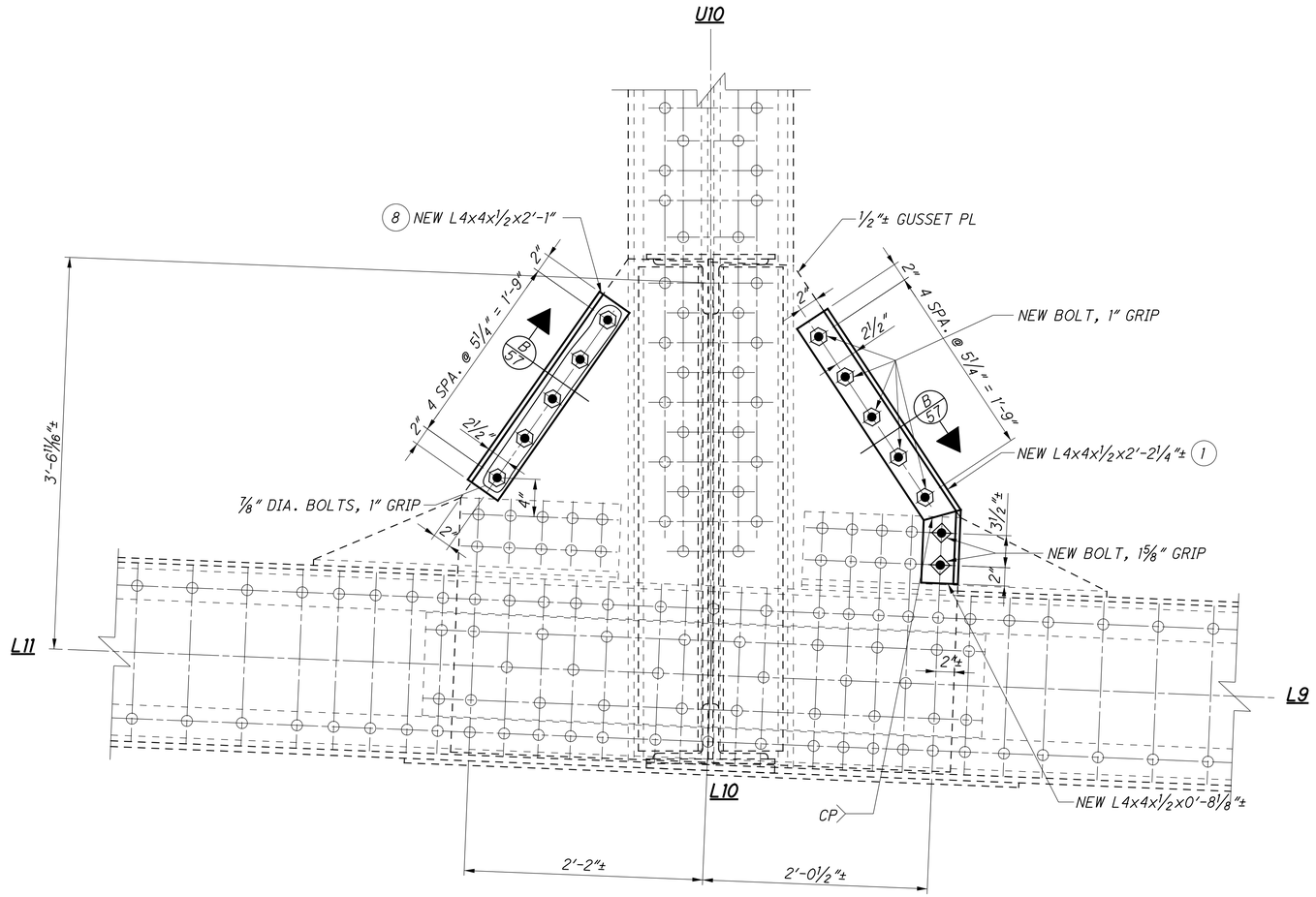

L10
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 408
SPAN 1 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L10E INSIDE
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LOR-611-3.44
PID No. 92009

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110/234

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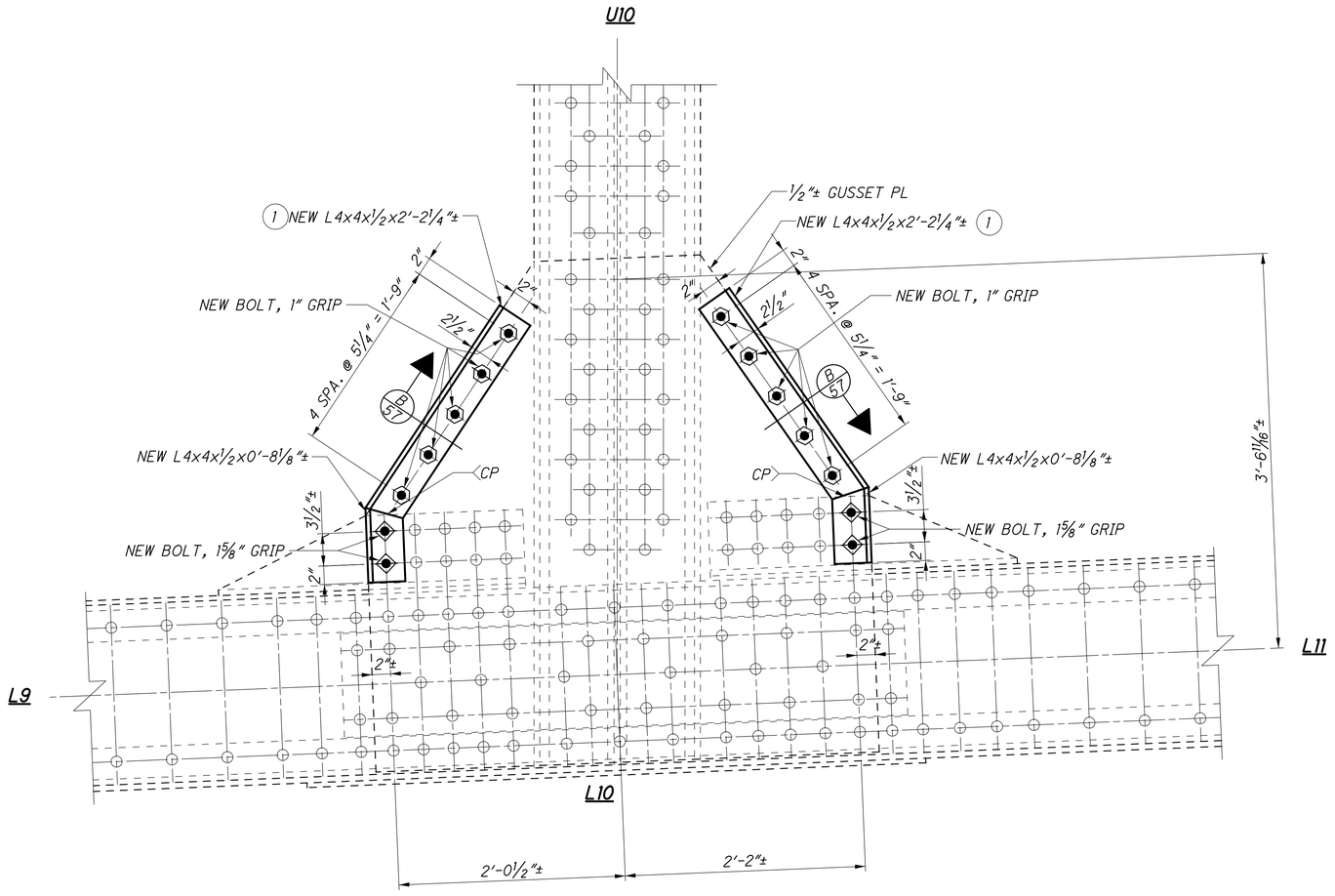

L10
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 408 SPAN 1 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L10E OUTSIDE
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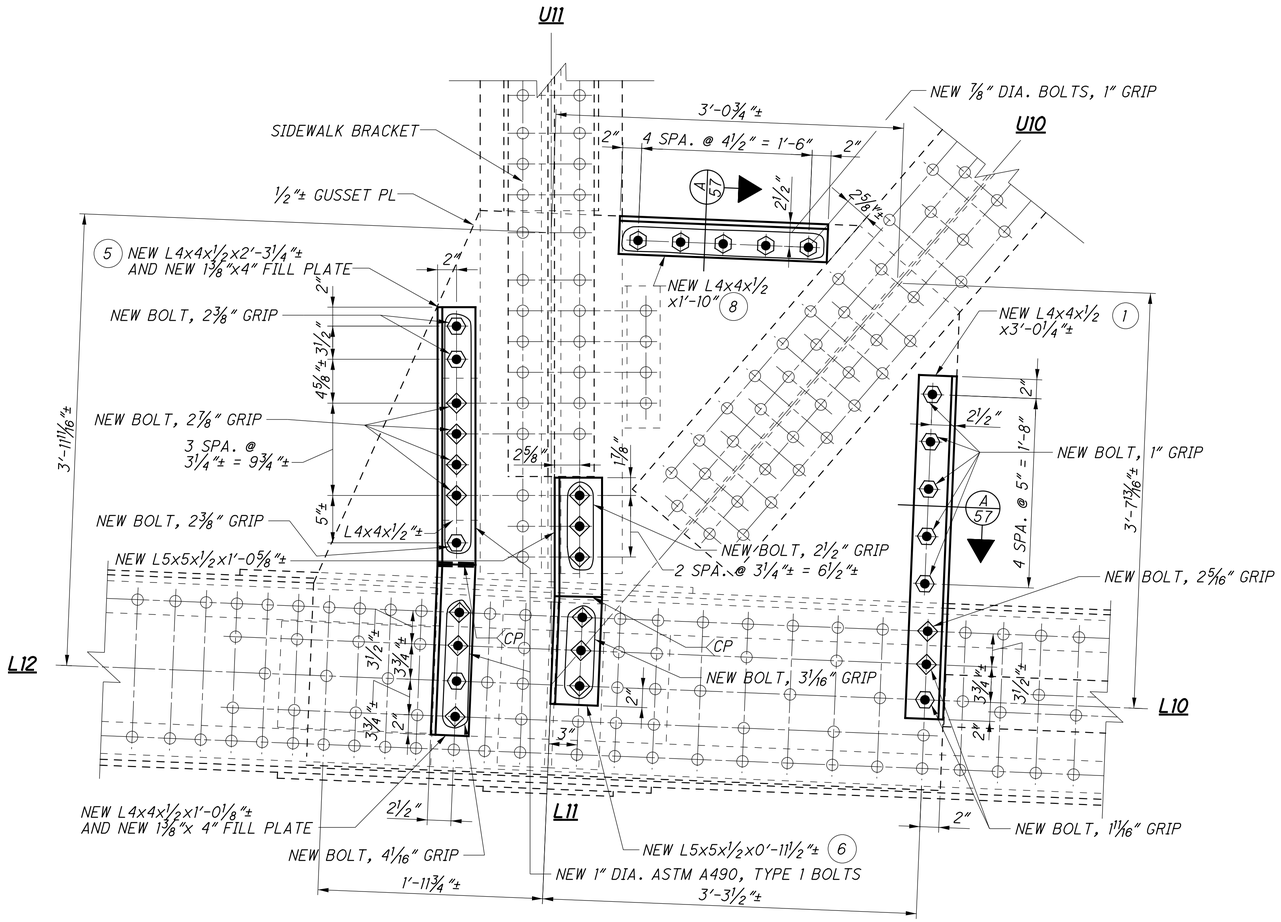
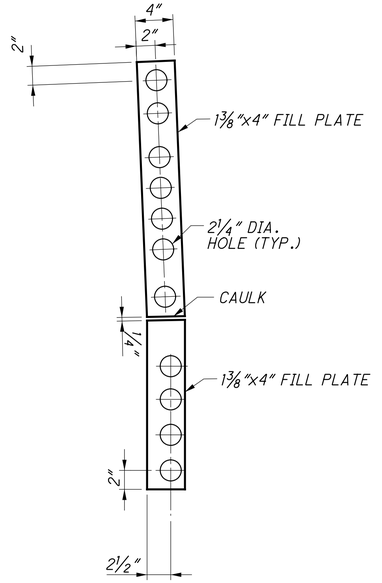


L11
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 408
SPAN 1 - PANEL POINT L11)



FILL PLATE DETAIL
AT L 4x4x1/2"

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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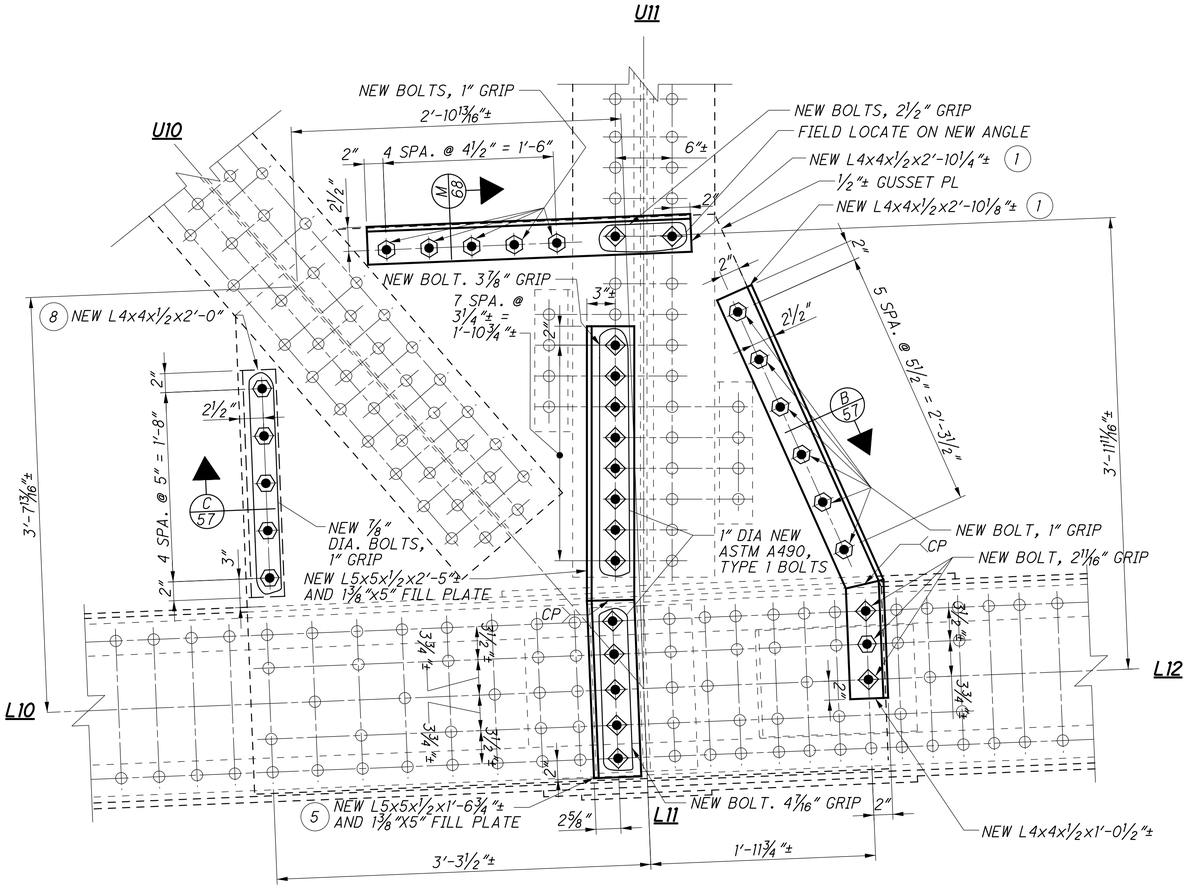
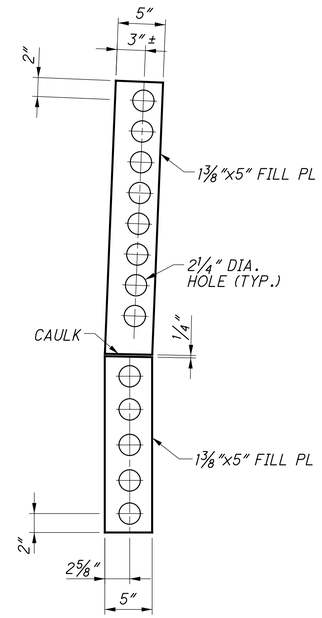
GUSSET PLATE REPAIR L11W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

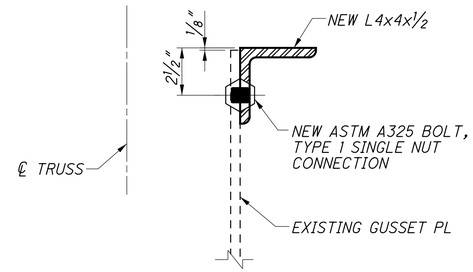


L11
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 408 SPAN 1 - PANEL POINT L11)



TYPICAL FILL PLATE DETAIL AT L5x5x1/2



SECTION M

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.*

NEW BOLTS *ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.*

CAULK *MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.*

CP *- COMPLETE PENETRATION (ANGLES ONLY).*

BOLT LEGEND: *SEE SHEET* 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: *SEE SHEET* 6/189.

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GUSSET PLATE REPAIR L11E OUTSIDE
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LOR-611-3.44
PID No. 92009

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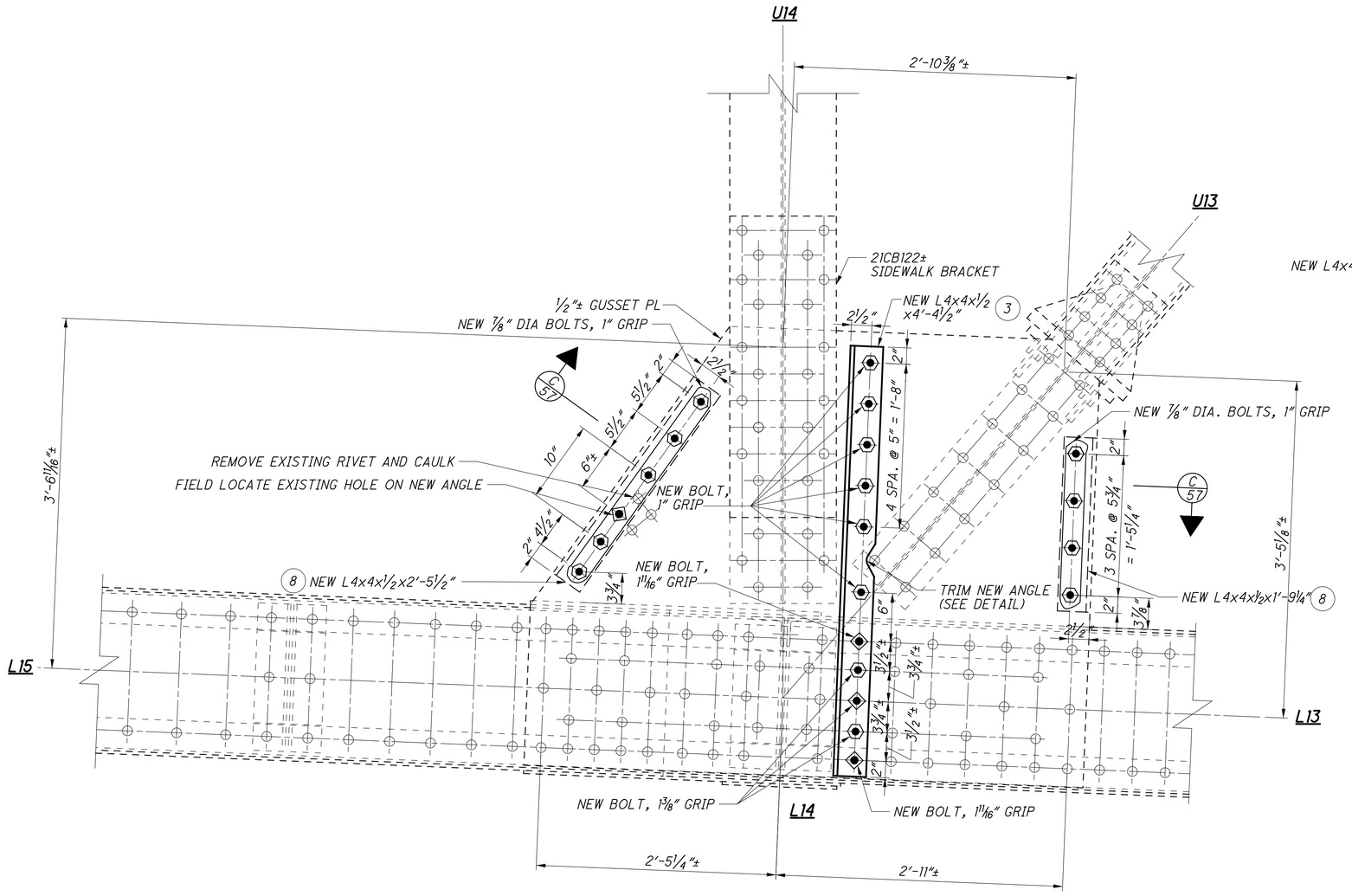
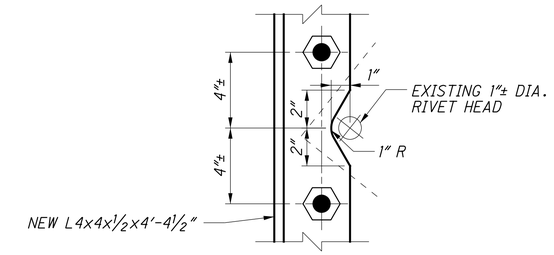


L14
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 507
SPAN 2 - PANEL POINT L2)



NEW ANGLE
TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK OPEN HOLES LEFT BY RIVET REMOVAL TO FACILITATE STIFFENING ANGLE INSTALLATION. COAT EXPOSED SURFACE WITH THE URETHANE FINISH COAT USED FOR BRIDGE PAINTING. WORK SHALL BE CONSIDERED INCIDENTAL TO THE ANGLE INSTALLATION ITEM.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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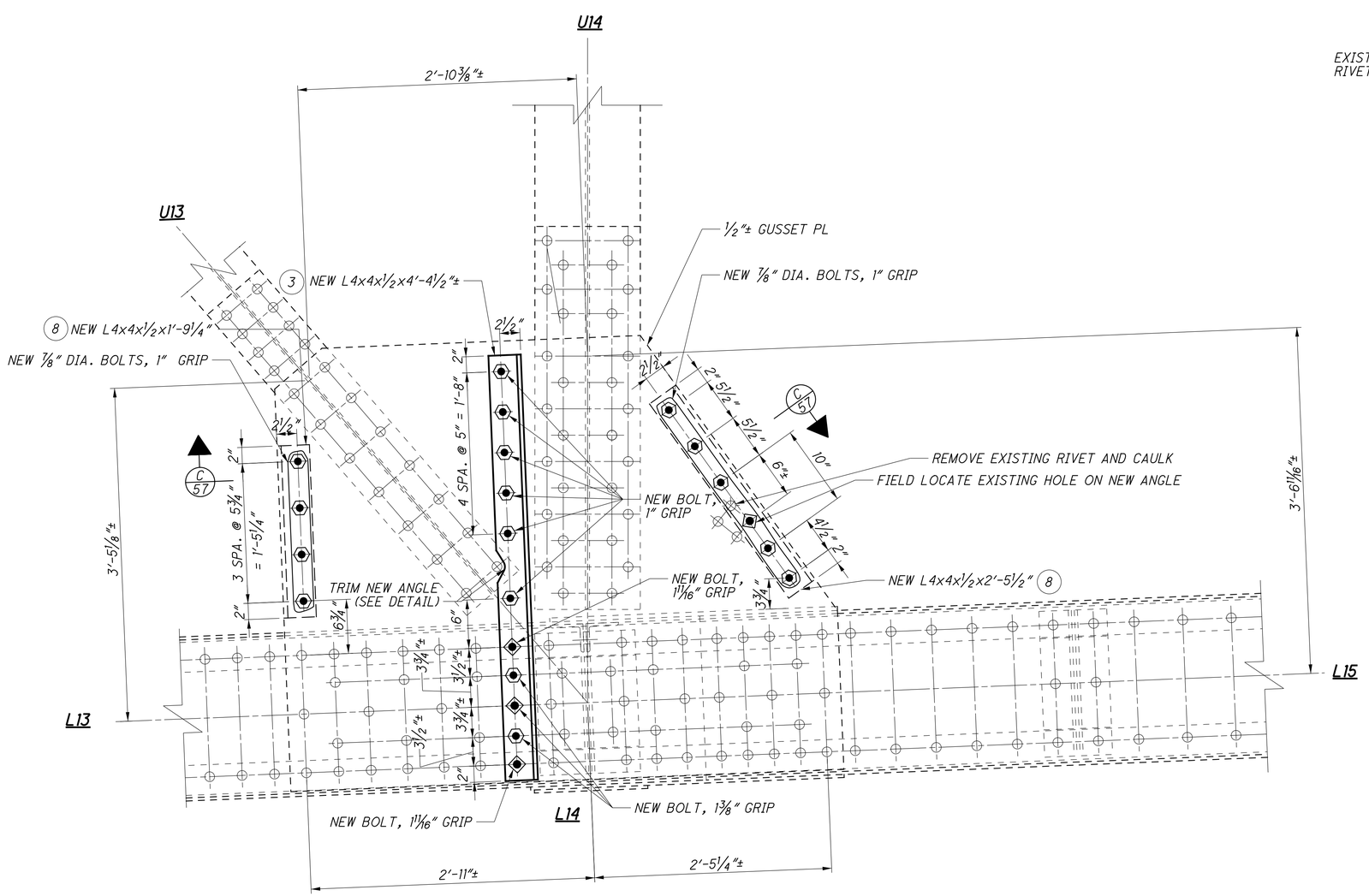
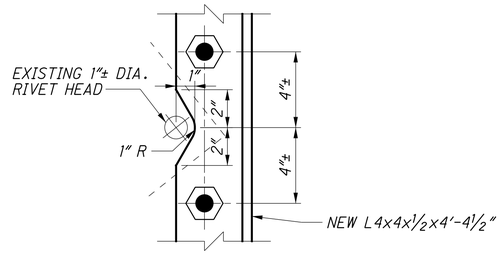
GUSSET PLATE REPAIR L14W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L14
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 507
SPAN 2 - PANEL POINT L2)



NEW ANGLE TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK OPEN HOLES LEFT BY RIVET REMOVAL TO FACILITATE STIFFENING ANGLE INSTALLATION. COAT EXPOSED SURFACE WITH THE URETHANE FINISH COAT USED FOR BRIDGE PAINTING. WORK SHALL BE CONSIDERED INCIDENTAL TO THE ANGLE INSTALLATION ITEM.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L14E OUTSIDE
BRIDGE NO. LOR-611-0344
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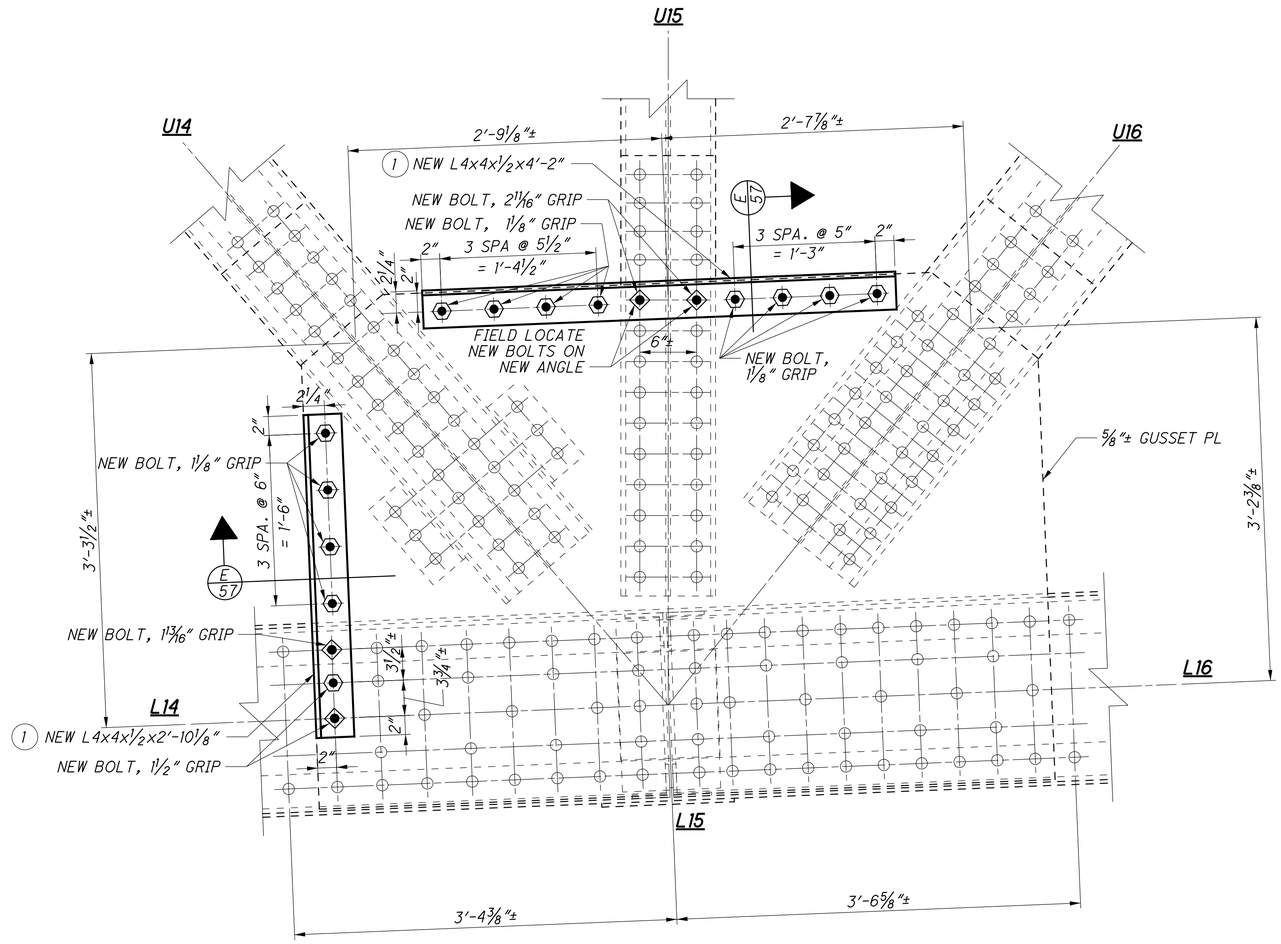
LOR-611-3.44
PID No. 92009



L15
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 501
SPAN 2 - PANEL POINT L3)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L15E OUTSIDE
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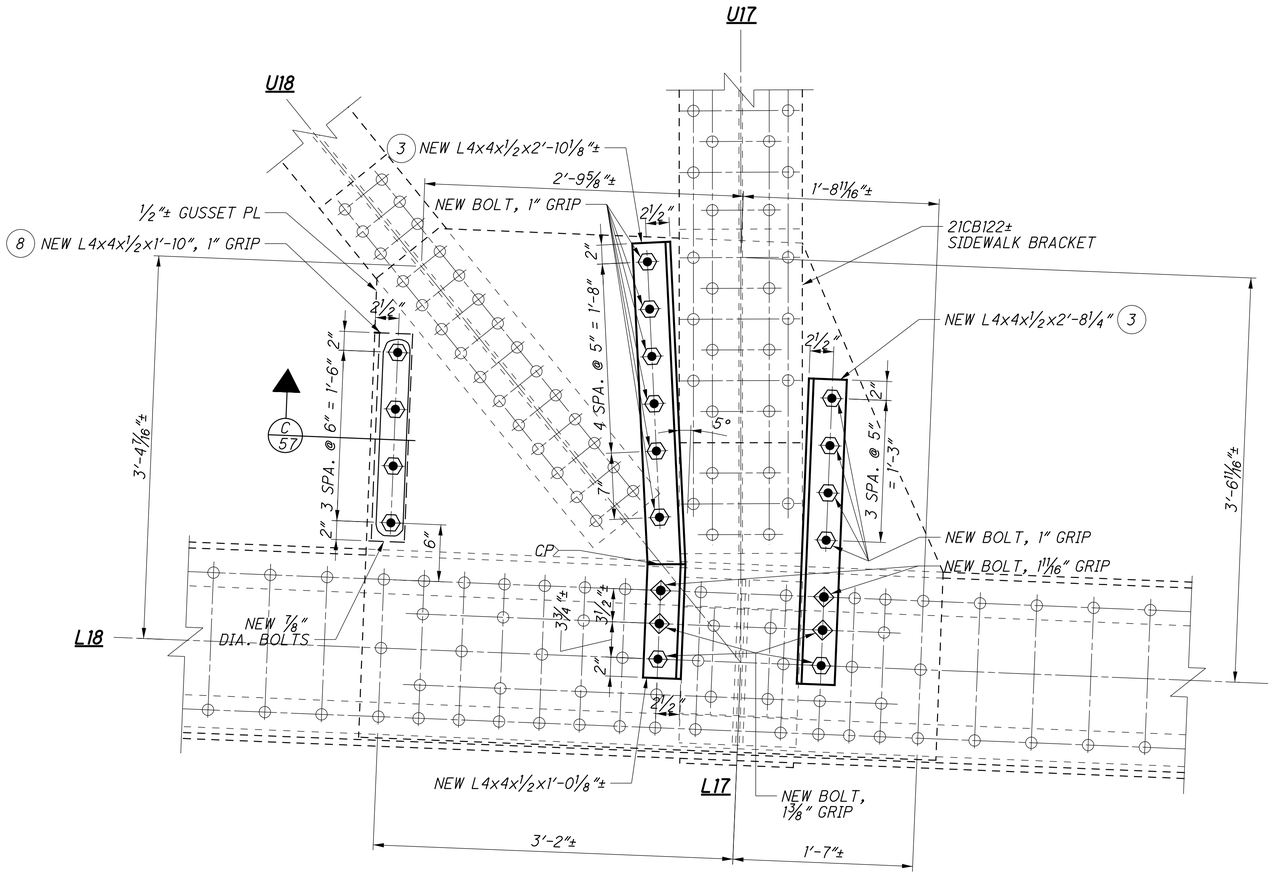

L17
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 501
SPAN 2 - PANEL POINT L5)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L17W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44 PID No. 92009

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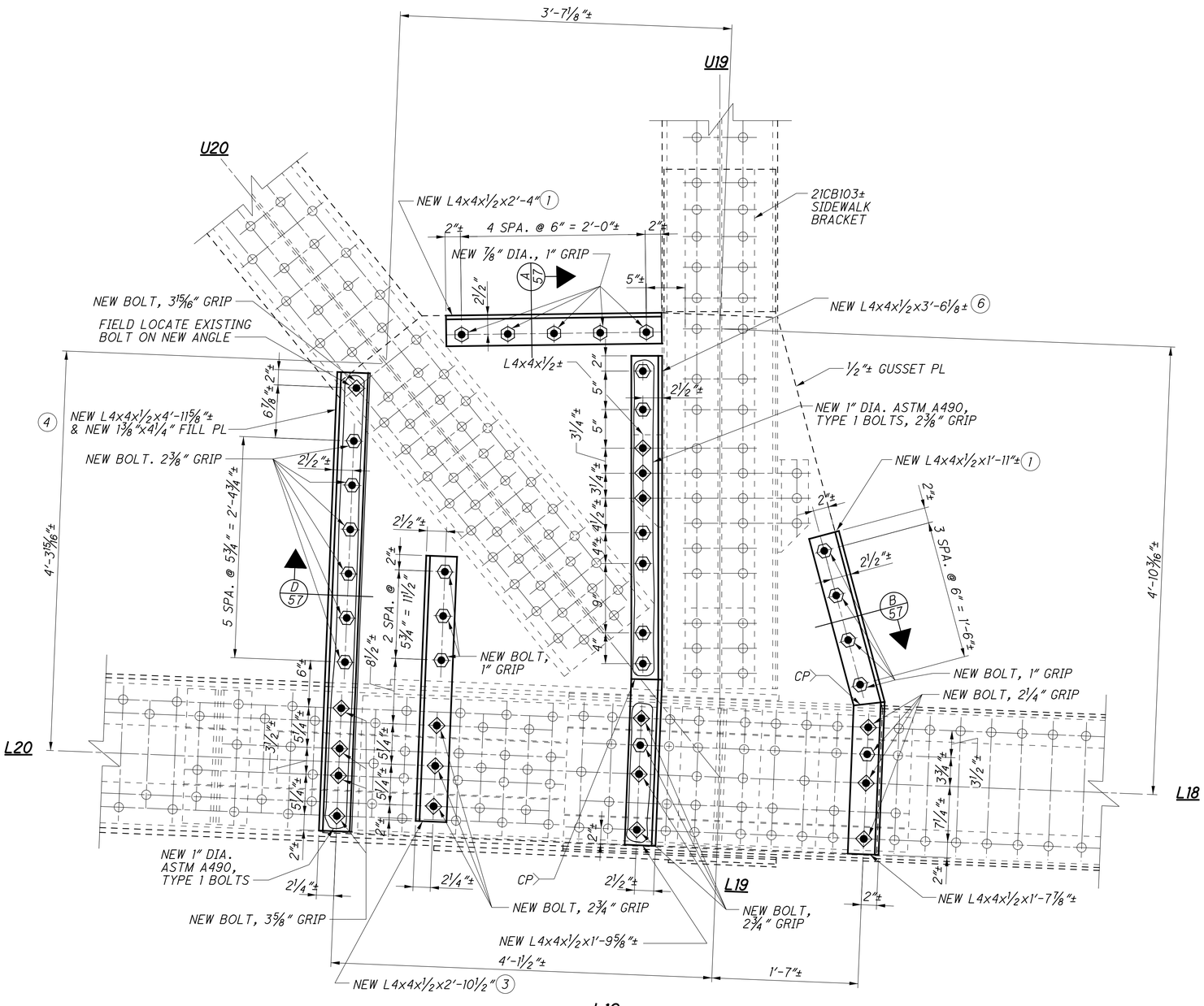

L19
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 3 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L19W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

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PID No. 92009

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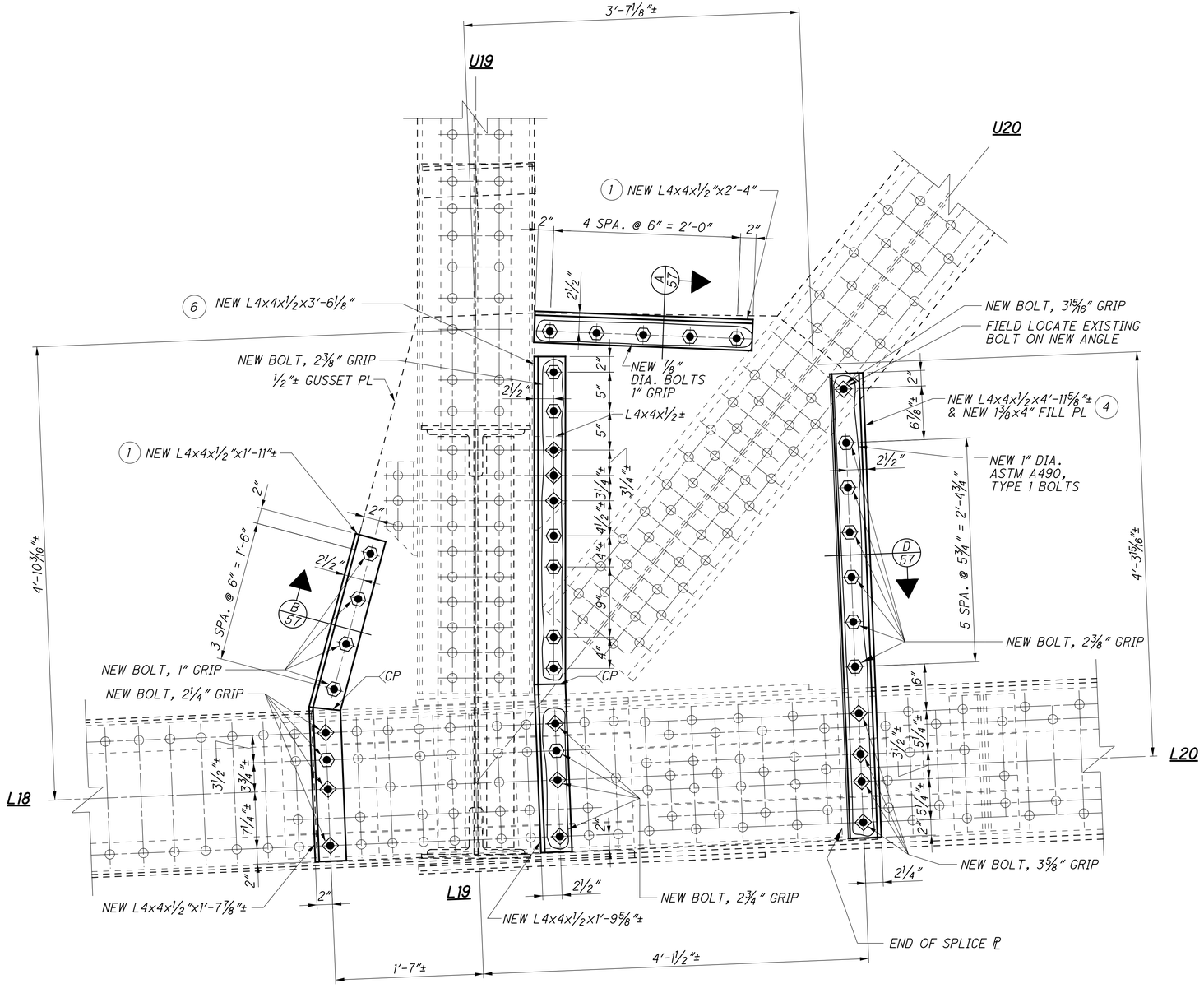

L19
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 3 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DAP		4707443	

GUSSET PLATE REPAIR L19W INSIDE
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LOR-611-3.44
PID No. 92009

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119/234

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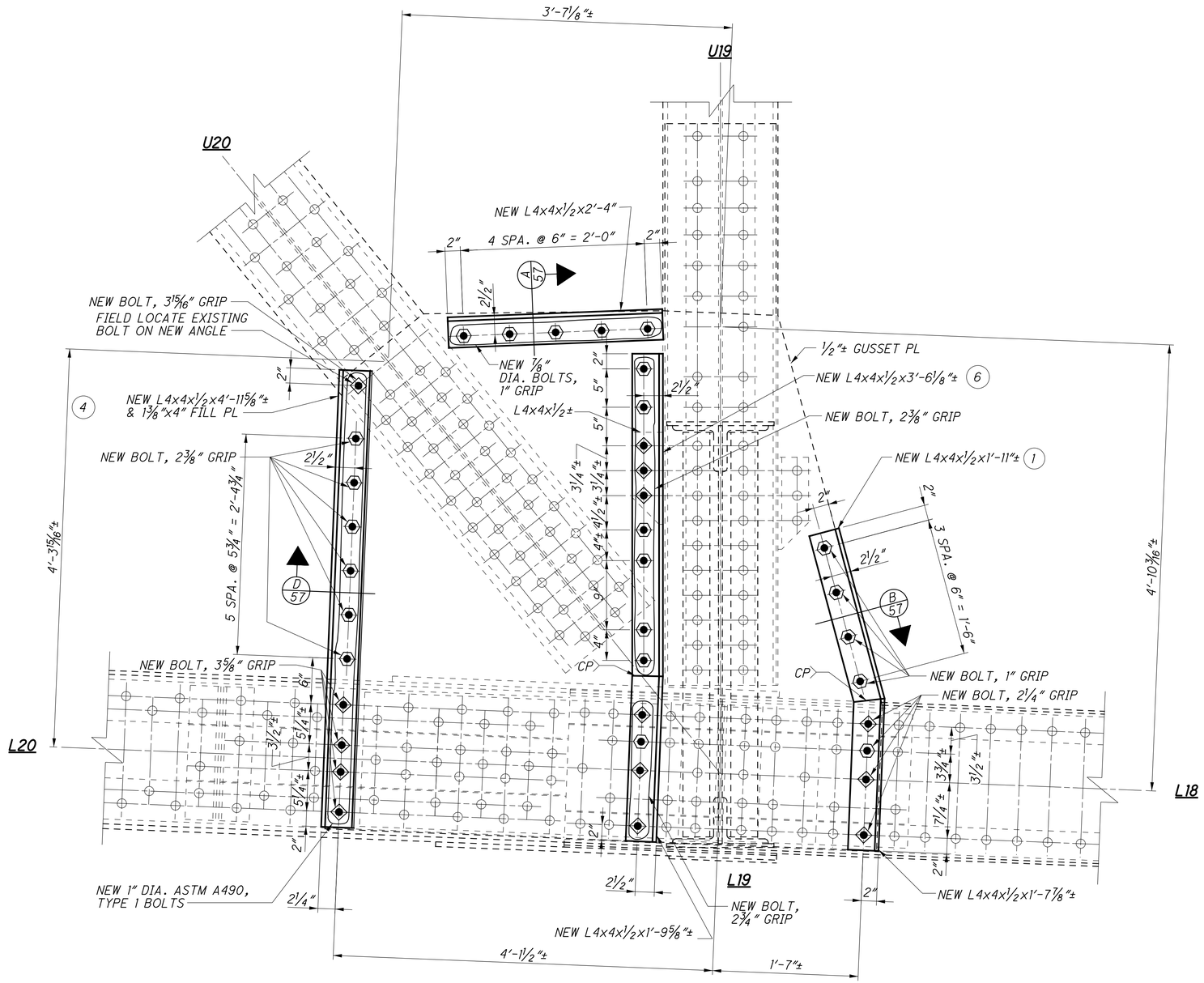

L19
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 3 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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DAP		4707443	

GUSSET PLATE REPAIR L19E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

75/189
120/234

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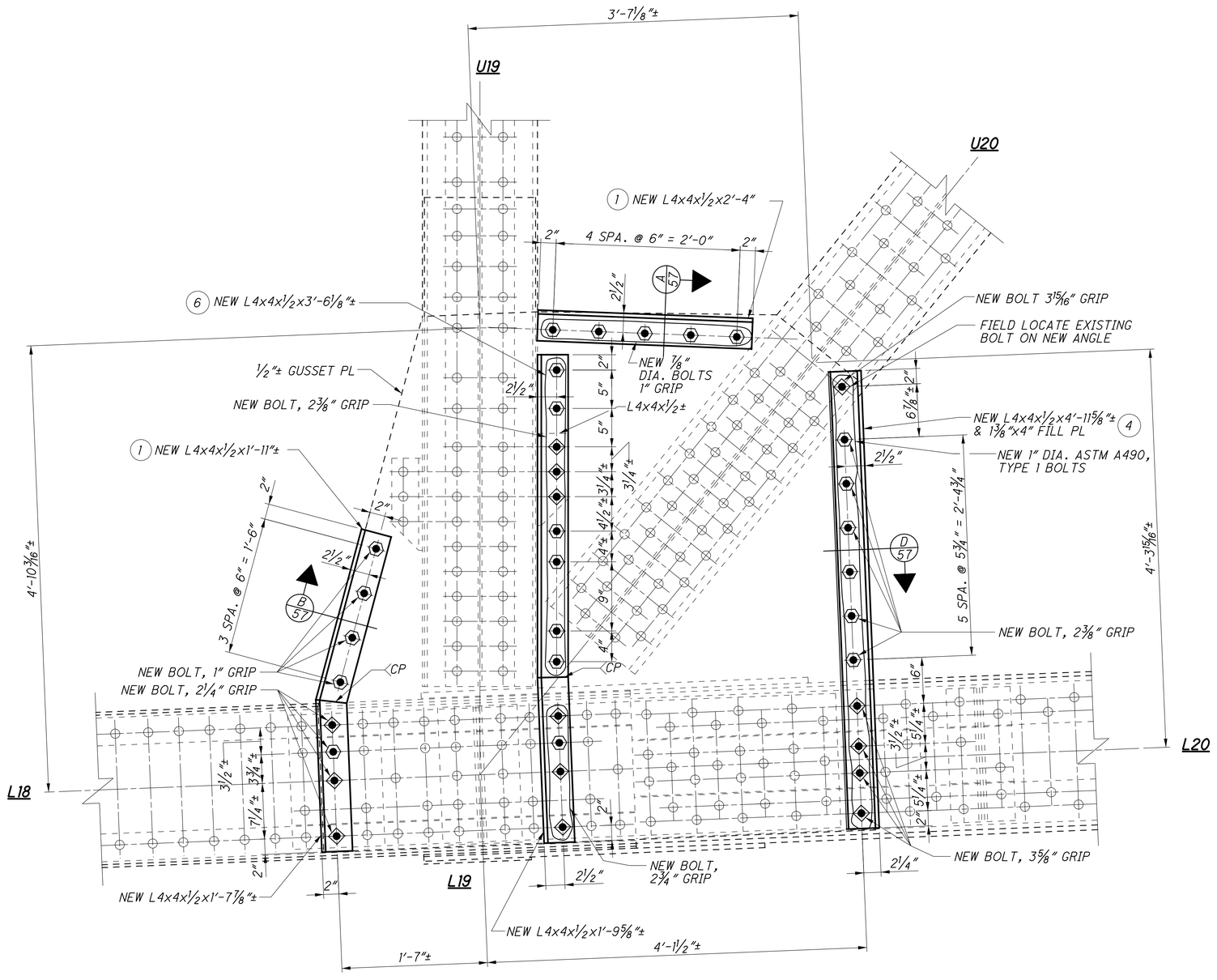

L19
SPAN 2 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 3 - PANEL POINT L1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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GUSSET PLATE REPAIR L19E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

76/189

121/234

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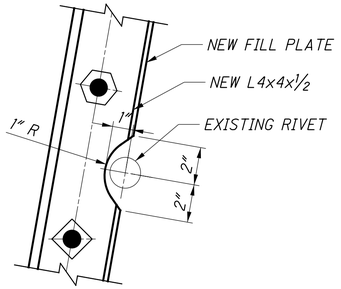
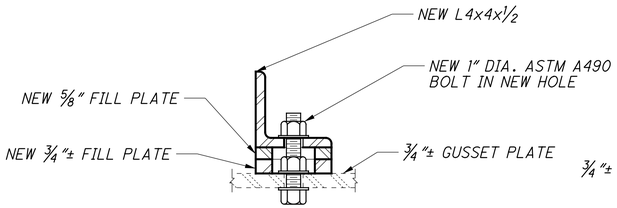
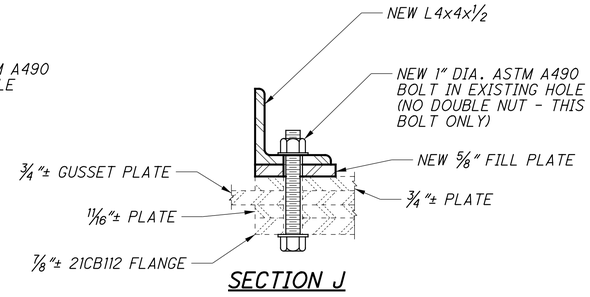


NEW ANGLE TRIMMING DETAIL

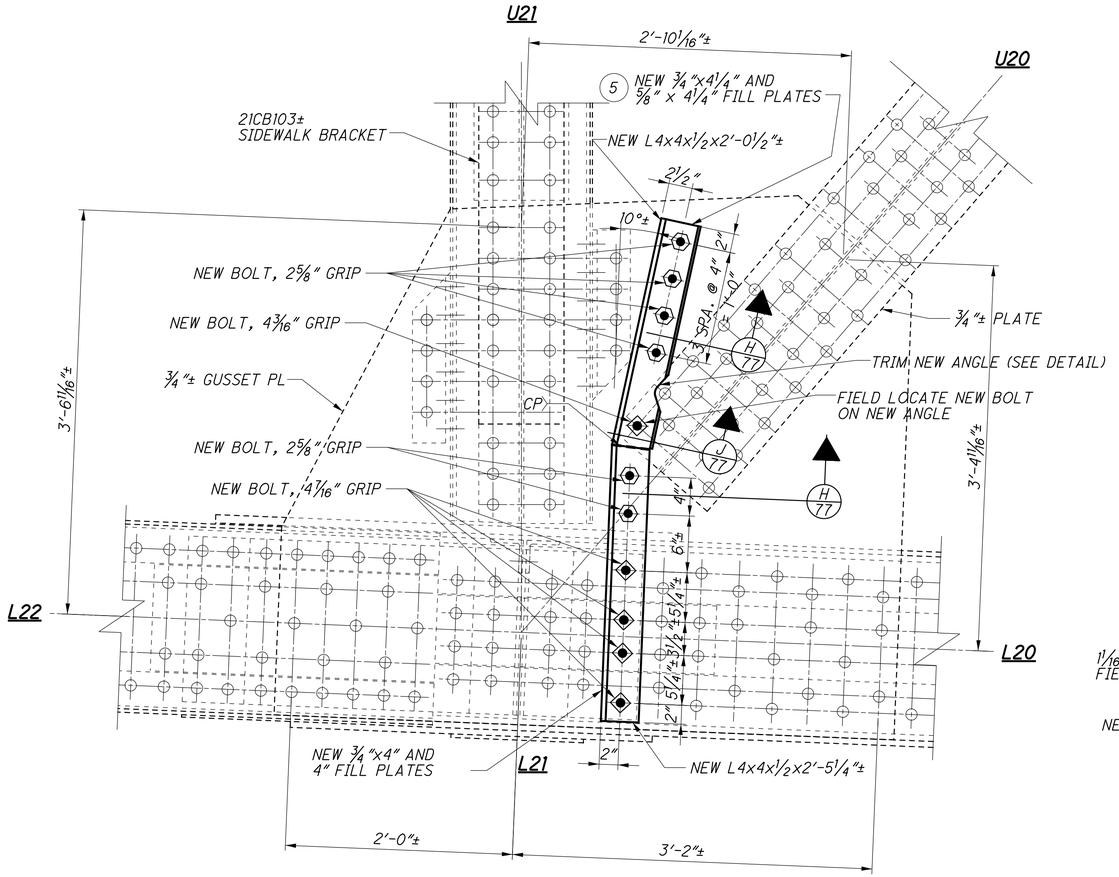


SECTION H

(4" FILL PLATE SHOWN)

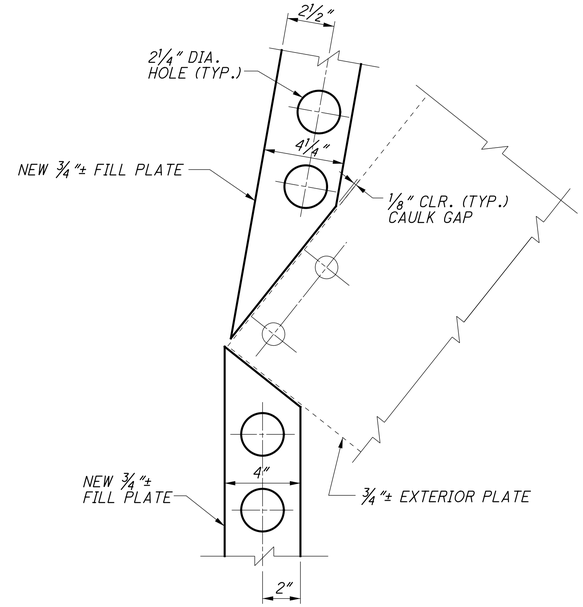


SECTION J

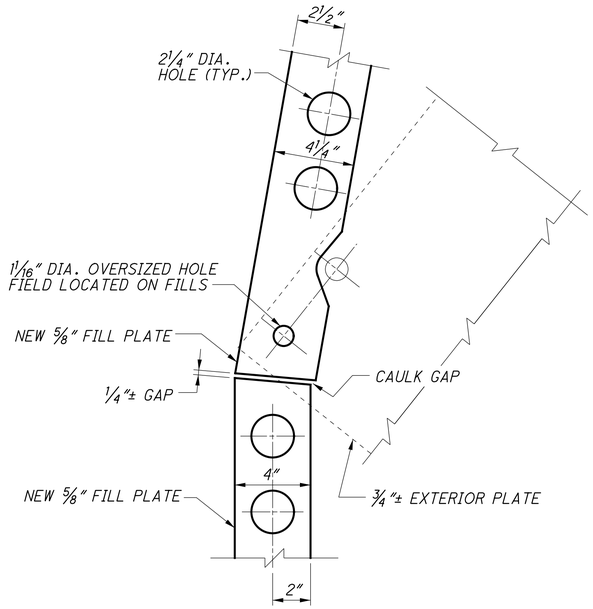


L21
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 203
SPAN 3 - PANEL POINT L3)



FILL PLATE DETAILS



FILL PLATE DETAILS

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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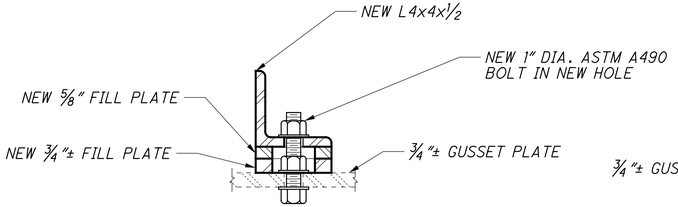
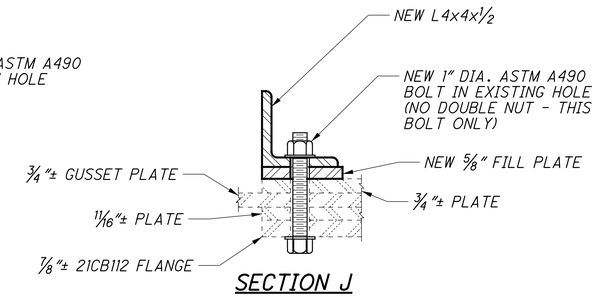
GUSSET PLATE REPAIR L21W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

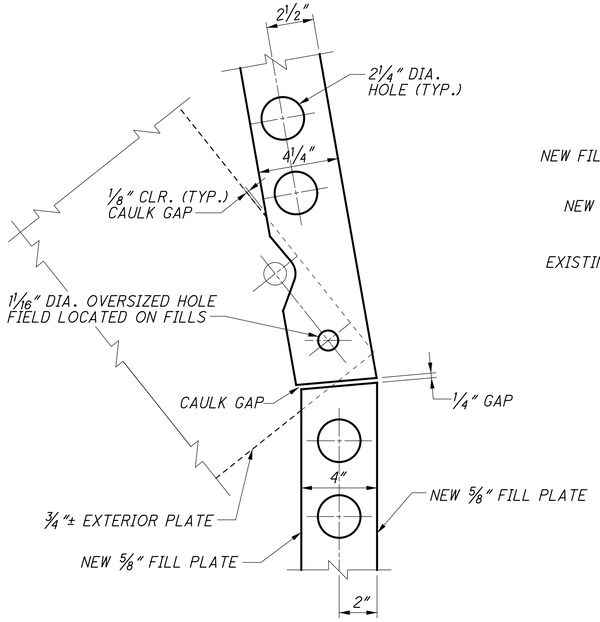
LOR-611-3.44
PID No. 92009



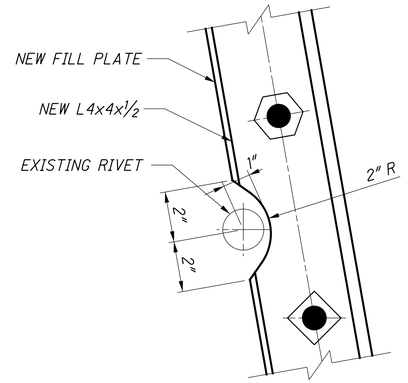
SECTION H



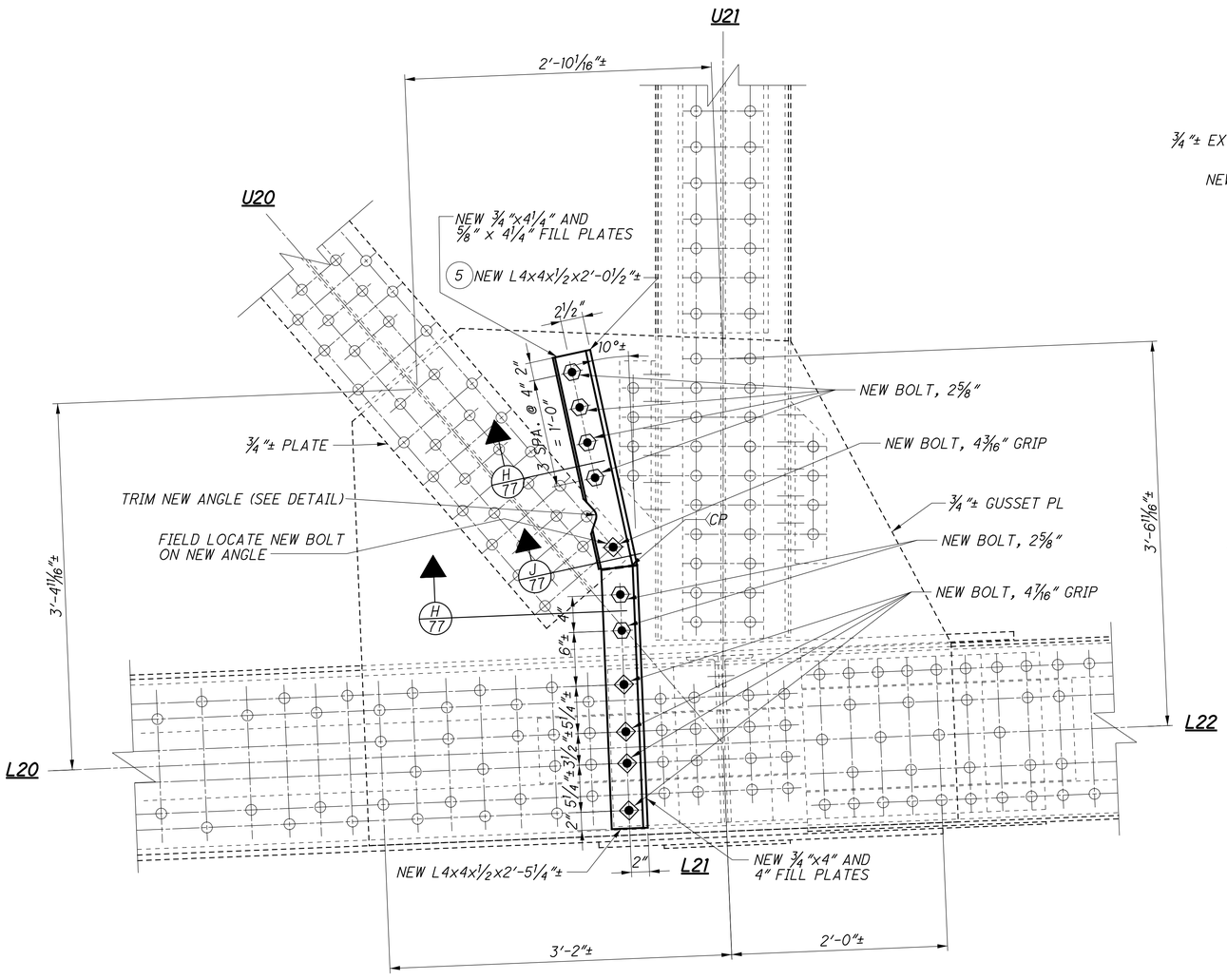
SECTION J



FILL PLATE DETAILS

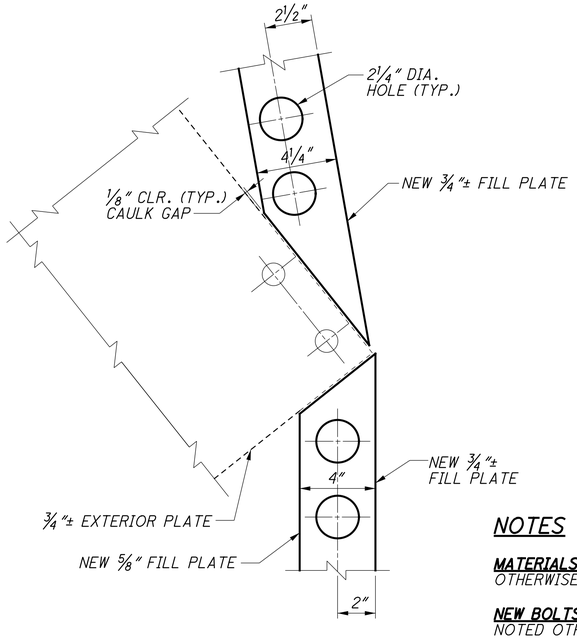


NEW ANGLE TRIMMING DETAIL



L21
SPAN 3 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 203
SPAN 3 - PANEL POINT L3)



FILL PLATE DETAILS

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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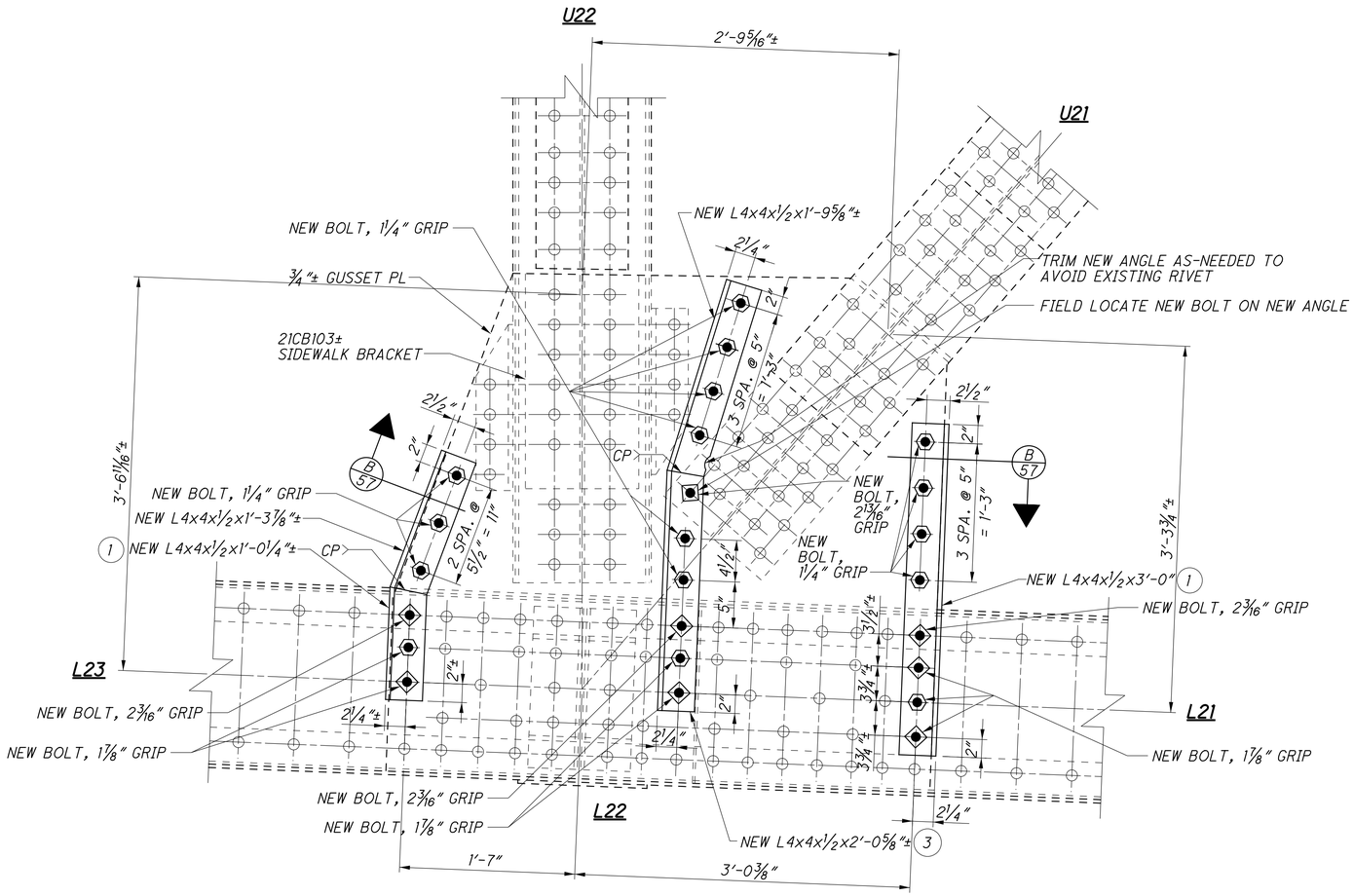
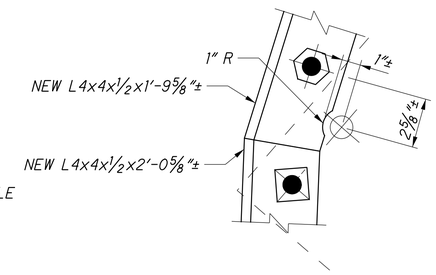
GUSSET PLATE REPAIR L21E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L22
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 204
SPAN 3 - PANEL POINT L4)



NEW ANGLE TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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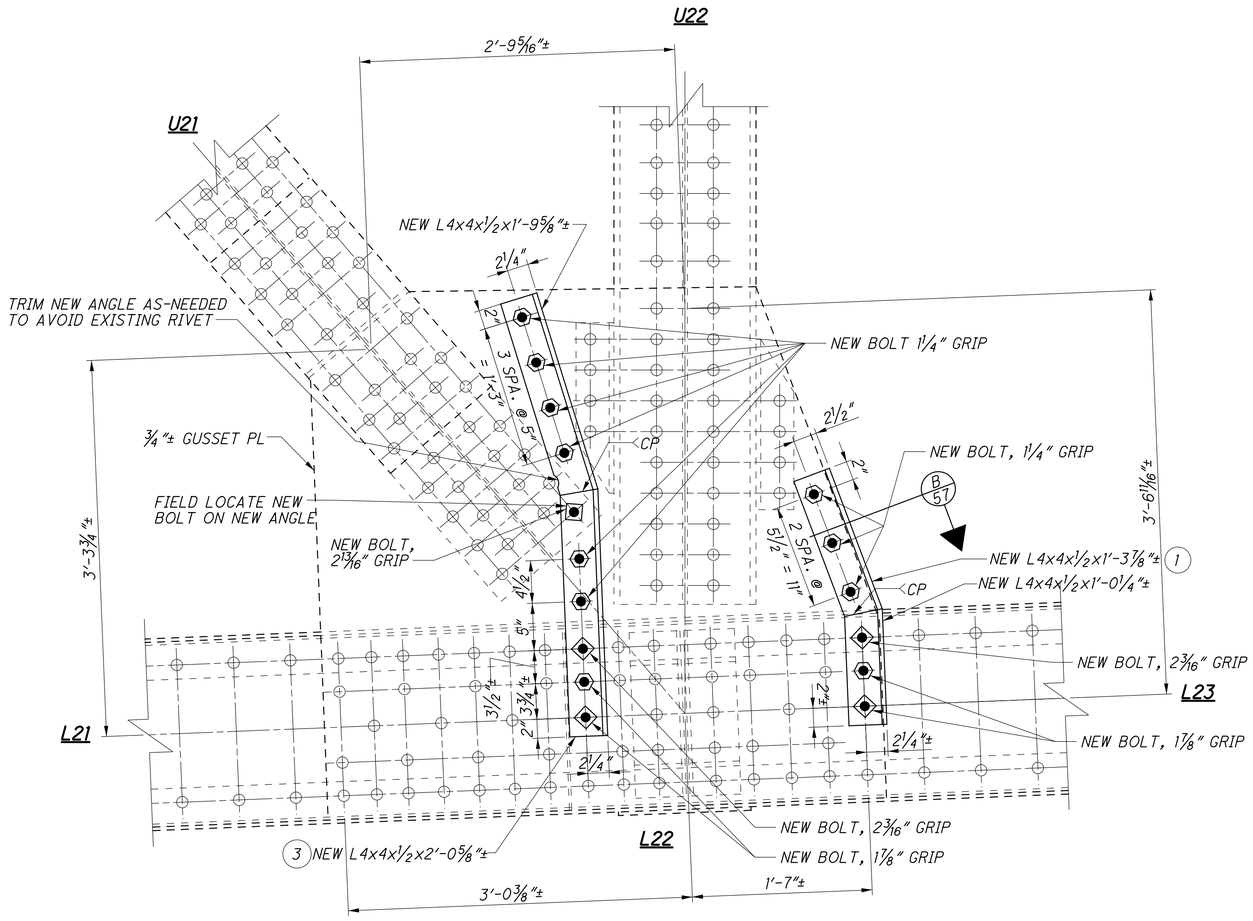
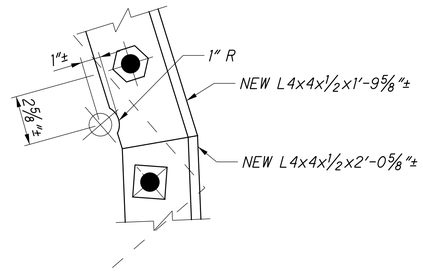
GUSSET PLATE REPAIR L22W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L22
SPAN 3 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE
(ORIGINAL SHOP DWG. MARK 204
SPAN 3 - PANEL POINT L4)



NEW ANGLE
TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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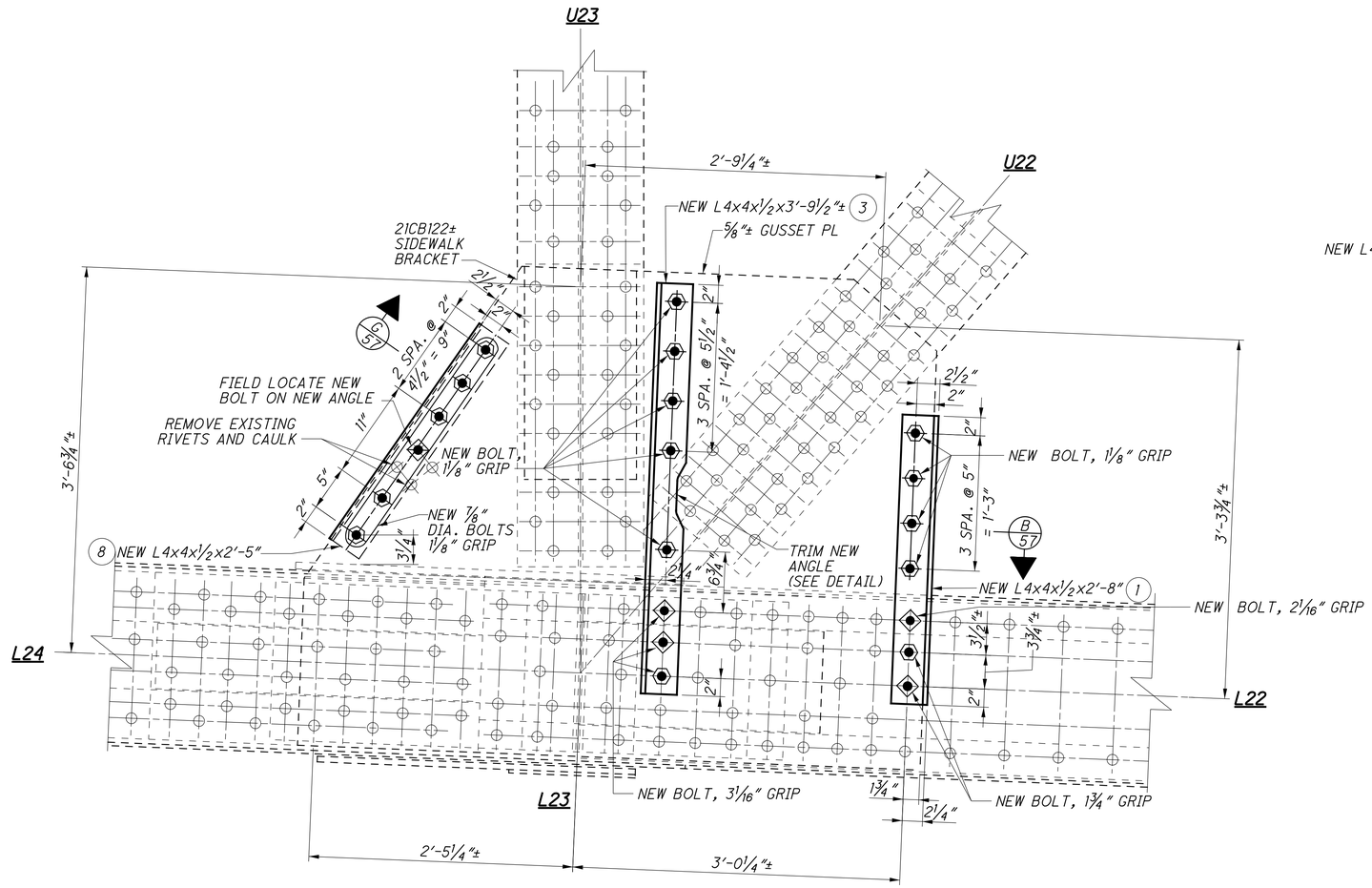
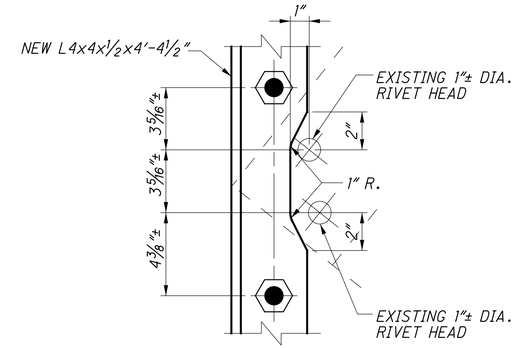
GUSSET PLATE REPAIR L22E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L23
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 204 SPAN 3 - PANEL POINT L5)



NEW ANGLE TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.*

NEW BOLTS *ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.*

CAULK *OPEN HOLES LEFT BY RIVET REMOVAL TO FACILITATE STIFFENING ANGLE INSTALLATION. COAT EXPOSED SURFACE WITH THE URETHANE FINISH COAT USED FOR BRIDGE PAINTING. WORK SHALL BE CONSIDERED INCIDENTAL TO THE ANGLE INSTALLATION ITEM.*

BOLT LEGEND: *SEE SHEET* 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: *SEE SHEET* 6/189.

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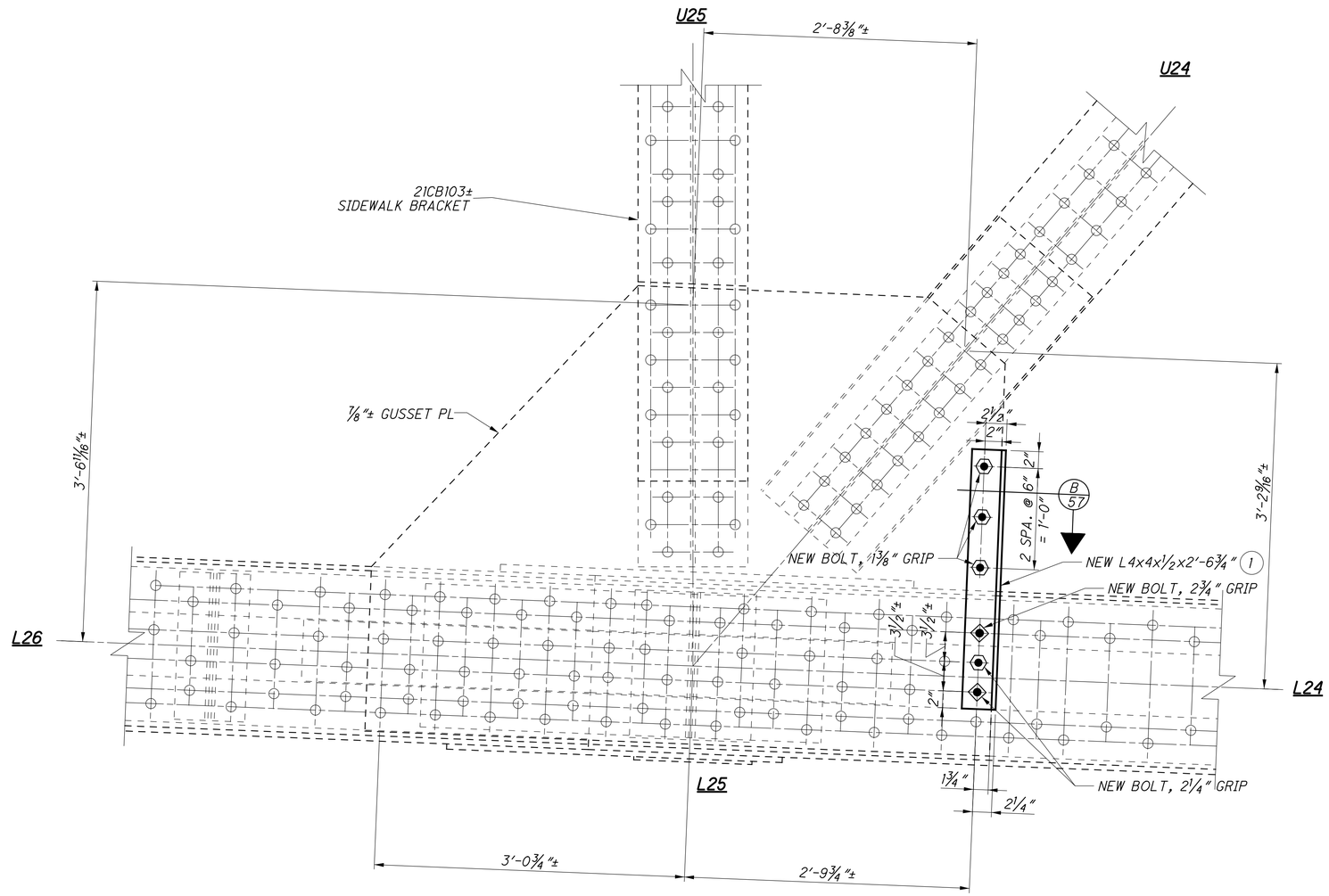
GUSSET PLATE REPAIR L23W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L25
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 205
SPAN 3 - PANEL POINT L7)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L25W OUTSIDE

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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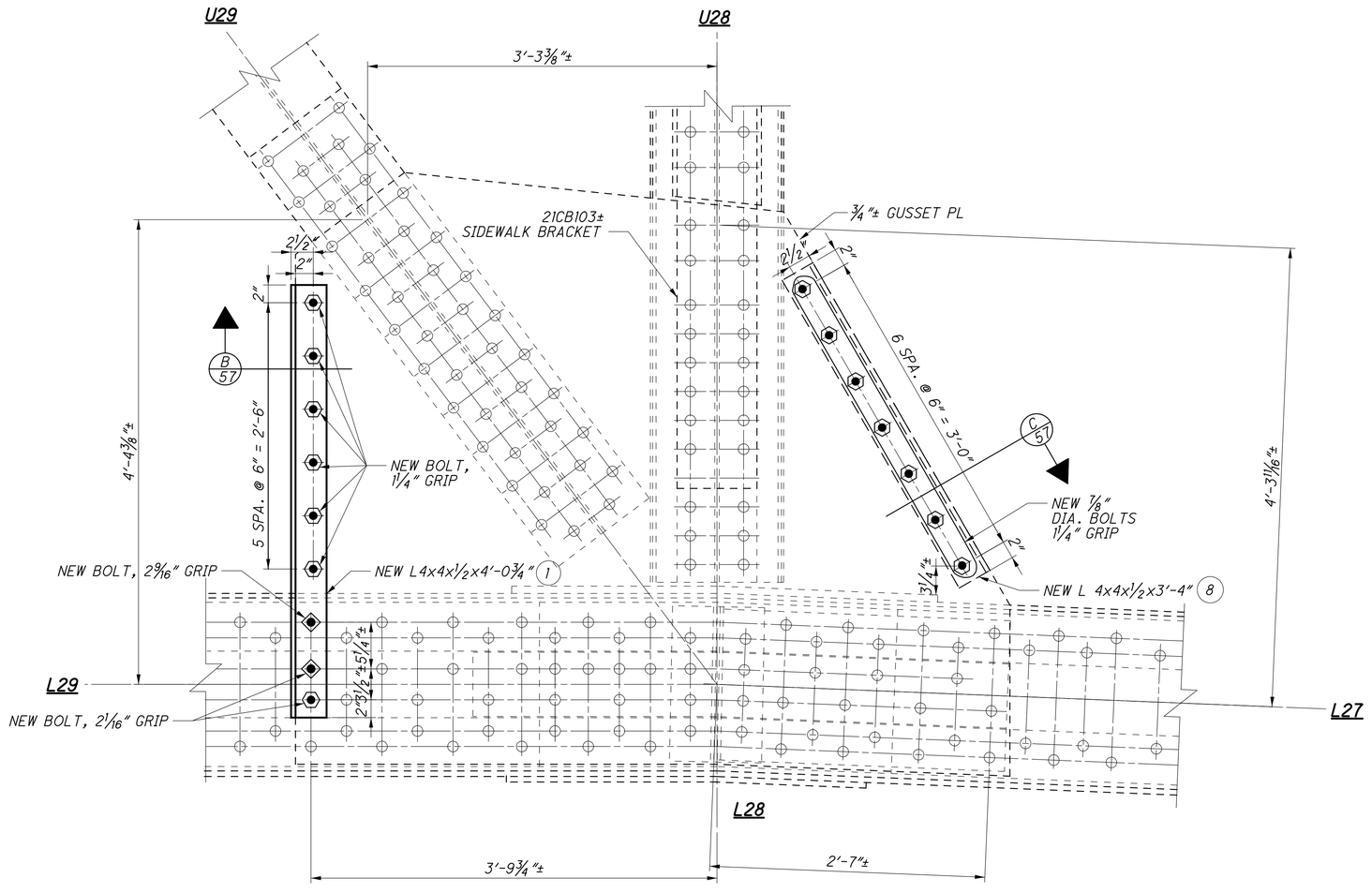

L28
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 207
SPAN 3 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L28W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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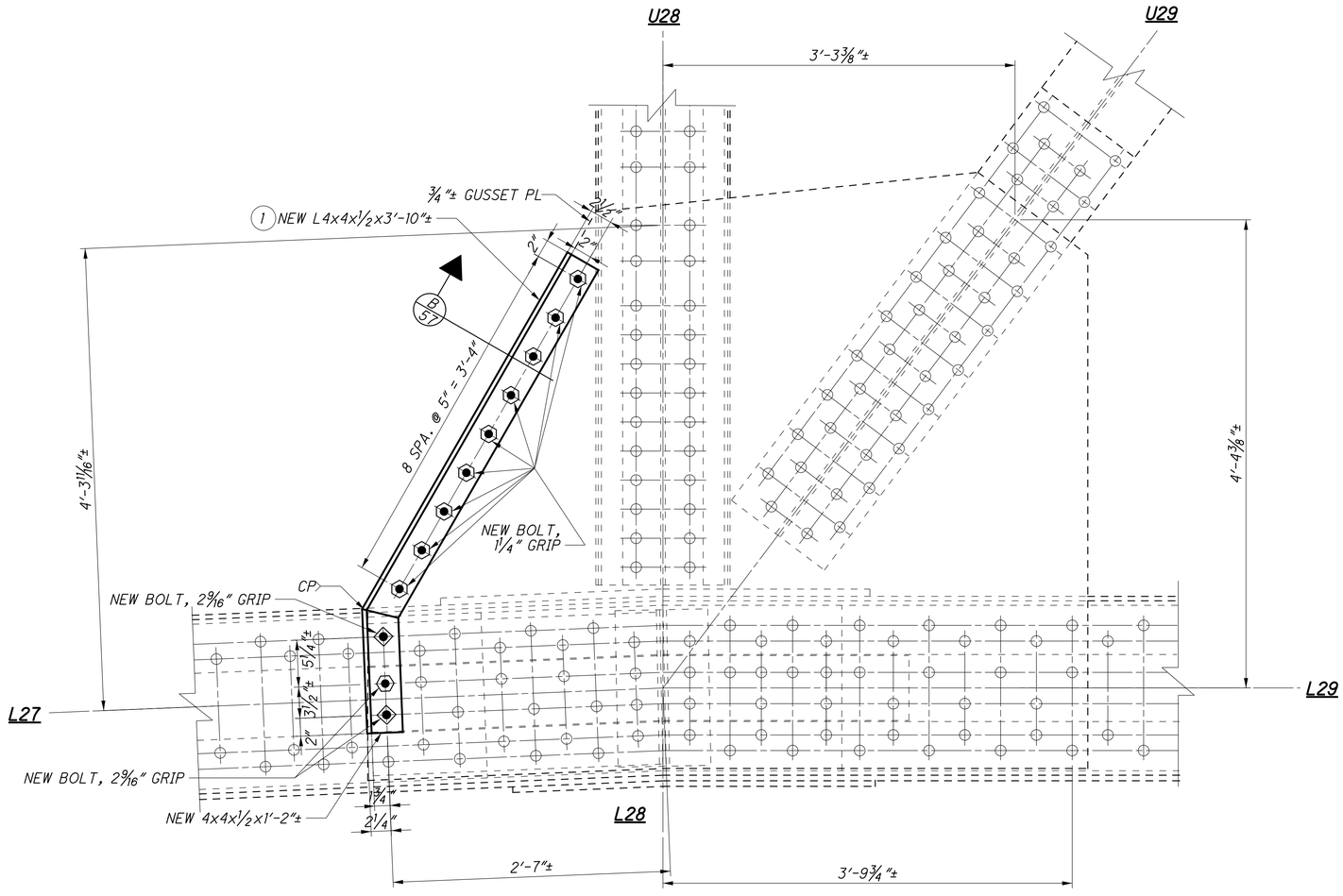

L28
SPAN 3 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 207
SPAN 3 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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GUSSET PLATE REPAIR L28E OUTSIDE
BRIDGE NO. LOR-611-0344
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LOR-611-3.44
PID No. 92009

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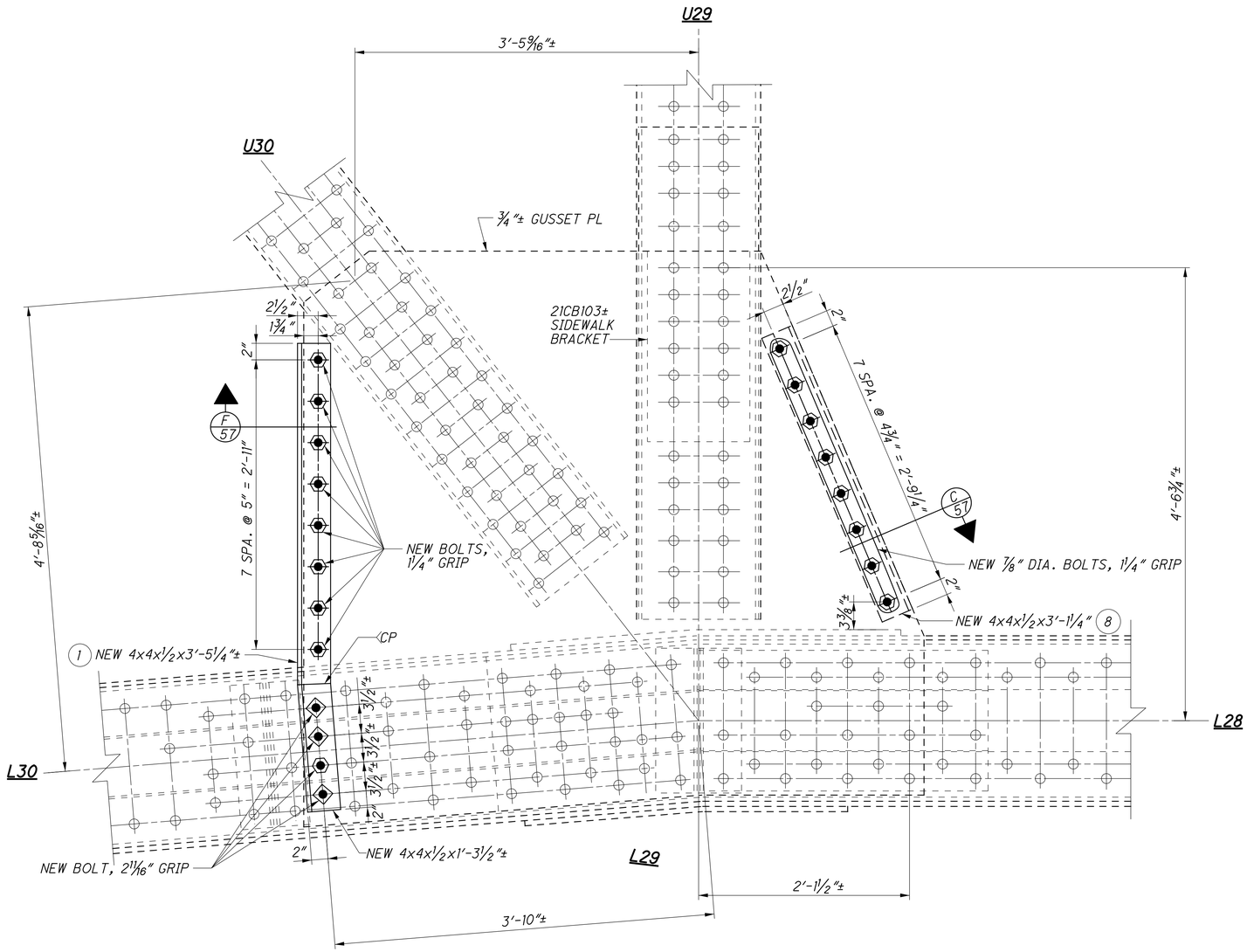

L29
SPAN 3 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 207
SPAN 3 - PANEL POINT L11)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DAP		4707443	

GUSSET PLATE REPAIR L29W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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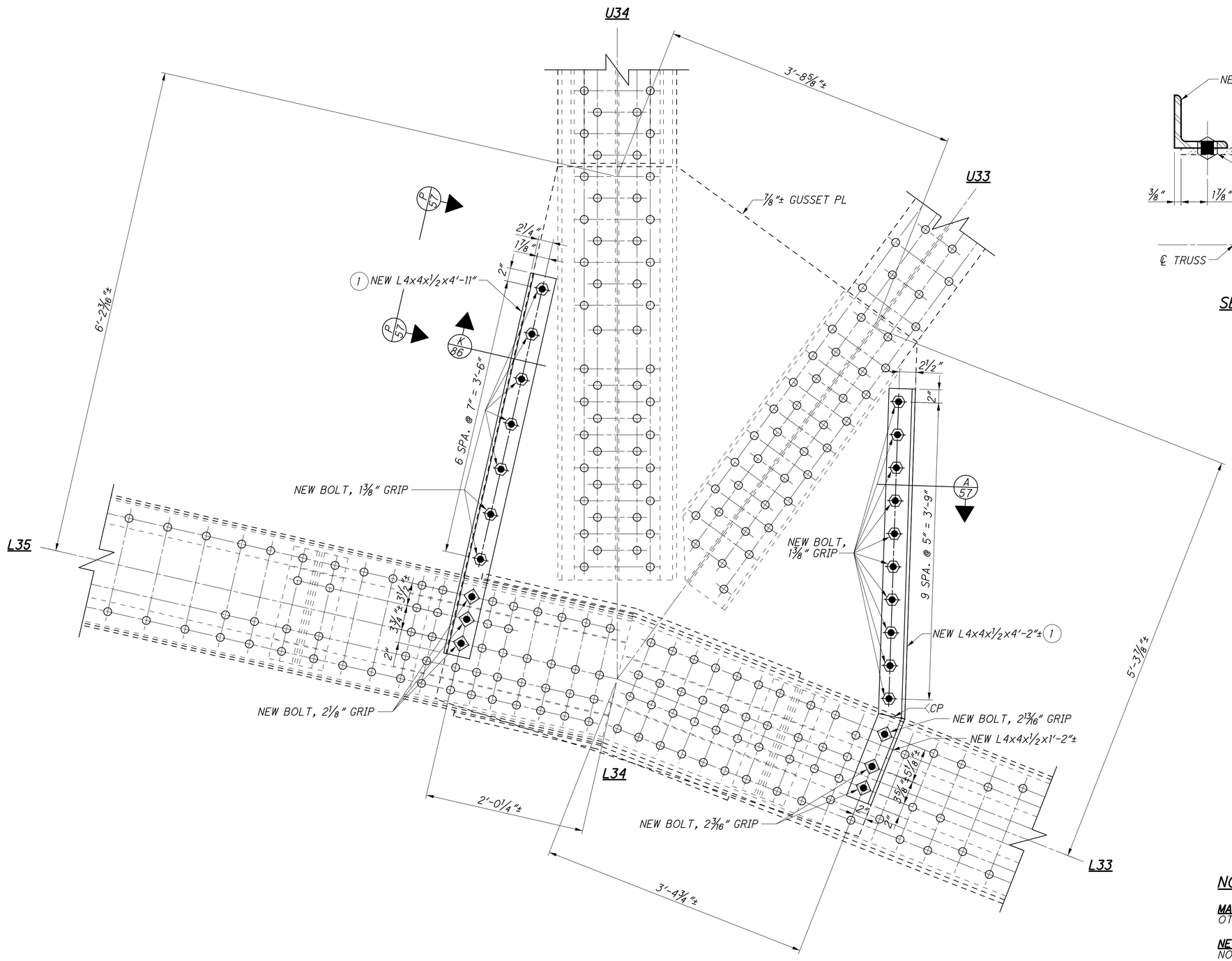

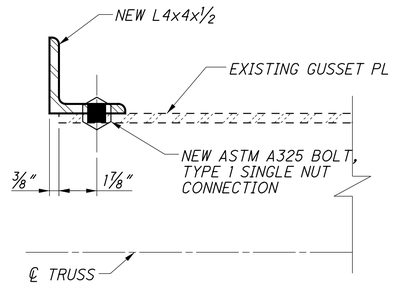

SECTION K

L34
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 3 - PANEL POINT L16)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
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MANSFIELD, OHIO 44902

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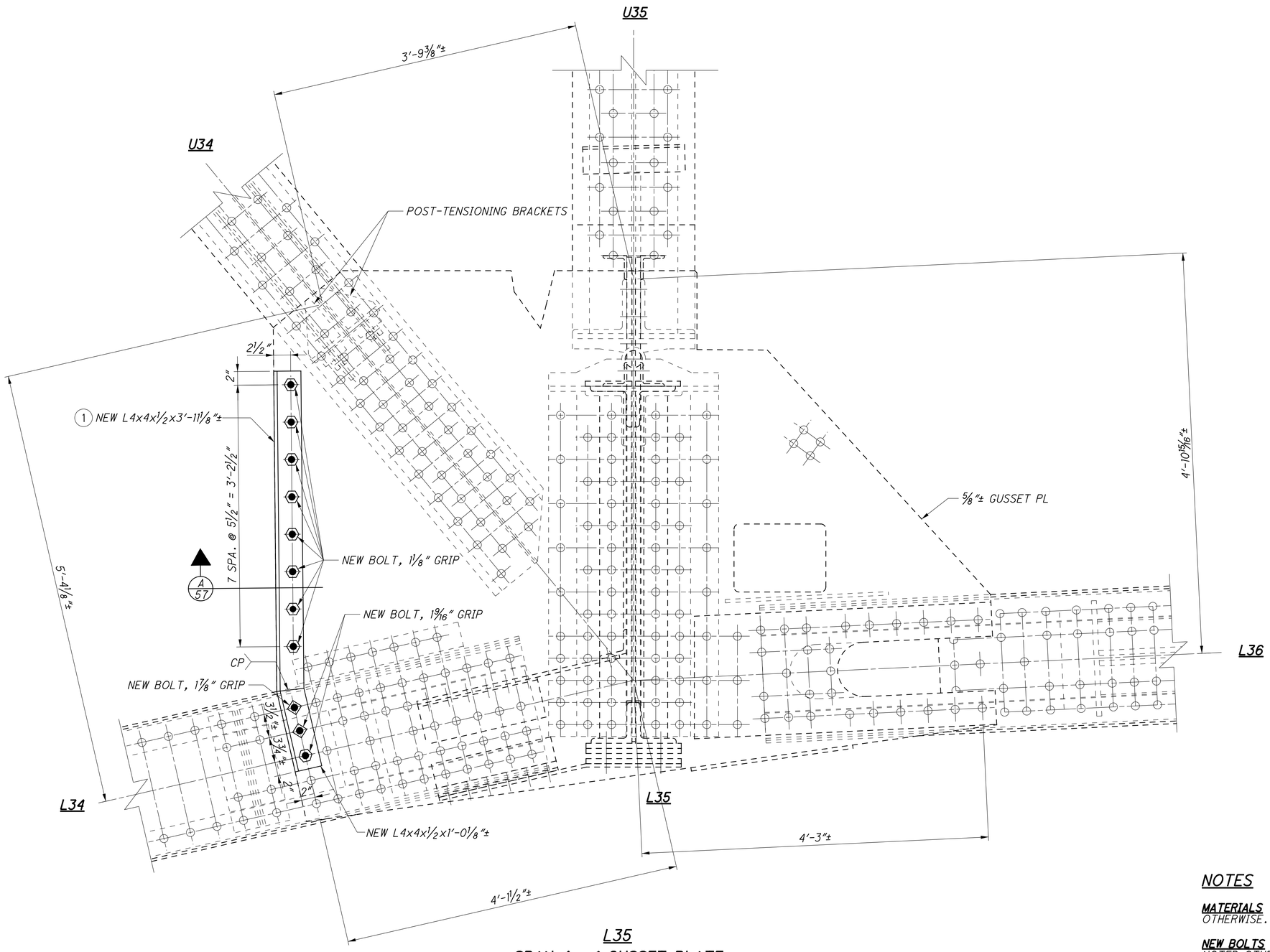
GUSSET PLATE REPAIR L34W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L35
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 4 - PANEL POINT L0)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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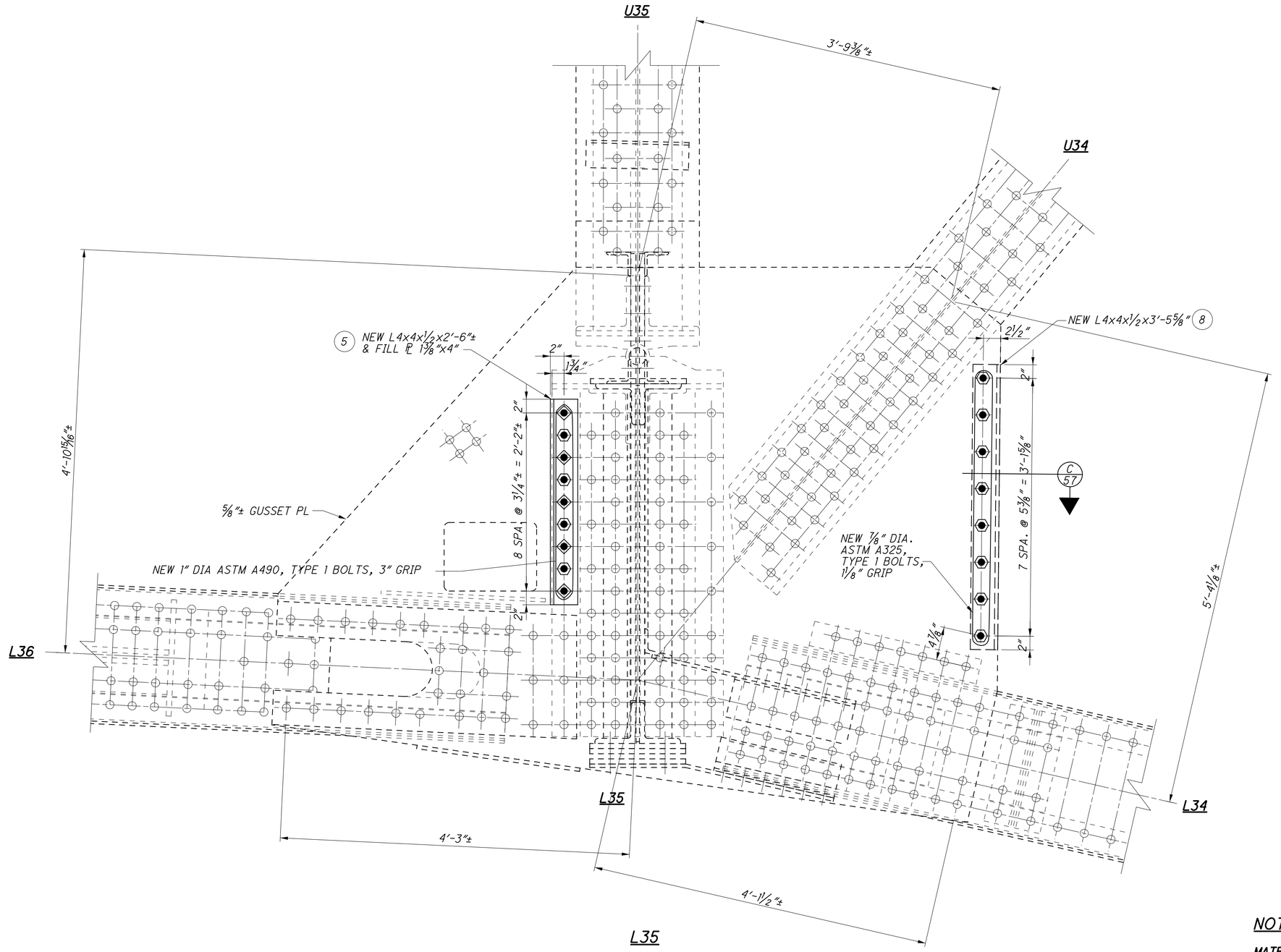
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	KH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

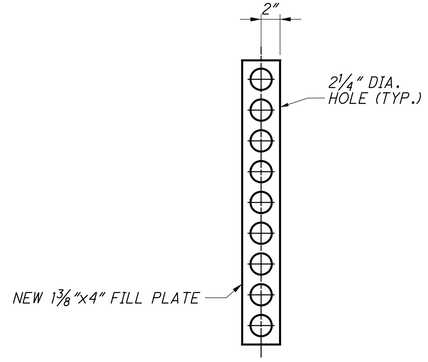
GUSSET PLATE REPAIR L35W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L35
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 4 - PANEL POINT L0)



FILL PLATE DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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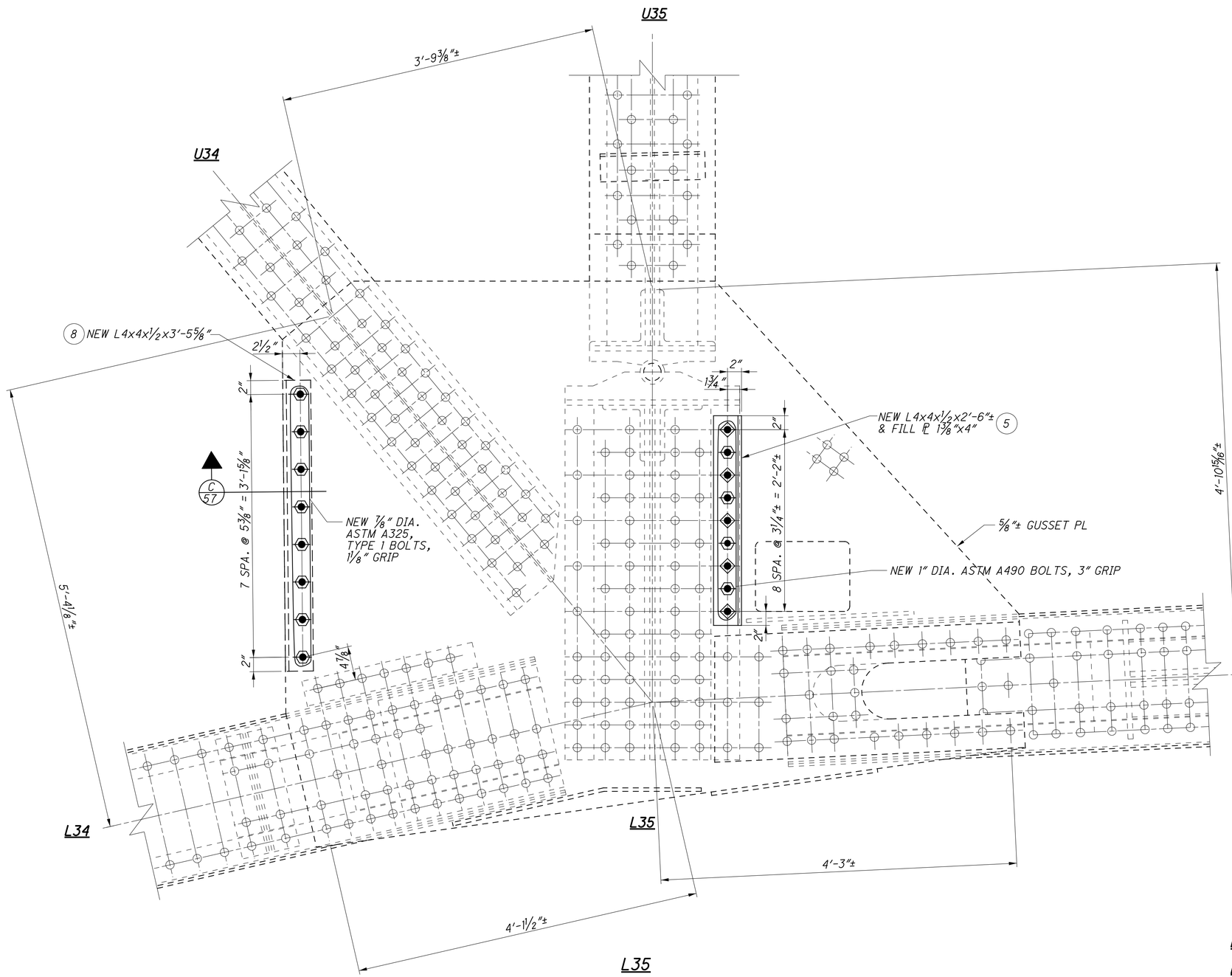
DAP		4707443	

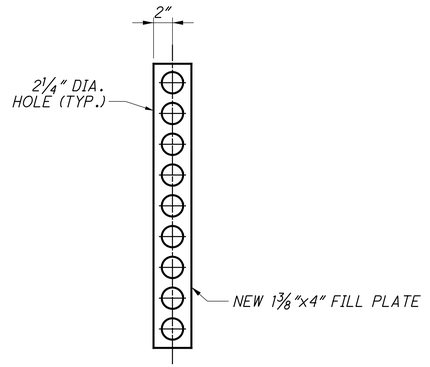
GUSSET PLATE REPAIR L35E
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L35
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 4 - PANEL POINT L0)



FILL PLATE DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
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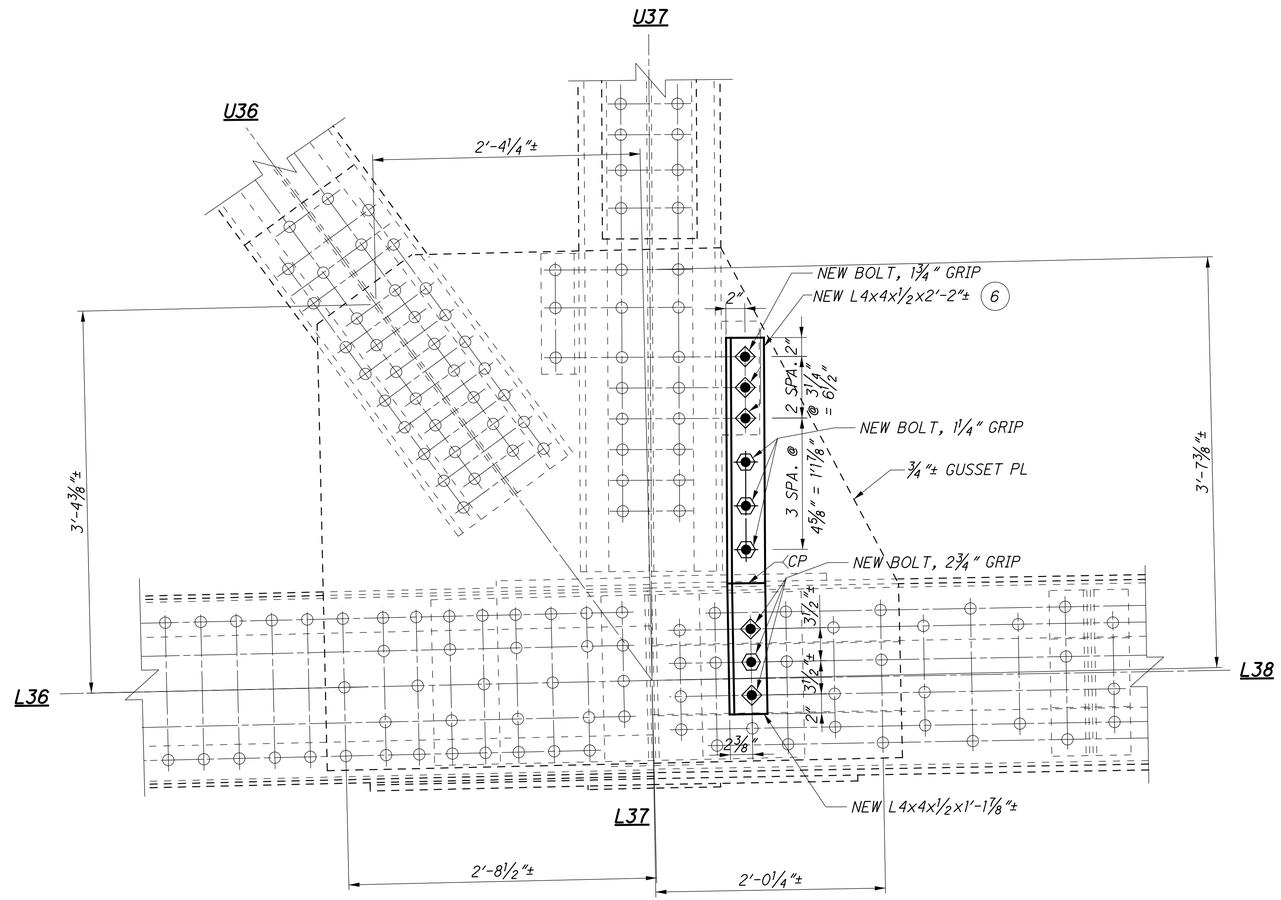
DAP		4707443	

GUSSET PLATE REPAIR L35E
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L37
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 304
SPAN 4 - PANEL POINT L2)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
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DAP		4707443	

GUSSET PLATE REPAIR L37E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

90/189

135
234

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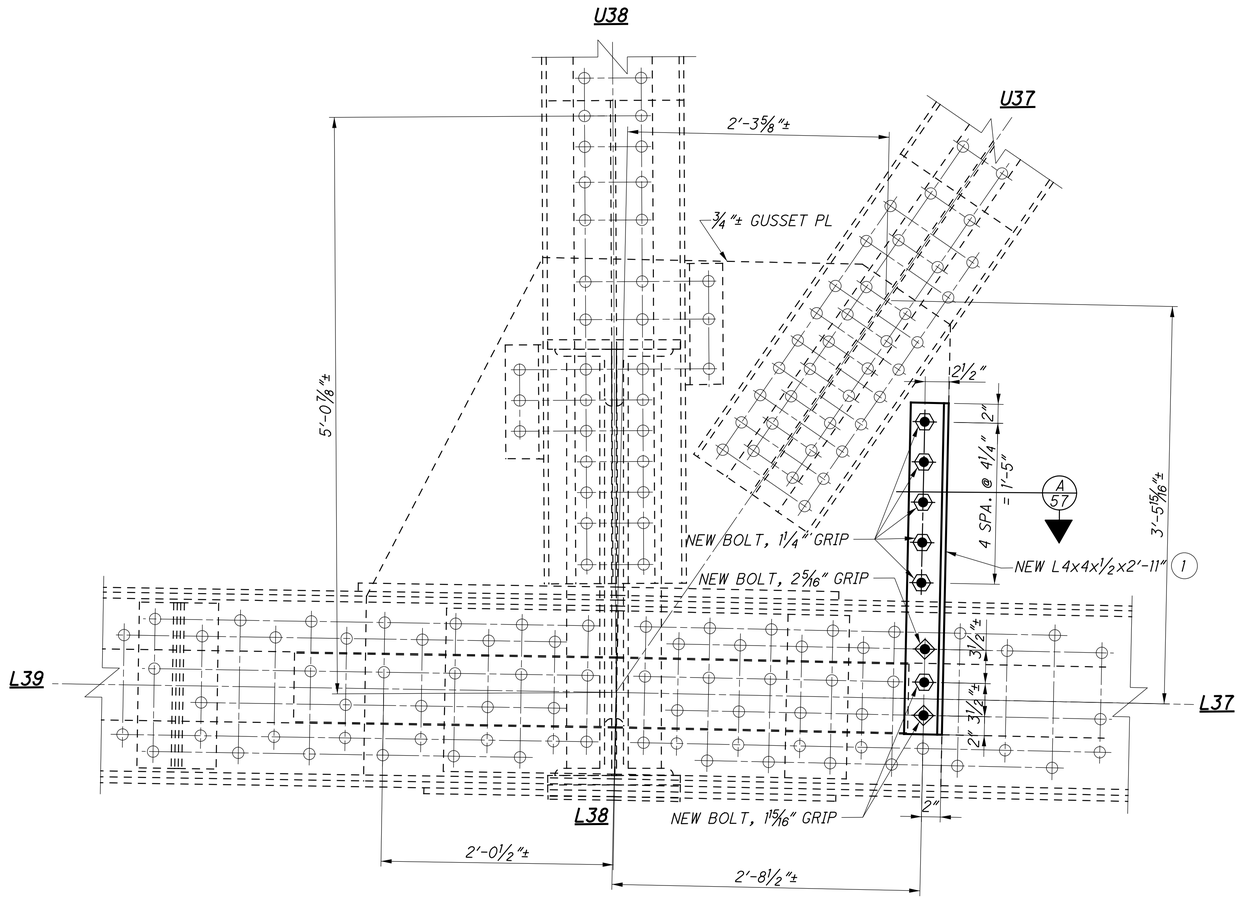

L38
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 305
SPAN 4 - PANEL POINT L3)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
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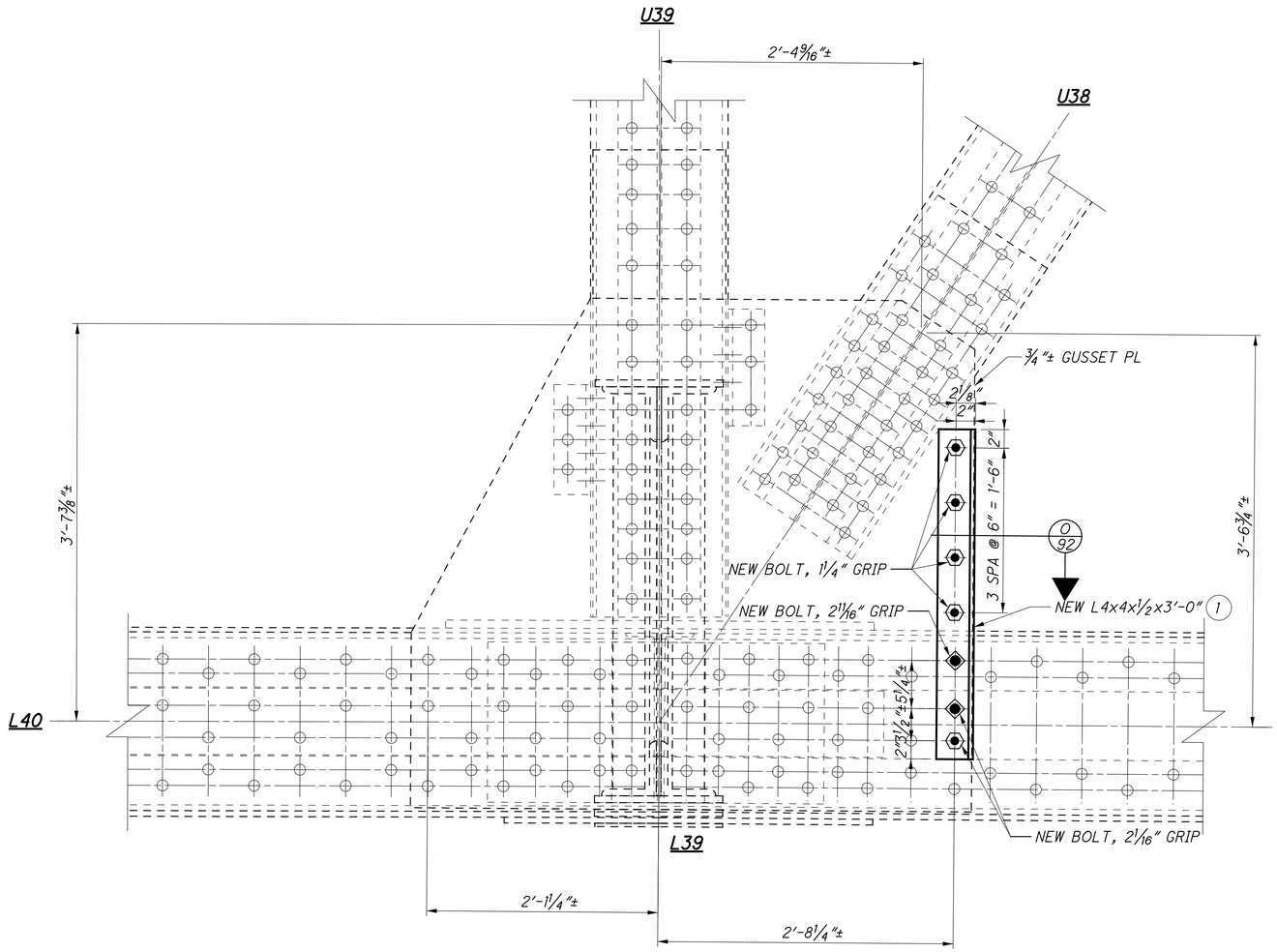
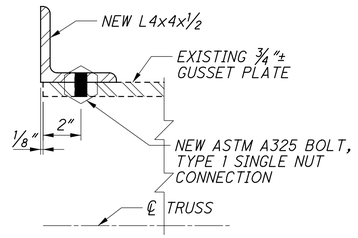
DAP		4707443	

GUSSET PLATE REPAIR L38E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009





SECTION O

L39
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 305
SPAN 4 - PANEL POINT L4)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
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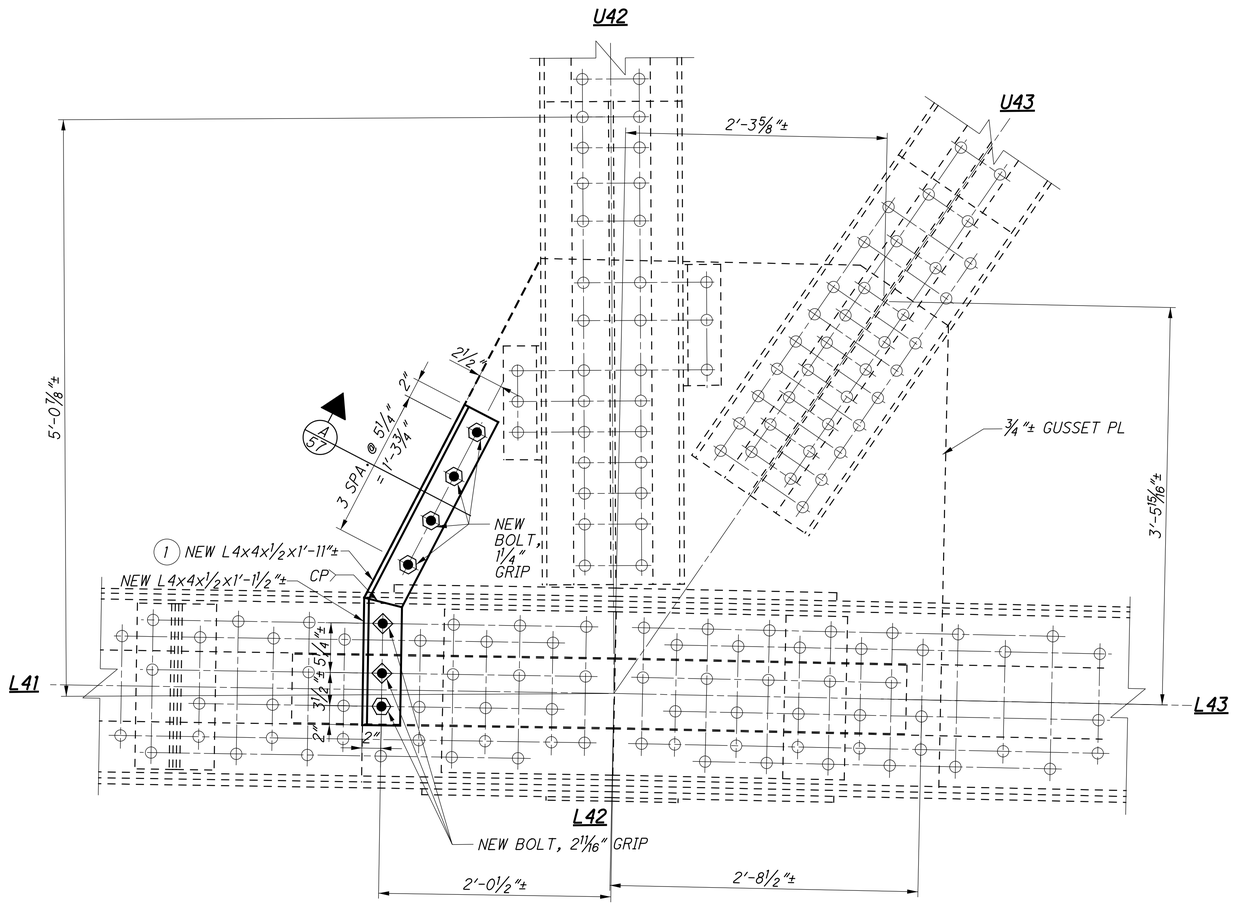
DAP		4707443	

GUSSET PLATE REPAIR L39E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L42
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 305
SPAN 4 - PANEL POINT L3)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
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DAP		4707443	

GUSSET PLATE REPAIR L42E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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138/234

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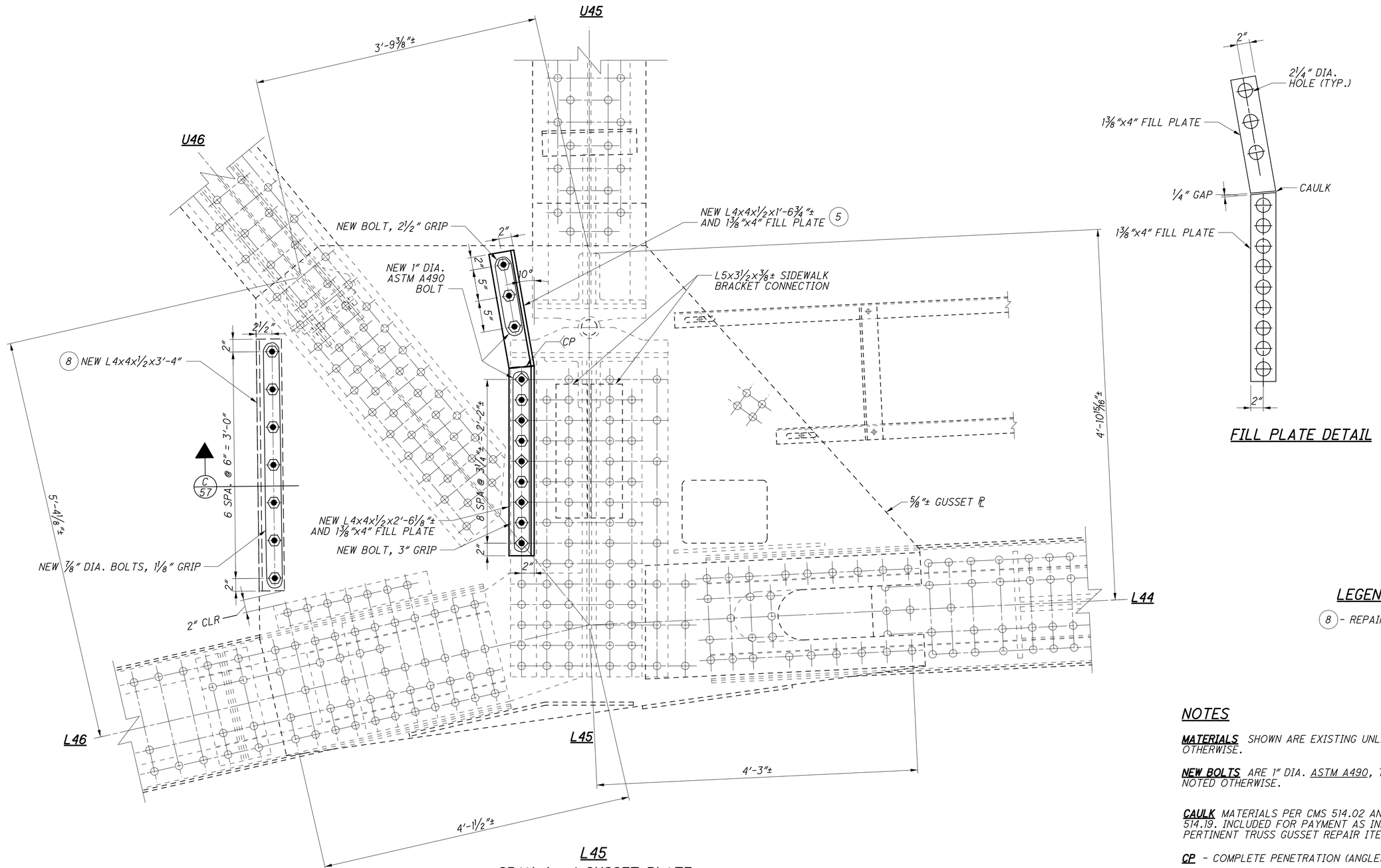

L45
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 210B SPAN 5 - PANEL POINT L17)

FILL PLATE DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR L45W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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139/234

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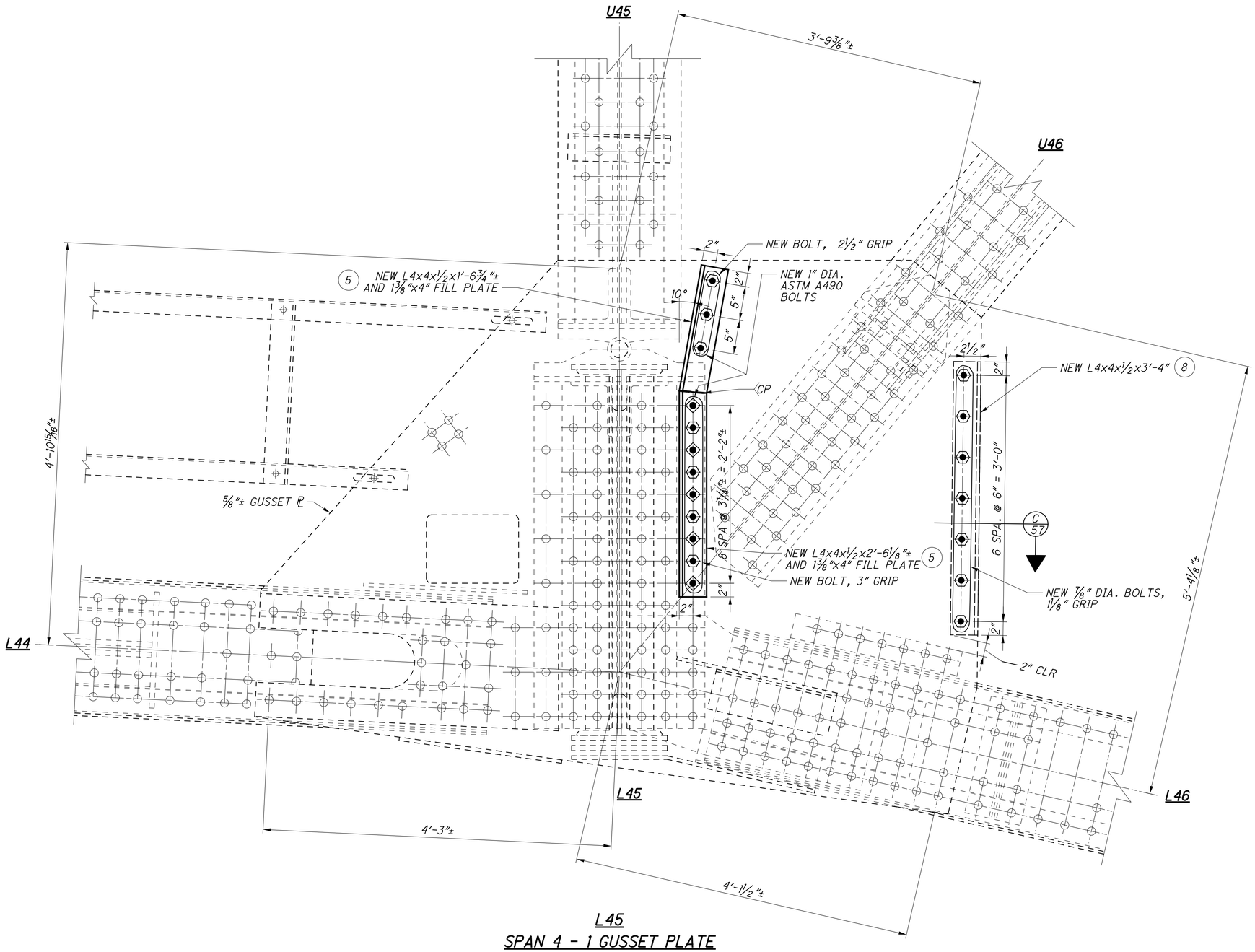
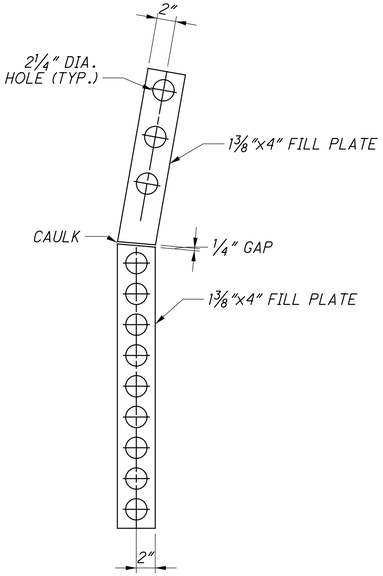


L45
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 5 - PANEL POINT L17)



FILL PLATE DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A490, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK MATERIALS PER CMS 514.02 AND APPLICATIONS PER 514.19. INCLUDED FOR PAYMENT AS INDICATED TO THE PERTINENT TRUSS GUSSET REPAIR ITEMS.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
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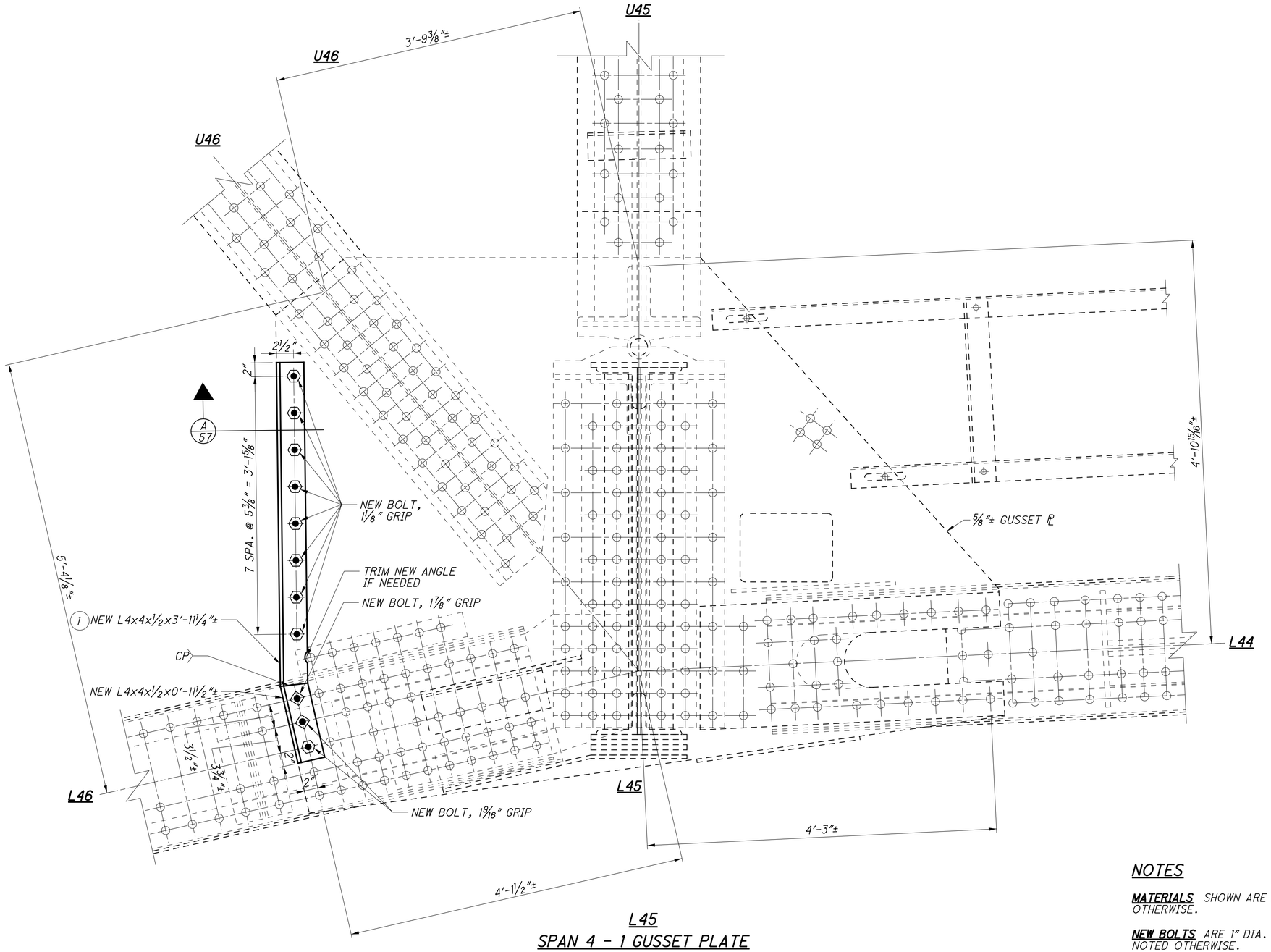
DAP		4707443	

GUSSET PLATE REPAIR L45W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L45
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210B
SPAN 5 - PANEL POINT L17)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L45E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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141/234

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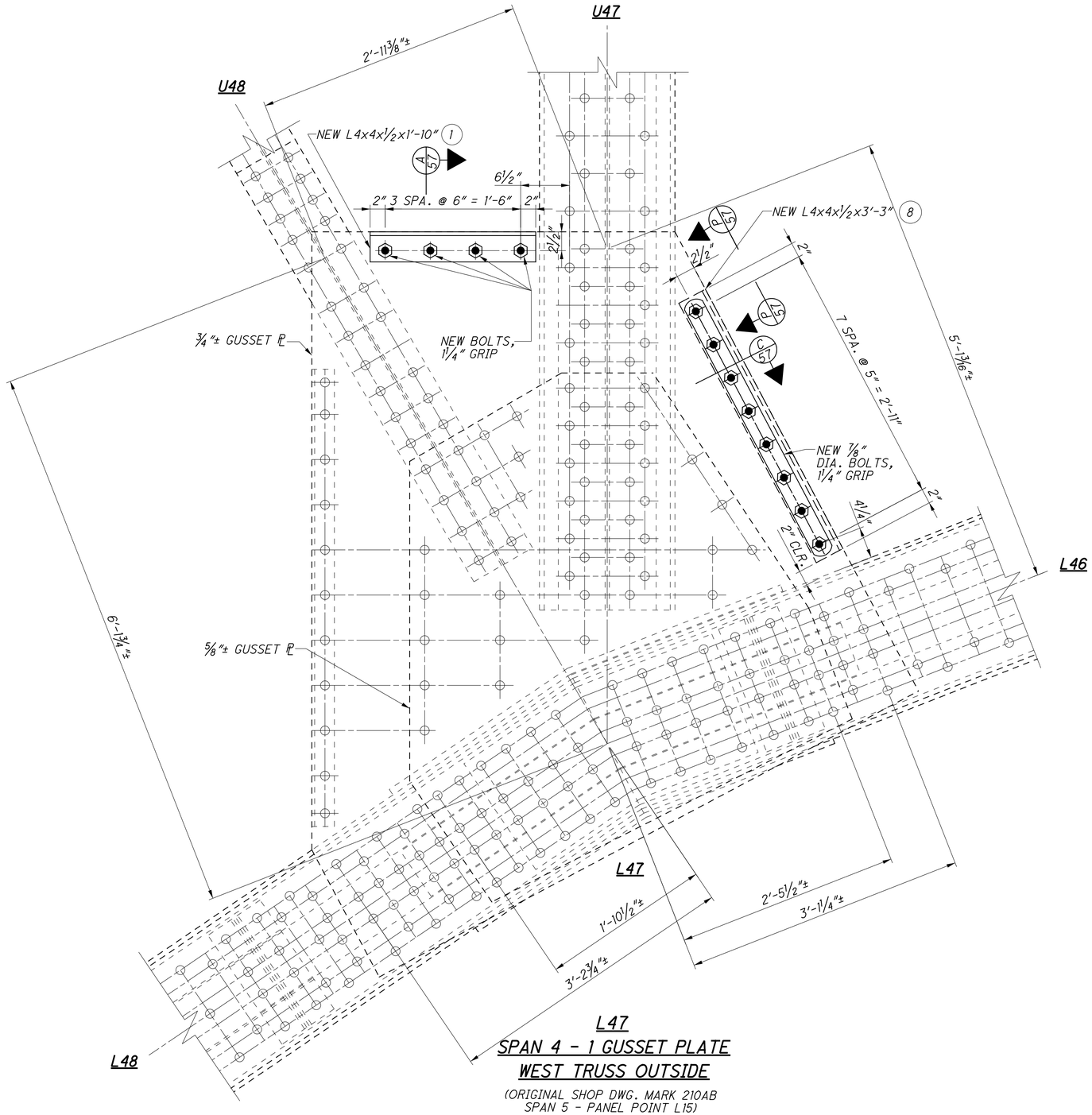

L47
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 210AB
SPAN 5 - PANEL POINT L15)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L47W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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142/234

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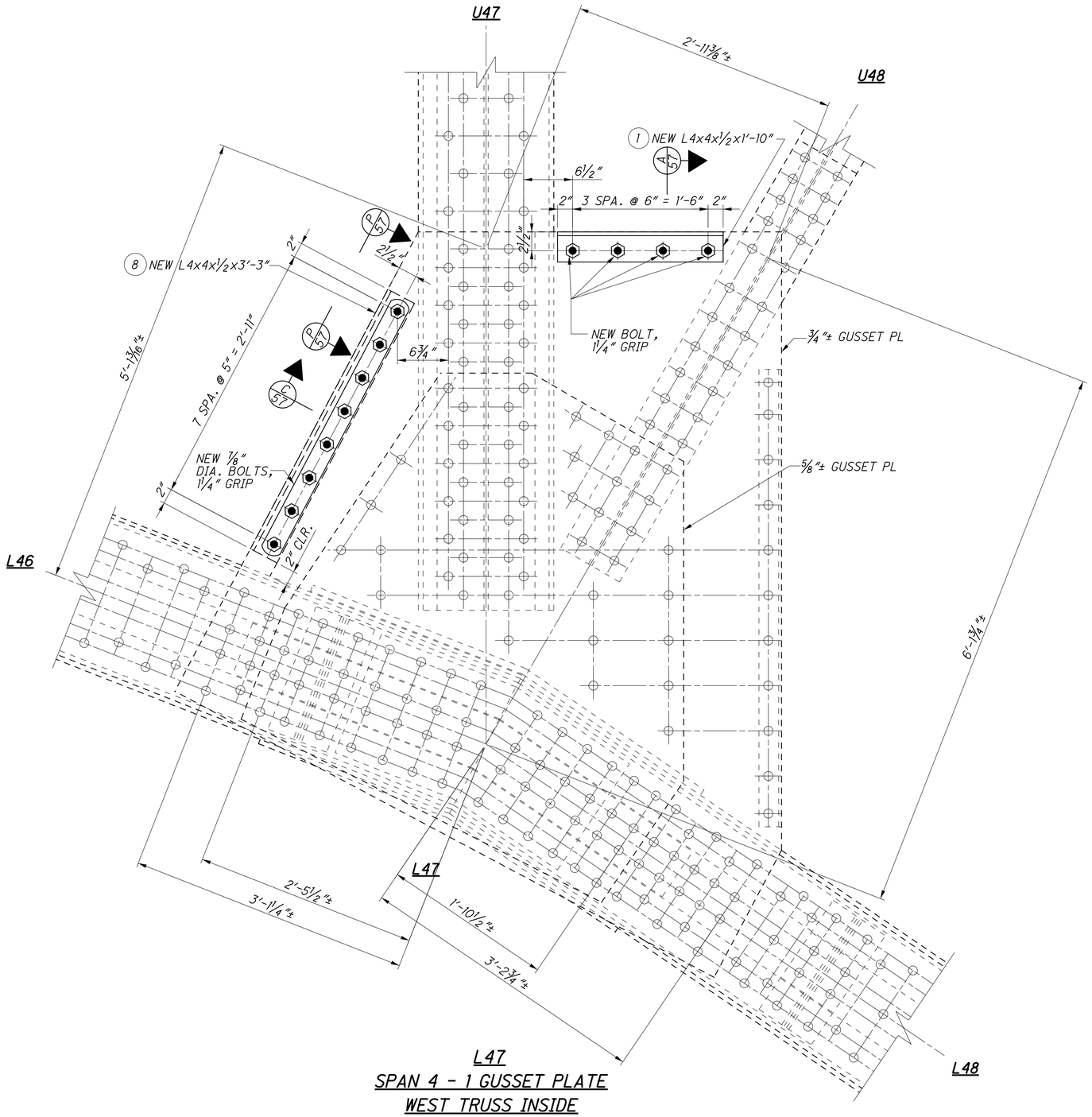

L47
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210AB
SPAN 5 - PANEL POINT L15)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189 .

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DESIGNED	DRAWN	REVIEWED	DATE
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L47W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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143/234

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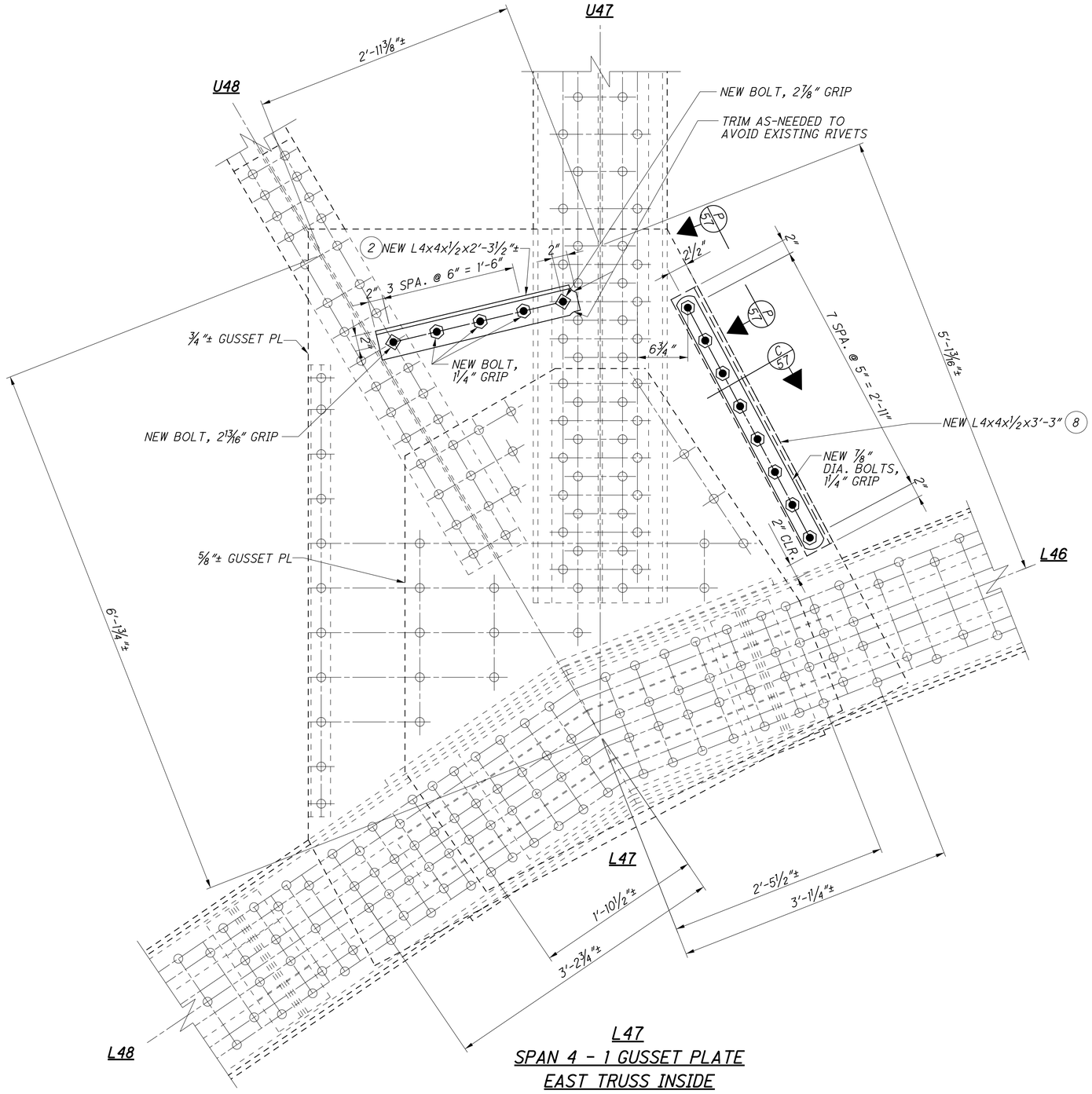

L47
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 210AB
SPAN 5 - PANEL POINT L15)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR L47E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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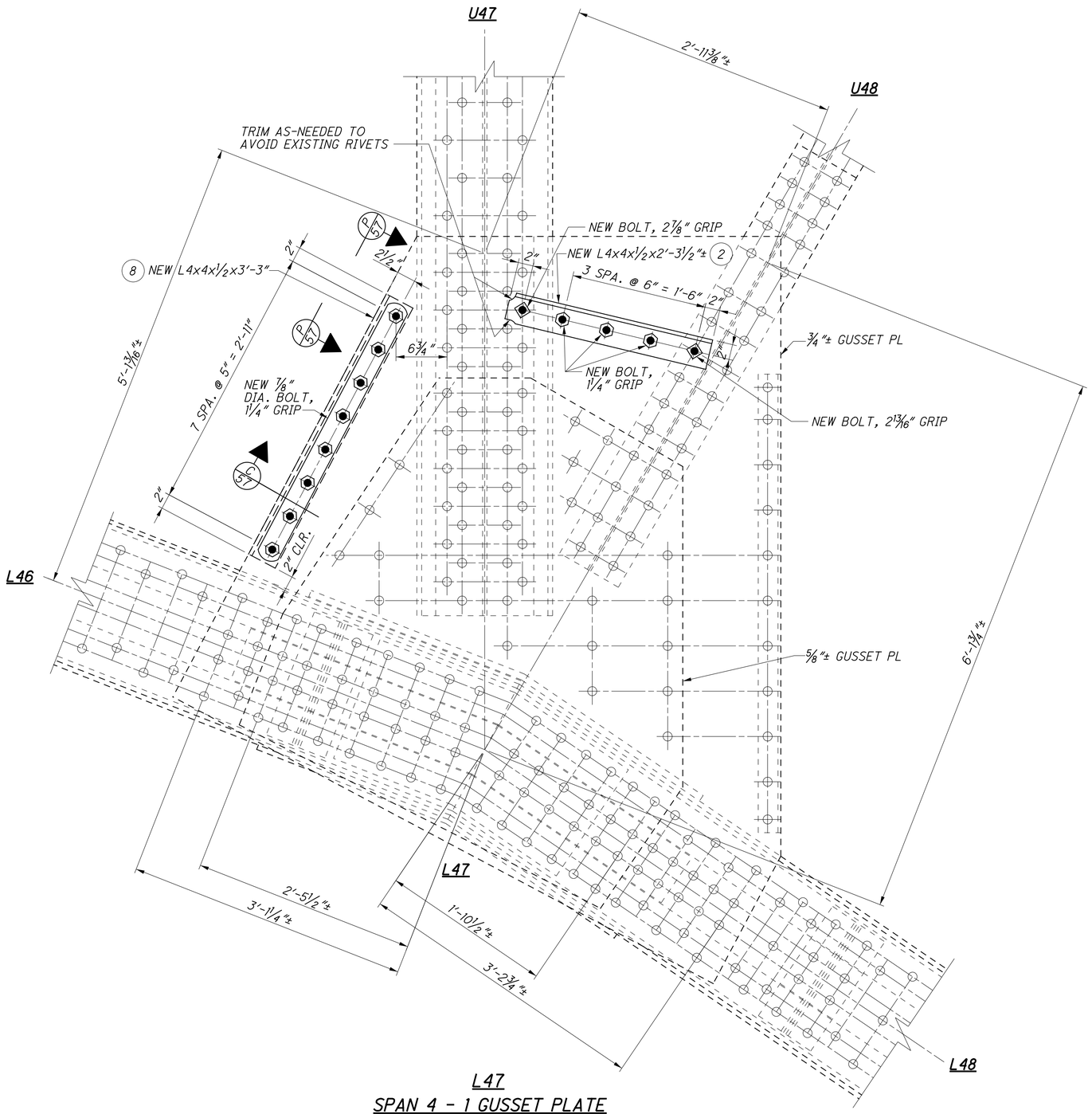

L47
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 210AB
SPAN 5 - PANEL POINT L15)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189 .

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L47E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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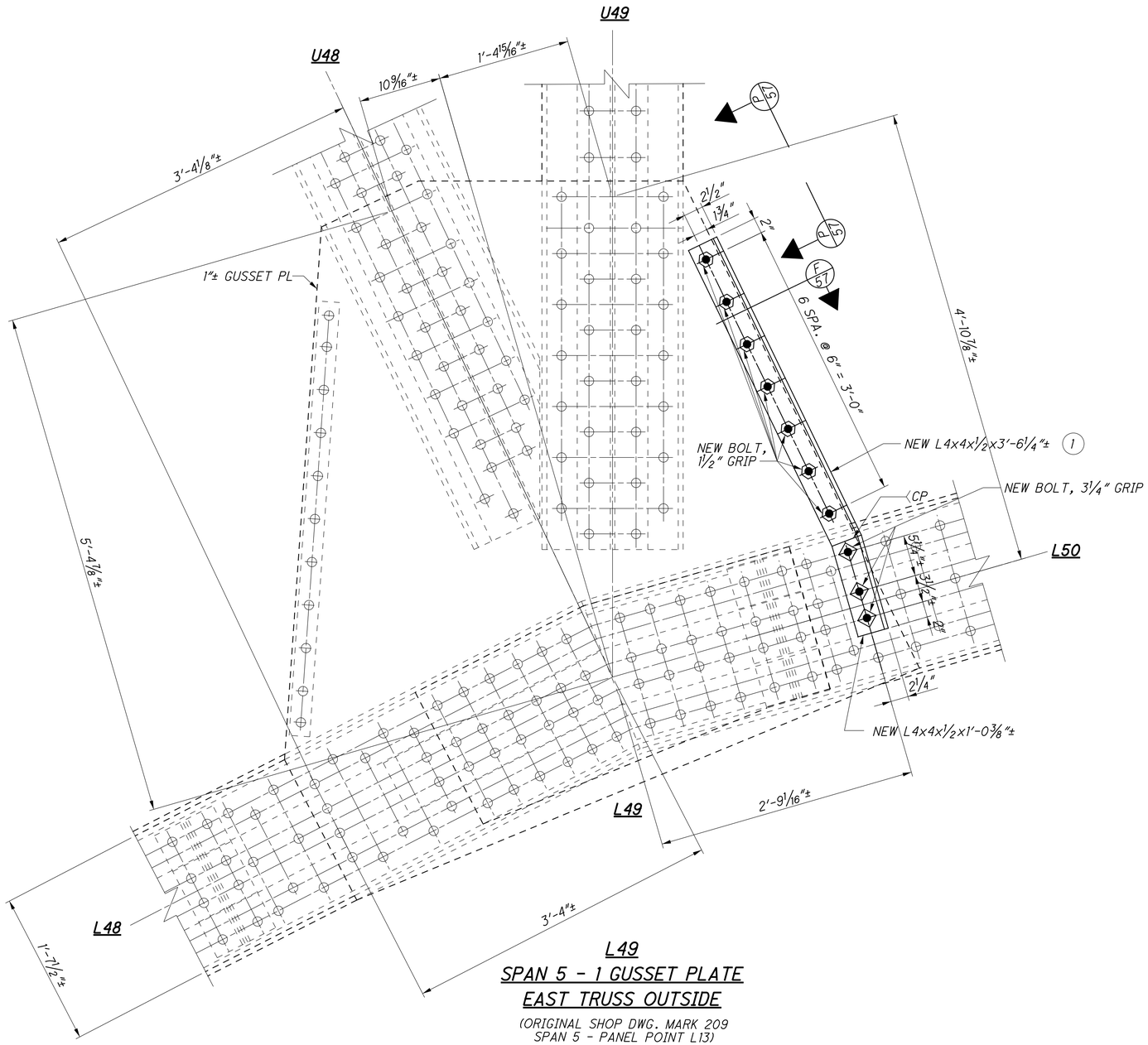

L49
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 209
SPAN 5 - PANEL POINT L13)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
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MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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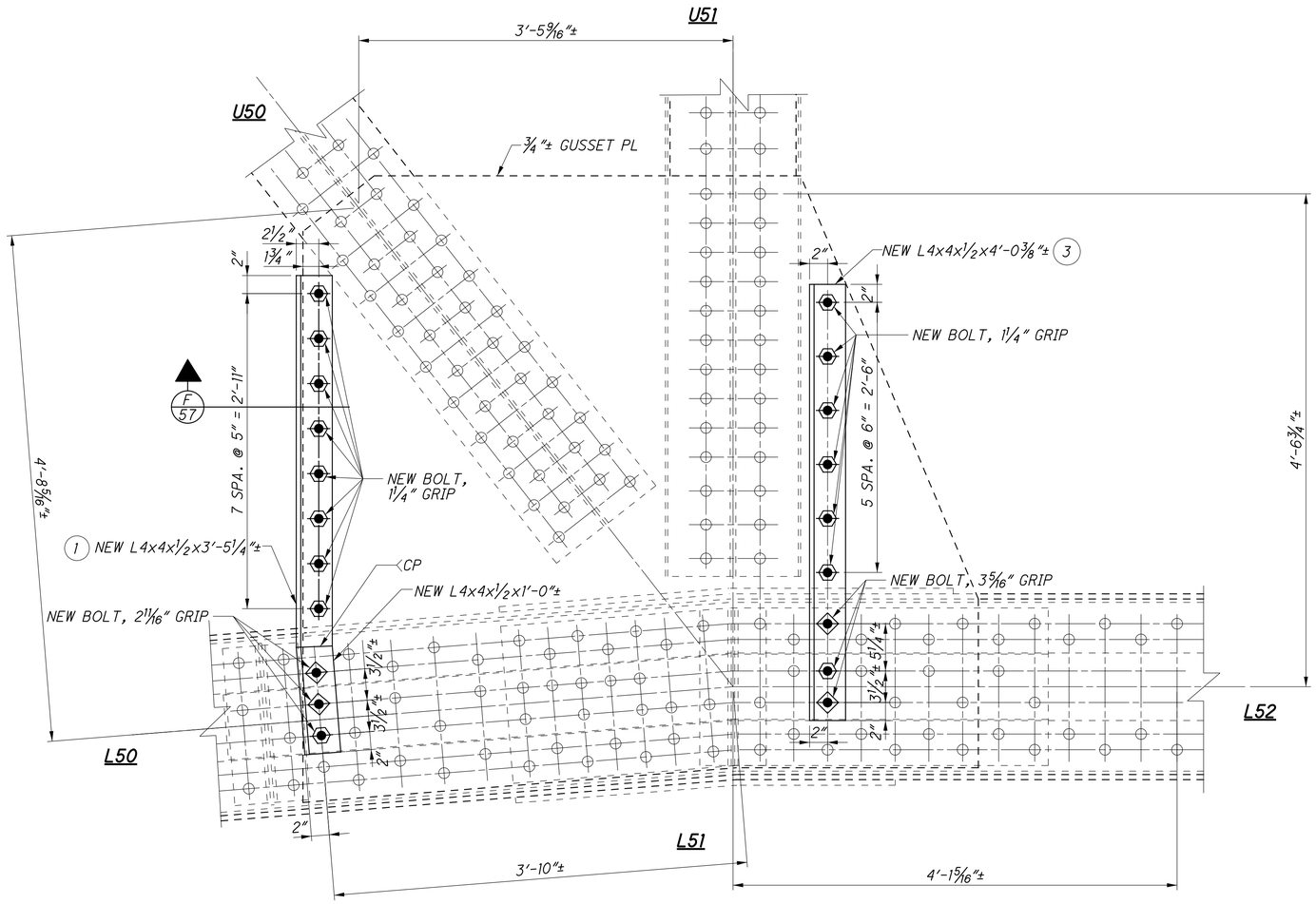
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L49E OUTSIDE

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L51
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 207
SPAN 5 - PANEL POINT L11)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
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DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR L51E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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147/234

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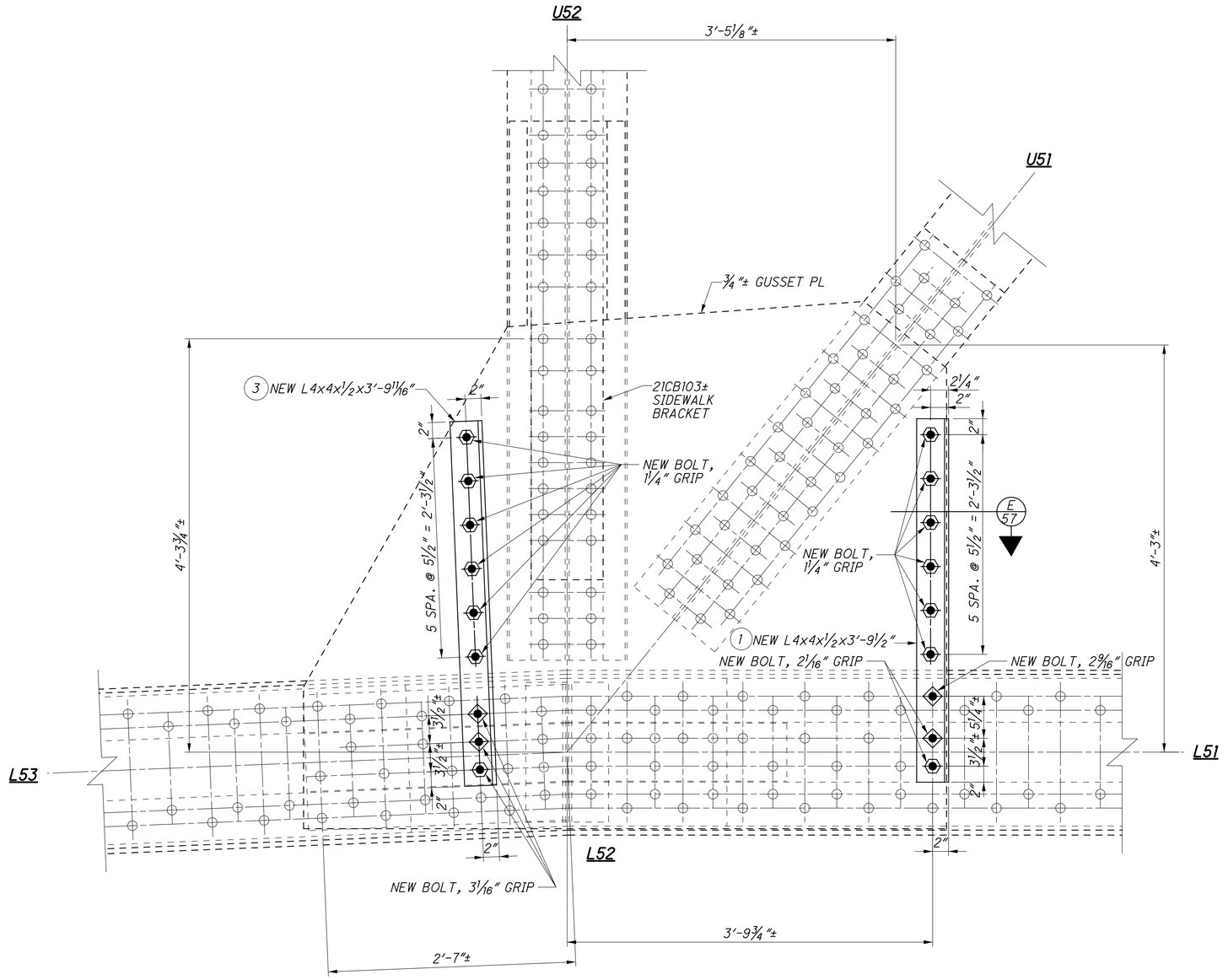

L52
SPAN 5 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 207 SPAN 5 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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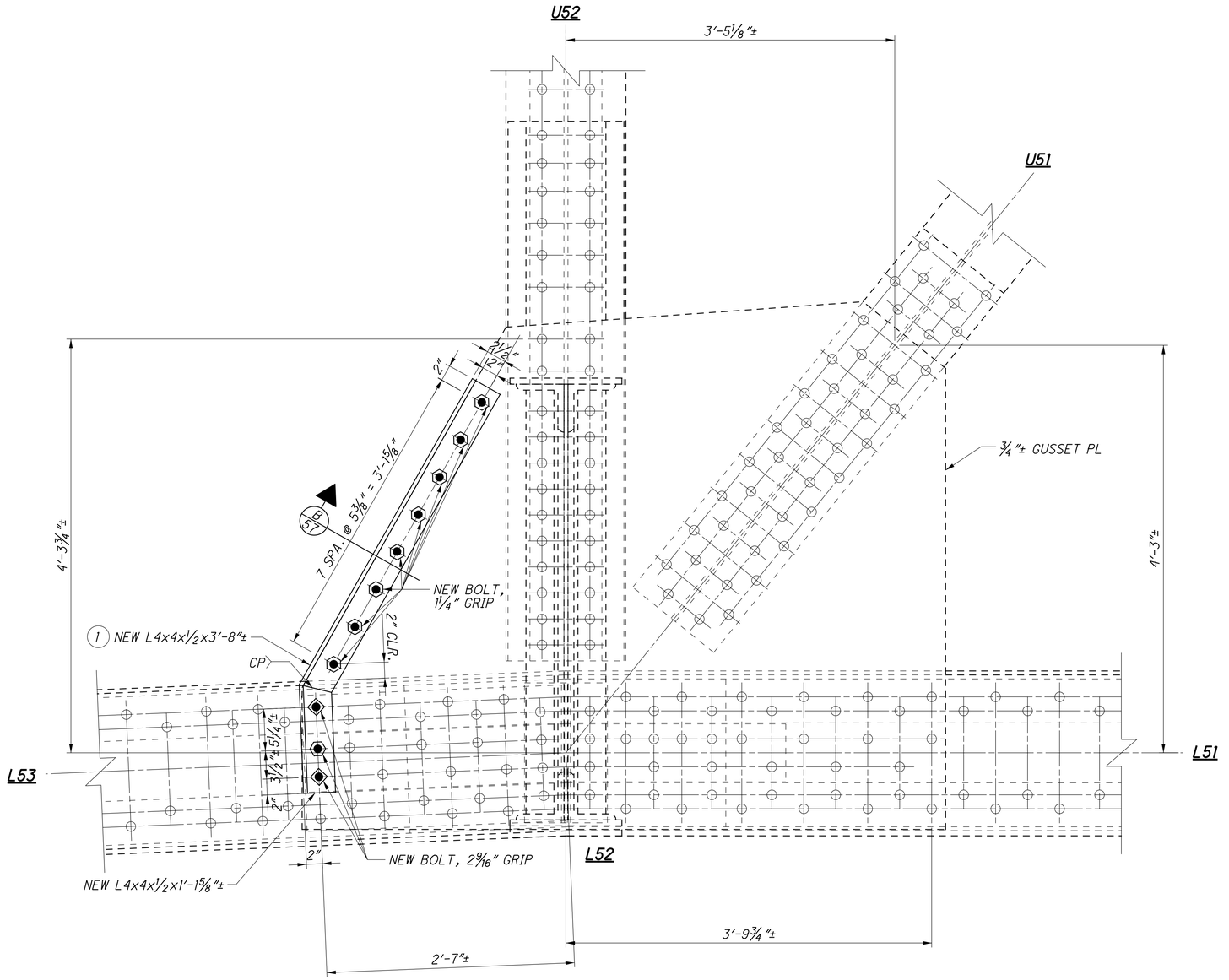
DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L52W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L52
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 207 SPAN 5 - PANEL POINT L10)

LEGEND

(8) - REPAIR TYPE

NOTES:

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DAP		4707443	

GUSSET PLATE REPAIR L52E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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149/234

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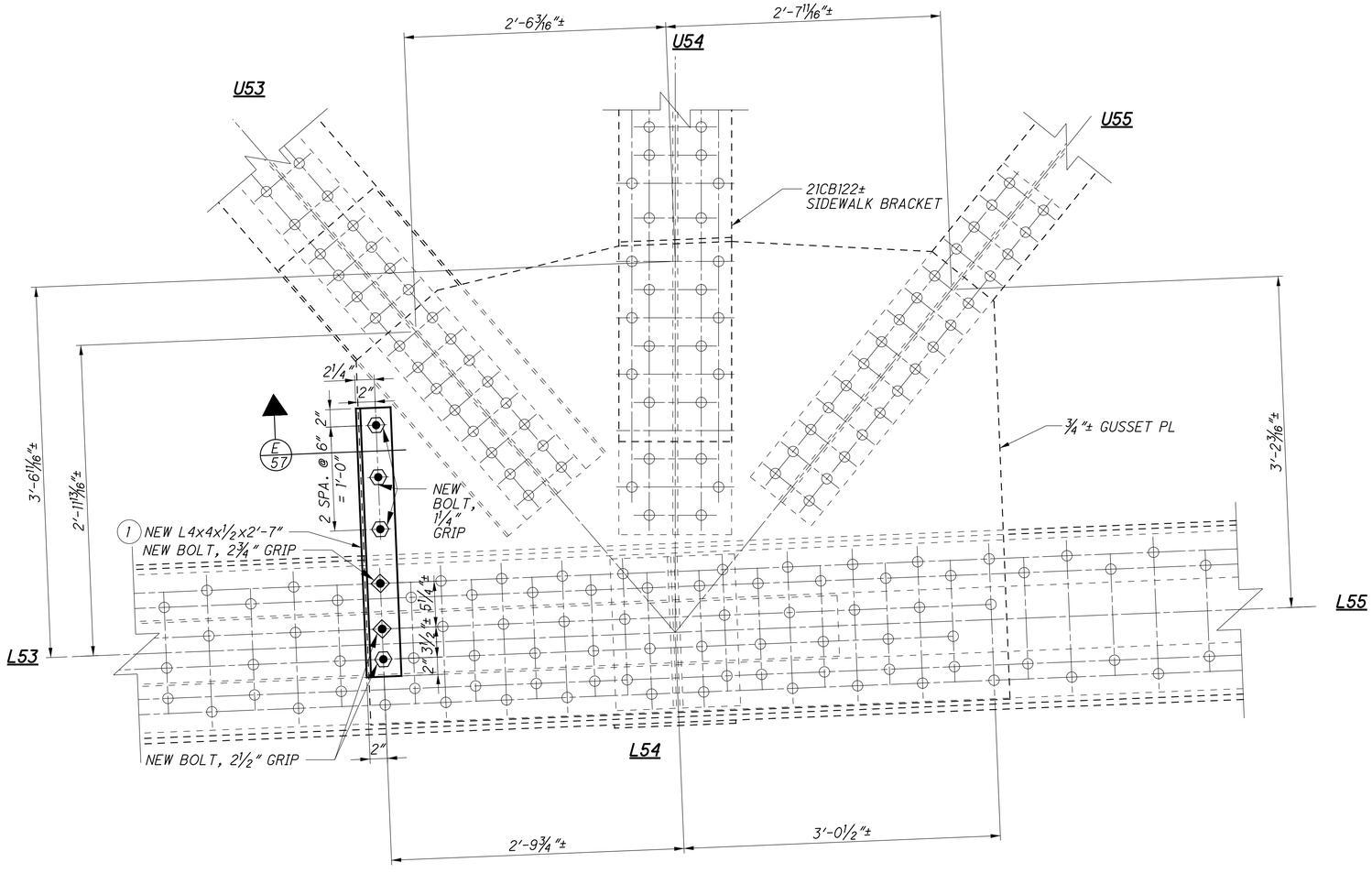

L54
SPAN 5 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 206
SPAN 4 - PANEL POINT L8)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DAP		4707443	

GUSSET PLATE REPAIR L54W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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150/234

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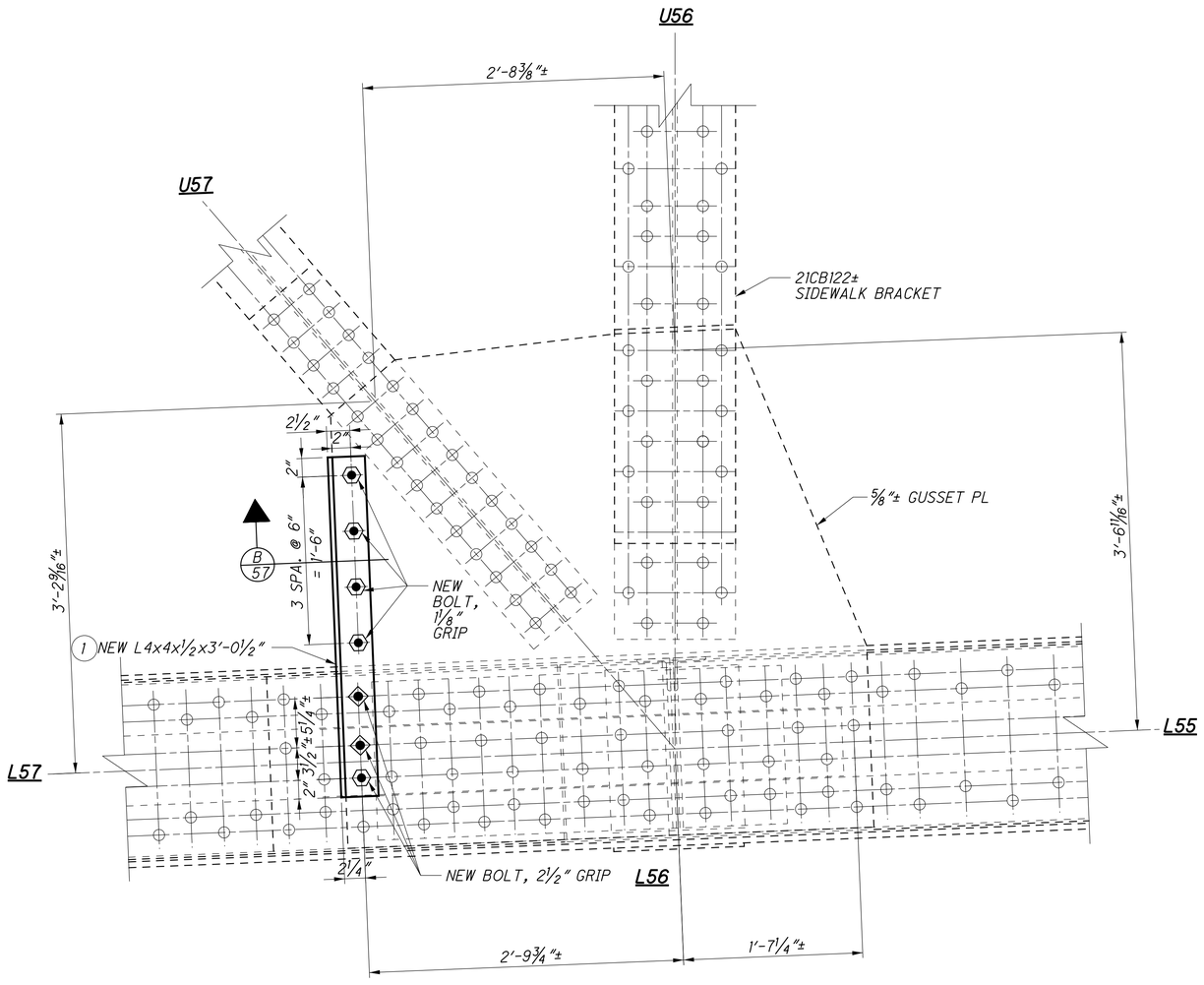

L56
SPAN 5 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 205
SPAN 5 - PANEL POINT L6)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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DAP		4707443	

GUSSET PLATE REPAIR L56W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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151/234

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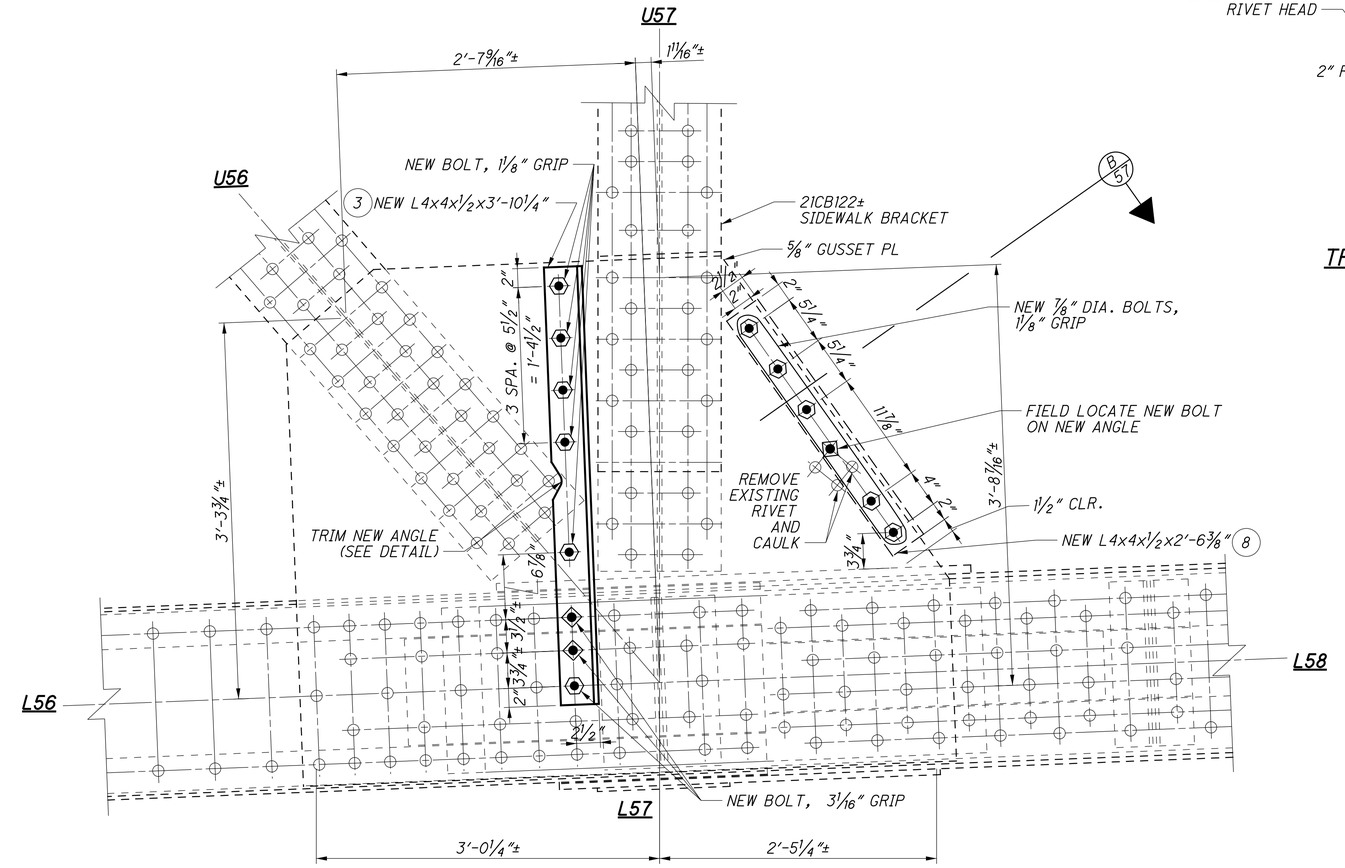
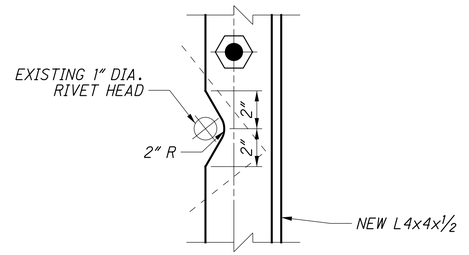


L57
SPAN 5 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 204
SPAN 5 - PANEL POINT L5)



NEW ANGLE TRIMMING DETAIL

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CAULK OPEN HOLES LEFT BY RIVET REMOVAL TO FACILITATE STIFFENING ANGLE INSTALLATION. COAT EXPOSED SURFACE WITH THE URETHANE FINISH COAT USED FOR BRIDGE PAINTING. WORK SHALL BE CONSIDERED INCIDENTAL TO THE ANGLE INSTALLATION ITEM.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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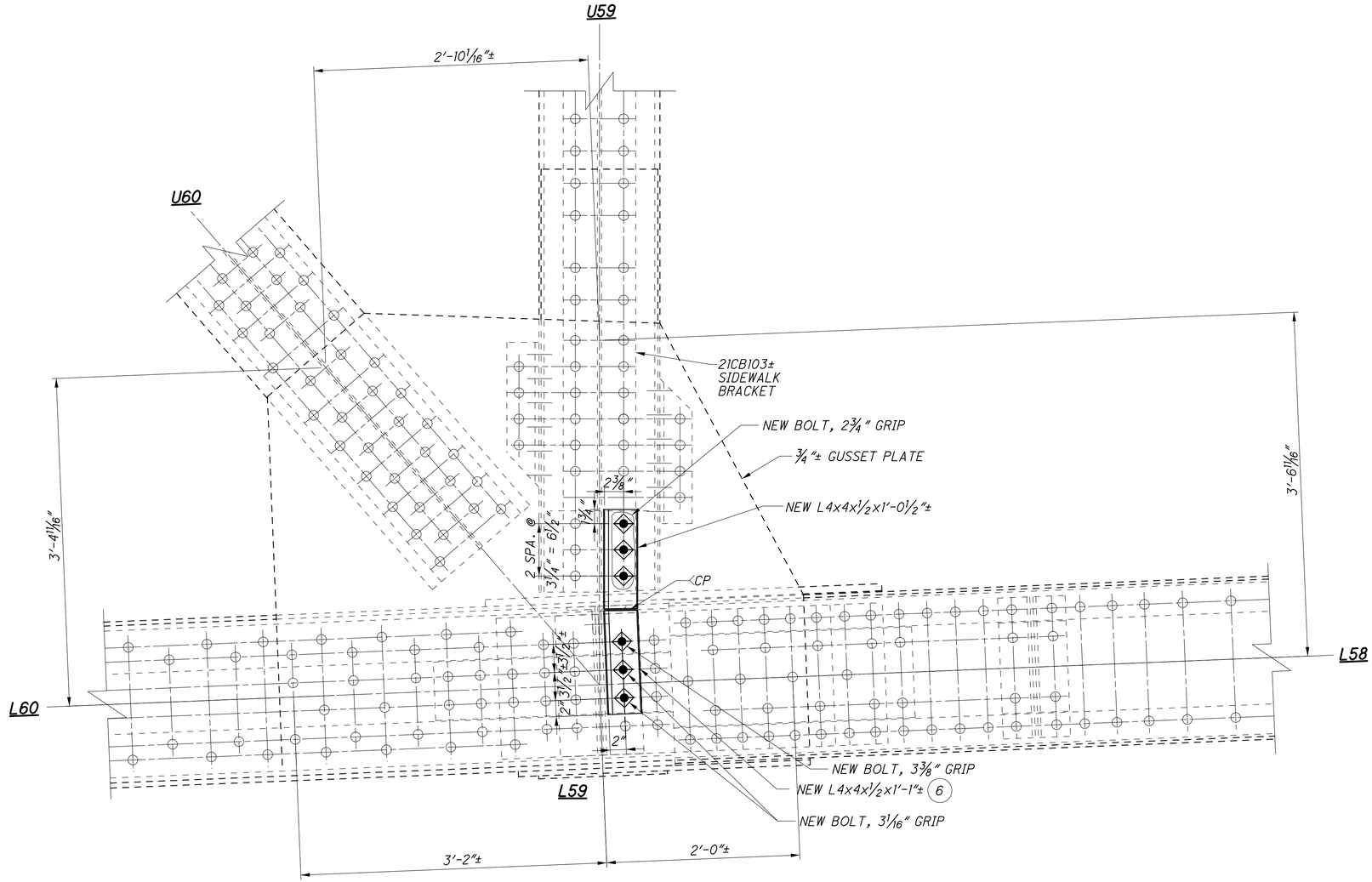
GUSSET PLATE REPAIR L57W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L59
SPAN 5 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 203
SPAN 5 - PANEL POINT L3)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAILS: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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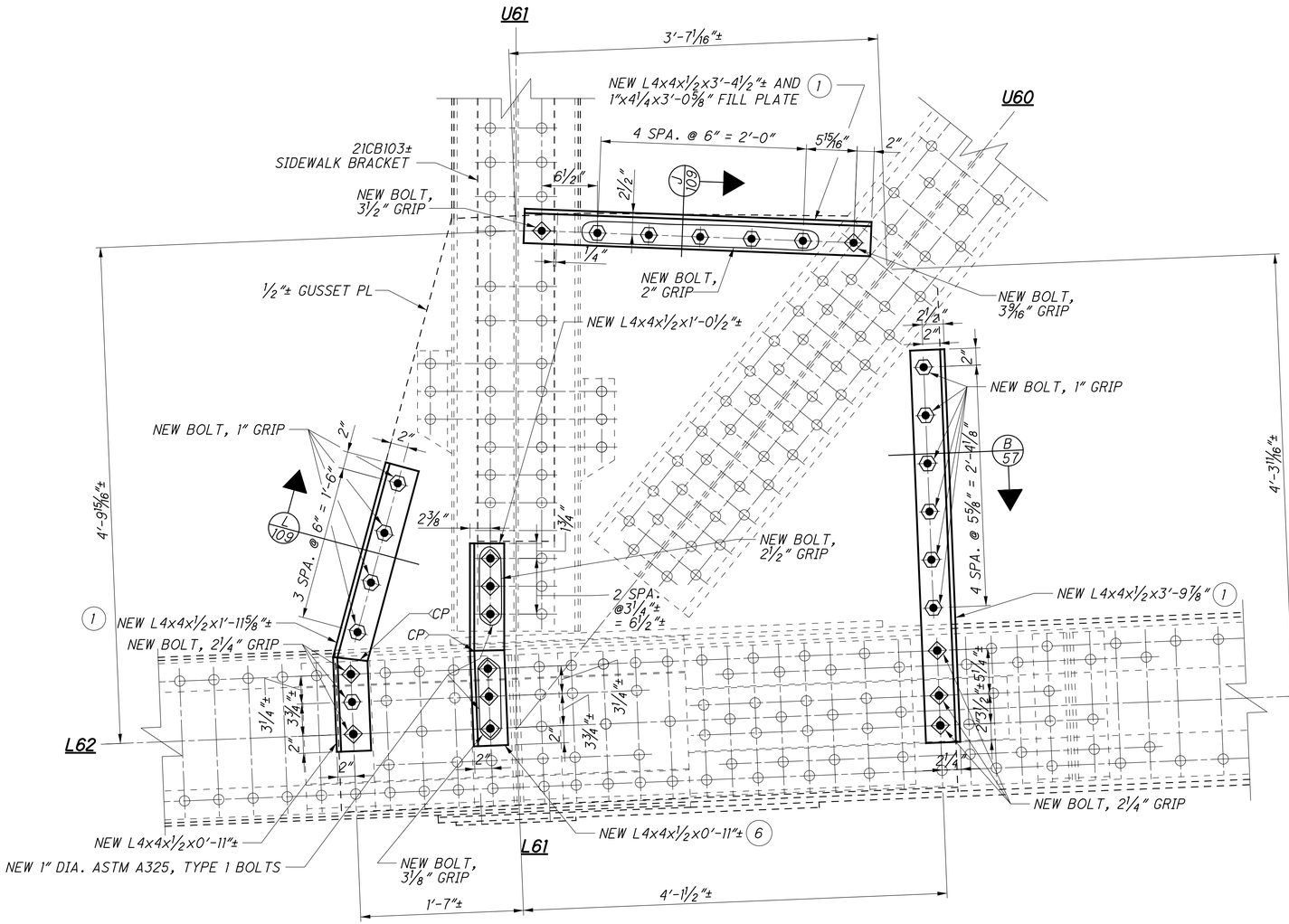
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

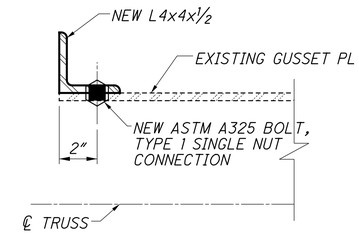
GUSSET PLATE REPAIR L59W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

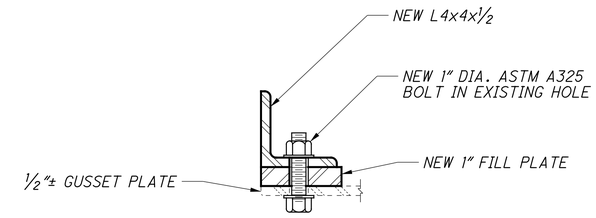


L61
SPAN 6 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 5 - PANEL POINT L1)



SECTION L



SECTION J

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

FILL PLATE DETAIL: SEE SHEET 57/189.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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GUSSET PLATE REPAIR L61W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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234

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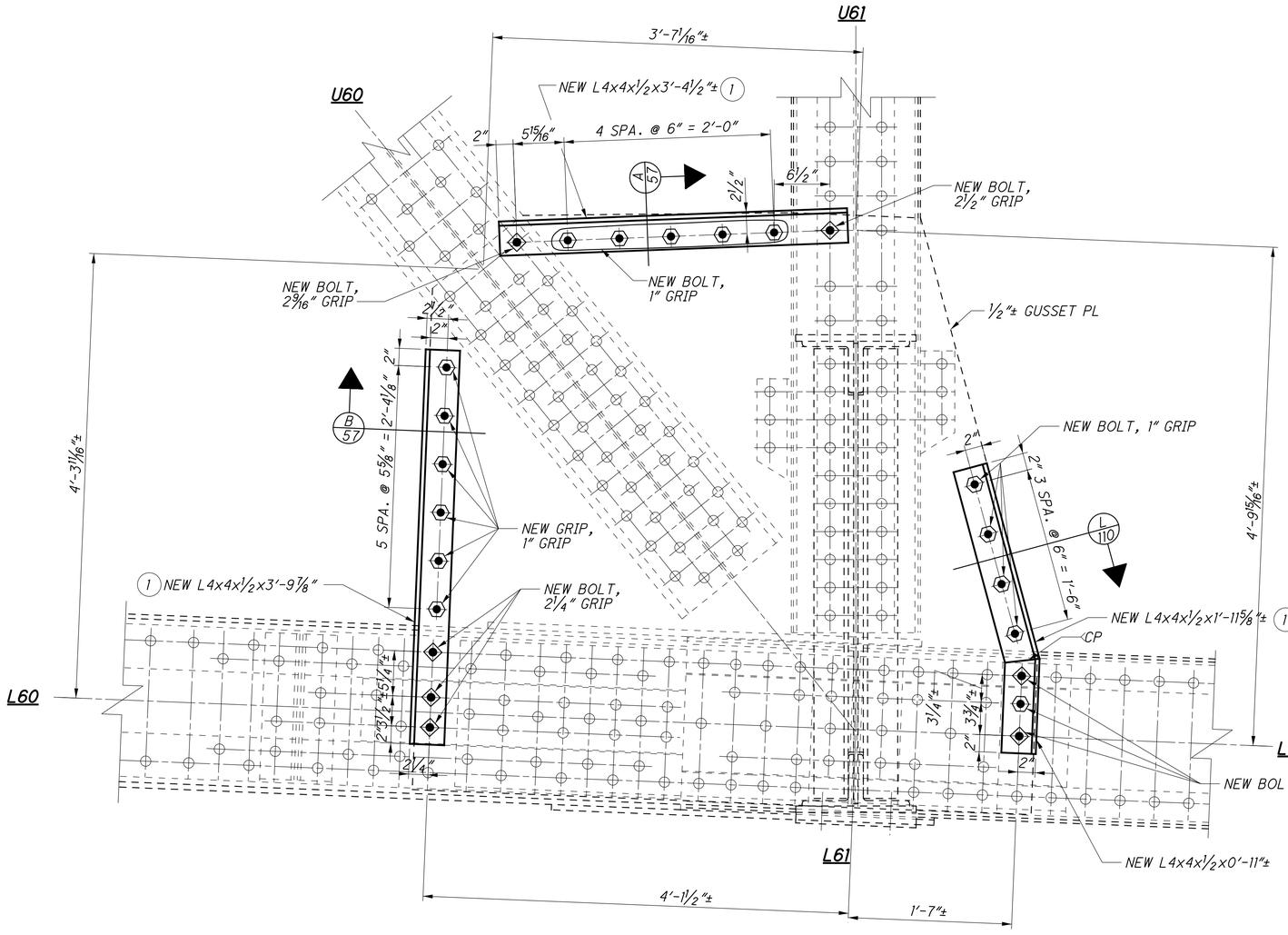
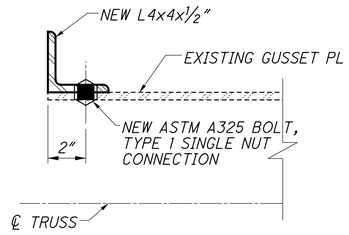


L61
SPAN 6 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 5 - PANEL POINT L1)



SECTION L

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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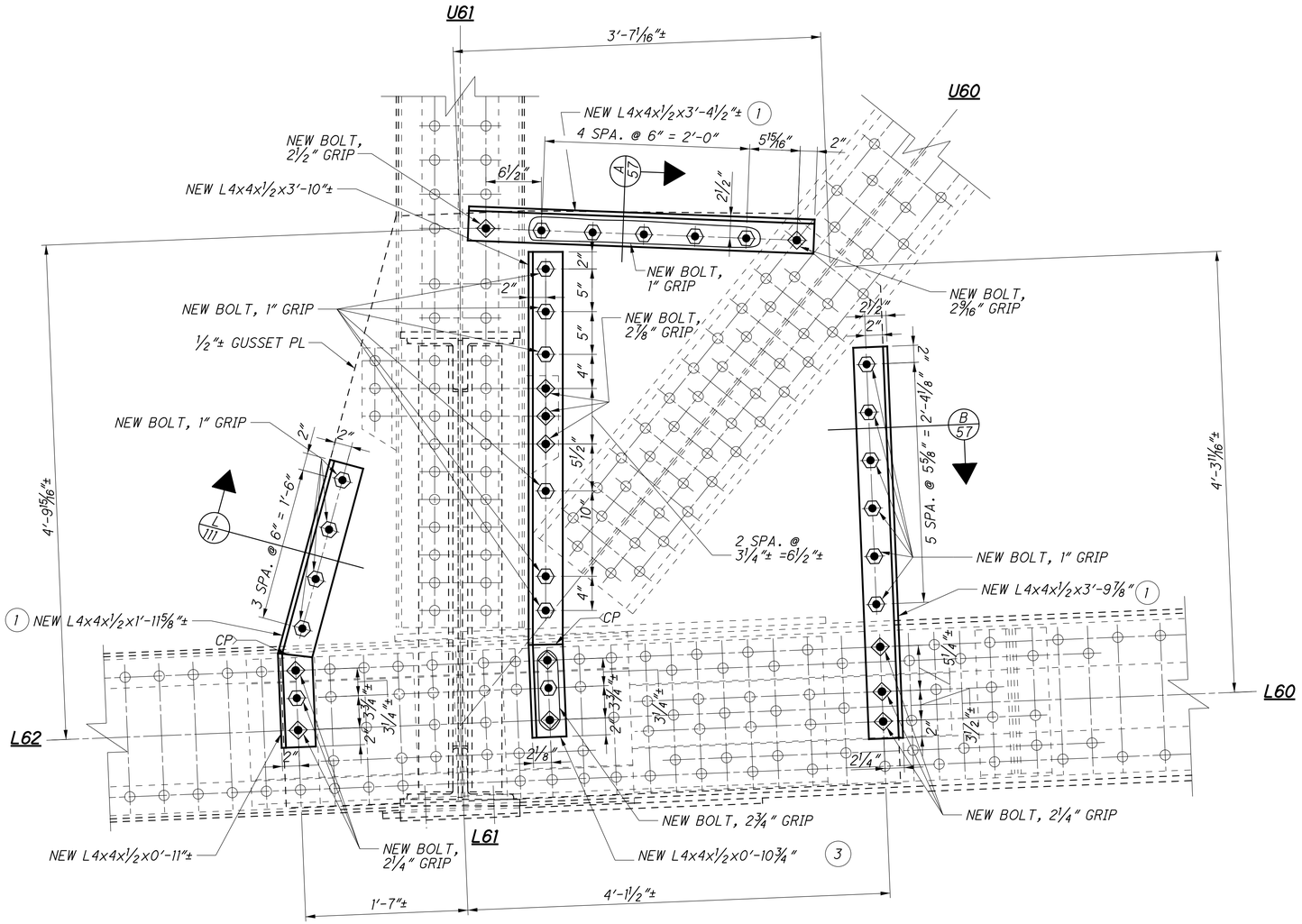
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

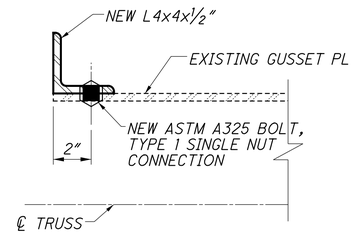
GUSSET PLATE REPAIR L61W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L61
SPAN 6 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 5 - PANEL POINT L1)



SECTION L

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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GUSSET PLATE REPAIR L61E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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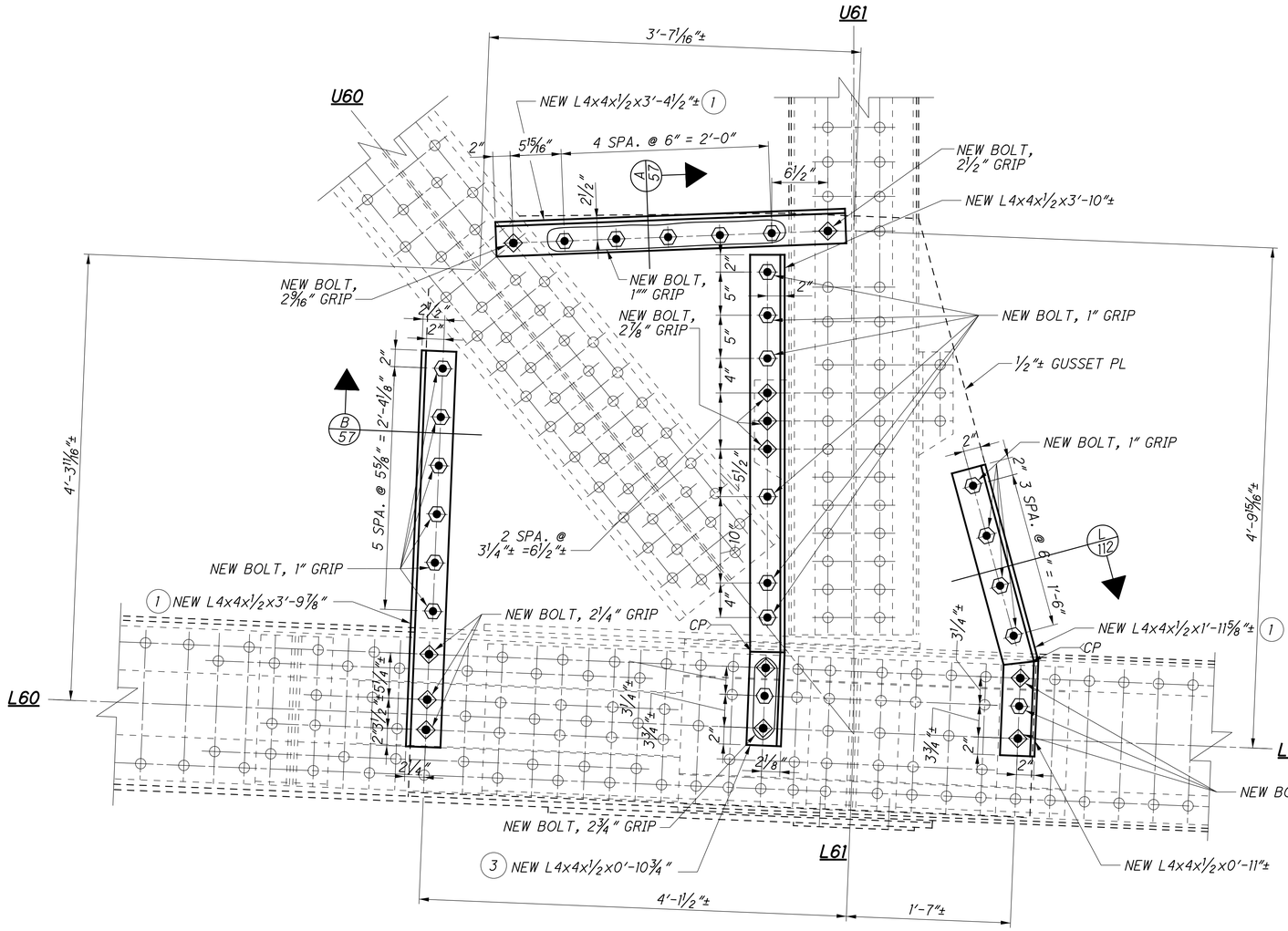
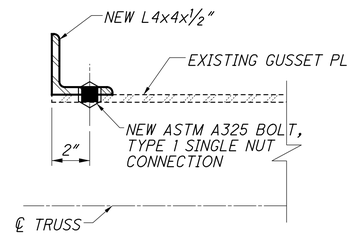


L61
SPAN 6 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 202
SPAN 5 - PANEL POINT L1)



SECTION L

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR L61E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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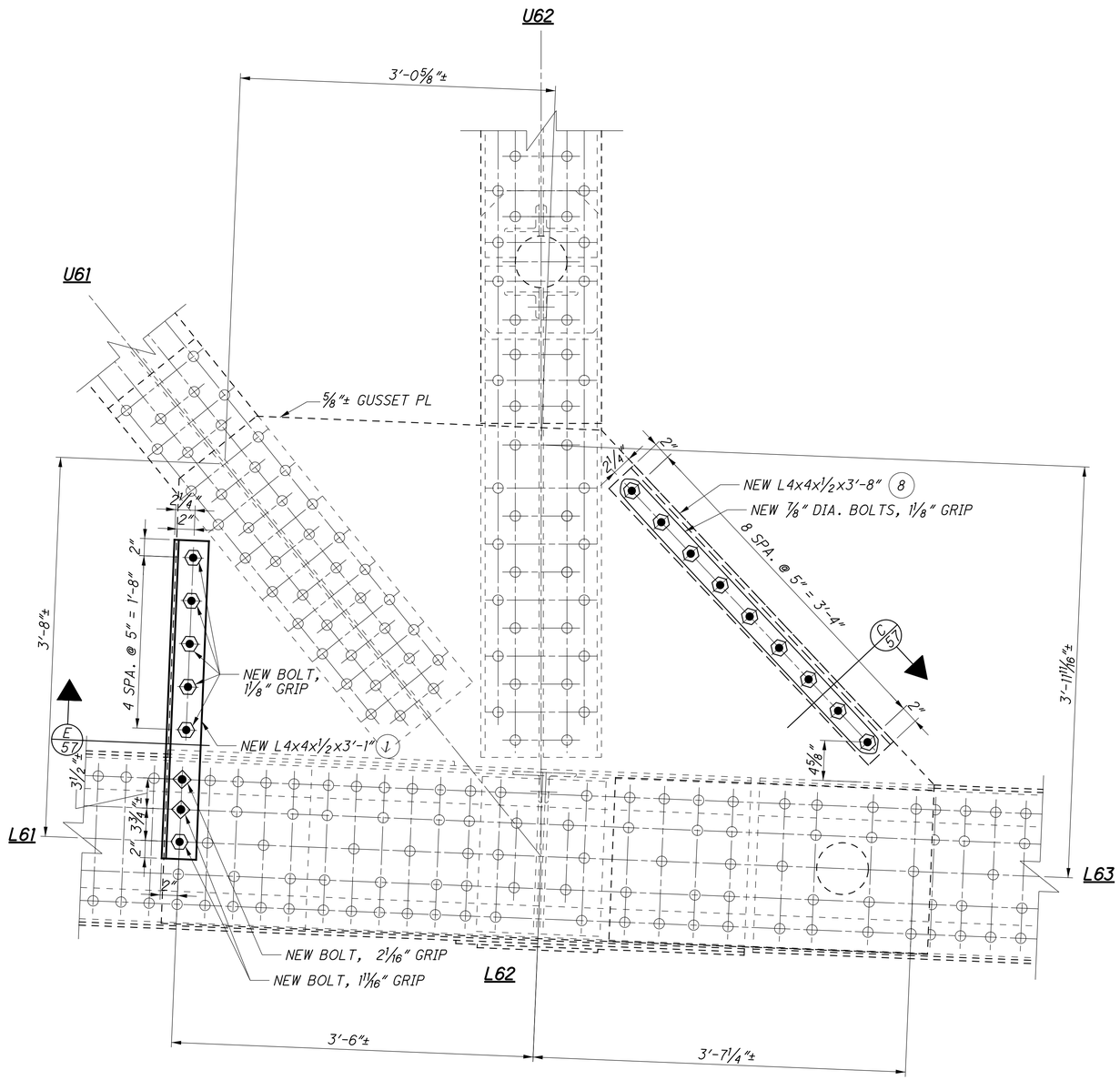

L62
SPAN 6 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 202 SPAN 6 - PANEL POINT L6)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR L62E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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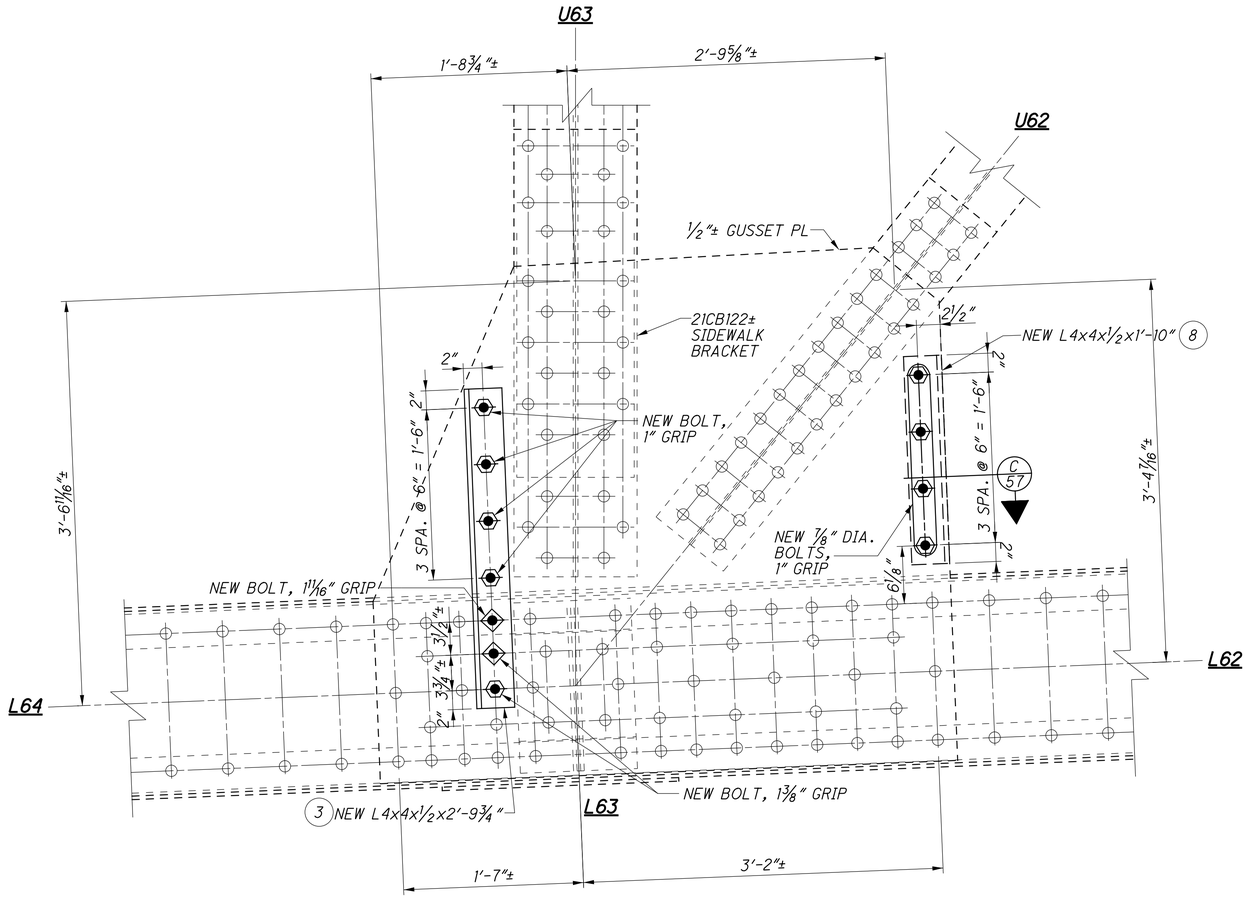

L63
SPAN 6 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 109
SPAN 6 - PANEL POINT L5)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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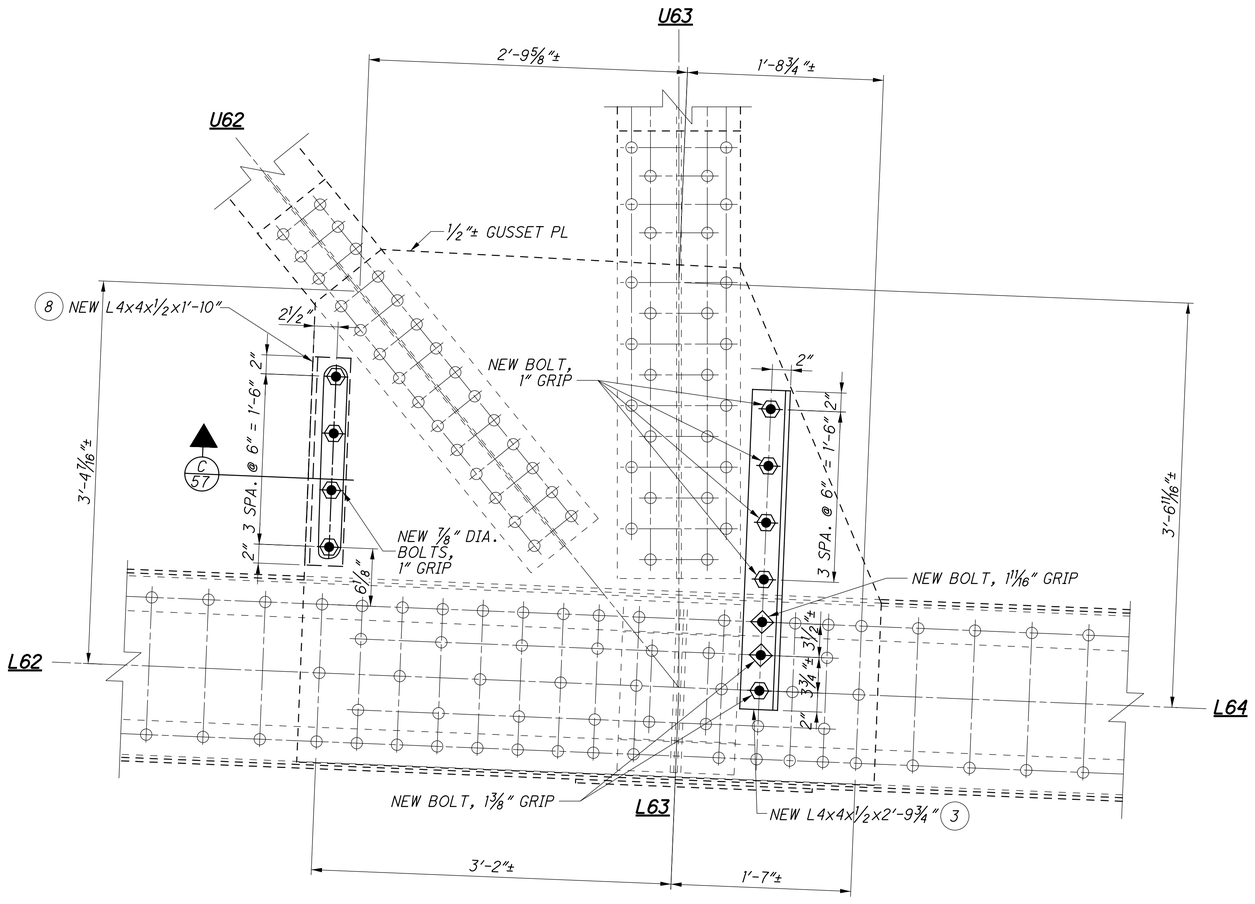
DAP		4707443	

GUSSET PLATE REPAIR L63W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L63
SPAN 6 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 109
SPAN 6 - PANEL POINT L5)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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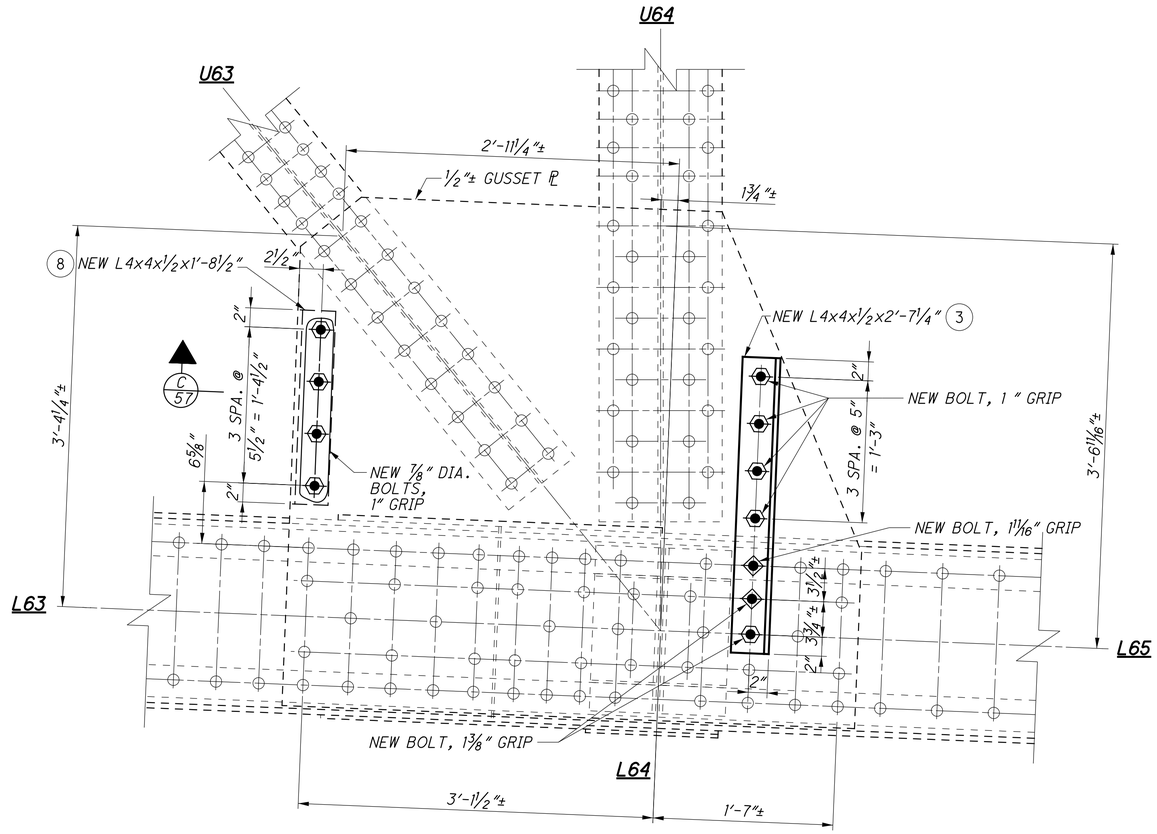
DAP		4707443	

GUSSET PLATE REPAIR L63E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



L64
SPAN 6 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 109
SPAN 6 - PANEL POINT L4)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR L64E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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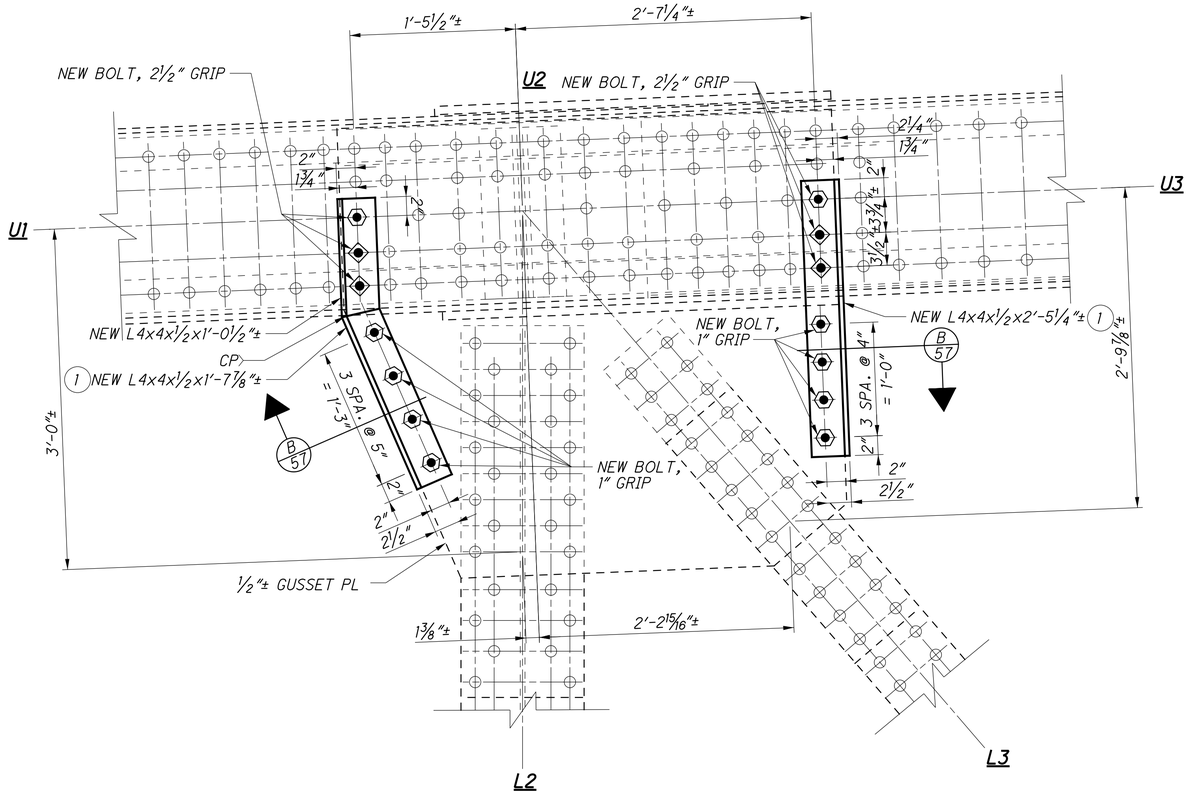

U2
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE
(ORIGINAL SHOP DWG. MARK 410
SPAN 1 - PANEL POINT U2)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

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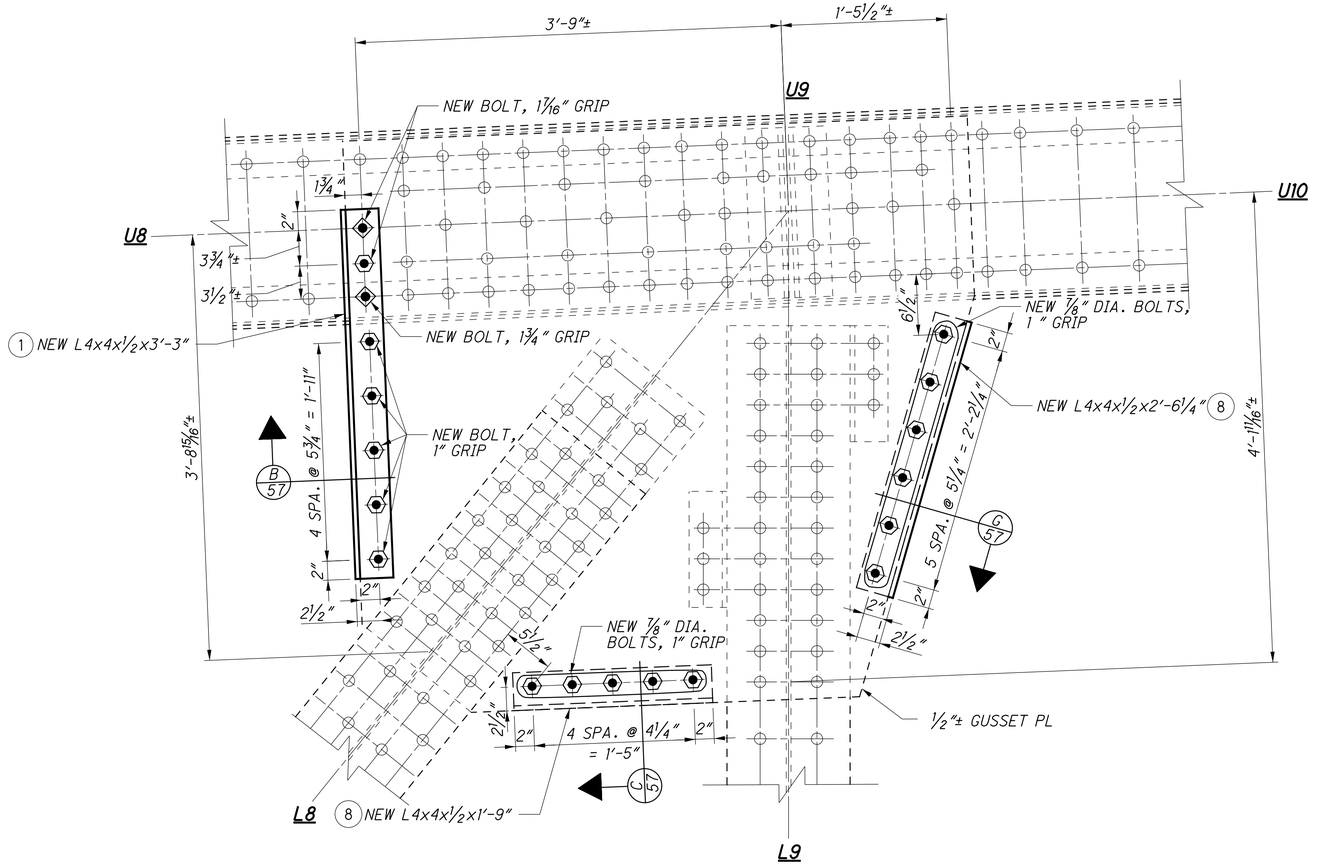
DAP		4707443	

GUSSET PLATE REPAIR U2E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



U9
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

*(ORIGINAL SHOP DWG. MARK 414
SPAN 1 - PANEL POINT U9)*

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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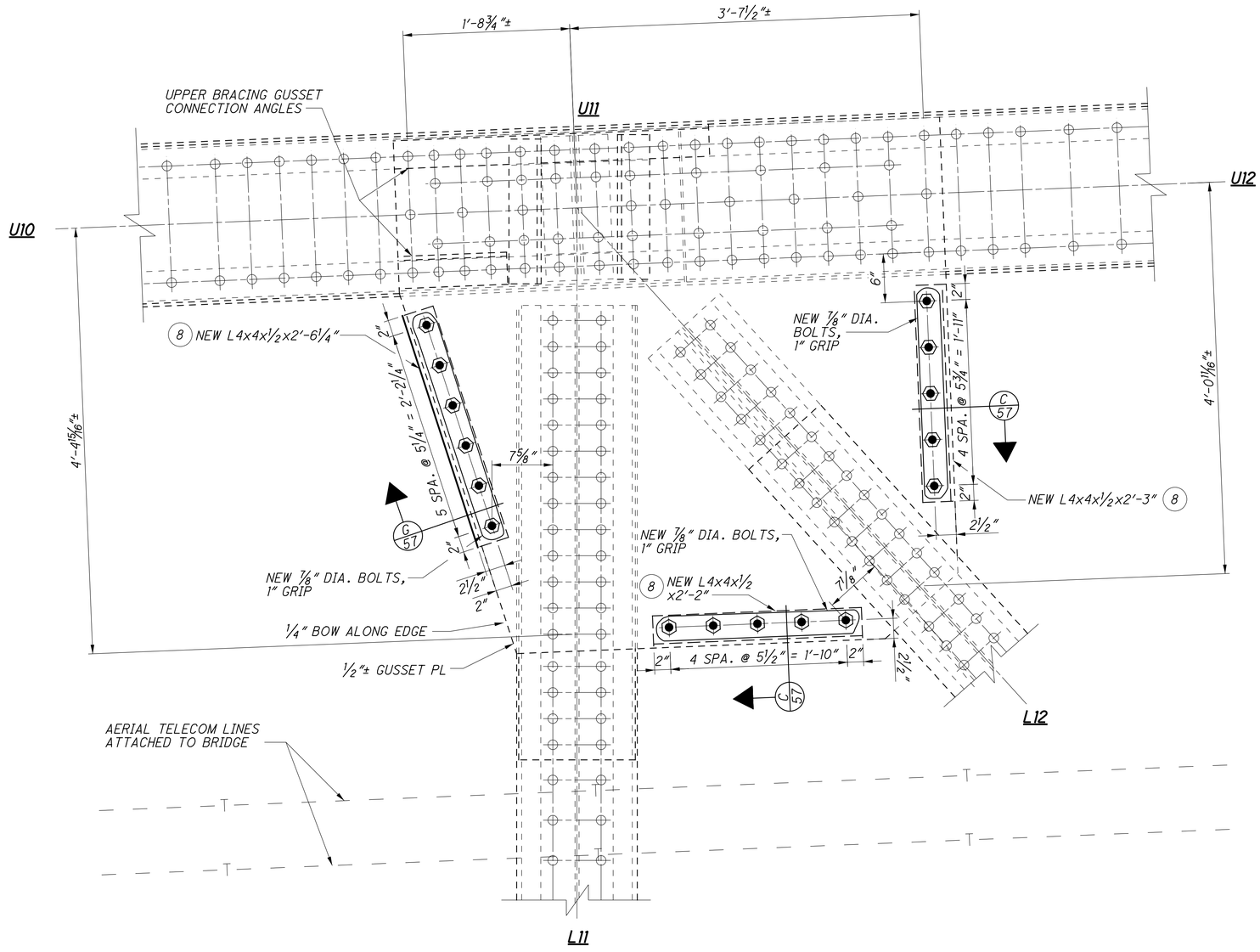
DAP		4707443	

GUSSET PLATE REPAIR U9E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



U11
SPAN 2 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 415
SPAN 1 - PANEL POINT U11)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707433	

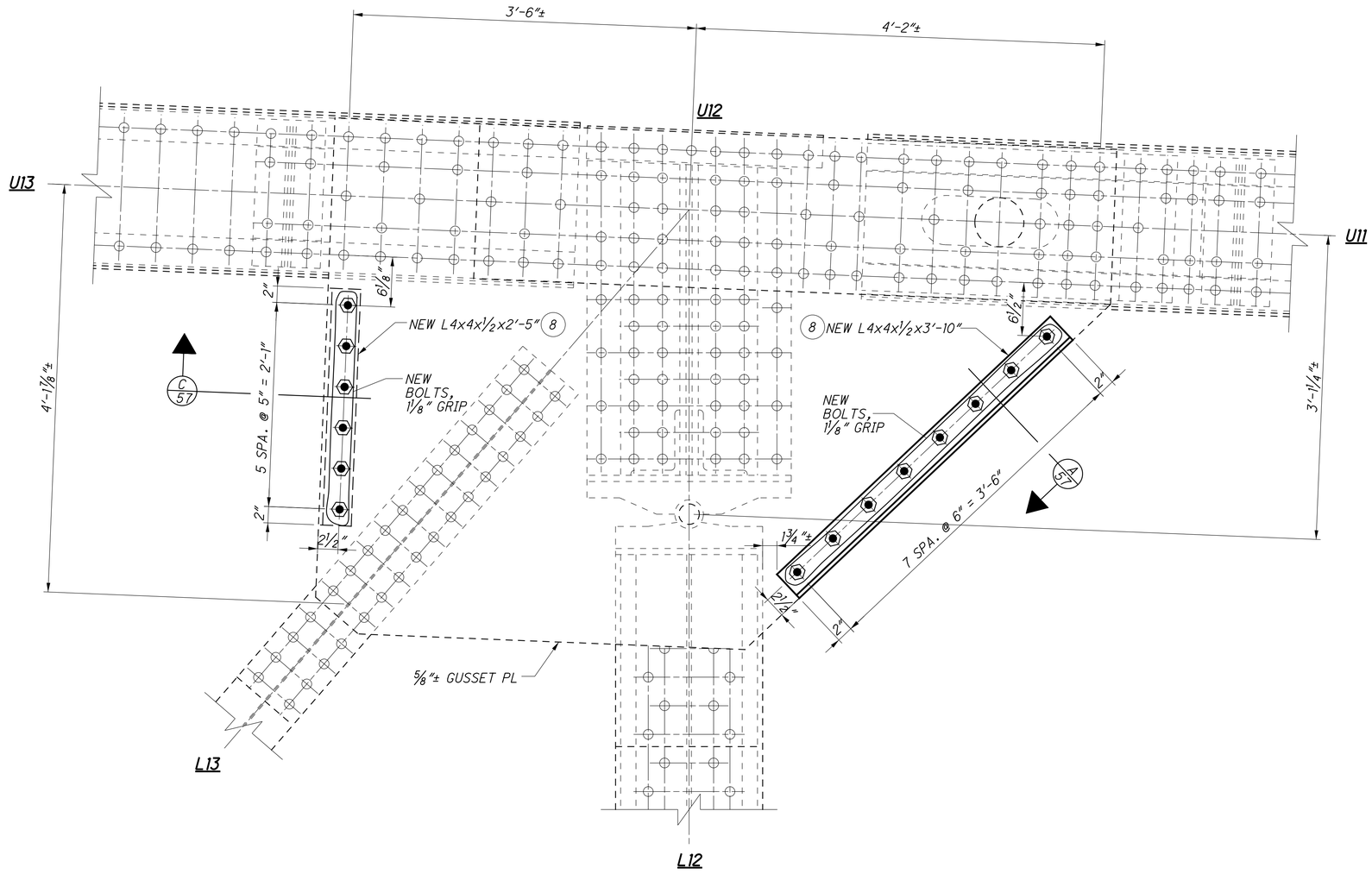
GUSSET PLATE REPAIR U11W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

119/189

164/234

F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\U11W INSIDE.dgn 9/28/2015 9:17:58 AM JeremyBurns



U12
SPAN 1 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 415
SPAN 2 - PANEL POINT U0)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U12W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

120/189

165/234

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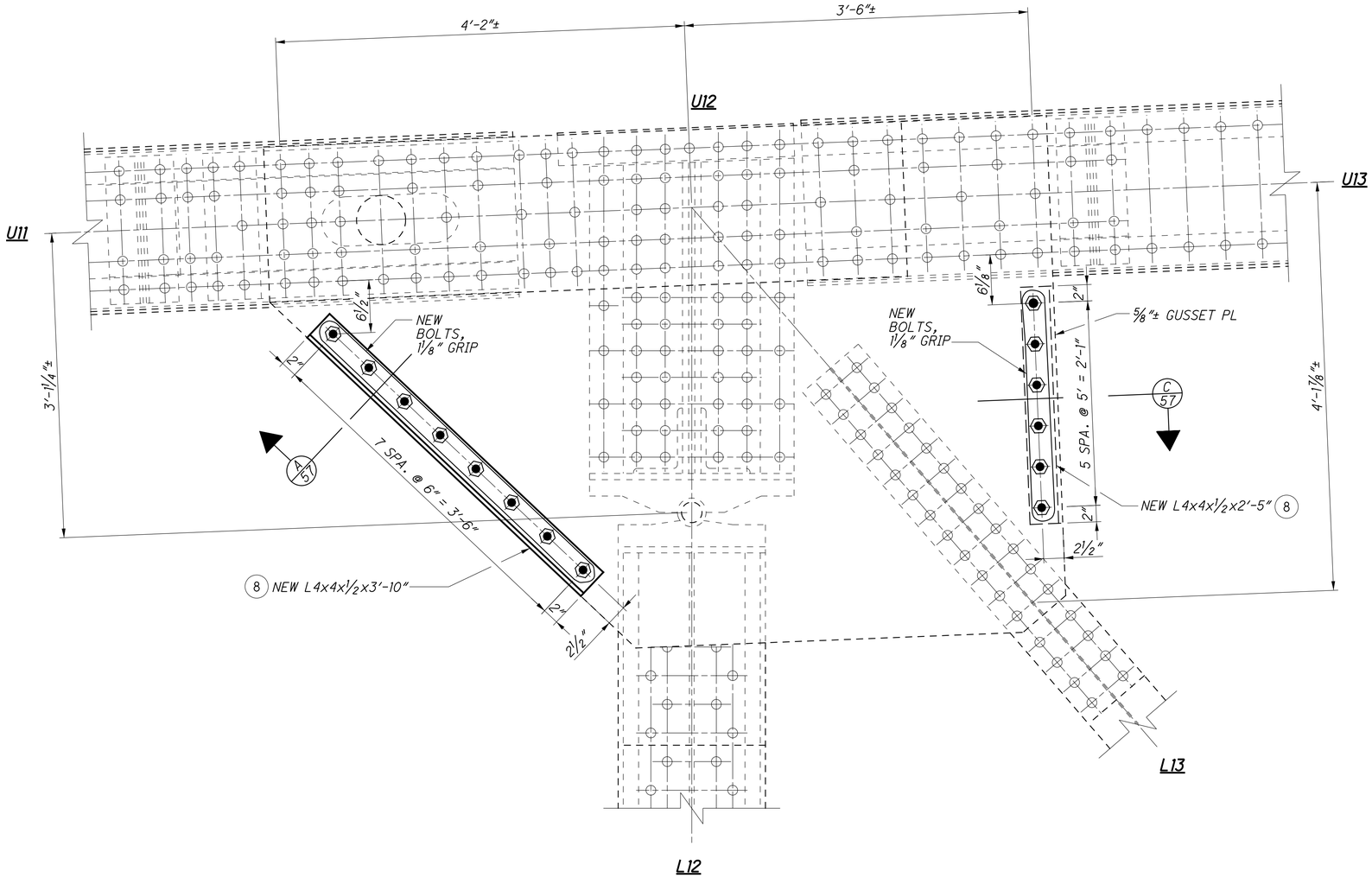

U12
SPAN 1 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 415
SPAN 2 - PANEL POINT U0)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U12E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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166/234

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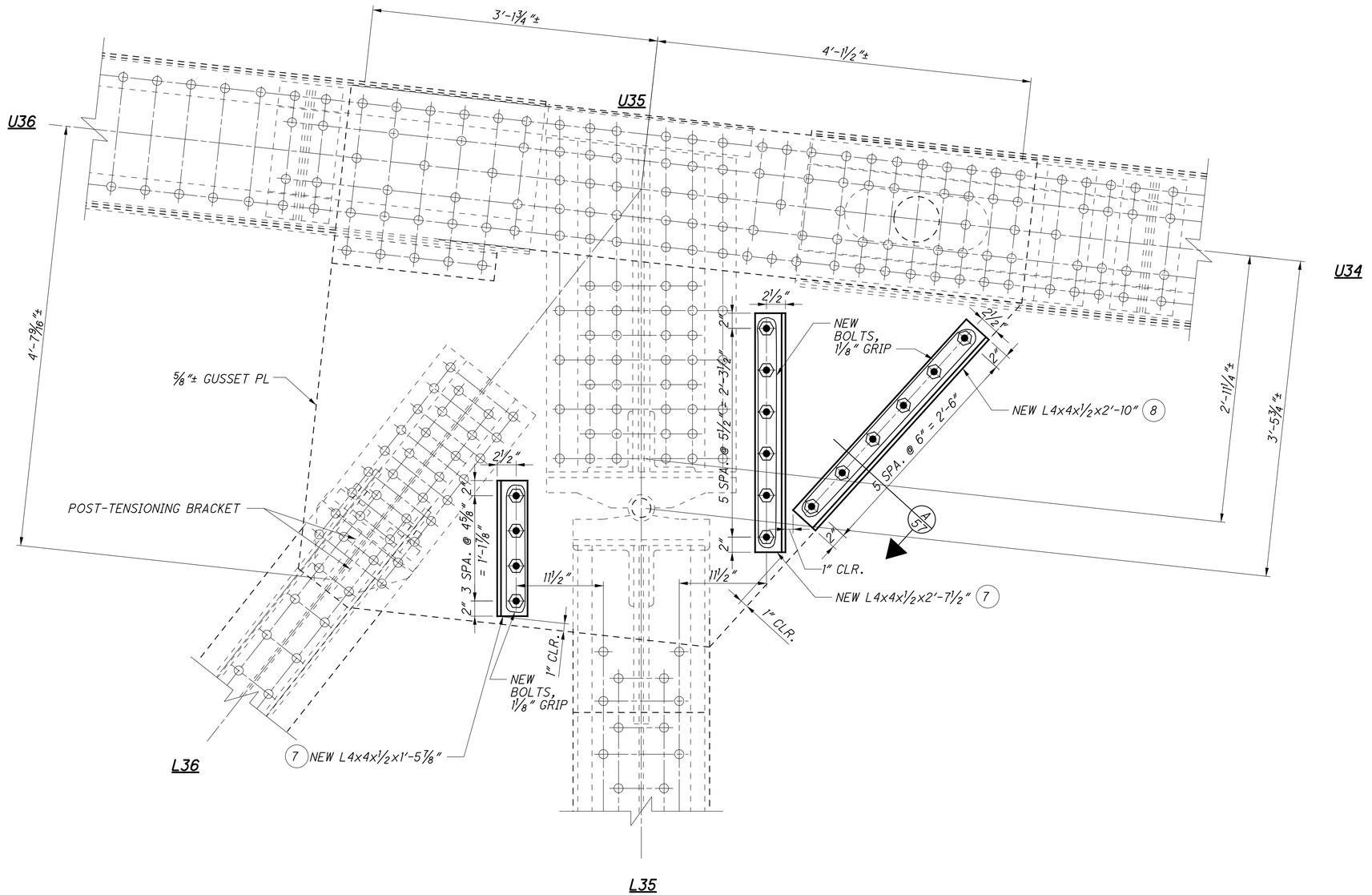


U35
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 211
SPAN 4 - PANEL POINT U0)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

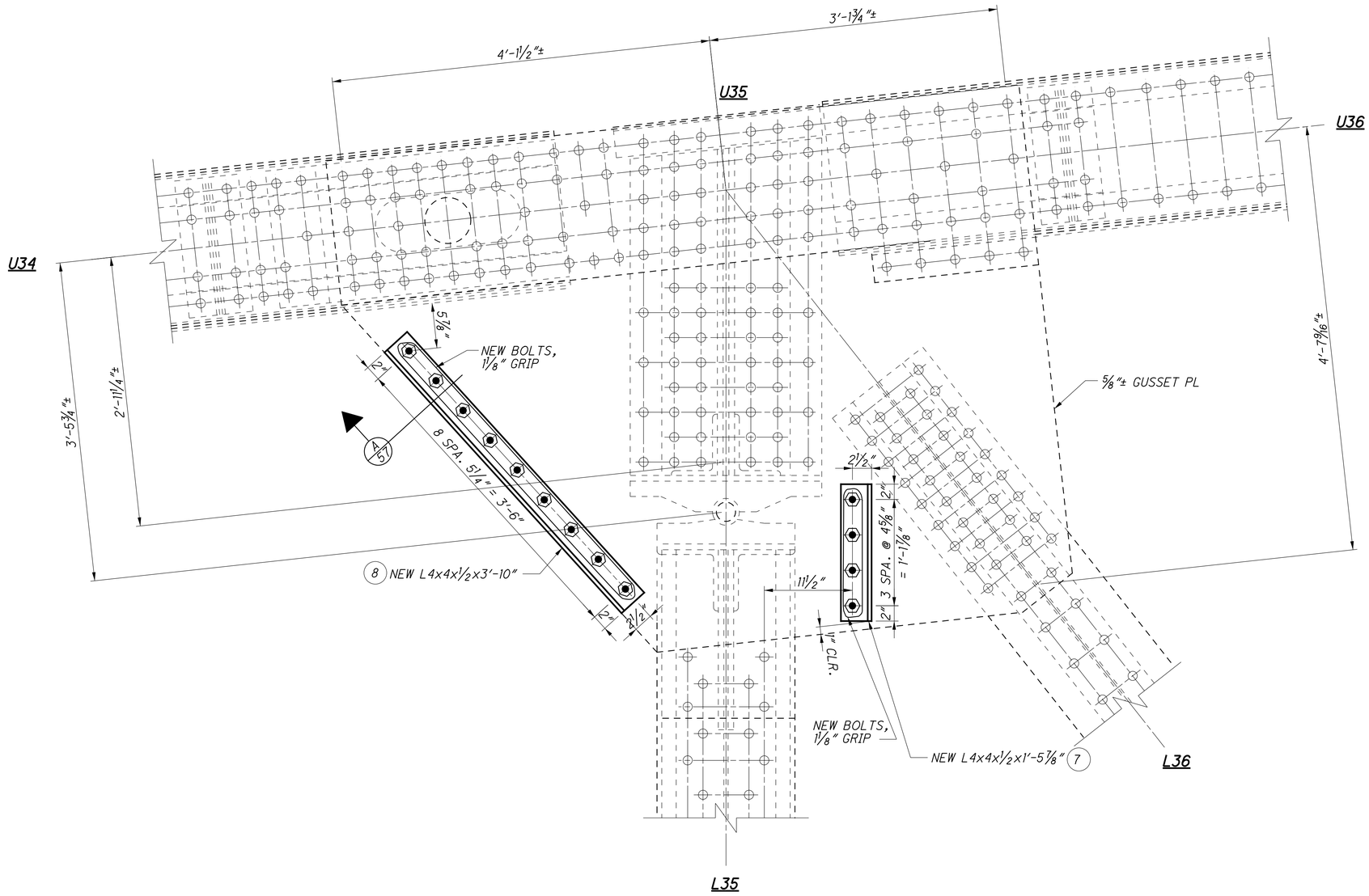
GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U35W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



U35
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 211
SPAN 4 - PANEL POINT U0)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

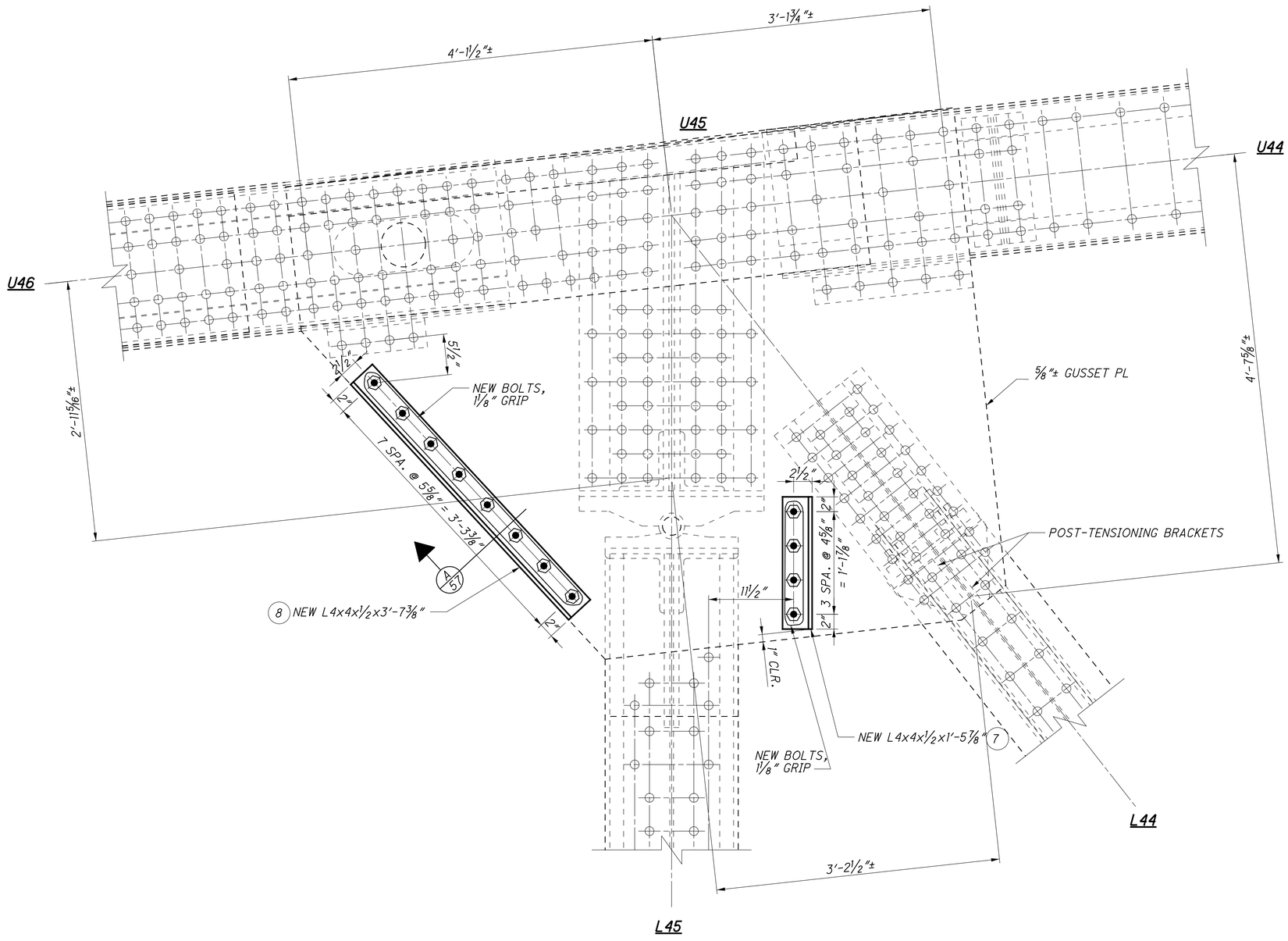
GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U35E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



U45
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 211 SPAN 5 - PANEL POINT U17)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	KH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U45W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

124/189
169/234

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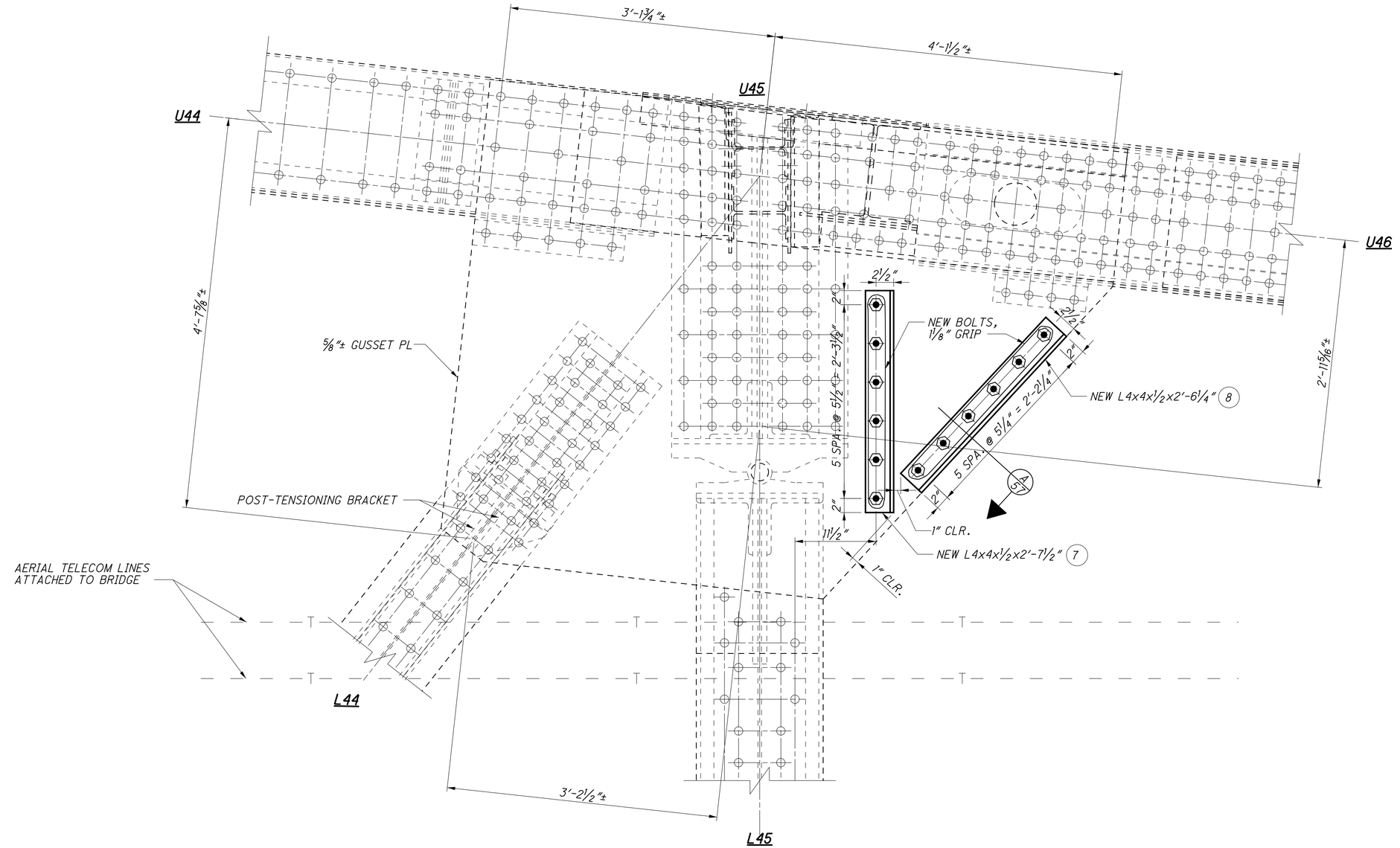

U45
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 211
SPAN 5 - PANEL POINT U17)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	KH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U45W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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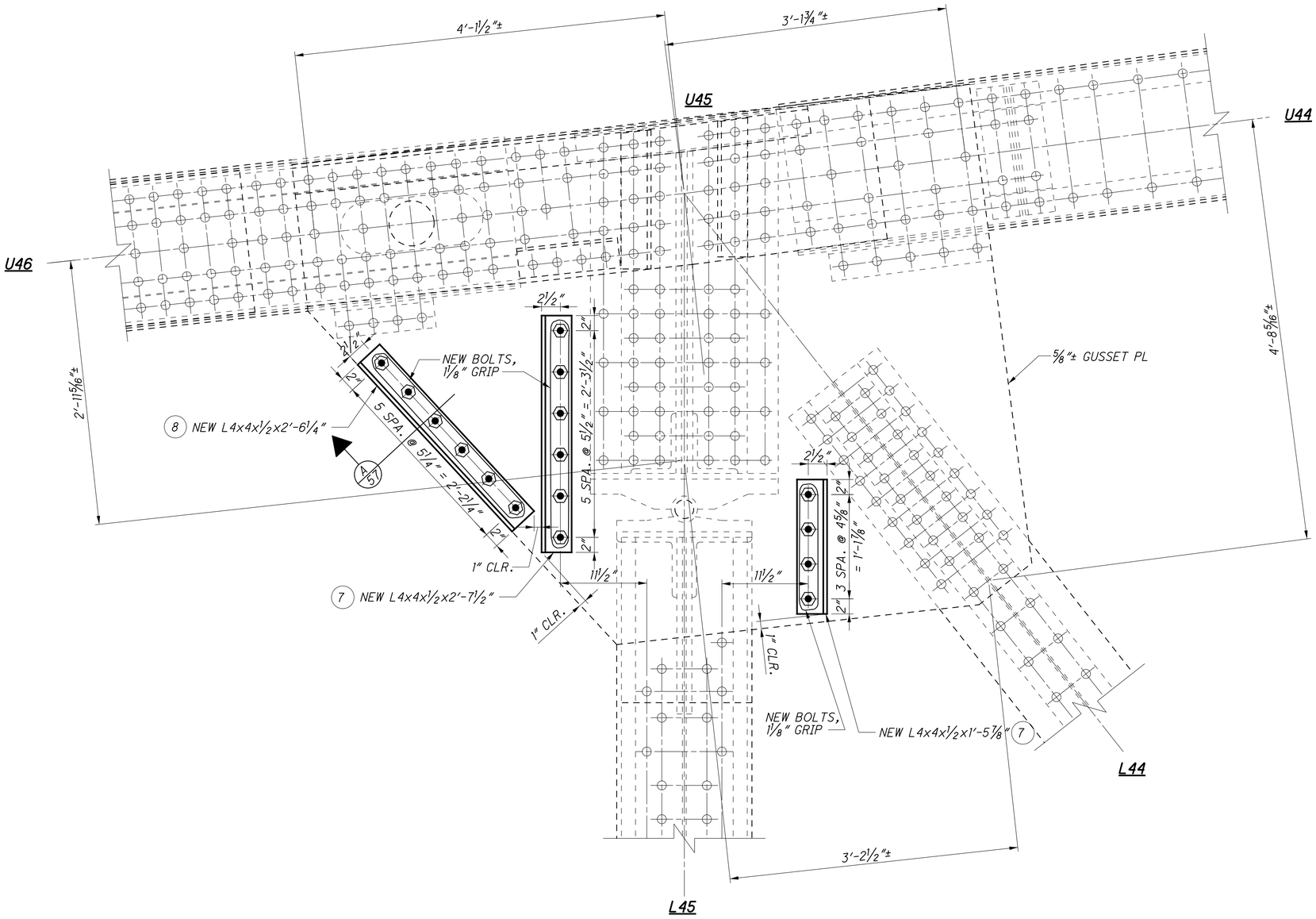

U45
SPAN 4 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 211
SPAN 5 - PANEL POINT U17)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	KH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U45E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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171/234

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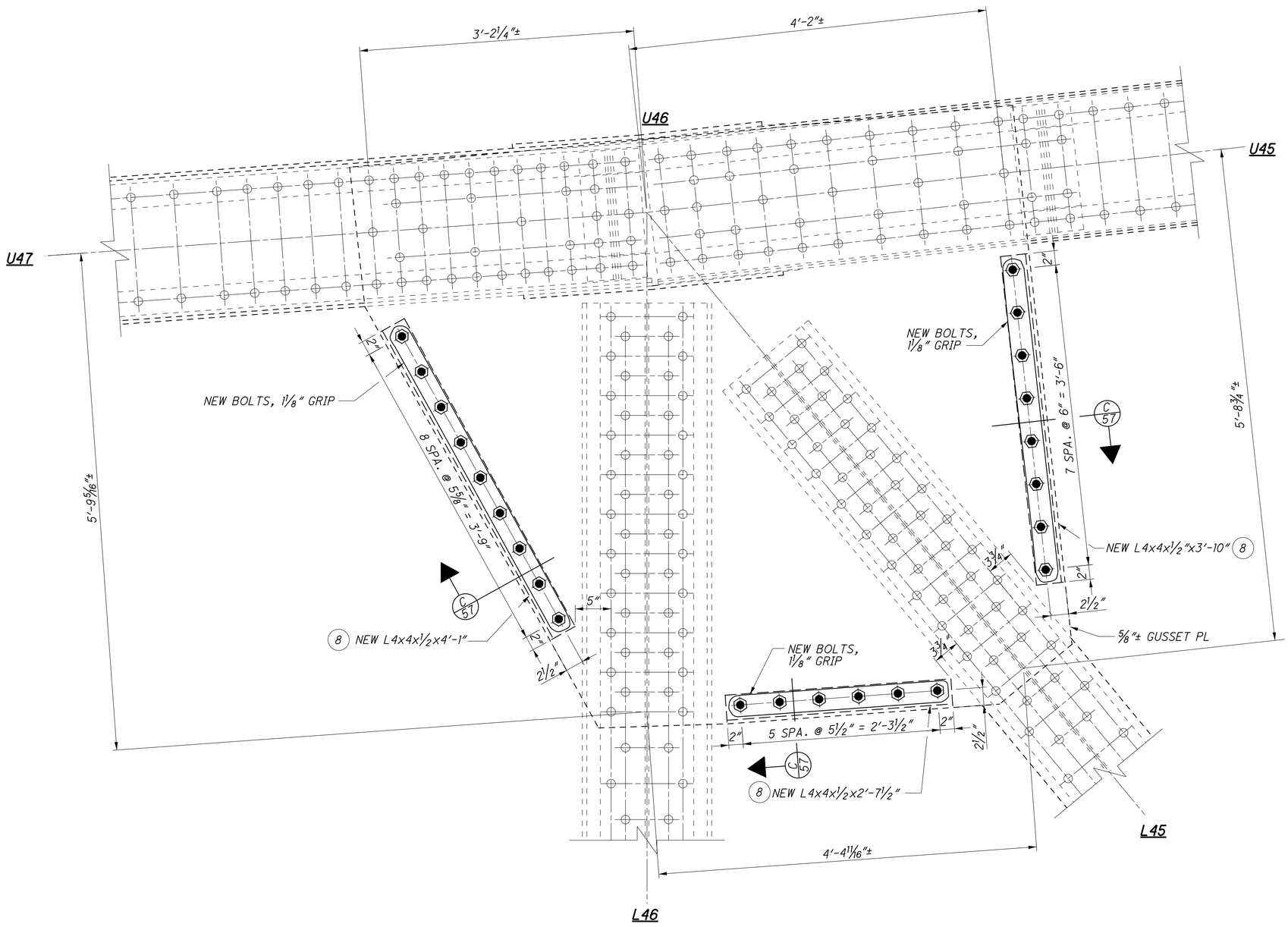

U46
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 219
SPAN 5 - PANEL POINT U16)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN KH | REVIEWED DLR | DATE 9/25/15
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GUSSET PLATE REPAIR U46W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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172/234

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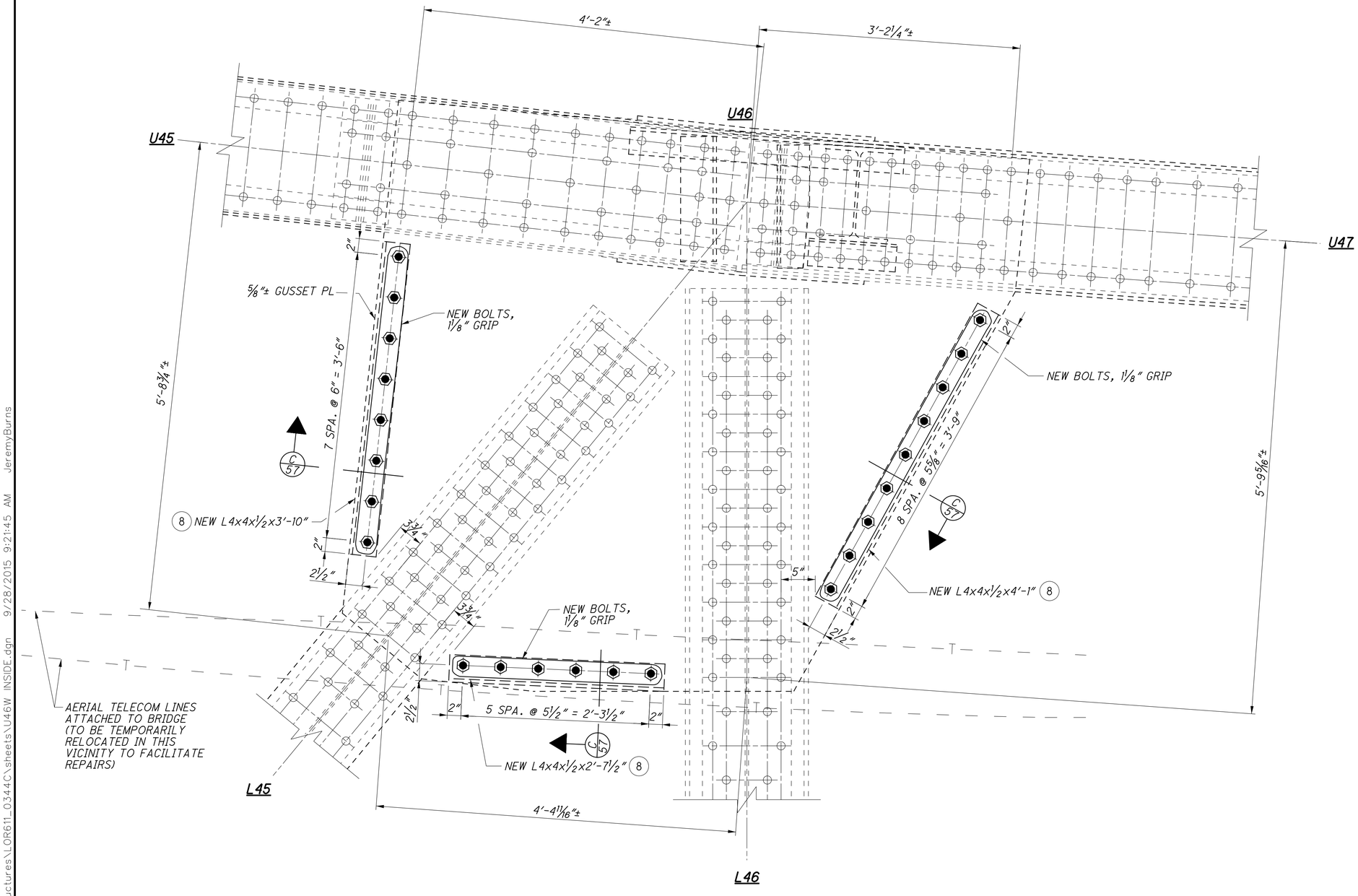

U46
SPAN 4 - 1 GUSSET PLATE
WEST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 219
SPAN 5 - PANEL POINT U16)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	KH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U46W INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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173/234

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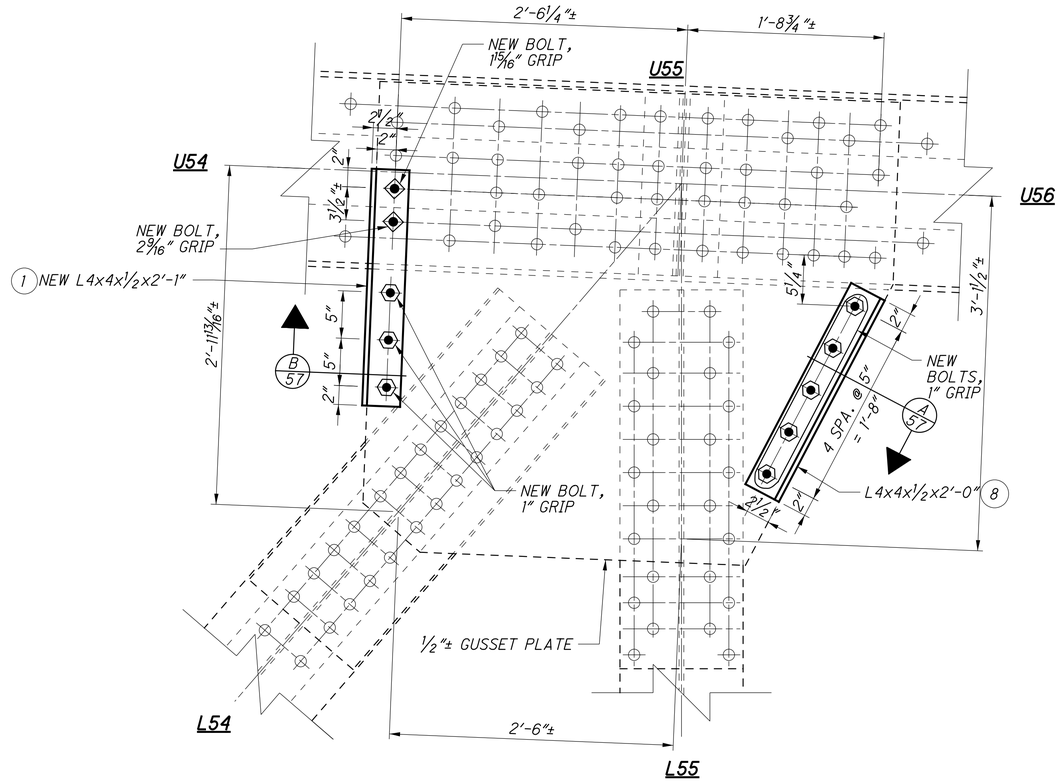

U55
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 215
SPAN 5 - PANEL POINT U7)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U55E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

129/189

174/234

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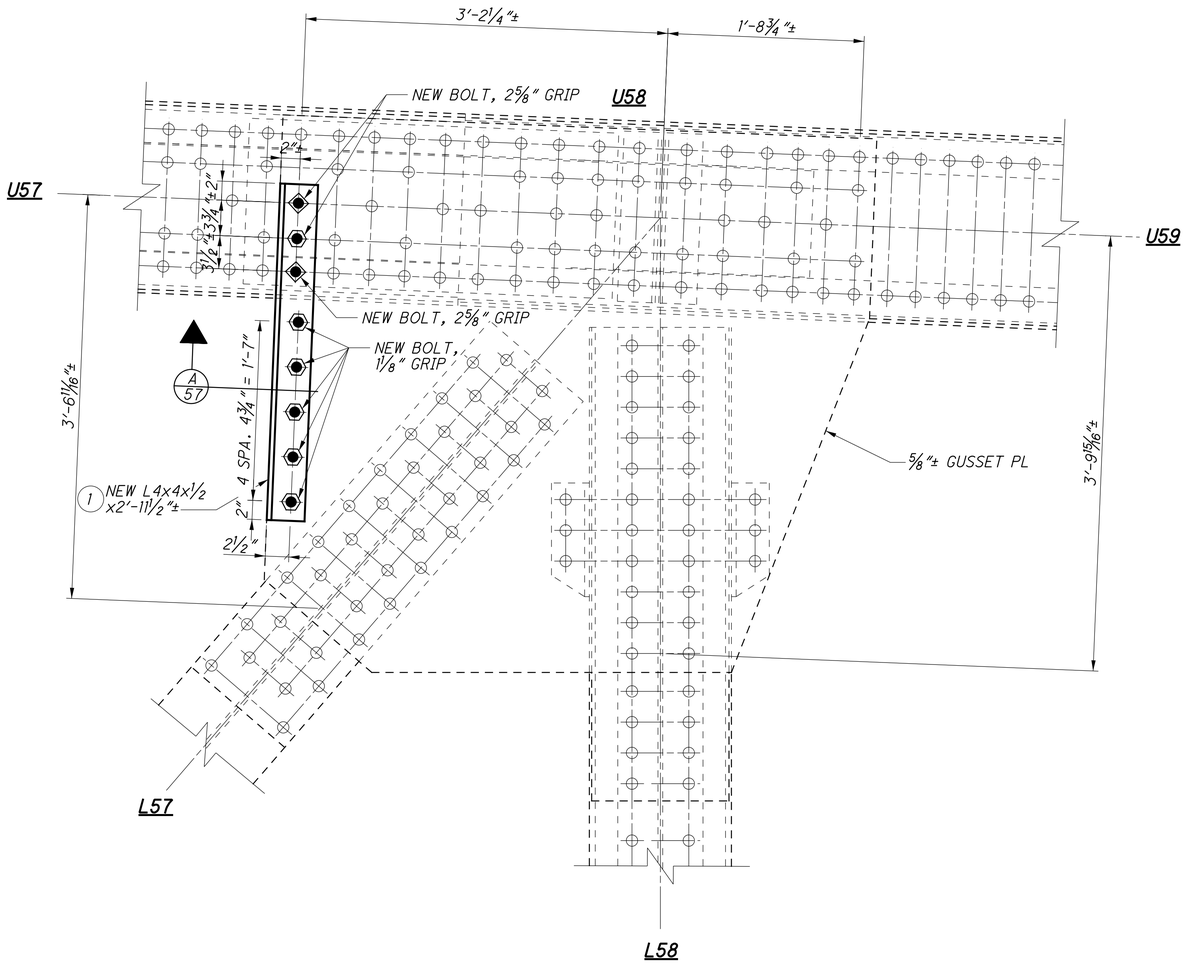

U58
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 213
SPAN 5 - PANEL POINT U4)

LEGEND

(8) - *REPAIR TYPE*

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.*

NEW BOLTS *ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.*

BOLT LEGEND: *SEE SHEET* 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: *SEE SHEET* 6/189.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

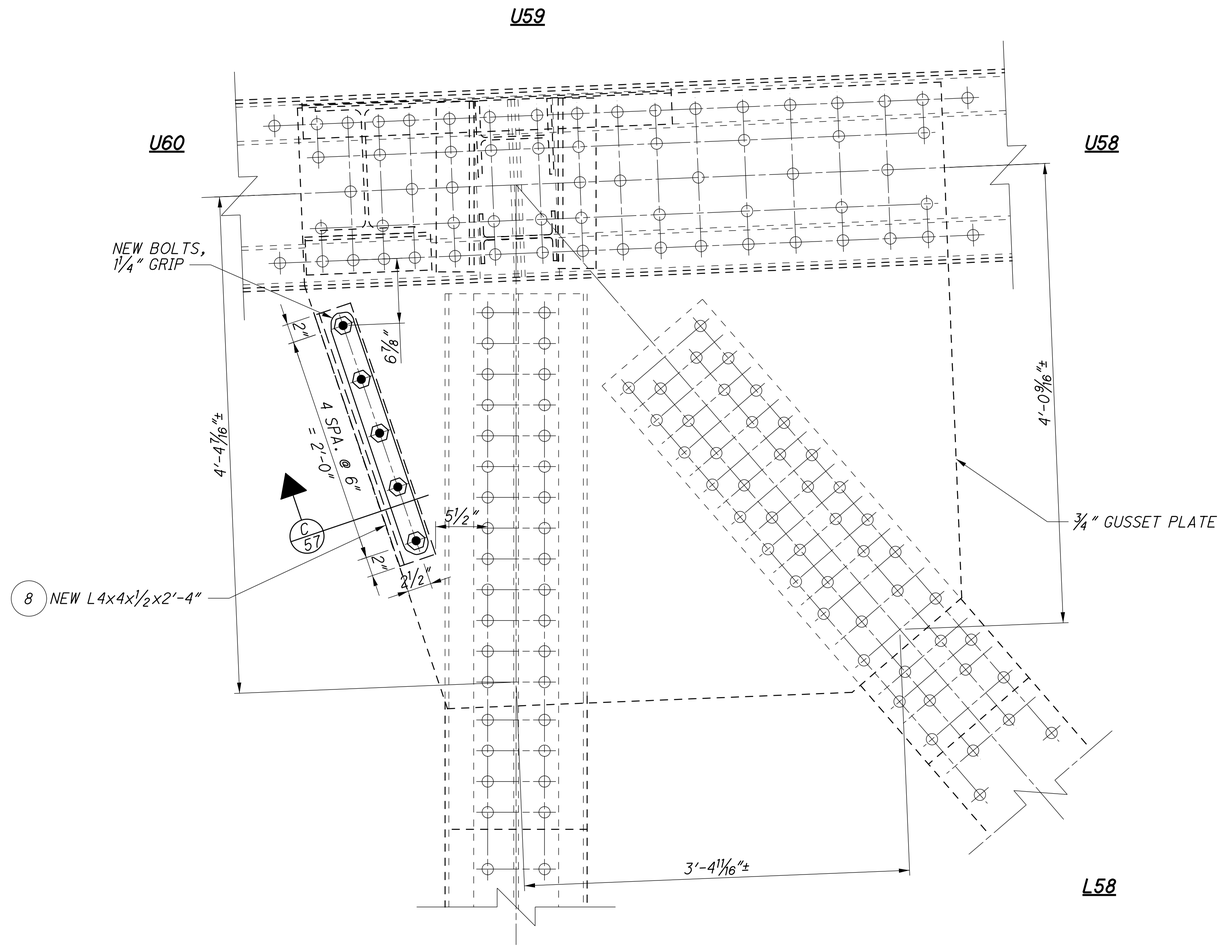
DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U58E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

130/189

175/234



U59
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS INSIDE

(ORIGINAL SHOP DWG. MARK 213
SPAN 5 - PANEL POINT U3)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

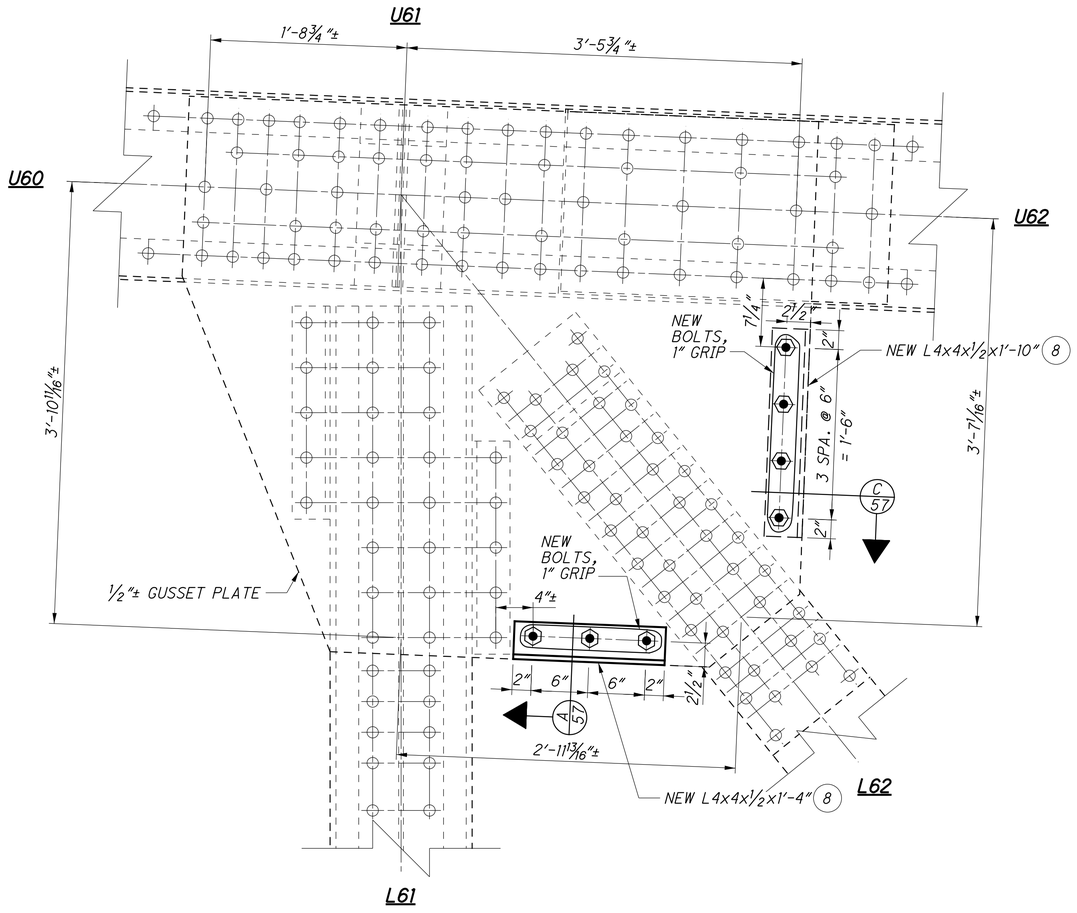
DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U59E INSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

131/189

176/234



U61
SPAN 5 - 1 GUSSET PLATE
EAST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 212
SPAN 5 - PANEL POINT U1)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DAP		4707443	

GUSSET PLATE REPAIR U61E OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

132/189

177/234

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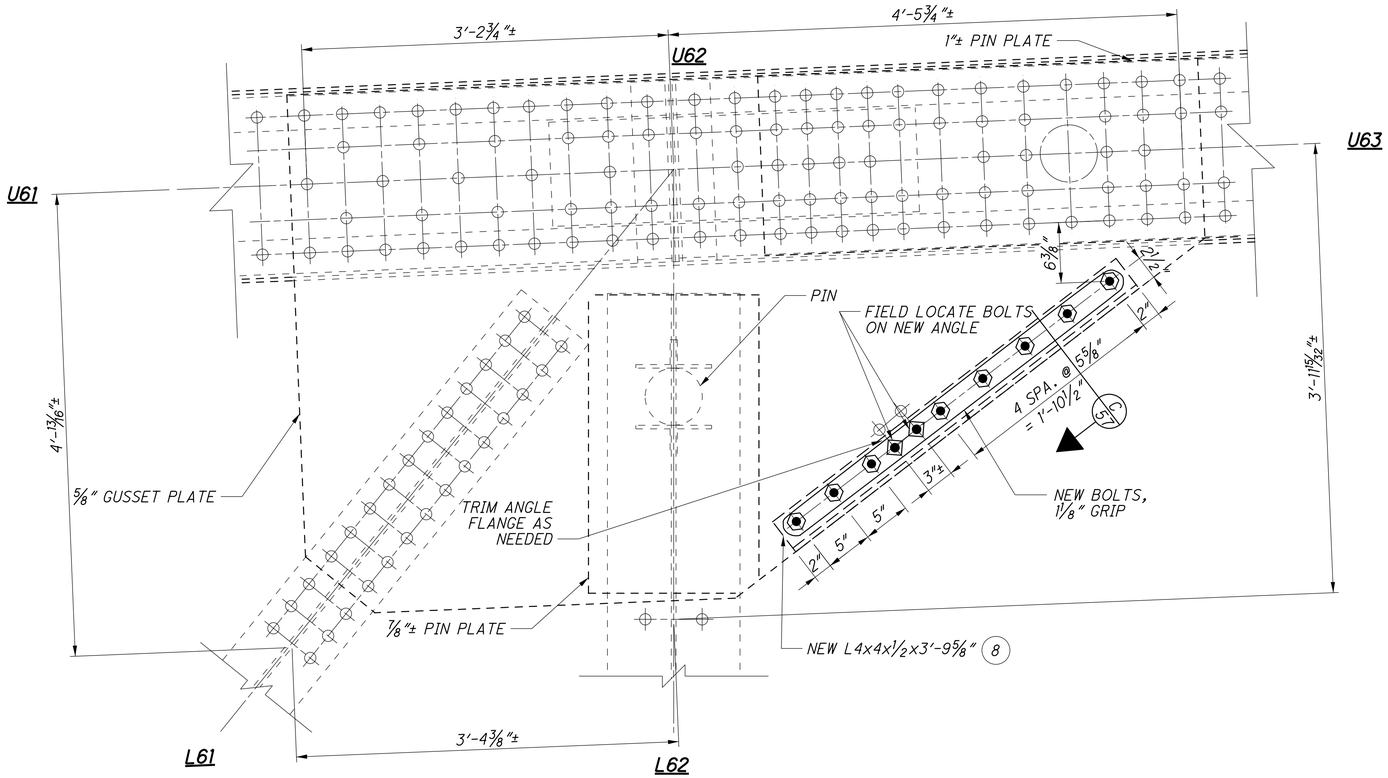

U62
SPAN 6 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 113
SPAN 6 - PANEL POINT U6)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE ⅞" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED DAP | REVISED | STRUCTURE FILE NUMBER 4707443

GUSSET PLATE REPAIR U62W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

133/189

178
234

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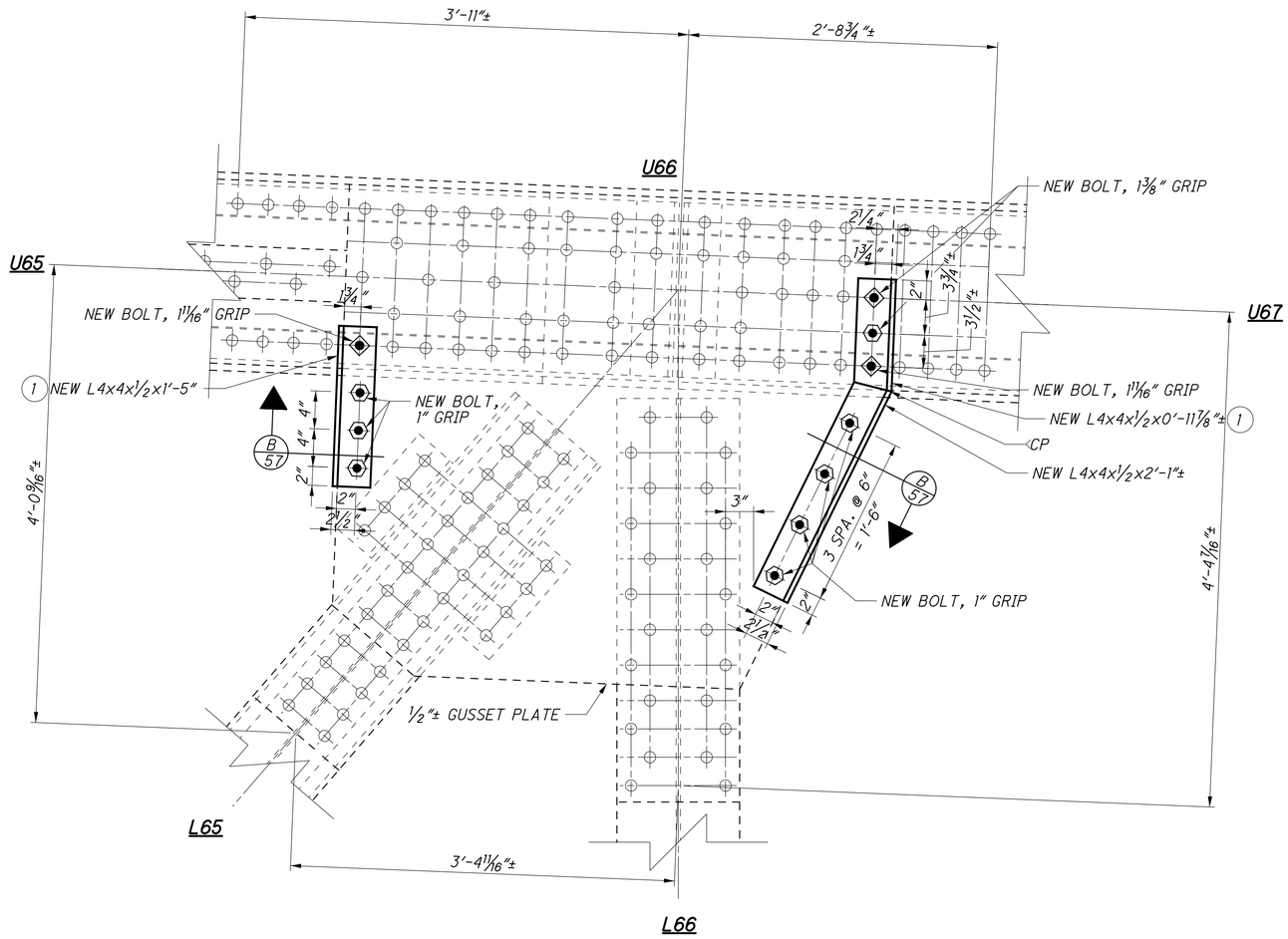

U66
SPAN 6 - 1 GUSSET PLATE
WEST TRUSS OUTSIDE

(ORIGINAL SHOP DWG. MARK 111
SPAN 6 - PANEL POINT U2)

LEGEND

(8) - REPAIR TYPE

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NEW BOLTS ARE 1" DIA. ASTM A325, TYPE 1 UNLESS NOTED OTHERWISE.

CP - COMPLETE PENETRATION (ANGLES ONLY).

BOLT LEGEND: SEE SHEET 11/189.

GUSSET PLATE REPAIR GENERAL NOTES: SEE SHEET 6/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
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DAP		4707443	

GUSSET PLATE REPAIR U66W OUTSIDE
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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179/234

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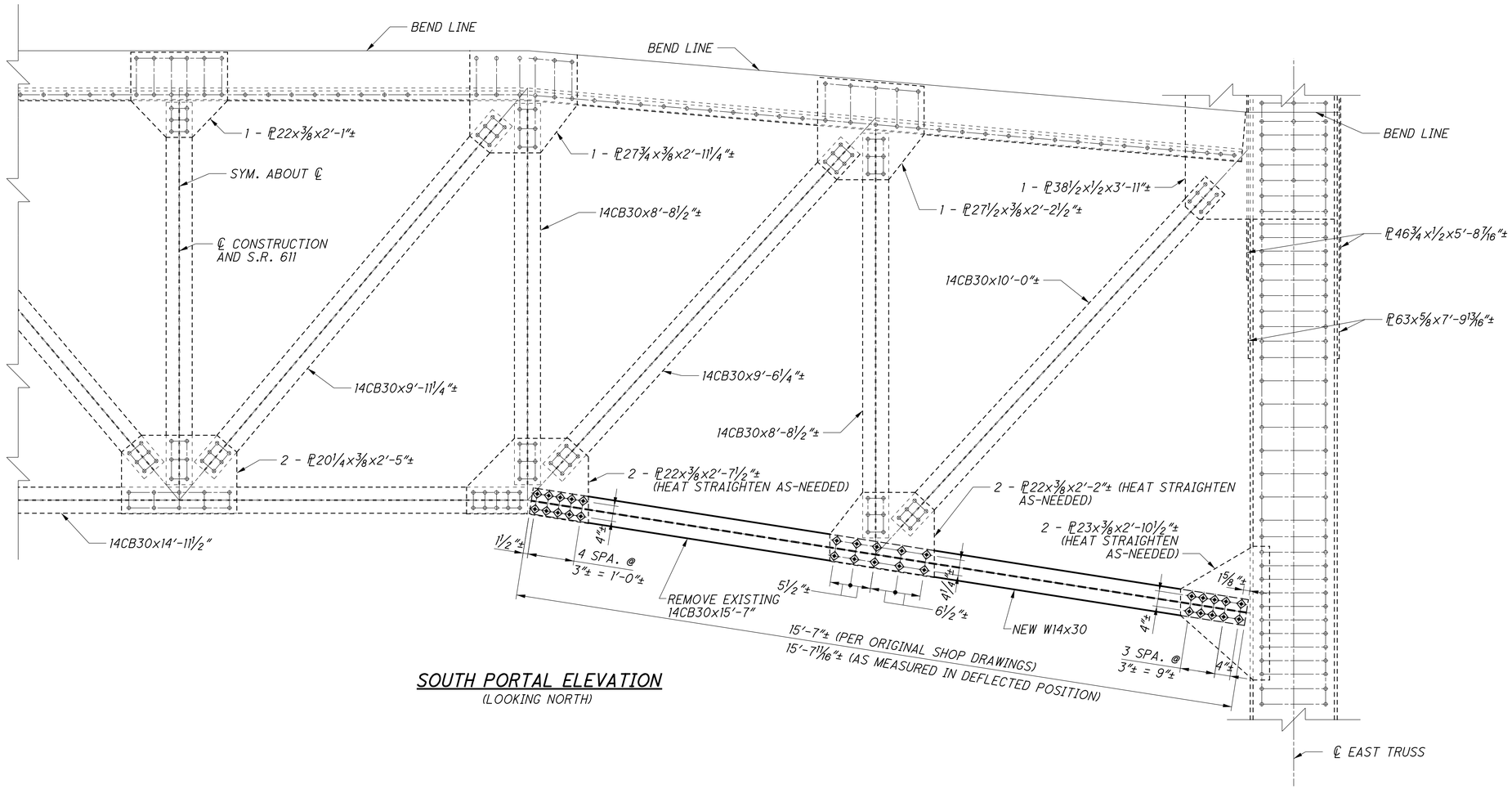


SOUTH PORTAL ELEVATION
(LOOKING NORTH)

NOTES:

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11/189.

REFERENCE SHOP DRAWING: ORDER NO. H2524, SHEET NO. 114, MARK PS2

DIMENSIONS SHOWN ARE TAKEN FROM ORIGINAL SHOP DRAWING AND FIELD MEASUREMENTS.

ITEM 513 - STRUCTURAL STEEL, MISC.: PORTAL MEMBER REPLACEMENT
SEE GENERAL NOTE SHEET 5/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DAP | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 4707443

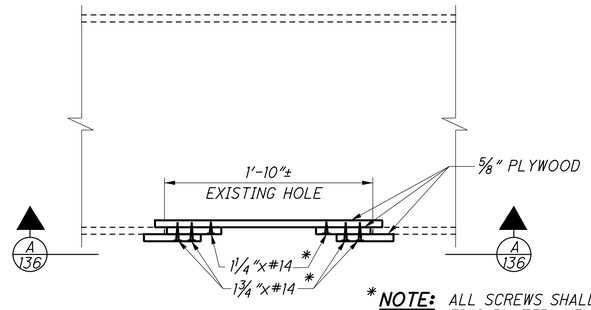
PORTAL DETAIL
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

STRUCTURE, MISC.: PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED

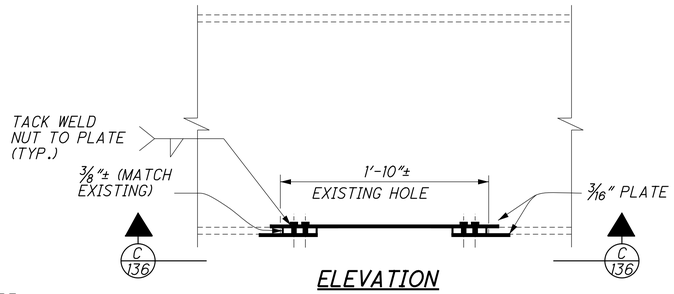
TRUSS MEMBER (WEST TRUSS UNLESS NOTED)	NUMBER OF DOORS PER MEMBER	DOOR TO BE REMOVED AND REINSTALLED	COMMENT
L6-L7	5	1	DOOR NEAR L7
L7-L8	5	1	DOOR NEAR L7
L8-L9	5	1	DOOR NEAR L9
L9-L10	5	1	DOOR NEAR L9
L10-L11	5	1	DOOR NEAR L11
L11-L12	5	1	DOOR NEAR L11
L18-L19	5	1	DOOR NEAR L19
L19-L20	5	1	DOOR NEAR L19
L20-L21	5	1	DOOR NEAR L21
L21-L22	5	5	
L22-L23	5	5	
L23-L24	5	5	
L24-L25	5	5	
L25-L26	5	5	
L26-L27	5	5	
L27-L28	5	5	
L28-L29	5	5	
L29-L30	5	5	
L30-L31	5	5	
L31-L32	5	1	DOOR NEAR L31
L32-L33	6	1	DOOR NEAR L33
L33-L34	5	5	
L34-L35	5	5	
L35-L36	5	5	
L36-L37	5	5	
L37-L38	5	1	DOOR NEAR L37
L38-L39	5	1	DOOR NEAR L39
L39-L40	5	1	DOOR NEAR L39
L40-L41	5	1	DOOR NEAR L41
L41-L42	5	5	
L42-L43	5	1	DOOR NEAR L42
L43-L44	5	1	DOOR NEAR L44
L44-L45	5	5	
L45-L46	5	5	
L46-L47	5	1	DOOR NEAR L46
L48-L49	5	5	
L49-L50	5	5	
L50-L51	5	5	
L51-L52	5	1	DOOR NEAR L51
L53-L54	5	1	DOOR NEAR L54
L54-L55	5	1	DOOR NEAR L54
L55-L56	5	5	
L56-L57	5	2	DOOR AT L56 AND AT L57
L57-L58	5	4	DOORS NEAREST L57
L58-L59	5	1	DOOR AT L59
L59-L60	5	1	DOOR AT L59
L60-L61	5	1	DOOR AT L61
L61-L62	5	1	DOOR AT L61
L64-L65	5	1	DOOR AT L65
L65-L66	5	1	DOOR AT L65
TOTALS	**241**	**138**	

NOTE: THE CONTRACTOR SHALL TRIM THE 2'-0"x1'-1½" BOARD TO FACILITATE PLACEMENT. ALL BOARDS WHICH ARE TRIMMED SHALL BE RESEALED WITH EPOXY AS PER THE GENERAL NOTE.

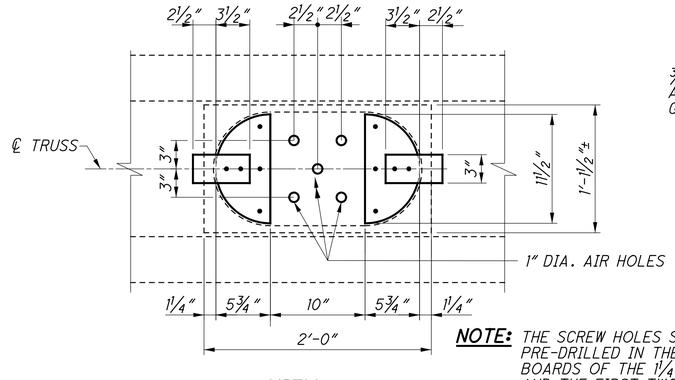


ELEVATION

*NOTE: ALL SCREWS SHALL BE ZINC PLATED, HEX HEAD WITH WASHER, SELF TAPPING, SHEET METAL TYPE

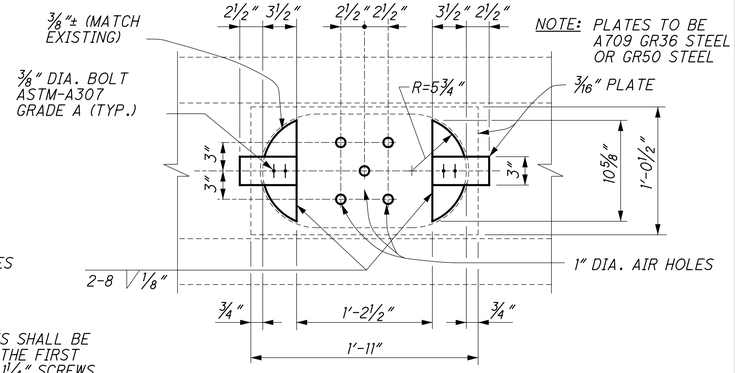


ELEVATION



NOTE: THE SCREW HOLES SHALL BE PRE-DRILLED IN THE FIRST BOARDS OF THE 1¼" SCREWS. AND THE FIRST TWO BOARDS OF THE 1¾" SCREWS.

VIEW A-A
NEW PLYWOOD PIGEON DOOR

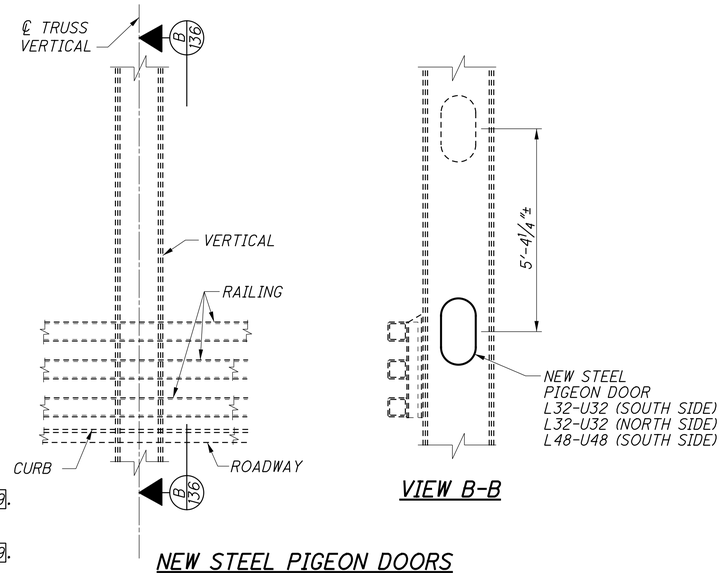


NOTE: PLATES TO BE A709 GR36 STEEL OR GR50 STEEL

VIEW C-C
NEW STEEL PIGEON DOOR

NEW PIGEON DOORS

TRUSS	MEMBER	NEW PLYWOOD PIGEON DOORS	NEW STEEL PIGEON DOORS
EAST	L32-U32	-	2
EAST	L48-U48	-	1
WEST	U15-U16	2	-
WEST	U19-U20	1	-
WEST	U22-U23	1	-
WEST	U49-U50	1	-
CONTINGENCY		20	-
TOTAL		**25**	**3**



VIEW B-B

NEW STEEL PIGEON DOORS
EAST TRUSS PIER 3 AND PIER 4

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS REMOVED AND REINSTALLED SEE GENERAL NOTE SHEET 10/189.

ITEM SPECIAL - STRUCTURE, MISC.: PLYWOOD PIGEON DOORS SEE GENERAL NOTE SHEET 10/189.

ITEM SPECIAL - STRUCTURE, MISC.: STEEL PIGEON DOORS SEE GENERAL NOTE SHEET 10/189.

TRUSS ELEVATION: SEE SHEET 48/189 AND 49/189.

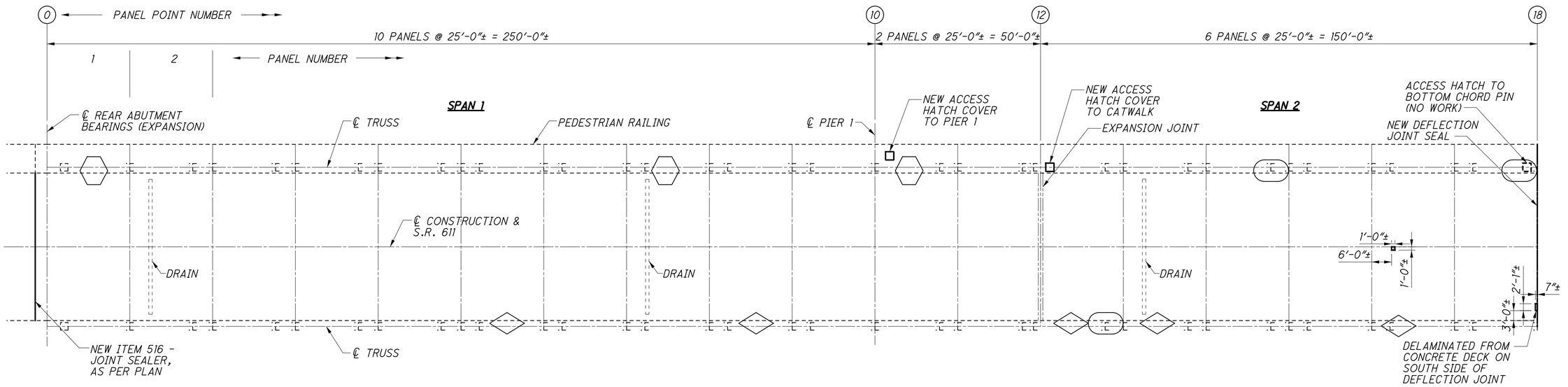
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

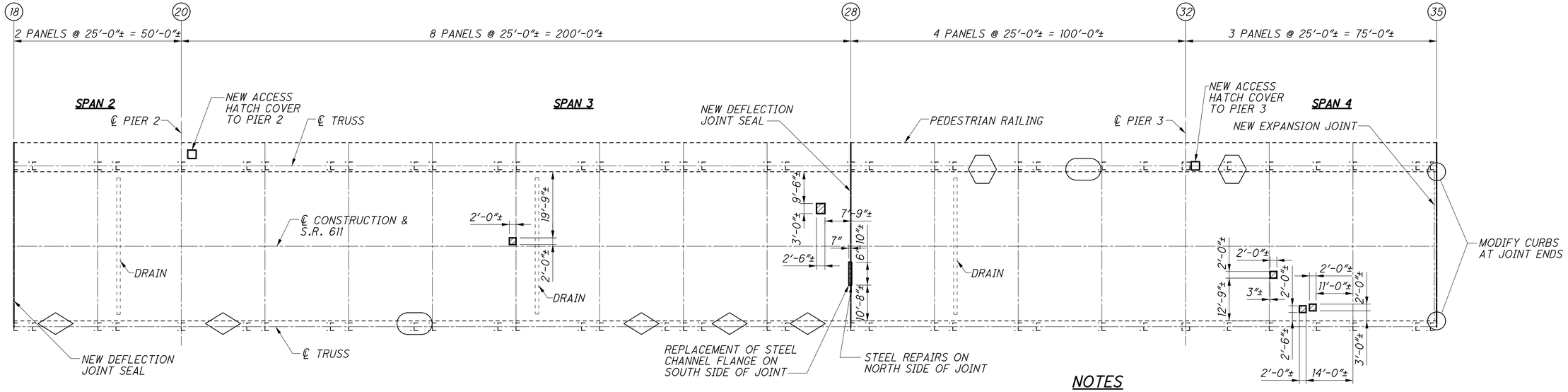
DESIGNED dht | DRAWN TWH | CHECKED ALP | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

PIGEON DOORS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

136/189
181/234





DECK PLAN

LEGEND

- ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT
- ITEM 513 - STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB)
- INDICATES ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK
- ITEM 514 - FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB)

NOTES

MATERIALS: SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLTED REPAIR LOCATIONS AT CURB AND RAILING SHOWN ON DECK PLAN REPRESENT ONE OR MORE BOLT REPLACEMENTS.

DEFLECTION JOINT SEAL: SEE SHEET 142/189 .

DEFLECTION JOINT FLANGE REPAIR: SEE SHEET 141/189 .

EXPANSION JOINT AT PANEL POINT 35: SEE SHEETS 143/189 THROUGH 149/189 .

ITEM 516 - JOINT SEALER, AS PER PLAN SEE GENERAL NOTE SHEET 9/189 .

ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK: SEE GENERAL NOTE SHEET 10/189 .

ACCESS HATCH COVERS: SEE SHEET 161/189 .

PEDESTRIAN RAILING REPAIRS: SEE SHEETS 156/189 THROUGH 160/189 .

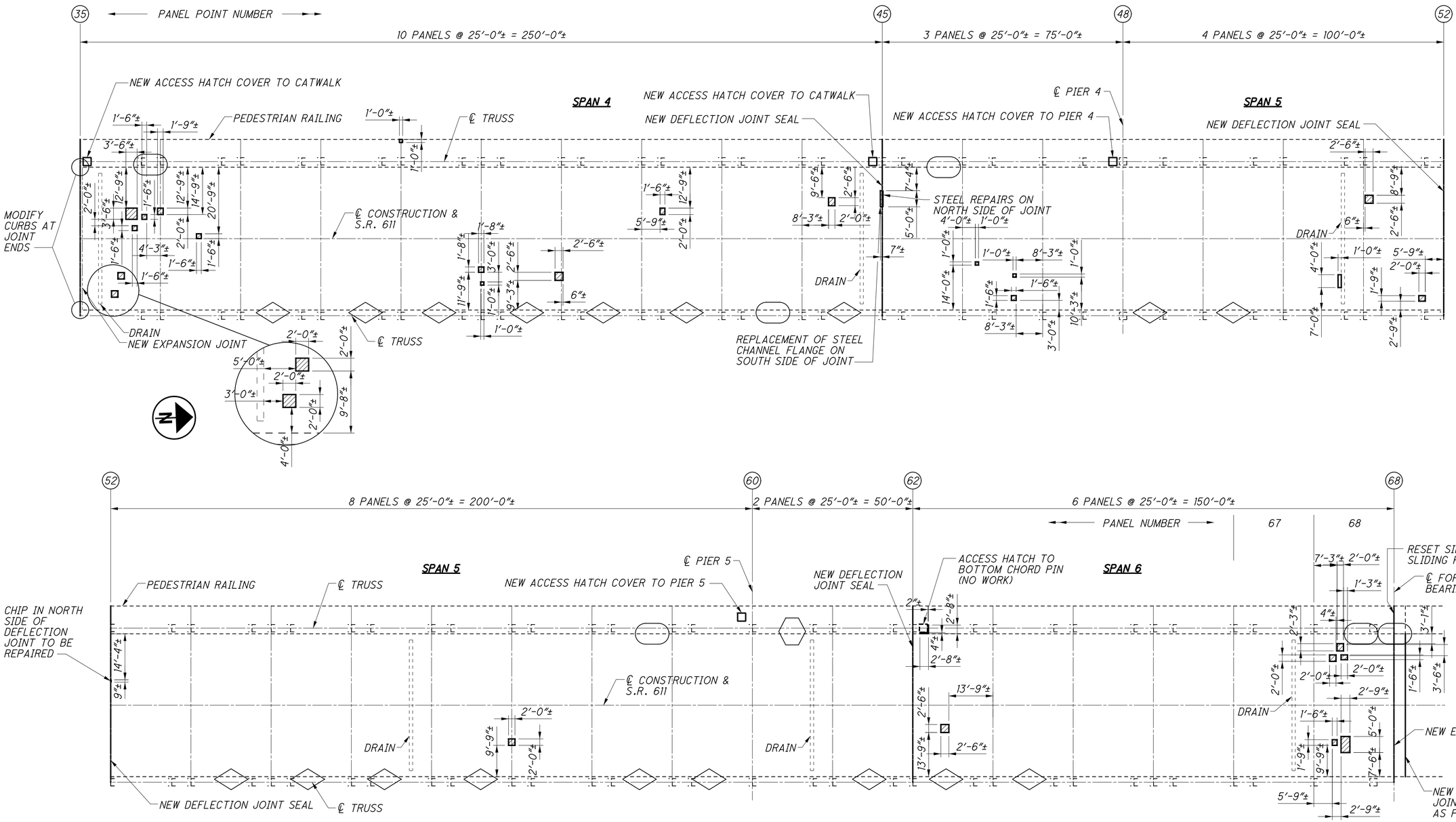
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED dht | REVISED | STRUCTURE FILE NUMBER 4707443

DECK PLAN - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

137/189
182/234



DECK PLAN

LEGEND

- ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT
- ITEM 513 - STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB)
- INDICATES ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK
- ITEM 514 - FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB)

NOTES

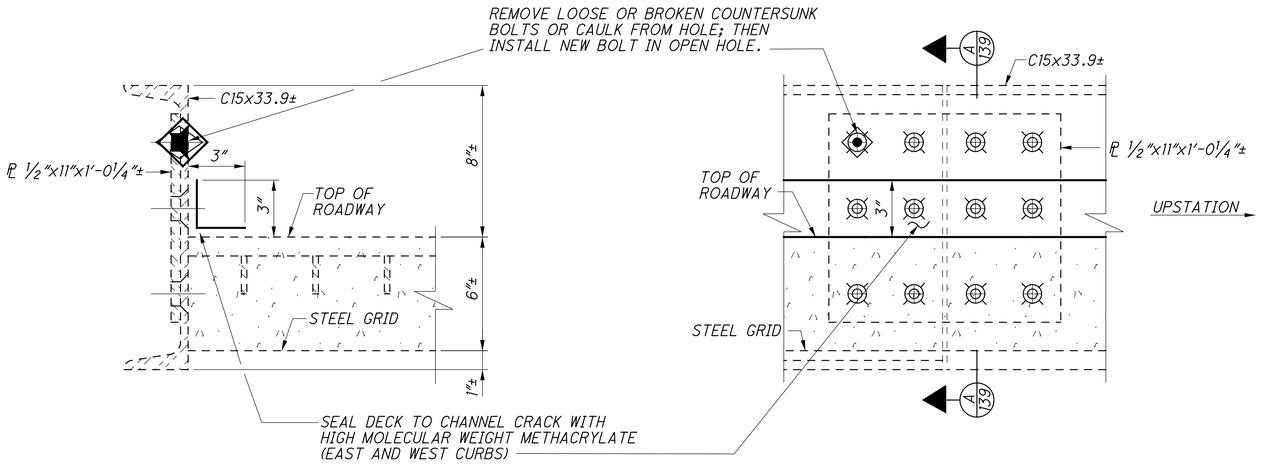
MATERIALS: SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.
ADDITIONAL NOTES: SEE SHEET 137/189 .
DEFLECTION JOINT SEAL: SEE SHEET 142/189 .
DEFLECTION JOINT FLANGE REPAIR: SEE SHEET 141/189 .
EXPANSION JOINT AT PANEL POINT 35: SEE SHEETS 143/189 THROUGH 149/189 .
EXPANSION JOINT FORWARD ABUTMENT: SEE SHEETS 150/189 THROUGH 155/189 .
ITEM 516 - JOINT SEALER, AS PER PLAN SEE GENERAL NOTE SHEET 9/189 .
ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK: SEE GENERAL NOTE SHEET 10/189 .
ACCESS HATCH COVERS: SEE SHEET 161/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DLR | DATE 9/25/15 | STRUCTURE FILE NUMBER 4707443 | CHECKED dht | REVISED

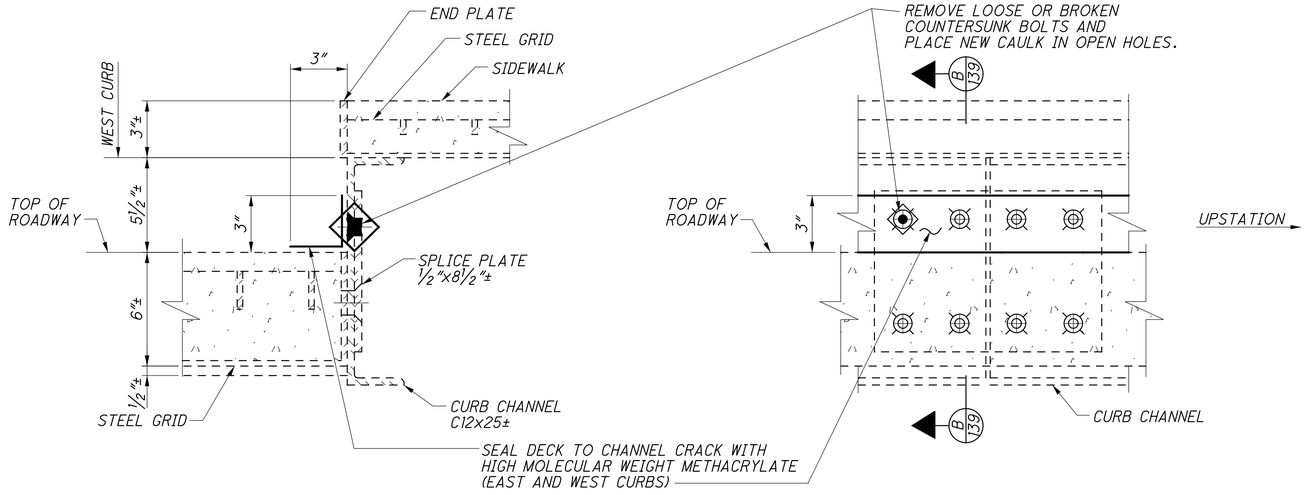
DECK PLAN - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



SECTION A-A **ELEVATION**

EAST CURB CHANNEL SPLICE



SECTION B-B **ELEVATION**

WEST CURB CHANNEL SPLICE

OPEN BOLT HOLES OR BROKEN BOLTS IN CURB			
TRUSS	**PANEL NUMBER**	**ITEM 514: FIELD PAINTING, MISC.: CAULKING OPEN BOLTS HOLES (ROADWAY CURB)**	**ITEM 513: STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB)**
WEST	1	1	-
WEST	8	1	-
WEST	11	2	-
WEST	28	2	-
WEST	30	1	-
WEST	33	1	-
WEST	61	1	-
EAST	6	-	1
EAST	9	-	3
EAST	13	-	3
EAST	14	-	1
EAST	17	-	1
EAST	19	-	2
EAST	21	-	1
EAST	26	-	1
EAST	27	-	2
EAST	28	-	1
EAST	38	-	2
EAST	39	-	2
EAST	40	-	1
EAST	41	-	4
EAST	42	-	2
EAST	43	-	2
EAST	45	-	2
EAST	49	-	2
EAST	50	-	3
EAST	54	-	1
EAST	55	-	1
EAST	56	-	1
EAST	57	-	1
EAST	59	-	3
EAST	60	-	1
EAST	62	-	1
EAST	63	-	1
EAST	64	-	1
	TOTAL	7	47
CONTINGENCY OF 5 BOLTS TO BE USED AS-DIRECTED BY THE ENGINEER			

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

BOLT LEGEND: SEE SHEET 11/189.

DECK PLAN: SEE SHEETS 137/189 AND 138/189.

ITEM 514 - FIELD PAINTING, MISC.: CAULKING OPEN BOLT HOLES (ROADWAY CURB): SEE GENERAL NOTE SHEET 8/189.

ITEM 513 - STRUCTURAL STEEL, MISC.: NEW BOLT IN OPEN HOLE (ROADWAY CURB): SEE GENERAL NOTE SHEET 7/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN SEE GENERAL NOTE SHEET 3/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

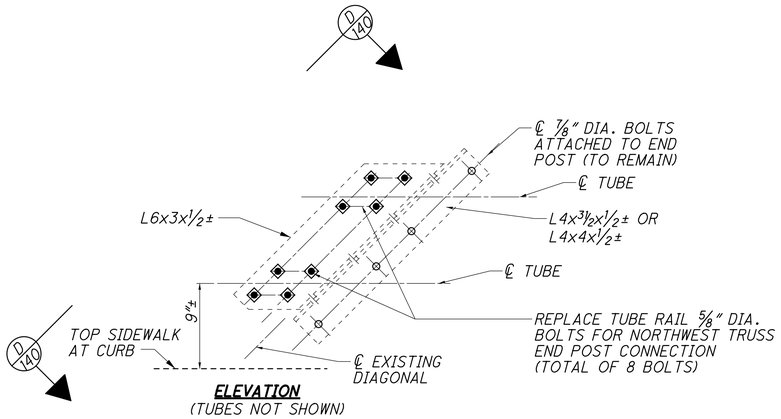
DESIGNED dht | DRAWN JLS | CHECKED ALP | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

ROADWAY CURB REPAIRS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

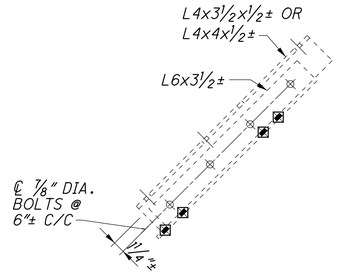
LOR-611-3.44
PID No. 92009

139/189

184/234

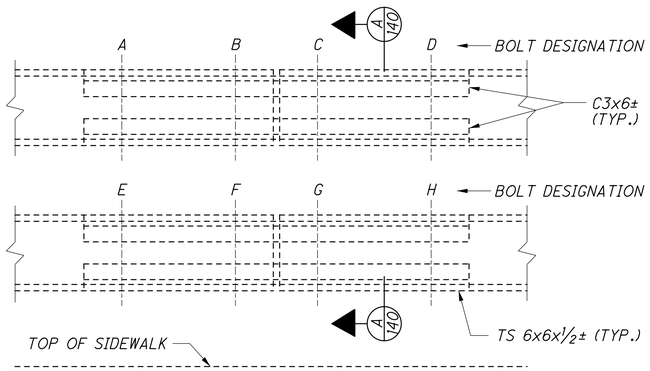


ELEVATION
(TUBES NOT SHOWN)

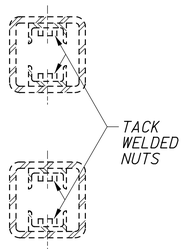


VIEW D-D

RAILING SUPPORT - WEST TRUSS ENDPOST U67-L68



ELEVATION



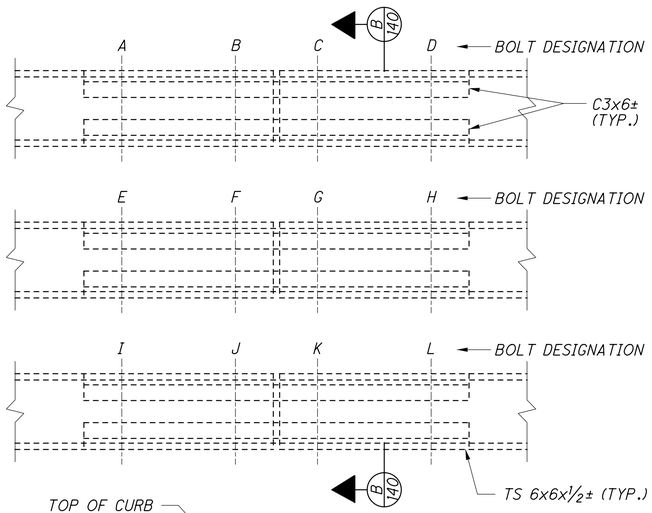
SECTION A-A

BOLTS SHALL BE 5/8" DIA. A325 WITH WASHER, UNLESS NOTED.

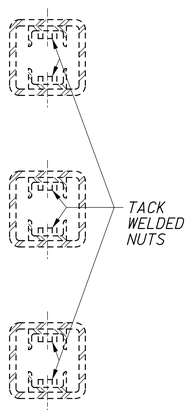
ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT								
WEST ROADWAY RAILING BOLT REPLACEMENT								
PANEL NUMBER	BOLT DESIGNATION							
	A	B	C	D	E	F	G	H
15	–	–	–	–	–	–	1	–
18	–	–	–	–	–	–	–	1
31	–	–	–	–	–	1	–	–
36	1	1	2	1	–	–	1	1
46	–	–	–	–	–	–	–	1
59	–	–	–	–	–	–	1	1
TOTAL - 13								
CONTINGENCY OF 5 BOLTS TO BE USED AS-DIRECTED BY THE ENGINEER								

WEST ROADWAY RAILING SPLICE DETAIL

(ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT)



ELEVATION

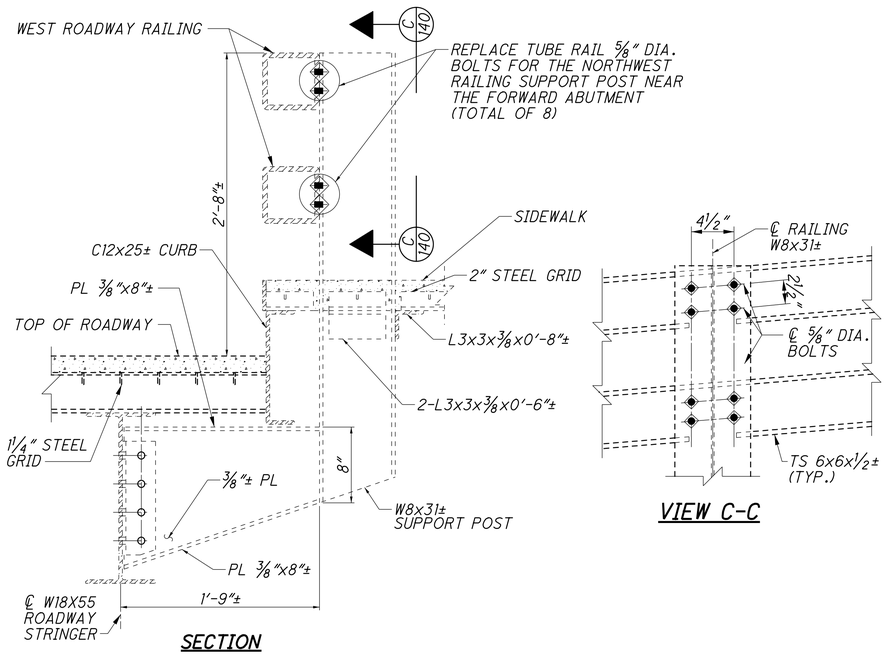


SECTION B-B

ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT												
EAST ROADWAY RAILING BOLT REPLACEMENT												
PANEL NUMBER	BOLT DESIGNATION											
	A	B	C	D	E	F	G	H	I	J	K	L
13	–	–	–	–	1	–	–	–	–	–	–	–
23	–	–	–	–	–	–	–	–	–	1	–	–
44	–	–	–	–	–	1	–	–	–	–	–	–
TOTAL - 3												
CONTINGENCY OF 5 BOLTS TO BE USED AS-DIRECTED BY THE ENGINEER												

EAST ROADWAY RAILING SPLICE DETAIL

(ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT)



SECTION

VIEW C-C

RAILING SUPPORT BETWEEN WEST TRUSS ENDPOST U67-L68 AND FORWARD ABUTMENT JOINT

(LOOKING BACK)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11/189.

DECK PLAN: SEE SHEETS 137/189 AND 138/189.

BOLT DESIGNATION A,B..... CAN REPRESENT THE BOLT AT THE TOP OR BOTTOM OF THE SPLICE.

ITEM 513 - STRUCTURAL STEEL, MISC.: ROADWAY RAILING BOLT REPLACEMENT: SEE GENERAL NOTE SHEET 7/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN SEE GENERAL NOTE SHEET 3/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED dht | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED ALP | REVISED | STRUCTURE FILE NUMBER 4707443

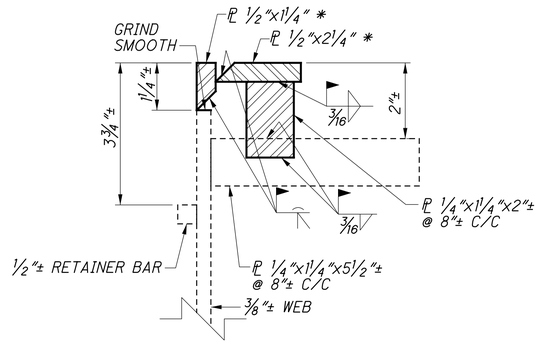
ROADWAY RAILING REPAIRS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

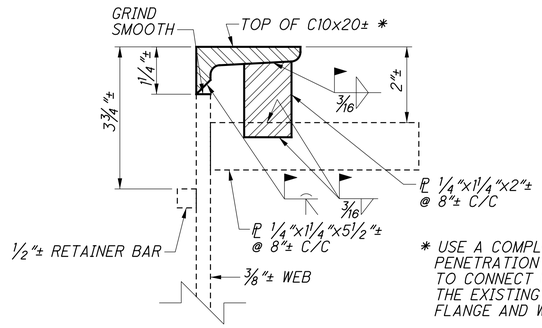
140/189

185/234

F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048MD011.dgn 9/28/2015 9:28:40 AM JeremyBurns

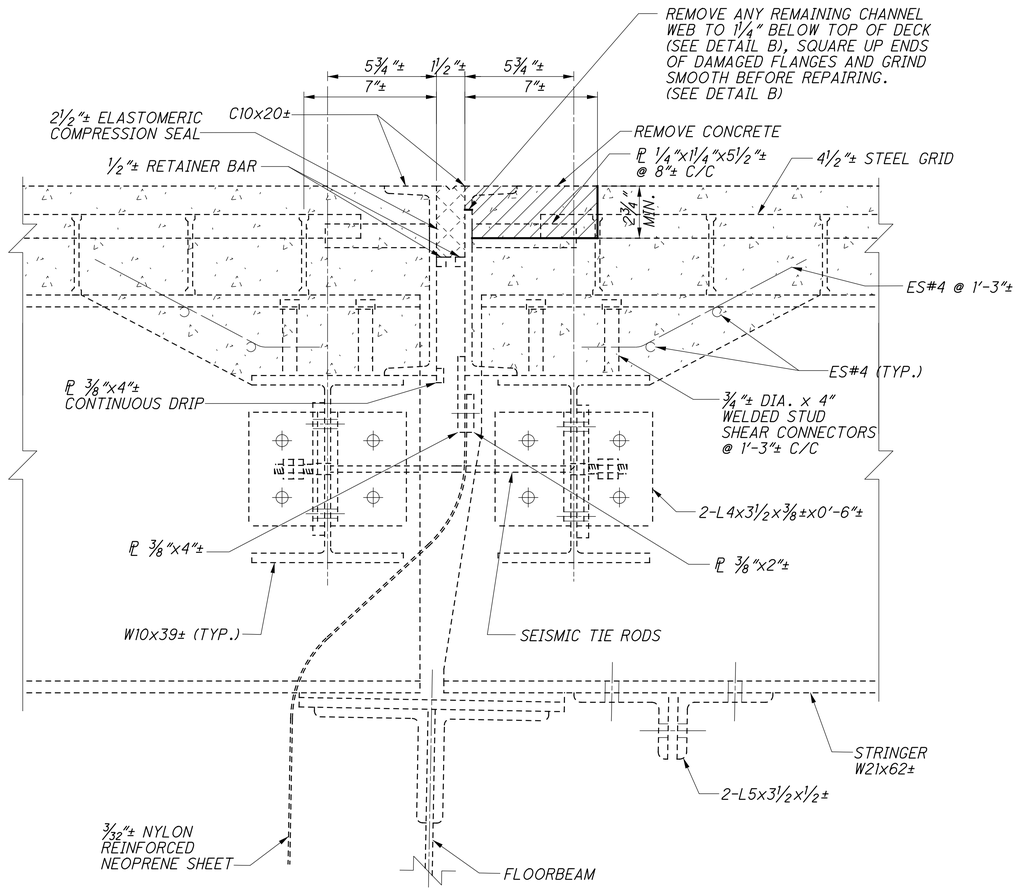


REPAIR CONCEPT 1



* USE A COMPLETE PENETRATION WELD TO CONNECT WITH THE EXISTING CHANNEL FLANGE AND WEB

REPAIR CONCEPT 2

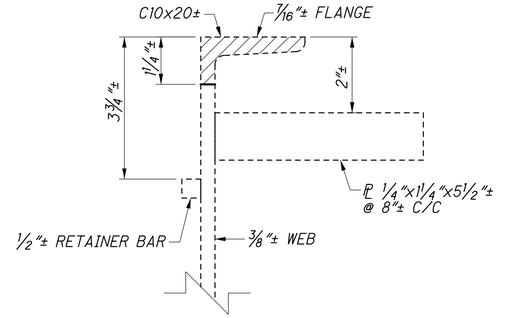


REMOVAL SECTION DEFLECTION JOINT

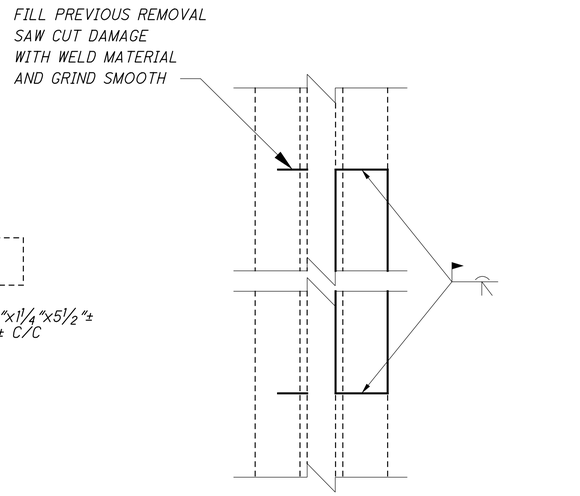
PANEL POINTS 28 AND 45

LEGEND

INDICATES PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.



DETAIL B



DEFLECTION JOINT FLANGE REPAIR

SEE PANEL POINTS 28 AND 45 ON SHEETS 137/189 AND 138/189 FOR LENGTH AND LOCATION.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

FOR LOCATIONS: SEE DECK PLAN SHEETS 137/189 AND 138/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN SEE GENERAL NOTE SHEET 3/189.

ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: REPAIR DAMAGED DEFLECTION JOINT STEEL FLANGE: SEE GENERAL NOTE SHEET 9/189.

ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK: SEE GENERAL NOTE SHEET 10/189.

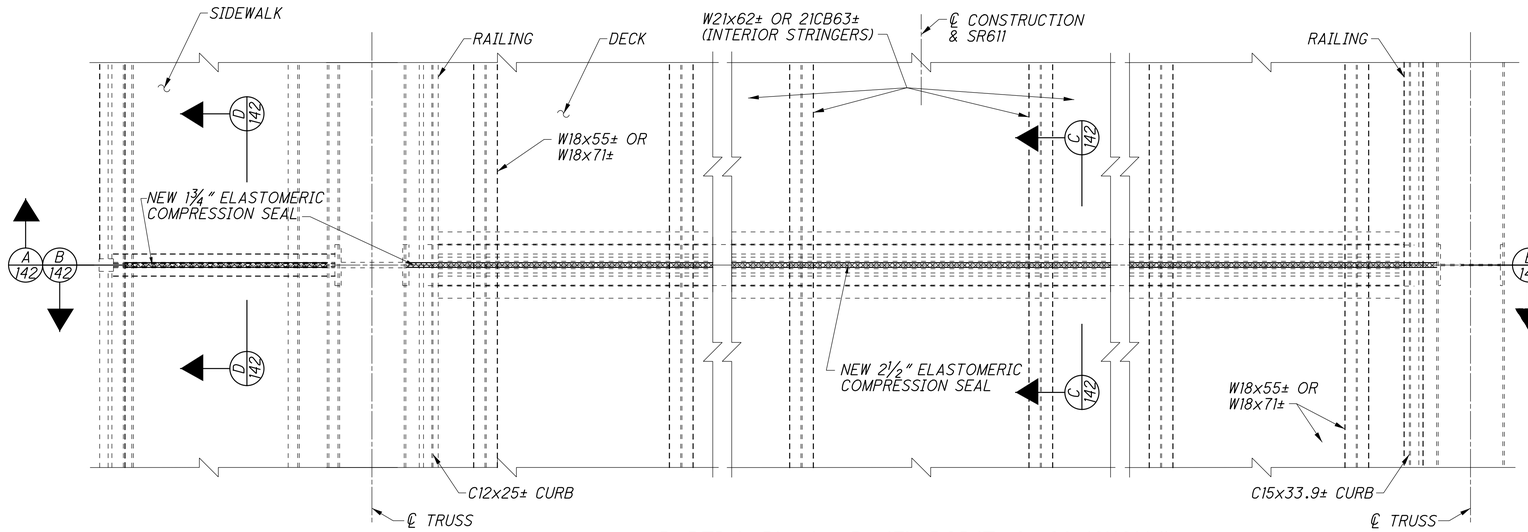
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

DEFLECTION JOINT PANEL POINT 28 AND PANEL POINT 45 REPAIR DETAILS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

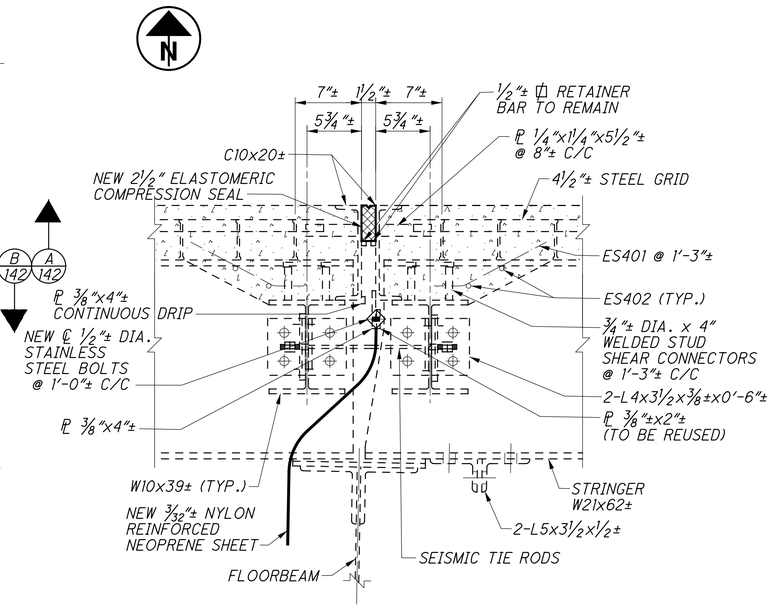
LOR-611-3.44
PID No. 92009

141/189
186/234



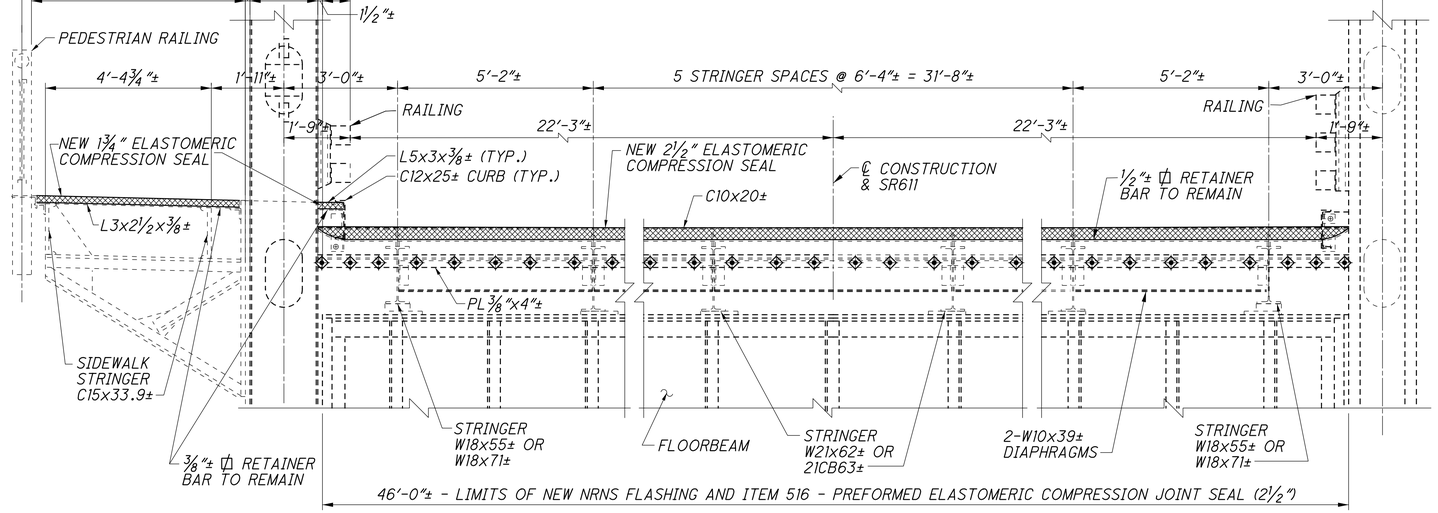
PARTIAL PLAN - PANEL POINT 18, 28 (SHOWN)

PARTIAL PLAN - PANEL POINT 45, 52, 62 (OPPOSITE HAND)



SECTION C-C

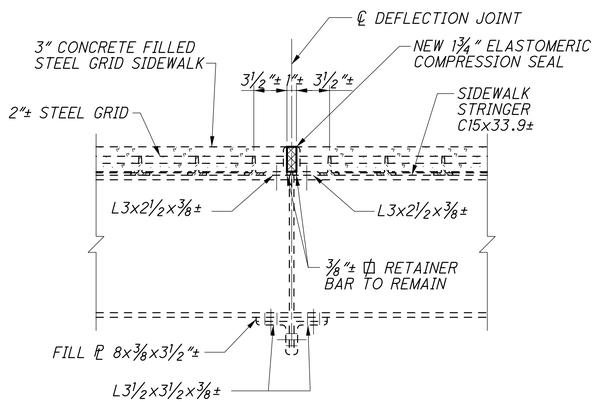
REMOVE & REPLACE EXISTING SEAL WITH 2½" ELASTOMERIC COMPRESSION SEAL
D.S. BROWN CV-2502 OR WABO WA-250 OR EQUAL INSTALLED IN 1½"± OPENING



SECTION A-A (SHOWN)

SECTION B-B (OPPOSITE HAND)

TABLE OF DIMENSIONS			
DIMENSION	**PANEL 18 & 62**	**PANEL 28 & 52**	**PANEL 45**
'X' O/O EXISTING MEMBER	1'-11⅞"±	1'-9¾"±	1'-9⅞"±
'Y' SIDEWALK JOINT	5'-6⅛"±	5'-7⅛"±	5'-7⅛"±
'Z' CURB JOINT	7⅜"±	8⅝"±	8⅜"±
LIMITS OF PAYMENT FOR ITEM 516 - PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (1¾")	6'-1⅝"±	6'-3¾"±	6'-3⅝"±



SECTION D-D

REMOVE & REPLACE EXISTING SEAL WITH 1¾" ELASTOMERIC COMPRESSION SEAL
D.S. BROWN CV-1752 OR WABO WA-175 OR EQUAL INSTALLED IN 1"± OPENING

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NOTATION: NRNS - NYLON REINFORCED NEOPRENE SHEETING.

NRNS DETAILS: SEE SHEET 184/189 .

FOR JOINT LOCATIONS: SEE DECK PLAN SHEETS 137/189 AND 138/189 .

BOLT LEGEND SEE SHEET 11/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | CHECKED KAK | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

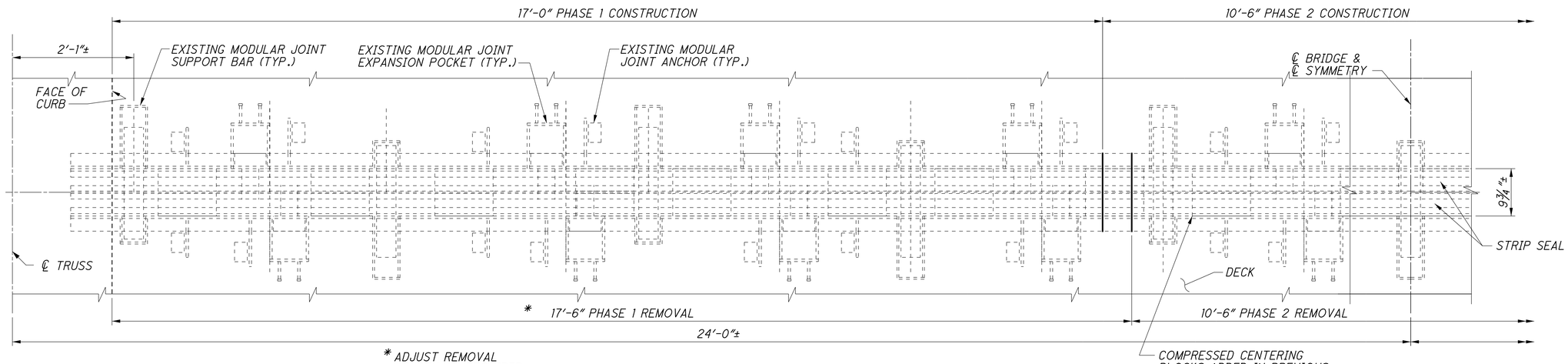
DEFLECTION JOINT SEAL

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

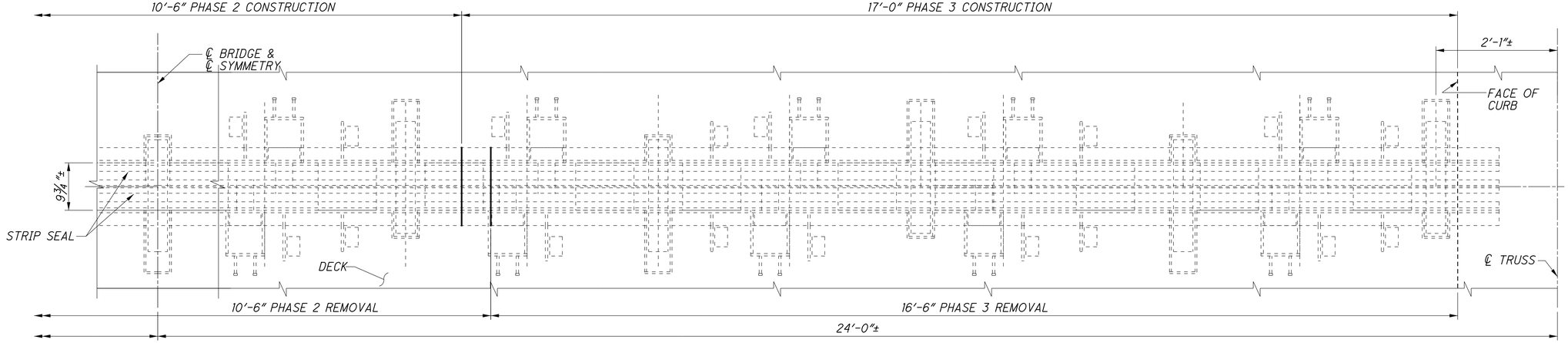
142/189

187/234



PLAN EXPANSION JOINT 35

(FORWARD ABUTMENT EXPANSION JOINT - SIMILAR)



PLAN EXPANSION JOINT 35

(FORWARD ABUTMENT EXPANSION JOINT - SIMILAR)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN SEE GENERAL NOTE SHEET 3/189.

ITEM 511 - CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK: SEE GENERAL NOTE SHEET 4/189.

ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5" OR 7"), AS PER PLAN: SEE GENERAL NOTE SHEET 9/189.

RICHLAND ENGINEERING LIMITED
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EXPANSION JOINT AT PANEL POINT 35 AND FORWARD ABUTMENT
PHASED CONSTRUCTION & REMOVAL LOCATIONS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

143/189

188/234

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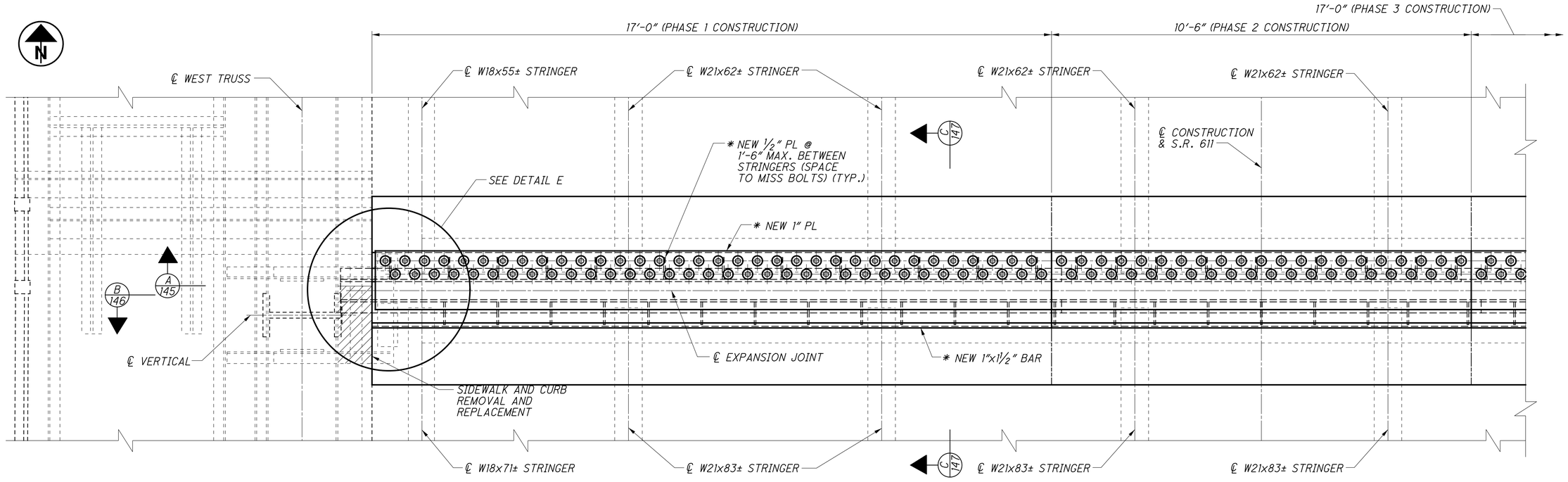
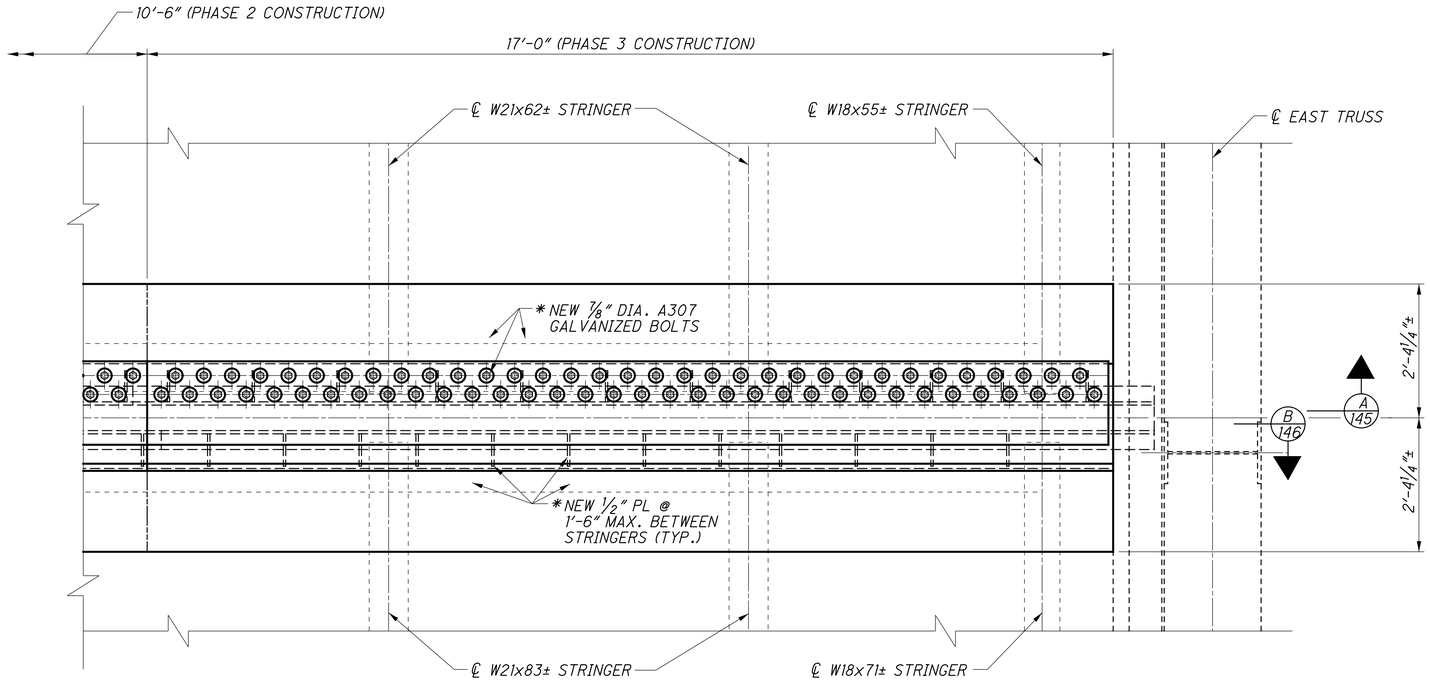


PLAN - PANEL POINT 35



PLAN - PANEL POINT 35

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

DETAIL E: SEE SHEET 148/189.

SIDEWALK AND CURB REMOVAL AND REPLACEMENT: SEE SHEET 149/189.

PHASE LINE CONNECTION DETAILS: SEE SHEET 148/189.

ADDITIONAL NOTES: SEE SHEET 143/189.

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MANSFIELD, OHIO 44902

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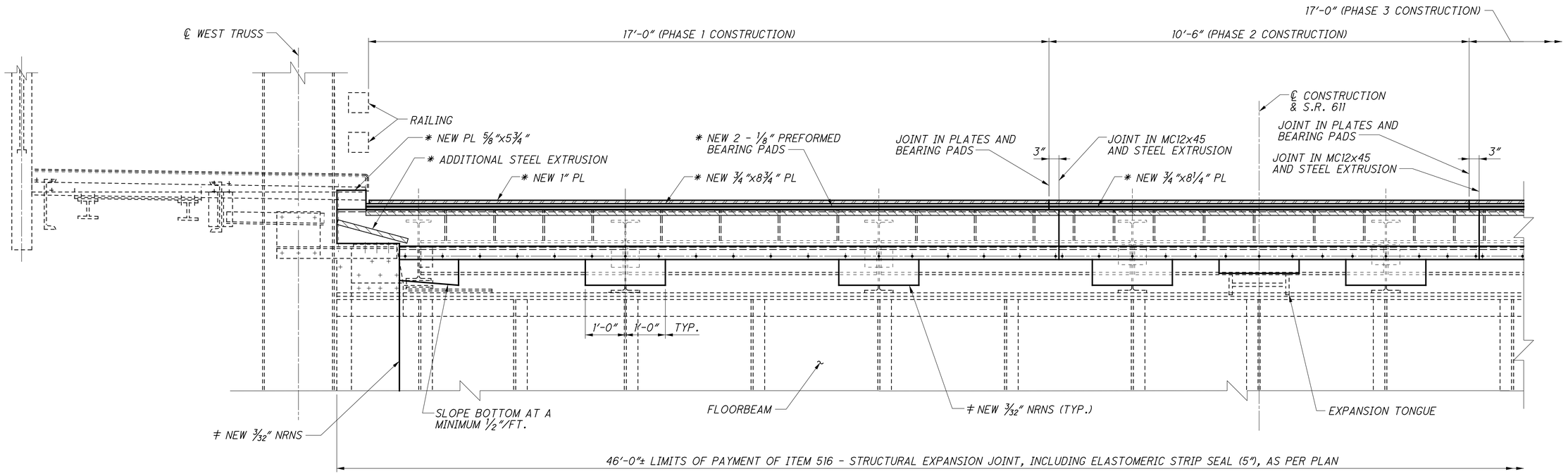
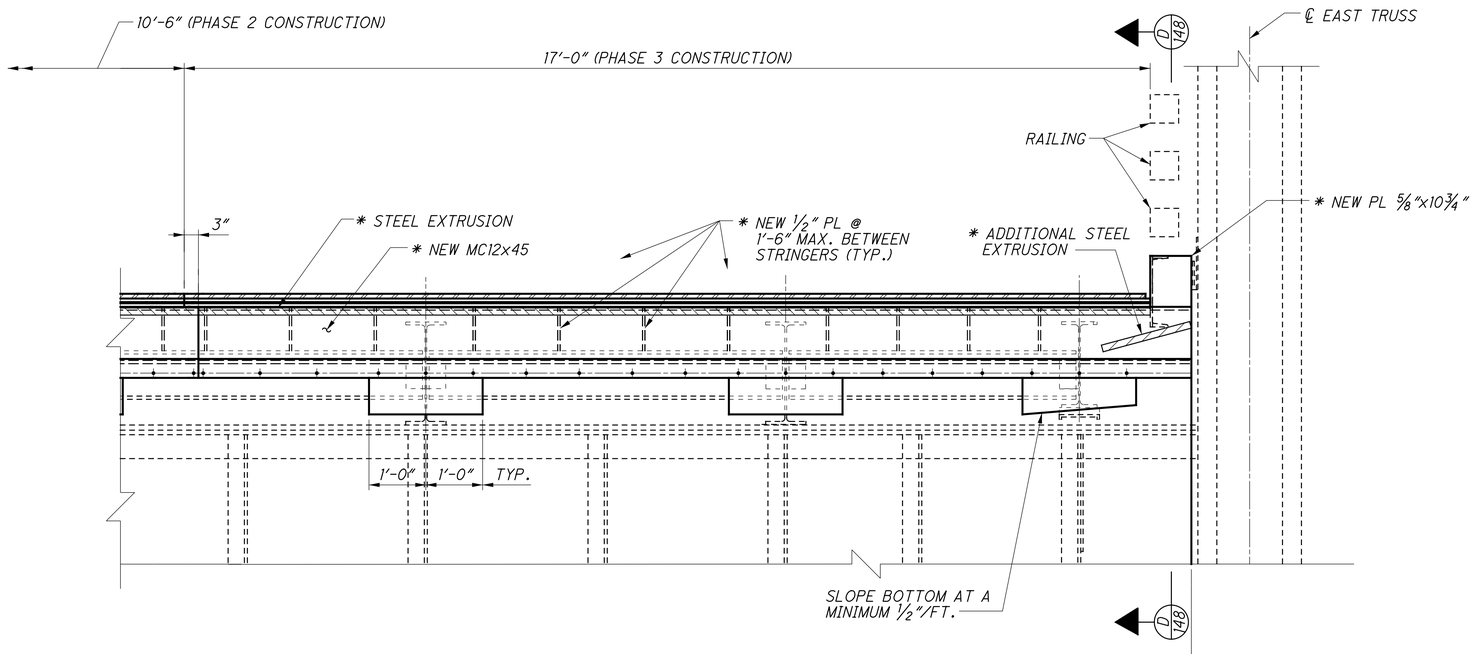
PANEL POINT 35 EXPANSION JOINT PLAN

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



SECTION A-A



SECTION A-A

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

≠ INCLUDED WITH ITEM 518 - STRUCTURAL DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS) FOR PAYMENT.

NRNS - NYLON REINFORCED NEOPRENE SHEET.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

SECTION A-A: FOR LOCATION SEE SHEET 144/189.

ADDITIONAL NOTES: SEE SHEET 143/189.

BOLT LEGEND: SEE SHEET 11/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

PANEL POINT 35 EXPANSION JOINT ELEVATION - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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190/234

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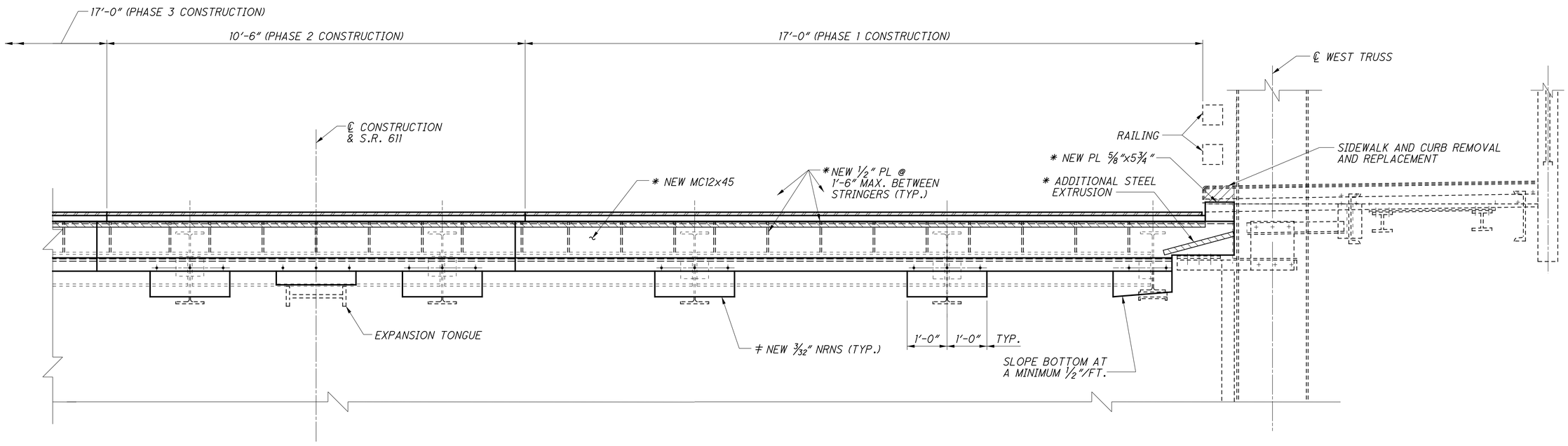
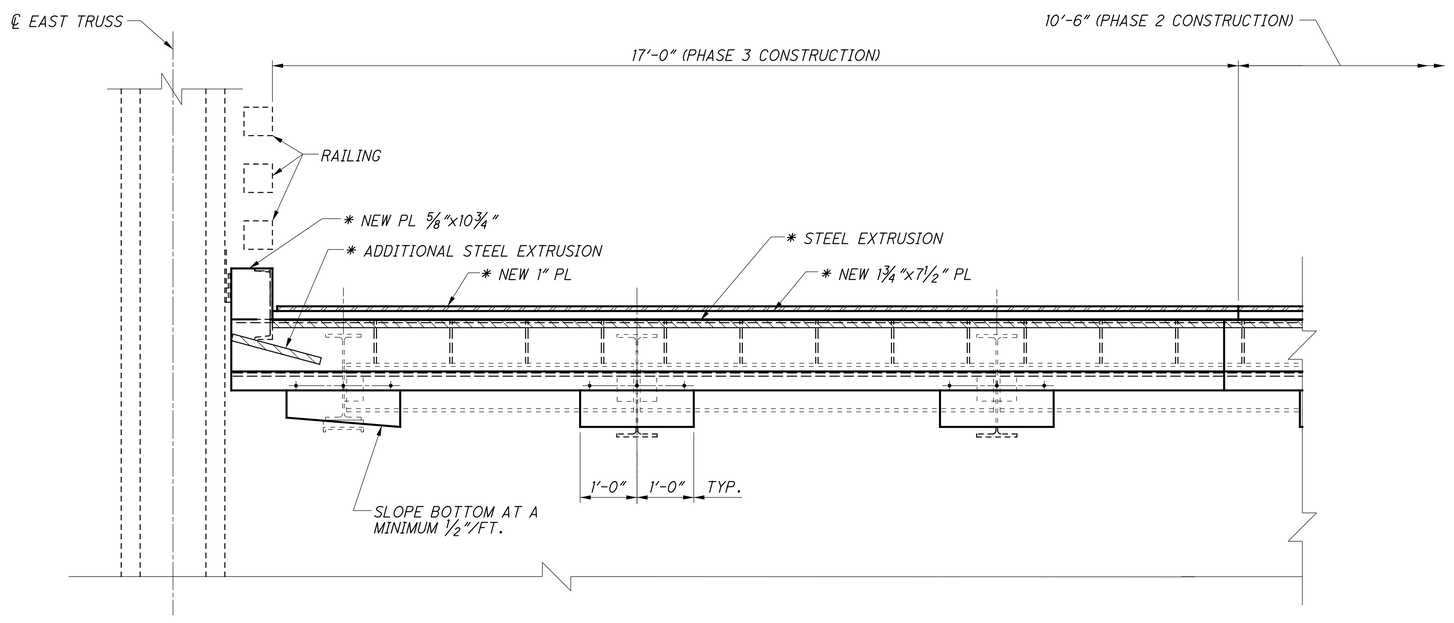


SECTION B-B



SECTION B-B

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

≠ INCLUDED WITH ITEM 518 - STRUCTURAL DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS) FOR PAYMENT.

NRNS - NYLON REINFORCED NEOPRENE SHEET.

INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.

NOTES

MATERIALS

SECTION B-B: FOR LOCATION SEE SHEET 144/189.

SIDEWALK AND CURB REMOVAL AND REPLACEMENT: SEE SHEET 149/189.

ADDITIONAL NOTES: SEE SHEET 143/189.

BOLT LEGEND: SEE SHEET 11/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

PANEL POINT 35 EXPANSION JOINT ELEVATION - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

146/189

191/234

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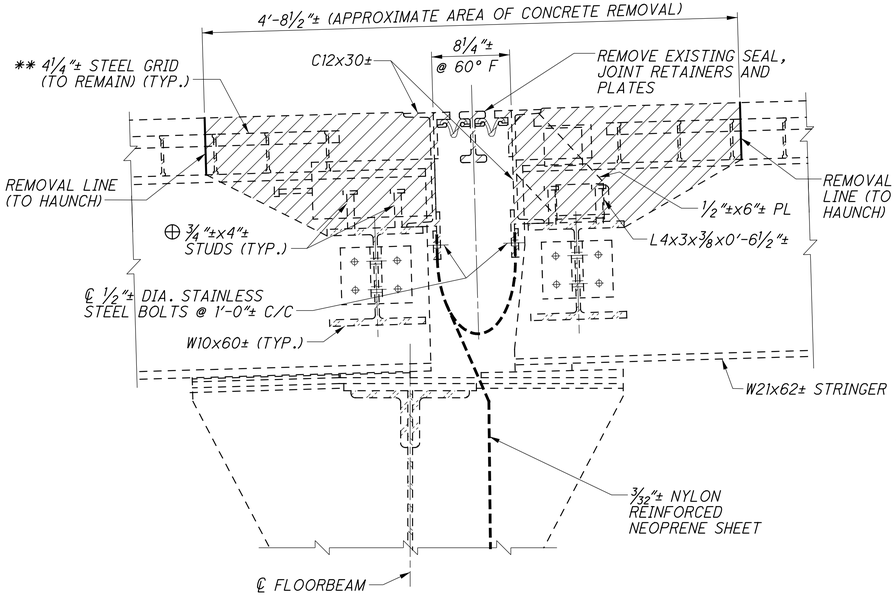
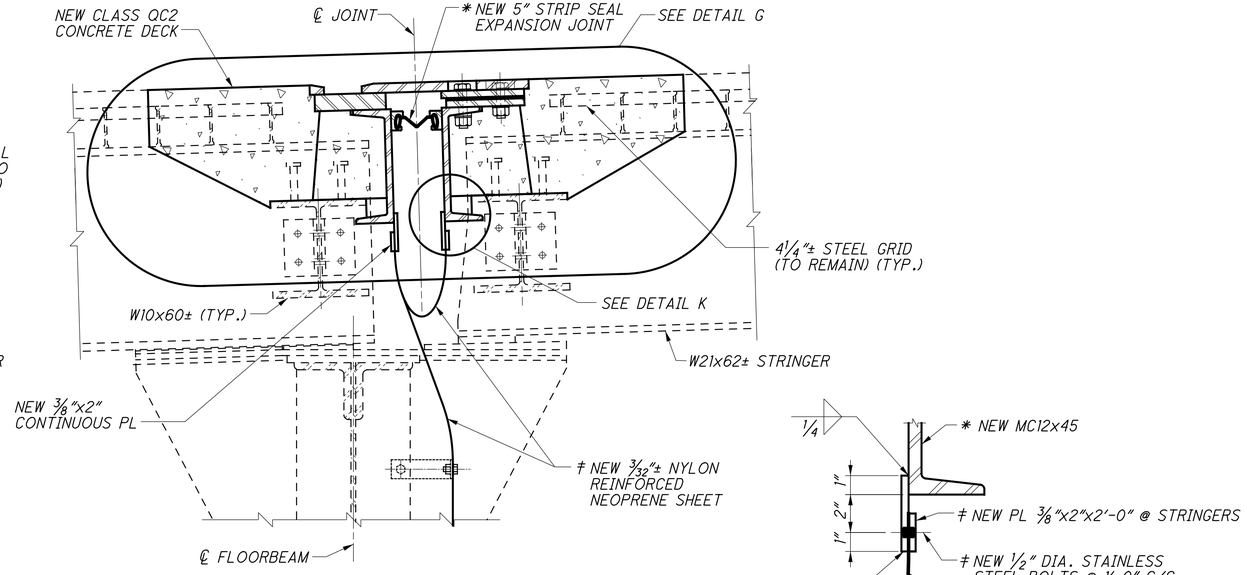
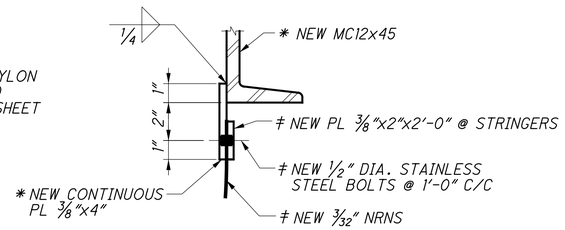


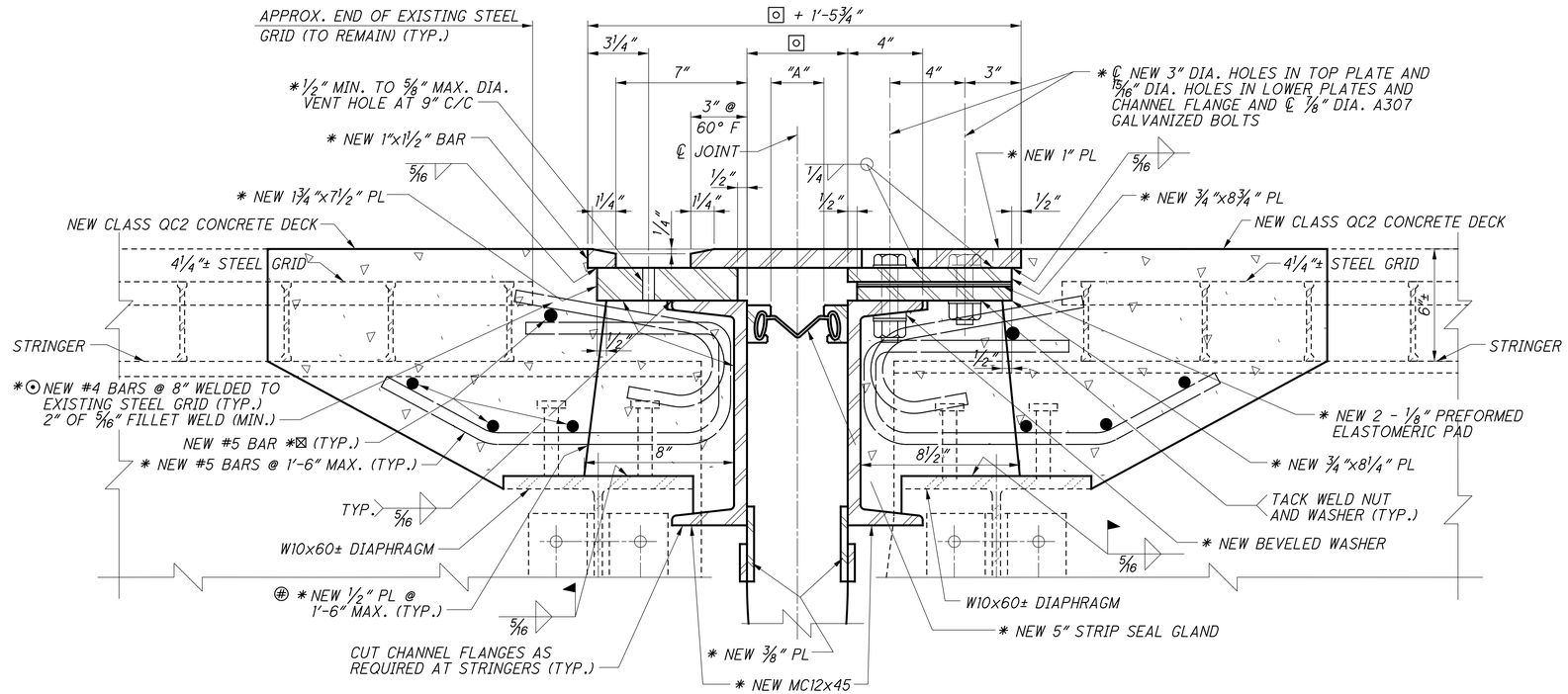
SECTION C-C - REMOVAL



SECTION C-C - PROPOSED



DETAIL K



DETAIL G

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

ǂ INCLUDED WITH ITEM 518 - STRUCTURAL DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS). (SEE DETAILS SHEET 184/189).

NRNS - NYLON REINFORCED NEOPRENE SHEET.

** REMOVE CONCRETE IN BETWEEN GRID MEMBERS.

⊕ REMOVE AND REPLACE IF REQUIRED TO MISS NEW ½" JOINT PLATE.

⊙ DETERMINE LENGTH BASED ON LOCATION OF EXISTING 4¼" STEEL GRID.

⊡ THIS DIMENSION IS THE SUM OF (2 x STEEL RETAINER WIDTH + DIM. "A")

INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.

⊠ TOP BAR FULL LENGTH, LOWER BARS BETWEEN STRINGER OR STRINGERS AND CURBS USE MECHANICAL CONNECTORS OR A MINIMUM LAP OF 2'-0" AT PHASE CONSTRUCTION JOINTS.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

SECTION C-C: FOR LOCATION SEE SHEET 144/189.

ADDITIONAL NOTES: SEE SHEET 143/189.

⊕ THE EXACT HEIGHT FROM THE TOP OF DECK TO THE EXISTING DIAPHRAGM IS UNKNOWN, AS IS THE HORIZONTAL DISTANCE THAT NEEDS TO BE NOTCHED OUT OF THE CHANNELS AND ½" VERTICAL ATTACHMENT PLATES. FABRICATING THE PLATES LONGER OR WITHOUT THE NOTCH AND THEN FIELD CUTTING IS ONE OPTION.

FIELD WELDING ½" ADJUSTMENT PLATES TO EACH SIDE OF THE ½" VERTICAL ATTACHMENT PLATE AND SUPPLING A SIMILAR AMOUNT OF 5/16" FILLET WELD TO PLATES AND DIAPHRAGM IS ANOTHER OPTION.

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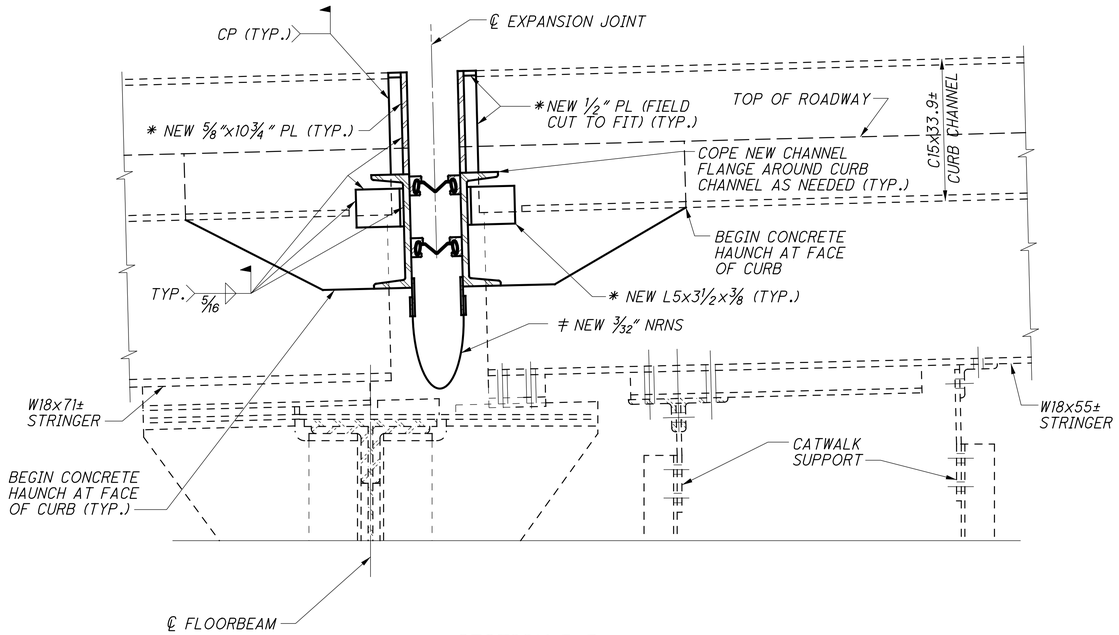
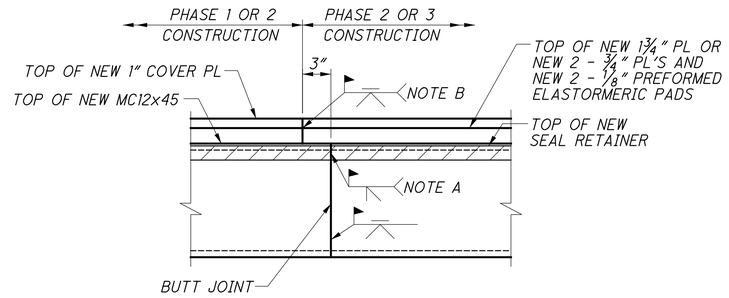
PANEL POINT 35 EXPANSION JOINT DETAILS - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

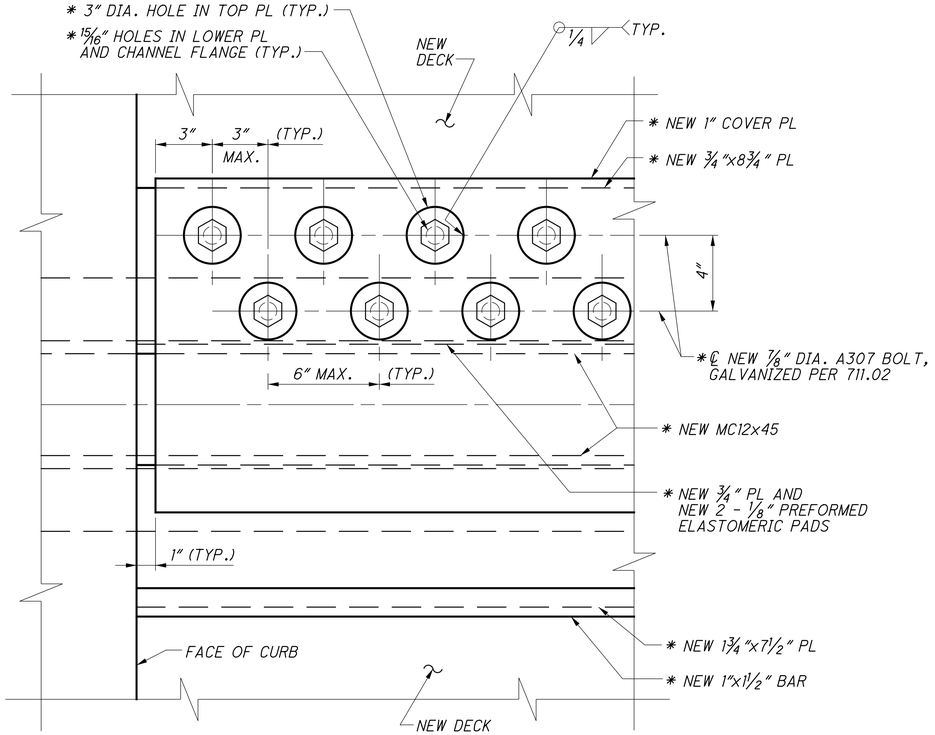
LOR-611-3.44
PID No. 92009



SECTION D-D



TYPICAL JOINT ARMOR SPLICE AT PHASED CONSTRUCTION JOINT



DETAIL E

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

≠ INCLUDED WITH ITEM 518 - STRUCTURAL DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS).

NRNS - NYLON REINFORCED NEOPRENE SHEET.

NOTE A: WELDS AT JOINTS IN RETAINERS SHALL BE WATERTIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. GRIND FLUSH ALL WELDS IN CONTACT WITH THE JOINT SEAL.

NOTE B: WELD SHOWN IS ALONG THE FULL LENGTH OF THE JOINT AT THE TOP OF THE 1 3/4"x7" PL AND THE 1"x1 1/2" BAR. THE 1" SLIDING COVER PLATE AND ATTACHED 3/4" PLATE ARE TO BE DISCONTINUOUS AT THE PHASE CONSTRUCTION JOINTS.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

SECTION D-D: FOR LOCATION SEE SHEET 145/189 .

DETAIL E: FOR LOCATION SEE SHEET 144/189 .

FLASHING SUPPORT DETAIL: SEE SHEET 184/189 .

ADDITIONAL NOTES: SEE SHEET 143/189 .

RICHLAND ENGINEERING LIMITED
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PANEL POINT 35 EXPANSION JOINT DETAILS - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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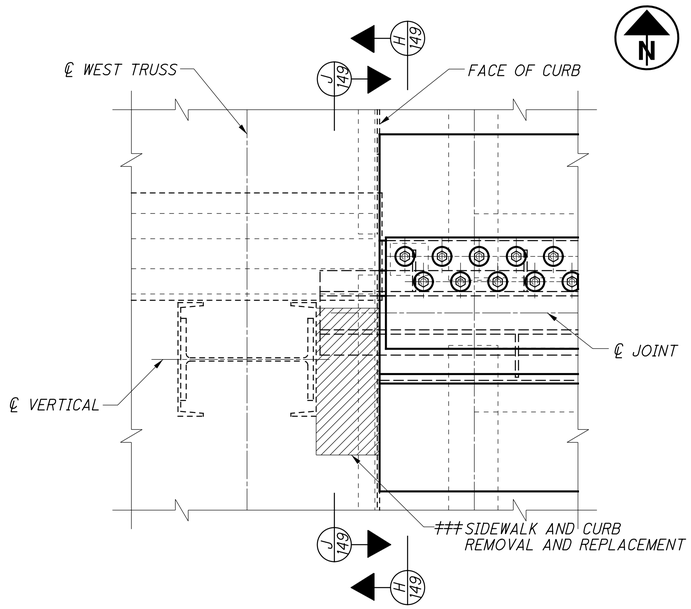
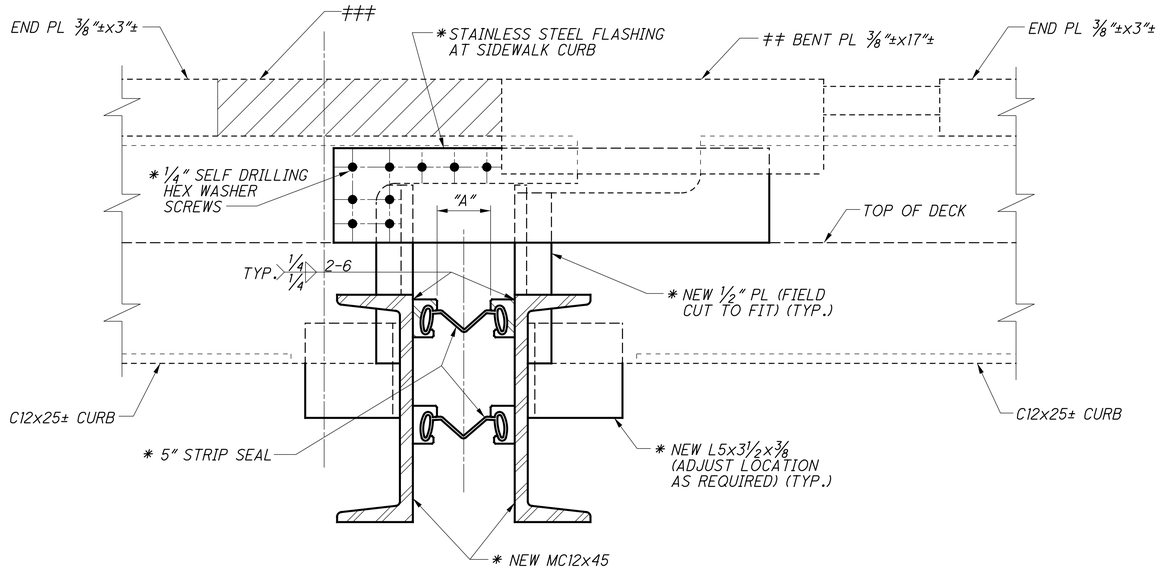
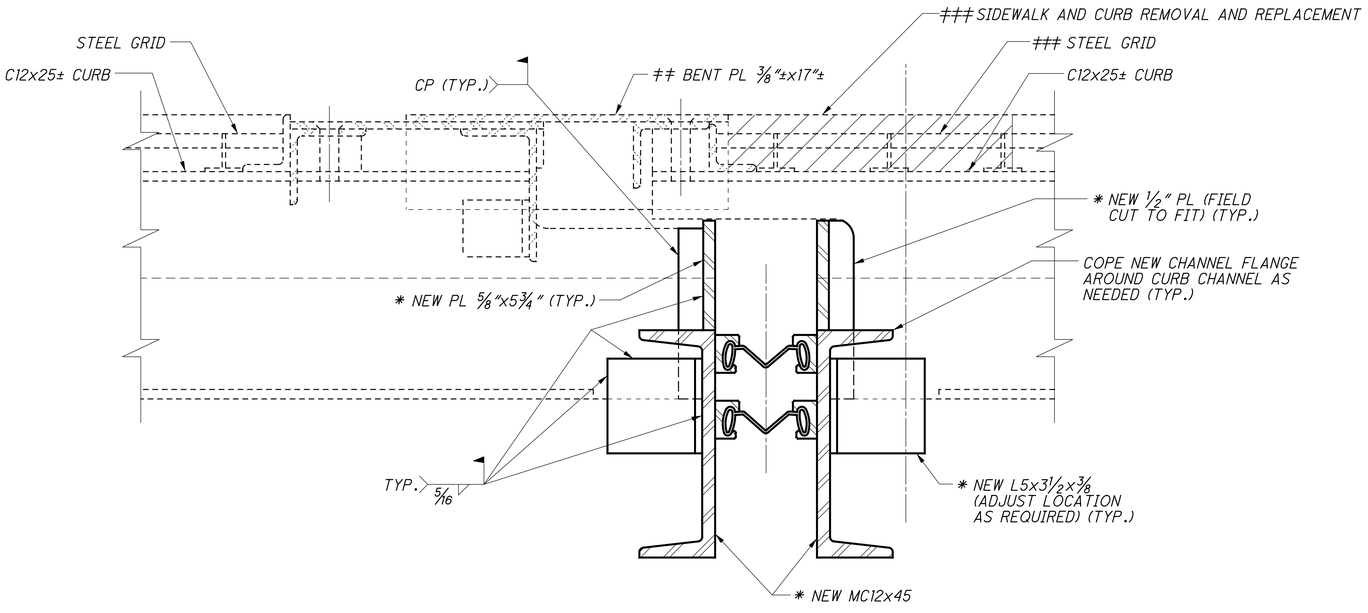


PLAN AT WEST CURB



SECTION H-H

JOINT SETTING TABLE - PP 35							
TEMPERATURE	**30°**	**40°**	**50°**	**60°**	**70°**	**80°**	**90°**
DIMENSION "A"	3 1/4"	2 1/8"	2 5/8"	2 3/8"	2"	1 5/8"	1 3/8"



SECTION J-J

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5"), AS PER PLAN FOR PAYMENT.

REMOVE AND REINSTALL 3/8" BENT PL WITH NEW 1" DIA. COUNTERSUNK BOLTS AS NEEDED TO INSTALL NEW EXPANSION JOINT.

REMOVE AND REPLACE PORTIONS OF SIDEWALK END PLATE AND SIDEWALK FILLED STEEL GRID AS REQUIRED. THE CURB CHANNEL CAN BE REMOVED AND REPLACED WITH A NEW WELDED SECTION IF REQUIRED TO INSTALL THE JOINT. OTHER FRAMING MEMBERS UNDER AND BEHIND THE SIDEWALK AND CURBS MAY NEED TO BE MODIFIED TO MAKE THE JOINT FIT. INSTEAD OF REPLACING THE FILLED STEEL SIDEWALK GRID BETWEEN THE CURB AND VERTICAL TRUSS MEMBER, A 3/8" STEEL PLATE CAN BE FABRICATED AND WELDED TO THE TOP OF THE CURB AND TRUSS SUPPORT ANGLE TO ACT AS A FORM. CLASS QC2 CAN THEN BE PLACED TO MATCH PREVIOUS SIDEWALK GRADING. THIS WORK IS PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPANS AND 511 - CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK.

INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

STAINLESS STEEL FLASHING SHALL BE A MINIMUM OF 22 GAGE ASTM A167, TYPE 304, MILL FINISH. THE SELF DRILLING HEX WASHER SCREWS SHALL BE 1/4 - 14 ASTM TYPE 410 STAINLESS STEEL.

STRIP SEAL EXPANSION JOINT: FOR ADDITIONAL NOTES AND DETAILS SEE STANDARD DRAWING EXJ-4-87.

ADDITIONAL NOTES: SEE SHEET 143/189 .

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PANEL POINT 35 EXPANSION JOINT DETAILS - 3

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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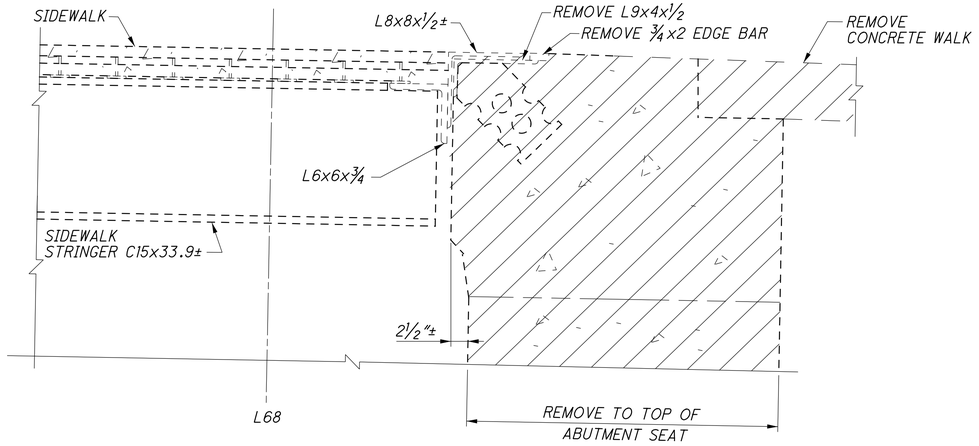
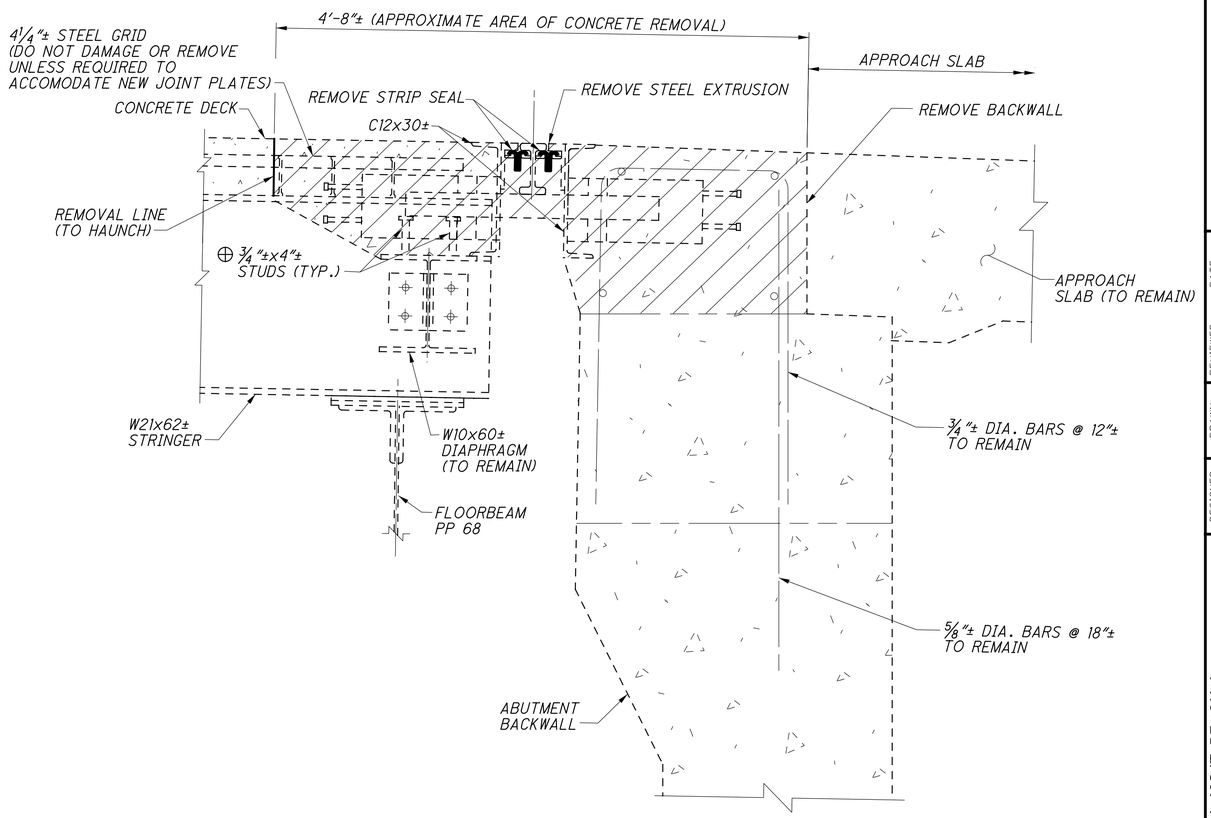
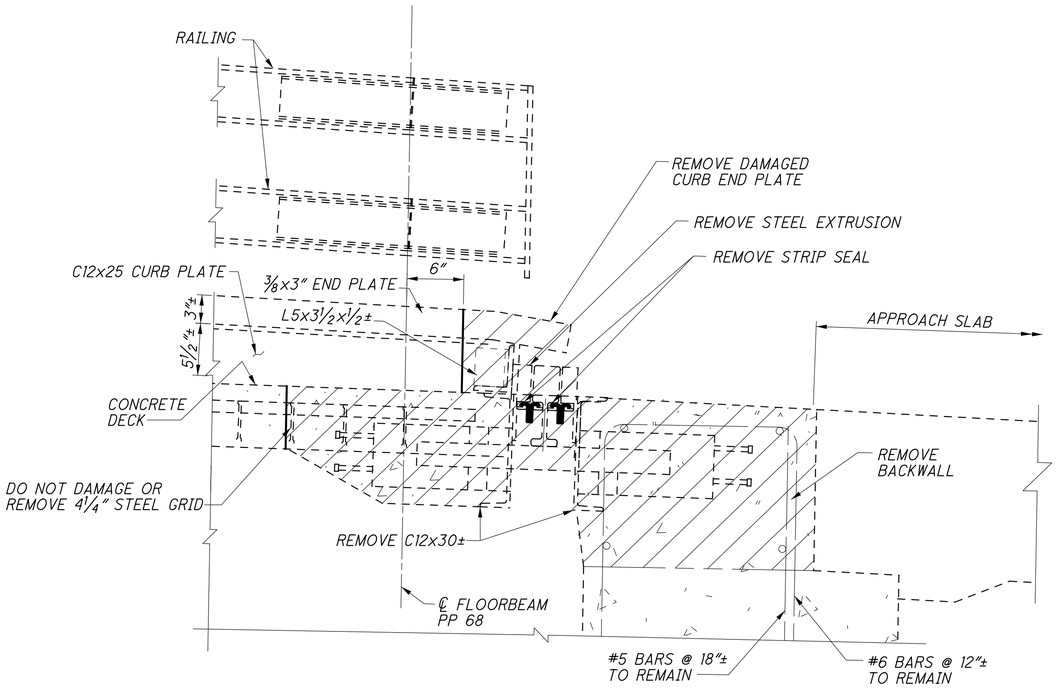


SIDEWALK REMOVAL SECTION
(SECTION D-D)



ROADWAY REMOVAL SECTION
(SECTION C-C)



CURB REMOVAL SECTION
(SECTION E-E)

LEGEND

- INDICATES PORTION OF STRUCTURE TO BE REMOVED.

⊕ - 3/4"±x4"± STUDS (TYP.)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN SEE GENERAL NOTE SHEET 3 / 189 .

ITEM 511 - CLASS QC2 CONCRETE, MISC.: DECK JOINTS AND SIDEWALK: SEE GENERAL NOTE SHEET 4 / 189 .

ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN SEE GENERAL NOTE SHEET 9 / 189 .

ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE: SEE GENERAL NOTE SHEET 9 / 189 .

FOR SIDEWALK REMOVAL (SECTION D-D) LOCATION SEE SHEET 151 / 189 .

FOR ROADWAY REMOVAL (SECTION C-C) LOCATION SEE SHEET 151 / 189 .

FOR CURB REMOVAL (SECTION E-E) LOCATION SEE SHEET 151 / 189 .

ADDITIONAL FORWARD ABUTMENT REMOVAL DETAILS: SEE SHEETS 15 / 189 AND 16 / 189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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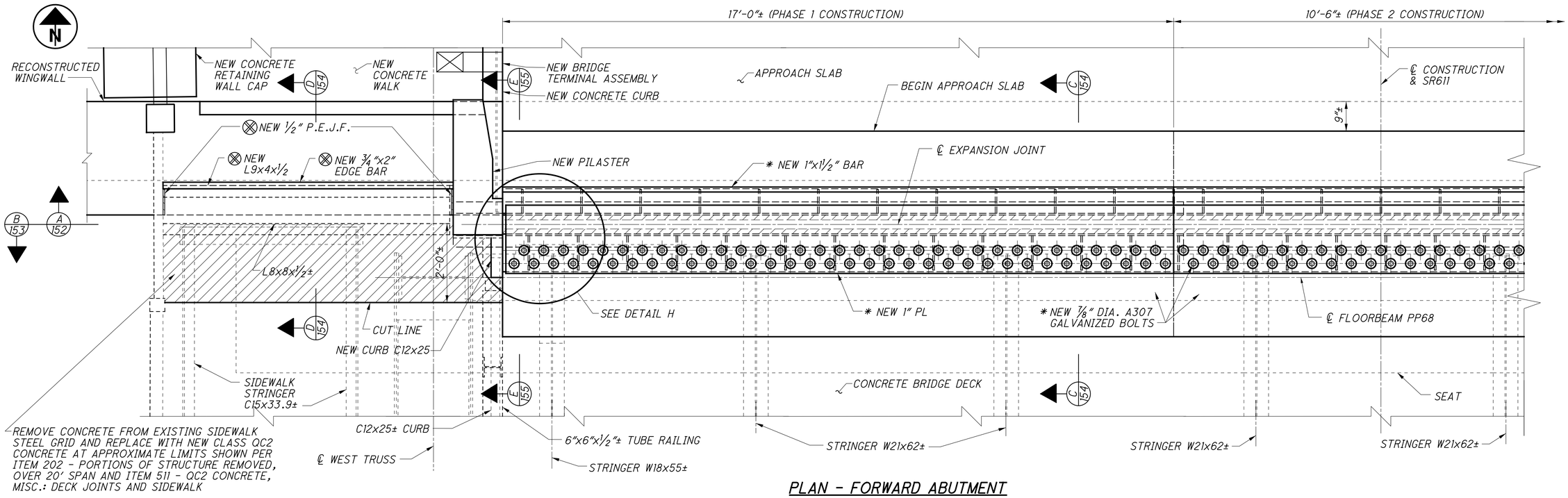
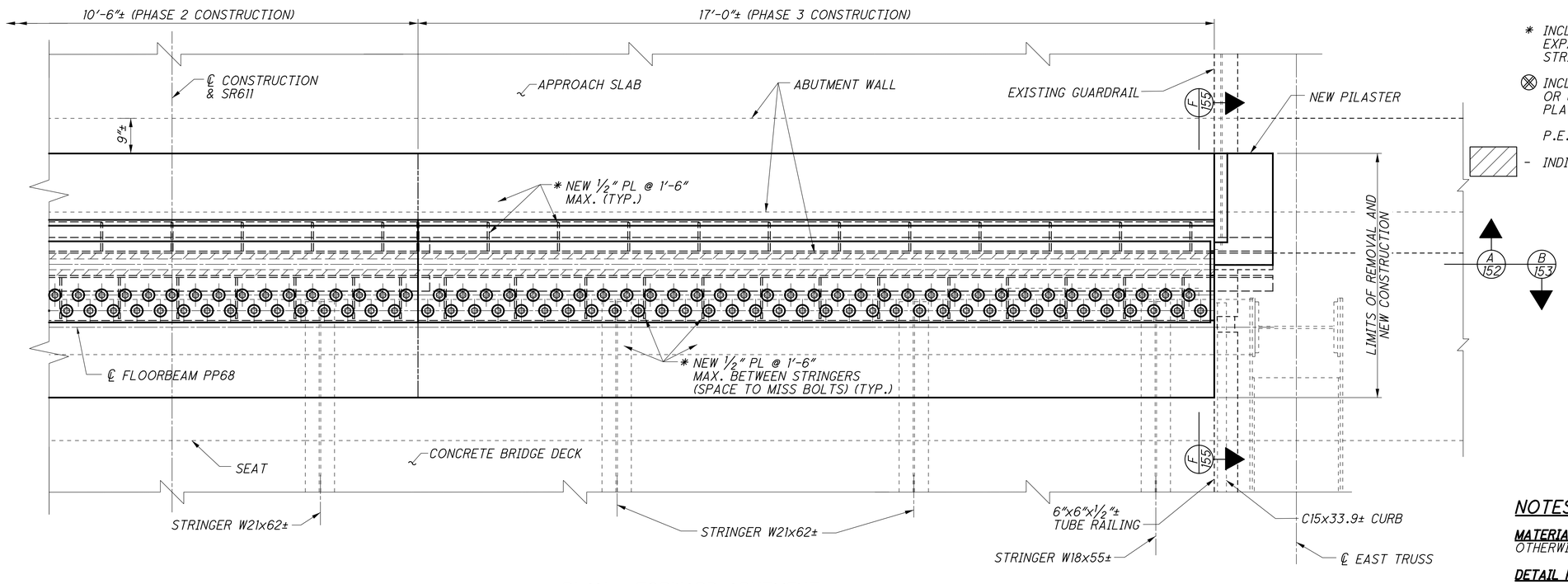
FORWARD ABUTMENT EXPANSION JOINT REMOVAL

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



PLAN - FORWARD ABUTMENT



PLAN - FORWARD ABUTMENT

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

⊗ INCLUDED WITH ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE FOR PAYMENT.

P.E.J.F. - PREFORMED EXPANSION JOINT FILLER.

▨ - INDICATES PORTION OF STRUCTURE TO BE REMOVED.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

DETAIL H: SEE SHEET 154/189.

ADDITIONAL NOTES: SEE SHEET 150/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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FORWARD ABUTMENT EXPANSION JOINT PLAN
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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196/234

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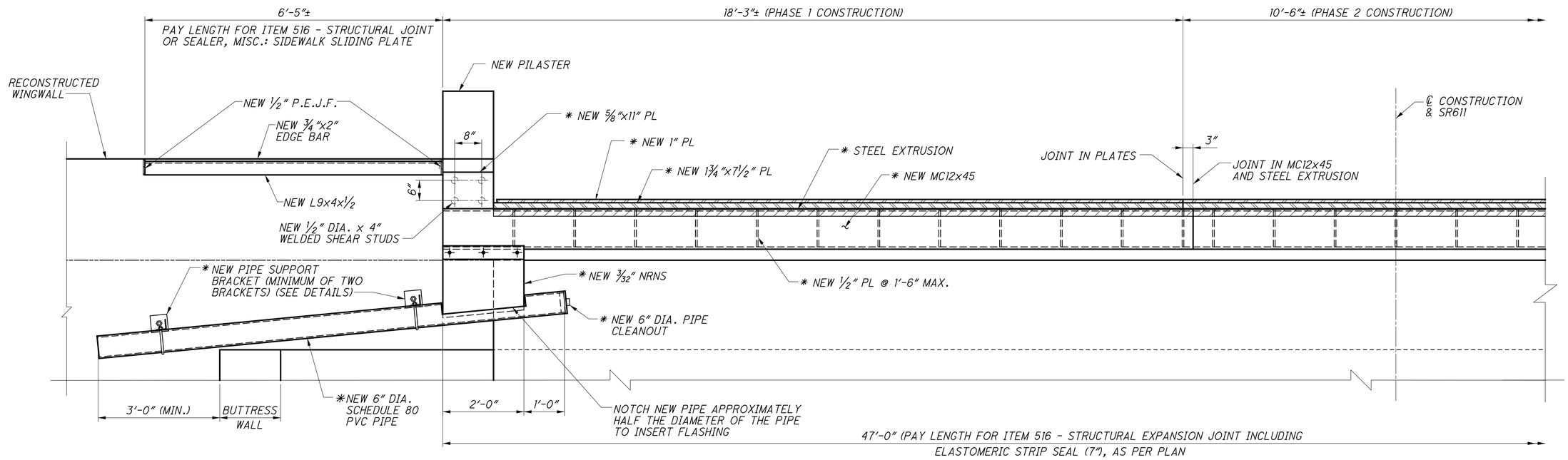
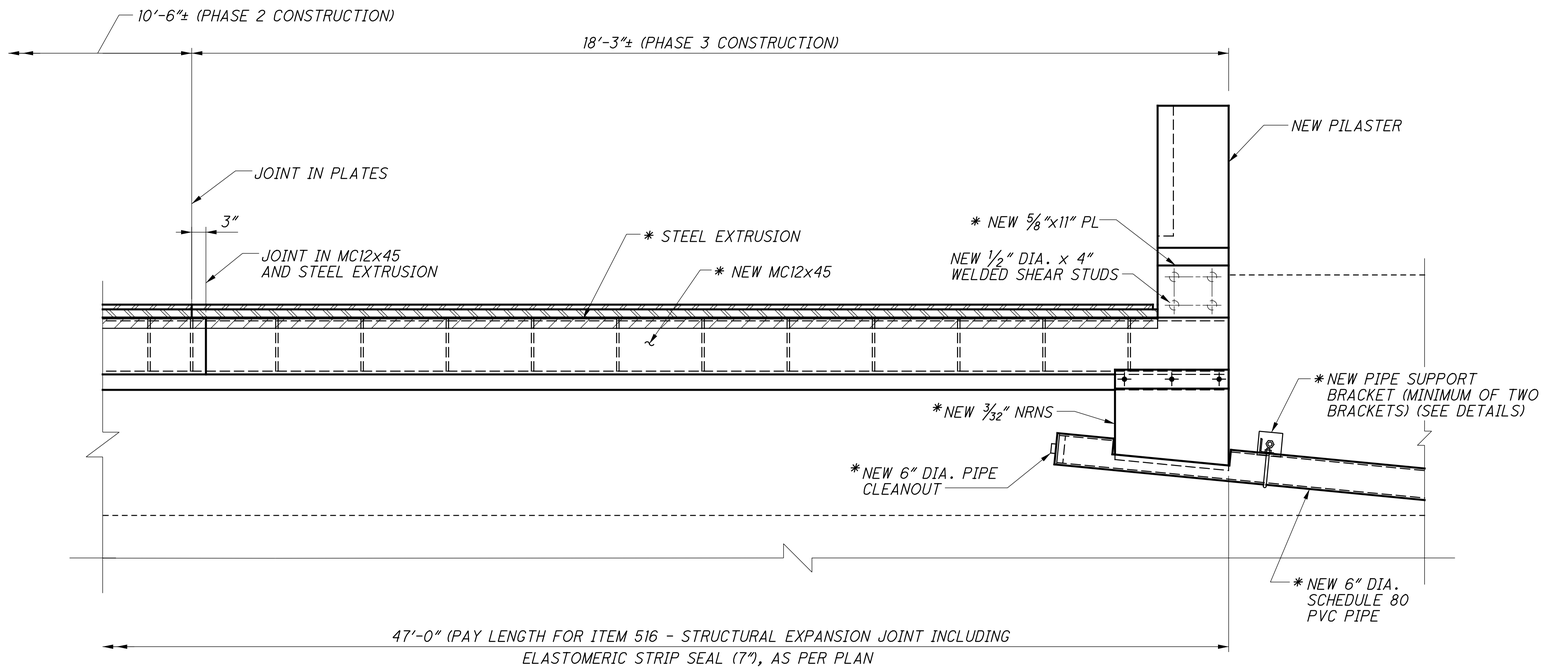


SECTION A-A



SECTION A-A

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

NRNS - NYLON REINFORCED NEOPRENE SHEET.

P.E.J.F. - PREFORMED EXPANSION JOINT FILLER.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SECTION A-A: FOR LOCATION SEE SHEET 151/189.

NEW PIPE SUPPORT BRACKET: SEE DETAILS ON SHEET 155/189.

DRAINAGE DETAILS SHOWN AT WEST TRUSS ARE SIMILAR FOR EAST TRUSS. SLOPE 6" DIA. SCHEDULE 80 PVC PIPE AS MUCH AS POSSIBLE FOR MAXIMUM DRAINAGE.

BOLT LEGEND: SEE SHEET 11/189.

ADDITIONAL NOTES: SEE SHEET 150/189.

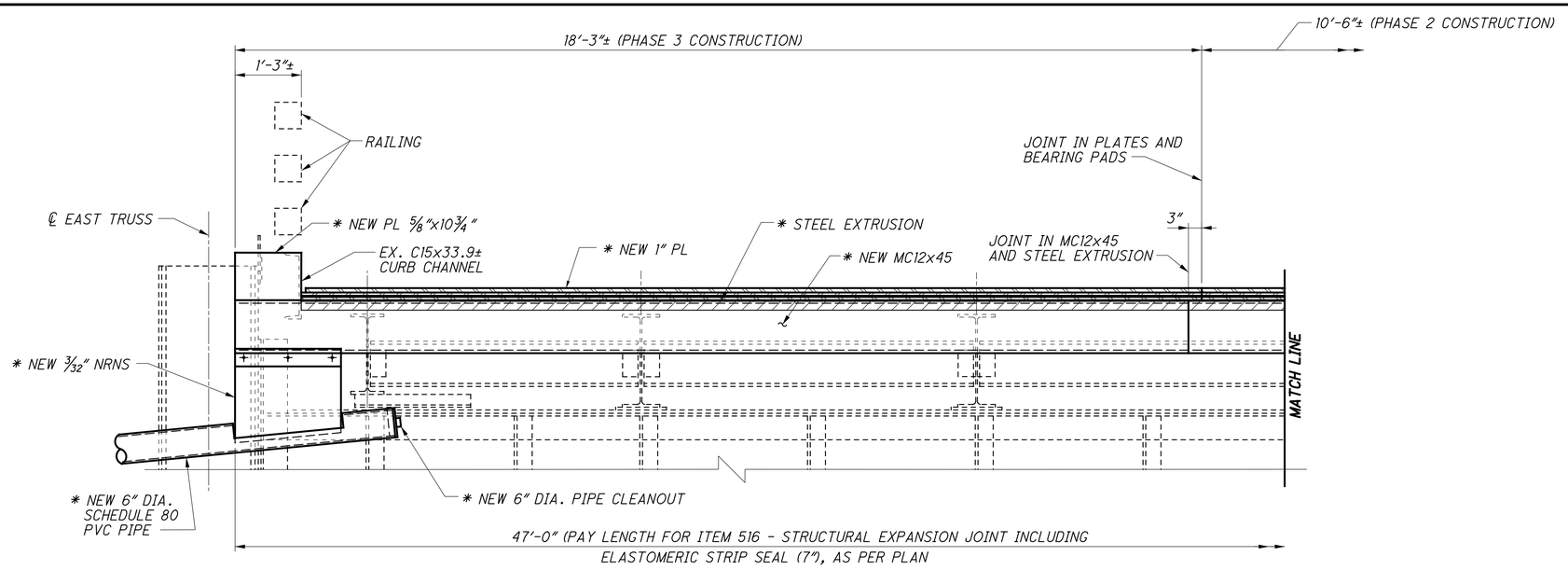
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 4707443

FORWARD ABUTMENT EXPANSION JOINT ELEVATION - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

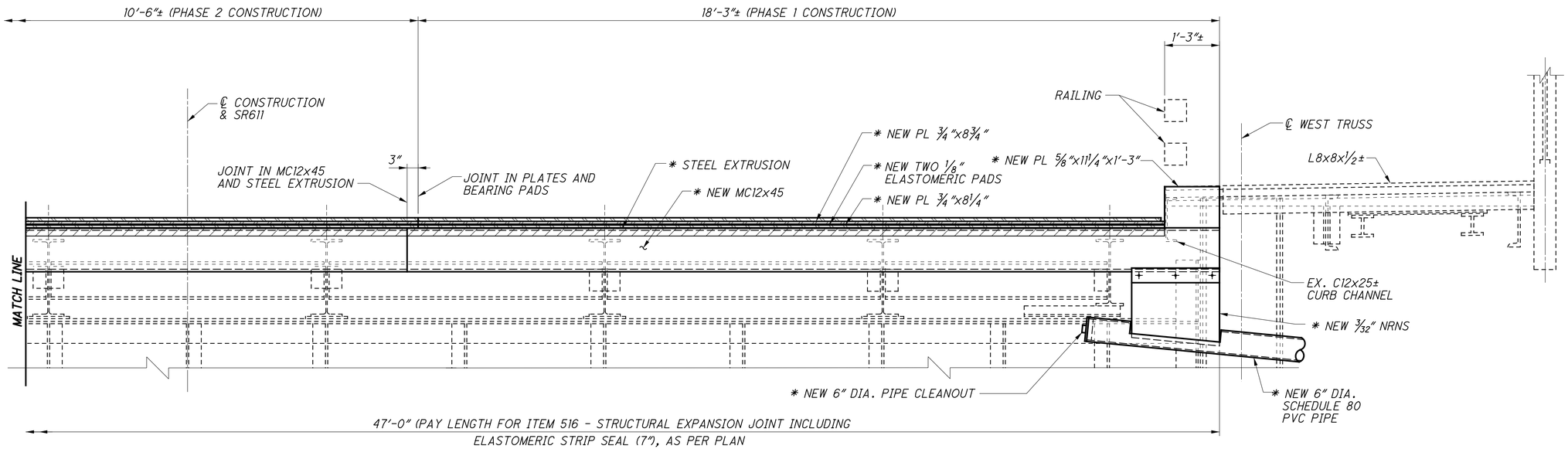


SECTION B-B

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

NRNS - NYLON REINFORCED NEOPRENE SHEET.



SECTION B-B

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

ADDITIONAL NOTES: SEE SHEET 150/189 .

SECTION B-B: FOR LOCATION SEE SHEET 151/189 .

DRAINAGE DETAILS: FOR ADDITONAL DETAILS SEE SHEET 155/189 .

BOLT LEGEND: SEE SHEET 11/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

FORWARD ABUTMENT EXPANSION JOINT ELEVATION - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

153/189
198/234

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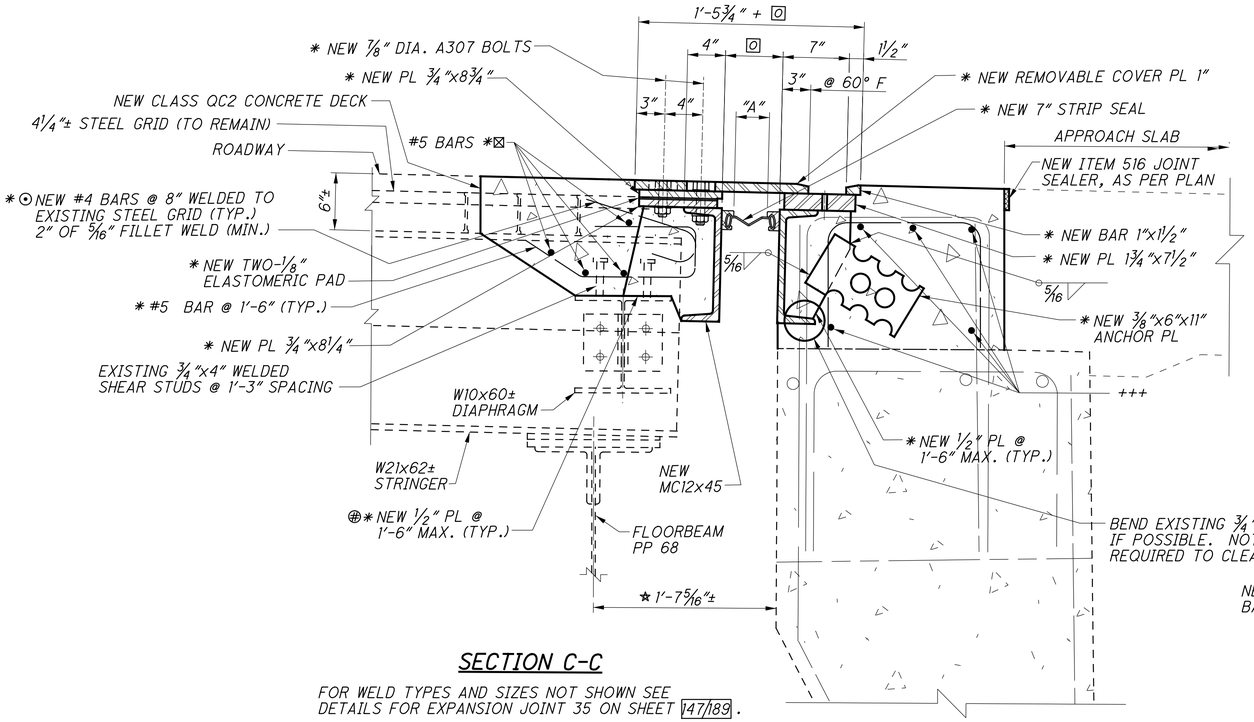
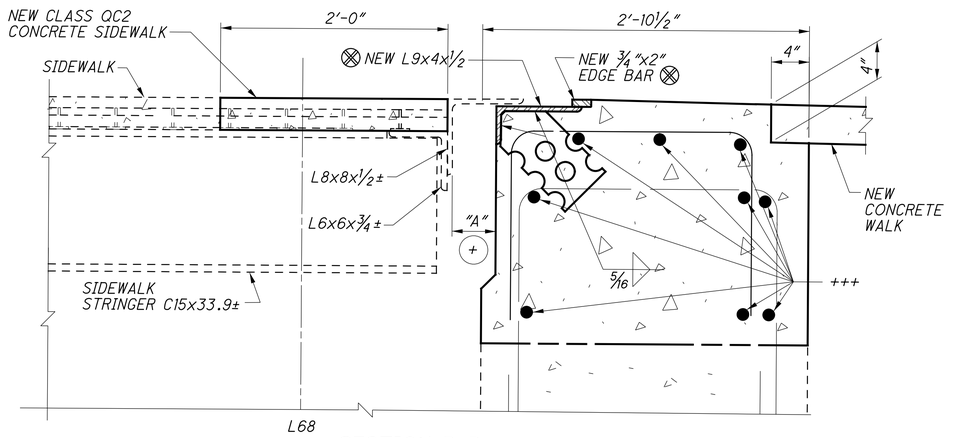


SECTION C-C

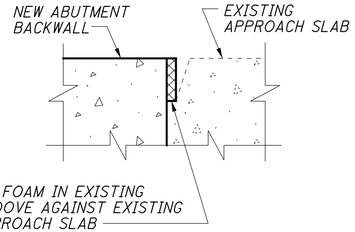
FOR WELD TYPES AND SIZES NOT SHOWN SEE DETAILS FOR EXPANSION JOINT 35 ON SHEET 147/189.



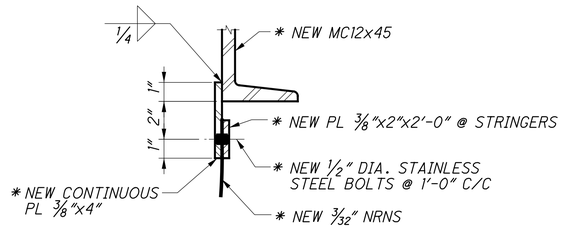
SECTION D-D

+ RECESS JOINT INTO BACKWALL AS NEEDED TO MAINTAIN DIMENSION "A". (ESTIMATED TO BE 1½")

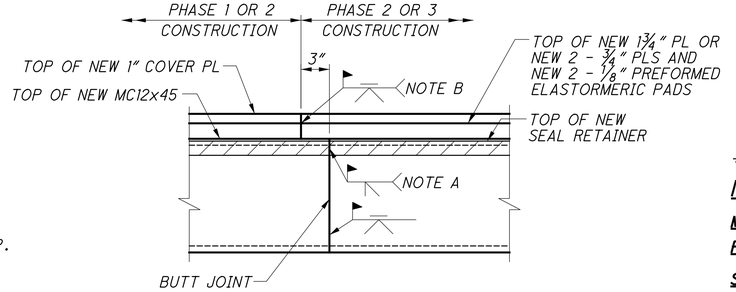
JOINT SETTING TABLE - FORWARD ABUTMENT							
TEMPERATURE	30°	40°	50°	60°	70°	80°	90°
DIMENSION "A"	4⅜"	3 15/16"	3 9/16"	3⅛"	2 1/16"	2 5/16"	1⅞"



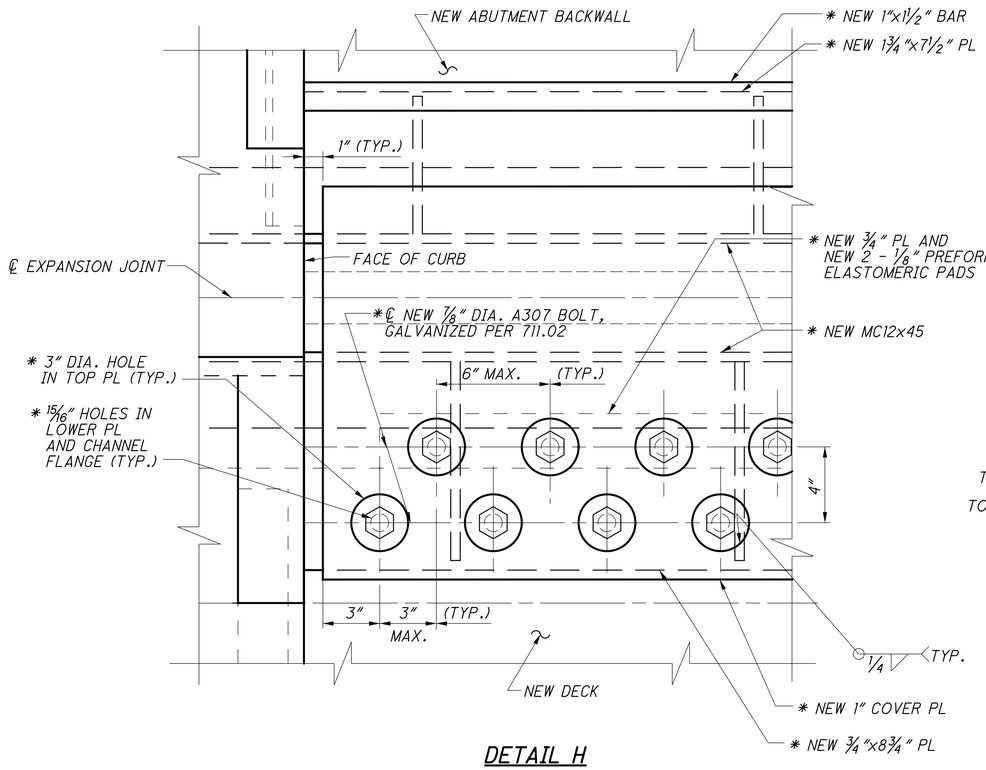
JOINT SEALER DETAIL



DETAIL K



TYPICAL JOINT ARMOR SPLICE AT PHASED CONSTRUCTION JOINT



DETAIL H

LEGEND

NOTE A: WELDS AT JOINTS IN RETAINERS SHALL BE WATERTIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. GRIND FLUSH ALL WELDS IN CONTACT WITH THE JOINT SEAL.

NOTE B: WELD SHOWN IS ALONG THE FULL LENGTH OF THE JOINT AT THE TOP OF THE 1¾"x7½" PL AND THE 1"x1½" BAR. THE 1" SLIDING COVER PLATE AND ATTACHED ¾" PLATE ARE TO BE DISCONTINUOUS AT THE PHASE CONSTRUCTION JOINTS.

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

⊙ DETERMINE BAR LENGTH BASED ON LOCATION OF EXISTING 4¼" STEEL GRID.

ⓞ THIS DIMENSION IS THE SUM OF (2 x STEEL RETAINER WIDTH + DIM. "A")

△ TO BE REMOVED AFTER ABUTMENT BACKWALL IS PLACED AND FILLED WITH 705.04 HOT APPLIED JOINT SEALER PER ITEM 516 - JOINT SEALER, AS PER PLAN.

⊠ TOP BAR FULL LENGTH; LOWER BARS BETWEEN STRINGER OR STRINGERS AND CURBS USE MECHANICAL CONNECTORS OR A MINIMUM LAP OF 2'-0" AT PHASE CONSTRUCTION JOINTS.

⊕ THE EXACT HEIGHT FROM THE TOP OF DECK TO THE EXISTING DIAPHRAGM IS UNKNOWN, AS IS THE HORIZONTAL DISTANCE THAT NEEDS TO BE NOTCHED OUT OF THE CHANNELS AND ½" VERTICAL ATTACHMENT PLATES. FABRICATING THE PLATES LONGER OR WITHOUT THE NOTCH AND THEN FIELD CUTTING IS ONE OPTION.

FIELD WELDING ½" ADJUSTMENT PLATES TO EACH SIDE OF THE ½" VERTICAL ATTACHMENT PLATE AND SUPPLYING A SIMILAR AMOUNT OF 5/16" FILLET WELD TO PLATES AND DIAPHRAGM IS ANOTHER OPTION.

★ PER 2013 INSPECTION MEASUREMENT. NOTE THAT THE JOINT IS CLOSED AT THIS TIME AND THERE IS LITTLE OR NO VARIATION WITH TEMPERATURE. THIS VALUE MAY BE REDUCED AS THE JOINT IS RELEASED.

⊗ INCLUDED WITH ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: SIDEWALK SLIDING PLATE FOR PAYMENT.

+++ BACKWALL BARS DETAILED ON FORWARD ABUTMENT SHEETS.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

FORWARD ABUTMENT BACKWALL REINFORCING STEEL SEE SHEET 18/189.

SECTIONS C-C & D-D: FOR LOCATIONS SEE SHEET 151/189.

DETAIL H: FOR LOCATION SEE SHEET 151/189.

DETAIL K: FOR LOCATION SEE SHEET 155/189.

ADDITIONAL NOTES: SEE SHEET 150/189.

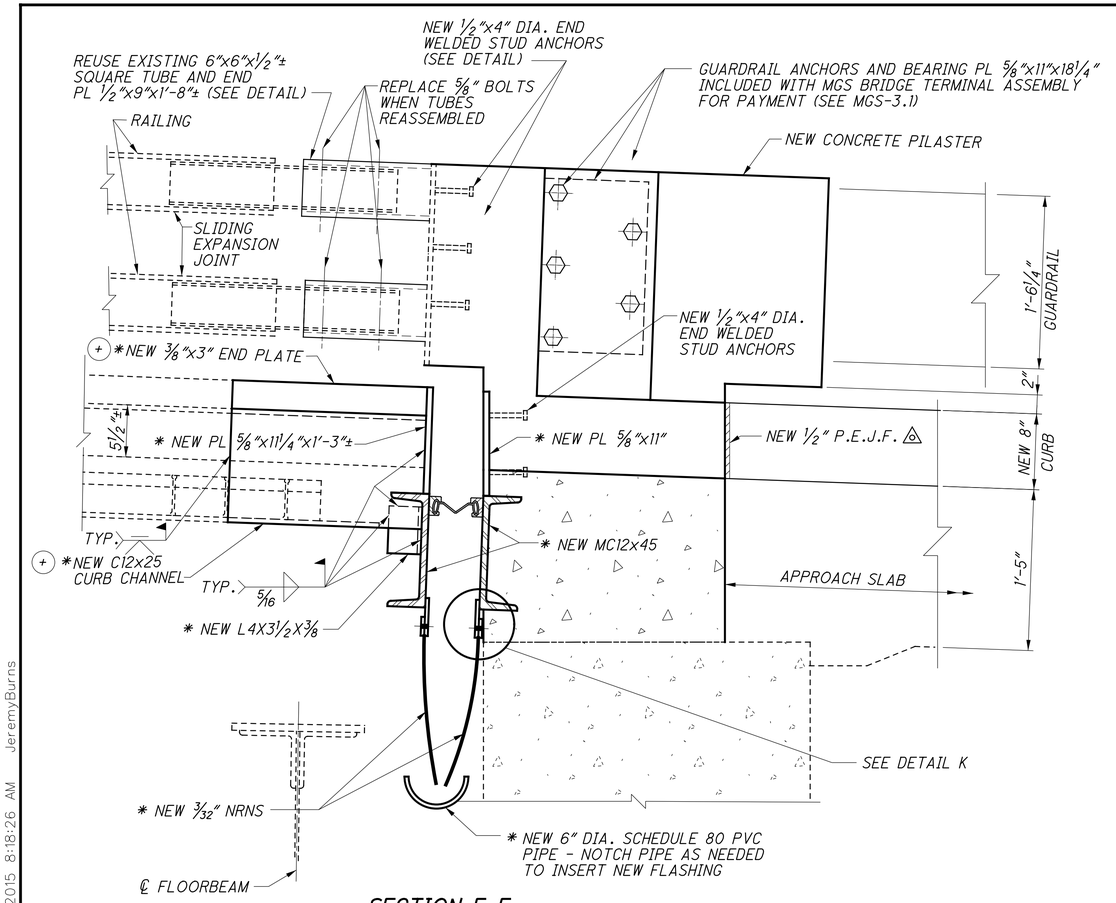
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | CHECKED KAK | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

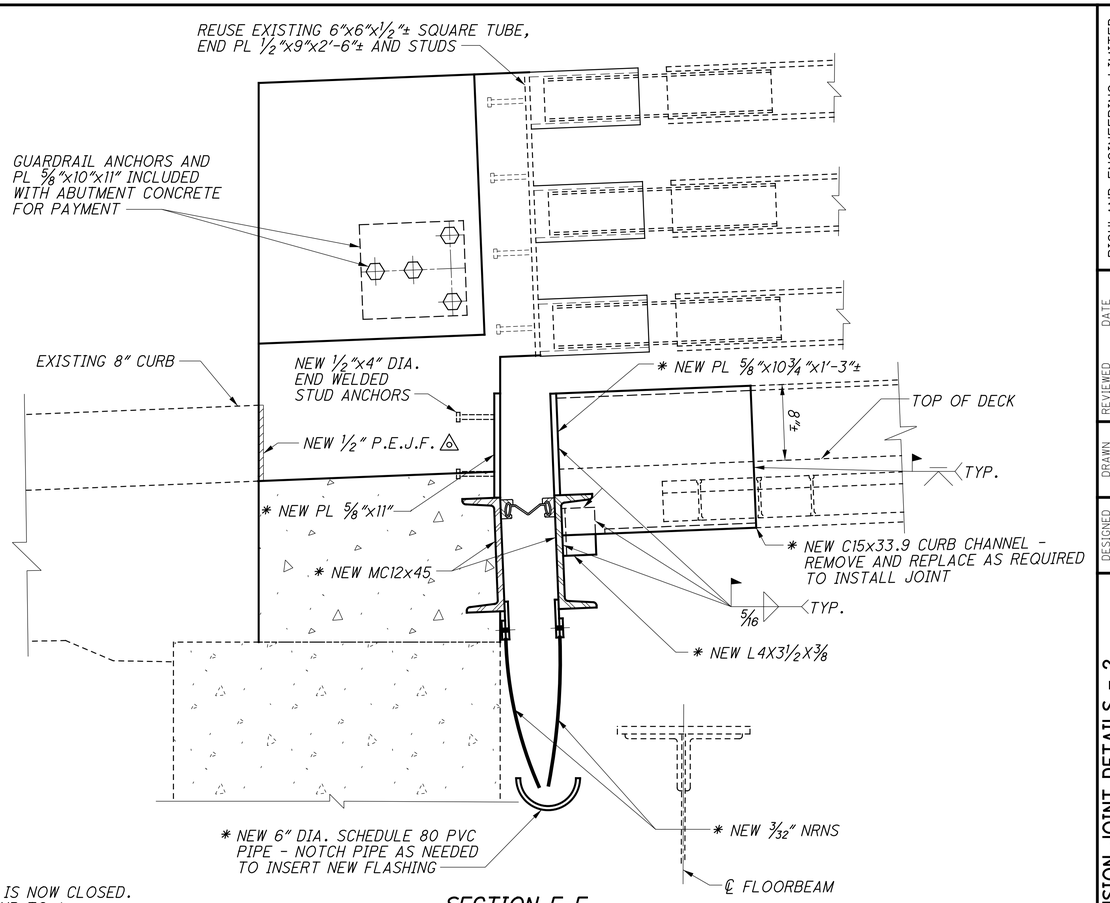
FORWARD ABUTMENT EXPANSION JOINT DETAILS - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

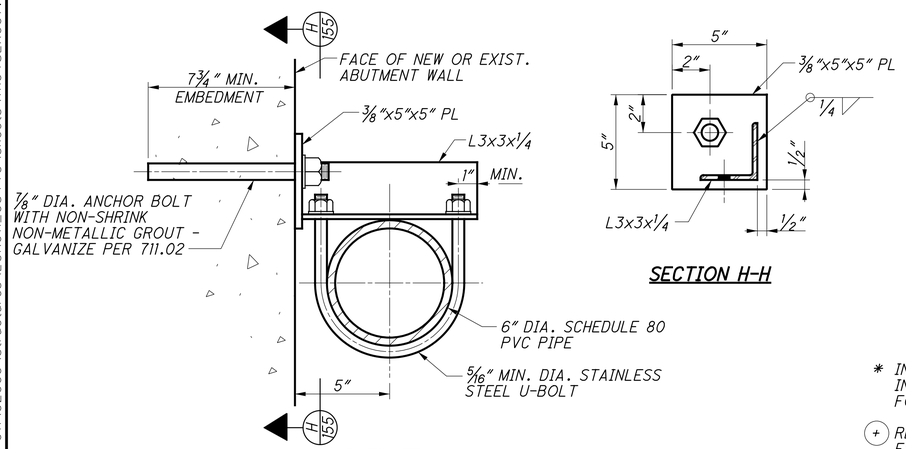
LOR-611-3.44
PID No. 92009



SECTION E-E



SECTION F-F

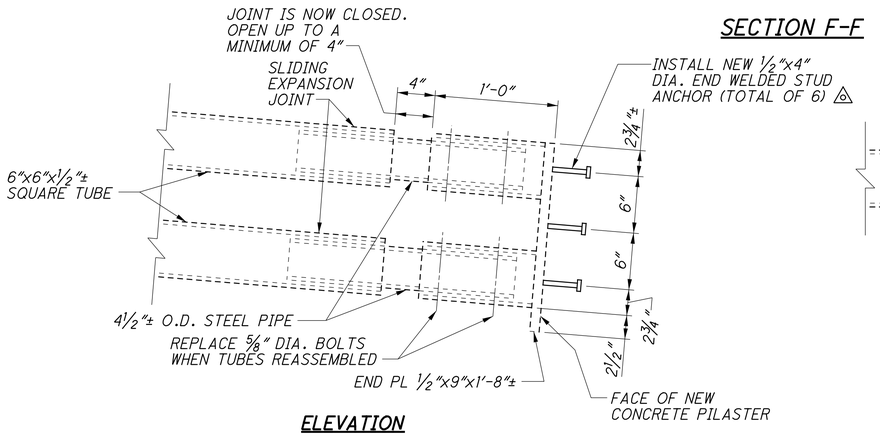


ELEVATION

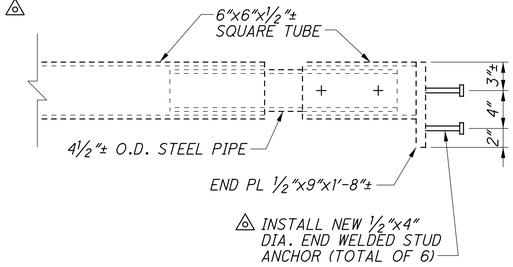
SECTION H-H

PIPE SUPPORT BRACKET DETAILS

GALVANIZE PLATE AND ANGLE PER 711.02 AFTER FABRICATION.



ELEVATION



PLAN

LEGEND

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (7"), AS PER PLAN FOR PAYMENT.

(+) REPLACE DAMAGED LENGTH AND WELD TO UNDAMAGED EXISTING MEMBER AS REQUIRED. REPLACED DAMAGED 3/4" BOLTS ATTACHED TO ROADWAY STEEL GRID AS NEEDED.

△6 INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN FOR PAYMENT.

P.E.J.F. - PREFORMED EXPANSION JOINT FILLER.

RAILING REPAIR AT NORTHWEST CONCRETE PILASTER

(REALIGN END OF RAILING AND ADD WELDED STUD ANCHORS)

NOTES

MATERIALS: SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

ABUTMENT RECONSTRUCTION DETAILS: SEE SHEETS 18/189 THROUGH 20/189.

DETAIL K: SEE SHEET 154/189.

SECTIONS E-E AND F-F: FOR LOCATIONS SEE SHEET 151/189.

ADDITIONAL NOTES: SEE SHEET 150/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

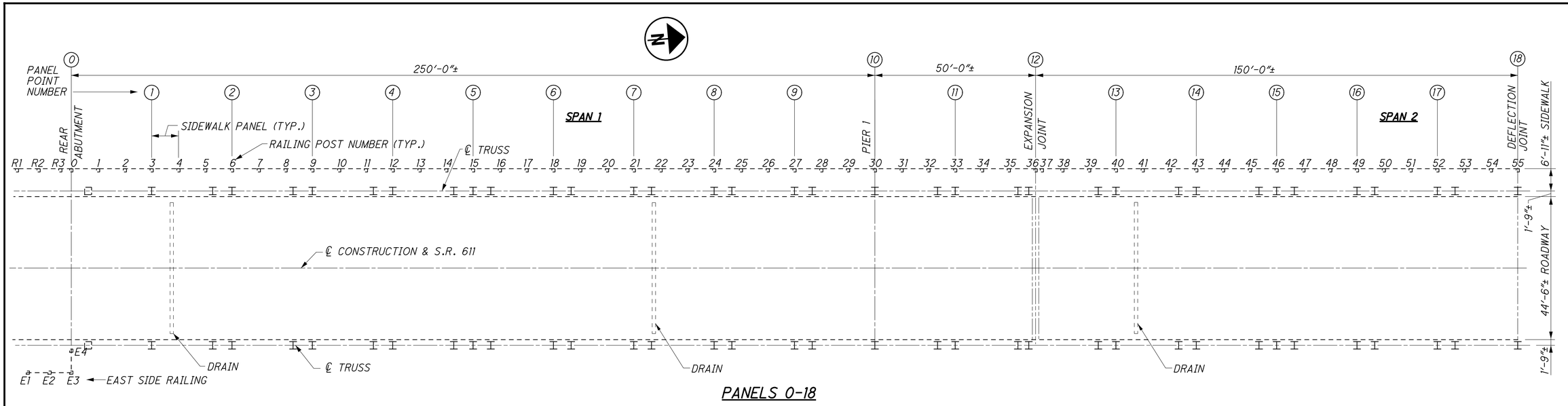
DESIGNED BLN | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 4707443

FORWARD ABUTMENT EXPANSION JOINT DETAILS - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

155/189
200/234



PANELS 0-18

WEST PEDESTRIAN RAILING REPAIR DETAILS

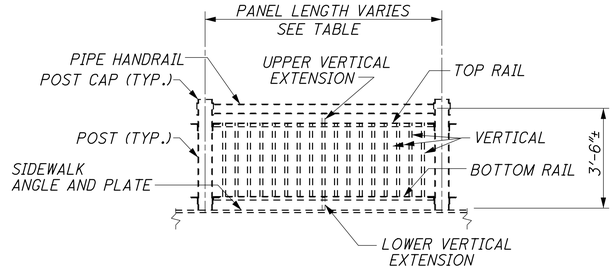
POST NO.	POST ②	PIPE HANDRAIL	TOP RAIL	VERTICAL ① ②	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
R1									6.75
R2									6.75
R3									3.42
0							B		8.33
1				A-9			B		8.33
2									8.33
3							B		8.33
4				A-9			B		8.33
5									8.33
6				A-9			B		8.33
7				A-9			B		8.33
8									8.33
9									8.33
10									8.33
11									8.33
12									8.33
13									8.33
14									8.33
15				A-9			B		8.33
16				A-9			B		8.33
17									8.33
18				A-9			B		8.33
19	C								8.33
20									8.33
21									8.33
22	1			A-9 / 14			B		8.33
23	1			15					8.33
24	1			8					8.33
25				A-9			B		8.33
26									8.33
27									8.33
28									8.33
29									8.33
30									8.33
31									8.33
32				A-9			B		8.33
33									8.33
34									8.33
35									8.33
36							B		8.33
									1.96

WEST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
37				A-9			B		6.38
38									8.33
39									8.33
40									8.33
41				A-9			B		8.33
42							B		8.33
43									8.33
44									8.33
45				A-9			B		8.33
46									8.33
47									8.33
48				A-9			B		8.33
49									8.33
50									8.33
51									8.33
52							B		8.33
53									8.33
54							B		8.33
55									8.33

EAST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.)
E1									6.75
E2									6.75
E3									6.83
E4									



TYPICAL RAILING POST & PANEL

LEGEND

① **ALPHA - NUMERIC DESIGNATION**

(EXAMPLE: "A-9") INDICATES TYPE "A" REPAIR ON THE 9TH VERTICAL FROM THE REAR OF PANEL.

② **SINGLE NUMBER**

SHOWN INDICATES A SPECIFIC QUANTITY OF VERTICALS BETWEEN POSTS, OR INDIVIDUAL POST, WITH SPOT LOCATION TO BE POWER TOOL CLEANED AND BRUSH PAINTED. INDIVIDUAL VERTICALS IN EACH PANEL SHALL BE IDENTIFIED BY THE ENGINEER PRIOR TO COMMENCEMENT OF REPAIR.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

REPAIR DETAILS A, B & C SEE SHEET 160/189.

ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING: SEE GENERAL NOTE SHEET 8/189.

ITEM 514 - FIELD PAINTING, MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP: SEE GENERAL NOTE SHEET 8/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
dht	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
ALP		4707443	

PEDESTRIAN RAILING - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

156/189

201/234

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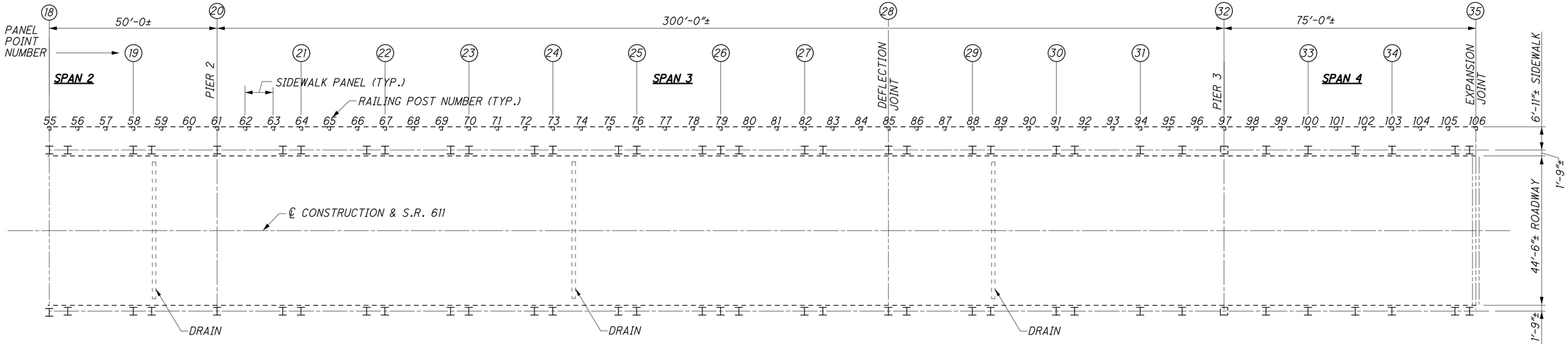
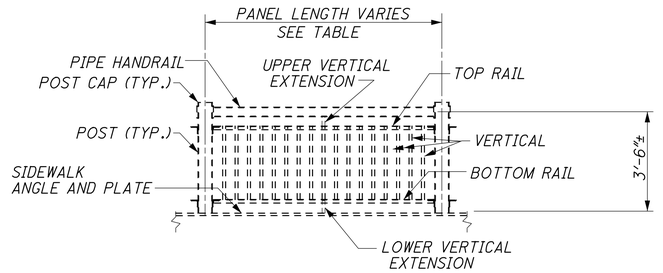


PANELS NO. 18-35

WEST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
56				A-9			B		8.33
57									8.33
58							B		8.33
59							B		8.33
60									8.33
61									8.33
62									8.33
63									8.33
64									8.33
65							B		8.33
66									8.33
67				A-9					8.33
68									8.33
69									8.33
70									8.33
71				A-9			B		8.33
72									8.33
73									8.33
74									8.33
75									8.33
76									8.33
77									8.33
78									8.33
79							B		8.33
80				A-9					8.33
81									8.33
82									8.33
83									8.33
84									8.33
85									8.33
86									8.33
87									8.33
88									8.33
89									8.33
90									8.33
91									8.33
92									8.33
93									8.33
94							B		8.33
95									8.33
96									8.33
97									8.33
98									8.33
99									8.33
100									8.33
101									8.33
102									8.33
103									8.33
104									8.33
105									8.33
106									8.33
				A-2					1.96



TYPICAL RAILING POST & PANEL

LEGEND

① **ALPHA - NUMERIC DESIGNATION**

(EXAMPLE: "A-9") INDICATES TYPE "A" REPAIR ON THE 9TH VERTICAL FROM THE REAR OF PANEL.

② **SINGLE NUMBER**

SHOWN INDICATES A SPECIFIC QUANTITY OF VERTICALS BETWEEN POSTS, OR INDIVIDUAL POST, WITH SPOT LOCATION TO BE POWER TOOL CLEANED AND BRUSH PAINTED. INDIVIDUAL VERTICALS IN EACH PANEL SHALL BE IDENTIFIED BY THE ENGINEER PRIOR TO COMMENCEMENT OF REPAIR.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

REPAIR DETAILS A & B SEE SHEET 160/189.

ADDITIONAL NOTES: SEE SHEET 156/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED dht | DRAWN JLS | CHECKED ALP | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

PEDESTRIAN RAILING - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

157/189

202/234

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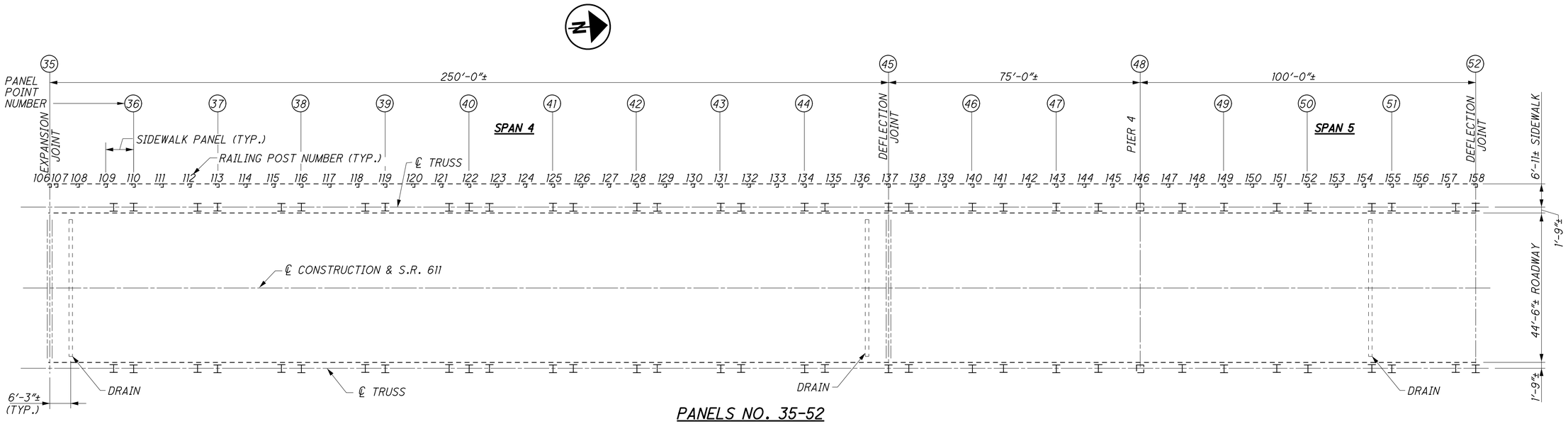


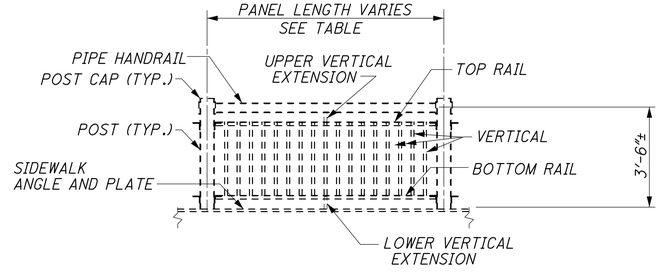
PANELS NO. 35-52

WEST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
107									6.38
108									8.33
109									8.33
110									8.33
111									8.33
112							B		8.33
113							B		8.33
114							B		8.33
115				A-9			B		8.33
116									8.33
117									8.33
118									8.33
119				A-9			B		8.33
120									8.33
121									8.33
122									8.33
123				A-9			B		8.50
124									8.33
125									8.33
126				A-9 / 1					8.33
127									8.33
128									8.33
129									8.33
130									8.33
131									8.33
132									8.33
133									8.33
134									8.33
135				A-9					8.33
136									8.33
137									8.33
138									8.33
139				A-2 / 15					8.33
140				A-1					8.33
141				A-1					8.33
142									8.33
143							B		8.33
144									8.33
145				A-9					8.33
146									8.33

WEST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
147									8.33
148									8.33
149				A-9					8.33
150									8.33
151									8.33
152									8.33
153									8.33
154				A-9					8.33
155									8.33
156									8.33
157							B		8.33
158									8.33



TYPICAL RAILING POST & PANEL

LEGEND

① **ALPHA - NUMERIC DESIGNATION**

(EXAMPLE: "A-9") INDICATES TYPE "A" REPAIR ON THE 9TH VERTICAL FROM THE REAR OF PANEL.

② **SINGLE NUMBER**

SHOWN INDICATES A SPECIFIC QUANTITY OF VERTICALS BETWEEN POSTS, OR INDIVIDUAL POST, WITH SPOT LOCATION TO BE POWER TOOL CLEANED AND BRUSH PAINTED. INDIVIDUAL VERTICALS IN EACH PANEL SHALL BE IDENTIFIED BY THE ENGINEER PRIOR TO COMMENCEMENT OF REPAIR.

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

REPAIR DETAILS A & B SEE SHEET 160/189.

ADDITIONAL NOTES: SEE SHEET 156/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

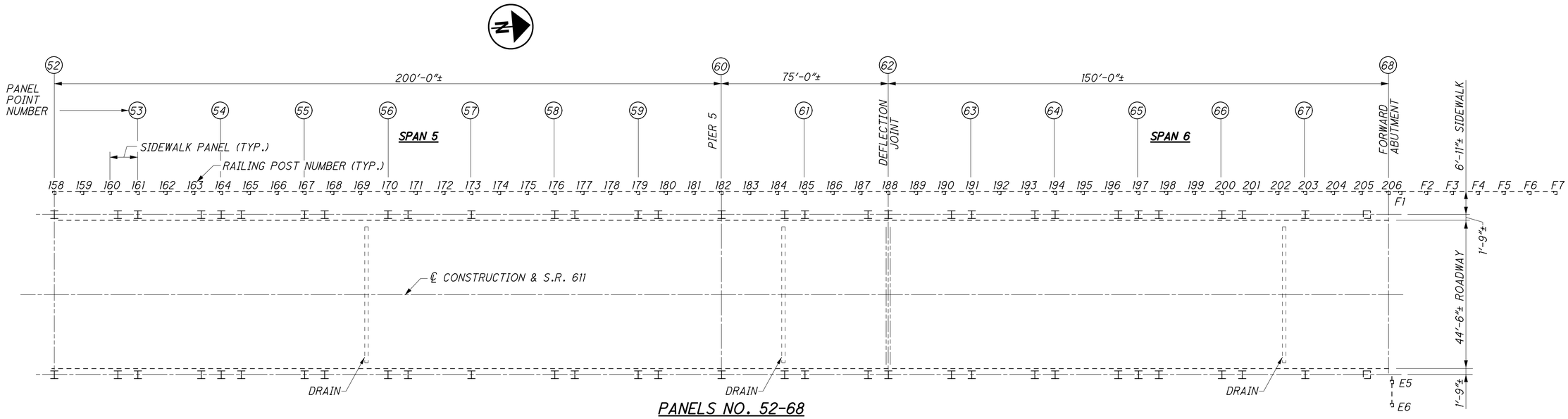
DESIGNED dht | DRAWN JLS | CHECKED ALP | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

PEDESTRIAN RAILING - 3
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

158/189

203/234



PANELS NO. 52-68

WEST PEDESTRIAN RAILING REPAIR DETAILS

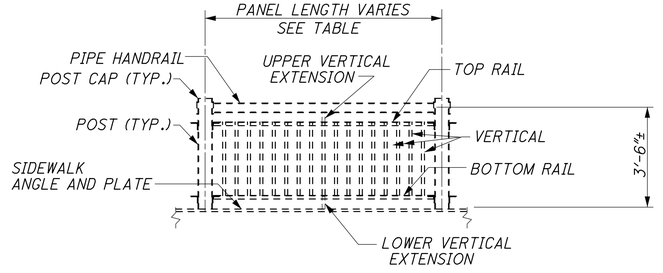
POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
159							B		8.33
160									8.33
161									8.33
162							B		8.33
163									8.33
164									8.33
165									8.33
166							B		8.33
167							B		8.33
168									8.33
169							B		8.33
170									8.33
171									8.33
172							B		8.33
173									8.33
174							B		8.33
175									8.33
176							B		8.33
177									8.33
178									8.33
179									8.33
180									8.33
181									8.33
182									8.33
183							B		8.33
184									8.33
185									8.33
186							B		8.33
187							B		8.33
188									8.33
189									8.33
190							B		8.33
191				A-9			B		8.33
192				A-9					8.33
193							B		8.33
194							B		8.33
195				A-9					8.33
196									8.33
197									8.33
198				A-9			B		8.33

WEST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST ③	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.±)
199									8.33
200									8.33
201									8.33
202							B		8.33
203	D/1						B		8.33
204									8.33
205									8.33
206							B		8.33
F1									3.50
F2									7.75
F3									7.75
F4									7.75
F5									7.75
F6									7.75
F7									7.75

EAST PEDESTRIAN RAILING REPAIR DETAILS

POST NO.	POST	PIPE HANDRAIL	TOP RAIL	VERTICAL ①	BOTTOM RAIL	UPPER VERTICAL EXTENSION	LOWER VERTICAL EXTENSION	SIDEWALK PLATE	PANEL LENGTH (FT.)
E5									6.92
E6									



TYPICAL RAILING POST & PANEL

LEGEND

① ***ALPHA - NUMERIC DESIGNATION***

(EXAMPLE: "A-9") INDICATES TYPE "A" REPAIR ON THE 9TH VERTICAL FROM THE REAR OF PANEL.

② ***SINGLE NUMBER***

SHOWN INDICATES A SPECIFIC QUANTITY OF VERTICALS BETWEEN POSTS, OR INDIVIDUAL POST, WITH SPOT LOCATION TO BE POWER TOOL CLEANED AND BRUSH PAINTED. INDIVIDUAL VERTICALS IN EACH PANEL SHALL BE IDENTIFIED BY THE ENGINEER PRIOR TO COMMENCEMENT OF REPAIR.

③ ***ALPHA - NUMERIC DESIGNATION***

(EXAMPLE: "D-1") INDICATES TYPE "D" REPAIR ON POST.

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

REPAIR DETAILS A, B & D *SEE SHEET* 160/189 .

ADDITIONAL NOTES: *SEE SHEET* 156/189 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PEDESTRIAN RAILING - 4
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

159/189

204/234

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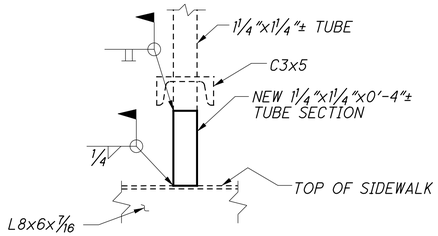
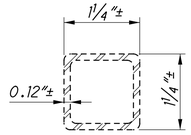
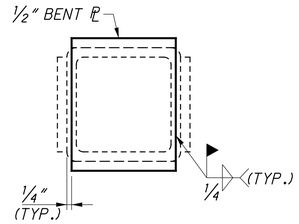


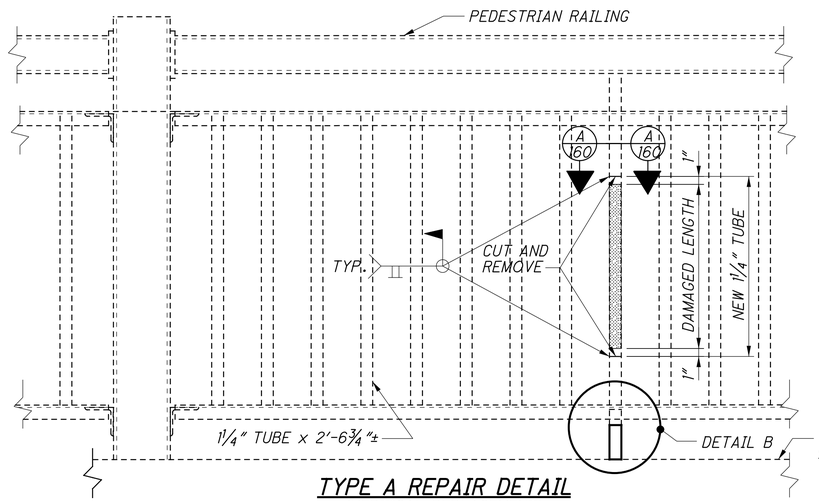
DETAIL B



SECTION A-A

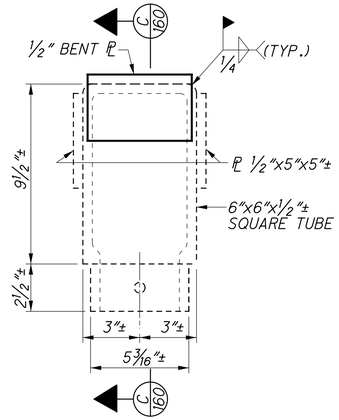


PLAN

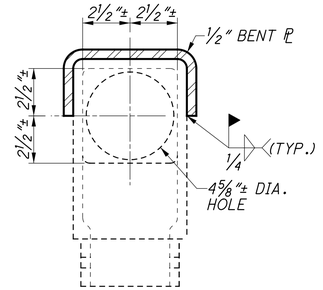


TYPE A REPAIR DETAIL
(VERTICAL REPLACEMENT)

TYPE B REPAIR DETAIL
(LOWER VERTICAL EXTENSION REPLACEMENT)

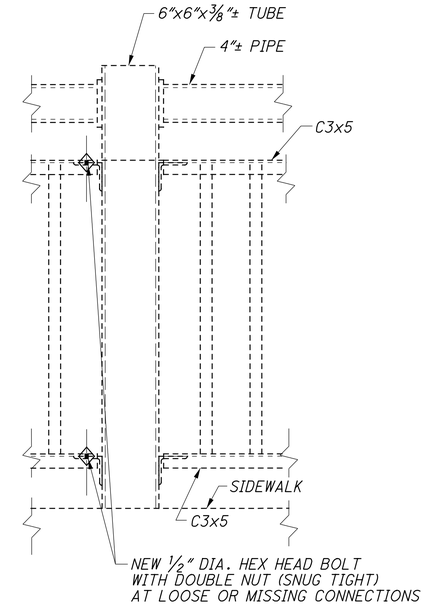


ELEVATION

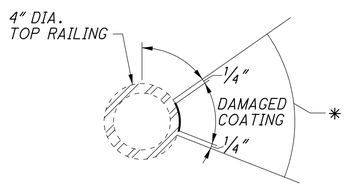


SECTION C-C

TYPE C REPAIR - POST CAP DETAIL
(PANEL POINT 19)



TYPE D REPAIR
(POST 203)



POWER TOOL CLEANING AND BRUSH-APPLIED PAINTING LIMITS
(LIMITS ALSO APPLY TO VERTICALS DELINEATED ON PLANS)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11 / 189 .

PAINTING LEGEND: SEE SHEET 162/189 .

ITEM 513 - STRUCTURE, MISC.: PEDESTRIAN RALING REPAIRS TYPE A, B, C, AND D: SEE GENERAL NOTE SHEET 7 / 189 .

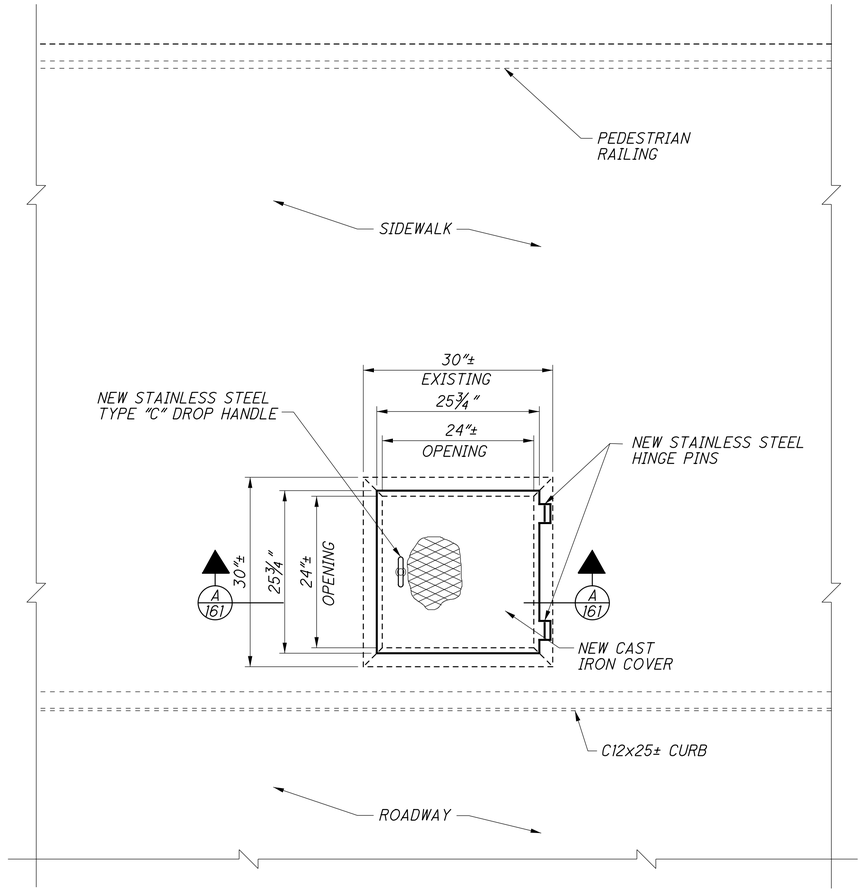
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED dht
DRAWN JLS
CHECKED ALP
REVIEWED DLR
DATE 9/25/15
REVISED
STRUCTURE FILE NUMBER 4707443

PEDESTRIAN RAILING - 5
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

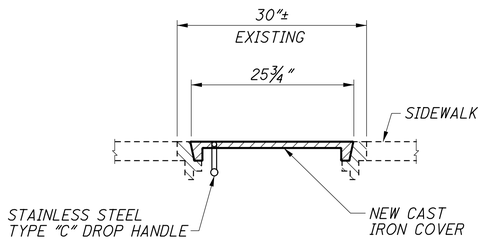
LOR-611-3.44
PID No. 92009

160/189
205/234



PLAN

ACCESS HATCH DETAILS



SECTION A-A

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

FOR HATCH LOCATIONS: SEE DECK PLAN SHEETS 137/189 AND 138/189.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN: SEE GENERAL NOTE SHEET 3/189.

ITEM 513 - STRUCTURAL STEEL, MISC: ACCESS HATCH COVER SEE GENERAL NOTE SHEET 7/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

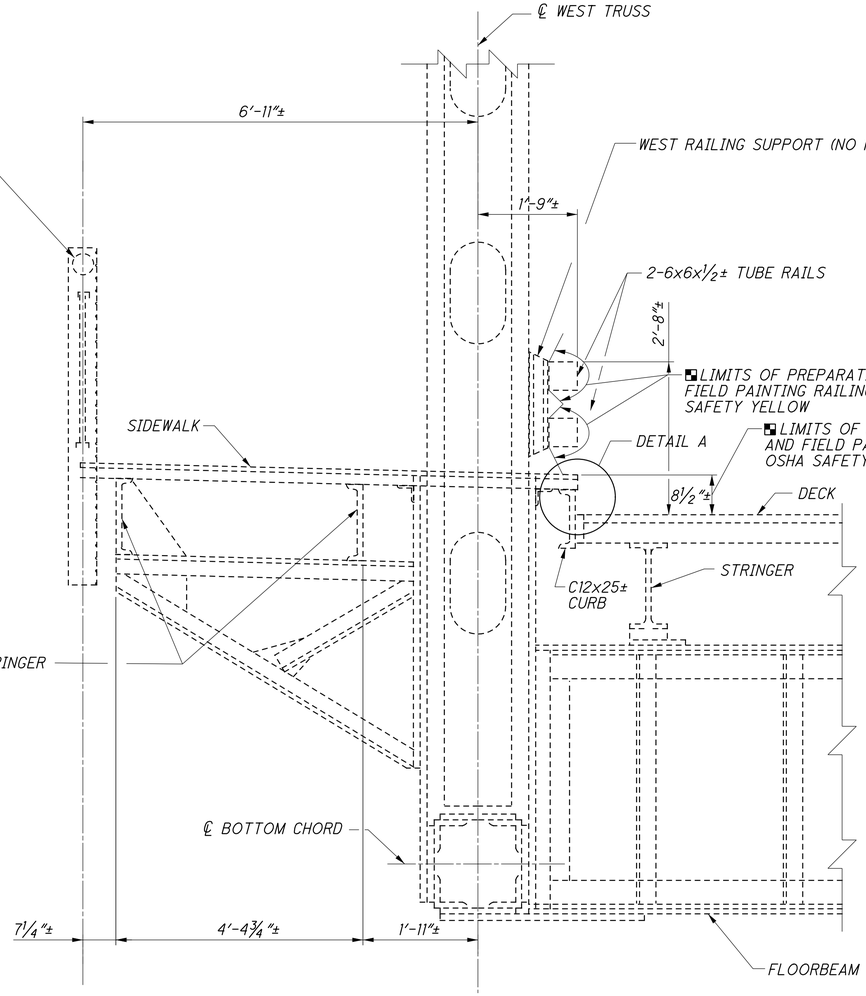
DESIGNED BLN | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 4707443

ACCESS HATCH DETAILS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

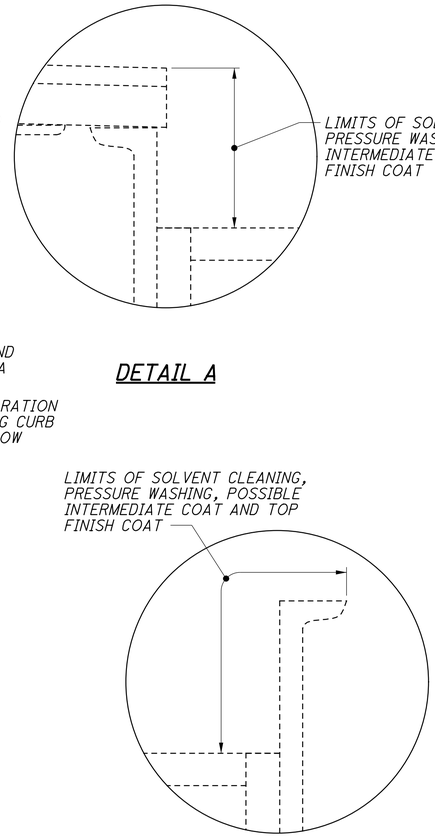
LOR-611-3.44
PID No. 92009

161/189

206/234

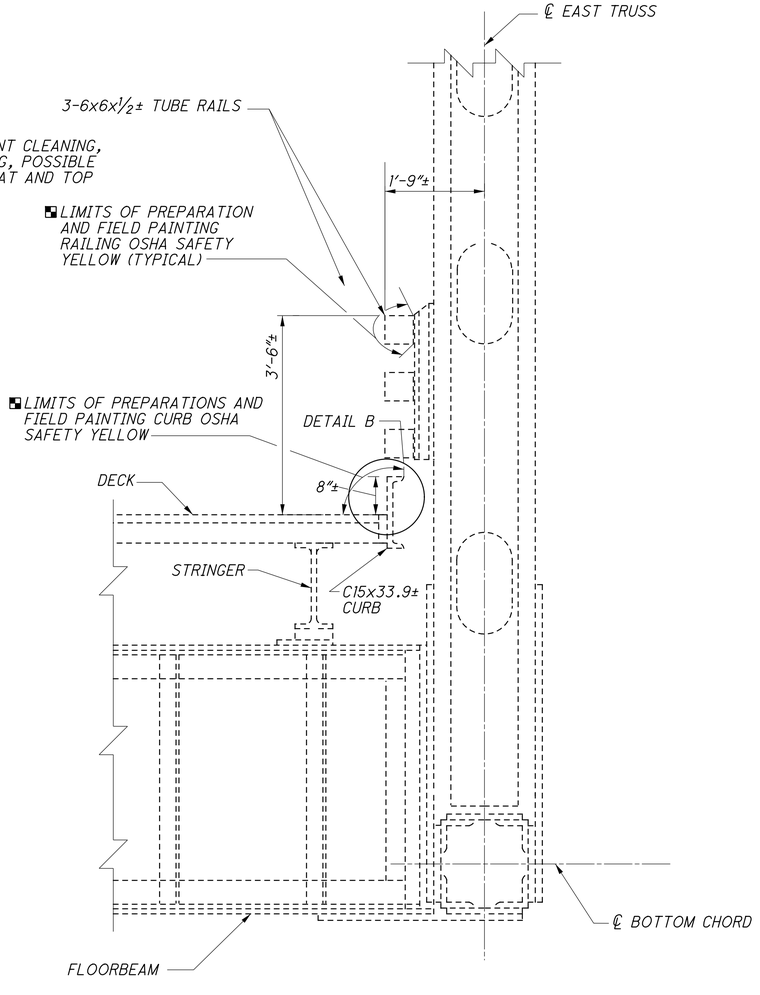


WEST RAILING



DETAIL A

DETAIL B



EAST RAILING

CURB AND RAILING PAINTING DETAILS

CLEANING AND PAINTING NOTATION, PAYMENT AND LEGEND

+ AND

INDICATES ITEMS FOR COMPLETE OR SPOT BLAST CLEANING & PAINTING. INCLUDE FOR PAYMENT WITH:
ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL - SF
ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

≠ AND

INDICATES PREPARATION AND PAINTING ITEMS FOR CAULKING. INCLUDE FOR PAYMENT WITH:
FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STEEL FOR CAULKING - FT
FIELD PAINTING, MISC.: EXISTING STEEL PRIME COAT FOR CAULKING - FT
FIELD PAINTING, MISC.: EXISTING STEEL INTERMEDIATE COAT FOR CAULKING - FT
FIELD PAINTING, MISC.: EXISTING STEEL FINISH COAT FOR CAULKING - FT

*** OR**

INDICATES ITEMS FOR POWER TOOL CLEANING AND PAINTING. INCLUDE FOR PAYMENT WITH:
ITEM 514 - FIELD PAINTING, MISC.: POWER TOOL CLEANING OF PEDESTRIAN RAILING - LUMP
ITEM 514 - FIELD PAINTING MISC.: BRUSH-APPLIED PEDESTRIAN RAILING TWO COAT TOUCH UP - LUMP

⊠ OR

DENOTES INACCESSIBLE INTERIOR PORTIONS OF TRUSS CHORDS THAT ARE TO BE BRUSH-OFF BLAST CLEANED AND PAINTED WITH ALUMINUM-FILLED EPOXY MASTIC PRIME COAT. THEN INTERMEDIATE AND FINISH COAT ARE APPLIED PER SYSTEM OZEU. INCLUDE FOR PAYMENT WITH:
ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL WITHIN BOX-SHAPED TRUSS MEMBERS - SF
ITEM 514 - FIELD PAINTING, MISC.: FIELD PAINTING OF EXISTING STRUCTURAL STEEL WITHIN BOXED-SHAPED TRUSS MEMBERS, PRIME COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

U.N.O. - UNLESS NOTED OTHERWISE

■

INDICATES ITEMS FOR PREPARATION AND PAINTING ITEMS FOR GALVANIZED ROADWAY RAILING AND CURBS, INCLUDED FOR PAYMENT WITH:
ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATIONS OF EXISTING STEEL, SOLVENT CLEANING, SYSTEM OZEU - SF
ITEM 514 - FIELD PAINTING, MISC.: HIGH PRESSURE WATER CLEANING OF GALVANIZED STEEL - SF
ITEM 514 - FIELD PAINTING, MISC.: SURFACE PREPARATIONS OF EXISTING GALVANIZED CURBS - SF (CURBS ONLY)
ITEM 514 - FIELD PAINTING, MISC.: EPOXY INTERMEDIATE COAT ON GALVANIZED ROADWAY RAILING AND CURBS
ITEM 514 - FIELD PAINTING, MISC.: TOP FINISH COAT ON GALVANIZED ROADWAY RAILING AND CURBS - SF

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

FIELD PAINTING GENERAL NOTES: SEE SHEETS 7/189 TO 9/189.

PEDESTRIAN RAILING REPAIRS: SEE SHEETS 156/189 TO 160/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SJK | REVIEWED DLR | DATE 9/25/15
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STRUCTURE PAINTING LEGEND AND DECK EDGE PAINTING

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

162/189

207/234

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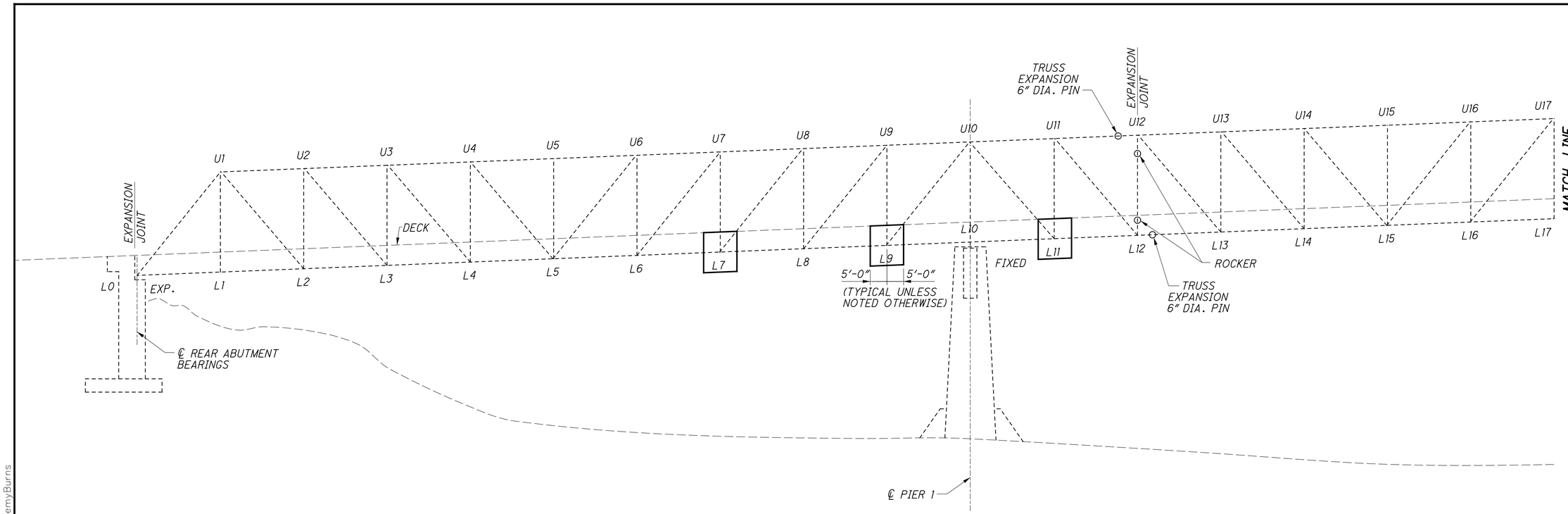

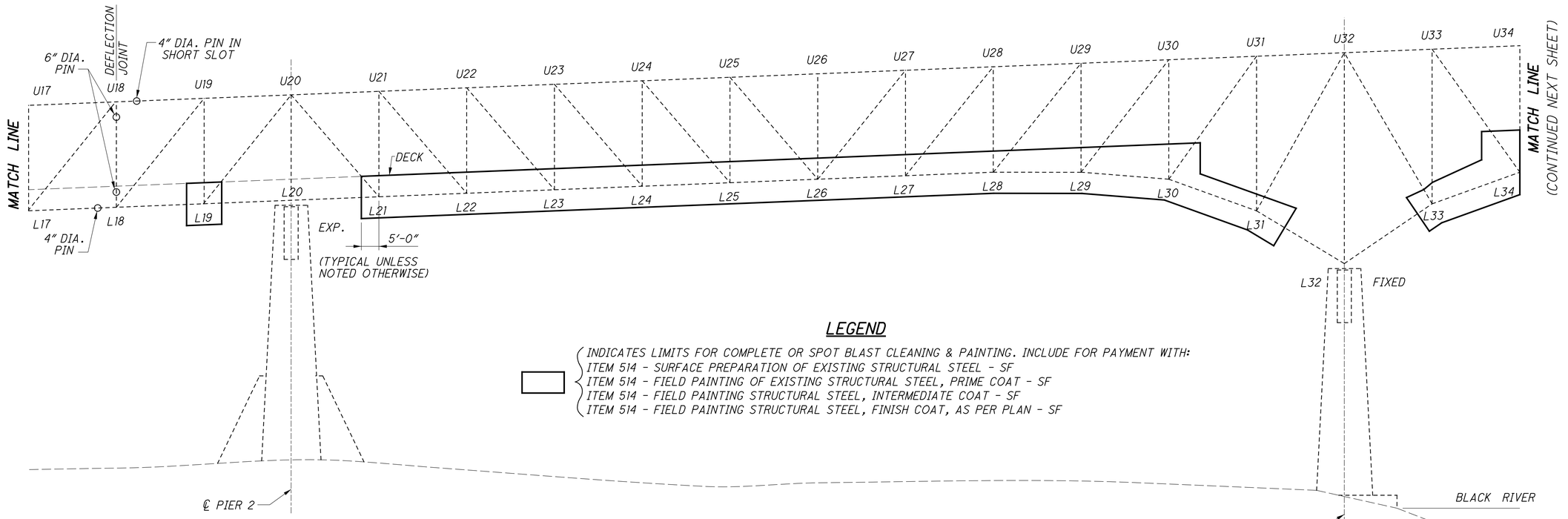

LEGEND

▭ INDICATES LIMITS FOR COMPLETE OR SPOT BLAST CLEANING & PAINTING. INCLUDE FOR PAYMENT WITH:
- ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL - SF
- ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

NOTE

TYPICAL WEST TRUSS PAINTING DETAILS: SEE SHEET 165/189.

WEST TRUSS LOWER CHORD AND FLOORBEAM CONNECTION PAINTING ELEVATION - 1

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

LOR-611-3.44
PID No. 92009

163/189

208/234

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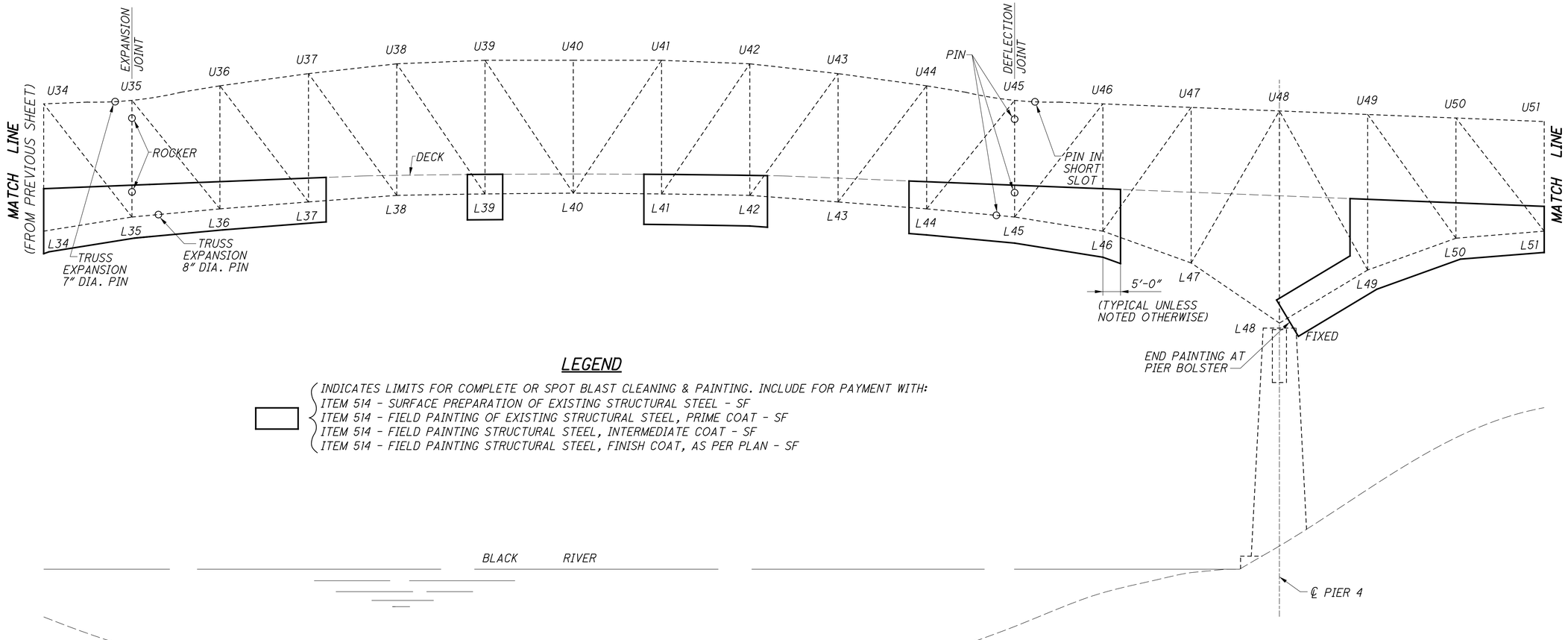

LEGEND

INDICATES LIMITS FOR COMPLETE OR SPOT BLAST CLEANING & PAINTING. INCLUDE FOR PAYMENT WITH:
- ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL - SF
- ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

NOTE

TYPICAL WEST TRUSS PAINTING DETAILS: SEE SHEET 165/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	JLS	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		4707443	

WEST TRUSS LOWER CHORD AND FLOORBEAM CONNECTION PAINTING ELEVATION - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

164/189

209/234

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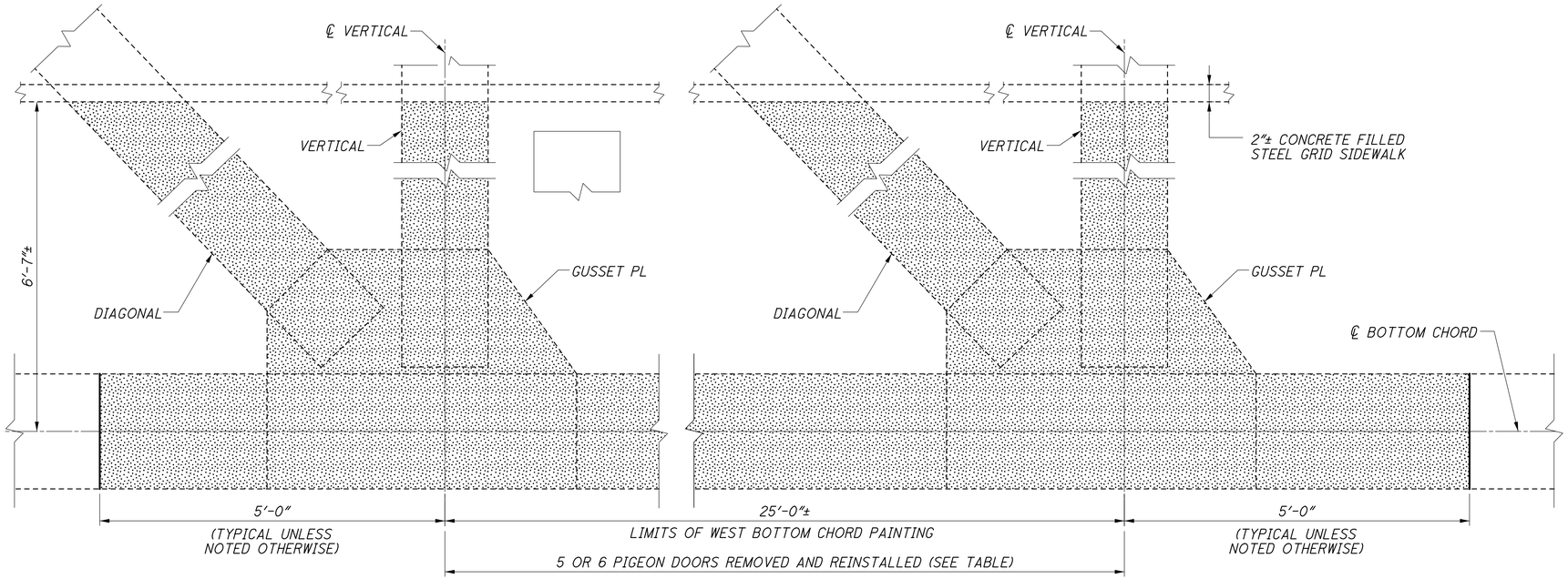
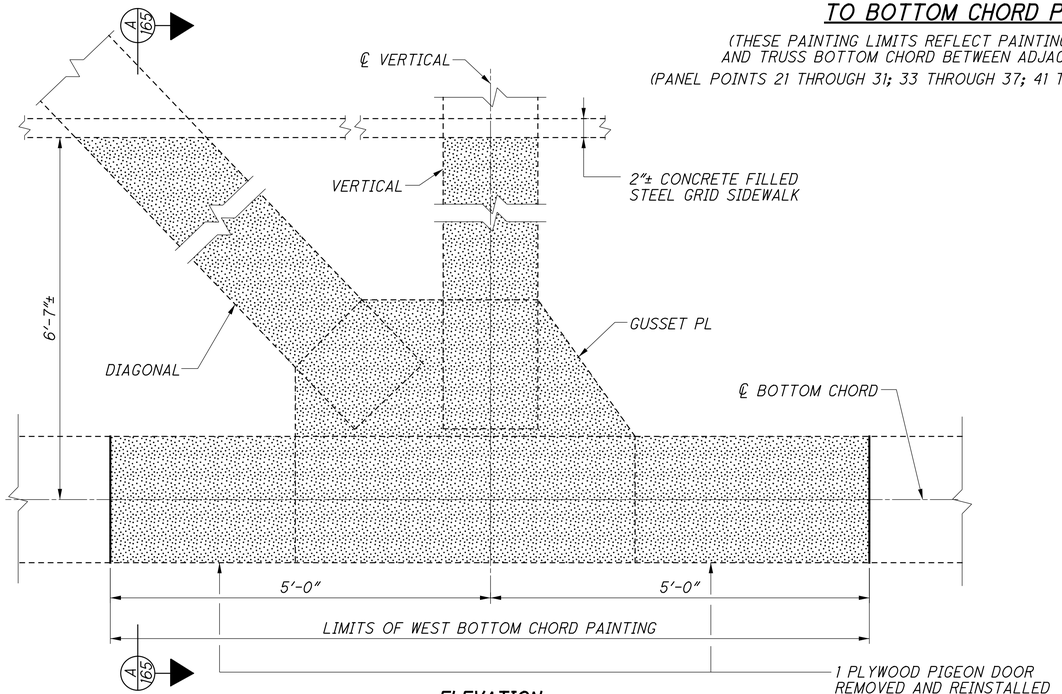


ELEVATION

WEST TRUSS FLOORBEAM CONNECTION TO BOTTOM CHORD PAINTING LIMITS

(THESE PAINTING LIMITS REFLECT PAINTING TRUSS/FLOORBEAM CONNECTIONS AND TRUSS BOTTOM CHORD BETWEEN ADJACENT CONNECTIONS TO BE PAINTED.)

(PANEL POINTS 21 THROUGH 31; 33 THROUGH 37; 41 THROUGH 42; 44 THROUGH 46; 49 THROUGH 51)



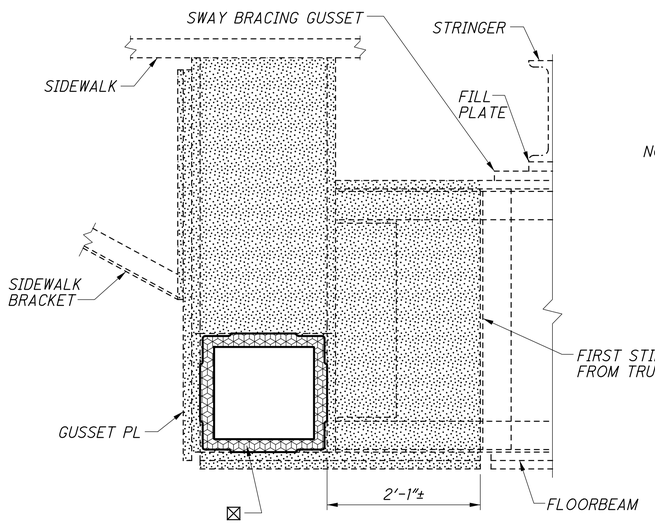
ELEVATION

WEST TRUSS FLOORBEAM CONNECTION TO BOTTOM CHORD PAINTING LIMITS

(THESE PAINTING LIMITS REFLECT DISCREET TRUSS/FLOORBEAM CONNECTIONS TO BE PAINTED.)

(PANEL POINTS 7, 9, 11, 19, 39, 54, 56, 57, 59, 61, 65)

ELEVATION



VIEW A-A

NOTE: THIS DETAIL INDICATES TYPICAL COMPLETE SURFACE PREPARATION AND PAINTING LIMITS OF WEST FLOORBEAM CONNECTION TO TRUSS. ACTUAL ARRANGEMENT, SIZE AND NUMBER OF TRUSS MEMBERS CONNECTED AT EACH PANEL POINT WILL VARY.

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

PIER 3 BOLSTER AT PANEL POINT L32 DOES NOT NEED PAINTED.

PIGEON DOOR REMOVAL AND REINSTALLTION SCHEDULE: SEE SHEET 136/189.

WEST TRUSS ELEVATION: SEE SHEETS 163/189 AND 164/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DLR | DATE 9/25/15
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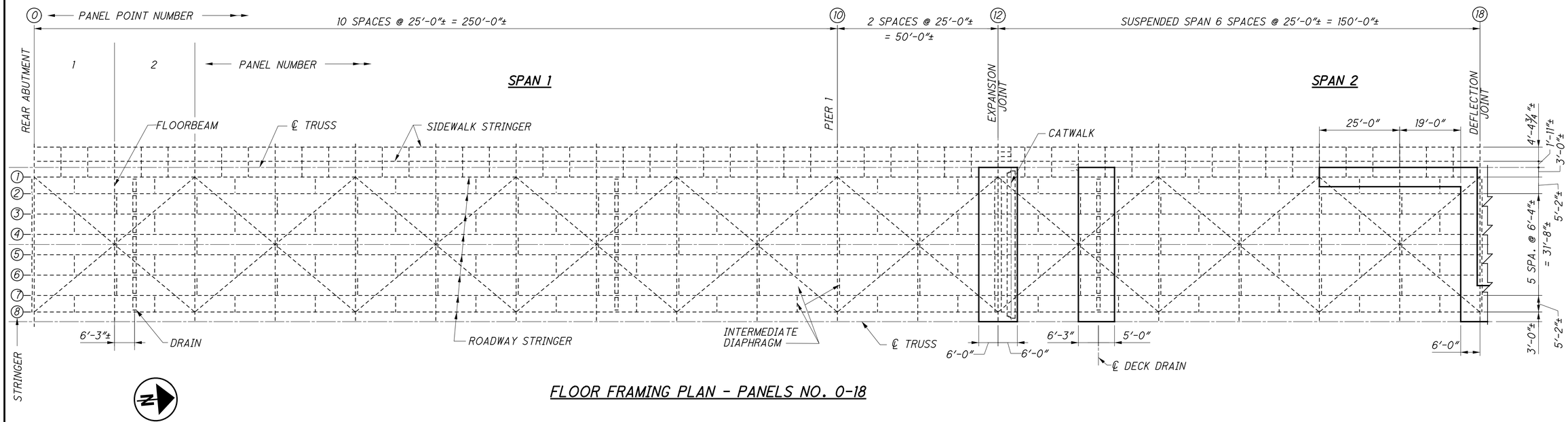
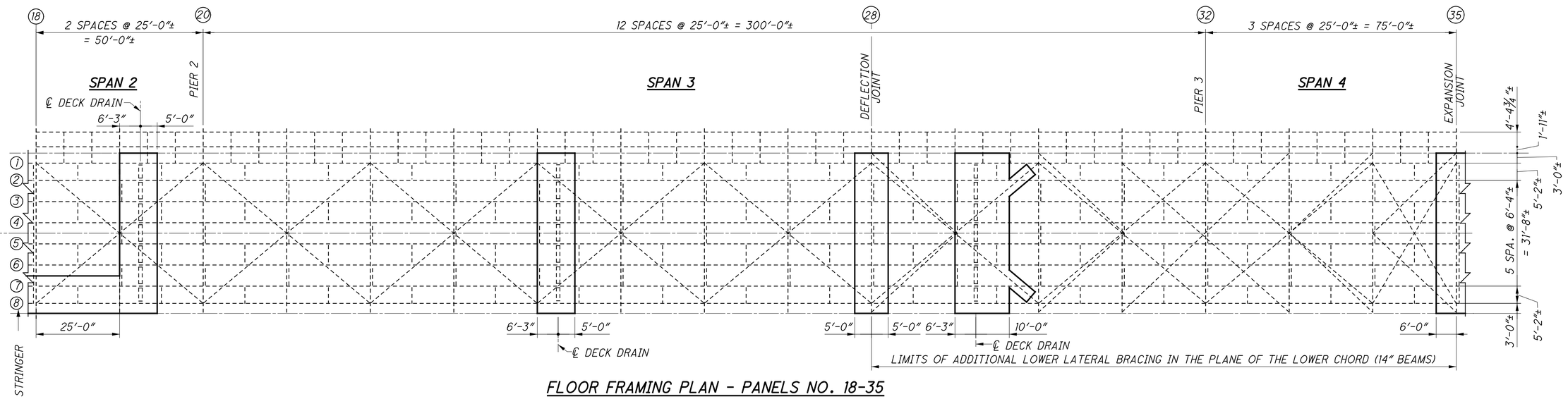
TYPICAL WEST TRUSS LOWER CHORD
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



FLOOR FRAMING PLAN - PANELS NO. 0-18



FLOOR FRAMING PLAN - PANELS NO. 18-35

LEGEND

▭ INDICATES LIMITS FOR COMPLETE OR SPOT BLAST CLEANING & PAINTING. INCLUDE FOR PAYMENT WITH:
- ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL - SF
- ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
- ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

NOTES

DRAWING REPRESENTS BLASTING AND PAINTING LIMITS ON STEEL MEMBERS BELOW THE DECK ONLY. TRUSS PAINTING DETAILS ARE SHOWN ELSEWHERE.

TYPICAL DEFLECTION JOINT PAINTING DETAILS: SEE SHEET 168/189.

TYPICAL DECK DRAIN PAINTING DETAILS: SEE SHEET 169/189.

EXPANSION JOINT AT L12 PAINTING DETAILS: SEE SHEET 170/189.

EXPANSION JOINT AT L35 PAINTING DETAILS: SEE SHEET 171/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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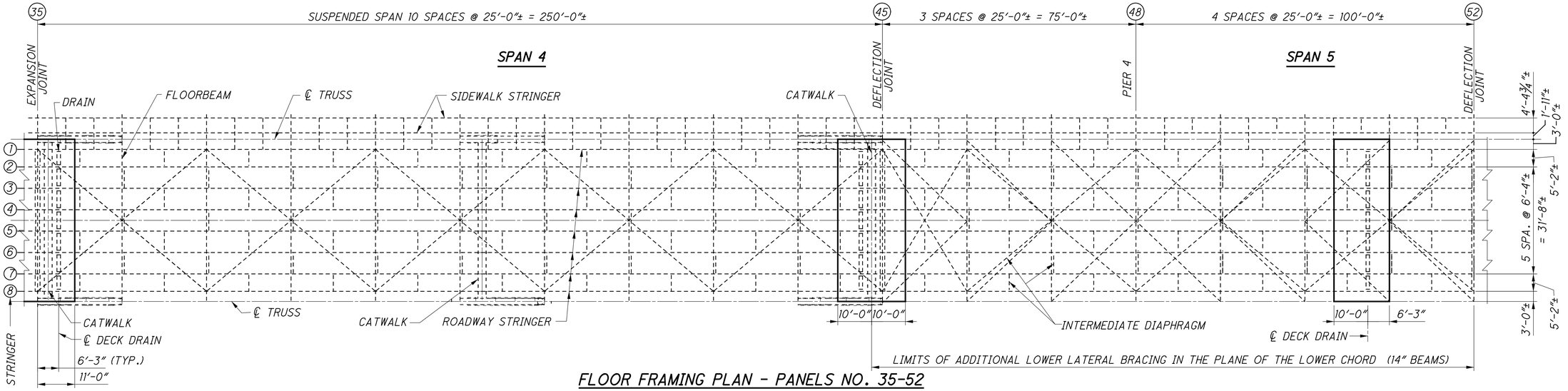
BLN		4707443	

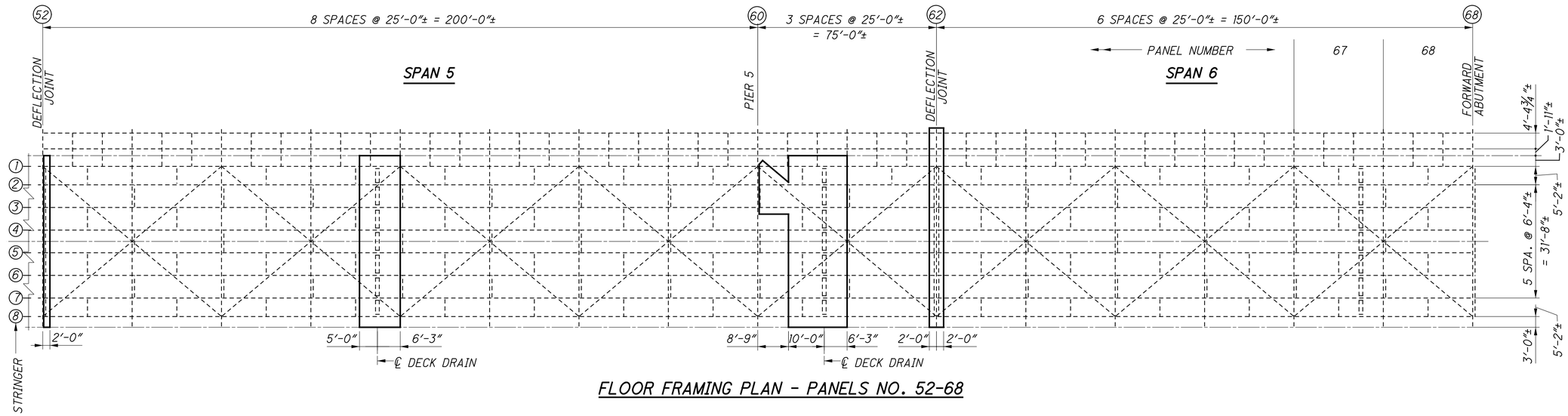
UNDER-DECK STEELWORK PAINTING PLAN - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

166/189
211/234



FLOOR FRAMING PLAN - PANELS NO. 35-52



FLOOR FRAMING PLAN - PANELS NO. 52-68

LEGEND

INDICATES LIMITS FOR COMPLETE OR SPOT BLAST CLEANING & PAINTING. INCLUDE FOR PAYMENT WITH:
ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL - SF
ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT - SF
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN - SF

NOTES

DRAWING REPRESENTS BLASTING AND PAINTING LIMITS ON STEEL MEMBERS BELOW THE DECK ONLY. TRUSS PAINTING DETAILS ARE SHOWN ELSEWHERE.

TYPICAL DEFLECTION JOINT PAINTING DETAILS: SEE SHEET 169/189.

TYPICAL DECK DRAIN PAINTING DETAILS: SEE SHEET 169/189.

EXPANSION JOINT AT L35 PAINTING DETAILS: SEE SHEET 171/189.

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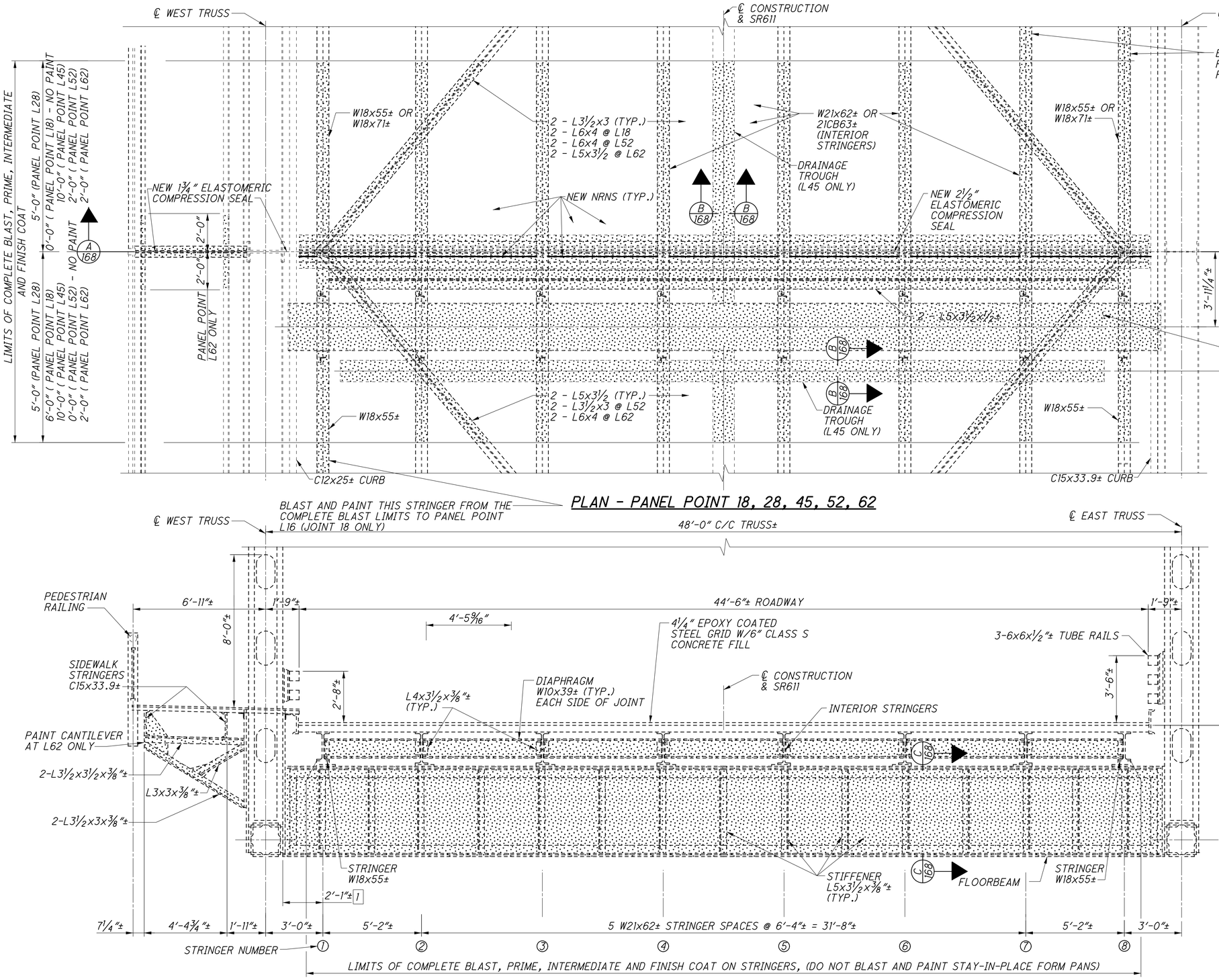
UNDER-DECK STEELWORK PAINTING PLAN - 2

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009



SECTION A-A

1 - TRUSS GUSSET AND FLOORBEAM END PAINTED AS PART OF WEST TRUSS CONNECTION WORK AT PANEL POINT L28W AND L45W.

NOTES

UNDER DECK STEELWORK PAINTING PLAN: SEE SHEET 166/189 AND 167/189.

PANEL POINT 45 CATWALK DETAILS: SEE SHEETS 45/189 TO 47/189.

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

LOWER LATERAL BRACING: THE 14" BEAM LOWER LATERAL BRACING IN THE PLANE OF THE LOWER CHORD BETWEEN L28 AND L29; L45 AND L46; AND L50 AND L51 SHALL BE PAINTED WITHIN THE LIMITS DEFINED ON THIS SHEET. PAYMENT IS INCLUDED IN THIS REPAIR.

DRAINAGE PANEL POINT: THE CATWALK, DRAINAGE TROUGH, AND DRAINAGE SUPPORTS WITHIN THE LIMITS SHOWN SHALL BE PAINTED AS PART OF THE L45 JOINT PAINTING.

PAINTING LEGEND: SEE SHEET 162/189.

NYLON REINFORCED NEOPRENE SHEETING (NRNS) DETAILS: SEE SHEET 184/189.

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STRUCTURE PAINTING DETAILS - BELOW DEFLECTION JOINTS

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LOR-611-3.44
PID No. 92009

168/189

213/234

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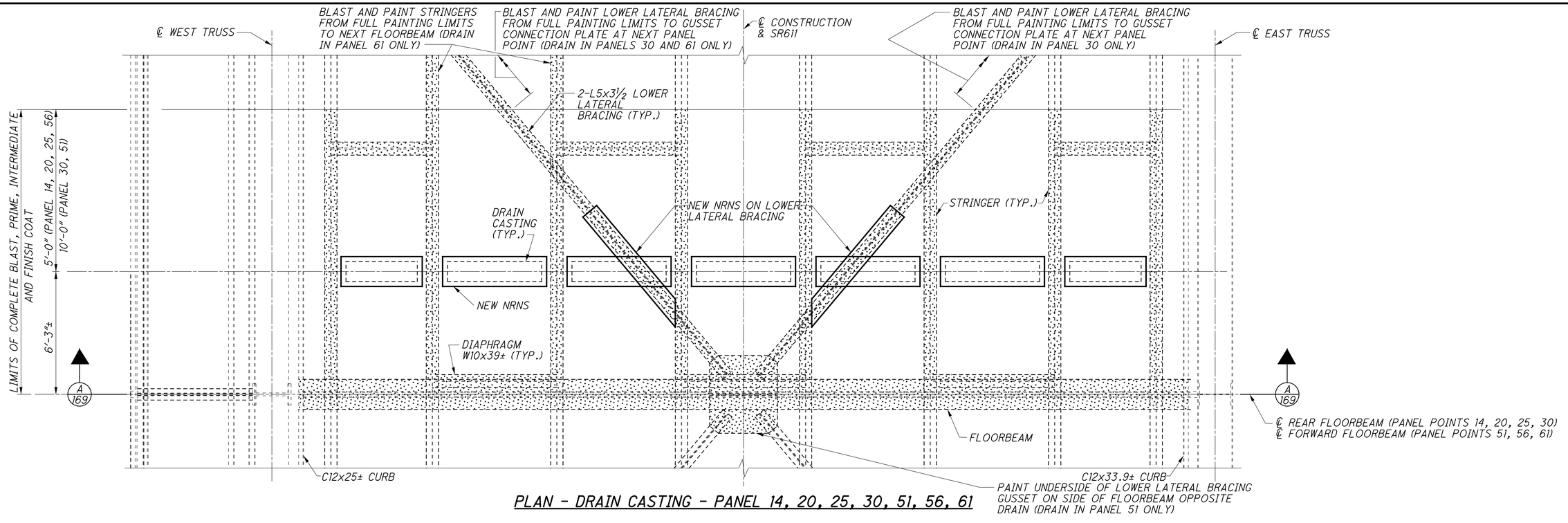
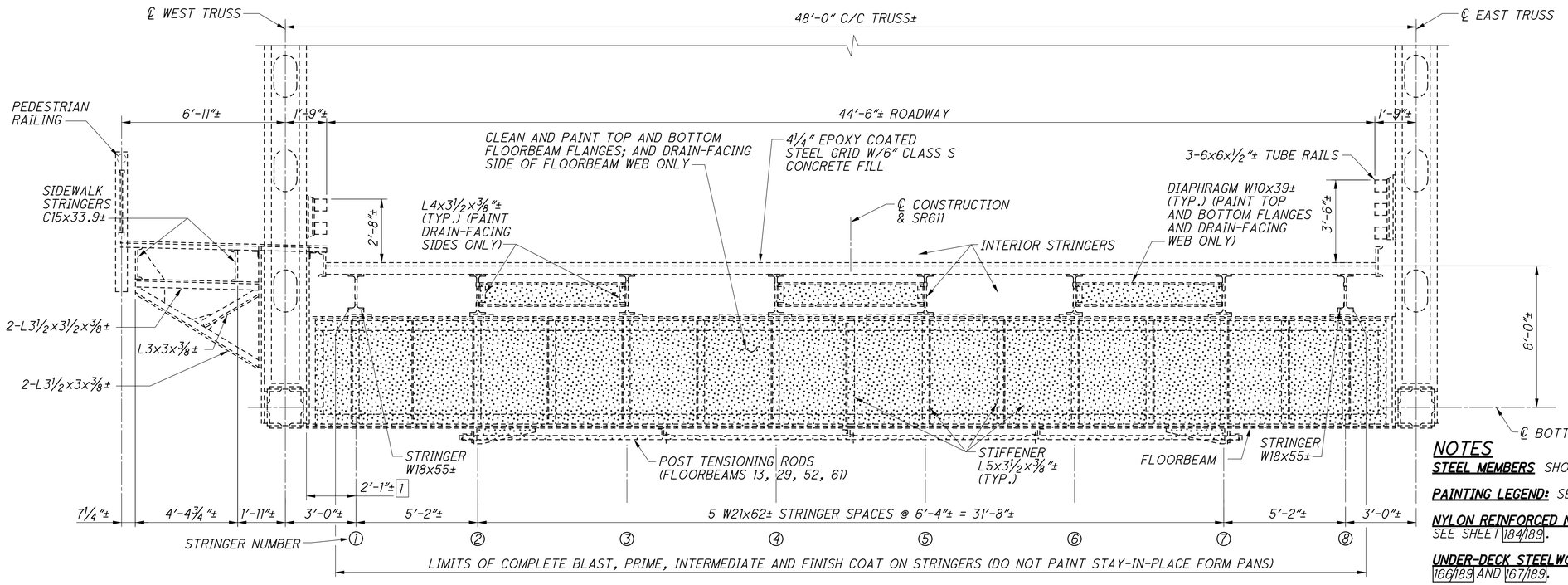


PLAN - DRAIN CASTING - PANEL 14, 20, 25, 30, 51, 56, 61



SECTION A-A

1 TRUSS GUSSET AND FLOORBEAM END PAINTED AS PART OF WEST TRUSS FLOORBEAM CONNECTION WORK. PANEL POINT L19W, L24W, L29W, L51W, L56W, L61W

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

NYLON REINFORCED NEOPRENE SHEETING (NRNS) DETAILS: SEE SHEET 184/189.

UNDER-DECK STEELWORK PAINTING PLAN: SEE SHEET 166/189 AND 167/189.

LOWER LATERAL BRACING: THE 14" BEAM LOWER LATERAL BRACING BETWEEN L28 AND L35; AND BETWEEN L45 AND L52 ARE NOT PAINTED AS PART OF THESE DETAILS.

DIAPHRAGM AND BRACING CONFIGURATION VARIES BY PANEL POINT FROM THAT SHOWN.

RICHLAND ENGINEERING LIMITED
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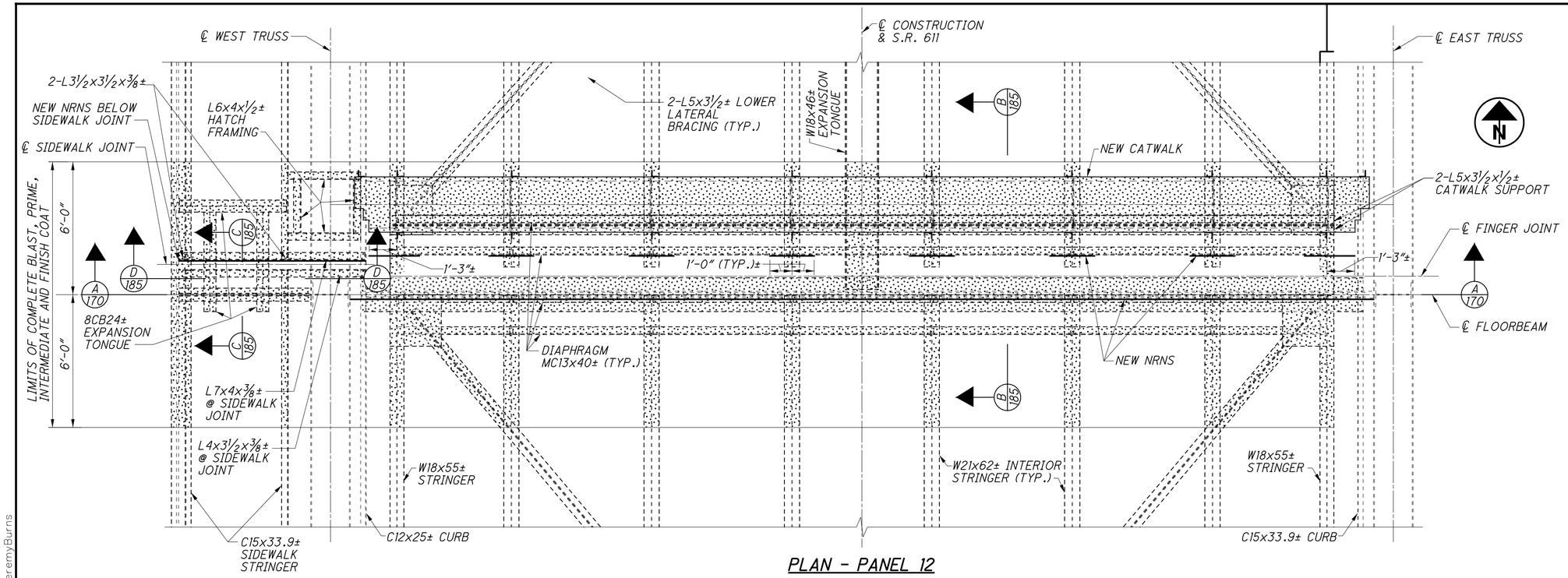
STRUCTURE PAINTING DETAILS - BELOW DRAIN CASTINGS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

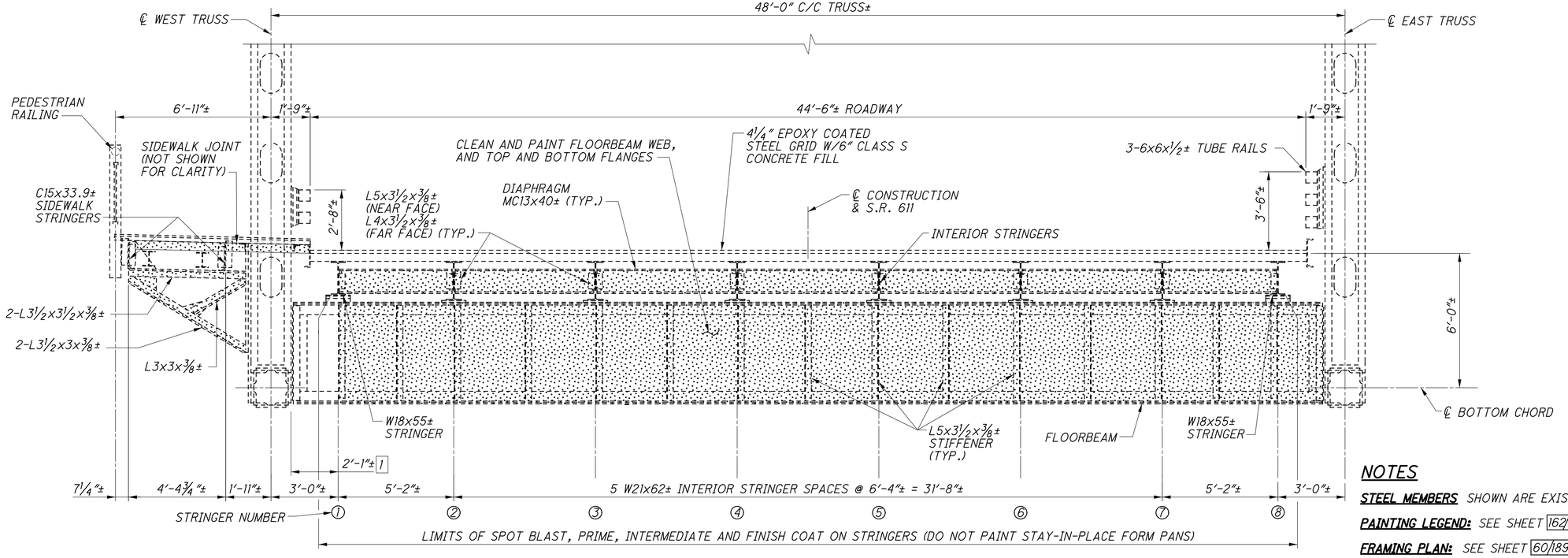
LOR-611-3.44
PID No. 92009

169/189

214/234



PLAN - PANEL 12



SECTION A-A

1 TRUSS MEMBERS AND FLOORBEAM END PAINTED AS PART OF WEST TRUSS FLOORBEAM CONNECTION WORK.

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

FRAMING PLAN: SEE SHEET 60/189.

NYLON REINFORCED NEOPRENE SHEETING (NRNS) DETAILS: SEE SHEET 185/189.

UNDER-DECK STEELWORK PAINTING PLAN: SEE SHEET 166/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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STRUCTURE PAINTING - PANEL POINT 12 EXPANSION JOINT

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

170/189

215/234

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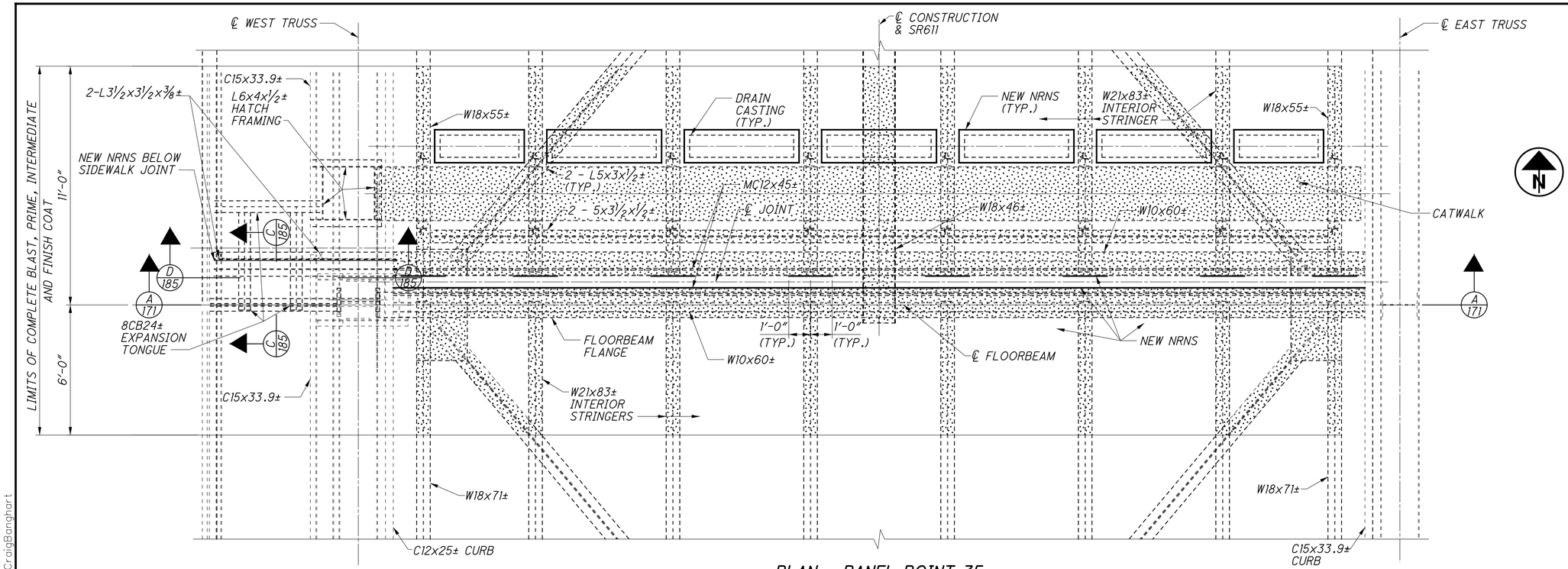
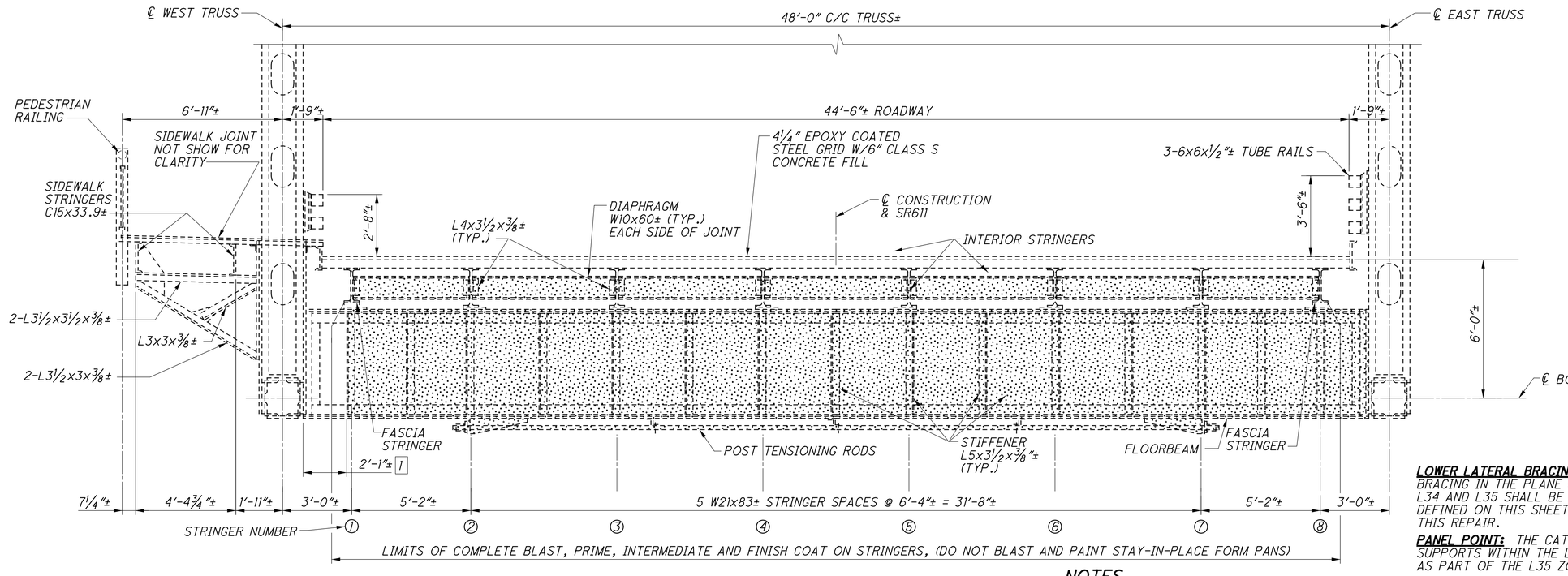


PLAN - PANEL POINT 35



SECTION A-A

[1] TRUSS MEMBERS AND FLOORBEAM END PAINTED AS PART OF WEST TRUSS FLOORBEAM CONNECTION WORK.

NOTES

FRAMING PLAN: SEE SHEET 60/189.

UNDER-DECK STEELWORK PAINTING PLAN: SEE SHEETS 166/189 AND 167/189.

LOWER LATERAL BRACING: THE 14" BEAM LOWER LATERAL BRACING IN THE PLANE OF THE LOWER CHORD BETWEEN L34 AND L35 SHALL BE PAINTED WITHIN THE LIMITS DEFINED ON THIS SHEET. PAYMENT IS INCLUDED IN THIS REPAIR.

PANEL POINT: THE CATWALK, DRAINAGE TROUGH, AND SUPPORTS WITHIN THE LIMITS SHOWN SHALL BE PAINTED AS PART OF THE L35 ZONE PAINTING.

NYLON REINFORCED NEOPRENE SHEETING (NRNS) DETAILS: SEE SHEETS 185/189 AND 186/189.

PAINTING LEGEND: SEE SHEET 162/189.

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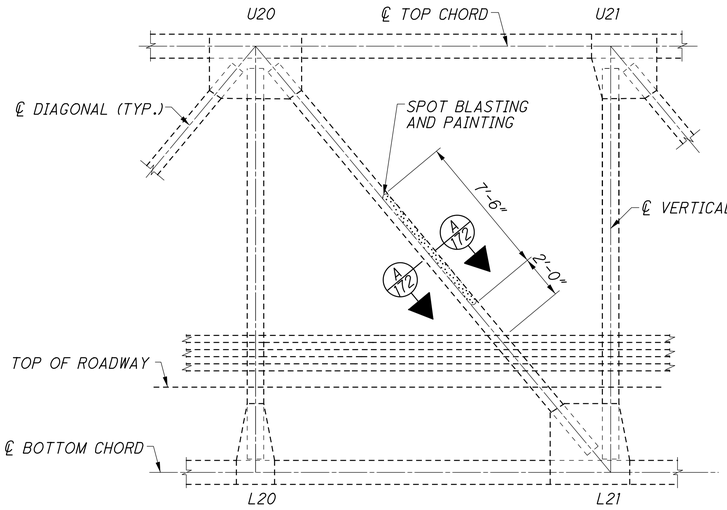
STRUCTURE PAINTING - PANEL POINT 35 - EXPANSION JOINT

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

171 | 189

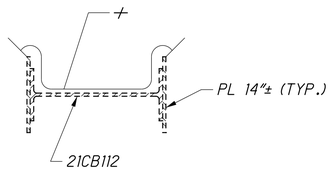
216
234



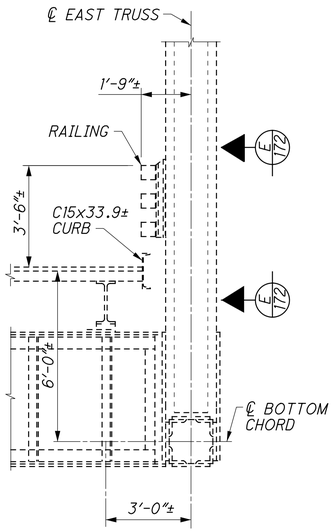
ELEVATION

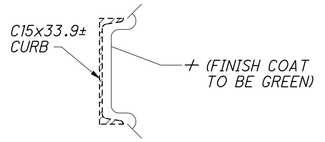
SPOT PAINTING DETAIL

(EAST TRUSS)

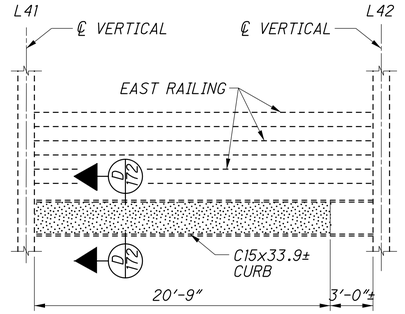


SECTION A-A





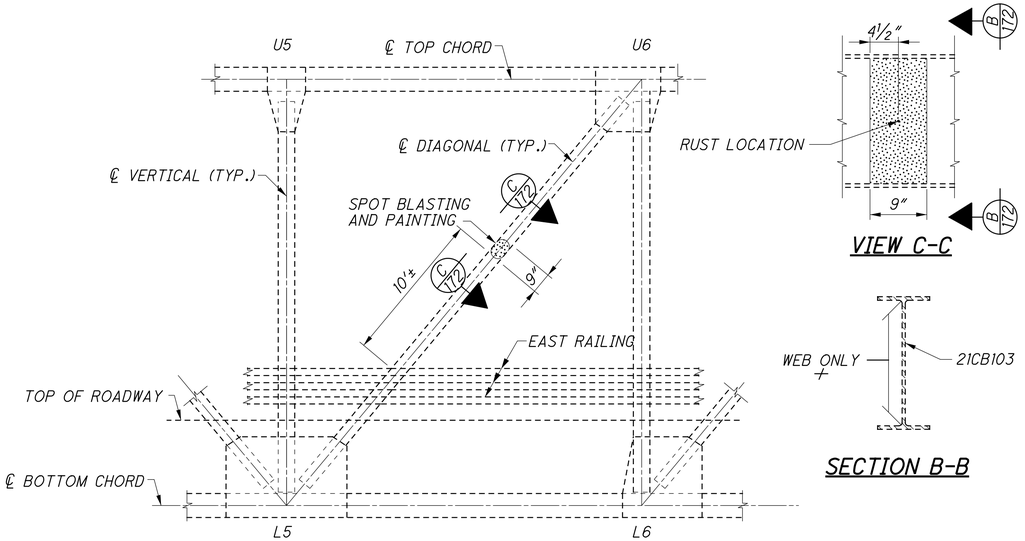
SECTION D-D



VIEW E-E

SPOT PAINTING DETAIL - EAST CURB

FRONT FACE OF CURB PAINTED FULL LENGTH - SEE SHEET 162/189)



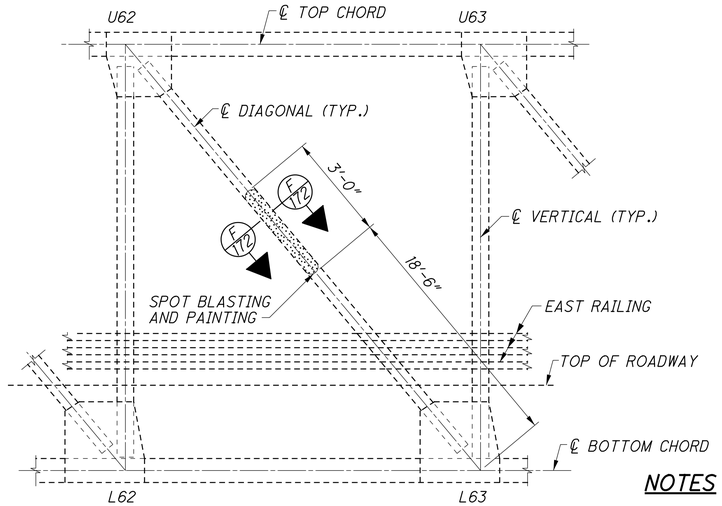
ELEVATION

SPOT PAINTING DETAIL

(EAST TRUSS)

VIEW C-C

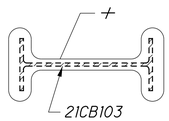
SECTION B-B



ELEVATION

SPOT PAINTING DETAIL

(EAST TRUSS)



SECTION F-F

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION AND PAINTING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

SPOT PAINTING PAYMENT SHALL BE MADE PER SQUARE FOOT AND PAID UNDER PER THE PAINTING LEGEND.

PAINTING LEGEND: SEE SHEET 162/189.

ADDITIONAL NOTES: SEE SHEET 162/189.

RICHLAND ENGINEERING LIMITED
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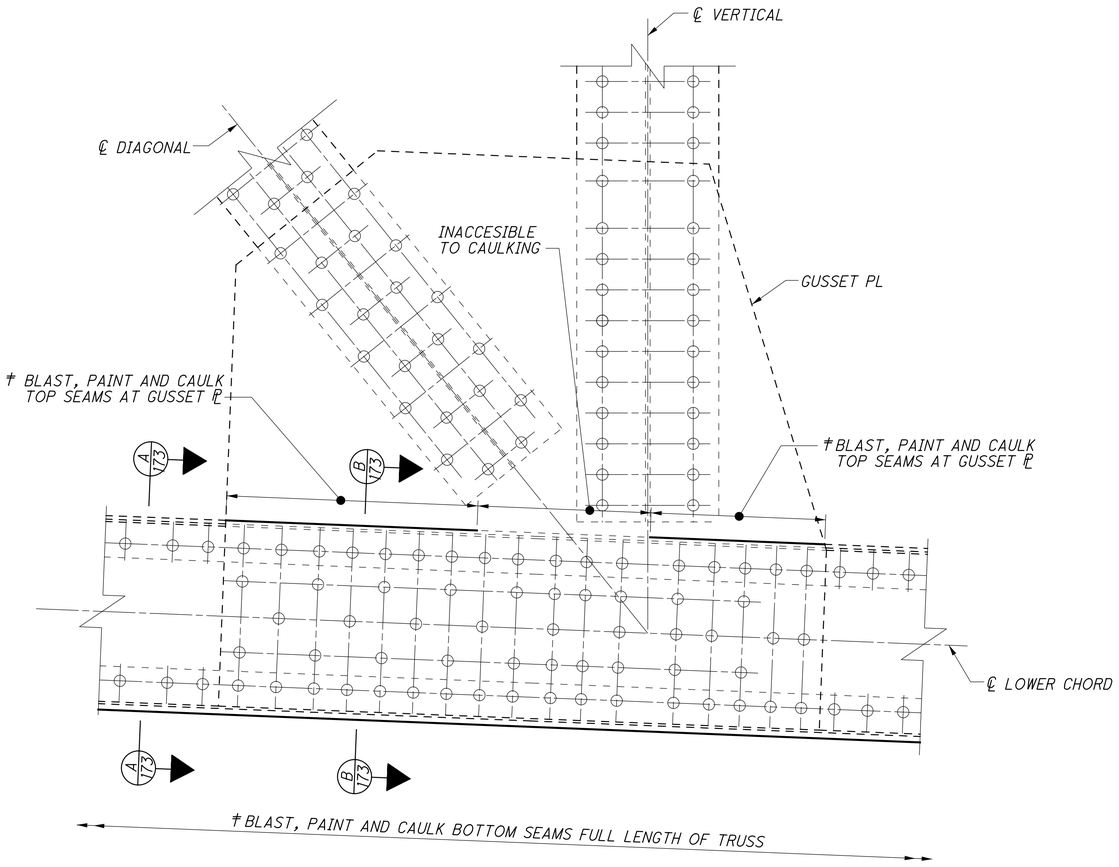
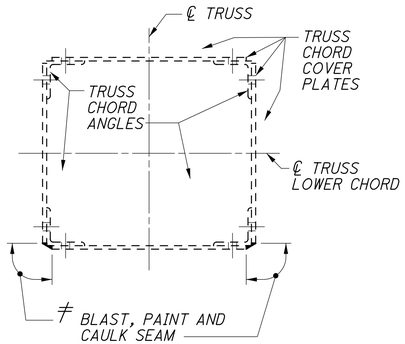
SPOT PAINTING DETAILS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

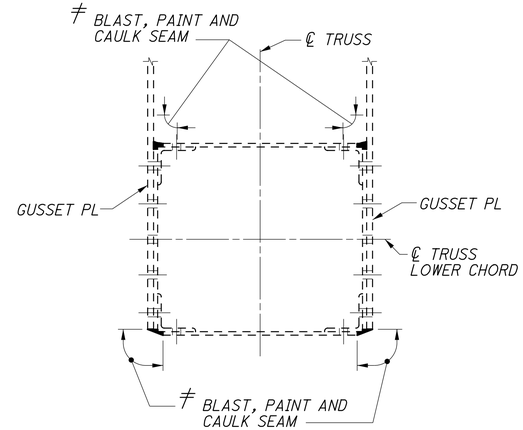
LOR-611-3.44
PID No. 92009



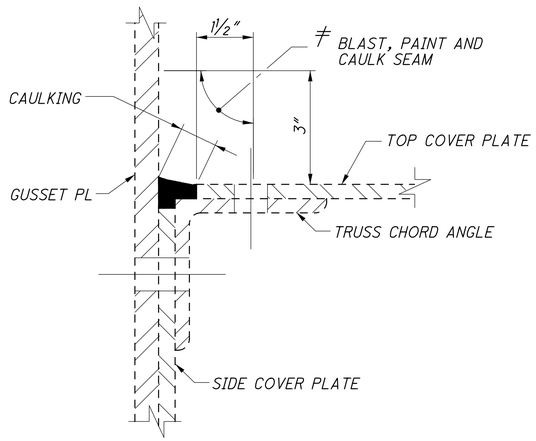
TYPICAL GUSSET PLATE ELEVATION



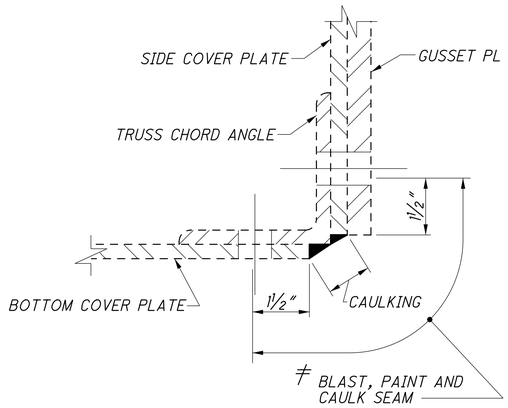
SECTION A-A



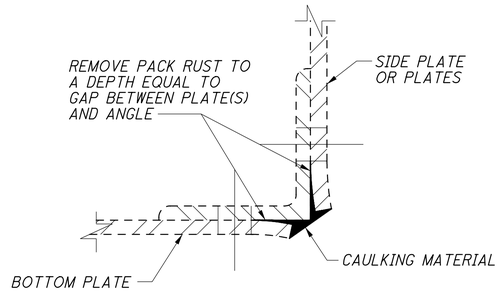
SECTION B-B



TOP CORNER DETAIL OF TRUSS LOWER CHORD



LOWER CORNER DETAIL OF TRUSS LOWER CHORD



CAULKING DETAILS

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

CAULKING DETAILS APPLY TO EAST AND WEST TRUSSES. CAULKING IS TO BE PERFORMED THE FULL LENGTH OF BOTH TRUSS LOWER CHORDS. PAINTING ON THE WEST TRUSS AT THE SEAMS TO BE CAULKED WILL BE PAID FOR PER SQUARE FOOT IN AREAS WHERE COMPLETE BLASTING AND PAINTING OCCUR, OR PER LINEAR FOOT IN AREAS WHERE ONLY BLASTING AND PAINTING IS NEEDED IN THE AREAS TO BE CAULKED.

PAYMENT FOR THE ABRASIVE BLASTING, PAINTING AND CAULKING SHALL BE MADE PER FOOT AS DESCRIBED IN THE "FIELD PAINTING, MISC.:" GENERAL NOTES ON SHEET 8/189 AND THE "FIELD PAINTING, MISC.: CAULKING" NOTE ON SHEET 8/189.

RICHLAND ENGINEERING LIMITED
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TYPICAL LOWER CHORD PAINTING AND CAULKING DETAILS

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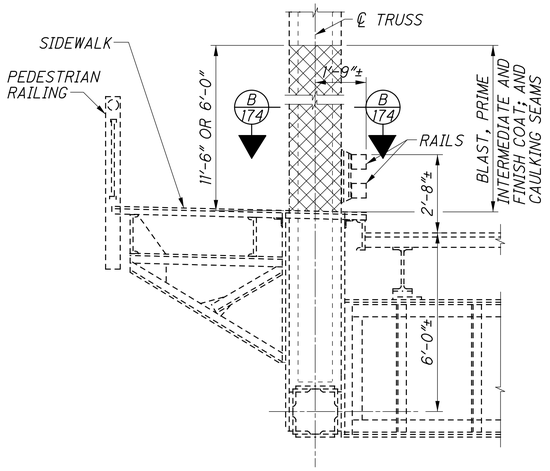
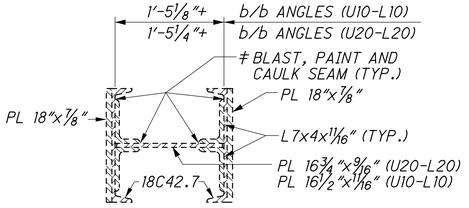
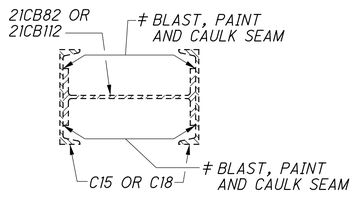


SECTION A-A



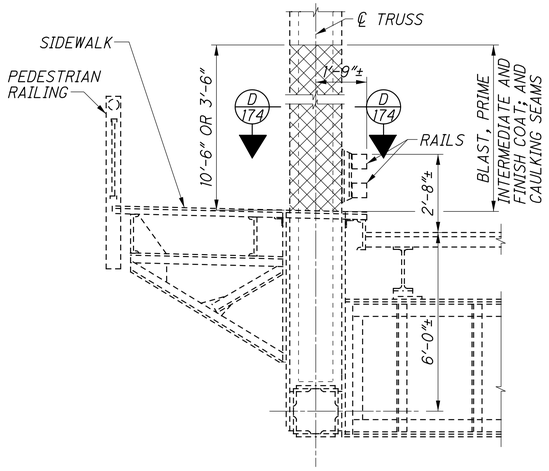
SECTION B-B

(U10-L10, U20-L20)

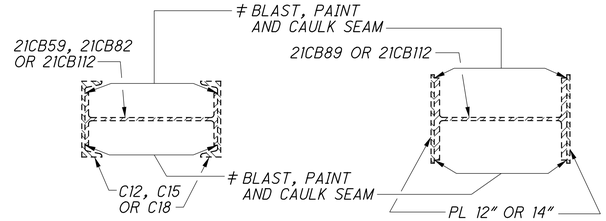


SECTION B-B

(U35-L35, U36-L36, U37-L37, U59-L59)



SECTION C-C

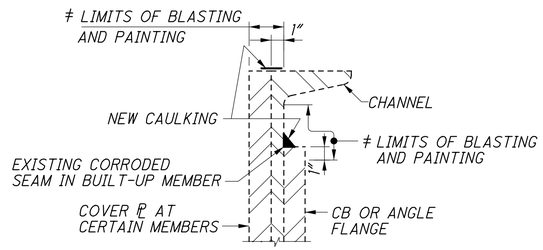


SECTION D-D

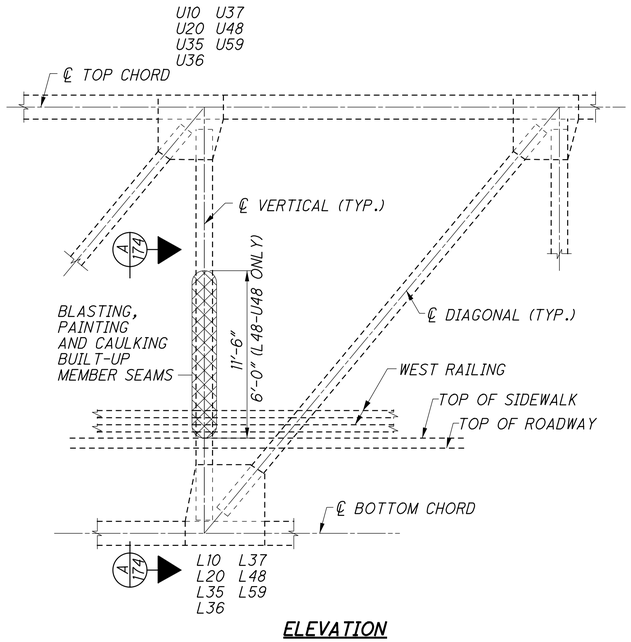
(U25-L26, U32-L31, U43-L42, U48-L49, U56-L55, U66-L65)

SECTION D-D

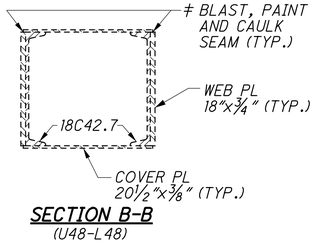
(U8-L7, U11-L12, U30-L29, U33-L34, U59-L58)



DETAIL OF PROPOSED BLASTING, PAINTING AND CAULKING ON TRUSS VERTICALS AND DIAGONALS



ELEVATION

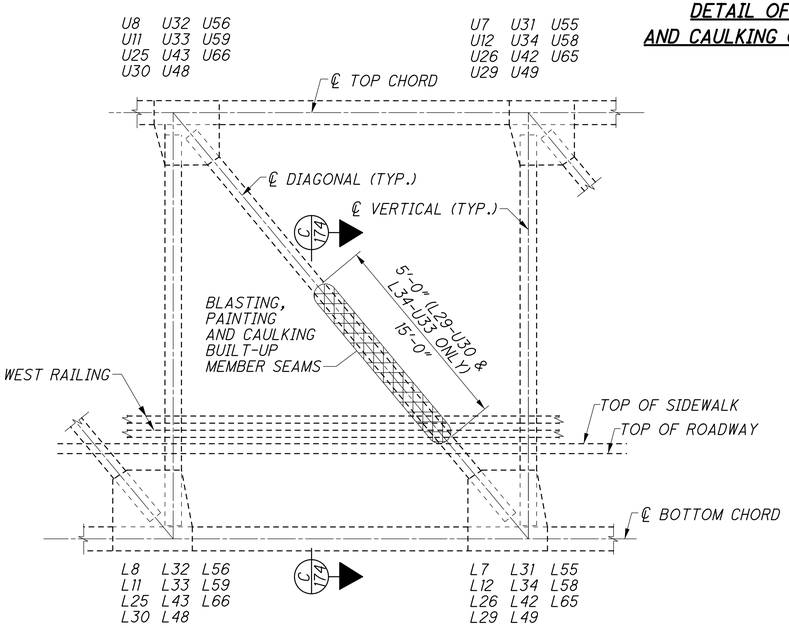


SECTION B-B

(U48-L48)

PARTIAL HEIGHT TRUSS VERTICAL PAINTING DETAILS

(WEST TRUSS)



ELEVATION

PARTIAL HEIGHT TRUSS DIAGONAL PAINTING DETAILS

(WEST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

PAYMENT FOR THE ABRASIVE BLASTING, PAINTING AND CAULKING SHALL BE MADE PER FOOT AS DESCRIBED IN THE "FIELD PAINTING, MISC.:" GENERAL NOTES ON SHEET 8/189 AND THE "FIELD PAINTING, MISC.: CAULKING" NOTE ON SHEET 8/189.

RICHLAND ENGINEERING LIMITED
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KAK	JSB	DLR	9/25/15
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BLN		4707443	

STRUCTURE PAINTING AND CAULKING DETAILS - 1 - WEST TRUSS

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OVER BLACK RIVER

LOR-611-3.44
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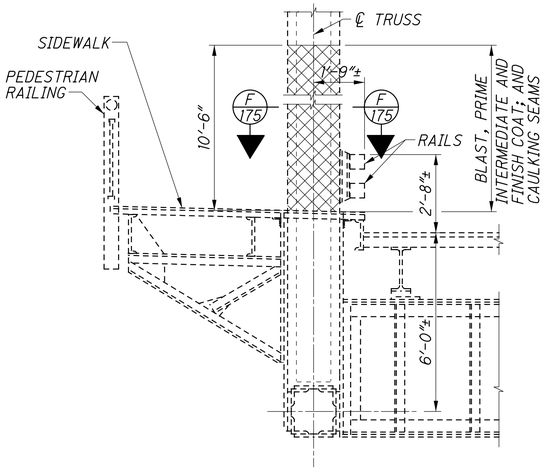
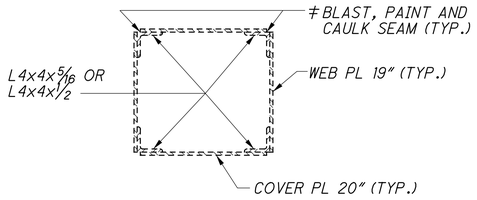
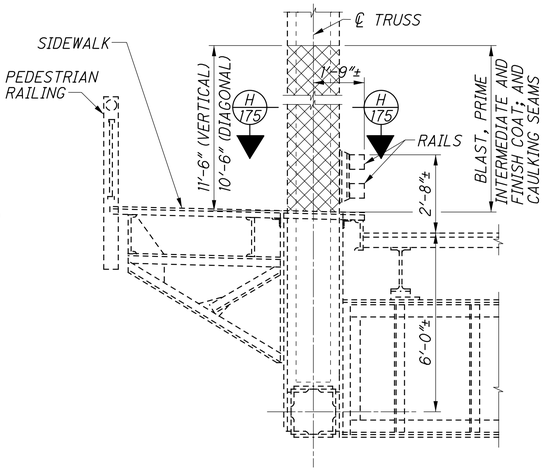


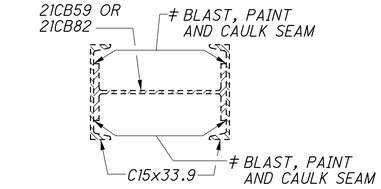
SECTION E-E



SECTION F-F

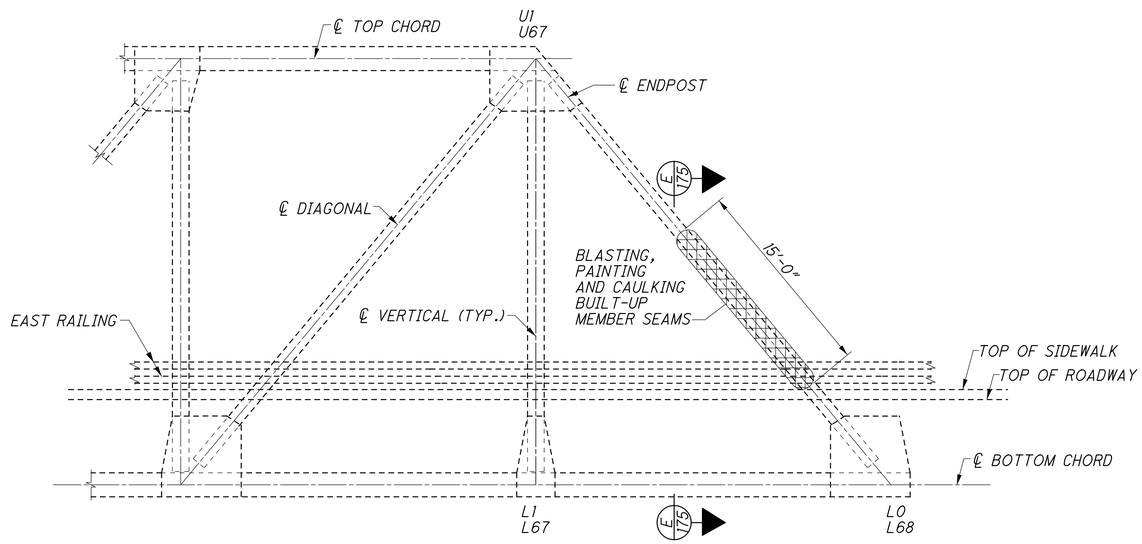


SECTION G-G



SECTION H-H

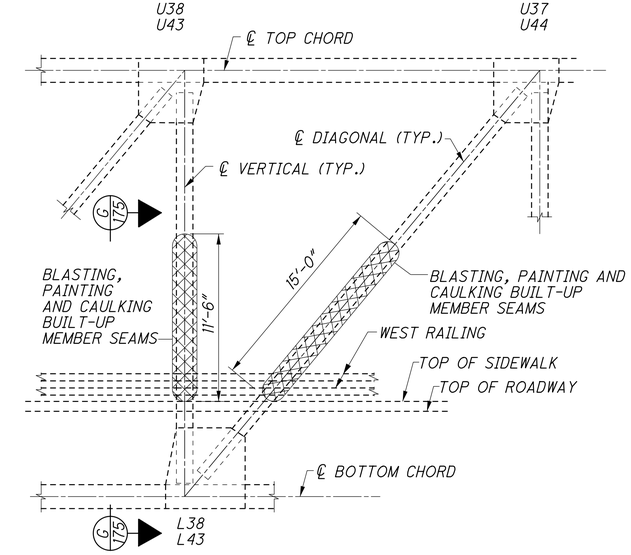
(U37-L38, U38-L38, U43-L43, U44-L43)



ELEVATION

PARTIAL HEIGHT TRUSS ENDPOST PAINTING DETAILS

(WEST TRUSS)



ELEVATION

PARTIAL HEIGHT TRUSS PAINTING DETAILS

(WEST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

SEAM PAINTING AND CAULKING DETAIL: SEE SHEET 174/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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KAK	JSB	DLR	9/25/15
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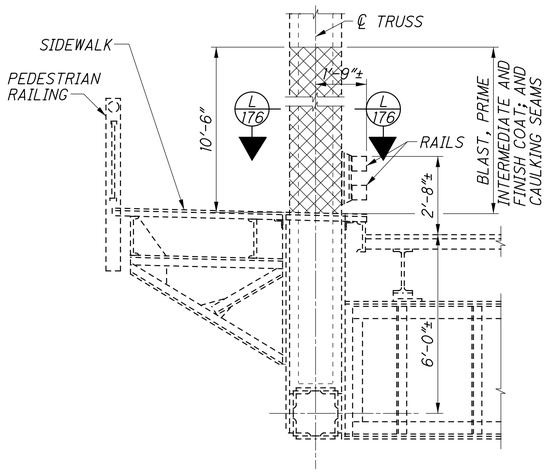
BLN		4707443	

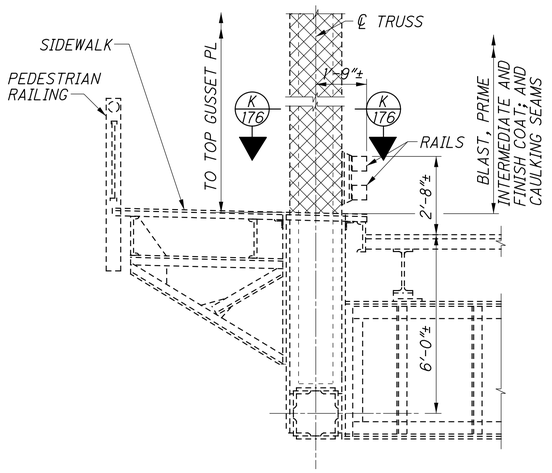
STRUCTURE PAINTING AND CAULKING DETAILS - 2 - WEST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

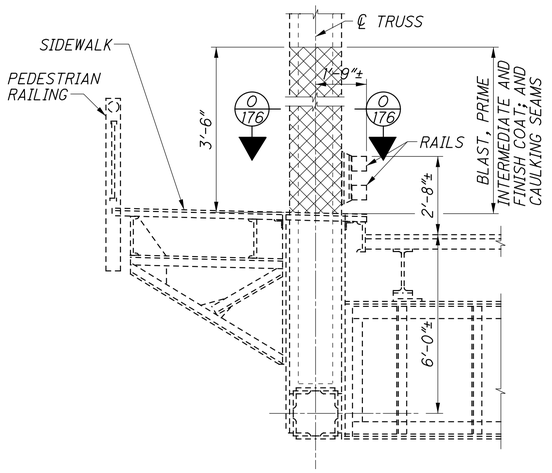
LOR-611-3.44
PID No. 92009



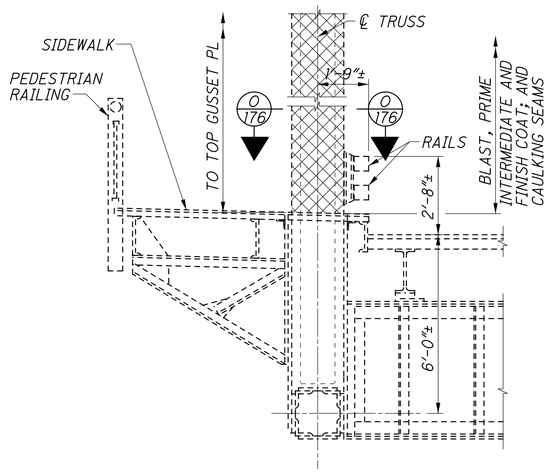
SECTION J-J



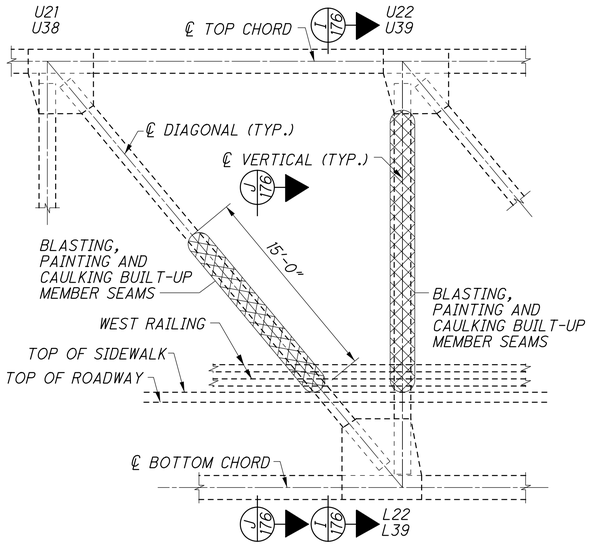
SECTION I-I



SECTION M-M



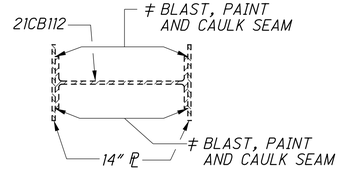
SECTION N-N



ELEVATION

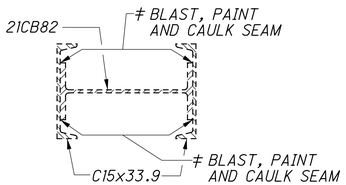
TRUSS PAINTING DETAILS

(WEST TRUSS)



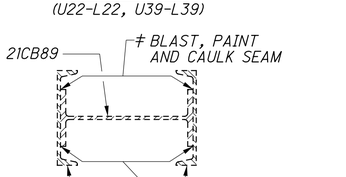
SECTION L-L

(U21-L22)



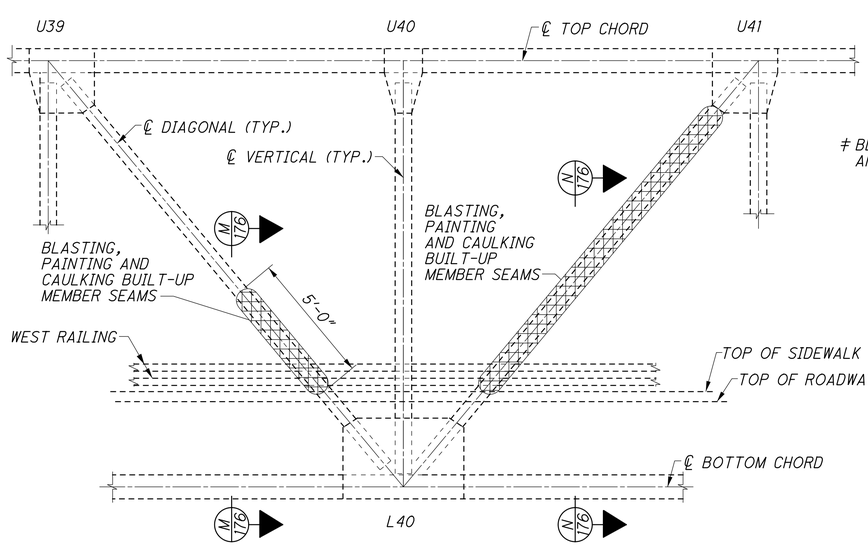
SECTION K-K

(U22-L22, U39-L39)



SECTION L-L

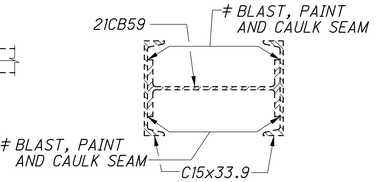
(U38-L39)



ELEVATION

TRUSS PAINTING DETAILS

(WEST TRUSS)



SECTION O-O

(U39-L40, U41-L40)

NOTES

STEEL MEMBERS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS *ARE NEW UNLESS OTHERWISE NOTED.*

PAINTING LEGEND: *SEE SHEET* 162/189.

SEAM PAINTING AND CAULKING DETAIL: *SEE SHEET* 174/189.

ADDITIONAL NOTES: *SEE SHEET* 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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KAK	JSB	DLR	9/25/15
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BLN		4707443	

STRUCTURE PAINTING AND CAULKING DETAILS - 3 - WEST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

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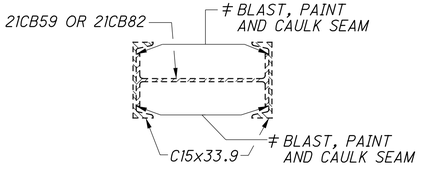
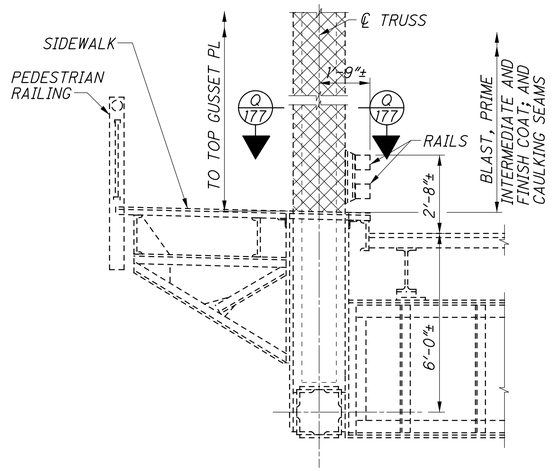
F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048SD017.dgn 9/28/2015 9:41:09 AM JeremyBurns

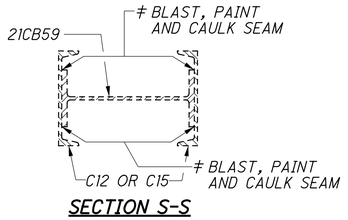


SECTION Q-Q

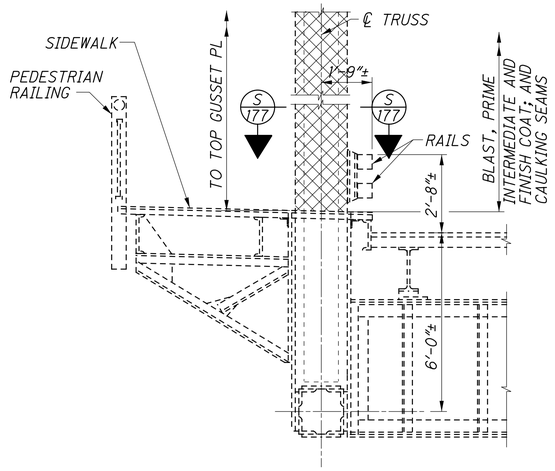
(U42-L41, U55-L54)



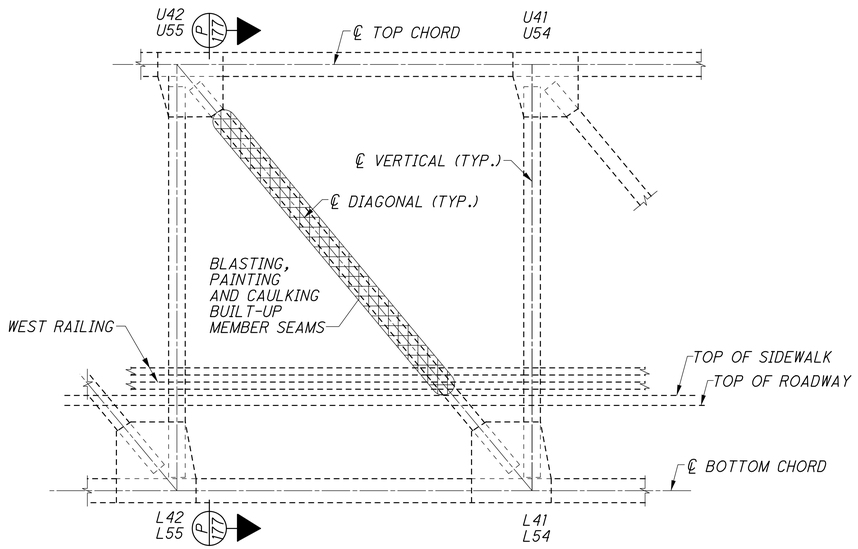
SECTION P-P



SECTION S-S



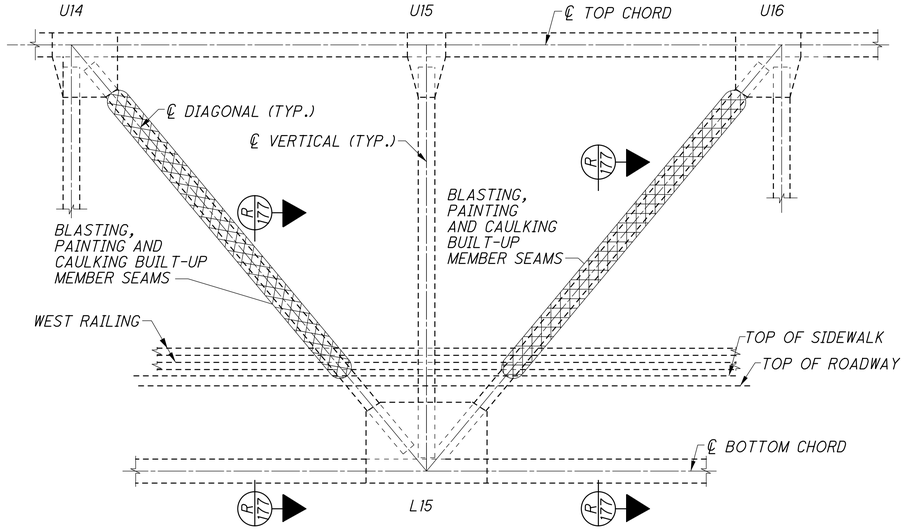
SECTION R-R



ELEVATION

FULL HEIGHT TRUSS DIAGONAL PAINTING DETAILS

(WEST TRUSS)



ELEVATION

FULL HEIGHT TRUSS DIAGONAL PAINTING DETAILS

(WEST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

SEAM PAINTING AND CAULKING DETAIL: SEE SHEET 174/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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STRUCTURE PAINTING AND CAULKING DETAILS - 4 - WEST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOT-611-3.44
PID No. 92009

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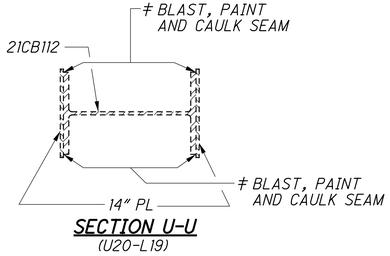
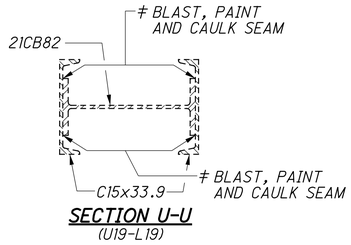
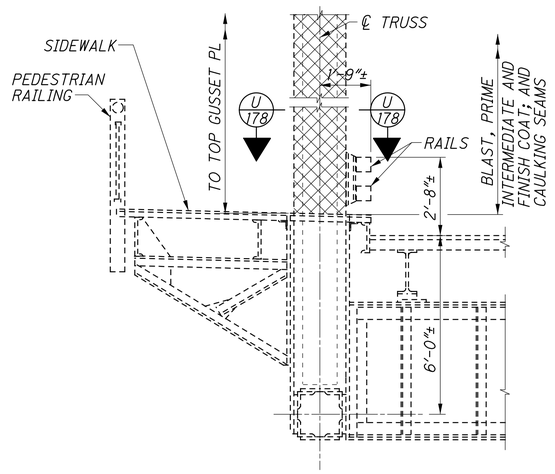


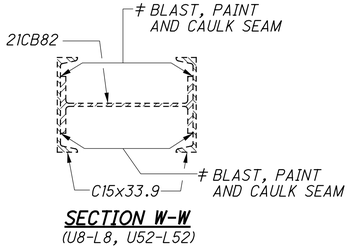
SECTION U-U
(U20-L19)



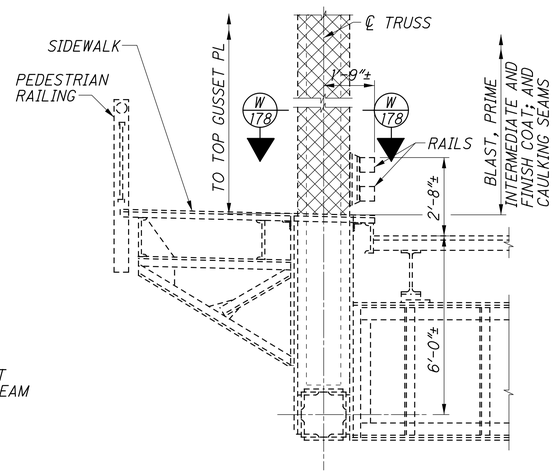
SECTION U-U
(U19-L19)



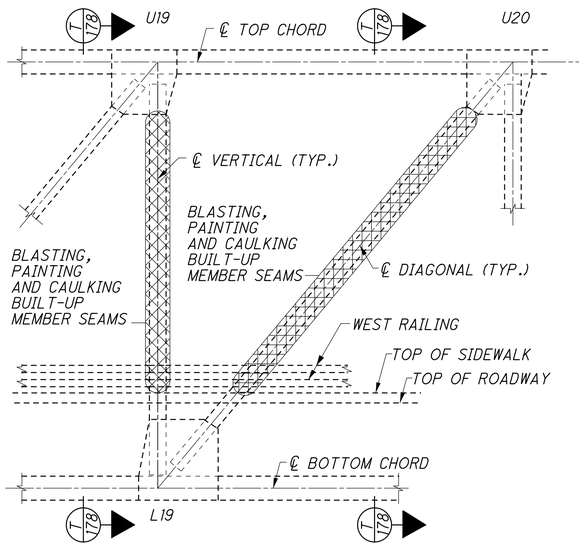
SECTION T-T



SECTION W-W
(U8-L8, U52-L52)

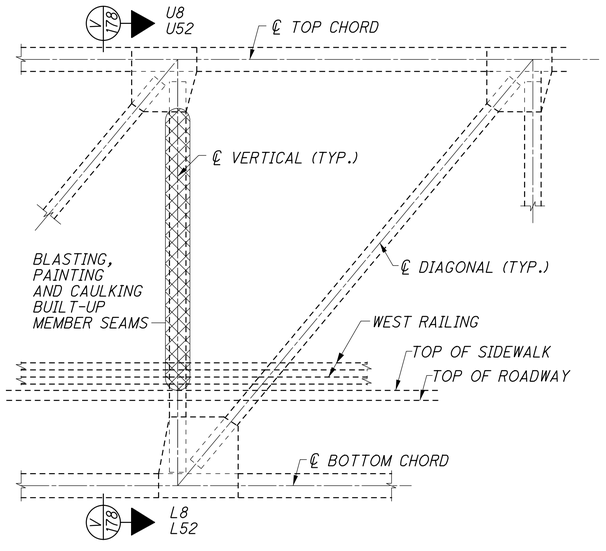


SECTION V-V



ELEVATION

FULL HEIGHT TRUSS PAINTING DETAILS
(WEST TRUSS)



ELEVATION

FULL HEIGHT TRUSS VERTICAL PAINTING DETAILS
(WEST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

SEAM PAINTING AND CAULKING DETAIL: SEE SHEET 174/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

STRUCTURE PAINTING AND CAULKING DETAILS - 5 - WEST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOT-611-3.44
PID No. 92009

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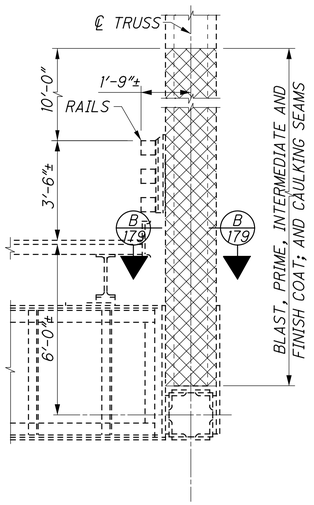
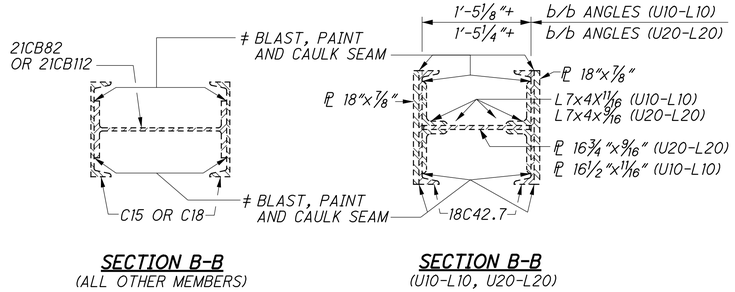
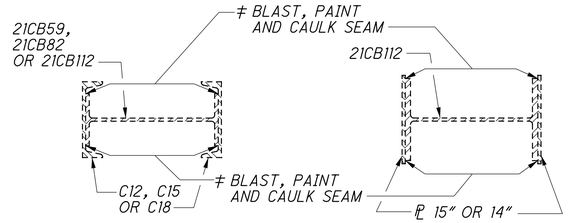


SECTION A-A



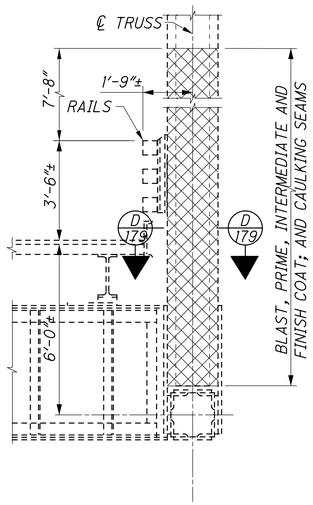
SECTION B-B
(ALL OTHER MEMBERS)

SECTION B-B
(U10-L10, U20-L20)

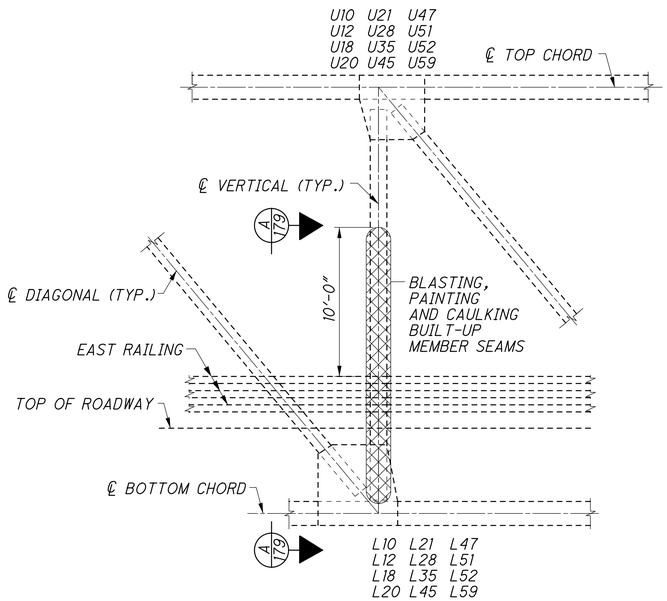


SECTION D-D
(U12-L12, U24-L25, U32-L31,
U44-L43, U55-L54, U56-L55)

SECTION D-D
(U3-L4, U4-L5, U10-L11,
U33-L34, U60-L61)

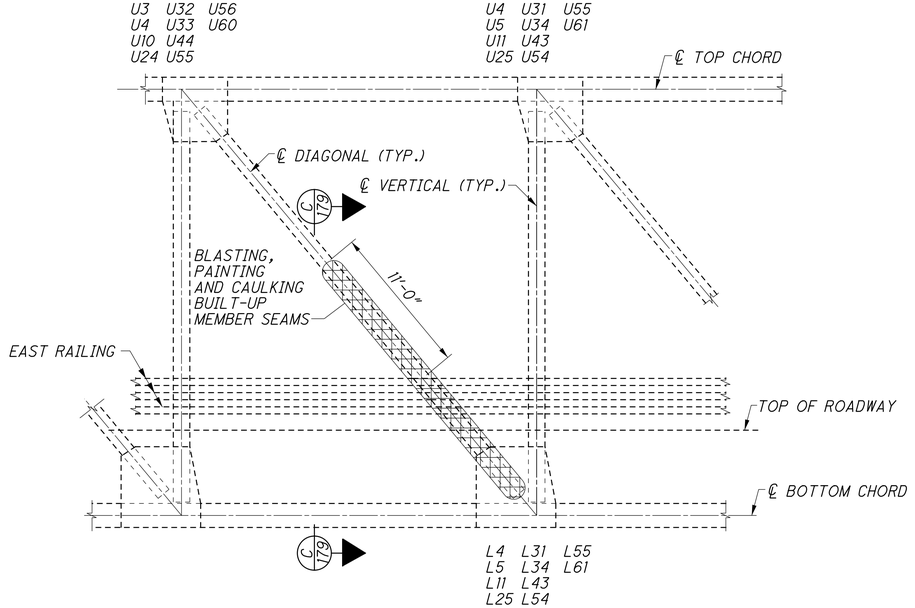


SECTION C-C



ELEVATION

PARTIAL HEIGHT TRUSS VERTICAL PAINTING DETAILS
(EAST TRUSS)



ELEVATION

PARTIAL HEIGHT TRUSS DIAGONAL PAINTING DETAILS
(EAST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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BLN		4707443	

STRUCTURE PAINTING AND CAULKING DETAILS - 1 - EAST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

179/189

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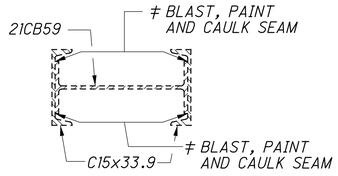
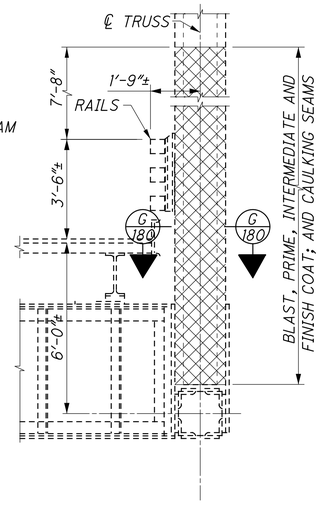
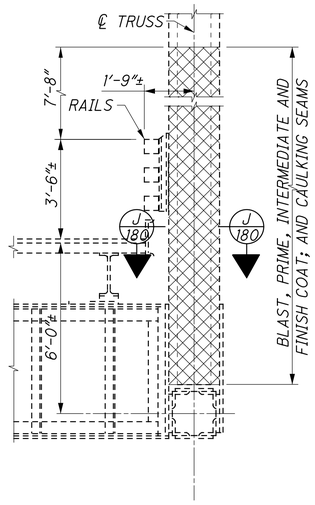


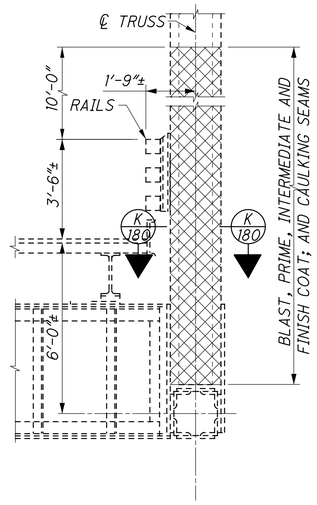
SECTION G-G



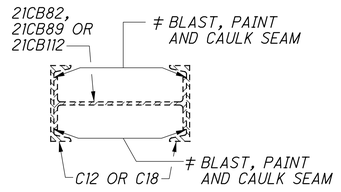
SECTION E-E
SECTION F-F (OPPOSITE HAND)



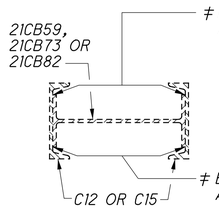
SECTION H-H



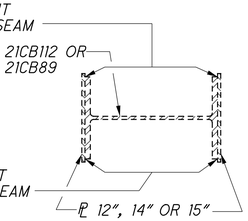
SECTION I-I



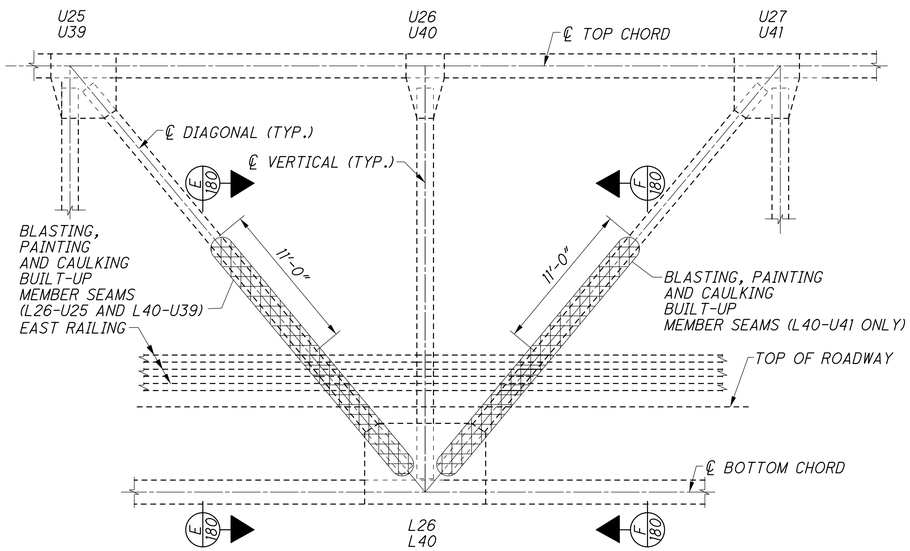
SECTION K-K
(U19-L19, U22-L22, U29-L29, U37-L37, U38-L38, U39-L39, U41-L41, U42-L42, U44-L44, U46-L46)



SECTION J-J
(U36-L37, U37-L38, U38-L39, U42-L41, U43-L42, U45-L44)

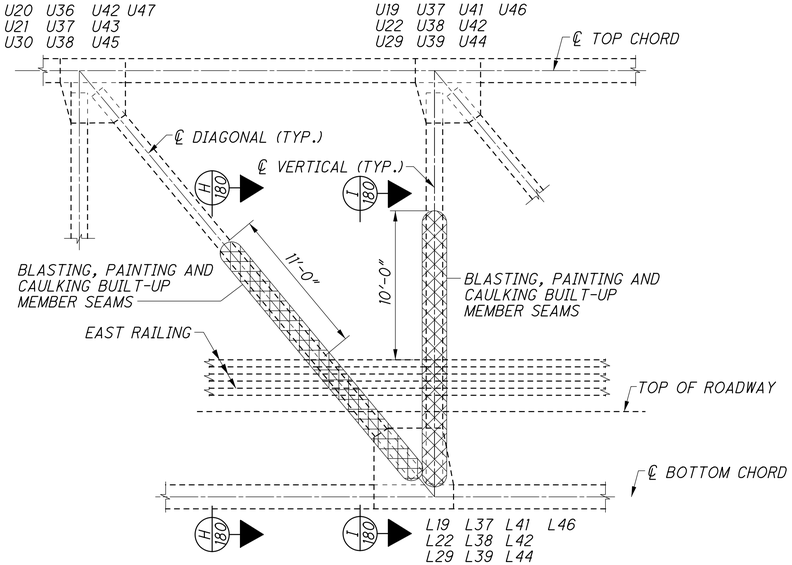


SECTION J-J
(U20-L19, U21-L22, U30-L29, U47-L46)



ELEVATION

PARTIAL HEIGHT TRUSS DIAGONAL PAINTING DETAILS
(EAST TRUSS)



ELEVATION

PARTIAL HEIGHT TRUSS DIAGONAL AND VERTICAL PAINTING DETAILS
(EAST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

SEAM PAINTING AND CAULKING DETAIL: SEE SHEET 174/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

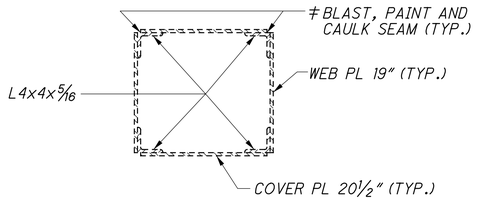
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

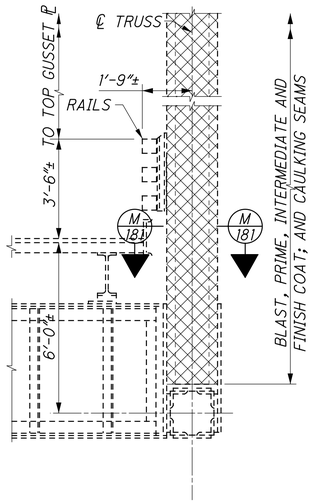
STRUCTURE PAINTING AND CAULKING DETAILS - 2 - EAST TRUSS

BRIDGE NO. LOR-61-0344
OVER BLACK RIVER

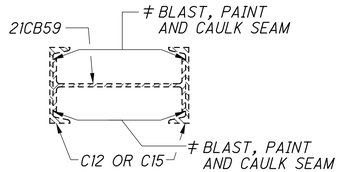
LOR-611-3.44
PID No. 92009



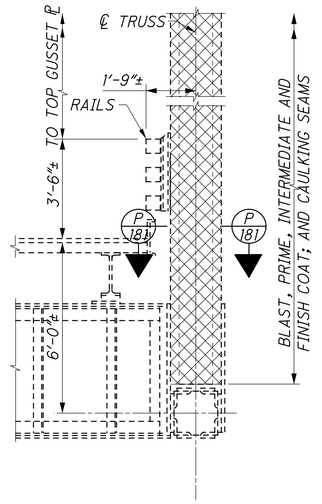
SECTION M-M
(U67-L68)



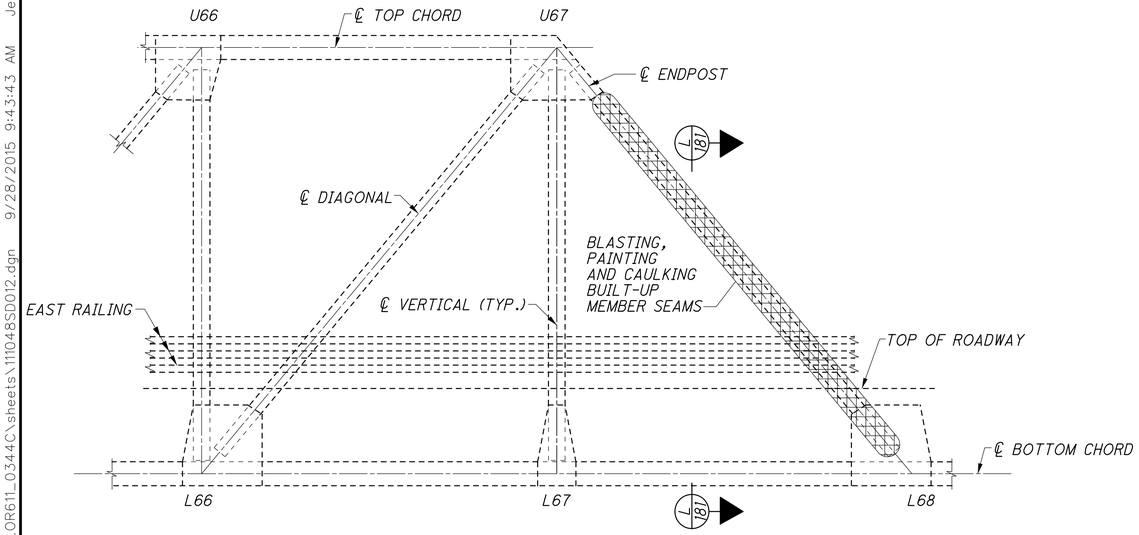
SECTION L-L



SECTION P-P

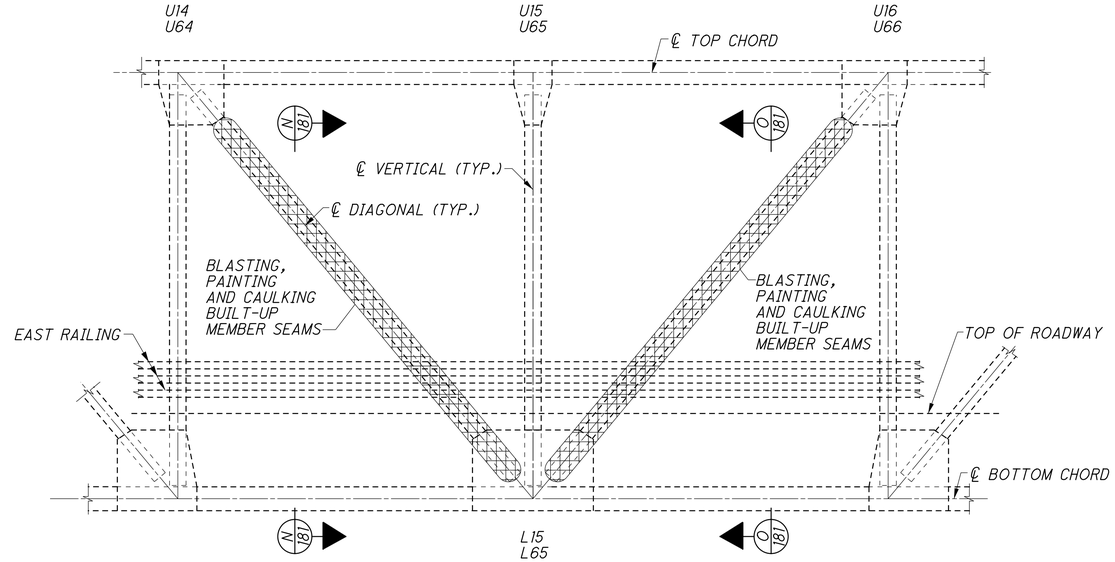


SECTION N-N
SECTION O-O (OPPOSITE HAND)



ELEVATION

FULL HEIGHT TRUSS ENDPOST PAINTING DETAILS
(EAST TRUSS)



ELEVATION

FULL HEIGHT TRUSS DIAGONAL PAINTING DETAILS
(EAST TRUSS)

NOTES

STEEL MEMBERS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS *ARE NEW UNLESS OTHERWISE NOTED.*

PAINTING LEGEND: *SEE SHEET* 162/189.

SEAM PAINTING AND CAULKING DETAIL: *SEE SHEET* 174/189.

ADDITIONAL NOTES: *SEE SHEET* 173/189.

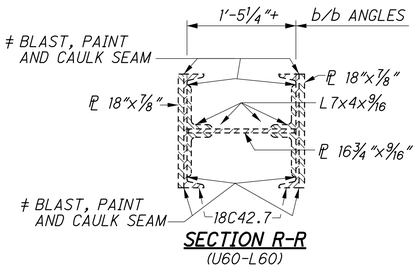
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

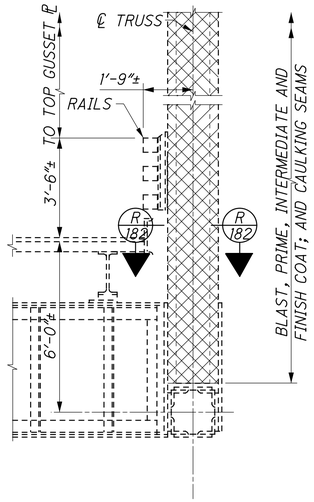
STRUCTURE PAINTING AND CAULKING DETAILS - 3 - EAST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

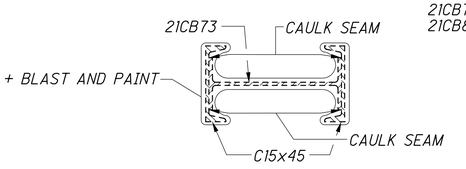
LOR-611-3.44
PID No. 92009



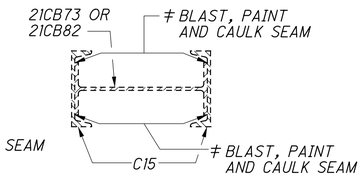
SECTION R-R
(U60-L60)



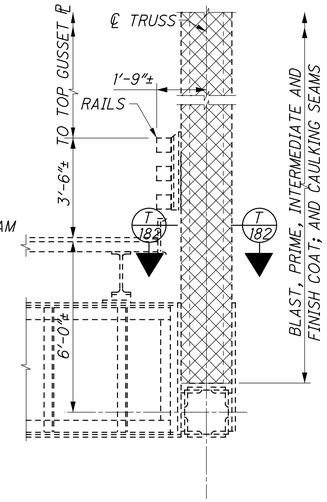
SECTION Q-Q



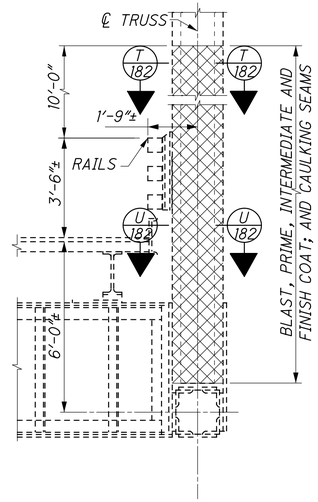
SECTION U-U



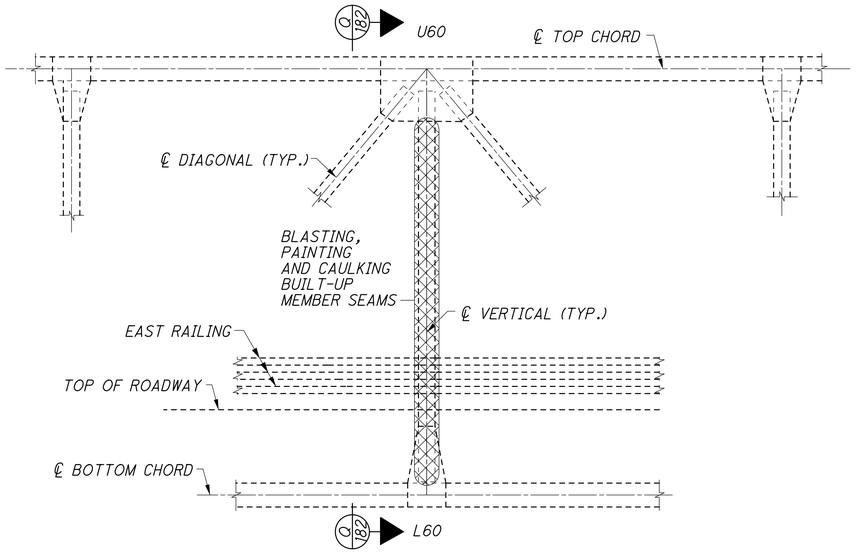
SECTION T-T



SECTION S-S

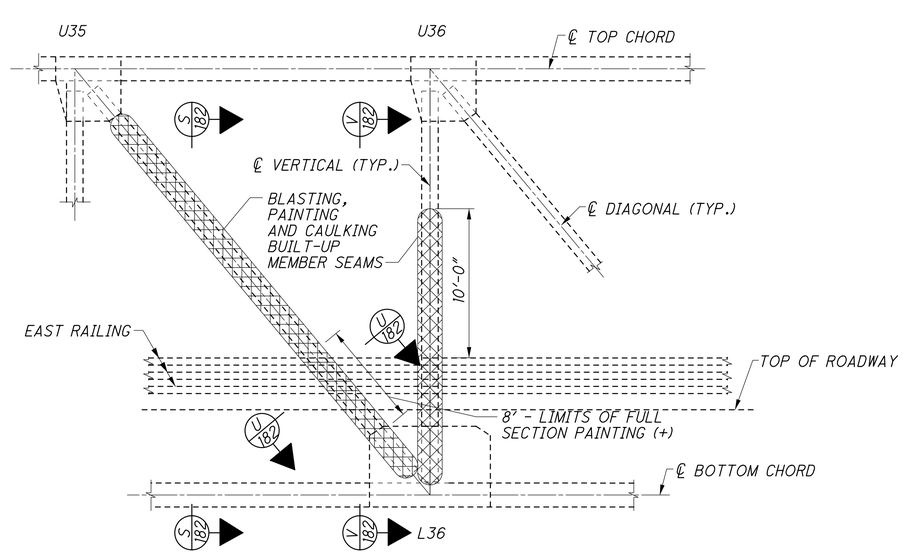


SECTION V-V



ELEVATION

FULL HEIGHT TRUSS VERTICAL PAINTING DETAILS
(EAST TRUSS)



ELEVATION

TRUSS VERTICAL AND DIAGONAL PAINTING DETAILS
(EAST TRUSS)

NOTES

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS ARE NEW UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

SEAM PAINTING AND CAULKING DETAIL: SEE SHEET 174/189.

ADDITIONAL NOTES: SEE SHEET 173/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

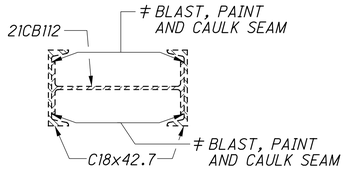
DESIGNED	DRAWN	REVIEWED	DATE
KAK	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

STRUCTURE PAINTING AND CAULKING DETAILS - 4 - EAST TRUSS
RIDGE NO. LOR-611-0344
OVER BLACK RIVER

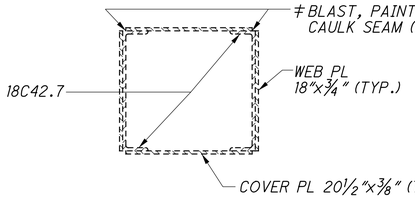
LOR-611-344
PID No. 92009

182/189

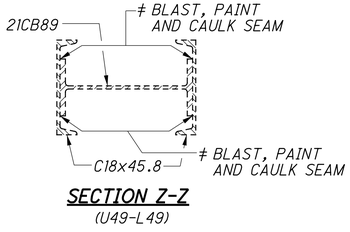
227/234



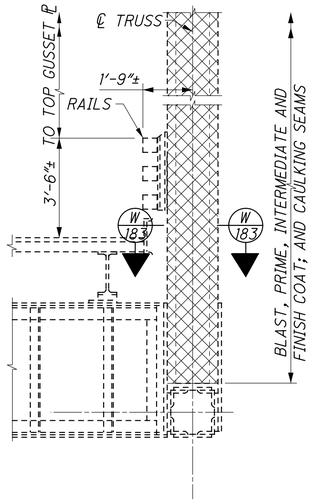
SECTION W-W
(U48-L49)



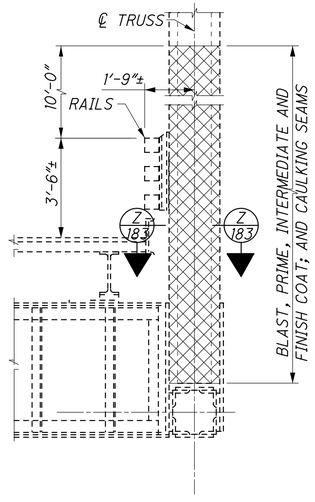
SECTION W-W
(U48-L48)



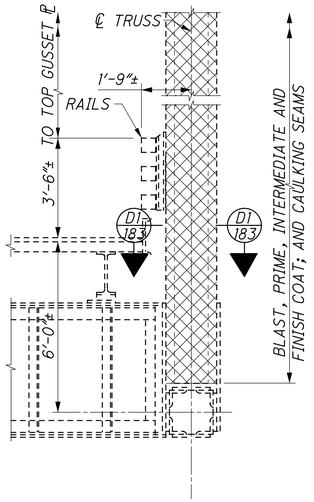
SECTION Z-Z
(U49-L49)



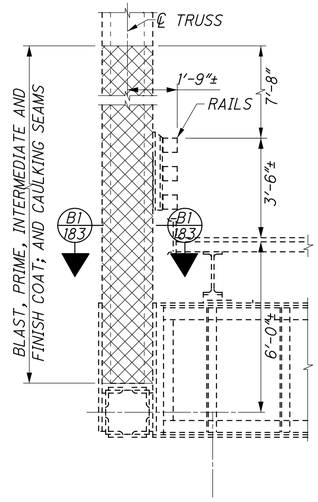
SECTION X-X



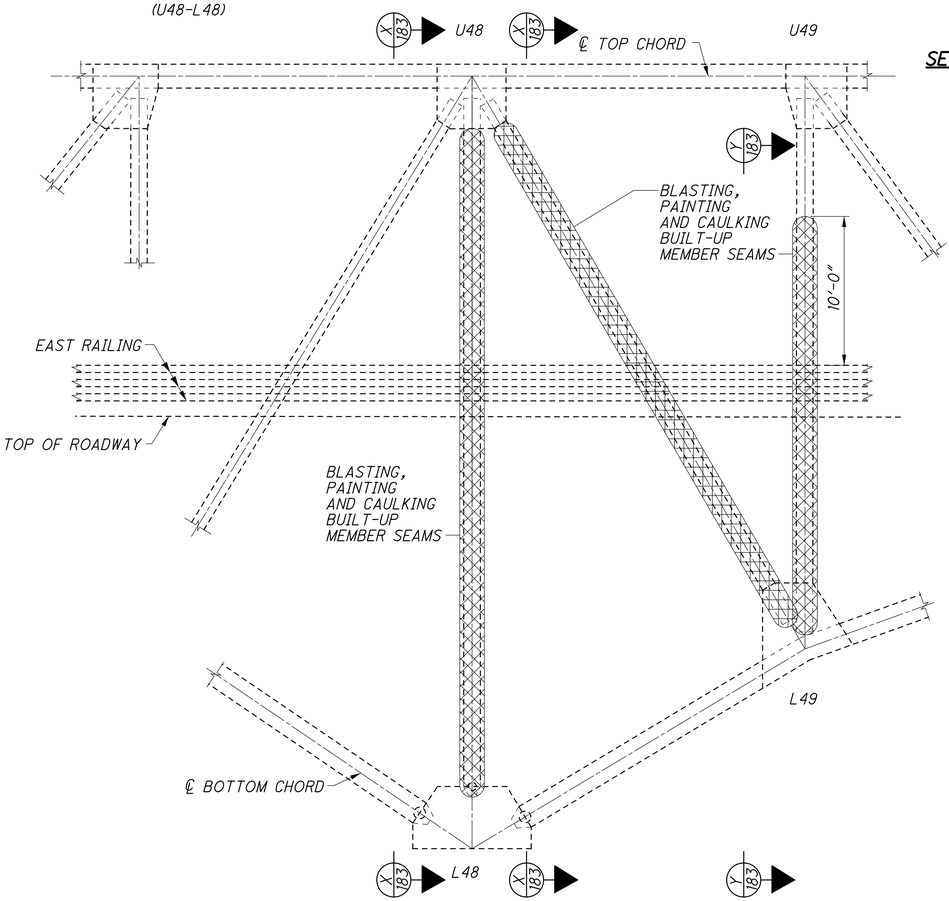
SECTION Y-Y



SECTION C1-C1

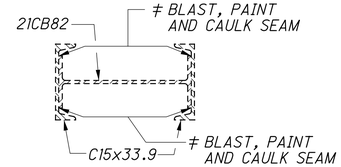


SECTION A1-A1

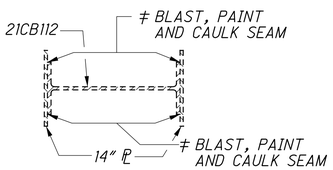


ELEVATION

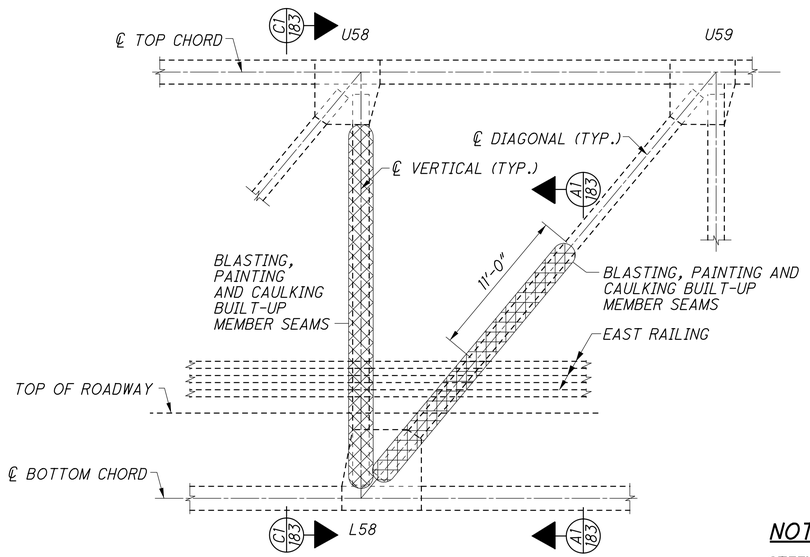
TRUSS DIAGONAL AND VERTICAL PAINTING DETAILS
(EAST TRUSS)



SECTION D1-D1



SECTION B1-B1



ELEVATION

TRUSS DIAGONAL AND VERTICAL PAINTING DETAILS
(EAST TRUSS)

NOTES

STEEL MEMBERS *SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.*

SURFACE PREPARATION, PAINTING AND CAULKING LIMITS *ARE NEW UNLESS OTHERWISE NOTED.*

PAINTING LEGEND: *SEE SHEET 162/189.*

SEAM PAINTING AND CAULKING DETAIL: *SEE SHEET 174/189.*

ADDITIONAL NOTES: *SEE SHEET 173/189.*

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

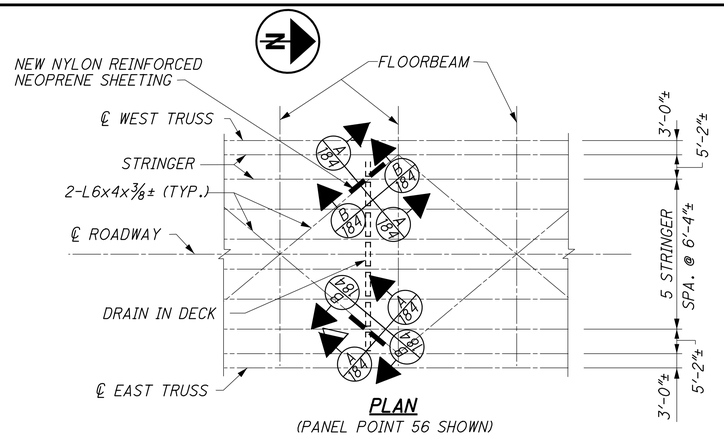
STRUCTURE PAINTING AND CAULKING DETAILS - 5 - EAST TRUSS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

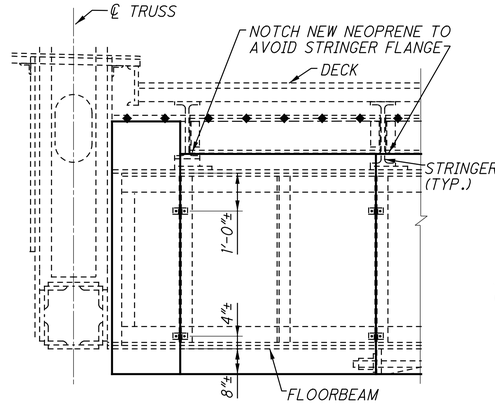
LOR-611-3.44
PID No. 92009

183/189

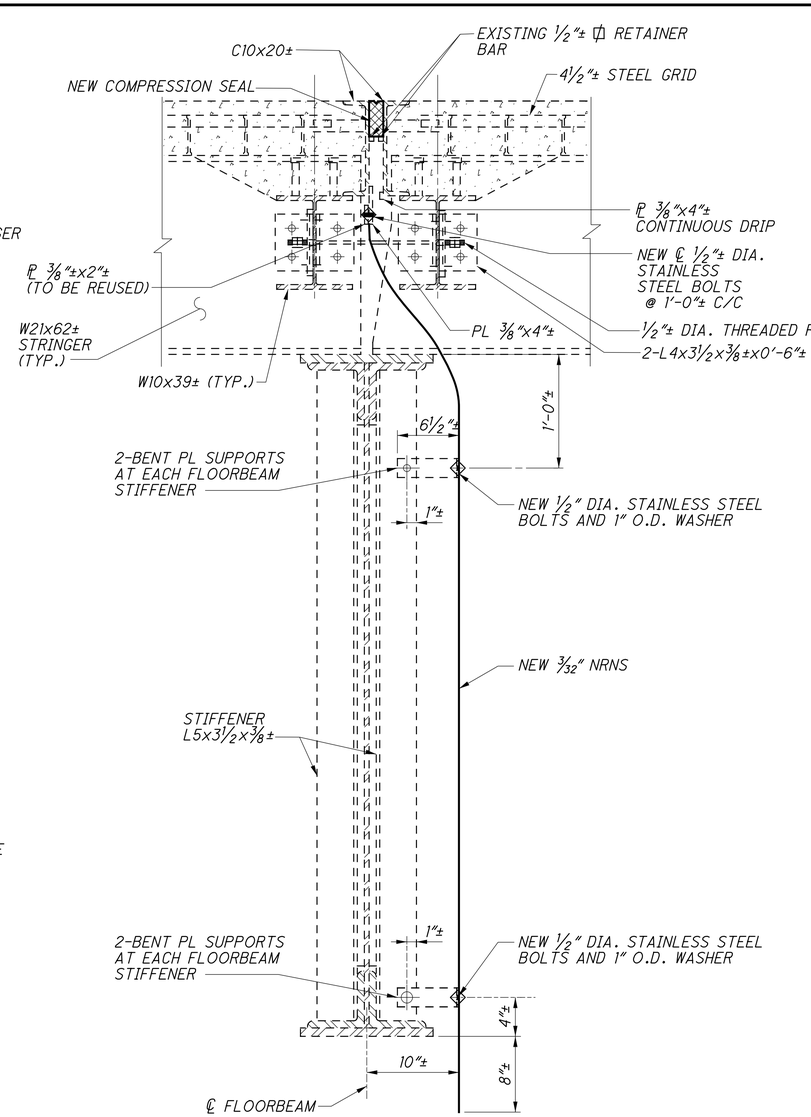
228/234



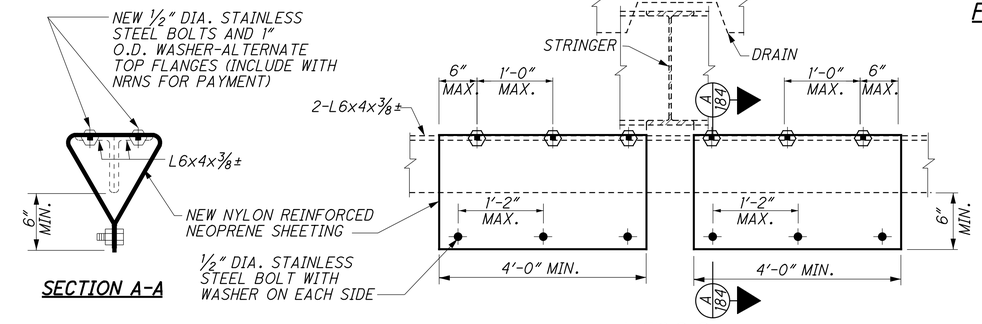
PLAN
(PANEL POINT 56 SHOWN)



FLASHING SUPPORT ELEVATION VIEW AT DEFLECTION JOINT

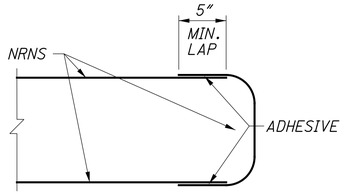


FLASHING SUPPORT DETAIL AT DEFLECTION JOINTS
(PANEL POINTS 18, 28, 45, 52 & 62)
(PANEL POINT 35 SIMILAR AT FLOORBEAM)



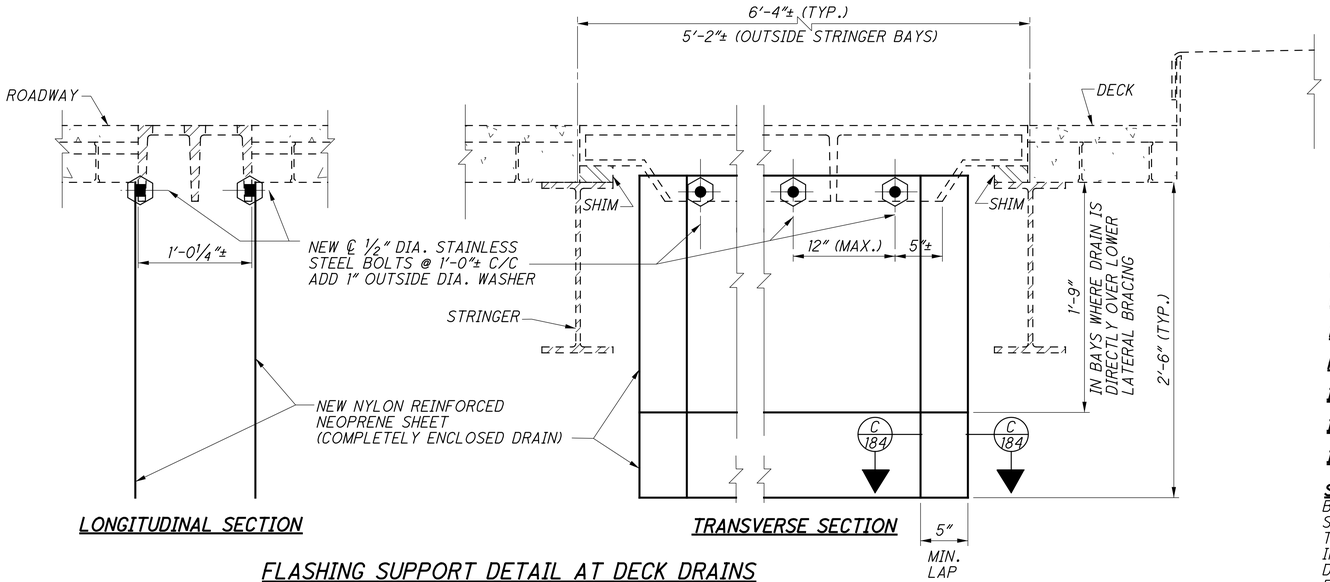
SECTION A-A

VIEW B-B



SECTION C-C

FLASHING DETAIL AT LOWER LATERAL BRACING BELOW DECK DRAINS
(PANELS 2, 8, 14, 20, 25, 30, 51, 56, 61, 67)



LONGITUDINAL SECTION

TRANSVERSE SECTION

FLASHING SUPPORT DETAIL AT DECK DRAINS
(PANELS 2, 8, 14, 20, 25, 30, 51, 56, 61, 67)

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NOTATION: O.D. - OUTSIDE DIAMETER

BOLT LEGEND: SEE SHEET 11/189 .

FRAMING PLAN: SEE SHEETS 28/189 AND 29/189 FOR REPAIR LOCATIONS.

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (DEFLECTION JOINTS): SEE GENERAL NOTE SHEET 9/189 .

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (DECK DRAINS): SEE GENERAL NOTE SHEET 9/189 .

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (LOWER LATERAL BRACING): SEE GENERAL NOTE SHEET 10/189 .

SHEETING LENGTH AT LOWER LATERAL BRACING BELOW DECK DRAINS: THE CONFIGURATION OF THE LOWER LATERAL BRACING BELOW THE DECK DRAINS VARIES IN EACH PANEL. WHERE THE DRAIN, STRINGER AND BRACING INTERSECT, THE SHEETING SHALL BE AS PER THE DETAIL OR A CONTINUOUS 8'-0" LAYER CAN BE INSTALLED IF A GAP EXISTS BETWEEN THE STRINGER BOTTOM FLANGE AND THE TOP OF THE BRACING. FOR LOCATIONS IN PANELS WHERE THE DRAIN/BRACING INTERSECTION IS AWAY FROM THE STRINGER, A CONTINUOUS 8'-0" LENGTH SHALL BE INSTALLED, CENTERED ON THE DRAIN. IF NO GAPS EXIST BETWEEN THE BOTTOM OF THE STRINGER AND THE TOP OF THE BRACING, THE ENGINEER MAY PERMIT THE SHEETING TO END AT THE STRINGER/BRACING INTERSECTION.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

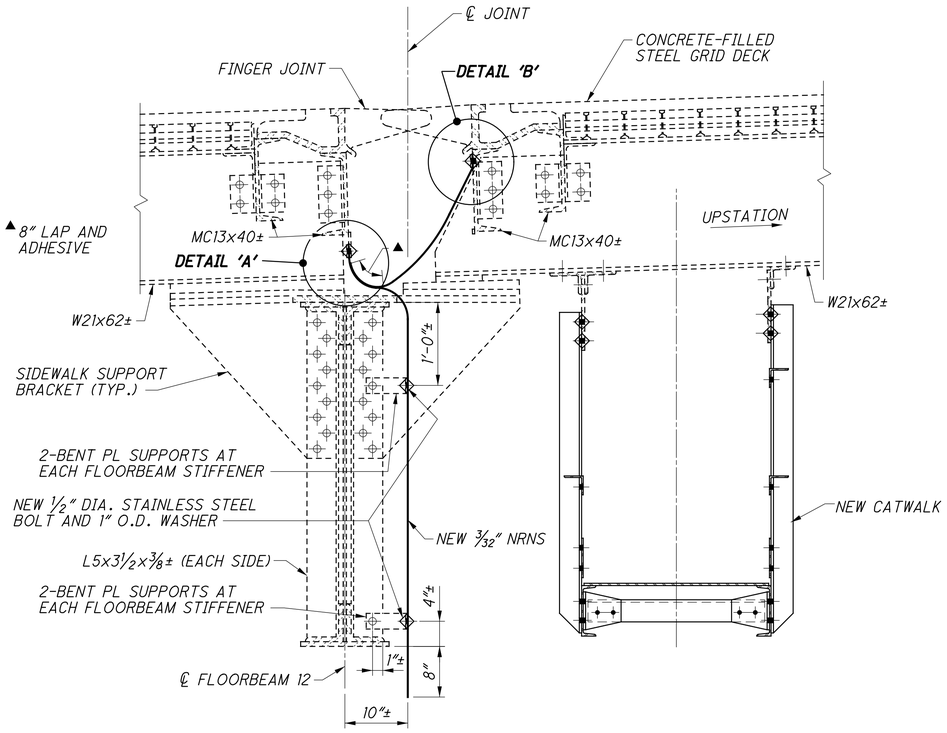
DESIGNED KAK | DRAWN TWH | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

NEOPRENE FLASHING SUPPORT DETAILS
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

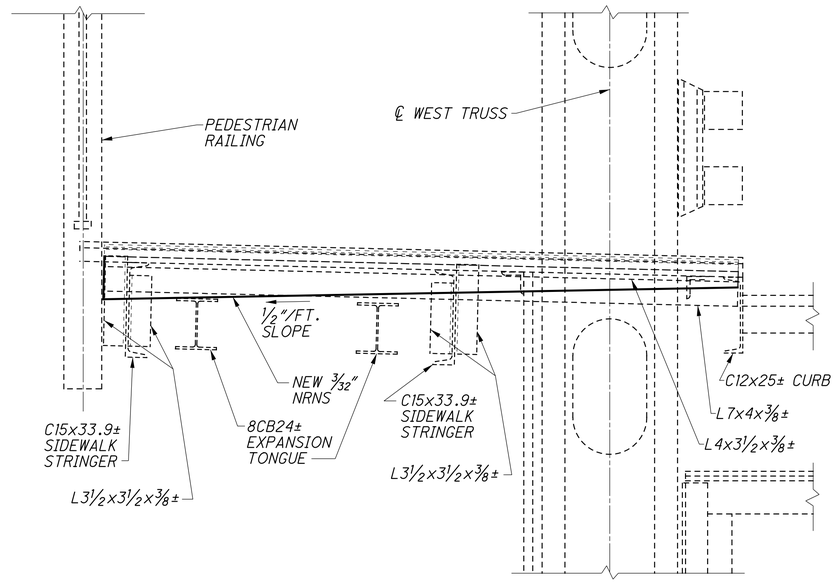
LOR-611-3.44
PID No. 92009

184/189

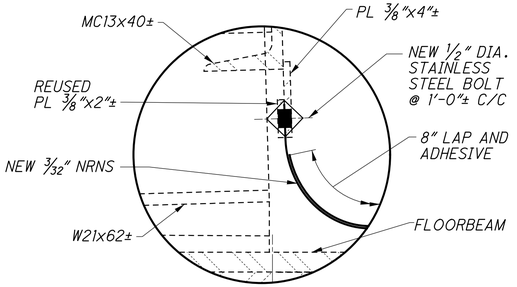
229/234



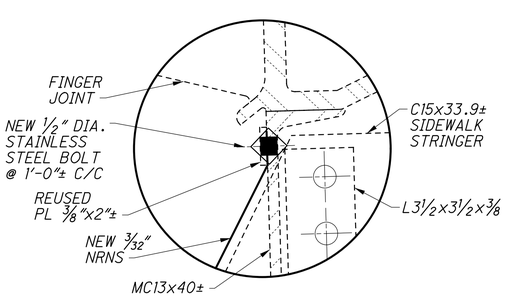
SECTION B-B



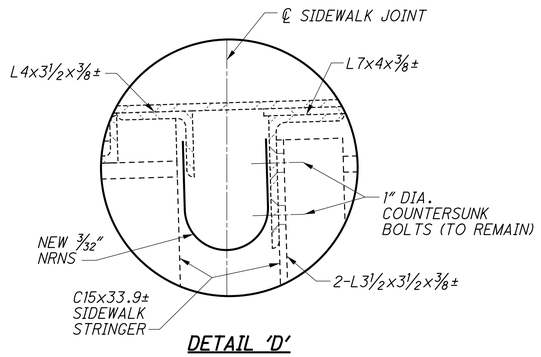
VIEW D-D



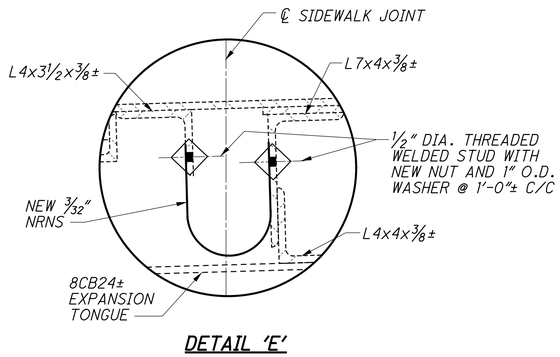
DETAIL 'A'



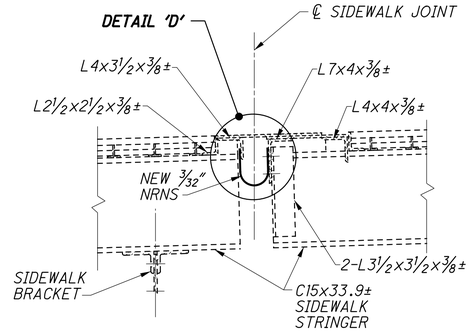
DETAIL 'B'



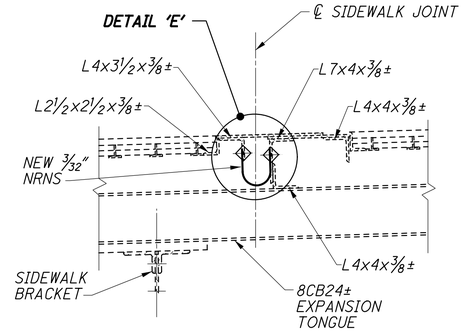
DETAIL 'D'



DETAIL 'E'



SECTION C-C
(AT C15x33.9± SIDEWALK STRINGER)



SECTION C-C
(AT 8CB24± EXPANSION TONGUE)

NOTES

BOLT LEGEND: SEE SHEET 11/189 .

STEEL MEMBERS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

PAINTING LEGEND: SEE SHEET 162/189.

PAINTING DETAILS ARE NOT SHOWN ON THIS SHEET.

ADDITIONAL NYLON REINFORCED NEOPRENE SHEETING (NRNS) DETAILS: SEE SHEET 184/189.

FOR SECTIONS B-B AND C-C LOCATIONS: SEE SHEET 170/189.

FOR VIEW D-D LOCATIONS: SEE SHEET 170/189.

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINTS, ROADWAY DRAINS OR DEFLECTION JOINTS): SEE SHEET 9/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	SCB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

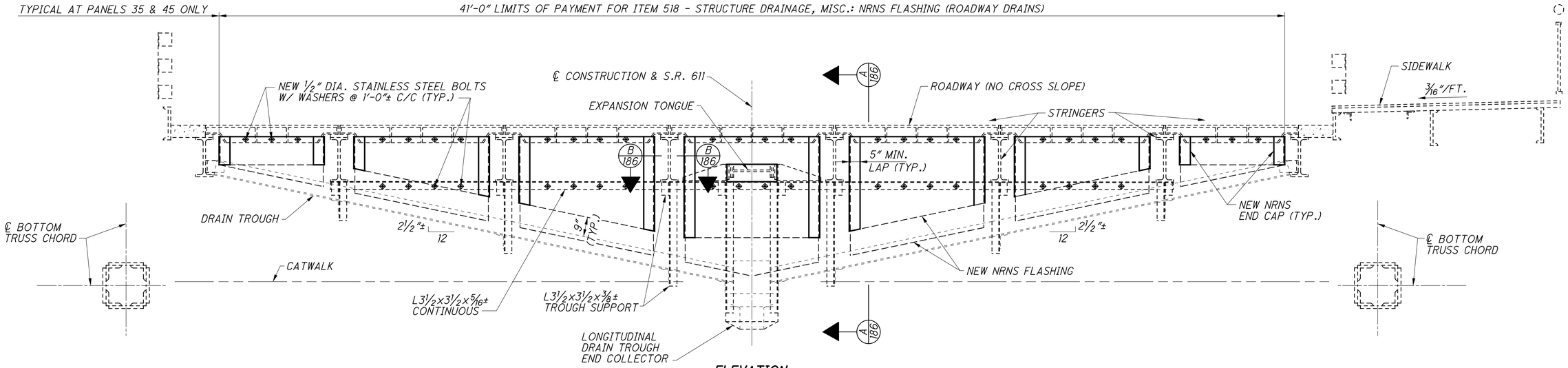
PANEL POINT 12 NEOPRENE FLASHING DETAILS

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

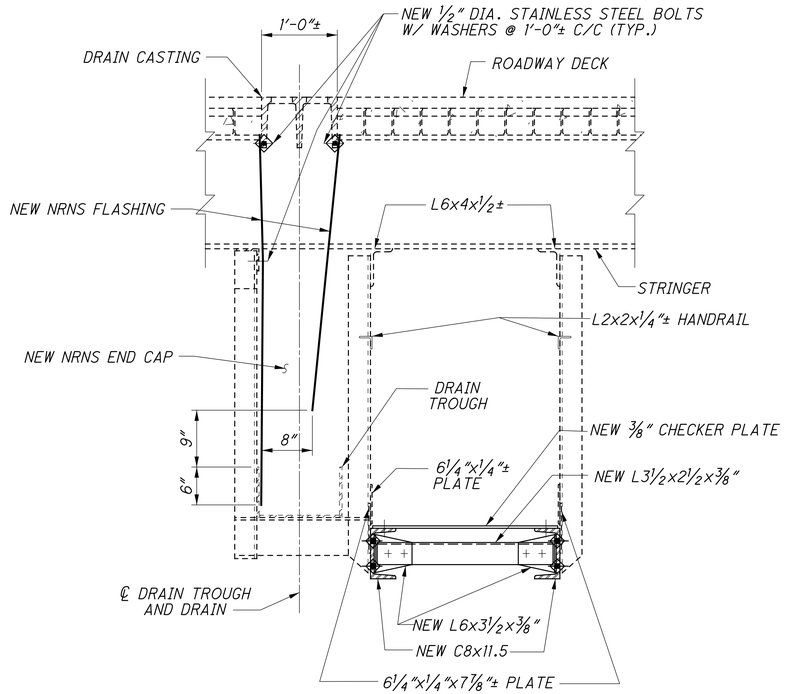
LOR-611-3.44
PID No. 92009

185/189

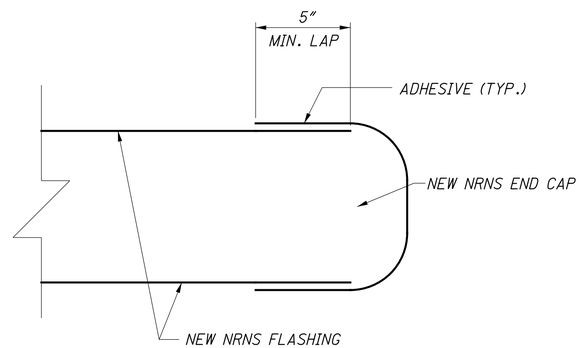
230/234



ELEVATION



SECTION A-A
(NEW CATWALK MATERIAL AT L45 ONLY)



SECTION B-B

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.

NRNS - NYLON REINFORCED NEOPRENE SHEETING

ITEM 518 - STRUCTURE DRAINAGE, MISC.: NRNS FLASHING (EXPANSION JOINT, ROADWAY DRAINS OR DEFLECTION JOINT): SEE GENERAL NOTE SHEET 9 /189.

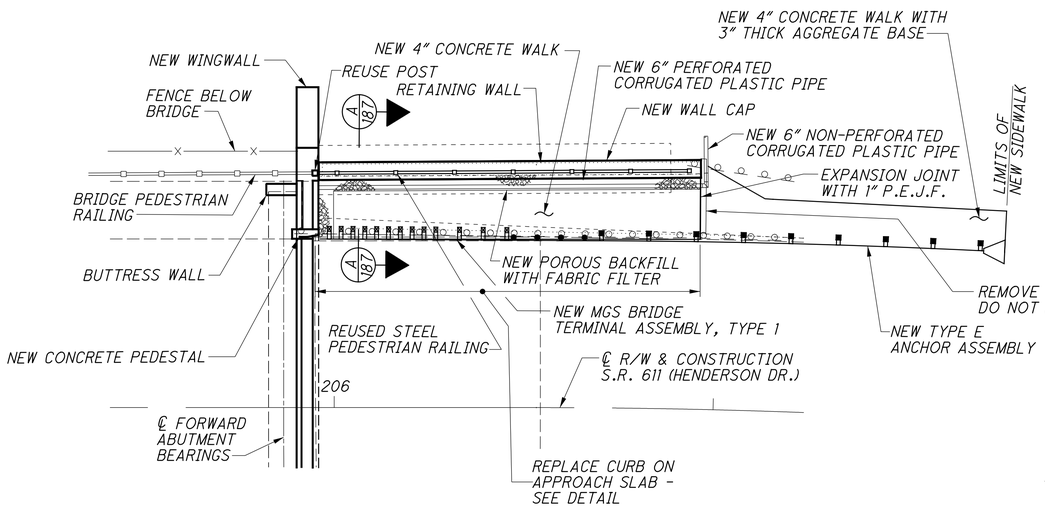
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

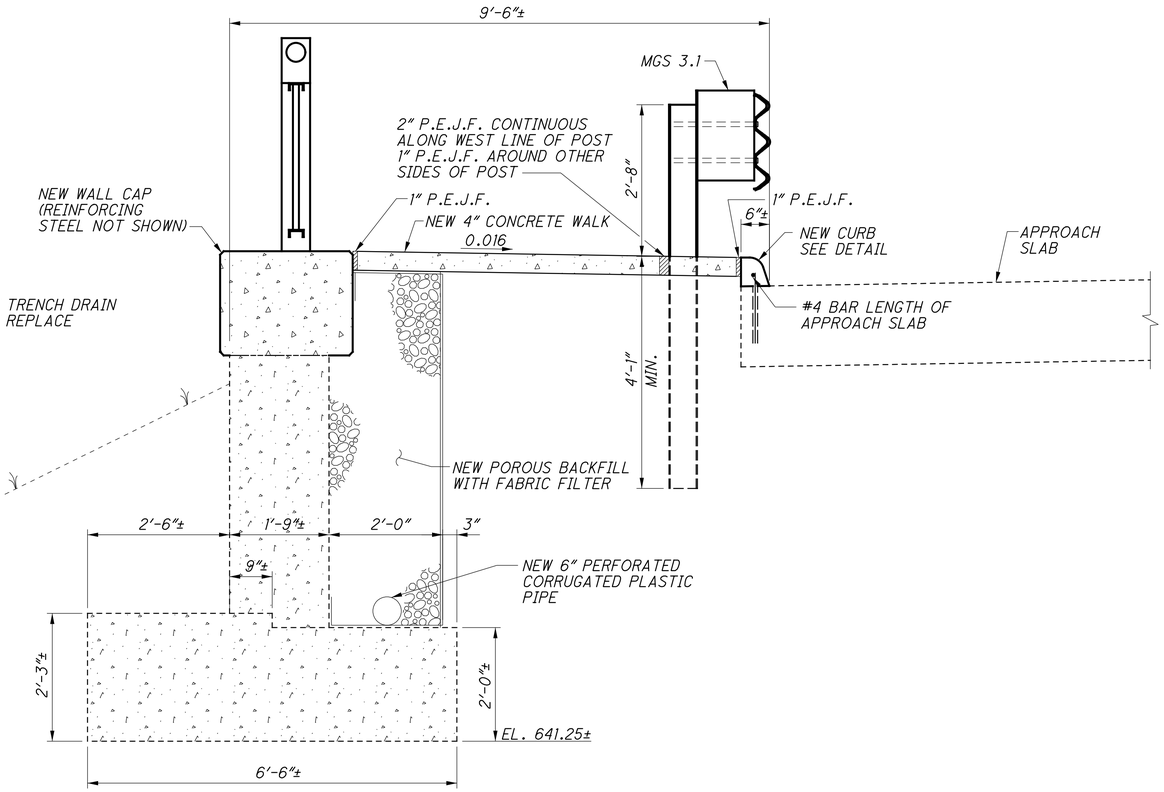
ROADWAY DRAIN NEOPRENE FLASHING AT PANELS 36 AND 45

BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

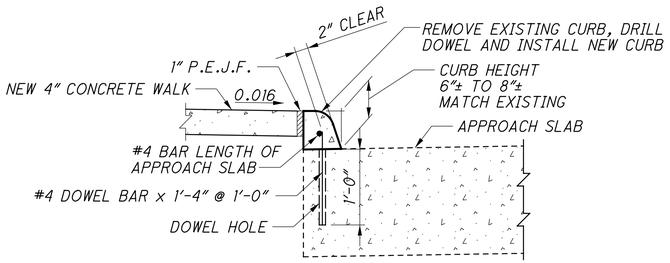
LOR-611-3.44
PID No. 92009



PLAN



SECTION A-A



APPROACH SLAB CURB DETAIL

LEGEND

P.E.J.F. - PREFORMED EXPANSION JOINT FILLER

NOTES

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

ITEM 517 - RAILING, MISC.: RETAINING WALL STEEL PEDESTRIAN RAILING REUSED SEE GENERAL NOTE SHEET 9 /189 .

SIDEWALK DETAILS: SEE SHEET 20 OF 221.

PREFORMED EXPANSION JOINT MATERIALS INCLUDED WITH ITEM 608 SIDEWALK FOR PAYMENT.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

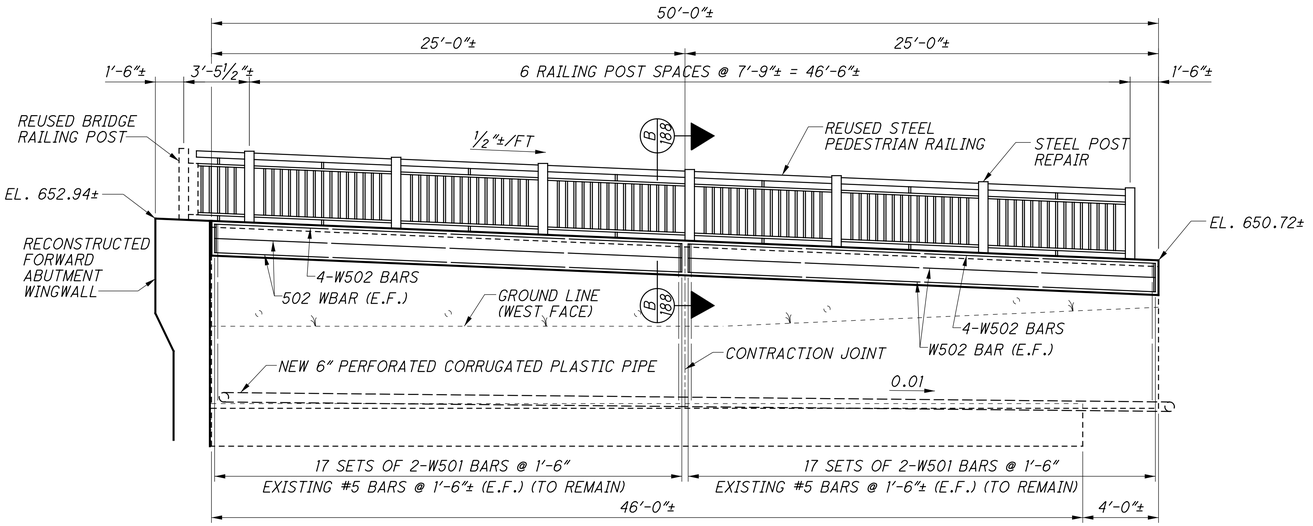
DESIGNED DAP | DRAWN JSB | CHECKED BLN | REVIEWED DLR | DATE 9/25/15 | REVISED | STRUCTURE FILE NUMBER 4707443

RETAINING WALL PLAN
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

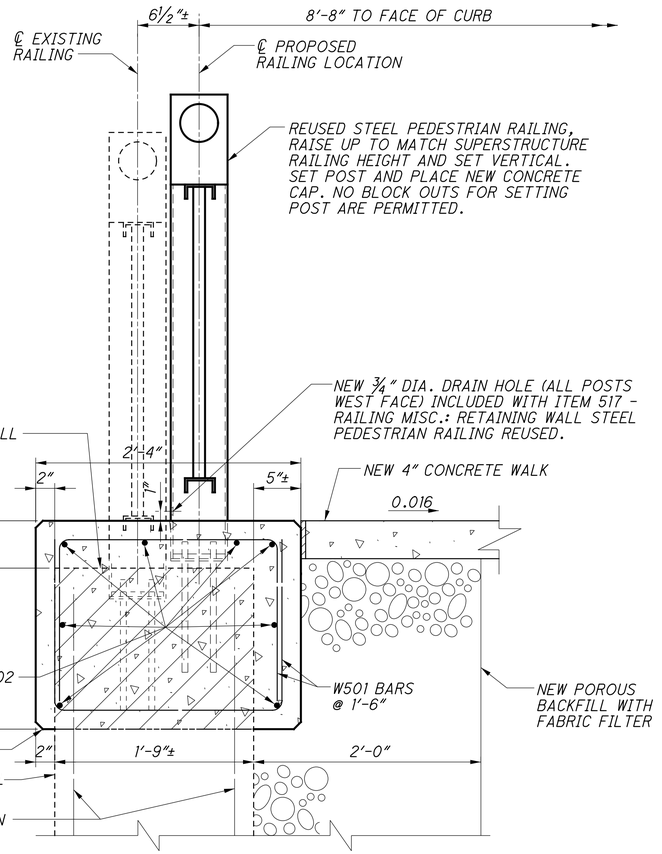
187/189

232/234

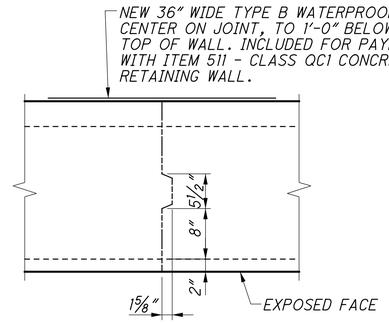


WALL ELEVATION

(EAST FACE SHOWN)



SECTION B-B

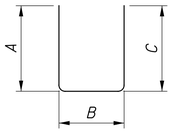


CONTRACTION JOINT DETAIL

(MATCH EXISTING LOCATION AND CONFIGURATION)

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
RETAINING WALL											
W501	68	4'-9"	337	2	1'-6"	2'-0"	1'-6"				
W502	16	24'-6"	409	STR							
		TOTAL	746								

CALCULATED JLS DATE 8/14
CHECKED BLN DATE 2/15



TYPE-2

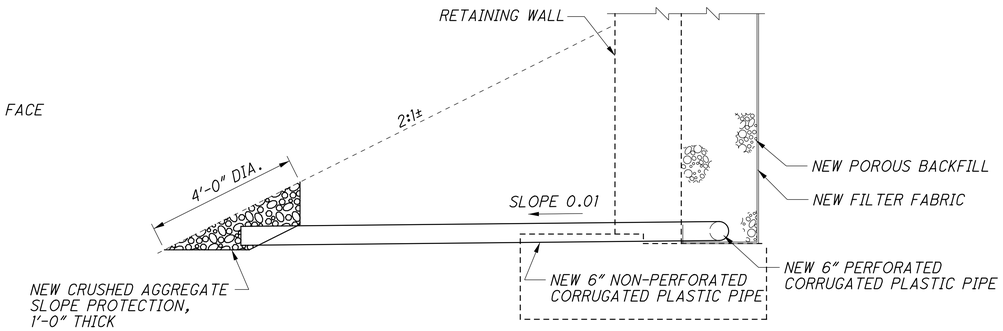
NOTES

BAR SIZE *IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION. THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.*

EXAMPLE: 511
W = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT)
5 = BAR SIZE DESIGNATION
11= SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL TO BE EPOXY COATED, PER CMS 709.00.



TERMINATION OF 6" NON-PERFORATED CONDUIT

NOTES

MATERIALS *SHOWN ARE EXISTING UNLESS NOTED OTHERWISE.*

ADDITIONAL NOTES: *SEE SHEET* 187/189.

STEEL POST DETAILS: *SEE SHEET* 189/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DAP | DRAWN JSB | REVIEWED DLR | DATE 9/25/15
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 4707443

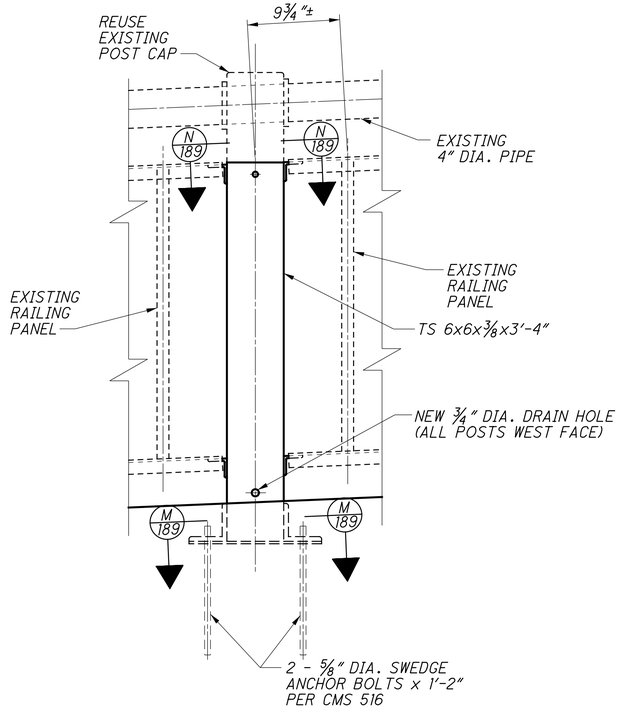
RETAINING WALL DETAILS - 1
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

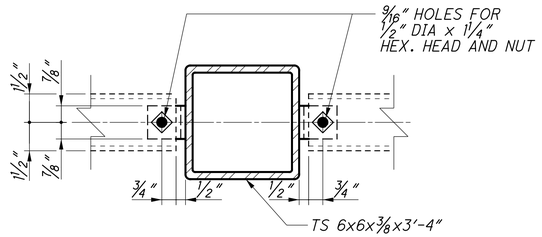
188/189

233
234

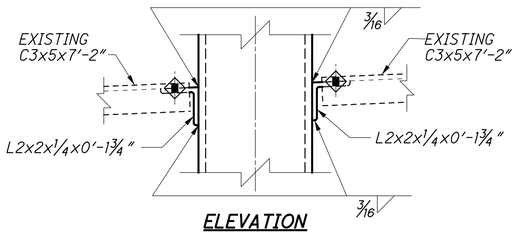
F:\2011\111048 LOR-611\92009\structures\LOR611_0344C\sheets\111048WD003.dgn 9/29/2015 11:43:31 AM JeremyBurns



STEEL POST REPAIR

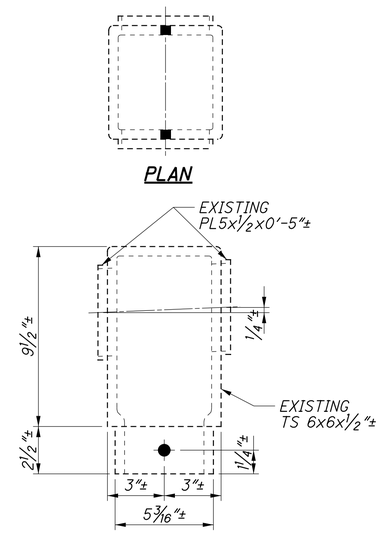


PLAN

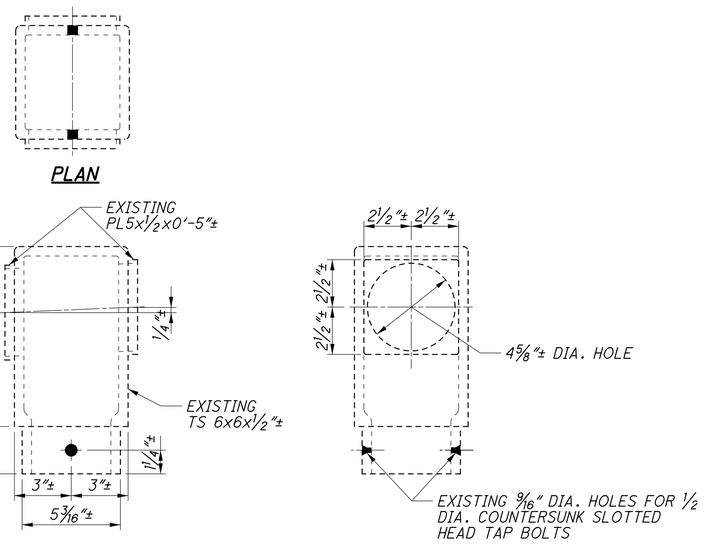


ELEVATION

SECTION N-N



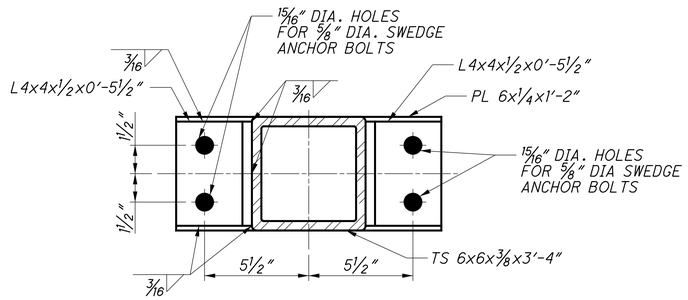
ELEVATION



SIDE VIEW

PLAN

EXISTING POST CAP DETAIL



SECTION M-M

NOTES

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

BOLT LEGEND: SEE SHEET 11/189.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DAP	JSB	DLR	9/25/15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		4707443	

RETAINING WALL DETAILS - 2
BRIDGE NO. LOR-611-0344
OVER BLACK RIVER

LOR-611-3.44
PID No. 92009

189/189

234/234

PROJECT DESCRIPTION

RICHLAND ENGINEERING LIMITED (REL) HAS INDICATED THAT ODOT DISTRICT 3 DESIRES TO REPAIR A CRACK SLIP LOCATED ALONG THE SOUTH BOUND LANE OF SR 611 JUST NORTH OF THE EXISTING BRIDGE OVER BLACK RIVER IN LORAIN COUNTY, OHIO. THE CURRENT APPROXIMATE SURVEYED LIMITS OF THE CRACK/SLIP ARE FROM STATION 209+25 TO 210+90. THE CRACK WAS MEASURED BY REL TO BE 8 INCHES DEEP.

IN ADDITION, WE UNDERSTAND THAT A RETAINING WALL IS EXPERIENCING MOVEMENT IN THE AREA OF STATION 206+00 AT THE NORTHERN BRIDGE ABUTMENT ON THE WEST SIDE. THE WALL IS APPROXIMATELY 50 FEET LONG, 10 FEET HIGH AND IS SUPPORTED ON SPREAD FOUNDATIONS. REL ORIGINALLY INDICATED TO S&ME THAT THE WALL HAD MOVED OUT 4 TO 7 INCHES AND SETTLED 2 TO 3 INCHES, BUT DID NOT APPEAR TO BE ROTATING. BASED ON UPDATED INFORMATION PROVIDED BY REL ON DECEMBER 10, 2013, THE WALL HAS SETTLED ABOUT 2 TO 3 INCHES AND HAS MOVED WEST AS MUCH AS 4 TO 5 INCHES OVER THE LAST 25 YEARS. REL REPORTED THAT MOST OF THE MOVEMENT OCCURRED OVER 20 YEARS AGO.

THE SCOPE OF WORK FOR THIS PROJECT INCLUDED TWO (2) TOP OF SLOPE BORINGS, ONE (1) TOE OF SLOPE BORING, AND TWO (2) PAVEMENT BORINGS FOR THE EMBANKMENT AND ONE (1) TOP OF SLOPE BORING, ONE (1) TOE OF SLOPE BORING, AND ONE (1) PAVEMENT BORING FOR THE RETAINING WALL. AN EMBANKMENT MID-SLOPE BORING WITH AN INCLINOMETER AND TWO (2) TOE OF SLOPE BORINGS AND OFFSET BORINGS WITH INCLINOMTERS AND PEIZOMETERS WERE LATER ADDED TO THE SCOPE. IN ADDITION TO THESE BORINGS, ONE ADDITIONAL BORING WAS PERFORMED WITHIN THE LIMITS OF THE CRACK AT THE TOP OF THE SLOPE TO ALLOW FOR THE INSTALLATION OF AN ADDITIONAL INCLINOMETER BRINGING THE TOTAL NUMBER OF INCLINOMETERS TO FIVE (5).

HISTORIC RECORDS

BBCM PERFORMED A SUBSURFACE INVESTIGATION FOR RICHLAND ENGINEERING IN 1998 AT THE SITE. A TOTAL OF FOUR (4) BORINGS, B-1 THROUGH B-4 WERE PERFORMED WITHIN THE PROJECT AREA. THE BORING LOCATIONS ARE SHOWN ON THE PLAN AND HAVE BEEN RENUMBERTED AS B-001-0-98 THROUGH B-004-0-98. COPIES OF THE LOGS ARE ALSO INCLUDED. PLEASE NOTE THAT THE LOGS ARE IN METRIC UNITS.

GEOLOGY

THE PROJECT SITE IS LOCATED IN A GLACIATED PORTION OF THE STATE IN THE ERIE LAKE PLAIN PHYSIOGRAPHIC REGION OF OHIO. NATURAL SOILS BENEATH THE ROADWAY EMBANKMENT FILL AT THE SITE MAY BE WAVE-PLAINED GROUND MORAINE DEPOSITS FROM THE WISCONSINAN GLACIAL EVENT. LAKE BED DEPOSITS ARE ALSO PRESENT NEAR THIS AREA OF THE STATE. THESE SOIL DEPOSITS ARE INDICATED TO OVERLIE DEVONIAN AGE SHALE AND SILTSTONE, WITH SOME SANDSTONE. BEDROCK TOPOGRAPHY MAPS SUGGEST ROCK MAY BE PRESENT AT ELEVATIONS VARYING BETWEEN EL. 500 AND EL. 600. THIS WAS GENERALLY CONFIRMED BY PREVIOUS BORINGS PERFORMED BY S&ME AT THE SITE. GROUND SURFACE ELEVATIONS VARY FROM EL. 570 TO EL. 650 (BUILT UP EMBANKMENT) IN THE VICINITY OF THE SITE.

A REVIEW OF THE ODNR "OHIO KARST AREAS" MAP AND THE "ABANDONED UNDERGROUND MINES OF OHIO" MAP REVEAL THAT NO MAPPED KARST DEPOSITS OR MAPPED ABANDONED UNDERGROUND MINES ARE PRESENT IN THE VICINITY OF THE SITE. A REVIEW OF THE ODNR "LANDSLIDES" MAP REVEALS THAT THE SITE IS IN AN AREA OF THE STATE SUBJECT TO SEVERE SLOPE FAILURE. ACCORDING TO THE LANDSLIDE MAP, THE NORTHERN BORDER OF LORAIN COUNTY MAY CONSIST OF CUYAHOGA VALLEY LAKE DEPOSITS.

RECONNAISSANCE

ON JUNE 20, 2013, S&ME PERFORMED A SITE RECONNAISSANCE OF THE SUBJECT SITE. DURING THE VISIT, A CRACK WAS VISIBLE IN THE OUTSIDE SOUTHBOUND LANE OF S.R. 611 NORTH OF THE BRIDGE. NO OBVIOUS SCARPS WERE NOTED IN THE GRASS COVERED SLOPE. CAT TAILS WERE NOTICEABLE AT THE TOE OF THE SLOPE, BUT FURTHER NORTH OF THE AREA WHERE THE CRACK IN THE PAVEMENT IS VISIBLE. THE GUARDRAIL IN FRONT OF THE RETAINING WALL APPEARED TO HAVE BEEN RECENTLY HIT AND REPAIRED. THE WALL APPEARED TO BE SLIGHTLY LEANING OUT, BUT NO OBVIOUS VISIBLE CRACKING WAS SEEN IN THE CONCRETE WALL FACE.

S&ME WAS ALSO ON SITE ON AUGUST 9, 2013, TO FIELD LOCATE THE BORINGS AND AGAIN ON SEPTEMBER 6, OCTOBER 10, AND OCTOBER 21, 2013 TO OBTAIN INCLINOMETER READINGS. AT THE TIME OF THE AUGUST 9, 2013 VISIT, THE PAVEMENT APPEARED TO JUST HAVE BEEN OVERLAYED AND THE CRACK WAS NOT VISIBLE.

DURING A TRIP TO OBTAIN INCLINOMETER READINGS ON NOVEMBER 13, 2013, WORK IN THE FORM OF A NEW DRAINAGE DITCH AT THE TOE WAS NOTED. THE COMPANY WHO OCCUPIES THE PROPERTY AT THE TOE EXPRESSED TO OUR FIELD PERSONNEL THAT THEY HAVE EXPERIENCED WATER/DRAINAGE ISSUES. IN AN EFFORT TO CONTROL THE WATER, THEY HAVE TAKEN IT UPON THEMSELVES TO EXCAVATE A DITCH AT THE TOE OF THE EMBANKMENT AND TO ALSO INSTALL A DRAINAGE PIPE NEAR THE TOE AT THE RETAINING WALL. FIVE TRIPS HAVE BEEN MADE IN 2014 FOR INCLINOMETER READINGS.

SUBSURFACE EXPLORATION

DURING THE PERIOD OF AUGUST 19 THROUGH OCTOBER 28, 2013, S&ME PERFORMED A TOTAL OF EIGHT (8) BORINGS RANGING IN DEPTHS FROM 10 TO 74.5 FEET. BORING B-001-1-13 WAS ELIMINATED DUE TO ACCESS CONSTRAINTS AND BORING B-003-2-13 WAS ADDED TO OBTAIN ADDITIONAL INFORMATION WITHIN THE AREA OF THE MAPPED CRACK ALONG S.R. 611 EMBANKMENT.

THE BORINGS WERE PERFORMED USING BOTH A TRUCK-MOUNTED AND ALL-TERRAIN- VEHICLE MOUNTED DRILL RIG. THE BORINGS WERE ADVANCED BETWEEN SAMPLING ATTEMPTS USING A 3 ¼-INCH I.D. HOLLOW-STEM AUGER. AT SPECIFIED INTERVALS (CONTINUOUS, 2-1/2, AND 5-FOOT DEPENDING ON THE BORING AND DEPTH), DISTURBED BUT REPRESENTATIVE SOIL SAMPLES WERE OBTAINED BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH BLOWS FROM A 140-POUND HAMMER FREELY FALLING 30 INCHES (ASTM D1586 - STANDARD PENETRATION TEST). IN ACCORDANCE WITH THE CURRENT ODOT SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS (SGE), THE HAMMER SYSTEM ON THE DRILL RIGS HAS BEEN CALIBRATED IN ACCORDANCE WITH ASTM D 4633 TO DETERMINE THE DRILL ROD ENERGY RATIO.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH.	CLASSIFIED VISUAL
GRAVEL	A-1-a	2	3
GRAVEL WITH SAND	A-1-b	2	7
COARSE AND FINE SAND	A-3a	0	5
SANDY SILT	A-4a	2	1
SILT AND CLAY	A-6a	10	42
SILTY CLAY	A-6b	7	59
CLAY	A-7-6	4	10
	TOTAL	27	127
SHALE	VISUAL		
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		

BORING LOCATION - PLAN VIEW

INSTRUMENTED BORING LOCATION - PLAN VIEW

DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.

WC INDICATES WATER CONTENT IN PERCENT.

N INDICATES STANDARD PENETRATION RESISTANCE FOR HISTORIC BORINGS.

N_{60} INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.

W— INDICATES FREE WATER ELEVATION.

▼— INDICATES STATIC WATER ELEVATION.

NP INDICATES A NON-PLASTIC SAMPLE.

SS INDICATES A SPLIT SPOON SAMPLE, STANDARD PENETRATION TEST.

ST INDICATES A SHELBY TUBE SAMPLE.

TR— INDICATES TOP OF BEDROCK.

SUBSURFACE EXPLORATION CONTINUED

A TOTAL OF TWO (2) UNDISTURBED (SHELBY TUBE) SAMPLES WERE ALSO OBTAINED BY HYDRAULICALLY PRESSING THE SAMPLER AT A CONSTANT RATE OF PENETRATION. THE SAMPLES WERE PRESERVED BY FIRST CLEANING THE DISTURBED PORTION OF THE SOILS OUT OF THE ENDS OF THE TUBES AND THEN SEALING THE TUBES WITH WAX. ALL RECOVERED SAMPLES WERE TRANSPORTED TO THE SOILS LABORATORY OF S&ME FOR FURTHER EXAMINATION AND TESTING. AT THE COMPLETION OF DRILLING, THE BORINGS WITHOUT INCLINOMETERS OR STANDPIPE WERE BACKFILLED IN ACCORDANCE WITH THE ODOT SGE.

S&ME'S SUBCONTRACT DRILLER, OTB, WAS ON SITE JUNE 5 AND 6, 2014, WITH A SKID RIG AND PERFORMED ONE (1) MID-SLOPE BORING TO A DEPTH OF 55 FEET. CONTINUOUS SAMPLING, 10 FEET OF ROCK CORE, AND INCLINOMETER INSTALLATION WERE ALL PERFORMED IN THE MID-SLOPE BORING, ALONG WITH RETRIEVAL OF ONE (1) SHELBY TUBE SAMPLE.

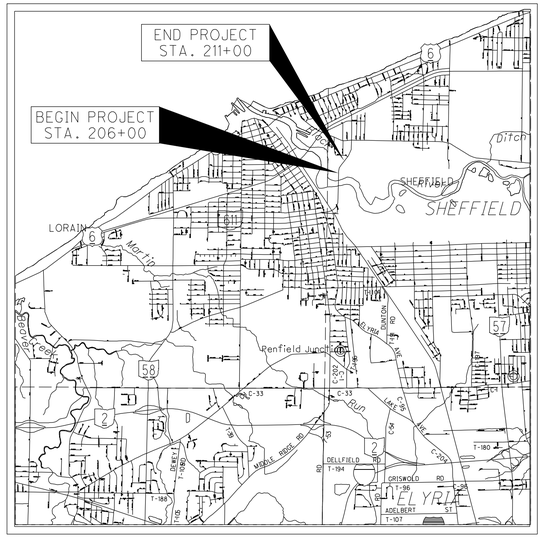
DURING THE PERIOD OF NOVEMBER 10 THROUGH 13, 2014 OTB RETURNED TO THE SITE TO PERFORM TWO (2) ADDITIONAL TOE OF SLOPE BORINGS WITH INCLINOMETERS AND TWO (2) OFFSET BORINGS WITH PEIZOMETERS. THE BORINGS WERE EXTENDED TO DEPTHS OF 41.5 AND 40 FEET AND WERE CONTINUOUSLY SAMPLED TO BEDROCK. TWENTY (20) FEET OF ROCK CORE WAS ATTEMPTED IN ALL FOUR (4) BORINGS. IN ADDITION, TWO (2) SHELBY TUBES SAMPLES WERE OBTAINED.

INSTRUMENTATION INSTALLATION

INCLINOMETER CASING WAS INSTALLED IN BORINGS B-002-0-13, B-002-1-14, B-003-2-13, B-003-3-14 AND B-003-4-14. A SLOTTED PVC STANDPIPE WAS INSTALLED IN BORINGS B-002-2-14, B-003-5-14 AND B-004-0-13. INCLINOMETER READINGS BEGAN IN LATE 2013 IN BORINGS B-002-0-13 AND B-003-2-13. READINGS CONTINED THROUGH 2014 IN THESE SAME BORINGS, ALONG WITH READINGS IN THE ADDED MID-SLOPE BORING. AT THE END OF 2014, READINGS WERE OBTAINED IN ALL FIVE (5) BORINGS AND CONTINUED THROUGH MID 2015, WITH THE LAST SET OF READINGS ON JUNE 23, 2015.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2007, INCLUDING JANUARY 2012 UPDATES.



LOCATION MAP

SCALE IN MILES

0 1 2 3 4

N

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.

EXPLORATION FINDINGS

BELOW THE PAVEMENT/SIDEWALK MATERIALS, THE BORINGS GENERALLY ENCOUNTERED EXISTING FILL RANGING IN DEPTH FROM 3 FEET (TOE OF EMBANKMENT BORING) TO 41 FEET (TOP OF EMBANKMENT BORING). THE UPPER PORTIONS OF THE FILL CONSISTED OF GRANULAR SOILS RANGING FROM LOOSE TO VERY-DENSE GRAVEL (A-1-A), GRAVEL WITH SAND (A-1-B), AND COARSE AND FINE SAND (A-3A). BELOW THE GRANULAR MATERIALS, THE EXISTING FILL CONSISTED OF VERY-STIFF TO HARD SILT AND CLAY (A-6A), SILTY CLAY (A-6B), AND CLAY (A-7-6). THE NATURAL SOILS CONSISTED OF VERY-STIFF TO HARD SILT AND CLAY (A-6A), SILTY CLAY (A-6B), AND CLAY (A-7-6). IN BORINGS B-001-2-13 AND B-003-4-14, LAYERS OF STIFF AND/OR STIFF TO VERY-STIFF COHESIVE SOILS WERE ENCOUNTERED. SHALE BEDROCK WAS ENCOUTNERED IN 11 OF THE 13 BORINGS PERFORMED FOR THIS EXPLORATION AT DEPTHS VARYING FROM 19.4 TO 69.5 FEET BELOW EXISTING GRADES. THE TOP OF BEDROCK IN THE NINE (9) EMBANKMENT BORINGS VARIED FROM ELEVATIONS OF 577.4 TO 581.1.

DURING DRILLING, SEEPAGE/GROUNDWATER WAS ENCOUNTERED IN THREE (3) OF THE EIGHT (8) BORINGS, BORINGS B-001-2, B-002-0, AND B-004-0 AT DEPTHS OF 23.5, 59.0, AND 53.3 FEET, RESPECTIVELY, BELOW THE EXISTING GROUND SURFACE. AT COMPLETION OF DRILLING, WATER ACCUMULATED IN BORINGS B-001-2 AND 004-0 TO DEPTHS OF 30.0 AND 58.3 FEET, RESPECTIVELY. NO SEEPAGE WAS NOTED DURING DRILLING IN THE REMAINING BORINGS AND THE BORINGS WERE DRY UPON THE COMPLETION OF DRILLING. SLOTTED PVC STANDPIPE WAS PLACED IN BORING B-004-0 TO ALLOW FOR EXTENDED WATER LEVEL READINGS. A WATER LEVEL WAS MEASURED IN THE STANDPIPE DURING EACH TRIP MADE FOR INCLINOMETER READINGS. THE WATER LEVEL HAS BEEN CONSISTENTLY MEASURED AT A DEPTH OF 34.6 FEET BELOW THE TOP OF THE SIDEWALK. ON JULY 11, 2014, THE WATER LEVEL WAS MEASURED AT 33.7 FEET. IN ADDITION SLOTTED PVC PIPE WAS PLACED IN TOE OF SLOPE BORINGS AND THE WATER LEVELS MEASURED IN 2015 HAVE RANGED FROM 9.2 TO 10.2 FEET IN B-002-2-14 AND 3 TO 3.6 FEET IN B-003-5-14.

RECON. - S&ME 6/20/13, 8/9/13

DRILLING - S&ME 8/19/13-6/6/14

DRAWN - KAH 8/6/14; KJD 7/9/15; 8/10/15; 8/19/15

REVIEWED - BLM 8/8/14; 7/10/15; 8/10/15

STATE OF OHIO
BETHANIE LYNN MEEK
E-62862
REGISTERED
PROFESSIONAL ENGINEER

DESIGN AGENCY S&ME

PID NO. 92009

LANDSLIDE EXPLORATION

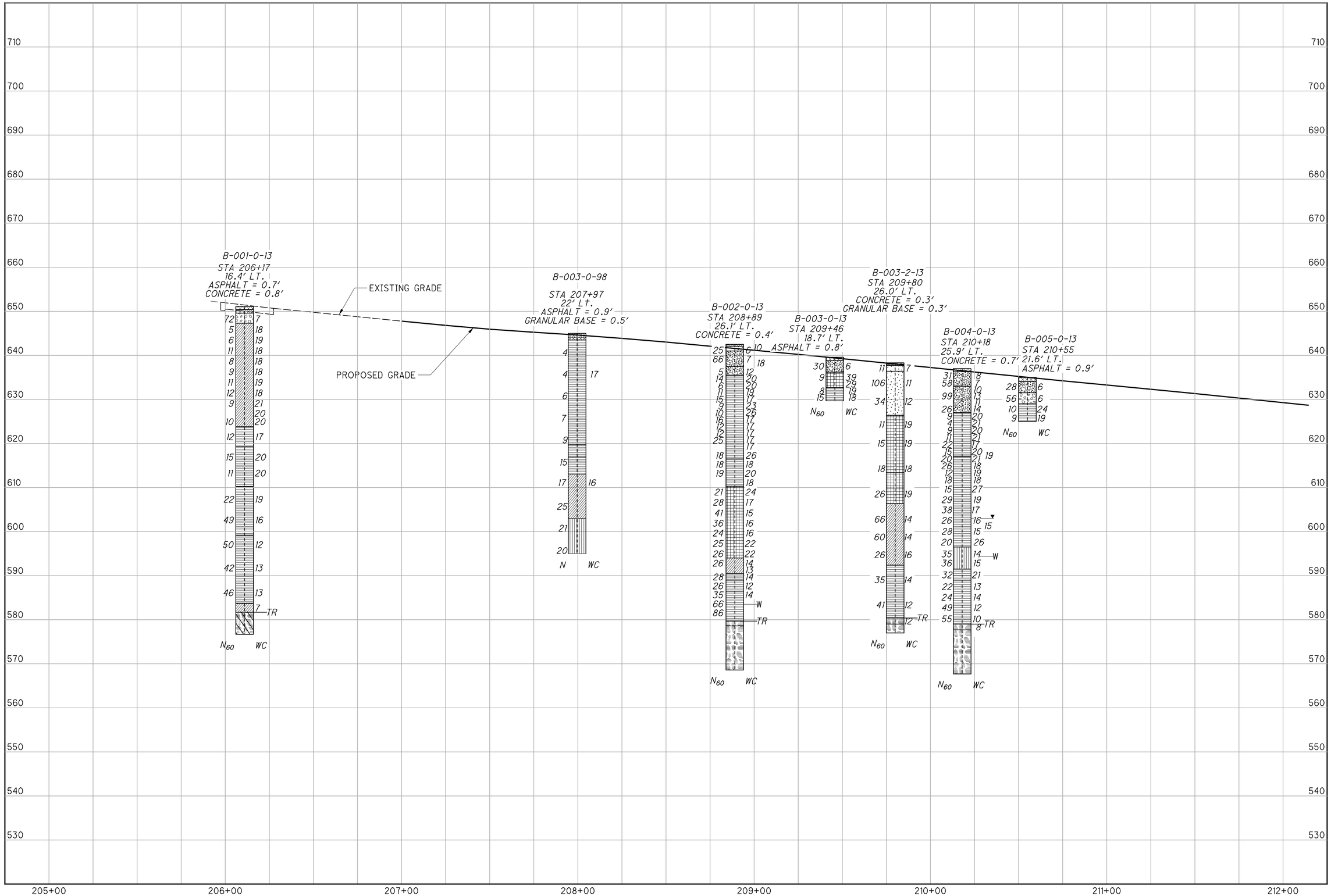
LOR-611-3.44

HORIZONTAL SCALE IN FEET
0 25 50

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION
STA. 204+50 TO STA. 213+00

LOR-611-3.44

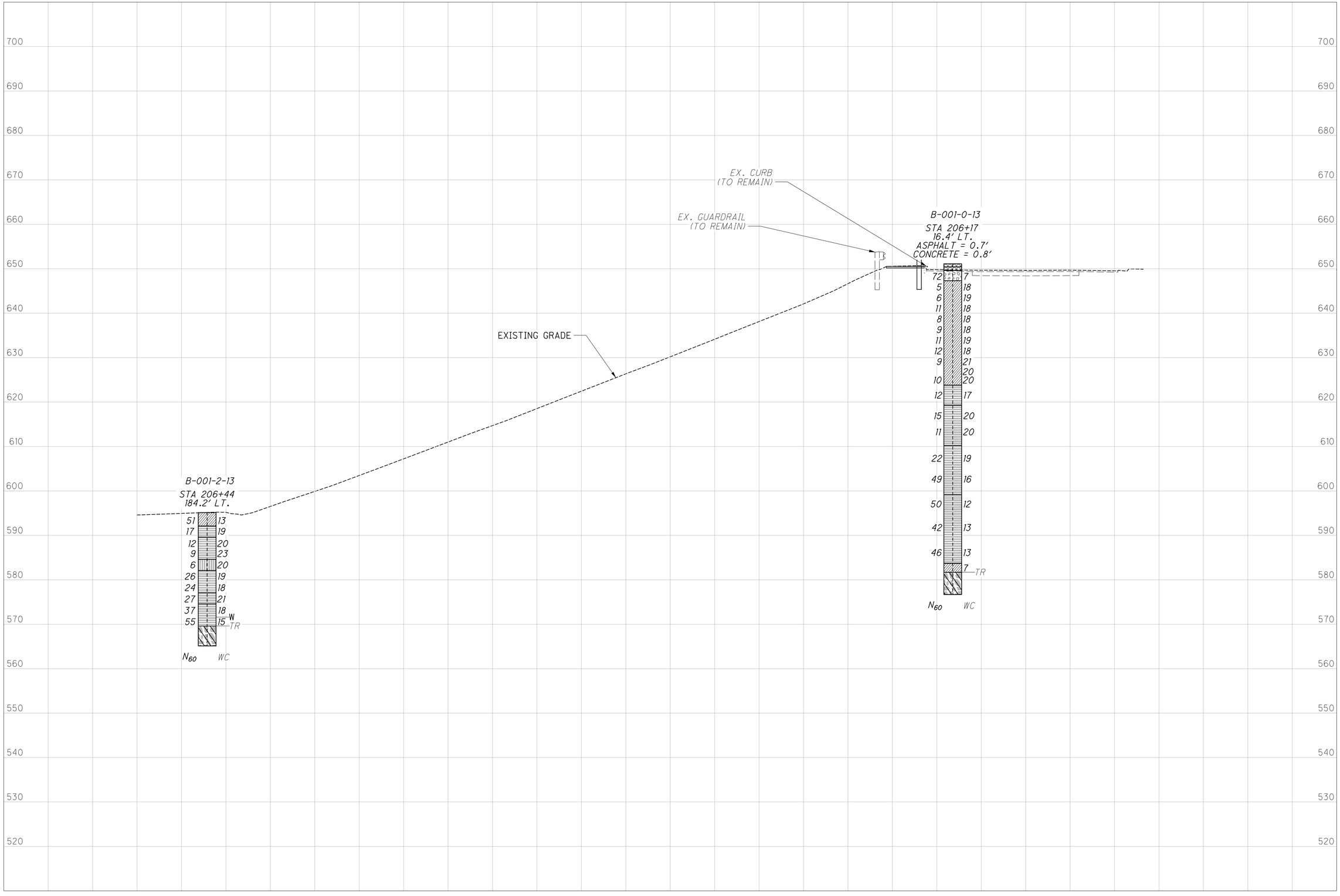


HORIZONTAL SCALE IN FEET
0 25 50

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION
STA. 204+50 TO STA. 213+00

LOR-611-3.44

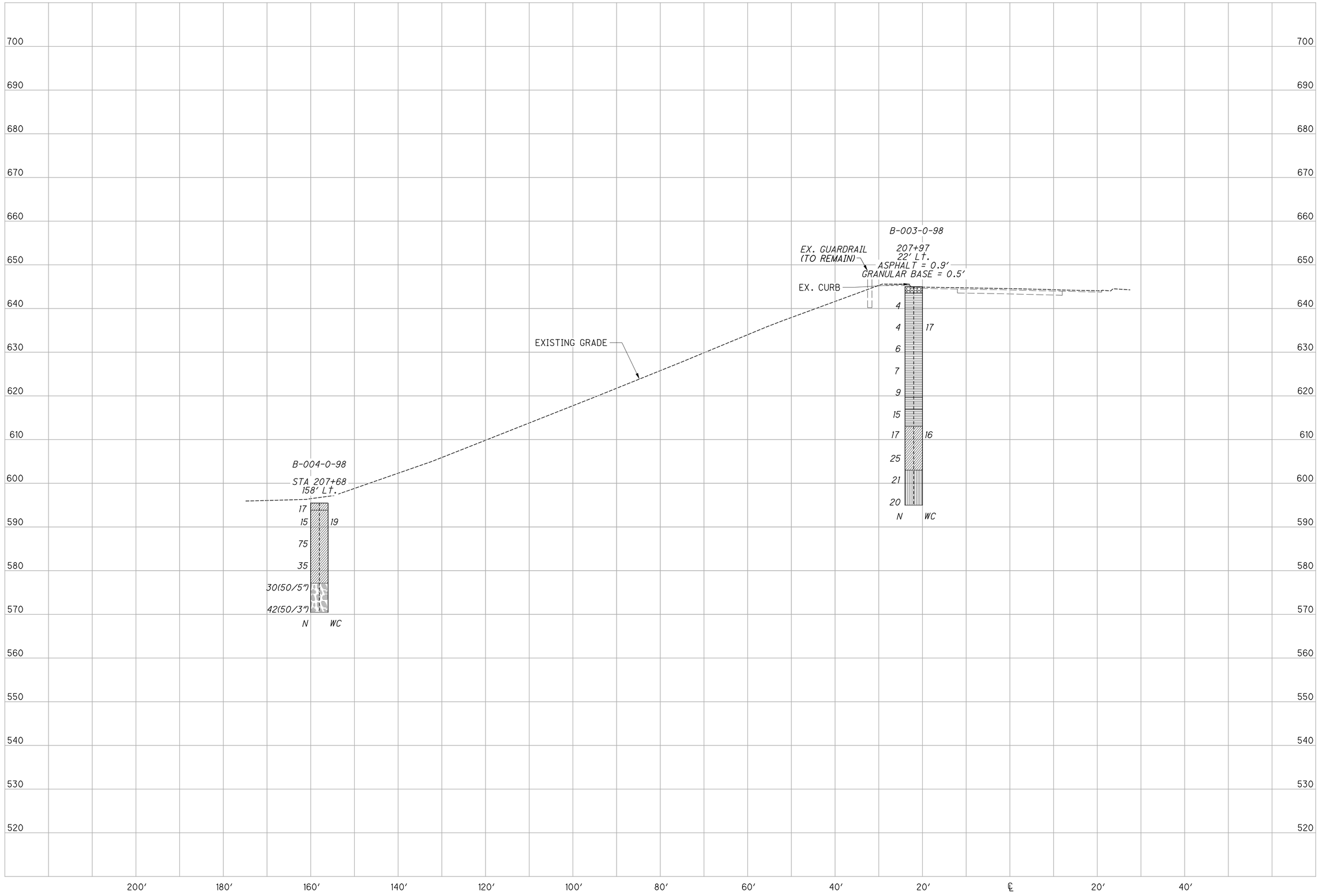


HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION CROSS SECTION STA. 206+50

LOR-611-3.44

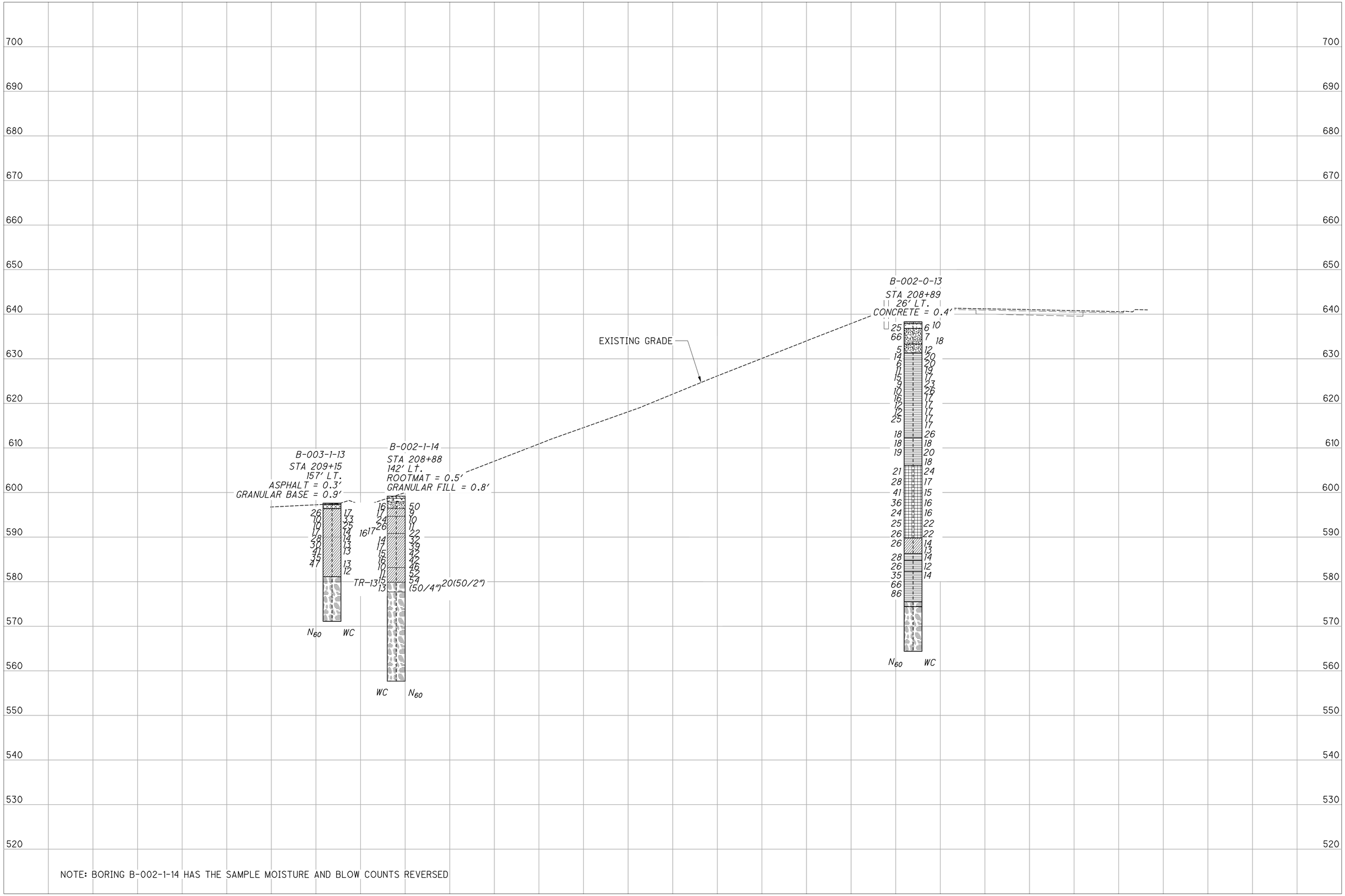


0 10 20 HORIZONTAL SCALE IN FEET

DRAWN K.JD | CHECKED BLM

LANDSLIDE EXPLORATION
CROSS SECTIONS STA. 208+00

LOR-611-3.44

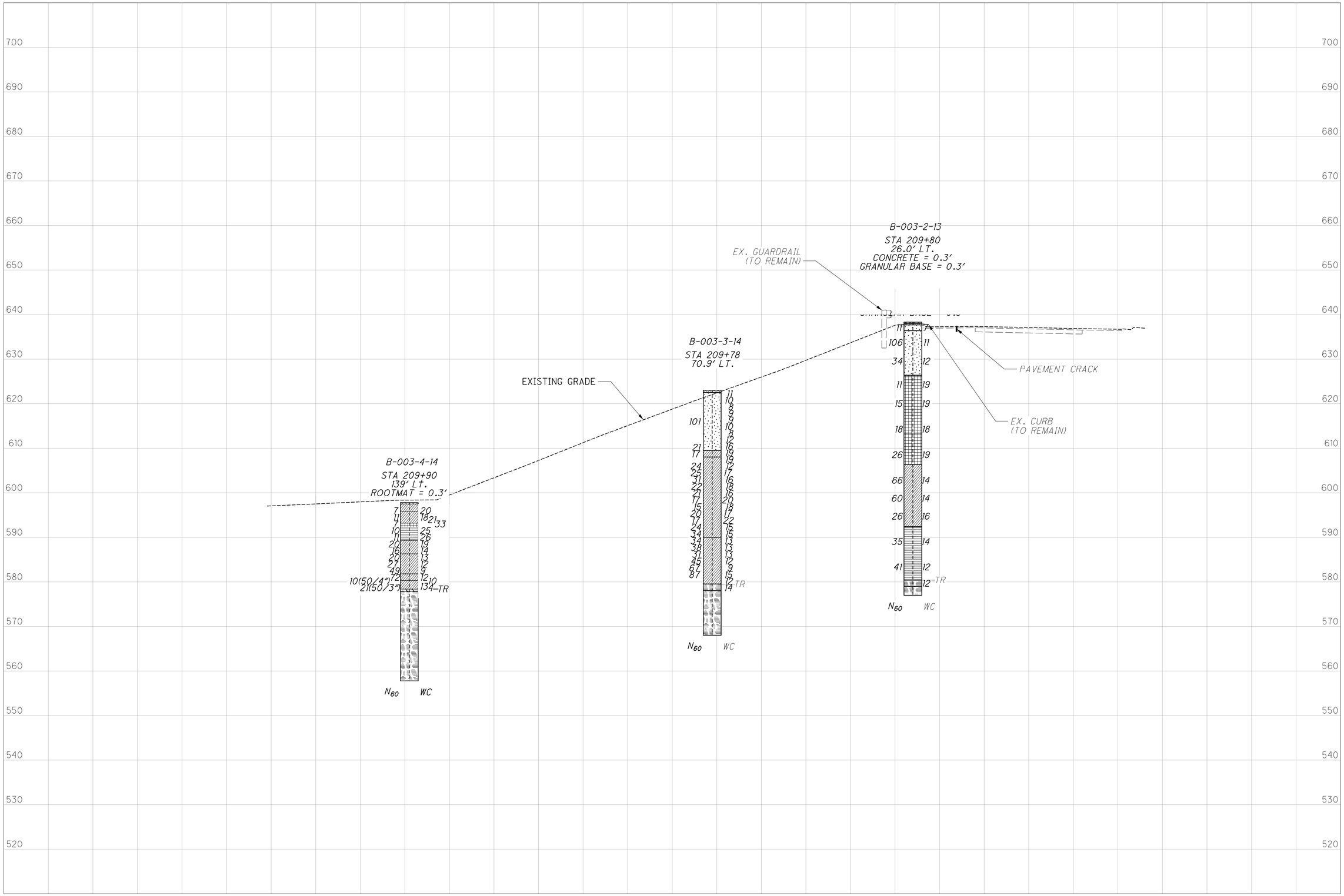


0 10 20
HORIZONTAL SCALE IN FEET

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION CROSS SECTIONS STA. 209+00

LOR-611-3.44



HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION CROSS SECTIONS STA. 210+00

LOR-611-3.44

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 206+17, 16' LT	EXPLORATION ID B-001-0-13
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / J. PENNELL	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 2/20/13	ELEVATION: 651.1 (MSL) EOB: 74.5 ft.	PAGE 1 OF 1
START: 8/19/13 END: 8/29/13	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75	LAT / LONG: 41.459329 N, 82.160308 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 651.1	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT – 8 INCHES	650.4																	
CONCRETE – 10 INCHES	649.4																	
Fill: Very-dense black GRAVEL, some fine to coase sand, trace silt, trace clay, damp, contains pieces of asphalt.	647.1	1	30 33 25	72	78	SS-1	–	53	25	10	9	3	NP	NP	NP	7	A-1-a (0)	
Fill: Very-stiff to hard brown mottled with gray SILT AND CLAY, little to some fine to coarse sand, trace fine to coarse gravel, contains stiff pockets from 25.5'–27.5', trace shale fragments from 24.0'–27.7', trace roots from 10.0'–20.5', damp to moist.		2	1 2 2	5	44	SS-2	–	3	6	10	36	45	33	20	13	18	A-6a (9)	
		3	1 2 3	6	61	SS-3	–	–	–	–	–	–	–	–	–	19	A-6a (V)	
		4	3 4 5	11	72	SS-4	–	–	–	–	–	–	–	–	–	18	A-6a (V)	
		5																
		6																
		7																
		8	1 3 3	8	78	SS-5	–	–	–	–	–	–	–	–	–	18	A-6a (V)	
		9																
		10																
		11																
		12	2 3 4	9	78	SS-6	–	5	6	10	35	44	32	17	15	18	A-6a (10)	
		13																
		14																
		15	1 4 5	11	78	SS-7	–	–	–	–	–	–	–	–	–	19	A-6a (V)	
		16																
		17																
		18	3 4 6	12	78	SS-8	–	–	–	–	–	–	–	–	–	18	A-6a (V)	
		19																
		20																
		21	2 2 5	9	89	SS-9	–	–	–	–	–	–	–	–	–	21	A-6a (V)	
		22																
		23																
		24			100	ST-10	–	–	–	–	–	–	–	–	–	20	A-6a (V)	
		25																
		26	2 3 5	10	89	SS-11	–	–	–	–	–	–	–	–	–	20	A-6a (V)	
	623.6	27																
Fill: Very-stiff to hard brown SILTY CLAY, little fine to coarse sand, trace fine to coarse gravel, damp to moist.		28																
		29	2 4 6	12	72	SS-12	–	3	5	9	36	47	35	17	18	17	A-6b (11)	
	619.1	30																
Fill: Very-stiff to hard brown mottled with gray SILTY CLAY, little fine to coarse sand, little fine gravel, contains trace shale fragments, damp to moist.		31																
		32																
		33																
		34	2 4 8	15	72	SS-13	–	–	–	–	–	–	–	–	–	20	A-6b (V)	
		35																
		36																
		37																
		38																
		39	2 3 6	11	78	SS-14	–	–	–	–	–	–	–	–	–	20	A-6b (V)	
	610.1	40																
Hard brown mottled with gray SILTY CLAY, trace fine to coarse sand, trace fine gravel, contains trace shale fragments, damp.		41																
		42																
		43																
		44	3 7 11	22	78	SS-15	–	–	–	–	–	–	–	–	–	19	A-6b (V)	
		45																
		46																
		47																
		48																
		49	9 16 23	49	89	SS-16	–	–	–	–	–	–	–	–	–	16	A-6b (V)	
	599.1	50																
Hard brown mottled with gray SILTY CLAY, some fine to coarse sand, trace fine gravel, contains few silt lenses from 51.3'–57.0', damp.		51																
		52																
		53																
		54	9 20 20	50	100	SS-17	–	–	–	–	–	–	–	–	–	12	A-6b (V)	
		55																
		56																
		57																
		58																

			59	14 20	42	100	SS-18	–	–	–	–	–	–	–	–	–	13	A-6b (V)
			60															
			61															
			62															
			63															
			64	7 16 21	46	100	SS-19	–	–	–	–	–	–	–	–	–	13	A-6b (V)
			65															
			66															
			67															
	583.6		68															
Hard gray SILT AND CLAY, similar in structure to severely weathered shale bedrock.			69	37 50–4"	–	100	SS-20	–	–	–	–	–	–	–	–	–	7	A-6a (V)
	581.6		70															
			71															
SHALE, gray, highly to severely weathered, very weak, friable, fissile, thinly bedded, highly to moderately fractured, contains few 3" minus limestone seams, RQD = 44%, Loss = 0%.			72	44		100	NQ2-21											Rock (V) CORE
			73															
	576.6	EOB	74															

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 0.5 BAG BENTONITE GROUT; 94.0 LB. CEMENT; SOIL CUTTINGS; 32 GAL. WATER

Notes:
– No seepage was encountered during drilling.
– After removal of augers, boring caved at 70.3 feet.

PROJECT: LOR–611–3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME D50 (AW)(13)	STATION / OFFSET: 206+44, 184' LT	EXPLORATION ID B–001–2–13	
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / SCHEIDERER	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE		
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 2/19/13	ELEVATION: 595.1 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1	
START: 8/22/13 END: 8/22/13	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 77	LAT / LONG: 41.459424 N, 82.160917 W		

MATERIAL DESCRIPTION AND NOTES	ELEV. 595.1	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
Fill: Hard gray SILT AND CLAY, some fine to coarse sand, little fine gravel, contains cinders, damp.	592.1	1	21 27 13	51	89	SS-1	4.5+	–	–	–	–	–	–	–	–	13	A-6a (V)	
Hard dark–gray mottled with brown SILTY CLAY, trace fine to coarse sand, damp.	589.6	2	3 6 7	17	100	SS-2	4.5+	0	1	7	51	41	40	23	17	19	A-6b (11)	
Very–stiff brown mottled with gray SILTY CLAY, trace fine to coarse sand, damp.	584.6	3 4	3 4 5	12	72	SS-3	2.3–3.3	–	–	–	–	–	–	–	–	20	A-6b (V)	
		5 6	2 3 4	9	78	SS-4	3.3–3.5	–	–	–	–	–	–	–	–	23	A-6b (V)	
Stiff to very–stiff gray mottled with dark–gray and brown SANDY SILT, some clay, trace fine gravel, contains seams of fine to coarse sand, slightly organic, damp.	582.1	7 8	3 2 3	6	100	SS-5	1.2–2.5	7	15	20	31	27	30	20	10	20	A-4a (5)	
Hard brown mottled with gray SILTY CLAY, trace fine to coarse sand, trace fine gravel, contains trace shale fragments, damp.	577.1	9 10	5 9 11	26	72	SS-6	4.5+	–	–	–	–	–	–	–	–	19	A-6b (V)	
		11 12	5 8 11	24	100	SS-7	4.5+	–	–	–	–	–	–	–	–	18	A-6b (V)	
Hard gray mottled with brown SILTY CLAY, trace fine to coarse sand, partly similar in structure to severely weathered shale bedrock, contians many iron oxide stained seams, trace shale fragments, damp.	574.6	13 14 ▼ AD	5 8 13	27	67	SS-8	4.5+	–	–	–	–	–	–	–	–	21	A-6b (V)	
Hard gray intermixed with dark–gray and brown SILTY CLAY, similar in structure to severely weathered shale bedrock, contains iron oxide staining, trace shale fragments, damp.	569.6	15 16 W	8 13 16	37	100	SS-9	4.5+	–	–	–	–	–	–	–	–	18	A-6b (V)	
		17 18	11 18 25	55	67	SS-10	4.5+	–	–	–	–	–	–	–	–	15	A-6b (V)	
SHALE, gray, severely to highly weathered, very weak, thick bedded with one 3" limestone/shale laminated seam, friable, fissile, highly to moderately fractured, RQD = 23%, Loss = 0%.	565.1	19 20 21 22 23 24 25 26 27 28 29 30 EOB	23		100	NQ2-11	–										Rock (V) CORE	

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 1/2 BAG BENTONITE; 94 LB. CEMENT; 32 GAL. WATER

Notes:
– After removal of augers, boring caved at 30.0 ft. and water was measured at 20.0 feet.
– Encountered water at 23.5 feet during drilling.

PROJECT: LOR-611-3.58	DRILLING FIRM / OPERATOR: OTB / J. MINCHAK	DRILL RIG: OTB ATV D50(13)	STATION / OFFSET: 208+88, 142' LT	EXPLORATION ID B-002-1-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / C. WEST	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 611 CL	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 10/30/13	ELEVATION: 599.2 (MSL) EOB: 41.5 ft.	PAGE 1 OF 1
START: 11/12/14 END: 11/13/14	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86	LAT / LONG: 41.460172 N, 82.160586 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 599.2	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INCL.
ROOTMAT – 6 INCHES	598.7																	
UNCONTROLLED FILL (CONCRETE DEBRIS) – 10 INCHES	597.9																	
Fill: Dense brown, gray and black GRAVEL WITH SAND, trace silt, trace clay, contains slag, damp.	596.4	1	28 27 8	50	33	SS-1	–	–	–	–	–	–	–	–	–	16	A-1-b (V)	
Possible Fill: Very-stiff brown SILT AND CLAY, little fine to coarse sand, trace fine gravel, damp.	594.7	2	3 3 3	9	61	SS-2	1.5–2.5	3	4	8	40	45	31	17	14	17	A-6a (10)	
Stiff to very-stiff brown mottled with gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, damp.		3	1 3 4	10	83	SS-3	1.0–3.5	–	–	–	–	–	–	–	–	24	A-6a (V)	
		4	2 4 4	11	100	SS-4	1.5–3.5	–	–	–	–	–	–	–	–	26	A-6a (V)	
	590.8	5	3	–	100	SS-5A	2.5–4.0	5	6	10	37	42	31	17	14	17	A-6a (10)	
Very-stiff to hard brown mottled with gray SILT AND CLAY, some fine to coarse sand, trace fine to coarse gravel, damp.			6-1" 9	22	100	SS-5B	3.0–4.5	–	–	–	–	–	–	–	–	16	A-6a (V)	
		6	5 8 14	32	100	SS-6	4.0–4.5+	–	–	–	–	–	–	–	–	14	A-6a (V)	
		7	7 11 16	39	100	SS-7	4.5+	–	–	–	–	–	–	–	–	17	A-6a (V)	
		8	8 12 17	42	94	SS-8	4.5+	–	–	–	–	–	–	–	–	15	A-6a (V)	
		9	8 12 17	42	94	SS-9	4.5+	8	17	14	28	33	33	19	14	16	A-6a (7)	
	583.2	10	7 14 18	46	100	SS-10	4.5+	–	–	–	–	–	–	–	–	10	A-6a (V)	
Hard gray mottled with brown SILT AND CLAY, some fine to coarse sand, trace fine to coarse gravel, damp.		11	10 16 20	52	67	SS-11	4.5+	–	–	–	–	–	–	–	–	11	A-6a (V)	
	579.8	12	10 12 26	54	94	SS-12	4.5+	–	–	–	–	–	–	–	–	15	A-6a (V)	
Very-soft to soft gray SHALE.		13	20 50-2"	–	88	SS-13	4.5+	–	–	–	–	–	–	–	–	13	Rock (V)	
	577.7	14	50-4"	–	25	SS-14	–	–	–	–	–	–	–	–	–	13	Rock (V)	
SHALE, dark-gray, moderately weathered, slightly to moderately strong, very thin to laminated, fissile, micaceous, fractured, RQD = 78%, Loss = 4%.		15	72		90	NQ2-15	–										Rock (V) CORE	
		17	82		100	NQ2-16	–										Rock (V) CORE	
		19	67		99	NQ2-17	–										Rock (V) CORE	
		21	92		95	NQ2-18	–										Rock (V) CORE	
	557.7	EOB																

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE; GROUT; INCLINOMETER

– No seepage encountered.
– Inclinometer installed with 2.1' stick-up.

PROJECT: LOR-611-3.58	DRILLING FIRM / OPERATOR: OTB / J. MINCHAK	DRILL RIG: OTB ATV D50(13)	STATION / OFFSET: 208+94, 142' LT	EXPLORATION ID B-002-2-14
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / C. WEST	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 611 CL	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 10/30/13	ELEVATION: 599.6 (MSL) EOB: 41.0 ft.	PAGE 1 OF 1
START: 11/13/14 END: 11/13/14	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86	LAT / LONG: 41.460188 N, 82.160577 W	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	MON. WELL
See log of B-002-1-14	599.6																	
		1																
		2																
		3																
		4			75	ST-1		–	–	–	–	–	–	–	–	–		
		5																
	593.6	6																
Very-stiff to hard brown mottled with gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, moist.		7			96	ST-2	3.7-4.5	–	–	–	–	–	–	–	–	25	A-6a (V)	
	591.6	8																
See log of B-002-1-14		9																
		10																
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		37																
		38																
		39																
		40																
	558.6	EOB 41																

– Installed open stand pipe piezometer with 2' stick-up.
– Slotted below 11.0'.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 1 BAG HOLE PLUG; 3 BAGS SAND

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 208+89, 26' LT	EXPLORATION ID B-002-0-13
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / J. PENNELL	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 2/20/13	ELEVATION: 642.5 (MSL) EOB: 73.9 ft.	PAGE 1 OF 1
START: 8/23/13 END: 8/27/13	SAMPLING METHOD: SPT / ST / NQ2	ENERGY RATIO (%): 75	LAT / LONG: 41.460080 N, 82.160182 W	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INCL.
CONCRETE – 5 INCHES	642.1																	
Fill: Medium–dense dark–brown COARSE AND FINE SAND, little to some fine gravel, trace silt, trace clay, contains cinders, damp.	641.0		5 9 11	–	100	SS–1A	–	–	–	–	–	–	–	–	–	10	A–3a (V)	
				25	67	SS–1B	–	–	–	–	–	–	–	–	–	6	A–3a (V)	
Fill: Very–dense gray GRAVEL, "and" fine to coarse sand, trace silt, trace clay, contains asphalt fragments from 2.5'–3.5', cinders from 4.0'–4.5', moist.			9 17 36	66	67	SS–2	–	–	–	–	–	–	–	–	–	7	A–1–a (V)	
			50	–	100	SS–3	–	–	–	–	–	–	–	–	–	18	A–1–a (V)	
	637.5																	
Fill: Loose dark–brown GRAVEL, "and" fine to coarse sand, trace silt, trace clay, contains cinders, damp.			13 2 2	5	78	SS–4	–	52	26	16	5	1	–	–	–	12	A–1–a (V)	
	635.5																	
Fill: Very–stiff to hard brown mottled with gray SILTY CLAY, little to some fine to coarse sand, trace fine gravel, contains trace shale fragments, damp to moist.			3 5 6	14	61	SS–5	3.5–4.5+	–	–	–	–	–	–	–	–	20	A–6b (V)	
			2 2 3	6	56	SS–6	3.0–4.3	–	–	–	–	–	–	–	–	20	A–6b (V)	
			3 4 5	11	78	SS–7	3.5–4.5+	–	–	–	–	–	–	–	–	19	A–6b (V)	
			4 5 7	15	67	SS–8	3.5–4.5+	2	4	8	37	49	36	20	16	17	A–6b (10)	
			3 3 4	9	67	SS–9	2.6–4.5+	–	–	–	–	–	–	–	–	23	A–6b (V)	
			2 3 5	10	67	SS–10	2.6–3.5	–	–	–	–	–	–	–	–	26	A–6b (V)	
			4 5 8	16	61	SS–11	2.6–4.5+	–	–	–	–	–	–	–	–	17	A–6b (V)	
			3 4 6	12	67	SS–12	2.0–4.5+	–	–	–	–	–	–	–	–	17	A–6b (V)	
			3 5 5	12	78	SS–13	2.0–4.5+	–	–	–	–	–	–	–	–	17	A–6b (V)	
			5 10 10	25	61	SS–14	2.0–4.5+	–	–	–	–	–	–	–	–	17	A–6b (V)	
					100	ST–15	–	2	4	8	26	60	37	21	16	17	A–6b (10)	
			4 5 9	18	100	SS–16	3.6–4.5+	–	–	–	–	–	–	–	–	26	A–6b (V)	
	616.5																	
Fill: Very–stiff to hard brown and brown mottled with gray and dark–gray SILTY CLAY, little fine to coarse sand, trace fine gravel, contains wood chips from 25.5' to 28.5', damp.			4 6 8	18	100	SS–17	3.0–4.5+	–	–	–	–	–	–	–	–	18	A–6b (V)	
			5 7 8	19	89	SS–18	4.0–4.5+	–	–	–	–	–	–	–	–	20	A–6b (V)	
	610.3																	
Very–stiff to hard brown mottled with gray CLAY, some silt, little fine to coarse sand, trace fine gravel, damp to moist.			3	–	100	SS–19A	4.5+	–	–	–	–	–	–	–	–	18	A–6b (V)	
			9 8	21	92	SS–19B	3.0–4.0	–	–	–	–	–	–	–	–	24	A–7–6 (V)	
			4 8 14	28	89	SS–20	4.5+	2	5	9	30	54	41	21	20	17	A–7–6 (12)	
			6 13 20	41	78	SS–21	4.5+	–	–	–	–	–	–	–	–	15	A–7–6 (V)	
			4 13 16	36	89	SS–22	4.5+	–	–	–	–	–	–	–	–	16	A–7–6 (V)	
			2 6 13	24	89	SS–23	4.5+	–	–	–	–	–	–	–	–	16	A–7–6 (V)	
			6 9 11	25	94	SS–24	4.5+	–	–	–	–	–	–	–	–	22	A–7–6 (V)	
			3 9 12	26	89	SS–25	3.5–4.5+	–	–	–	–	–	–	–	–	22	A–7–6 (V)	
	594.0																	
Hard brown mottled with gray SILT AND CLAY, some fine to coarse sand, little fine gravel, contains trace shale fragments, damp.			4 9 12	26	100	SS–26	4.5+	7	9	14	33	37	28	17	11	14	A–6a (7)	
	590.5																	
Hard dark–brown intermixed with gray SILTY CLAY, little fine to coarse sand, trace fine gravel, contains trace shale fragments, a 3" seam of gray intermixed with brown silty clay, damp.			2	–	100	SS–27A	4.5+	–	–	–	–	–	–	–	–	13	A–6a (V)	
			9 13	28	100	SS–27B	4.5+	–	–	–	–	–	–	–	–	14	A–6b (V)	
	589.0																	
Hard gray SILTY CLAY, some fine to coarse sand, trace fine gravel, contains trace shale fragments, damp.			3 8 13	26	100	SS–28	4.5+	–	–	–	–	–	–	–	–	12	A–6b (V)	
	586.5																	
Hard brown intermixed with gray SILTY CLAY, some fine to coarse sand, trace fine to coarse gravel, contains trace shale fragments, damp.			3 12 16	35	94	SS–29	4.5+	–	–	–	–	–	–	–	–	14	A–6b (V)	
		W	10 25 28	66	39	SS–30	4.5+	–	–	–	–	–	–	–	–	–	A–6b (V)	
	579.7		10 19 50	86	94	SS–31	4.5+	–	–	–	–	–	–	–	–	–	Rock (V)	
SHALE, dark–gray, highly to moderately weathered.	578.6																	
SHALE, dark–gray, highly to moderately weathered, very weak to slightly strong, medium to thickly bedded, friable, fissile, highly to slightly fractured, contains a 3" seam of limestone at the top of S–32 (63.9' – 64.2'), RQD = 60%, Loss = 2%.			54		99	NQ2–32											Rock (V) CORE	

Depth	SPT/RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)
67–72	54		100	NQ2-33											Rock (V) CORE
72–73	80		96	NQ2-34											Rock (V) CORE

Elev. 568.6 — EOB

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

Notes:
- Encountered water at 59.0 feet.
- Inclinometer casing installed to a depth of 63.9 feet with a flushmount cover.

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME D50 (AW)(13)	STATION / OFFSET: 209+15, 157' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / SCHEIDERER	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 2/19/13	ELEVATION: 597.6 (MSL) EOB: 26.5 ft.
START: 8/21/13 END: 8/21/13	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 77	LAT / LONG: 41.460266 N, 82.160605 W

EXPLORATION ID B-003-1-13 — PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 597.6	DEPTHS	SPT/RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT - 3 INCHES	597.3																	
GRANULAR SUBBASE - 11 INCHES	596.4	1																
Very-stiff to hard brown mottled with gray SILT AND CLAY, some fine to coarse sand, trace to little fine gravel, contains few silt lenses from 4.5' to 6.0', damp to moist.		2	6 10 10	26	72	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
		3–4	3 3 5	10	100	SS-2	2.5-3.5	-	-	-	-	-	-	-	-	33	A-6a (V)	
		5	2 4 4	10	100	SS-3	2.7-3.0	-	-	-	-	-	-	-	-	25	A-6a (V)	
		6–7	4 5 8	17	67	SS-4	4.5+	13	10	13	30	34	30	16	14	14	A-6a (7)	
		8	7 10 12	28	100	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		9–10	10 10 13	30	100	SS-6	4.5+	8	10	14	33	35	28	16	12	13	A-6a (7)	
		11	12 14 18	41	100	SS-7	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		12–13	7 12 15	35	89	SS-8	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		14	7 15 22	47	89	SS-9	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
	581.1	15–16	10 22 50-3"	-	80	SS-10	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
SHALE, dark-gray, few zones of severely weathered to mostly moderately to highly weathered, weak to slightly strong (very weak in top 6 inches), thickly bedded with few laminates, partly friable, fissile, highly to slightly fractured, RQD = 51%, Loss = 12%.		17–19	0		63	NQ2-11	-										Rock (V) CORE	
		20–24	77		100	NQ2-12	-										Rock (V) CORE	
	571.1	25–26 EOB	34		94	NQ2-13	-										Rock (V) CORE	

Notes:
-After removal of augers, boring caved at 25.0 feet and was observed to be dry.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 1/2 BAG BENTONITE; 94 LB. CEMENT; 32 GAL. WATER

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 209+46, 19' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / J. PENNELL	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 2/20/13	ELEVATION: 639.6 (MSL) EOB: 10.0 ft.
START: 8/26/13 END: 8/26/13	SAMPLING METHOD: SPT	ENERGY RATIO (%): 75	LAT / LONG: 41.460226 N, 82.160086 W

EXPLORATION ID B-003-0-13 — PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 639.6	DEPTHS	SPT/RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT - 10 INCHES	638.7																	
Fill: Medium-dense gray intermixed with brown GRAVEL WITH SAND, little silt, trace clay, damp.	636.1	1–3	11 11 13	30	89	SS-1	-	48	23	11	14	4	NP	NP	NP	6	A-1-b (0)	
Fill: Very-stiff to hard brown mottled with gray CLAY, some silt, trace fine to coarse sand, trace fine gravel, moist.	632.6	4–6	3 3 4	9	67	SS-2	3.0-4.5+	3	4	9	34	50	50	22	28	39	A-7-6 (17)	
Fill: Very-stiff to hard brown mottled with gray SILTY CLAY, little fine to coarse sand, trace fine to coarse gravel, contains a gray seam from 7.0' to 8.5', damp.		7	2	-	100	SS-3A	2.1-3.5	-	-	-	-	-	-	-	-	29	A-7-6 (V)	
		8	3 3	8	50	SS-3B	3.0-4.0	-	-	-	-	-	-	-	-	19	A-6b (V)	
	629.6	9–10 EOB	4 5 7	15	78	SS-4	3.0-4.0+	-	-	-	-	-	-	-	-	18	A-6b (V)	

Notes:
-After removal of augers, boring caved at 9.3 feet and was observed to be dry.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / SCHEIDERER	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 209+80, 26.0 LT	EXPLORATION ID B-003-2-13
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / D. FRITZE	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 2/20/13	ELEVATION: 638.3 (MSL) EOB: 61.4 ft.	PAGE 1 OF 1
START: 10/28/13 END: 10/28/13	SAMPLING METHOD: SPT	ENERGY RATIO (%): 75	LAT / LONG: Not Recorded	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INCL.
CONCRETE – 4 INCHES	638.0																	
AGGREGATE BASE – 4 INCHES	637.6																	
Fill: Medium-dense brown COARSE AND FINE SAND, little fine gravel, little to some silt, damp.	636.3		4 5 4	11	67	SS-1	–	–	–	–	–	–	–	–	–	7	A-3a (V)	
Fill: Dense to very-dense dark-brown COARSE AND FINE SAND, some fine to coarse gravel, little silt, damp.			33 40 45	106	100	SS-2	–	–	–	–	–	–	–	–	–	11	A-3a (V)	
			18 14 13	34	100	SS-3	–	–	–	–	–	–	–	–	–	12	A-3a (V)	
	626.3																	
Fill: Very-stiff to hard brown intermixed with gray CLAY, some silt, little fine to coarse sand, trace gravel, damp.			3 4 5	11	100	SS-4	–	–	–	–	–	–	–	–	–	19	A-7-6 (V)	
			4 5 7	15	100	SS-5	–	–	–	–	–	–	–	–	–	19	A-7-6 (V)	
	613.3		5 5 9	18	100	SS-6	–	1	4	9	31	55	41	22	19	18	A-7-6 (12)	
Hard brown mottled with gray CLAY, some silt, little fine to coarse sand, trace fine gravel, damp.			3 8 13	26	100	SS-7	–	–	–	–	–	–	–	–	–	19	A-7-6 (V)	
	606.3																	
Very-stiff to hard brown mottled with gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, dry to damp.			12 20 33	66	100	SS-8	–	4	6	12	39	39	32	18	14	14	A-6a (10)	
			12 21 27	60	100	SS-9	–	–	–	–	–	–	–	–	–	14	A-6a (V)	
			6 9 12	26	100	SS-10	–	–	–	–	–	–	–	–	–	16	A-6a (V)	
	592.3																	
Hard gray SILTY CLAY, some fine to coarse sand, trace fine gravel, oxide stains, damp.			5 12 16	35	100	SS-11	–	–	–	–	–	–	–	–	–	14	A-6b (V)	
			10 15 18	41	100	SS-12	–	–	–	–	–	–	–	–	–	12	A-6b (V)	
	580.3																	
Very-soft gray SHALE, fragmental structures, similar to hard silty clay.	578.9		8 50-0.4'	–	100	SS-13	–	–	–	–	–	–	–	–	–	12	Rock (V)	
Estimated SHALE, dark gray, weathered.	576.9	EOB																

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 50 LB. BENTONITE; 188 LB. CEMENT

– No seepage encountered during drilling.
– Inclinometer casing installed to a depth of 61.4' with a flush mount cover.

LOR-611-3.44

LANDSLIDE EXPLORATION
LOG OF BORING B-003-2-13

DRAWN KAH
CHECKED BLM

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: OTB / A. JIM	DRILL RIG: OTB ATV D50	STATION / OFFSET: 209+78, 71' LT	EXPLORATION ID B-003-3-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: OTB / A. JIM	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 611 CENTERLINE	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 10/1/09	ELEVATION: 623.0 (MSL) EOB: 55.0 ft.	PAGE 1 OF 1
START: 6/5/14 END: 6/6/14	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 84	LAT / LONG: 41.460363 N, 82.160219 W	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INCL.
	622.5																	
Fill: Very-dense gray and brown COARSE AND FINE SAND, some fine to coarse gravel, trace silt, dry to damp, contains slag.		1	2 38 50-3"	–	100	SS-1	–	–	–	–	–	–	–	–	–	11	A-3a (V)	
		2	50-3"	–	100	SS-2	–	–	–	–	–	–	–	–	–	10	A-3a (V)	
		3	50-3"	–	100	SS-3	–	–	–	–	–	–	–	–	–	8	A-3a (V)	
		4																
		5	50-3"	–	100	SS-4	–	–	–	–	–	–	–	–	–	9	A-3a (V)	
		6																
		7	28 50-5"	–	100	SS-5	–	–	–	–	–	–	–	–	–	9	A-3a (V)	
		8	13 37 35	101	100	SS-6	–	–	–	–	–	–	–	–	–	10	A-3a (V)	
		9	37 50-5"	–	100	SS-7	–	–	–	–	–	–	–	–	–	8	A-3a (V)	
		10																
		11	39 52	–	100	SS-8	–	–	–	–	–	–	–	–	–	12	A-3a (V)	
		12																
	609.5	13	13 11 4	21	89	SS-9	–	–	–	–	–	–	–	–	–	16	A-3a (V)	
Possible Fill: Very-stiff to hard brown mottled with gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, damp.	608.0	14	3 4 8	17	100	SS-10	4.5	3	6	11	32	48	36	21	15	19	A-6a (10)	
Hard brown mottled with gray SILT AND CLAY, little to some fine to coarse sand, trace fine gravel, damp to moist, stiff to hard zone at 16.0' to 17.5'.		15			100	ST-11	4.25-4.5	–	–	–	–	–	–	–	–	19	A-6a (V)	
		16																
		17	4 8 9	24	100	SS-12	1.75-4.5	–	–	–	–	–	–	–	–	12	A-6a (V)	
		18																
		19	5 8 10	25	89	SS-13	4.5	5	9	20	32	34	31	16	15	17	A-6a (8)	
		20	6 10 12	31	100	SS-14	4.5	–	–	–	–	–	–	–	–	16	A-6a (V)	
		21																
		22	4 6 10	22	100	SS-15	4.5	–	–	–	–	–	–	–	–	18	A-6a (V)	
		23	4 7 8	21	94	SS-16	4.5	–	–	–	–	–	–	–	–	16	A-6a (V)	
		24																
		25	3 5 7	17	100	SS-17	4.5	–	–	–	–	–	–	–	–	20	A-6a (V)	
		26	3 5 6	15	100	SS-18	4.5	–	–	–	–	–	–	–	–	18	A-6a (V)	
		27																
		28	4 6 8	20	100	SS-19	4.5	–	–	–	–	–	–	–	–	17	A-6a (V)	
		29	4 5 7	17	100	SS-20	4.5	–	–	–	–	–	–	–	–	22	A-6a (V)	
		30																
		31	4 6 11	24	100	SS-21	4.5	–	–	–	–	–	–	–	–	15	A-6a (V)	
	590.0	32	8 10 14	34	100	SS-22	4.5	–	–	–	–	–	–	–	–	15	A-6a (V)	
Hard gray SILT AND CLAY, some fine to coarse sand, trace fine gravel, iron oxide stains from 34.5' to 37.5', damp.		33																
		34	7 10 14	34	100	SS-23	4.5	7	10	16	34	33	27	14	13	13	A-6a (8)	
		35	7 11 16	38	100	SS-24	4.5	–	–	–	–	–	–	–	–	13	A-6a (V)	
		36																
		37	6 9 13	31	100	SS-25	4.5	–	–	–	–	–	–	–	–	13	A-6a (V)	
		38	7 14 18	45	100	SS-26	4.5	–	–	–	–	–	–	–	–	12	A-6a (V)	
		39																
		40	9 22 26	67	89	SS-27	4.5	–	–	–	–	–	–	–	–	9	A-6a (V)	
		41	13 30 32	87	100	SS-28	4.5	–	–	–	–	–	–	–	–	15	A-6a (V)	
		42	26 50-2"	–	100	SS-29	4.5	–	–	–	–	–	–	–	–	12	A-6a (V)	
	579.5	43																
Very-soft gray SHALE, structure similar to hard clayey silt.	578.0	44	35 50-3"	–	100	SS-30	–	–	–	–	–	–	–	–	–	14	A-6a (V)	
SHALE, dark-gray, slightly to moderately weathered, slightly strong, very-thin to thinly bedded, fissile, fractured to moderately fractured, RQD=45%, Loss = 11%.		45																
		46																
		47																
		48																
		49																
		50	45		89	SS-31											Rock (V) CORE	
		51																
		52																
		53																
		54																
	568.0	55 EOB																

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

No seepage encountered.
Inclinometer installed with 3.1' stick-up.

PROJECT: LOR-611-3.58	DRILLING FIRM / OPERATOR: OTB / J. MINCHAK	DRILL RIG: OTB ATV D50(13)	STATION / OFFSET: 209+84, 141' LT	EXPLORATION ID B-003-5-14
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / C. WEST	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 611 CL	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 10/30/13	ELEVATION: 597.5 (MSL) EOB: 40.0 ft.	PAGE 1 OF 1
START: 11/13/14 END: 11/13/14	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86	LAT / LONG: 41.460455 N, 82.160444 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 597.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	MON. WELL
See Log of B-003-4-14		1 2 3																
	593.5	4																
Very-stiff to hard brown mottled with gray SILT AND CLAY, some fine to coarse sand, trace fine gravel, contains few silt seams, moist.		5			83	ST-1	2.5-4.0	–	–	–	–	–	–	–	–	24	A-6a (V)	
	591.5	6																
See Log of B-003-4-14		7			92	ST-2		–	–	–	–	–	–	–	–	–		
		8 9 10 11 12 13 14 15 16 17 18 19																
	577.5	20																
SHALE, dark-gray, moderately weathered, slightly to moderately strong, very-thin to laminated, fissile, micaceous, fractured to slightly fractured, RQD=80%, LOSS=1%.		21 22 23 24 25	85		91	NQ2-3											Rock (V) CORE	
		26 27 28 29 30																
		31 32 33 34	65		98	NQ2-4											Rock (V) CORE	
		35 36 37 38 39	83		95	NQ2-5											Rock (V) CORE	
	557.5	EOB 40																

– Installed open stand pipe piezometer with 1.1' stick-up.
– Slotted below 9.0'.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

LOR-611-3.44

LANDSLIDE EXPLORATION
LOG OF BORING B-003-5-14

DRAWN KAH
CHECKED BLM

PROJECT: LOR-611-3.58	DRILLING FIRM / OPERATOR: OTB / J. MINCHAK	DRILL RIG: OTB ATV D50(13)	STATION / OFFSET: 209+90, 139' LT	EXPLORATION ID B-003-4-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / C. WEST	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 611 CL	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 10/30/13	ELEVATION: 597.8 (MSL) EOB: 40.0 ft.	PAGE 1 OF 1
START: 11/10/14 END: 11/11/14	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86	LAT / LONG: 41.460469 N, 82.160427 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 597.8	DEPTHS	SPT / RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INCL.
ROOTMAT – 3 INCHES	597.5																	
Possible Fill: Very-stiff brown mottled with gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few roots, damp.	595.3		4 3 2	7	94	SS-1	2.2–4.0	–	–	–	–	–	–	–	–	20	A-6a (V)	
Very-stiff to hard brown mottled with gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, damp.	593.2		3 3 5	11	72	SS-2	4.2–4.5	–	–	–	–	–	–	–	–	18	A-6a (V)	
			2	–	100	SS-3A	2.0–3.0	–	–	–	–	–	–	–	–	21	A-6a (V)	
Stiff brown CLAY, little silt, trace fine to coarse sand, trace fine gravel, damp.	592.3		2-5" 3	7	73	SS-3B	1.0–2.0	1	3	3	14	79	56	24	32	33	A-7-6 (19)	
Stiff to very-stiff brown SILTY CLAY, trace fine to coarse sand, trace fine gravel, damp.	589.3		3 3 4	10	100	SS-4	2.5–3.5	–	–	–	–	–	–	–	–	25	A-6b (V)	
			2 4 4	11	100	SS-5	1.5–2.7	1	2	2	45	50	38	22	16	26	A-6b (10)	
Very-stiff to hard brown mottled with gray SILT AND CLAY, little to some fine to coarse sand, trace fine gravel, damp.	586.3		4 5 9	20	100	SS-6	3.5–4.0	–	–	–	–	–	–	–	–	19	A-6a (V)	
			4 5 6	16	100	SS-7	4.2–4.5	6	11	15	33	35	28	16	12	14	A-6a (7)	
Hard gray SILT AND CLAY, little to some fine to coarse sand, trace fine gravel, damp.	581.8		4 6 8	20	100	SS-8	4.5	–	–	–	–	–	–	–	–	13	A-6a (V)	
			5 9 10	27	100	SS-9	4.5	–	–	–	–	–	–	–	–	12	A-6a (V)	
			10 14 20	49	100	SS-10	4.5	–	–	–	–	–	–	–	–	9	A-6a (V)	
Hard brown mottled with gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, damp.	580.3		14 26 24	72	100	SS-11	4.5	–	–	–	–	–	–	–	–	12	A-6a (V)	
Hard gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, partly similar to weathered shale, damp.	578.4		10 50-4"	–	100	SS-12	4.5	–	–	–	–	–	–	–	–	10	A-6a (V)	
			21	–	83	SS-13A	4.5	–	–	–	–	–	–	–	–	13	A-6a (V)	
Very-soft gray SHALE, highly weathered.	577.8		50-3"	–	100	SS-13B		–	–	–	–	–	–	–	–	4	Rock (V)	
SHALE, dark-gray. See B-003-5-14 for additional description.			100		96	NQ2-14											Rock (V) CORE	
			100		64	NQ2-15											Rock (V) CORE	
			100		40	NQ2-16											Rock (V) CORE	
			100		75	NQ2-17											Rock (V) CORE	
			92		100	NQ2-18											Rock (V) CORE	
	557.8	EOB																

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 50 LB. BENTONITE; 40 LB. GROUT; INCLINOMETER

– Bottom 2' of NQ-15 sliped out of core barrel and was partially recovered with NQ-16.
– Inclinometer installed with 1.8' stick-up.

LOR-611-3.44

LANDSLIDE EXPLORATION
LOG OF BORING B-003-4-14

DRAWN KAH
CHECKED BLM

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 210+18, 26' LT	EXPLORATION ID B-004-0-13
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / J. PENNELL	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE	
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 2/20/13	ELEVATION: 637.0 (MSL) EOB: 69.3 ft.	PAGE 1 OF 1
START: 8/19/13 END: 8/20/13	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75	LAT / LONG: 41.460421 N, 82.160005 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 637.0	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	MON. WELL
CONCRETE – 9 INCHES	636.3																	
Fill: Dense to very-dense gray intermixed with dark-gray GRAVEL WITH SAND, little silt, trace clay, contains cinders from 1.0' to 1.8', damp.	633.0		9 12 13	31	56	SS-1	–	–	–	–	–	–	–	–	–	8	A-1-b (V)	
			7 14 32	58	78	SS-2	–	55	18	11	13	3	–	–	–	7	A-1-b (V)	
Fill: Dense to very-dense dark gray GRAVEL WITH SAND, little silt, trace clay, contains many slag fragments, damp.			23 50-4"	–	70	SS-3	–	–	–	–	–	–	–	–	–	10	A-1-b (V)	
			19 42 37	99	100	SS-4	–	–	–	–	–	–	–	–	–	13	A-1-b (V)	
			21 50-5"	–	164	SS-5	–	–	–	–	–	–	–	–	–	11	A-1-b (V)	
	627.0		9 16 5	26	72	SS-6	–	–	–	–	–	–	–	–	–	14	A-1-b (V)	
Fill: Very-stiff to hard brown mottled with gray SILTY CLAY, little fine to coarse sand, trace fine gravel, contains stiff pockets from 10.0' to 11.5', trace plastic mesh fibers from 10.0' to 11.0', intermixed with light gray organic silt from 19.4' to 20.0', damp to moist.			2 2 5	9	39	SS-7	1.5-2.0	7	9	13	28	43	38	20	18	20	A-6b (10)	
			1 1 2	4	44	SS-8	2.0-2.7	–	–	–	–	–	–	–	–	21	A-6b (V)	
			2 3 4	9	33	SS-9	2.5-4.5+	–	–	–	–	–	–	–	–	20	A-6b (V)	
			3 3 6	11	39	SS-10	4.3-4.5+	–	–	–	–	–	–	–	–	21	A-6b (V)	
			7 9 9	22	89	SS-11	4.0-4.5+	–	–	–	–	–	–	–	–	17	A-6b (V)	
			3 5 7	15	67	SS-12	4.0-4.5+	–	–	–	–	–	–	–	–	20	A-6b (V)	
	617.0		4	–	100	SS-13A	3.5-4.5+/	–	–	–	–	–	–	–	–	19	A-6b (V)	
			7 9	20	100	SS-13B	4.5+	–	–	–	–	–	–	–	–	21	A-6b (V)	
Very-stiff to hard brown mottled with gray SILTY CLAY, little fine to coarse sand, trace fine gravel, damp to moist.			7 10 11	26	56	SS-14	4.5+	–	–	–	–	–	–	–	–	18	A-6b (V)	
			1 4 6	12	67	SS-15	3.4-4.5+	2	4	9	32	53	39	20	19	19	A-6b (12)	
			3 6 8	18	94	SS-16	4.5+	–	–	–	–	–	–	–	–	18	A-6b (V)	
			3 6 6	15	94	SS-17	3.8-4.5+	–	–	–	–	–	–	–	–	27	A-6b (V)	
			4 9 14	29	89	SS-18	4.5+	–	–	–	–	–	–	–	–	19	A-6b (V)	
			6 13 17	38	78	SS-19	4.5+	–	–	–	–	–	–	–	–	17	A-6b (V)	
			5 9 12	26	89	SS-20	4.5+	–	–	–	–	–	–	–	–	16	A-6b (V)	
			5	–	100	SS-21A	4.5+	–	–	–	–	–	–	–	–	15	A-6b (V)	
			9 13	28	92	SS-21B	4.5+	–	–	–	–	–	–	–	–	15	A-6b (V)	
	596.5		4 6 10	20	100	SS-22	3.8-4.5+	–	–	–	–	–	–	–	–	26	A-6b (V)	
Hard brown mottled with gray SANDY SILT, "and" clay, trace fine to coarse gravel, damp.			6 12 16	35	89	SS-23	4.5+	9	10	14	31	36	28	18	10	14	A-4a (6)	
			7 12 17	36	67	SS-24	4.5+	–	–	–	–	–	–	–	–	15	A-4a (V)	
	591.5																	
Hard brown mottled with gray SILTY CLAY, some fine to coarse sand, trace fine gravel, moist.			6 10 16	32	100	SS-25	4.5+	–	–	–	–	–	–	–	–	21	A-6b (V)	
	589.0																	
Hard gray SILTY CLAY, little fine to coarse sand, trace fine to coarse gravel, contains shale fragments from 53.5' to 54.7', damp.			4 8 10	22	89	SS-26	4.5+	–	–	–	–	–	–	–	–	13	A-6b (V)	
			3 7 12	24	89	SS-27	4.5+	–	–	–	–	–	–	–	–	14	A-6b (V)	
			9 20 19	49	78	SS-28		–	–	–	–	–	–	–	–	12	A-6b (V)	
			7 18 26	55	67	SS-29		–	–	–	–	–	–	–	–	10	A-6b (V)	
	579.0																	

LOR-611-3.44

LANDSLIDE EXPLORATION
LOG OF BORING B-004-0-13

DRAWN KAH
CHECKED BLM

Soft gray SHALE, fragmental structure, slightly similar to hard clayey silt, damp.		577.7	▼ AD	58	22 50-3"	–	100	SS-30		–	–	–	–	–	–	–	–	8	Rock (V)						
SHALE, dark-gray, highly to moderately weathered, weak to slightly strong with 1/2" and smaller seams of very weak material, thickly bedded, fissile, highly to slightly fractured, contains few seams of limestone, vertical fracture at 63.4', rock splitting on bedding planes upon drying, RQD = 39%, Loss = 1%. DESCRIPTION ON FOLLOWING PAGE				59																				
				60																					
				61	20		100	NQ2-31												Rock (V) CORE					
				62																					
				63																					
				64																					
				65	25		100	NQ2-32												Rock (V) CORE					
				66																					
				67																					
				68	87		95	NQ2-33												Rock (V) CORE					
		567.7	EOB	69																					

Notes:
-Encountered seepage at 53.3 feet.
-After removal of augers, boring caved at 59.3 ft. and water was measured at 58.3 feet.
- Installed slotted PVC pipe to a depth of 69.3 feet with a flushmount cover.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: N/A

PROJECT: LOR-611-3.44	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME 550 (AW)(13)	STATION / OFFSET: 210+55, 22' LT	EXPLORATION ID B-005-0-13																					
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / J. PENNELL	HAMMER: CME AUTOMATIC	ALIGNMENT: S.R. 611 CENTERLINE																						
PID: 92009 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 2/20/13	ELEVATION: 635.0 (MSL) EOB: 10.0 ft.	PAGE 1 OF 1																					
START: 8/26/13 END: 8/26/13	SAMPLING METHOD: SPT	ENERGY RATIO (%): 75	LAT / LONG: 41.460508 N, 82.159931 W																						
MATERIAL DESCRIPTION AND NOTES		ELEV. 635.0	DEPTHS		SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL					
										GR	CS	FS	SI	CL	LL	PL	PI								
ASPHALT - 11 INCHES		634.1																							
Fill: Medium-dense gray intermixed with brown GRAVEL WITH SAND, little silt, trace clay, damp.		631.5		1	6 10 12	28	72	SS-1	–	46	21	13	15	5	NP	NP	NP	6	A-1-b (0)						
Fill: Very-dense dark gray GRAVEL, "and" fine to coarse sand, trace silt, trace clay, contains many slag fragments, damp.		629.0		2																					
				3	30 30 15	56	78	SS-2	–	53	25	16	5	1	NP	NP	NP	6	A-1-a (0)						
				4																					
				5																					
Fill: Very-stiff to hard brown mottled with gray SILTY CLAY, little to some fine to coarse sand, trace fine gravel, damp to moist.				6																					
				7	2 3 5	10	72	SS-3	–	–	–	–	–	–	–	–	–	24	A-6b (V)						
				8																					
				9	3 3 4	9	78	SS-4	–	–	–	–	–	–	–	–	–	19	A-6b (V)						
		625.0	EOB	10																					

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

Notes:
-After removal of augers, boring caved at 8.9 feet and was observed to be dry.

BBC&M ENGINEERING, INC.

LOG OF BORING NO. B-1
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 8.53 ELEVATION: 187.10 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
0												TOPSOIL - 457 MILLIMETERS
1	1	3/2/3	190-335									Very-stiff brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel, contains shale fragments and roots, slightly organic.
2												Est. A-6a
3	2	2/3/3	95-190									Stiff brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel, contains seams of clay and roots, slightly organic.
4												Est. A-6a
	3	5/6/10	430+									Hard brown clayey silt, some to "and" fine to medium sand, trace coarse sand, trace fine gravel, contains few lenses of clay and shale fragments.
5												
6	4	7/10/14	430+	13	20	13	3	15	24	34	23	
7												
	5	8/14/18	430+									
8												
	6	50-25mmR										A-4a
9												Medium-hard gray shale.
												Visual
10												- Encountered water at 8.4m.
												- Caved at 6.7m.
11												

WATER LEVEL: 8.38 | 3.35
WATER NOTE: | Caved at 6.1m
DATE: 07/16/98 | 07/17/98

JOB: 6317

PLATE 6

BBC&M ENGINEERING, INC.

LOG OF BORING NO. B-2
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 15.24 ELEVATION: 197.90 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
0												ASPHALT - 457 MILLIMETERS
												GRANULAR BASE - 457 MILLIMETERS
1	1	2/2/1	95-145									FILL: Stiff to very-stiff brown silty clay, some fine to coarse sand, trace fine gravel, contains silt seams.
2	2	2/2/3	145-190	19	34	18	4	9	11	32	44	
3												
	3	2/3/3	95-240									
4												A-6b
	4	2/3/3	305-430+									FILL: Very-stiff to hard brown silty clay, intermixed with clayey silt, some fine to coarse sand, trace fine gravel, contains silt seams.
5												Est. A-6b
6	5A	3/3/4	365-430+									FILL: Stiff to very-stiff brown silty clay, some fine to coarse sand, contains few lenses of clay, contains weathered shale fragments.
	5B		190-240									
7												Est. A-6b
	6	3/4/5	355-430+									FILL: Very-stiff to hard brown clayey silt, some fine to coarse sand, trace fine gravel, contains few lenses of clay.
8												
9	7	3/4/5	335-430+									
10												
11												Est. A-6b

WATER LEVEL: "Dry" | "Dry"
WATER NOTE:
DATE: 07/16/98 | 07/17/98

JOB: 6317

-CONTINUED-

PLATE 7

DRAWN K.A.H | CHECKED B.L.M

LANDSLIDE EXPLORATION
LOGS OF BORINGS B-001-0-98 AND B-002-0-98

LOR-611-3.44

LOG OF BORING NO. B-2
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 15.24 ELEVATION: 197.90 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION - CONTINUED
12	8		4 / 5 / 7	165-190	25								Stiff gray silty clay, some fine to coarse sand, trace fine gravel, contains silt seams, decayed wood, roots, highly organic. Est. A-6a
13	9		7 / 10 / 15	430+									Hard brown clayey silt interbedded with gray silty clay, some fine to coarse sand, contains desiccation cracks, silt and weathered shale fragments. Est. A-4a
15	10		5 / 7 / 11	430+									- Encountered no water
16													
17													
18													
19													
20													
21													
22													

WATER LEVEL: ▽ "Dry" ▽ "Dry"
WATER NOTE:
DATE: 07/16/98 07/17/98

JOB: 6317

LOG OF BORING NO. B-3
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 15.24 ELEVATION: 196.60 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
0													ASPHALT - 279 MILLIMETERS
													GRANULAR BASE - 152 MILLIMETERS
1	1		2 / 2 / 2	190-270									FILL: Very-stiff brown silty clay, some fine to coarse sand, trace fine gravel, contains silt seams.
2	2		2 / 2 / 2	240-295	17								Est. A-6b
3	3		3 / 3 / 3	190-285									FILL: Very-stiff brown silty clay, intermixed with clayey silt, some fine to coarse sand, trace fine gravel, contains few roots and silt seams.
4	4		3 / 3 / 4	190-270									Est. A-6b
5	5		2 / 4 / 5	240-385									FILL: Hard brown mottled with gray clayey silt, some fine to coarse sand, trace fine gravel, contains few roots, contains few 1" seams of dark-gray organic clayey silt.
6	6		5 / 6 / 9	385-430+									Est. A-6b
7	7		4 / 7 / 10	430+	16	33	20	9	13	12	28	39	Hard brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, contains few roots.
9													
10													
11													

WATER LEVEL: ▽ "Dry" ▽ "Dry"
WATER NOTE:
DATE: 07/16/98 07/17/98

JOB: 6317

-CONTINUED-

DRAWN K.JD CHECKED BLM

LANDSLIDE EXPLORATION
LOGS OF BORINGS B-002-0-98 CONTINUED AND B-003-0-98

LOR-611-3.44

BBC&M ENGINEERING, INC.

LOG OF BORING NO. B-3
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 15.24 ELEVATION: 196.60 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION - CONTINUED
12	8	6/10/15	430+									Hard brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, contains few roots. A-6a
13	9	6/9/12	430+									Very-stiff to hard brown clayey silt, some fine to coarse sand, trace fine gravel, contains few lenses of clay.
14												
15	10	6/7/13	385-430+									- Strong petroleum odor. Est. A-4a
16												- Encountered no water
17												
18												
19												
20												
21												
22												

WATER LEVEL: ▽ "Dry" ▼ "Dry"
WATER NOTE:
DATE: 07/16/98 07/17/98

JOB: 6317

BBC&M ENGINEERING, INC.

LOG OF BORING NO. B-4
LOR-611-05761 (0358)
LORAIN COUNTY, OHIO

TYPE: 57mm I.D. Hollow-stem Auger; 51mm O.D. Split-barrel Sampler
LOCATION: See Plate 2
COMPLETION DEPTH: 7.44 ELEVATION: 181.50 DATE: 7/16/98

DEPTH, METERS	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER kPa	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
0												
1	1	4/7/8/9	430+									Hard brown clayey silt, some fine to coarse sand, little fine gravel, contains shale fragments. Est. A-6a
2	2	5/6/9	385-430+	19	38	23	7	1	2	44	48	Medium-dense to very-dense brown silt interbedded with gray silty clay, trace fine to coarse sand, trace fine gravel, slightly organic, contains weathered shale fragments and roots.
3	3	5/34/39	335-430+				8	11	15	67		- Some fine to coarse sand with depth. A-6a
4	4	12/15/20										
5	5	30/50-127mm										Very-soft to soft gray weathered shale.
6												
7		42/50-76mmR										Visual
8												- Encountered no water.
9												
10												
11												

WATER LEVEL: ▽ "Dry" ▼ "Dry"
WATER NOTE:
DATE: 07/16/98 07/17/98

JOB: 6317

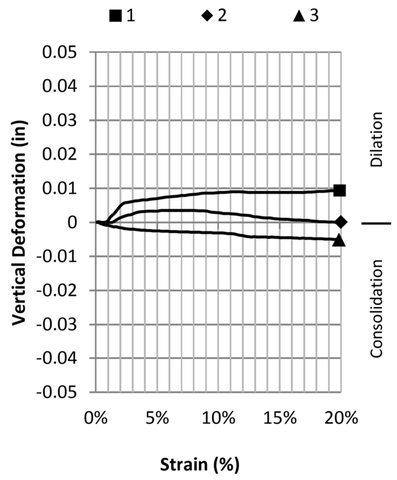
DRAWN K.JD CHECKED BLM

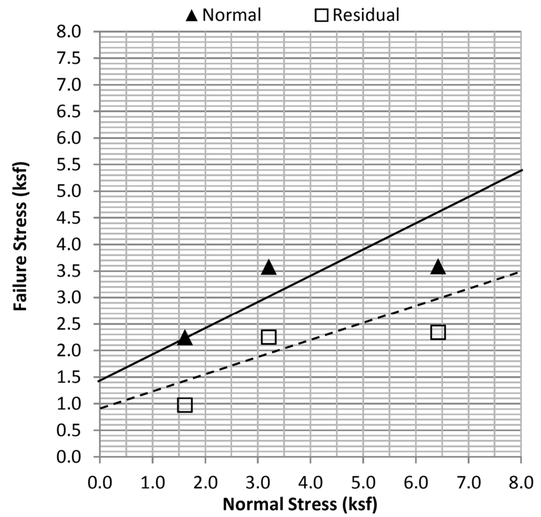
LANDSLIDE EXPLORATION
LOGS OF BORINGS B-003-0-98 CONTINUED AND B-004-0-98

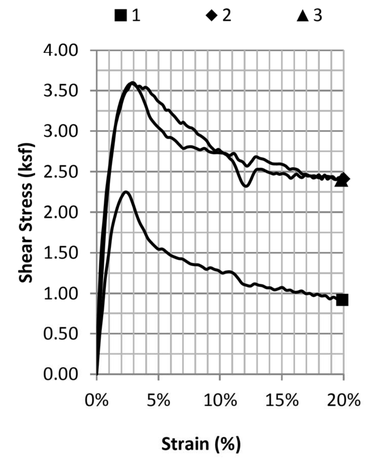
LOR-611-3.44

S&ME DIRECT SHEAR TEST REPORT

Results: **Normal** **C (ksf) =** **1.40** **ϕ (deg) =** **26**
Residual **C_r (ksf) =** **0.90** **ϕ_r (deg) =** **17**







Sample No.		1	2	3
Initial	Moisture Content (%)	17.23%	15.78%	21.63%
	Dry Density (pcf)	114.20	117.41	106.32
	Saturation (%)	97.9%	97.9%	99.9%
	Void Ratio	0.4754	0.4350	0.5847
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.68%	18.90%	22.85%
	Dry Density (pcf)	112.57	116.31	107.57
	Saturation (%)	107.0%	113.8%	108.9%
	Void Ratio	0.4967	0.4485	0.5662
	Diameter (in)	2.5	2.5	2.5
	Height (in)	0.9937	0.9829	0.9785
Normal Stress (ksf)		1.61	3.21	6.42
Failure Stress - Normal (ksf)		2.25	3.58	3.59
- Strain at Normal Failure (%)		2.32%	2.89%	3.02%
Failure Stress - Residual (ksf)		0.97	2.25	2.34
- Strain at Residual Failure (%)		8.16%	8.27%	1.74%
Avg. Strain Rate (in/min)		0.0026	0.0028	0.0019

Sample Type: Shelby Tube
Sample Description:
FILL: Hard brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel.

Comments:
ODOT Classification: A-6b

LL = 37 **PI =** 16
Assumed Specific Gravity = 2.7

Client:	ODOT
Project Name:	LOR-611-3.44
Project Location:	Lorain County, Ohio
Project No.:	1171-13-058A
Boring ID:	B-002-0-13
Sample ID:	S-15
Sample Depth:	22.0' to 24.0'
Date(s) Tested:	11/14-21/2013

Tested By: PJM Checked By: BLM

DRAWN KAH
CHECKED BLM

LANDSLIDE EXPLORATION
DIRECT SHEAR TEST RESULTS

LOR-611-3.44