

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

LOG-CR 21-1.00
BRIDGE REHABILITATION
OVER GREAT MIAMI RIVER
PLEASANT TOWNSHIP
LOGAN COUNTY

PROJECT DESCRIPTION

REHABILITATION OF A THROUGH TRUSS BRIDGE OVER THE GREAT MIAMI RIVER INCLUDING DISASSEMBLY, GALVAIZING, AND REERECTION WITH A NEW DECK AND WEARING SURFACE WITH RECONSTRUCTION OF THE APPROACH ROADWAY.

LENGTH OF PROJECT = 365 FEET

PROJECT EARTH DISTURBED AREA: 0.86 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.13 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (NOI NOT REQUIRED)

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.

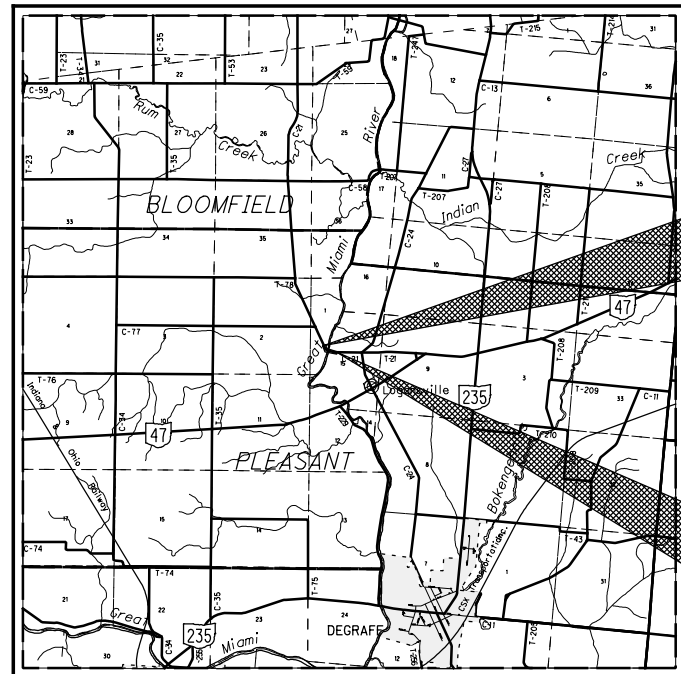
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY.

APPROVED _____
DATE _____ LOGAN COUNTY ENGINEER

APPROVED _____
DATE _____ LOGAN COUNTY COMMISSIONER

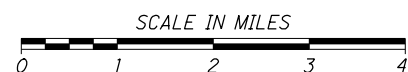
APPROVED _____
DATE _____ LOGAN COUNTY COMMISSIONER

APPROVED _____
DATE _____ LOGAN COUNTY COMMISSIONER



LOCATION MAP

LATITUDE: 40°21'04" N LONGITUDE: 83°56'19" W



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

DESIGN DESIGNATION

CURRENT ADT (2013)	782
DESIGN YEAR ADT (2033)	1,053
DESIGN SPEED	20
LEGAL SPEED	55
DESIGN FUNCTIONAL CLASSIFICATION:	
RURAL LOCAL	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NO DESIGN EXCEPTIONS REQUIRED

INDEX OF SHEETS:

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FINAL PLANS
DATE: 03/18/15

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

CALL
1-800-362-2764
(TOLL FREE)

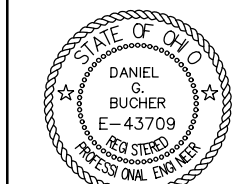
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS UNDERGROUND
PROTECTION SERVICE CALL: **1-800-925-0988**

PLAN PREPARED BY:

KOHLI & KALIHER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
2244 Baton Rouge Ave., Lima, Ohio 45805 419-227-1135

ENGINEERS SEAL:



SIGNED: *Daniel G. Bucher*
DATE: 03-18-2015

STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS	
BP-4.1	7-19-13	DM-1.1	1-18-13	DS-1-92	7-18-03	800	1-17-14
		DM-1.4	1-18-13	EXJ-3-82	1-18-13	832	1-17-14
MGS-1.1	7-19-13	DM-4.4	7-20-12	TST-1-99	1-17-14		
MGS-2.1	7-19-13						
MGS-3.1	7-19-13	TC-41.20	10-18-13				
MGS-4.2	7-19-13	TC-41.30	10-18-13				
		TC-42.20	10-18-13				
RM-1.1	1-18-13	TC-61.30	1-17-14				
		MT-101.60	7-19-13				
		MT-105.10	7-19-13				

FEDERAL PROJECT NO. **E110(333)**
PID NO. **87081**
CONSTRUCTION PROJECT NO. _____
RAILROAD INVOLVEMENT **NONE**
LOG-CR 21-1.00
1/52

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LEGEND

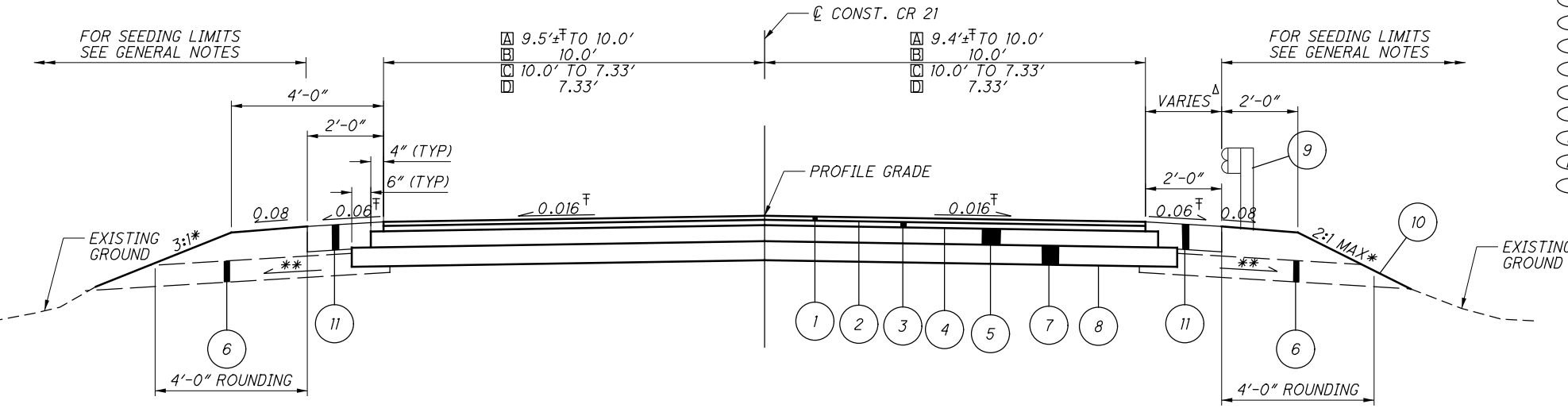
- ① ITEM 448 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22
- ② ITEM 407 TACK COAT FOR INTERMEDIATE COURSE, APPLIED AT 0.04 GAL. PER S.Y.
- ③ ITEM 448 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22
- ④ ITEM 407 TACK COAT, APPLIED AT 0.075 GAL. PER S.Y.
- ⑤ ITEM 301 5" ASPHALT CONCRETE BASE, PG64-22
- ⑥ ITEM 605 AGGREGATE DRAINS
- ⑦ ITEM 304 6" AGGREGATE BASE
- ⑧ ITEM 204 SUBGRADE COMPACTION
- ⑨ ITEM 606 GUARDRAIL, TYPE MGS
- ⑩ ITEM 659 SEEDING AND MULCHING (SEE GENERAL NOTES)
- ⑪ ITEM 304 8" AGGREGATE BASE

* UNLESS OTHERWISE SHOWN ON CROSS SECTIONS.

** 0.08 DESIRABLE, 0.04 MINIMUM.

‡ TRANSITION TO MATCH EXISTING WITHIN STATION LIMITS OF A & B

Δ SEE GUARDRAIL DETAIL SHEET 14/52 FOR DIMENSIONS

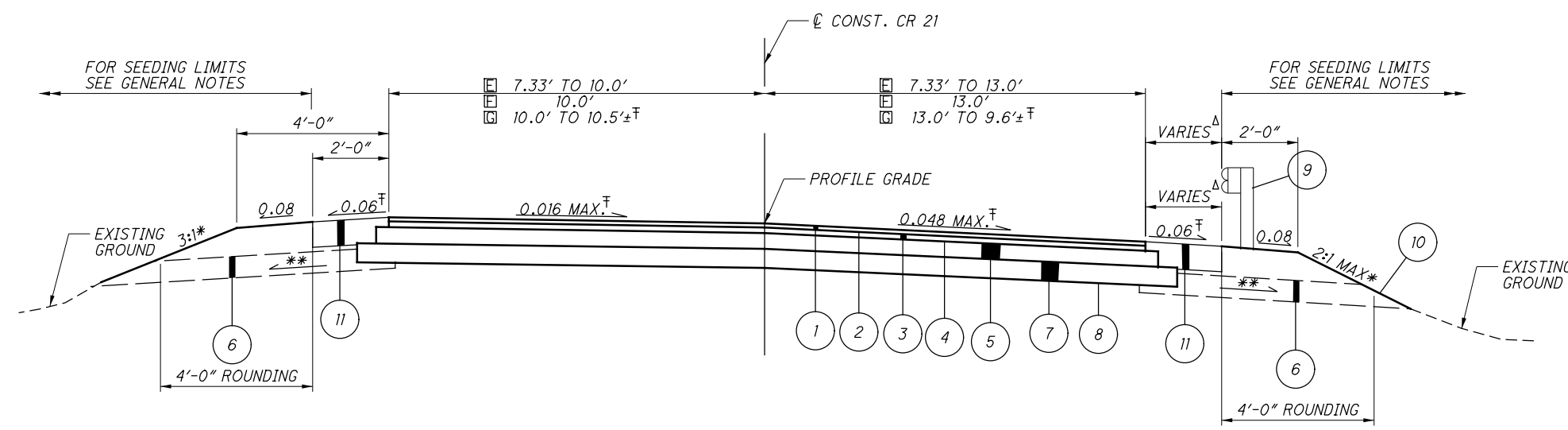


NORMAL SECTION "A"

APPLIES FROM:

A	STA. 51+55.00 TO STA. 51+70.00	= 15.00 FT
B	STA. 51+70.00 TO STA. 52+57.00	= 87.00 FT
C	STA. 52+57.00 TO STA. 52+77.00	= 20.00 FT
D	STA. 52+77.00 TO STA. 54+23.00	= 146.00 FT

DEDUCT FOR STRUCTURE LOG-21-0100
 STA. 52+77.27 TO STA. 54+22.98 = -145.71 FT
 122.29 FT



SUPERELEVATED SECTION "B"

APPLIES FROM: STA. 54+23.00 TO STA. 55+62.00 = 139.00 FT

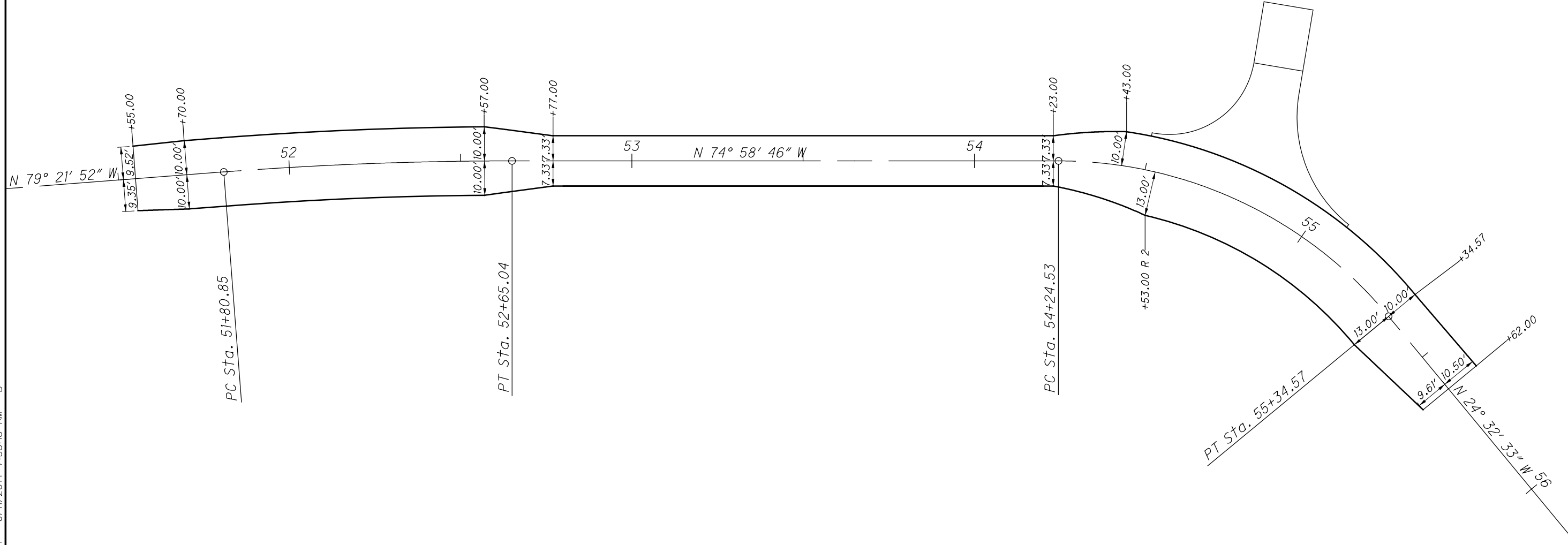
PAVEMENT WIDTHS FOR SECTION "B":

LEFT SIDE		RIGHT SIDE	
E	STA. 54+23.00 TO STA. 54+43.00 = 20.00 FT	E	STA. 54+23.00 TO STA. 54+53.00 = 30.00 FT
F	STA. 54+43.00 TO STA. 55+34.57 = 91.57 FT	F	STA. 54+53.00 TO STA. 55+34.57 = 81.57 FT
G	STA. 55+34.57 TO STA. 55+62.00 = 27.43 FT	G	STA. 55+34.57 TO STA. 55+62.00 = 27.43 FT

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TYPICAL SECTIONS

LOG-CR 21-1.00



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

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

ELECTRIC:
 LOGAN COUNTY CO-OP
 1587 CR 32, NORTH
 PO BOX 279
 BELLEFONTAINE, OHIO 43311
 937-651-6980
 ATTN: RYAN SMITH

TELEPHONE:
 CENTURY LINK
 127 N. MAIN ST.
 BELLEFONTAINE, OHIO 43311
 937-599-9285
 ATTN: AL HOCKLEY

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY LINES:

THE UTILITY(IES) SHALL BEAR ALL EXPENSE INVOLVED IN RELOCATING (INSTALLING) ANY AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITY(IES) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ELEVATION DATUM: NAVD 88

CONSTRUCTION LIMITS: THE CONSTRUCTION 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.

CLEARING AND GRUBBING: REMOVE ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING, AS PER PLAN. TREES ARE TO BE REMOVED TO THE TOP OF THE GROUND ELEVATION AND THE STUMPS ARE TO REMAIN. TREAT STUMPS WITH A HERBICIDE TO PREVENT FUTURE GROWTH. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES TO BE REMOVED.

SIZES	NO. TREES	NO. STUMPS	TOTAL
18"	16	2	18
30"	5	0	5

DEMOLITION DEBRIS: THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT DOES FALL INTO THE STREAM SHALL BE REMOVED AS SOON AS POSSIBLE.

CONTINGENCY 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.

ITEM 605 - AGGREGATE DRAINS: FOR LOCATIONS OF AGGREGATE DRAINS, SEE SHEET NO. 7/52.

ITEM 204 - PROOF ROLLING: THE FOLLOWING QUANTITY IS PROVIDED IN THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING AS DIRECTED BY THE ENGINEER.

ITEM 204 - PROOF ROLLING 2 HOUR

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

ITEM 659 - TOPSOIL	266 CU YD
ITEM 659 - SEEDING AND MULCHING	2392 SQ YD
ITEM 659 - REPAIR SEEDING AND MULCHING	120 SQ YD
ITEM 659 - COMMERCIAL FERTILIZER	0.32 TON
ITEM 659 - LIME	0.49 ACRE
ITEM 659 - WATER	13 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 THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

FARM DRAINS: ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-1.1, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEMS.

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

ITEM 611	6" CONDUIT, TYPE E	25 FT
ITEM 611	6" CONDUIT, TYPE F	25 FT
ITEM 611	8" CONDUIT, TYPE F	25 FT
ITEM 611	12" CONDUIT, TYPE B	25 FT

ENVIRONMENTAL COMMITMENTS: THE CONTRACTOR AND ENGINEER ARE TO ENSURE THAT THE FOLLOWING CONSTRUCTION-RELATED ITEMS ARE CARRIED OUT:

1. NO INSTREAM WORK IS PERMITTED UNDER THIS PROJECT. NO TEMPORARY FILL MAY BE PLACED BELOW ORDINARY HIGH WATER MARK DURING CONSTRUCTION OF THIS PROJECT. NO EQUIPMENT MAY BE PLACED BELOW ORDINARY HIGH WATER MARK. IF DEBRIS ENTERS THE WATERWAY DURING CONSTRUCTION, IT MUST BE REMOVED PROMPTLY, BY HAND OR UTILIZING EQUIPMENT STAGED ABOVE ORDINARY HIGH WATER MARK.

2. UNAVOIDABLE CUTTING OF TREES WILL BE PERFORMED ONLY BEFORE APRIL 1 OR AFTER SEPTEMBER 30, WHEN BATS WILL NOT BE USING TREES FOR ROOST HABITAT.

ITEM 202 - GUARDRAIL REMOVED FOR STORAGE, AS PER PLAN:

THIS ITEM OF WORK CONSISTS OF REMOVING THE ENTIRE LINEAR FEET OF GUARDRAIL SPECIFIED IN THE PLANS INCLUDING ALL HARDWARE, POSTS, BLOCKOUTS, AND CONCRETE FOUNDATIONS. THE GUARDRAIL PANELS AND ANY WOOD POSTS DEEMED TO BE IN GOOD CONDITION BY THE ENGINEER SHALL BE REMOVED WITH CARE AND DELIVERED TO THE CLOSEST LOGAN COUNTY FACILITY. THE CONTRACTOR SHALL CONTACT THE COUNTY ENGINEER AT 937-592-2791 TO COORDINATE GUARDRAIL PANEL AND POST DELIVERY.

PAYMENT SHALL INCLUDE COMPLETE REMOVAL AND DELIVERY OF GUARDRAIL PANELS AND POSTS IN THE UNIT PRICE FOR ITEM 202, GUARDRAIL REMOVED FOR STORAGE, AS PER PLAN AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY.

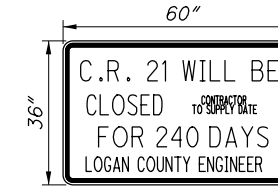
ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN:

THE CONTRACTOR IS REQUIRED TO VERIFY THE VERTICAL AND HORIZONTAL CONTROL AND ADVISE THE LOGAN COUNTY ENGINEER OF ANY DISCREPANCIES FOUND. THE COST FOR THIS WORK IS INCLUDED IN ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN.

ITEM 614 - MAINTAINING TRAFFIC:

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. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINTS OF CLOSURE.

NOTICE OF CLOSURE SIGN:



W20-H14-60

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN STANDARD 48" X 30" "ROAD CLOSED" SIGNS, SIGN SUPPORTS, BARRICADES AND LIGHTS, AS DETAILED IN STANDARD CONSTRUCTION DRAWING MT-101.60 AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC:

1. NEAR "BEGIN WORK" AND "END WORK" STATIONS OF PROJECT

THE CONTRACTOR SHALL PROVIDE, ERECT, AND MAINTAIN SIGNS AND SIGN SUPPORTS AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND TYPE III BARRICADES OF THE TYPE AND LOCATION AS FOLLOWS:

1. MOVABLE TYPE AT STA. 50+00
2. MOVABLE TYPE AT STA. 56+00

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 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 ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLANS.

DUST CONTROL:

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR MAINTENANCE OF TRAFFIC AND DUST CONTROL:

ITEM 616	2 M GAL	WATER
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SHEET NO.	STATION TO STATION		ROADWAY						PAVEMENT						
			202		204		606		690	301	304	407		448	
			PAVEMENT REMOVED, ASPHALT	GUARDRAIL REMOVED	SUBGRADE COMPACTION	GUARDRAIL, TYPE MSG	ANCHOR ASSEMBLY MGS TYPE T	MCS BRIDGE TERMINAL, TYPE 1 ASSEMBLY	SPECIAL - MAILBOX REMOVED AND RESET	ASPHALT CONCRETE BASE, PG64-22	AGGREGATE BASE	TACK COAT	TACK COAT FOR INTERMEDIATE COURSE	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28
SQ YD	FT	SQ YD	FT	EACH	EACH	EACH	CU YD	CU YD	GAL	GAL	CU YD	CU YD			
14	55+22.98	55+08.76					1								
14	55+08.76	54+51.84				50.00									
14	54+51.84	54+22.92					1								
14	54+57.62	54+47.37					1								
14	54+47.37	54+22.98						1							
14	52+77.02	52+50.01						1							
14	52+50.01	51+86.83				62.50									
14	51+86.83	51+74.26					1								
14	52+77.02	52+50.33						1							
14	52+50.33	51+88.51				62.50									
14	51+88.51	51+76.09					1								
8	51+55	52+77.27	226		305				39	58	21	11	9	13	
8	54+22.98	55+62	374		385				49	116	26	14	12	16	
8	51+70	55+34.57		267											
8	55+00							1							
TOTALS CARRIED TO GENERAL SUMMARY			600	267	690	175	4	4	1	88	174	47	25	21	29

SHEET NO.	STATION TO STATION		SIDE	DESCRIPTION	TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC								
					626		630			642			
					BARRIER REFLECTOR	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	SIGN POST REFLECTOR	GROUND MOUNTED SUPPORT, NO. 3 POST	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE *	REMOVAL OF GROUND MOUNTED SIGN AND REEFFECTION	EDGE LINE		
EACH	EACH	EACH	FT	EACH	EACH	EACH	MILE						
15	51+82		RT	BRIDGE WEIGHT LIMIT SIGN		1				1			
15	52+73		LT & RT	OBJECT MARKER SIGN		2	2	24	2				
15	54+25		LT & RT	OBJECT MARKER SIGN		2	2	24	2				
15	54+45		LT	BRIDGE WEIGHT LIMIT SIGN		1				1			
15	54+58		LT	W1-6L-48		1	2	20	1				
15	54+98		LT	W1-6L-48		1	2	20	1				
15	55+40	55+60	RT	YELLOW RECTANGULAR REFLECTOR		5	5	50			5		
15	51+55	55+62	LT & RT	SOLID WHITE									0.16
14	51+74.26	55+22.98	LT	BARRIER REFLECTOR	7								
14	51+76.09	54.57.62	RT	BARRIER REFLECTOR	8								
TOTALS CARRIED TO GENERAL SUMMARY					15	13	13	138	8	5	0.16		

* TO BE REMOVED AND STORED ON THE PROJECT SITE FOR PICK-UP BY FORCES FROM THE LOGAN COUNTY ENGINEER'S OFFICE

ITEM 605 - AGGREGATE DRAINS		
CONST. STATION	SIDE	LENGTH (FT)
STA. 51+75	LT	9
STA. 52+00	RT	7
STA. 52+25	LT	6
STA. 52+50	RT	6
STA. 54+50	LT & RT	10 10
STA. 55+00	LT & RT	10 20
STA. 55+25	LT & RT	10 10
STA. 55+50	LT & RT	10 10
TOTAL CARRIED TO GENERAL SUMMARY		118

SHEET NO.	EARTHWORK		
	203		659
	EXCAVATION	EMBANKMENT	SEEDING AND MULCHING
	CU YD	CU YD	SQ YD
9	11	4	526
10	53	58	1182
11	25	102	565
12	17	3	119
TOTALS CARRIED TO GENERAL SUMMARY	106	167	2392 ^Δ

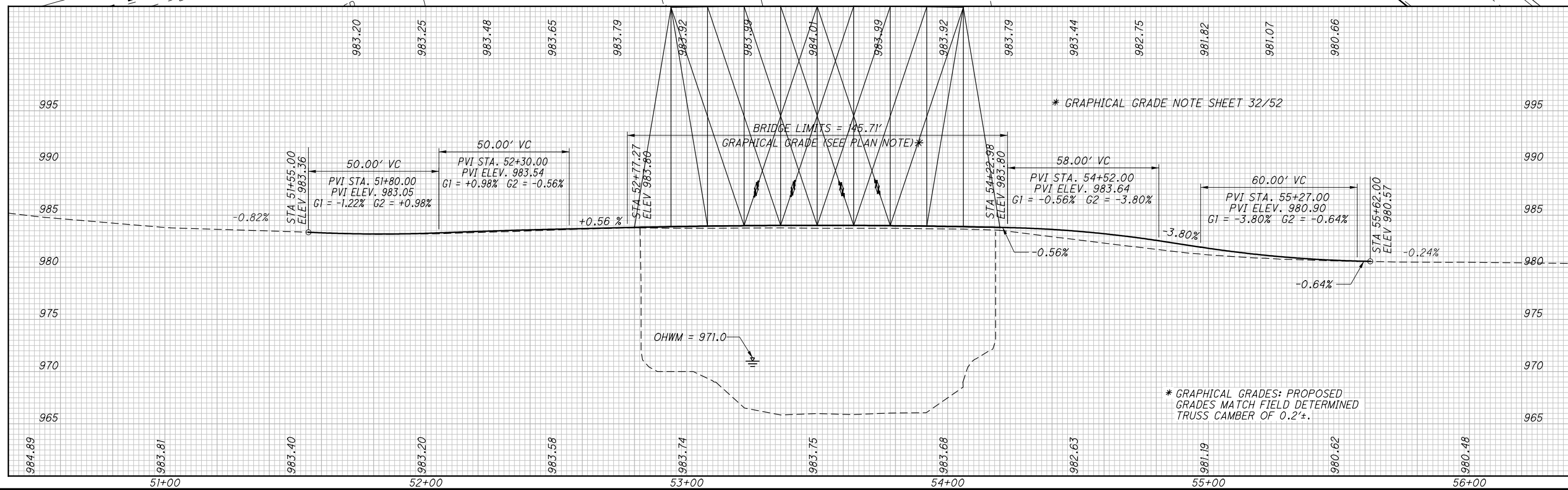
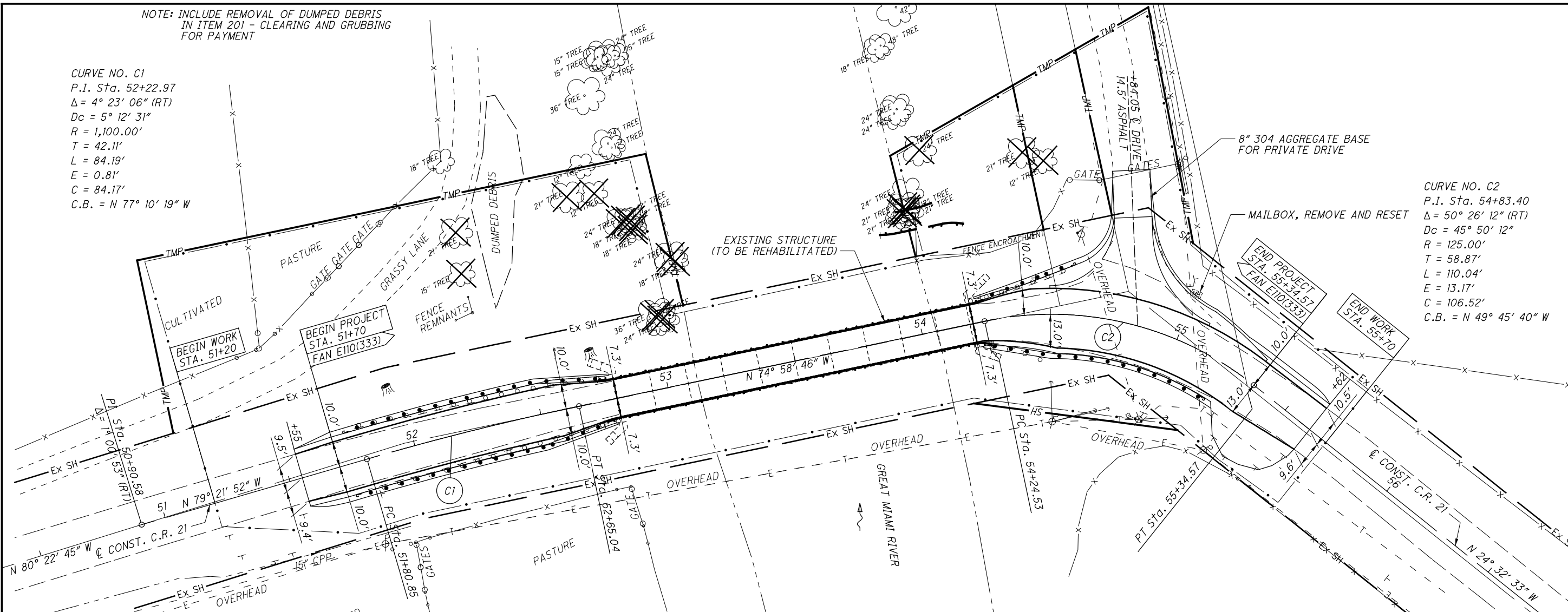
EROSION CONTROL	
ITEM 659 - TOPSOIL	$(2392 \text{ SQ YD}) \times (111 \text{ CU YD} / 1000 \text{ SQ YD}) = 266 \text{ CU YD}^{\Delta}$
ITEM 659 - REPAIR SEEDING AND MULCHING	$(2392 \text{ SQ YD}) \times (0.05) = 120 \text{ SQ YD}^{\Delta}$
ITEM 659 - COMMERCIAL FERTILIZER	$(2392 \text{ SQ YD}) \times (9 \text{ SQ FT} / \text{SQ YD}) \times (30 \text{ POUND} / 1000 \text{ SQ FT}) \times (1 \text{ TON} / 2000 \text{ POUND}) = 0.32 \text{ TON}^{\Delta}$
ITEM 659 - LIME	$(2392 \text{ SQ YD}) \times (9 \text{ SQ FT} / \text{SQ YD}) \times (1 \text{ ACRE} / 43,560 \text{ SQ FT}) = 0.49 \text{ ACRE}^{\Delta}$
ITEM 659 - WATER	$(2392 \text{ SQ YD}) \times (9 \text{ SQ FT} / \text{SQ YD}) \times (300 \text{ GALLON} / 1000 \text{ SQ FT}) \times (2 \text{ APPLICATIONS}) \times (1 \text{ M GAL} / 1000 \text{ GALLON}) = 13 \text{ M GAL}^{\Delta}$

Δ QUANTITIES CARRIED TO SEEDING AND MULCHING NOTE ON SHEET 5/47.

NOTE: INCLUDE REMOVAL OF DUMPED DEBRIS
IN ITEM 201 - CLEARING AND GRUBBING
FOR PAYMENT

CURVE NO. C1
P.I. Sta. 52+22.97
 $\Delta = 4^\circ 23' 06''$ (RT)
 $D_c = 5^\circ 12' 31''$
 $R = 1,100.00'$
 $T = 42.11'$
 $L = 84.19'$
 $E = 0.81'$
 $C = 84.17'$
C.B. = N 77° 10' 19" W

CURVE NO. C2
P.I. Sta. 54+83.40
 $\Delta = 50^\circ 26' 12''$ (RT)
 $D_c = 45^\circ 50' 12''$
 $R = 125.00'$
 $T = 58.87'$
 $L = 110.04'$
 $E = 13.17'$
 $C = 106.52'$
C.B. = N 49° 45' 40" W



CALCULATED
IMK
CHECKED
DCB

PLAN AND PROFILE
STA. 50+60 TO STA. 56+20

LOG-CR 21-1.00
8
52

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SEEDING	
END WIDTH	SO. YDS.
95	157
93	52
95	317
95	+20
526	90

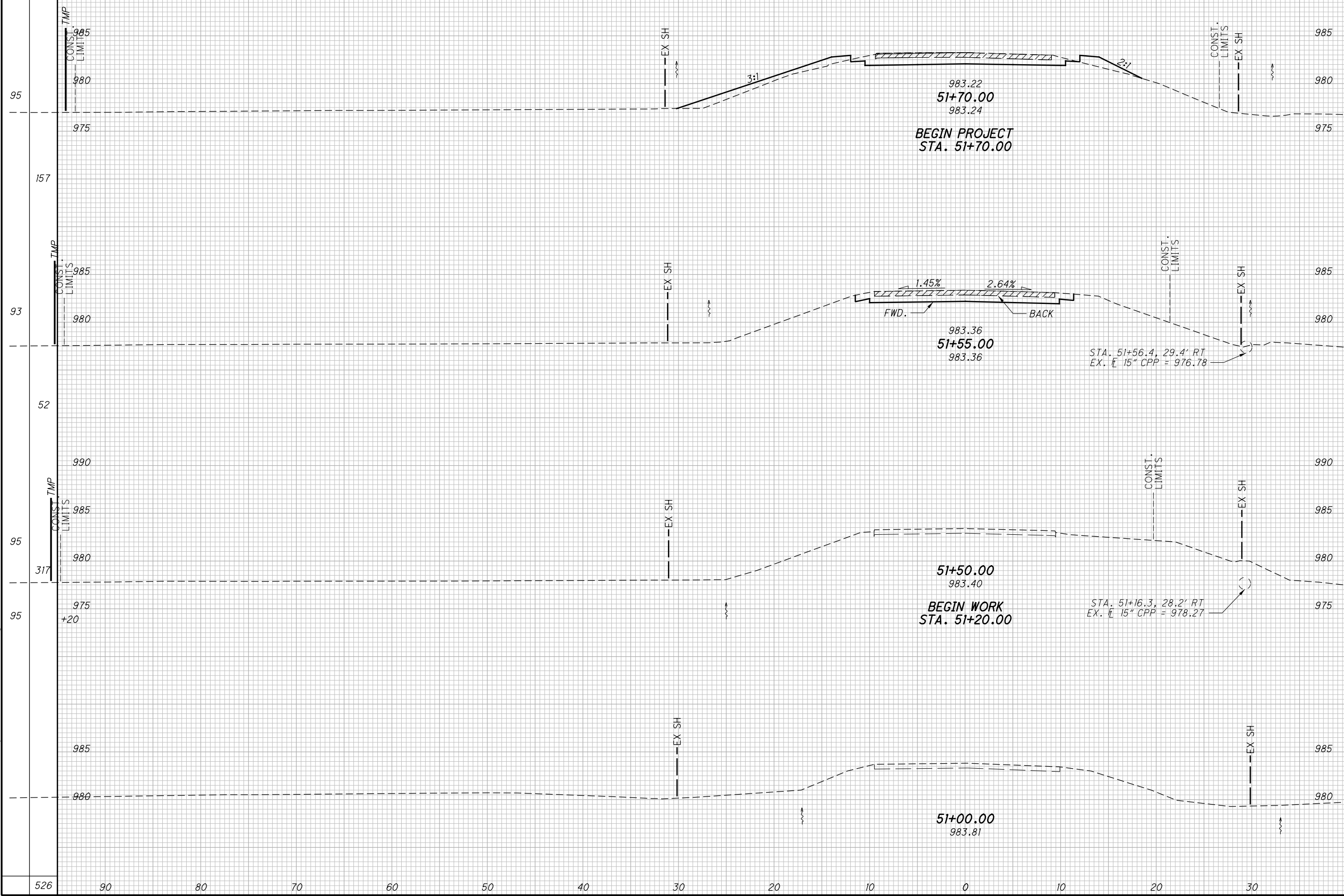
ITEM 202 - PAVEMENT REMOVED, ASPHALT

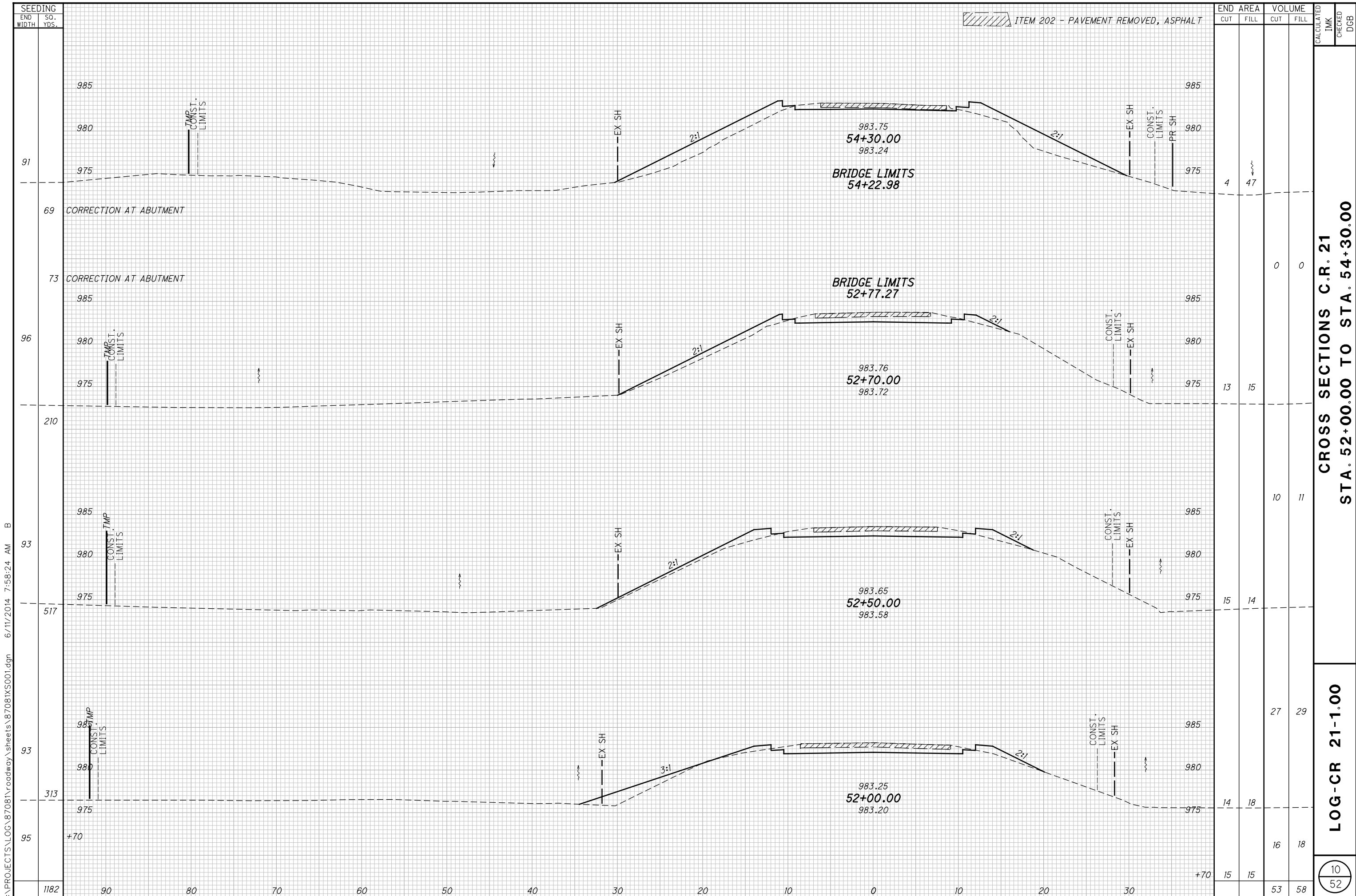
END AREA		VOLUME		CALCULATED	CHECKED
CUT	FILL	CUT	FILL		
15	15	9	4		
16	0	2	0		
0	0	11	4		

CROSS SECTIONS C.R. 21
STA. 51+00.00 TO STA. 51+70.00

LOG-CR 21-1.00

9
52





ITEM 202 - PAVEMENT REMOVED, ASPHALT

END AREA	VOLUME	CALCULATED	CHECKED		
				CUT	FILL
4	47				
13	15	0	0		
15	14	10	11		
14	18	27	29		
15	15	16	18		
15	15	53	58		

CROSS SECTIONS C.R. 21
STA. 52+00.00 TO STA. 54+30.00

LOG-CR 21-1.00

10
52

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SEEDING	END WIDTH	SO. YDS.
	90	91
	80	69
	70	73
	60	96
	50	210
	40	93
	30	517
	20	93
	10	313
	0	95
	10	+70
	20	1182
	30	

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SEEDING	
END WIDTH	SO. YDS.
565	90
101	213
91	91
39	131
29	29
-43	-43

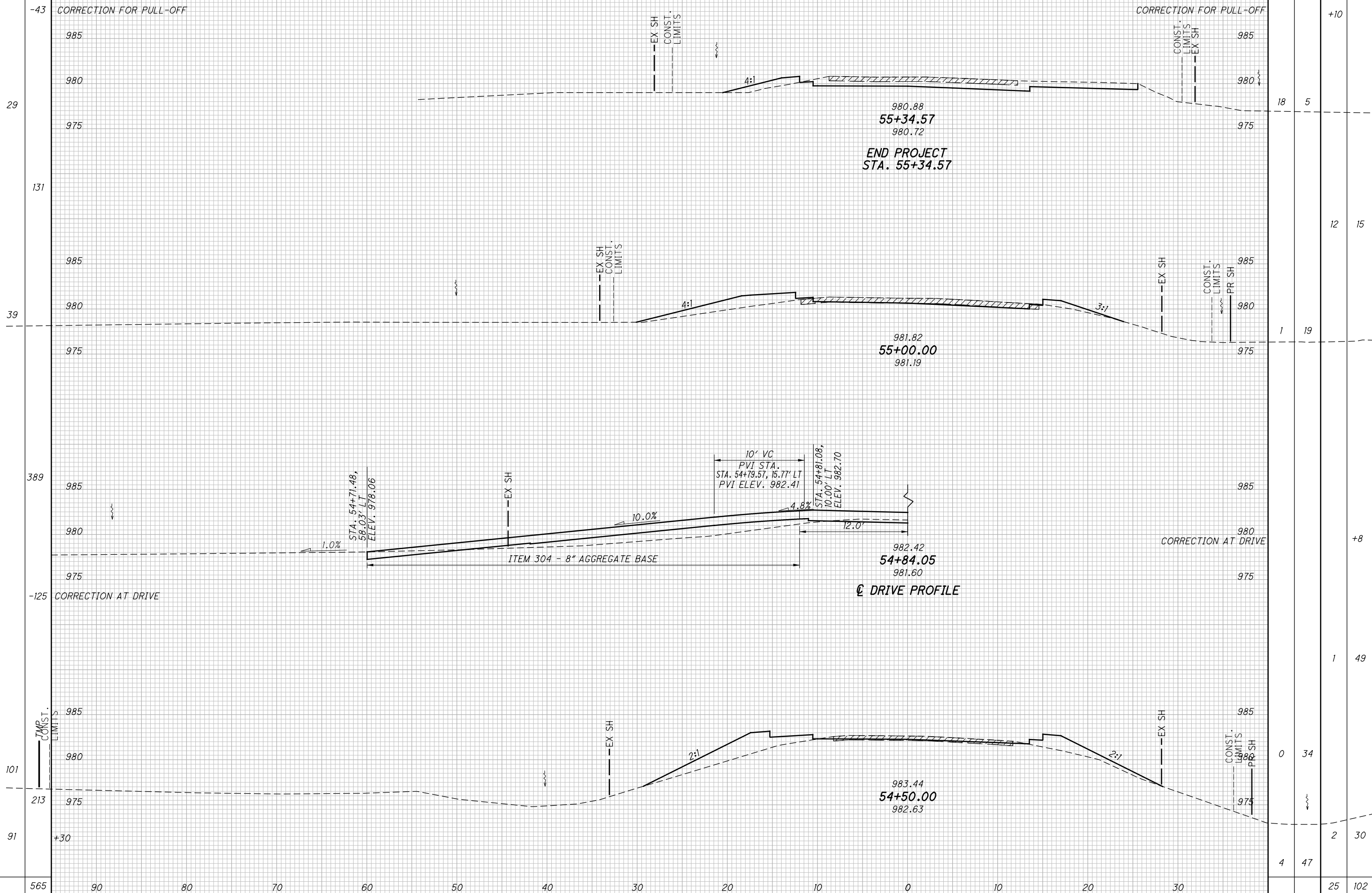
ITEM 202 - PAVEMENT REMOVED, ASPHALT

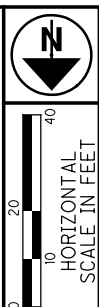
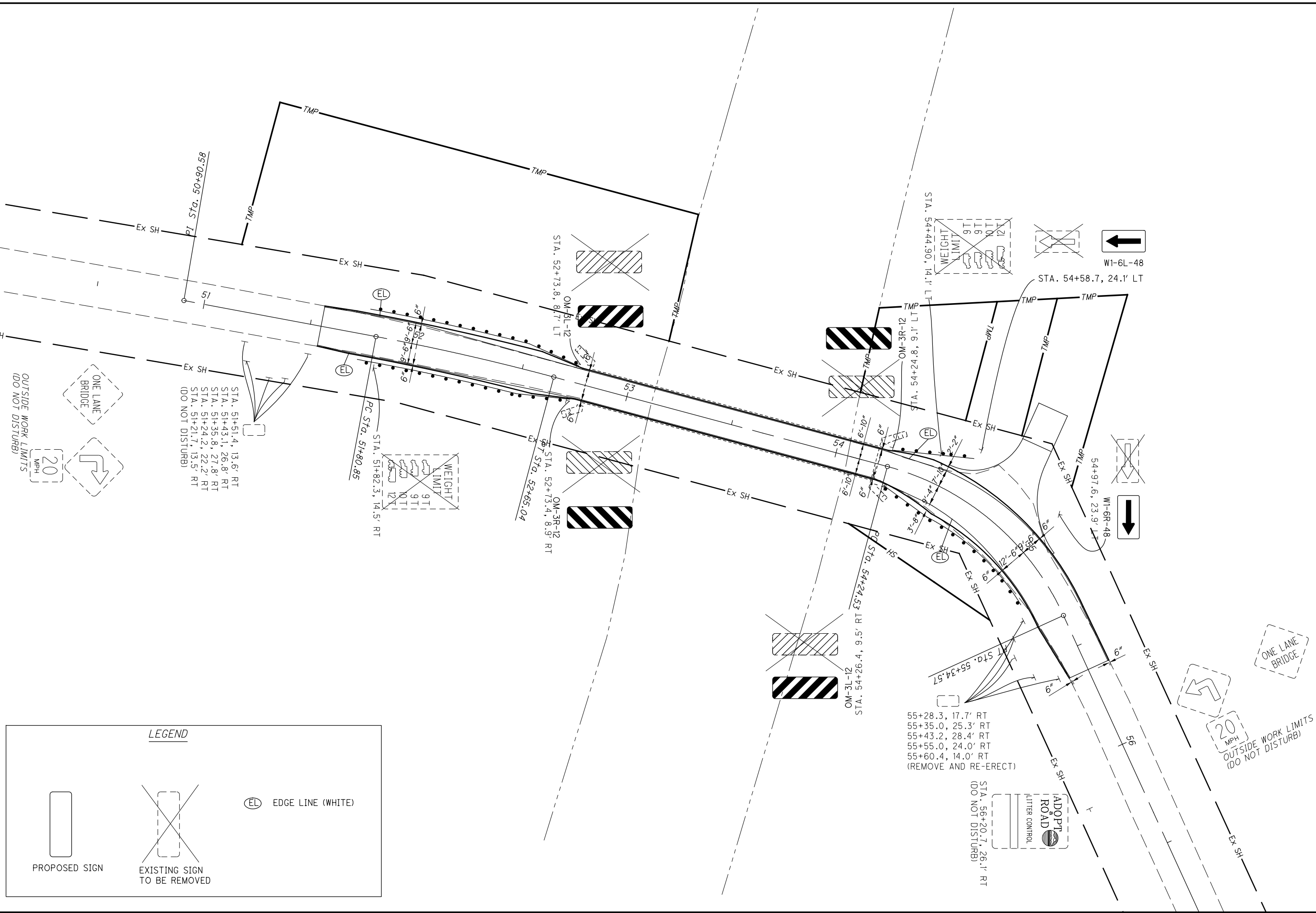
END AREA		VOLUME		CALCULATED	CHECKED
CUT	FILL	CUT	FILL		
18	5				
1	19				
0	34				
4	47				
		25	102		

CROSS SECTIONS C.R. 21
STA. 54+50.00 TO STA. 55+34.57

LOG-CR 21-1.00

11
52





ONE LANE BRIDGE
20 MPH
OUTSIDE WORK LIMITS (DO NOT DISTURB)

STA. 51+51.4, 13.6' RT
STA. 51+43.1, 26.8' RT
STA. 51+35.8, 27.8' RT
STA. 51+24.2, 22.2' RT
STA. 51+21.7, 13.5' RT
(DO NOT DISTURB)

WEIGHT LIMIT
9T
9T
10T
12T

OM-3R-12
STA. 52+73.4, 8.9' RT

OM-3L-12
STA. 52+73.8, 8.7' LT

OM-3R-12
STA. 54+24.8, 9.1' LT

WEIGHT LIMIT
12T
10T
9T
8T
6T
4T

OM-3L-12
STA. 54+26.4, 9.5' RT

55+28.3, 17.7' RT
55+35.0, 25.3' RT
55+43.2, 28.4' RT
55+55.0, 24.0' RT
55+60.4, 14.0' RT
(REMOVE AND RE-ERECT)

ADOPT ROAD LITTER CONTROL
STA. 56+20.7, 26.1' RT
(DO NOT DISTURB)

W1-6L-48
STA. 54+58.7, 24.1' LT

W1-6R-48
54+97.6, 23.9' LT

20 MPH
OUTSIDE WORK LIMITS (DO NOT DISTURB)

ONE LANE BRIDGE

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

TST-1-99 REVISED 1-17-14
EXJ-3-82 REVISED 1-18-13
DS-1-92 REVISED 7-18-03

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS" FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:

NEW MATERIALS INCORPORATED IN THE STRUCTURE CONFORM TO THE FOLLOWING.

DESIGN LOADING: 100% OHIO LEGAL LOAD (OPERATING)
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)
REINFORCING STEEL - ASTM A615 OR A996 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI
EPOXY COAT ALL REINFORCING BARS, EXCEPT AS NOTED OTHERWISE.

STRUCTURAL STEEL - ASTM A709 - GRADE 50, ALLOWABLE STRENGTH 27,000 PSI
YIELD STRENGTH 50,000 PSI

DECK - TREATED SOUTHERN YELLOW PINE, STRESS GRADES FOR STRUCTURAL PURPOSES.

THE TIMBER DECK ELEMENTS ARE 3"x6" NOMINAL DIMENSIONS
COMPONENT ALLOWABLE STRESS/PROPERTIES, NAIL LAMINATED DECK:

F_b 1600 PSI - BENDING UNDER WET USE
F_v 100 PSI - HORIZONTAL SHEAR
F_a 440 PSI - COMPRESSION PERPENDICULAR TO GRAINS (UNDER WET USE)
E 1,600,000 PSI - MODULUS OF ELASTICITY (UNDER WET USE)

FCM

FRACTURE CRITICAL NON-REDUNDANT BRIDGE MEMBERS (FCM) SHALL MEET THE PROVISIONS OF SECTION 12, AWS D1.5. BASE METAL CHARPY V-NOTCH (CVN) IMPACT REQUIREMENTS SHALL SATISFY ZONE 2 TEMPERATURES.

CVN

WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.

DECK PROTECTION METHOD

TYPE 2 WATERPROOFING WITH ASPHALT CONCRETE OVERLAY

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED 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, 105.02, AND 513.04.

CONTRACT BID PRICES SHALL BE BASED UPON THE 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.

SPECIAL NOTES

DIMENSIONS OF THE EXISTING STRUCTURES SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY. THEY HAVE BEEN TAKEN FROM THE FIELD NOTES TAKEN FOR BRIDGE INSPECTION AND ARE NOT GUARANTEED TO BE ACCURATE. ALL DIMENSIONS AFFECTED BY THE GEOMETRY, AND/OR LOCATIONS OF THE EXISTING STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE ANY CONSTRUCTION IS PREFORMED, AND BEFORE ANY MATERIALS ARE ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE COUNTY ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK SHOP DRAWINGS. THERE IS NO SEPARATE BID ITEM FOR VERIFICATION OF EXISTING TRUSS GEOMETRY, MEMBER COMPONENTS AND DIMENSIONS. CONTRACTOR IS TO INCLUDE ANY WORK REQUIRED FOR FIELD VERIFICATION IN THE TOTAL FINAL BID PRICE. ANY EXPENSES INCURRED AS A RESULT OF IMPROPER FIT OF NEW MATERIALS WILL BE AT THE EXPENSE OF THE CONTRACTOR.

THE CONTRACTOR SHALL VISIT THE SITE BEFORE BIDDING TO BECOME FAMILIAR WITH THE PRESENT CONDITIONS, AND TO JUDGE THE EXTENT AND NATURE OF THE WORK TO BE DONE UNDER THIS CONTRACT.

THE EXISTING BRIDGE REQUIRES LOAD LIMIT POSTINGS. DO NOT OPERATE OVER OR OCCUPY BRIDGE WITH CONSTRUCTION VEHICLES OR EQUIPMENT EXCEEDING POSTED LIMITS AT ANY TIME.

RECONSTRUCTION NOTES

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT, DUE TO THE NATURE OF RECONSTRUCTION PROJECTS, THE EXACT EXTENT OF RECONSTRUCTION WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO THE COMMENCEMENT OF WORK. THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED BASED ON FIELD INSPECTION AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO CONSTRUCTION DETAILS AND WORK QUANTITIES. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH FIELD CONDITIONS.

RECONSTRUCTION NOTES: (CONT.)

MORE SPECIFICALLY, SOME MEMBER SIZES SUCH AS PIN SIZES AND DIAMETERS, DIAGONAL AND LOWER CHORD LENGTH, C PIN HOLE TO C PIN HOLE, AND MEMBER CONDITION CANNOT BE ACCURATELY DETERMINED UNTIL THE TRUSS HAS BEEN DISSASSEMBLED AND INDIVIDUAL MEMBERS HAVE BEEN CLEANED AND INSPECTED. ALSO INDIVIDUAL MEMBERS, OUT OF A GROUP, MAY HAVE BEEN DESIGNATED TO BE THE PROTOTYPE FOR FABRICATION OF NEW MEMBERS BASED UPON THEIR FIT AND TENSION AT THE BRIDGE CONSTRUCTION INSPECTION.

THE CONTRACTOR SHALL PERFORM ALL WORK WITH CARE SO THAT ANY MATERIALS THAT ARE TO REMAIN WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY MATERIALS THAT ARE TO REMAIN OR THAT ARE TO REMAIN THE PROPERTY OF THE COUNTY, THE DAMAGED MATERIALS SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

WHENEVER ITEMS IN THE CONTRACT REQUIRE MATERIALS TO BE REMOVED AND DISPOSED OF, THE COST OF SUPPLYING A DISPOSAL AREA AND TRANSPORTATION TO THAT AREA SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THOSE ITEMS. EXISTING STONES FROM THE ABUTMENTS AND WINGWALL CAN BE REUSED FOR SCOUR PROTECTION.

DURING REMOVAL OPERATIONS, THE CONTRACTOR SHALL NOT BE ALLOWED TO DROP WASTE CONCRETE, DEBRIS, OR ANY OTHER MATERIALS TO THE AREA BELOW OR ADJACENT TO THE BRIDGE. PLATFORMS, NETS, SCREENS, OR OTHER PROTECTIVE DEVICES SHALL BE USED TO CATCH THE MATERIAL. IF THE ENGINEER DETERMINES THAT ADEQUATE PROTECTIVE DEVICES ARE NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL PROTECTION IS PROVIDED. THE COST OF FURNISHING, INSTALLING, MAINTAINING, AND DISPOSING OF ALL PLATFORMS, NETS, SCREENS, OR OTHER PROTECTIVE DEVICES SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS ITEMS OF THE CONTRACT. ALL MATERIAL FALLING ON THE AREA ADJACENT OR BELOW THE BRIDGE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR ON A REGULAR RECURRING BASIS.

UTILITY LINES

THE UTILITY(IES) SHALL BEAR ALL EXPENSE INVOLVED IN RELOCATING (INSTALLING) ANY AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITY(IES) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ELECTRIC: LOGAN COUNTY CO-OP
TELEPHONE: CENTURY LINK

RIVER/WATERWAY PROTECTION NOTES

DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL CONDUCT OPERATIONS IN SUCH A MANNER AS TO PREVENT OR REDUCE TO A MINIMUM ANY DAMAGE TO ANY STREAM FROM POLLUTION BY DEBRIS, SEDIMENT, OR OTHER FOREIGN MATERIAL OR FROM MANIPULATION OF EQUIPMENT AND/OR MATERIALS IN OR NEAR SUCH A STREAM. THE CONTRACTOR SHALL NOT RETURN DIRECTLY TO A STREAM ANY WATER WHICH HAS BEEN USED FOR WASH PURPOSES OR OTHER SIMILAR OPERATIONS WHICH CAUSE THIS WATER TO BECOME POLLUTED WITH SAND, SILT, CEMENT, OIL, OR OTHER IMPURITIES.

TRAFFIC CONTROL

BRIDGE TO REMAIN CLOSED TO TRAFFIC DURING CONSTRUCTION. DETOURS REMAIN IN PLACE UNTIL BRIDGE REPLACEMENT WORK IS COMPLETE. FOR ADDITIONAL NOTES, SEE SHEET 5 OF 52.

PROPOSED STRUCTURE WORK:

1. REMOVE TREES IN TEMPORARY RIGHT-OF-WAY AREA SOUTH OF BRIDGE AND PLACE TIMBER BENTS TO SUPPORT REMOVED TRUSS. (NOTE WORK IS ABOVE ORDINARY HIGH WATER AND TREE STUMPS ARE TO REMAIN IN PLACE.)
2. NO WORK SHALL BE PERFORMED IN THE RIVER. NO SUPPORTS WILL BE PLACED IN THE RIVER AND THE STRUCTURE WILL BE PLACED ON WOODEN BENTS IN THE SOUTH EAST TEMPORARY RIGHT-OF-WAY .
3. REMOVE ASPHALT, TIMBER DECK, AND GUARDRAILS.
4. BRACE AND REMOVE TRUSS TO TIMBER BENTS IN TEMPORARY RIGHT-OF-WAY AREAS.
5. DISSASSEMBLE TRUSS AND MOVE TO FABRICATION SHOP FOR CLEANING AND INSPECTION OF INDIVIDUAL MEMBERS.
6. MEMBERS U1L1, U9L9; U1L2, U9L8; U1L3, U9L7; U2L4, U8L6; U3L5, U7L5; L3U5, L7U5; AND L4U6, L6U4 WILL BE REPLACED WITH NEW GALVANIZED MEMBERS AS DETAILED IN THE PLANS.
7. MEMBERS L0L1, L1L2, L2L3, L3L4, L4L5, L5L6, L6L7, L7L8, L8L9, AND L9L10 WILL BE SALVAGED (CLEANED AND GALVANIZED) IF THE INSPECTION AND STRENGTH TEST (F_y AND F_w) INDICATE THE MEMBERS ARE ACCEPTABLE. OTHERWISE NEW MEMBERS WILL BE FABRICATED UTILIZING THE DESIGNATED EXISTING MEMBER AS THE MODEL.
8. THE END POSTS, TOP CHORDS, VERTICALS U2L2, U3L3, U4L4, U5L5, U6L6, U7L7, AND U8L8 WILL BE SALVAGED (CLEANED AND GALVANIZED) FOR REUSE. MINOR REPAIR OF THE NORTH EAST END POST WILL BE REQUIRED PRIOR TO GALVANIZING.
9. TOP STRUTS, TOP SWAY BRACES, TOP KNEE BRACES WILL BE SALVAGED (CLEANED AND GALVANIZED) FOR REUSE IN THE REHABILITATED TRUSS. THE TOP SPLICE COVER PLATES WILL BE REPLACED USING HIGH STRENGTH BOLTS.

PROPOSED STRUCTURE WORK: (CONT.)

10. FLOOR BEAMS WILL BE SALVAGED (CLEANED AND GALVANIZED). SOME RIVETS, AS DETERMINED BY THE DETAILED INSPECTION DURING THE CLEANING PROCESS, WILL BE REPLACED WITH HIGH STRENGTH BOLTS. REPLACE REINFORCING PLATES AT LOWER LATERAL CONNECTION POINTS USING HIGH STRENGTH BOLTS.
11. THE LOWER LATERAL BRACES WILL BE SALVAGED (CLEANED AND GALVANIZED). THOSE LOWER LATERAL BRACES DEEMED NOT REUSABLE WILL BE REPLACED WITH NEW MEMBERS. THE BOLTS, NUTS, & WASHERS WILL BE REPLACED WITH NEW GALVANIZED H.S. BOLTS, NUTS, & WASHERS.
12. FLOOR BEAM HANGER BOLTS AND BEARING PLATES WILL BE REPLACED WITH NEW GALVANIZED BOLTS, PLATES, AND NUTS.
13. ALL PINS WILL BE REPLACED WITH STAINLESS STEEL PINS AND NUTS. THE OLD PINS WILL BE USED AS THE MODEL FOR THE NEW PINS AS TO DIAMETER, THREADS, AND PIN LENGTH.
14. ELASTOMERIC BEARINGS WILL REPLACE THE EXISTING BEARINGS FOR THE EXPANSION END POST BEARINGS, FIXED END POST BEARINGS, EXPANSION STRINGER BEARINGS, AND FIXED STRINGER BEARINGS.
15. THE BRIDGE END JOINTS WILL BE REPLACED WITH COMPRESSION SEAL EXPANSION JOINTS AT BOTH ENDS OF THE BRIDGE.
16. REFURBISHED AND NEW BRIDGE TRUSS COMPONENTS SHALL BE GALVANIZED AND MEMBERS PREASSEMBLED.
17. REPAIR STONE ABUTMENTS
 - A. REMOVE AND REPLACE BROKEN STONES
 - B. SEAL ABUTMENTS STONE CRACKS BY EPOXY INJECTION
 - C. REPOINT MORTAR JOINTS AND CLEAN STONE MASONRY.
18. REASSEMBLE TRUSS AT JOB SITE AND SET ON REPAIRED STONE ABUTMENTS. PLACE STRINGERS AND NEW TIMBER DECKING.
19. BUILD NEW ABUTMENT BACKWALLS AND END OF BRIDGE EXPANSION JOINTS.
20. REBUILD SHORT PORTIONS OF APPROACH ROADWAY ON EACH END OF THE BRIDGE. REBUILD RESIDENTIAL DRIVE AT SOUTH WEST QUADRANT OF PROJECT.
21. REPLACE THE RAILING ON THE BRIDGE AND APPROACHES WITH A STRONGER GUARDRAIL SYSTEM.
22. PLACE TYPE 2 WATERPROOFING ON TIMBER DECK AND PLACE ASPHALT WEARING SURFACE ON BRIDGE AND APPROACH ROADWAY.
23. PLACE NEW DECORATIVE LIGHTING ON BRIDGE.
24. REPLACE ROADWAY TRAFFIC CONTROL SIGNS AND OPEN STRUCTURE TO TRAFFIC.

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 REMOVAL PROCEDURES ARE DESCRIBED IN THE GENERAL NOTES. PAYMENT FOR RIVET OR BOLT REMOVED IS INCLUDED WITH RESPECTIVE ITEMS OR WITH ITEM 202 - REMOVAL MISC.: EXISTING RIVET OR BOLT.

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

1. CAREFUL MEASUREMENT OF EXISTING HOLE LOCATIONS BY THE CONTRACTOR SHALL BE USED FOR LOCATING HOLES IN NEW MATERIALS TO BE SUBPUNCHED OR DRILLED UNDERSIZED IN THE SHOP. THE HOLE SHALL BE 3/16 INCH LESS IN DIAMETER THAN THE NORMAL DIAMETER OF THE NEW BOLT. THE NEW HOLES SHALL BE REAMED TO PROPER SIZE AFTER FIT-UP TO THE EXISTING RIVET OR BOLT HOLES.
2. MAKE TEMPLATES OF HOLE PATTERNS AND LOCATIONS AFTER REMOVAL OF RIVETS OR BOLTS. USE THE TEMPLATES IN THE SHOP TO PUNCH OR DRILL STANDARD HOLE SIZES. THE HOLES SHALL BE REAMED 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 DRILLED AND REAMED TO MATCH EXISTING RIVET OR BOLT LOCATIONS.

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

EXISTING MATERIALS 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, 1/16 INCH LARGER IN DIAMETER THAN THE NOMINAL BOLT DIAMETER, UNLESS OTHERWISE NOTED.

ADDITIONAL REQUIREMENTS FOR HOLES SHALL BE PER 513.19. SHOP HOLES THAT DO NOT MATCH EXISTING RIVET HOLES SHALL BE FIELD DRILLED.

EXISTING MATERIALS SHALL BE CLEANED AND GALVANIZED BEFORE CONNECTION TO NEW MATERIAL.

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

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CONNECTION BOLTS

5/8 INCH DIAMETER AND LARGER SHALL BE HEX HEAD, GALVANIZED ASTM A325 HIGH STRENGTH STEEL BOLTS, UNLESS OTHERWISE NOTED. BOLTS 1/2 INCH DIAMETER AND SMALLER SHALL BE GALVANIZED ASTM A449. STAINLESS STEEL BOLTS SHALL BE TYPE 304. COUNTERSUNK BOLTS SHALL BE GALVANIZED SAE J429 GRADES. NEW CONNECTION BOLTS SHALL BE INCLUDED FOR PAYMENT WITH THE PERTINENT NEW MATERIAL PAY ITEM.

THREADED BOLT ENDS AND NUTS SHALL BE LOCATED TO THE INSIDE OF BOX TYPE TRUSS MEMBERS SUCH AS END POSTS, UPPER CHORDS, LOWER CHORDS, VERTICALS, AND DIAGONALS. NUTS SHALL BE LOCATED IN LESS VISIBLE LOCATIONS AS DIRECTED BY THE ENGINEER.

NO INFORMATION, INCLUDING RIVET SIZES, REMAINS FOR THE EXISTING BRIDGE. NEW BOLT SIZES ARE DERIVED FROM FIELD MEASUREMENTS OF THE EXISTING RIVET HEADS. GIVEN THE SMALL SIZE OF MANY RE-USED EXISTING MEMBERS, THE SIZE OF THE NEW BOLTS IN THESE PLANS GENERALLY MATCHES THE EXISTING RIVET SIZE. THE FABRICATOR SHALL VERIFY THE EXISTING RIVET HOLES AND USE NEW BOLTS CORRESPONDING TO THE ACTUAL HOLE SIZE, UNLESS A SPECIFIED SIZE IS NOTED IN THE PLANS. IF A SPECIFIC BOLT SIZE IS SPECIFIED TO CONNECT EXISTING MATERIAL, THE HOLES MAY NEED TO BE ENLARGED TO ACCOMMODATE A LARGER BOLT.

HOLES FOR CONNECTION BOLTS, CONNECTING NEW MATERIAL TO NEW MATERIAL MAY BE OVERSIZED 1/16 INCH LARGER THAN STANDARD HOLES. HOLES IN EXISTING MATERIAL AND NEW MATERIAL CONNECTING TO EXISTING MATERIAL SHALL BE OVERSIZED 1/8 INCH LARGER THAN THE BOLT DIAMETER.

WELDING TO EXISTING STEEL

WELDING TO THE EXISTING STRUCTURAL STEEL SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.

ITEM 202 - REMOVAL, MISC.: EXISTING RIVET OR BOLT

EXISTING RIVETS OR BOLTS THAT ARE IN HOLES USED TO CONNECT NEW TO EXISTING MATERIAL; EXISTING RIVETS OR BOLTS THAT MUST BE REMOVED TO REMOVE EXISTING STEEL; RIVETS OR BOLTS NECESSARY FOR TRUSS DISASSEMBLY, AND RIVETS DIRECTED TO BE REMOVED BY THE ENGINEER SHALL BE REMOVED WITH CARE IN ACCORDANCE WITH CMS SECTION 202.03.

ALL EXISTING RIVETS TO BE REMOVED SHALL FIRST HAVE THE HEADS CUT OFF AND THEN THE REMAINDER OF THE RIVET SHALL BE REMOVED BY DRILLING OR BURNING. SOME RIVETS TO BE REMOVED MAY HAVE COUNTERSUNK HEADS ON ONE OR BOTH ENDS. RIVETS THAT ARE COUNTERSUNK 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 AND BOLT REMOVAL METHOD FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK. ANY DAMAGE TO EXISTING MATERIAL TO REMAIN IN PLACE SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE COST OF THE CONTRACTOR.

PAYMENT FOR SPECIAL RIVET AND BOLT REMOVAL PROCEDURES SHALL BE INCLUDED PER EACH CONNECTOR WITH ITEM 202 - REMOVAL MISC.: EXISTING RIVET OR BOLT.

ITEM 513 - STRUCTURAL STEEL, MISC.: REMOVE AND REPLACE EXISTING RIVETS WITH HIGH STRENGTH BOLTS

A QUANTITY OF BOLTS HAS BEEN INCLUDED TO REPLACE BROKEN OR SERIOUSLY DETERIORATED RIVETS ON THE TRUSS BUILT UP MEMBERS OR FLOOR BEAM BUILT UP MEMBERS. THESE RIVETS SHOULD BE IDENTIFIED, AFTER ABRASIVE BLASTING OR PACK RUST REMOVAL. A CONTINGENCY QUANTITY HAS BEEN INCLUDED TO ACCOUNT BOLTS NOT DELINEATED IN THE PLANS. THE REMOVAL OF THESE RIVETS AND PLACEMENT OF NEW BOLTS OF THE SAME DIAMETER SHALL BE PAID PER EACH UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: REMOVE AND REPLACE EXISTING RIVETS WITH HIGH STRENGTH BOLTS.

CONTINGENCY	TOTAL
400 EACH	400 EACH

ITEM 512 - TYPE 2 WATERPROOFING, AS PER PLAN (ON TIMBER DECK)

EXCESS WOOD PRESERVATIVE SHALL BE REMOVED BY SCRAPING AND CLEANING WITH SOLVENT TO THE SATISFACTION OF THE ENGINEER PRIOR TO APPLYING THE TYPE 2 WATERPROOFING TO THE NEW TIMBER STRIP DECK.

IN ADDITION TO THE ITEMS ON THE ODOT QUALIFIED PRODUCT LIST, PAVEPREP SA BY CRAFTCO INC. MAY BE USED FOR ITEM 512 - TYPE 2 WATERPROOFING, AS PER PLAN.

ITEM 512 - TYPE 2 WATERPROOFING, AS PER PLAN (ON STRINGER)

PLACE TYPE 2 WATERPROOFING ON THE TOP FLANGE OF THE STRINGERS - OVERHANG FLANGE 1/2" ON EACH SIDE PRIOR TO PLACING TIMBER DECKING.

IN ADDITION TO THE ITEMS ON THE ODOT QUALIFIED PRODUCT LIST, PAVEPREP SA BY CRAFTCO INC. MAY BE USED FOR ITEM 512 - TYPE 2 WATERPROOFING, AS PER PLAN.

ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN

THIS PAY ITEM SHALL INCLUDE ALL WORK DESCRIBED IN 513.01, EXCEPT ERECTION, FOR NEW STRUCTURAL STEEL INCORPORATED INTO THE REHABILITATED BRIDGE NOT SEPARATELY LISTED FOR PAYMENT. STEEL SUCH AS BEARINGS, EXPANSION JOINTS AND RAILINGS ARE DESCRIBED UNDER THEIR RESPECTIVE PAY ITEMS.

THE STRUCTURAL STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

NEW MEMBERS SHOULD BE SHOP-FIT TO EXISTING MEMBERS TO VERIFY CONNECTIONS MATCH. THIS DOES NOT REQUIRE A FULL SHOP FIT-UP.

THE NEW STRUCTURAL STEEL SHALL BE ERECTED WITH THE RE-USED TRUSS MEMBERS AND PAID FOR AS DESCRIBED IN THE "STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS" NOTE.

WORK UNDER THIS ITEM SHALL BE PAID FOR PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN.

ITEM 513 - STRUCTURAL STEEL, MISC.: PINS AND NUTS

THE STEEL PINS AND NUTS SHALL BE STAINLESS STEEL CONFORMING TO ASTM A240, UNS 21800 OR ASTM A276, UNS 21800.

STAINLESS STEEL PINS SHALL HAVE A SURFACE FINISH CONFORMING TO 513.12. THE PINS SHALL MEET THE SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS FOR A573 STEEL AS SPECIFIED IN 711.01.

THE PIN SPACERS SHALL BE A709, GRADE 50 STEEL. THE SPACERS SHALL BE GALVANIZED.

ALL PIN HOLE SURFACES SHALL CONFORM TO THE SURFACE FINISH DEFINED IN SECTION 513.12.

THE FABRICATOR QUALIFICATION LEVEL FOR THE PINS, NUTS, AND SPACERS SHALL BE MISCELLANEOUS.

PINS, PIN SPACERS, NUTS AND SET SCREW SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MISC.: PINS AND NUTS.

ITEM 513 - STRUCTURAL STEEL, MISC.: DISASSEMBLE EXISTING TRUSS

WORK UNDER THIS ITEM SHALL INCLUDE THE DISMANTLING OF THE EXISTING TRUSS BRIDGE. THIS ITEM SHALL INCLUDE ALL TEMPORARY SUPPORTS AND BRACES NEEDED TO KEEP THE BRIDGE STABLE DURING DISASSEMBLY, TRANSPORT TO THE SHOP FOR CLEANING & INSPECTION, AND REPAIR AS REQUIRED.

THIS WORK SHALL ALSO INCLUDE THE REMOVAL OF THE CONNECTION BETWEEN THE FIXED TRUSS BEARINGS AND THE FORWARD (EAST) ABUTMENT. EXISTING ANCHOR BOLTS SHALL BE CUT TO FREE THE TRUSS AND THEN CUT FLUSH WITH THE TOP SURFACE OF THE ABUTMENT SEAT AFTER THE BEARINGS HAVE BEEN REMOVED.

NO PART OF THE STRUCTURE SHALL BE SUBJECT TO UNIT STRESSES THAT EXCEED 136.5% OF THE ALLOWABLE UNIT STRESSES GIVEN IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OR MANUAL FOR CONDITION EVALUATION OF BRIDGES, DUE TO DISMANTLING THE BRIDGE. STRUCTURAL ANALYSIS COMPUTATIONS, BY PROFESSIONAL ENGINEER, REGISTERED IN OHIO, SHOWING THAT THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE CONTRACTOR'S METHODS OR EQUIPMENT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO THE START OF THE WORK.

THE CONTRACTOR SHALL NOT DAMAGE, MAR OR ADD ADDITIONAL HOLES TO EXISTING STEEL AND IRON DESIGNATED FOR RE-USE TO FACILITATE THE REMOVAL OR TEMPORARY SUPPORT OF THE STRUCTURE.

PAYMENT FOR ALL TOOLS, LABOR, MATERIALS, AND INCIDENTALS FOR THE ABOVE DESCRIBED WORK SHALL BE PAID PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: DISASSEMBLE EXISTING TRUSS.

ITEM 513 - STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS

WORK UNDER THIS ITEM SHALL INCLUDE THE TRANSPORT TO THE SITE, ERECTION AND ASSEMBLY OF THE SUPERSTRUCTURE STEEL AND IRON INCLUDING NEW MATERIAL AND RE-USED EXISTING MATERIAL. NEW HIGH STRENGTH BOLTS, NUTS & WASHERS USED FOR CONNECTING STRUCTURAL STEEL MEMBERS SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM. ALSO INCLUDE ALL TEMPORARY SUPPORTS AND BRACES NEEDED TO KEEP THE BRIDGE STABLE DURING ASSEMBLY.

THE HOLES FOR THE PIN CONNECTIONS SHALL BE BORED TO 1/32" LARGER THAN THE PIN DIAMETER AFTER GALVANIZING THE EXISTING AND NEW MEMBERS. THE PIN SHALL BE SHOP INSERTED THROUGH ALL MEMBERS IN THE FABRICATION SHOP PRIOR TO FIELD ASSEMBLY, AT THE PROJECT SITE.

THE CONDITIONS OF THE WORK DESCRIBED IN THE "DISASSEMBLE EXISTING TRUSS" NOTE PERTAINING TO TEMPORARY SUPPORT, CONSTRUCTION STRESSES, AND DAMAGE TO STEEL SHALL APPLY.

PAYMENT FOR ALL TOOLS, LABOR, MATERIALS, AND INCIDENTALS FOR THE ABOVE DESCRIBED WORK SHALL BE PAID PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND ARE NOT SEPARATELY LISTED FOR PAYMENT. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN INCORPORATED IN THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER.

THIS WORK SHALL INCLUDE THE REMOVAL OF THE ABUTMENT CONCRETE BACKWALL, THE TIMBER DECK, AND RAILING. CARE SHALL BE TAKEN DURING DECK REMOVAL TO PROTECT PORTIONS OF THE STRUCTURE THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE. IN THIS RESPECT, THE USE OF EXPLOSIVES, HEADACHE BALLS, AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITED.

NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF THE ALLOWABLE UNIT STRESSES GIVEN IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OR MANUAL FOR CONDITION EVALUATION OF BRIDGES, DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. STRUCTURAL ANALYSIS COMPUTATIONS BY A PROFESSIONAL ENGINEER REGISTERED IN OHIO, SHOWING THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE CONTRACTOR'S METHODS OR EQUIPMENT SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO THE START OF THE WORK.

PAYMENT FOR THE ABOVE MENTIONED WORK SHALL BE INCLUDED IN ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

ITEM 202 - WEARING COURSE REMOVED, AS PER PLAN

THE CONTRACTOR SHALL EXERCISE CARE IN THE REMOVAL OF THE ASPHALT CONCRETE WEARING SURFACE FROM THE BRIDGE. NO ASPHALT CONCRETE SHALL BE PERMITTED TO ENTER THE RIVER.

ITEM SPECIAL 530 - STRUCTURE, MISC.: PACK RUST REMOVAL

WORK UNDER THIS ITEM INCLUDES THE ADDITIONAL EFFORT ABOVE ABRASIVE BLASTING REQUIRED TO COMPLETELY REMOVE PACK RUST FROM BETWEEN CONNECTED PLATES, WHERE NEITHER PLATE WILL BE REPLACED. PACK RUST AREAS ARE DEFINED AS THOSE LOCATIONS WHERE ADJACENT STEEL PLATES ARE RUSTED APART MORE THAN 1/8".

HEAT METAL TO NO MORE THAN 800°F. DO NOT HEAT METAL TO GLOWING.

USING A RIVET GUN OR OTHER SUITABLE DEVICE, HAMMER ON A STEEL "CUSHION PLATE" SET AGAINST THE HEATED METAL. DO NOT HAMMER DIRECTLY ON THE BRIDGE METAL AS THIS WILL CAUSE SCARRING. HAMMER UNTIL PACK RUST COMES OUT AND THE METAL IS FLAT.

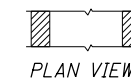
WHEN WORKING ON JOINTS OF BUILT-UP SECTIONS, REPAIR SMALL SECTIONS, NO LONGER THAN 2' LONG AT ONE TIME, THEN MOVE TO OTHER AREAS AND RETURN TO THE FIRST LATER IF NEEDED. THE MORE THE WORK IS DISTRIBUTED THE BETTER. HEATING A LONG EDGE AT ONE TIME CAN PERMANENTLY BEND (WARP) THE BUILT-UP MEMBER.

THE WORK OF PACK RUST REMOVAL SHALL BE DONE BY, OR UNDER THE DIRECT SUPERVISION OF A BLACKSMITH OR CRAFTSMAN APPROVED BY THE ENGINEER BASED ON DOCUMENTATION OF SUCCESSFUL COMPLETION OF SIMILAR WORK ON OTHER STRUCTURES OR THE FHWA'S WORKSHOP ON HEAT STRAIGHTENING REPAIR.

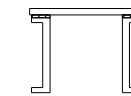
ONCE THE PACK RUST IS REMOVED, THE CONTRACTOR SHALL CHECK THOSE RIVETS AND MAY REQUEST REPLACEMENT UNDER "ITEM 513 - STRUCTURAL STEEL, MISC.: REMOVE AND REPLACE EXISTING RIVET WITH NEW HIGH STRENGTH BOLTS" OF RIVETS WHICH ARE LOOSE OR HAVE EXCESSIVE SECTION LOSS.

PAYMENT FOR ALL TOOLS, LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE DESCRIBED WORK SHALL BE MADE PER SQUARE FOOT UNDER ITEM SPECIAL 530 - STRUCTURE, MISC.: PACK RUST REMOVAL. A CONTINGENCY QUANTITY HAS BEEN INCLUDED TO ACCOUNT AREAS NOT DELINEATED IN THE PLANS.

ESTIMATED QUANTITY	CONTINGENCY	TOTAL
1 SF	20 SF	21 SF



PLAN VIEW



SECTION VIEW

▨ PACK RUST AREA

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" OR REFERRED TO AS "CONTINGENCY QUANTITIES" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED FOR PAYMENT.

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DESIGN AGENCY: KOHLHAUER ASSOCIATES, INC. ENGINEERS AND SURVEYORS
 2244 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

DATE: 5-12-14
 REVIEWED: MAD
 STRUCTURE FILE NUMBER: 4651838

DRAWN: BLS
 CHECKED: DGB

DESIGNED: BLS

GENERAL NOTES: BRIDGE NO. LOG-21-0100 OVER THE GREAT MIAMI RIVER

LOG-CR 21- 1.00
 PID No. 87081

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ITEM 513 - STRUCTURAL STEEL, MISC.: FLOORBEAM CLEANING AND INSPECTION

THIS PAY ITEM SHALL INCLUDE ALL WORK NECESSARY TO CLEAN THE FLOORBEAM AND PERFORM THE VISUAL INSPECTION TO DETERMINE SECTION LOSS AND WHETHER OR NOT THE MEMBER IS ACCEPTABLE FOR REUSE IN THE STRUCTURE.

IF THE MEMBER IS ACCEPTABLE FOR REUSE THE PAYMENT FOR ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING FLOOR BEAMS.

IF THE MEMBER IS NOT ACCEPTABLE, THE COST OF ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: NEW GALVANIZED FLOORBEAMS.

ITEM 513 - STRUCTURAL STEEL, MISC.: LOWER CHORDS CLEANING AND INSPECTION

THIS PAY ITEM SHALL INCLUDE ALL WORK NECESSARY TO CLEAN THE LOWER CHORD MEMBERS, PERFORM A VISUAL INSPECTION, AND MAGNETIC PARTICAL INSPECTION IF MEMBER CRACKING IS SUSPECTED.

IF THE MEMBER IS ACCEPTABLE FOR REUSE THE PAYMENT FOR ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER CHORDS.

IF THE MEMBER IS NOT ACCEPTABLE, THE COST OF ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER CHORDS.

ITEM 513 - STRUCTURAL STEEL, MISC.: LOWER LATERAL BRACES CLEANING AND INSPECTION

THIS PAY ITEM SHALL INCLUDE ALL WORK NECESSARY TO CLEAN THE LOWER LATERAL BRACES AND PERFORM A VISUAL INSPECTION TO DETERMINE IF THE MEMBER IS ACCEPTABLE FOR REUSE IN THE STRUCTURE.

IF THE MEMBER IS ACCEPTABLE FOR REUSE THE PAYMENT FOR ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER LATERAL BRACES.

IF THE MEMBER IS NOT ACCEPTABLE, THE COST OF ADDITIONAL WORK SHALL BE INCLUDED IN ITEM 513-STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER LATERAL BRACES.

ITEM 513 - STRUCTURAL STEEL, MISC.: NEW GALVANIZED FLOORBEAMS

THIS PAY ITEM SHALL INCLUDE ALL WORK DESCRIBED IN 513.01, EXCEPT ERECTION. THE FABRICATOR SHALL BE LEVEL 6. THE STRUCTURAL STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

NEW MEMBERS SHOULD BE SHOP-FIT TO EXISTING MEMBERS TO VERIFY CONNECTIONS MATCH. THIS DOES NOT REQUIRE A FULL SHOP FIT-UP.

THE NEW STRUCTURAL STEEL SHALL BE ERECTED WITH THE REUSED TRUSS MEMBERS AND PAID FOR AS DESCRIBED IN THE "STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS" NOTE.

WORK UNDER THIS ITEM SHALL BE PAID FOR PER EACH UNDER ITEM 513 - STRUCTURAL STEEL MISC.: NEW GALVANIZED FLOORBEAMS.

ITEM 513 - STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER CHORDS

THIS PAY ITEM SHALL INCLUDE ALL WORK DESCRIBED IN 513.01, EXCEPT ERECTION. THE FABRICATOR SHALL BE LEVEL 6.

THE STRUCTURAL STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

NEW MEMBERS SHOULD BE SHOP-FIT TO EXISTING MEMBERS TO VERIFY CONNECTIONS MATCH. THIS DOES NOT REQUIRE A FULL SHOP FIT-UP.

THE NEW STRUCTURAL STEEL SHALL BE ERECTED WITH THE REUSED TRUSS MEMBERS AND PAID FOR AS DESCRIBED IN THE "STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS" NOTE.

WORK UNDER THIS ITEM SHALL BE PAID FOR PER EACH UNDER ITEM 513 - STRUCTURAL STEEL MISC.: NEW GALVANIZED LOWER CHORDS.

ITEM 513 - STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER LATERAL BRACES

THIS PAY ITEM SHALL INCLUDE ALL WORK DESCRIBED IN 513.01, EXCEPT ERECTION. THE FABRICATOR SHALL BE LEVEL UF.

THE STRUCTURAL STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

NEW MEMBERS SHOULD BE SHOP-FIT TO EXISTING MEMBERS TO VERIFY CONNECTIONS MATCH. THIS DOES NOT REQUIRE A FULL SHOP FIT-UP.

THE NEW STRUCTURAL STEEL SHALL BE ERECTED WITH THE REUSED TRUSS MEMBERS AND PAID FOR AS DESCRIBED IN THE "STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS" NOTE.

WORK UNDER THIS ITEM SHALL BE PAID FOR PER EACH UNDER ITEM 513 - STRUCTURAL STEEL MISC.: NEW GALVANIZED LOWER LATERAL BRACES.

ALL NEW LOWER LATERAL BRACES SHALL BE 1/4" φ A709 GR50 WITH A TURN BUCKLE. USE EXISTING AS A PROTOTYPE TO DETERMINE THE LENGTH OF BRACES AND BOLT, NUT, AND WASHER SIZES.

ITEM 513 - STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING FLOORBEAMS

WORK UNDER THIS ITEM INCLUDES THE TRANSPORT, CLEANING AND GALVANIZATION OF THE EXISTING STRUCTURAL STEEL DESIGNATED FOR REUSE IN THE REHABILITATED BRIDGE.

THE CLEANING AND GALVANIZING OF THE MEMBERS SHALL BE PER THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

AFTER GALVANIZING, THE EXISTING STRUCTURAL STEEL MEMBERS SHALL BE SHIPPED TO THE FABRICATOR FOR SHOP FIT UP OF THE CONNECTIONS TO THE NEW STRUCTURAL STEEL MEMBERS.

PAYMENT FOR THE WORK DESCRIBED ABOVE SHALL BE MADE PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER CHORDS

WORK UNDER THIS ITEM INCLUDES THE TRANSPORT, CLEANING AND GALVANIZATION OF THE EXISTING STRUCTURAL STEEL DESIGNATED FOR REUSE IN THE REHABILITATED BRIDGE.

THE CLEANING AND GALVANIZING OF THE MEMBERS SHALL BE PER THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

AFTER GALVANIZING, THE EXISTING STRUCTURAL STEEL MEMBERS SHALL BE SHIPPED TO THE FABRICATOR FOR SHOP FIT UP OF THE CONNECTIONS TO THE NEW STRUCTURAL STEEL MEMBERS.

PAYMENT FOR THE WORK DESCRIBED ABOVE SHALL BE MADE PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER LATERAL BRACES

WORK UNDER THIS ITEM INCLUDES THE TRANSPORT, CLEANING AND GALVANIZATION OF THE EXISTING STRUCTURAL STEEL DESIGNATED FOR REUSE IN THE REHABILITATED BRIDGE.

THE CLEANING AND GALVANIZING OF THE MEMBERS SHALL BE PER THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

AFTER GALVANIZING, THE EXISTING STRUCTURAL STEEL MEMBERS SHALL BE SHIPPED TO THE FABRICATOR FOR SHOP FIT UP OF THE CONNECTIONS TO THE NEW STRUCTURAL STEEL MEMBERS.

PAYMENT FOR THE WORK DESCRIBED ABOVE SHALL BE MADE PER EACH.

ITEM 513 - STRUCTURAL STEEL, MISC.: GALVANIZE EXISTING TRUSS MEMBERS

WORK UNDER THIS ITEM INCLUDES THE TRANSPORT, CLEANING AND GALVANIZATION OF THE EXISTING STRUCTURAL STEEL DESIGNATED FOR RE-USE IN THE REHABILITATED BRIDGE.

THE CLEANING AND GALVANIZING OF THE MEMBERS SHALL BE PER THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

AFTER GALVANIZING, THE EXISTING STRUCTURAL STEEL MEMBERS SHALL BE SHIPPED TO THE FABRICATOR FOR SHOP FIT UP OF THE CONNECTIONS TO THE NEW STRUCTURAL STEEL MEMBERS. THIS ITEM IS FOR END POST, TOP CHORDS, VERTICALS, TOP STRUTS, TOP SWAY BRACES, TOP KNEE BRACES, AND ASSOCIATED CONNECTION HARDWARE.

PAYMENT FOR THE WORK DESCRIBED ABOVE SHALL BE MADE PER LUMP SUM UNDER ITEM 513-STRUCTURAL STEEL, MISC.: GALVANIZE EXISTING TRUSS MEMBERS.

ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

WORK UNDER THIS ITEM INCLUDES FABRICATION OF THE BEARING PLATES WITH KEEPER BARS FOR THE TRUSS END POST BEARINGS AND THE STRINGER BEARINGS FOR USE WITH THE NEW ELASTOMERIC BEARING PADS. THE STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

PAYMENT FOR THE WORK DESCRIBED ABOVE SHALL BE MADE PER LUMP SUM UNDER ITEM 513 - STRUCTURAL STEEL MEMBER, LEVEL UF, AS PER PLAN.

ITEM 513 - COMPATIBILITY & REQUIREMENTS OF GALVANIZED NUTS, BOLTS, AND WASHERS

HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF CMS 513, 711.02, 711.09, AND SUPPLEMENT 1080.

FOR GALVANIZED NUTS AND BOLTS, THE COMPATIBILITY OF THE NUTS AND BOLTS AFTER GALVANIZING IS ESSENTIAL. THEREFORE, THE CONTRACTOR SHALL ORDER NUTS, BOLTS, AND WASHERS FROM A DISTRIBUTOR AND SHALL NOT ORDER THEM BLACK AND THEN MAKE SEPARATE ARRANGEMENTS FOR GALVANIZING. THE THREADS OF THE NUTS SHALL BE LUBRICATED WITH MELTED BEESWAX OR MELTED COMMERCIAL WAX PRIOR TO SHIPMENT TO THE JOB SITE.

PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPLICABLE CMS 513, PLAN ITEM.

GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES:

1.0 DESCRIPTION
IN ADDITION TO THE REQUIREMENTS OF CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) SECTION 513, THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT TO CLEAN AND GALVANIZE ALL STRUCTURAL STEEL SURFACES, AS SPECIFIED HEREIN. THE GALVANIZED COATING SYSTEM MAY BE APPLIED BY A GALVANIZER NOT QUALIFIED AS A FABRICATION SHOP UNDER CMS 513, BUT THE APPROVED FABRICATOR OF THE STRUCTURAL STEEL SHALL BE RESPONSIBLE FOR THE QUALITY OF THE APPLIED GALVANIZED COATING SYSTEM AND ANY REPAIRS, RE-FABRICATING, ADDITIONAL LAYDOWNS REQUIRED TO ASSURE THE FABRICATED STEEL MEETS ALL REQUIREMENTS OF THIS SPECIFICATION. SECTIONS 513.27 AND 513.28 SHALL NOT APPLY. THIS ITEM SHALL ALSO INCLUDE GALVANIZING, PER 711.02, OF ALL NUTS, WASHERS, BOLTS, AND ANCHOR BOLTS. SEE GALVANIZED NUTS AND BOLTS COMPATIBILITY NOTE ON THIS SHEET FOR ADDITIONAL HARDWARE REQUIREMENTS.

2.0 PRE-FABRICATION MEETING
IN ADDITION TO THE PRE-FABRICATION MEETING REQUIREMENTS UNDER CMS 513.07, BOTH THE FABRICATOR'S QUALITY CONTROL SPECIALIST, (QCPS) AND GALVANIZED COATING APPLICATOR SHALL BE PRESENT AND DISCUSS METHODS OF OPERATION, QUALITY CONTROL, INCLUDING REPAIRS, TRANSPORTATION, ERECTION METHODS TO ACCOMPLISH ALL PHASES OF THE PREPARATION AND COATING WORK REQUIRED BY THIS SPECIFICATION.

3.0 QUALITY CONTROL
3.1 QUALITY CONTROL SPECIALIST
THE QCPS (QUALITY CONTROL PAINT SPECIALIST) REQUIRED UNDER CMS 513, IS RESPONSIBLE FOR ALL QUALITY CONTROL REQUIREMENTS OF THIS SPECIFICATION. THE QCPS SHALL HAVE THE TESTING EQUIPMENT SPECIFIED IN CMS 514.05.

3.2 QUALITY CONTROL POINTS (QCP)
QUALITY CONTROL POINTS (QCP) ARE POINTS IN TIME WHEN ONE PHASE OF THE WORK IS COMPLETE AND READY FOR INSPECTION BY THE FABRICATOR'S QCPS AND THE COUNTY'S QA REPRESENTATIVE. THE NEXT OPERATIONAL STEP MUST NOT PROCEED UNLESS THE QCP HAS BEEN ACCEPTED OR QA INSPECTION WAIVED BY THE COUNTY'S QA REPRESENTATIVE. AT THESE POINTS THE FABRICATOR MUST AFFORD ACCESS TO INSPECT ALL AFFECTED SURFACES. IF INSPECTION INDICATES A DEFICIENCY, THAT PHASE OF THE WORK MUST BE CORRECTED IN ACCORDANCE WITH THESE SPECIFICATIONS PRIOR TO BEGINNING THE NEXT PHASE OF WORK. DISCOVERY OF DEFECTIVE WORK OR MATERIAL AFTER A QUALITY CONTROL POINT IS PAST OR FAILURE OF THE FINAL PRODUCT BEFORE FINAL ACCEPTANCE, MUST NOT IN ANY WAY PREVENT REJECTION OR OBLIGATE THE COUNTY TO FINAL ACCEPTANCE.

QUALITY CONTROL POINTS	
QUALITY CONTROL POINTS (QCP)	PURPOSE
A. SOLVENT CLEANING	REMOVE ASPHALTIC CEMENT, OIL, GREASE, SALT, DIRT, ETC.
B. GRINDING EDGES	REMOVE SHARP CORNERS PER AWS.
C. ABRASIVE BLASTING	BLAST SURFACES, INCLUDING REPAIR FINS, TEARS, SLIVERS OR SHARP EDGES.
D. GALVANIZING	CHECK COATING THICKNESS
E. FAYING SURFACE CLEANING	CHECK FAYING SURFACE ROUGHNESS. CHECK BOLT HOLE CLEARANCE. CHECK FOR OTHER FIELD CONNECTIONS UNIFORM COATING THICKNESS.
F. SECOND LAY DOWN	CHECK SWEEP AND CAMBER TOLERANCES OF EACH STRUCTURAL MEMBER.
G. FIELD REPAIR OF DAMAGE AREAS	CHECK FOR DAMAGE AREAS AFTER ERECTION OF STRUCTURE. PERFORM DAMAGE REPAIRS.
H. FINAL REVIEW	CLEAN STRUCTURE AS PER QCP#1. VISUALLY INSPECT SYSTEM FOR ACCEPTANCE.

A. SOLVENT CLEANING (QCP #1)
THE STEEL MUST BE SOLVENT CLEANED WHERE NECESSARY TO REMOVE ALL TRACES OF ASPHALTIC CEMENT, OIL, GREASE, DIESEL FUEL DEPOSITS, AND OTHER SOLUBLE CONTAMINANTS PER SSPC-SP1 SOLVENT CLEANING. UNDER NO CIRCUMSTANCES MUST ANY ABRASIVE BLASTING BE DONE TO AREAS WITH ASPHALTIC CEMENT, OIL, GREASE, OR DIESEL FUEL DEPOSITS. STEEL MUST BE ALLOWED TO DRY BEFORE BLAST CLEANING BEGINS. THE QCPS SHALL INSPECT AND DOCUMENT THAT THE CLEANING CONFORMS TO SSPC-SP1 AND PROVIDE A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.

B. GRINDING EDGES (QCP #2)
ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES MUST HAVE A 1/16 INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE. THERMALLY CUT MATERIAL THICKER THAN 1 1/2 INCH MUST HAVE THE SIDES GROUND TO REMOVE THE HEAT EFFECTED ZONE, AS NECESSARY TO ACHIEVE THE SPECIFIED SURFACE CLEANING. THE QCPS MUST VISUALLY INSPECT AND DOCUMENT THAT THE GRINDING CONFORMS TO THIS SPECIFICATION AND PROVIDE A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.

GENERAL NOTES

BRIDGE NO. LOG-21-0100
OVER THE GREAT MIAMI RIVER

LOG-CR 21- 1.00
PID No. 87081

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52

DESIGN AGENCY
KOHLHAUER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
2244 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

DATE 5-12-14
REVIEWED MAD
DRAWN BLS
DESIGNED BLS
CHECKED DGB

STRUCTURE FILE NUMBER 4631838

GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES: (CONTINUED)

- C. ABRASIVE BLASTING (QCP #3)
BEAMS AND GIRDERS MUST BE PREPARED BY THE FABRICATOR TO STEEL STRUCTURES PAINTING COUNCIL (SSPC) GRADE SIX (6) COMMERCIAL BLAST CLEANING PRIOR TO GALVANIZING. ALL MATERIAL MUST BE FREE OF PAINT MARKS, SECONDARY ANGLE, PLATES, BARS AND SHAPES NEED NOT BE BLAST CLEANED. ABRASIVES MUST ALSO BE CHECKED FOR OIL CONTAMINATION BEFORE USE. A SMALL SAMPLE OF ABRASIVES MUST BE ADDED TO ORDINARY TAP WATER. ANY DETECTION OF AN OIL FILM ON THE SURFACE OF THE WATER MUST BE CAUSE FOR REJECTION. THE QCPS MUST PERFORM AND RECORD THIS TEST AT THE START OF EACH SHIFT. ALL FINS, TEARS, SLIVERS AND BURRED OR SHARP EDGES THAT ARE PRESENT ON ANY STEEL MEMBER OR THAT APPEAR AFTER THE BLASTING OPERATION MUST BE CONDITIONED PER ASTM A6. WELDING REPAIRS MUST ONLY BE PERFORMED BY THE CMS 513 FABRICATOR. THE QCPS MUST VISUALLY INSPECT AND DOCUMENT THAT THE BLAST CONFORMS TO SSPC-SP6, THAT ALL CONDITIONING IS PERFORMED PER ASTM A6, AND PROVIDE A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.
- D. GALVANIZING (QCP #4)
GALVANIZE PER 711.02 AND THIS SPECIFICATION. COATING THICKNESS MUST BE A MINIMUM OF 4 MILS MEASURED AS SPECIFIED. MATERIAL MUST BE FREE OF IMPERFECTIONS OR DEPRESSIONS CAUSED BY MATERIAL HANDLING. THE FABRICATOR, GALVANIZER AND ERECTOR MUST USE LIFTING CLAMPS OR SOFTENERS FOR HANDLING. PRIOR TO GALVANIZING, SURFACE IMPERFECTIONS MAY BE REPAIRED BY THE FABRICATOR IN CONFORMANCE WITH ASTM A6. IMPERFECTIONS GREATER THAN THE LIMITS ALLOWED BY ASTM A6 MUST BE DOCUMENTED. REPAIR OR REPLACEMENT OF THIS MEMBER WILL BE AT THE DISCRETION OF THE COUNTY. ALL DAMAGED GALVANIZING MUST BE REPAIRED IN ACCORDANCE WITH ASTM A780, METHOD A1 OR A3. DOCUMENTATION OF COATING THICKNESS MUST BE PERFORMED BY THE QCPS. THE QCPS MUST RECORD THE GAGE READINGS AND PROVIDE A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.
- E. FAYING SURFACE CLEANING (QCP #5)
AREAS OF FIELD CONNECTIONS MUST HAVE A UNIFORM GALVANIZED COATING THICKNESS FREE OF LOCAL EXCESSIVE ROUGHNESS WHICH WOULD PREVENT SPLICE PLATES, BEARINGS OR OTHER FIELD CONNECTIONS FROM MAKING INTIMATE CONTACT. FAYING SURFACES OF THE BOLTED SPLICES MUST BE ROUGHENED IN THE SHOP AFTER GALVANIZING BY HAND WIRE BRUSHING. POWER WIRE BRUSHING IS NOT PERMITTED. ALL FIELD SPLICE BOLT HOLES MUST BE FREE OF ZINC BUILD UP. AFTER GALVANIZING, EACH HOLE MUST BE CHECKED IN THE SHOP BY USING A DRIFT PIN WITH A DIAMETER 1/16 INCH GREATER THAN THE DIAMETER OF THE BOLT TO BE USED IN THAT HOLE. CONSIDERATION WILL BE GIVEN TO OTHER METHODS OF TREATING THE FAYING SURFACES IF A WRITTEN REQUEST IS SUBMITTED TO THE OFFICE OF STRUCTURAL ENGINEERING (OSE) IN ACCORDANCE WITH CMS 108.05. INSPECTION OF THE ROUGHENING OF THE FAYING SURFACES AND CHECKING OF HOLES WITH DRIFT PINS MUST BE PERFORMED BY THE QCPS. ACCEPTANCE OF THE FAYING SURFACES AND HOLES SHALL BE DOCUMENTED BY THE QCPS.
- F. SECOND LAY DOWN (QCP #6)
AFTER GALVANIZING, MATERIALS MUST BE PLACED IN A SECOND SHOP ASSEMBLY PER CMS SECTION 513.24 TO CHECK ALIGNMENT OF HOLES, SWEEP AND CAMBER AGAINST THE FABRICATOR'S ORIGINAL RECORDED LAY DOWN DIMENSIONS. THIS SHOP ASSEMBLY MAY BE PERFORMED AT THE GALVANIZER'S FACILITY, BY THE FABRICATOR'S PERSONNEL, IF APPROVED BY THE OSE. THE SECOND LAY DOWN MAY BE WAIVED BY THE OSE IF THE FABRICATOR RECORDS INDIVIDUAL BEAM CAMBERS AND SWEEPS DURING THE FIRST LAY DOWN, AND THE NEW INDIVIDUAL BEAM CAMBERS AND SWEEPS, AFTER GALVANIZING, COMPARED TO THE FIRST LAY DOWN ARE WITHIN THE FOLLOWING TOLERANCES: BEARING POINTS AFTER GALVANIZING, MUST BE WITHIN +/- 1/8 INCH OF THE APPROVED SHOP DRAWING LAY DOWN. CAMBER POINTS AFTER GALVANIZING MUST BE + 1/4 INCH OR - 0 INCH FROM THE FIRST LAY DOWN. SWEEP POINTS AFTER GALVANIZING MUST BE +/- 3/8 INCH FROM THE FIRST LAY DOWN. INDIVIDUAL BEAMS THAT EXCEED THE LISTED TOLERANCES MUST BE PLACED WITH AT LEAST TWO ADJACENT BEAMS IN LAY DOWN FOR CHECKING AGAINST THE RECORDED SHOP ASSEMBLY RECORDS PER CMS 513.04. DOCUMENTATION OF THE SECOND LAY DOWN OR INDIVIDUAL MEMBER CAMBERS MUST BE RECORDED BY THE QCPS PER CMS 513.24.
- G. FIELD REPAIR OF DAMAGED AREAS (QCP #7)
MATERIAL MUST BE FREE OF IMPERFECTIONS OR DEPRESSIONS CAUSED BY MATERIAL HANDLING. THE CONTRACTOR MUST USE LIFTING CLAMPS OR SOFTENERS FOR HANDLING. IMPERFECTIONS MAY BE REPAIRED BY GRINDING AS ALLOWED BY ASTM A6 BY THE CONTRACTOR. IMPERFECTIONS THAT ARE GREATER THAN THE GRINDING LIMITS ALLOWED BY ASTM A6, MUST BE DOCUMENTED. REPAIR OR REPLACEMENT OF THIS MEMBER WILL BE AT THE DISCRETION OF THE OSE. ALL DAMAGED GALVANIZING MUST BE REPAIRED IN ACCORDANCE WITH ASTM A780, METHOD A1 OR A3. DAMAGED GALVANIZING WHICH WILL BE INACCESSIBLE FOR REPAIR AFTER ERECTION MUST BE REPAIRED PRIOR TO ERECTION. IN ORDER TO MINIMIZE DAMAGE TO THE GALVANIZED STEEL, CONCRETE SPLATTER AND FORM LEAKAGE MUST BE WASHED FROM THE SURFACE OF THE STEEL SHORTLY AFTER THE CONCRETE IS PLACED AND BEFORE IT IS DRY. IF THE CONCRETE DRIES, IT MUST BE REMOVED. TEMPORARY ATTACHMENTS, SUPPORTS FOR SCAFFOLDING AND FINISHING MACHINE OR FORMS MUST NOT DAMAGE THE COATING SYSTEM. IN PARTICULAR, SUFFICIENT SIZE SUPPORT PADS MUST BE USED ON THE FASCIAS WHERE BRACING IS USED. DOCUMENTATION OF GALVANIZING REPAIRS MUST BE PERFORMED BY THE QCPS BY A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.

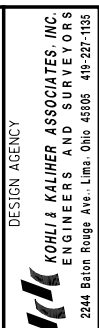


- H. FINAL REVIEW (QCP #8)
AFTER THE ERECTION WORK HAS BEEN COMPLETED, INCLUDING ALL CONNECTIONS AND THE APPROVED REPAIR OF ANY DAMAGED BEAMS, GIRDERS OR OTHER STEEL MEMBERS, AND THE DECK HAS BEEN PLACED, THE CONTRACTOR AND ENGINEER MUST INSPECT THE STRUCTURE FOR DAMAGED COATING. (QCP #8). DAMAGED AREAS MUST BE REPAIRED BY QCP #7. AT THE COMPLETION OF CONSTRUCTION, THE GALVANIZING MUST BE UNDAIMAGED AND THE SURFACES FREE FROM GREASE, OIL, CHALK MARKS, PAINT, CONCRETE SPLATTER OR OTHER SILAGE. SUCH SILAGE WILL BE REMOVED BY SOLVENT CLEANING PER SSPC-SP1 (QCP #1). DOCUMENTATION OF FINAL REVIEW MUST BE PERFORMED BY THE QCPS BY A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.
- 4.0 TESTING EQUIPMENT
THE FABRICATOR MUST PROVIDE THE QCPS INSPECTOR THE FOLLOWING TESTING EQUIPMENT IN GOOD WORKING ORDER FOR THE DURATION OF THE PROJECT: ONE (POSTECTOR 2000 OR 6000, QUANIX 2200, OR ELCOMETER A345FB1) AND THE CALIBRATION PLATES, 38-200 MM AND 250-625 MM [1.5 -8 MILS AND 10-25 MILS] AS PER THE NBS CALIBRATION STANDARDS IN ACCORDANCE WITH ASTM D-1186.
- 5.0 COATING THICKNESS
GALVANIZED THICKNESS MUST BE DETERMINED BY USE OF TYPE 2 MAGNETIC GAGE IN ACCORDANCE WITH THE FOLLOWING:
FIVE SEPARATE SPOT MEASUREMENTS MUST BE MADE, SPACED EVENLY OVER ONE (1) RANDOMLY SELECTED, 100 SQUARE FEET OF SURFACE AREA ON EACH STRUCTURAL MEMBER. THREE GAGE READINGS MUST BE MADE FOR EACH SPOT MEASUREMENT. THE PROBE MUST BE MOVED A DISTANCE OF 1 TO 3 INCHES FOR EACH NEW GAGE READING. ANY UNUSUALLY HIGH OR LOW GAGE READING THAT CANNOT BE REPEATED CONSISTENTLY MUST BE DISCARDED. THE AVERAGE (MEAN) OF THE 3 GAGE READINGS MUST BE USED AS THE SPOT MEASUREMENT. THE AVERAGE OF FIVE SPOT MEASUREMENTS FOR EACH SUCH 100 SQUARE FOOT AREA MUST NOT BE LESS THAN THE SPECIFIED THICKNESS. NO SINGLE SPOT MEASUREMENT IN ANY 100 SQUARE FOOT AREA MUST BE LESS THAN 80% OF THE SPECIFIED MINIMUM THICKNESS. ANY ONE OF 3 READINGS WHICH ARE AVERAGED TO PRODUCE EACH SPOT MEASUREMENT, MAY UNDER-RUN OR OVER-RUN BY A GREATER AMOUNT. THE 5 SPOT MEASUREMENTS MUST BE MADE FOR ONE (1) RANDOMLY SELECTED, 100 SQUARE FEET OF AREA ON EACH STRUCTURAL MEMBER. ALL SPLICE MATERIAL AND SECONDARY MEMBERS MUST HAVE AT LEAST ONE SPOT MEASURED ON EACH PIECE. THE PROBE MUST BE MOVED SO THAT ONE READING IS TAKEN AT EACH END AND MIDDLE OF THE PIECE FOR A TOTAL OF THREE READINGS. THE QCPS MUST INSPECT AND PROVIDE DOCUMENTATION OF ACTUAL DATA, THE GALVANIZED THICKNESS CHECKS WERE PERFORMED PER SPECIFICATION, AND THE COATING THICKNESS MEETS SPECIFICATION REQUIREMENTS.
- 6.0 HANDLING AND SHIPPING
REASONABLE CARE MUST BE EXERCISED IN HANDLING THE GALVANIZED STEEL DURING SHIPPING, ERECTION, AND SUBSEQUENT CONSTRUCTION OF THE BRIDGE. THE STEEL MUST BE INSULATED FROM THE BINDING CHAINS BY SOFTENERS. HOOKS AND SLINGS USED TO HOIST STEEL MUST BE PADDED. DIAPHRAGMS AND SIMILAR PIECES MUST BE SPACED IN SUCH A WAY THAT NO RUBBING WILL OCCUR DURING SHIPMENT THAT MAY DAMAGE THE GALVANIZING. THE STEEL MUST BE STORED ON PALLETS AT THE JOB SITE, OR BY OTHER MEANS, SO THAT IT DOES NOT REST ON THE GROUND OR SO THAT COMPONENTS DO NOT FALL OR REST ON EACH OTHER.
- 7.0 SAFETY REQUIREMENTS AND PRECAUTIONS
THE CONTRACTOR MUST MEET THE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), IN ADDITION TO THE SCAFFOLDING REQUIREMENTS BELOW. THE CONTRACTOR IS REQUIRED TO MEET THE APPLICABLE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION IN ADDITION TO THE SCAFFOLDING REQUIREMENTS SPECIFIED BELOW.
- 8.0 SCAFFOLDING
RUBBER ROLLERS, OR OTHER PROTECTIVE DEVICES MEETING THE APPROVAL OF THE ENGINEER, MUST BE USED ON SCAFFOLD FASTENINGS. METAL ROLLERS OR CLAMPS AND OTHER TYPES OF FASTENINGS WHICH WILL MAR OR DAMAGE COATED SURFACES MUST NOT BE USED.
- 9.0 INSPECTION ACCESS FOR FIELD REPAIR
IN ADDITION TO THE REQUIREMENT OF 105.10, THE CONTRACTOR MUST FURNISH, ERECT, AND MOVE SCAFFOLDING AND OTHER APPROPRIATE EQUIPMENT, TO PERMIT THE INSPECTOR THE OPPORTUNITY TO INSPECT (CLOSELY OBSERVE), ALL AFFECTED SURFACES. THIS OPPORTUNITY MUST BE PROVIDED TO THE INSPECTOR DURING ALL PHASES OF THE WORK AND CONTINUE FOR A PERIOD OF AT LEAST TEN (10) WORKING DAYS AFTER THE TOUCH-UP WORK HAS BEEN COMPLETED. WHEN SCAFFOLDING IS USED, IT MUST BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS. WHEN SCAFFOLDING, OR THE HANGERS ATTACHED TO THE SCAFFOLDING ARE SUPPORTED BY HORIZONTAL WIRE ROPES, OR WHEN SCAFFOLDING IS PLACED DIRECTLY UNDER THE SURFACE TO BE PAINTED, THE FOLLOWING REQUIREMENTS MUST BE COMPLIED WITH:
WHEN SCAFFOLDING IS SUSPENDED 43" OR MORE BELOW THE COATED SURFACE TO BE REPAIRED, TWO ROWS OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF THE SCAFFOLDING. ONE ROW OF GUARDRAIL MUST BE PLACED AT 42" ABOVE THE SCAFFOLDING AND THE OTHER ROW AT 20" ABOVE THE SCAFFOLDING.
WHEN THE SCAFFOLDING IS SUSPENDED AT LEAST 21", BUT LESS THAN 43" BELOW THE COATED SURFACE TO BE REPAIRED, A ROW OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF THE SCAFFOLDING AT 20" ABOVE THE SCAFFOLDING.
TWO ROWS OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF SCAFFOLDING NOT PREVIOUSLY MENTIONED. THE ROWS OF GUARDRAIL MUST BE PLACED AT 42" AND 20" ABOVE SCAFFOLDING, AS PREVIOUSLY MENTIONED.
ALL SCAFFOLDING MUST BE AT LEAST 24" WIDE WHEN GUARDRAIL IS USED AND 28" WIDE WHEN THE SCAFFOLDING IS SUSPENDED LESS THAN 21" BELOW THE COATED SURFACE TO BE REPAIRED AND GUARDRAIL IS NOT USED. IF TWO OR MORE SCAFFOLDING ARE LAID PARALLEL TO ACHIEVE THE PROPER WIDTH, THEY MUST BE RIGIDLY ATTACHED TO EACH OTHER TO PRECLUDE ANY DIFFERENTIAL MOVEMENT.

ALL GUARDRAIL MUST BE CONSTRUCTED AS A SUBSTANTIAL BARRIER WHICH IS SECURELY FASTENED IN PLACE AND IS FREE FROM PROTRUDING OBJECTS SUCH AS NAILS, SCREWS AND BOLTS. THERE MUST BE AN OPENING IN THE GUARDRAIL, PROPERLY LOCATED, TO ALLOW THE INSPECTOR ACCESS ONTO THE SCAFFOLDING. THE RAILS AND UPRIGHTS MUST BE EITHER METAL OR WOOD. IF PIPE RAILING IS USED, THE RAILING MUST HAVE A NOMINAL DIAMETER OF NO LESS THAN ONE AND ONE HALF INCHES. IF STRUCTURAL STEEL RAILING IS USED, THE RAILS MUST BE 2 X 2 X 3/8 INCH STEEL ANGLES OR OTHER METAL SHAPES OF EQUAL OR GREATER STRENGTH. IF WOOD RAILING IS USED, THE RAILING MUST BE 2 X 4 INCH (NOMINAL) STOCK. ALL UPRIGHTS MUST BE SPACED AT NO MORE THAN 8 FEET ON CENTER. IF WOOD UPRIGHTS ARE USED, THE UPRIGHTS MUST BE 2 X 4 INCH (NOMINAL) STOCK.

WHEN THE SURFACE TO BE INSPECTED IS MORE THAN 15 FEET ABOVE THE GROUND OR WATER, AND THE SCAFFOLDING IS SUPPORTED FROM THE STRUCTURE BEING PAINTED, THE CONTRACTOR MUST PROVIDE THE INSPECTOR WITH A SAFETY BELT AND LIFELINE. THE LIFELINE MUST NOT ALLOW A FALL GREATER THAN 6 FEET. THE CONTRACTOR MUST PROVIDE A METHOD OF ATTACHING THE LIFELINE TO THE STRUCTURE INDEPENDENT OF THE SCAFFOLDING, CABLES, OR BRACKETS SUPPORTING THE SCAFFOLDING. WHEN SCAFFOLDING IS MORE THAN TWO AND ONE HALF FEET ABOVE THE GROUND, THE CONTRACTOR MUST PROVIDE A LADDER FOR ACCESS ONTO THE SCAFFOLDING. THE LADDER AND ANY EQUIPMENT USED TO ATTACH THE LADDER TO THE STRUCTURE MUST BE CAPABLE OF SUPPORTING 250 POUNDS WITH A SAFETY FACTOR OF AT LEAST FOUR (4). ALL RUNGS, STEPS, CLEATS, OR TREADS MUST HAVE UNIFORM SPACING AND MUST NOT EXCEED 12" ON CENTER. AT LEAST ONE SIDE RAIL MUST EXTEND AT LEAST 36" ABOVE THE LANDING NEAR THE TOP OF THE LADDER. AN ADDITIONAL LANDING MUST BE REQUIRED WHEN THE DISTANCE FROM THE LADDER TO THE POINT WHERE THE SCAFFOLDING MAY BE ACCESSED, EXCEEDS 12". THE LANDING MUST BE A MINIMUM OF AT LEAST 24" WIDE AND 24" LONG. IT MUST ALSO BE OF ADEQUATE SIZE AND SHAPE SO THAT THE DISTANCE FROM THE LANDING TO THE POINT WHERE THE SCAFFOLDING IS ACCESSED DOES NOT EXCEED 12". THE LANDING MUST BE RIGID AND FIRMLY ATTACHED TO THE LADDER; HOWEVER, IT MUST NOT BE SUPPORTED BY THE LADDER. THE SCAFFOLDING MUST BE CAPABLE OF SUPPORTING A MINIMUM OF 1000 LBS. IN ADDITION TO THE AFOREMENTIONED REQUIREMENTS, THE CONTRACTOR IS STILL RESPONSIBLE TO OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS AND DECREES. THE CONTRACTOR MUST FURNISH ALL NECESSARY TRAFFIC CONTROL TO PERMIT INSPECTION DURING AND AFTER ALL PHASES OF THE PROJECT.

- 10.0 PROTECTION OF PERSONS AND PROPERTY
THE CONTRACTOR MUST INSTALL AND MAINTAIN SUITABLE SHIELDS OR ENCLOSURES TO PREVENT DAMAGE TO ADJACENT BUILDINGS, PARKED CARS, TRUCKS, BOATS, OR VEHICLES TRAVELING ON, OVER, OR UNDER STRUCTURES HAVING GALVANIZED REPAIRS. THEY MUST BE SUITABLY ANCHORED AND REINFORCED TO PREVENT INTERFERING WITH NORMAL TRAFFIC OPERATIONS IN THE OPEN LANES. PAYMENT FOR THE SHIELDS MUST BE INCLUDED AS INCIDENTAL TO THE APPLICABLE FIELD COATING OPERATION. WORK MUST BE SUSPENDED WHEN DAMAGE TO ADJACENT BUILDINGS, MOTOR VEHICLES, BOATS, OR OTHER PROPERTY IS OCCURRING. WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY, THE CONTRACTOR MUST RESTORE, AT HIS OWN EXPENSE, SUCH PROPERTY, TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.
- 11.0 POLLUTION CONTROL
THE CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES.
- 12.0 METHOD OF MEASUREMENT
THE COST OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO GALVANIZE AND TO FABRICATE THE STRUCTURAL STEEL IN ACCORDANCE WITH CMS 513 AND PERFORM ANY NECESSARY FIELD REPAIR SHALL BE INCLUDED IN THE APPLICABLE CMS 513, AS PER PLAN ITEM.
- 13.0 BASIS OF PAYMENT
PAYMENT WILL BE MADE AT CONTRACT PRICES FOR THE APPLICABLE CMS 513, AS PER PLAN ITEM.

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	DESIGN AGENCY
	DATE 5-12-14 REVIEWED MAD STRUCTURE FILE NUMBER 4631838
DRAWN BLS CHECKED DGB	DESIGNED BLS CHECKED DGB
GENERAL NOTES BRIDGE NO. LOG-21-0100 OVER THE GREAT MIAMI RIVER	
LOG-CR 21- 1.00 PID No. 87081	
 	

ITEM SPECIAL 530 - STRUCTURE, MISC.: 6" STRIP FLOOR

DESCRIPTION:
 TIMBER SHALL CONSIST OF FURNISHING, CUTTING, PRESERVATIVE TREATMENT, PLACING AND ERECTING OF TIMBER AND THE FURNISHING AND INSTALLING OF ALL NECESSARY HARDWARE, AS SPECIFIED. THE TIMBER STRIP FLOOR SHALL CONSIST OF NO. 1 DENSE MIXED SOUTHERN PINE OR SOUTHERN PINE AS RATED BY THE SOUTHERN PINE INSPECTION BUREAU; OR AN ALTERNATE WOOD TYPE, ACCEPTED BY THE ENGINEER, WITH AN ALLOWABLE BENDING STRESS EQUAL OR GREATER THAN $F_B \geq 1600$ (WET SERVICE CONDITION).

MATERIALS:
 MATERIALS SHALL CONFORM TO THE FOLLOWING:
 STRUCTURAL TIMBER AND LUMBER SHALL CONFORM TO AASHTO M 168 WITH THE FOLLOWING ADDITIONS: TIMBER AND LUMBER SHALL BE AIR DRIED OR KILN DRIED TO A MOISTURE CONTENT NOT TO EXCEED 19 PERCENT BY WEIGHT. SIZE AND GRADE SHALL CONFORM TO AMERICAN LUMBER STANDARDS. ALL STRUCTURAL TIMBER AND LUMBER ORIGINATING WITHIN THE STATE OF OHIO SHALL BE SUBJECT TO INSPECTION BY AN AUTHORIZED INSPECTOR OF THE DEPARTMENT. ALL UNTREATED LUMBER ORIGINATING OUTSIDE THE STATE OF OHIO SHALL BE GRADED UNDER THE RULES OF ONE OF THE FOLLOWING ASSOCIATIONS:
 (1) WEST COAST LUMBER INSPECTION BOARD
 (2) WESTERN WOOD PRODUCTS ASSOCIATION
 (3) SOUTHERN PINE INSPECTION BUREAU
 (4) NORTHERN HARDWOOD AND PINE MANUFACTURERS ASSOCIATION

THE UNTREATED LUMBER SHALL BE GRADED BY AND BEAR THE MARK OF AN AGENCY CERTIFIED FOR GRADING LUMBER UNDER THE RULES OF ONE OF THE ABOVE ASSOCIATIONS. THE LABORATORY HAS A LISTING OF APPROVED AGENCIES. ALL TREATED TIMBER AND LUMBER ORIGINATING OUTSIDE THE STATE OF OHIO SHALL BE CERTIFIED BEFORE TREATMENT AS TO GRADE, SPECIES AND GRADING AGENCY BY THE FOLLOWING MEANS:
 (A) A CERTIFICATE OF INSPECTION FROM AN APPROVED GRADING AGENCY.
 (B) A MARK OF IDENTIFICATION ON ONE END OF EACH PIECE INDICATING THE GRADE, GRADING AGENCY, AND PRODUCER. SUCH IDENTIFICATION IS TO BE APPLIED BY THE MANUFACTURER PRODUCING THE MATERIAL.

PRESERVATIVE TREATMENT FOR STRUCTURAL TIMBER AND LUMBER:

STRUCTURAL TIMBER AND LUMBER SHALL CONFORM TO THE CURRENT AWPB STANDARDS AND REQUIREMENTS OF THIS SPECIFICATION.

MATERIAL TREATED WITHIN THE STATE OF OHIO SHALL EITHER BE INSPECTED BY AN AUTHORIZED INSPECTOR OF THE DEPARTMENT OR, WHERE SUCH INSPECTION IS WAIVED, THE COMPANY TREATING THE MATERIAL SHALL SUBMIT FOR EACH CHARGE:
 (1) CHARTS FROM AUTOMATIC RECORDING INSTRUMENTS SHOWING CONDITIONS WITHIN THE TREATING CYLINDER AT ALL TIMES DURING TREATMENT
 (2) COMPUTATIONS SHOWING THE VOLUME OF WOOD IN THE CHARGE, THE VOLUME OF PRESERVATIVE MATERIAL USED AND THE FINAL NET RETENTION OF EACH CHARGE.
 (3) APPROXIMATELY ONE DOZEN REPRESENTATIVE CORES TAKEN FROM THE MATERIAL WITH AN INCREMENT BORER. THE DEPARTMENT SHALL BE NOTIFIED AT LEAST 72 HOURS (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND HOLIDAYS) IN ADVANCE OF THE TREATING OF THE MATERIAL.

MATERIAL TREATED OUTSIDE THE STATE OF OHIO SHALL BEAR THE IDENTIFICATION MARK OF THE INSPECTION AGENCY. A CERTIFICATE OF INSPECTION FOR TREATMENT SHALL BE FORWARDED TO THE DEPARTMENT. AN AGENCY QUALIFIED AND APPROVED BY THE DEPARTMENT FOR SUCH INSPECTION SHALL MAKE THE REQUIRED INSPECTION AND THE COST OF THIS INSPECTION AND FURNISHING OF THE REPORTS SHALL BE INCLUDED IN THE PRICE BID FOR MATERIAL. THE SUPPLIER SHALL FURNISH A NOTARIZED CERTIFICATE OF CONFORMANCE WITH EACH SHIPMENT OF MATERIAL STATING THE SIZE, SPECIES, QUANTITY SHIPPED, PROJECT NUMBER, SOURCE OF MATERIAL, WHERE TREATED, TYPE OF TREATMENT, DATE TREATED, RETENTION IN POUNDS PER CUBIC FOOT, CHARGE NUMBER, INSPECTION AGENCY, INSPECTION REPORT NUMBER, AND DATE ISSUED.

MATERIALS:
 THE TIMBER MEMBERS SHALL BE TREATED BY CHROMATED COPPER ARSENATE (CCA) IN ACCORDANCE WITH AWPB STANDARD P5-02, STANDARD FOR WATERBORNE PRESERVATIONS. THE TIMBER SHALL HAVE A MINIMUM PRESERVATIVE RETENTION OF 0.6 POUNDS PER CUBIC FOOT OF LUMBER.

PREPARATION FOR TREATMENT:

SORTING
 WHENEVER IT IS PRACTICAL THE MATERIAL SHALL BE SORTED INTO ONE KIND OR DESIGNATED GROUP OF KINDS OF WOOD AND INTO PIECES OF APPROXIMATELY EQUAL SIZE, MOISTURE AND SAPWOOD CONTENT, THIS WILL INSURE THE CONTACT OF TREATING MEDIUM WITH ALL SURFACES.

FRAMING
 ALL ADZING, BORING, CHAMFERING, FRAMING, GRADING, MORTISING, SURFACING, ETC., SHALL BE DONE PRIOR TO TREATMENT AS LONG AS PRACTICABLE.

INCISING
 A SUITABLE POWER-DRIVEN MACHINE BEFORE TREATMENT SHALL INCISE ALL TIMBER WITH THE EXCEPTION OF RAIL AND RAIL POSTS WHEN THE LEAST DIMENSION IS 2 INCHES OR OVER. LUMBER HAVING A THICKNESS OF 3 INCHES AND OVER SHALL BE INCISED ON ALL FOUR SIDES. LUMBER LESS THAN THREE INCHES THICK SHALL BE INCISED ON THE WIDE FACES ONLY, EXCEPT WHERE INDICATED ON THE PLANS. THE SPACING AND SHAPE OF THE CUTTING TEETH AND THE METHOD OF INCISING SHALL BE SUCH AS TO PRODUCE A UNIFORM PENETRATION. THE DEPTH OF THE INCISION SHALL BE NOT LESS THAN THE FOLLOWING:

SIZE	MINIMUM DEPTH OF INCISION (IN)
2 X 12	3/8
3 X 12	7/16
4 X 12	1/2
8 X 12	9/16
10 X 12	5/8
12 X 12	3/4

AMOUNT OF PRESERVATIVE
 THE NET RETENTION IN ANY CHARGE SHALL BE NOT LESS THAN 90 PERCENT OF THE QUANTITY OF PRESERVATIVE SPECIFIED; HOWEVER, THE AVERAGE RETENTION BY THE MATERIAL TREATED UNDER ANY CONTRACT OR ORDER AND THE AVERAGE RETENTION OF ANY FIVE CONSECUTIVE CHARGES SHALL BE AT LEAST 100 PERCENT OF THE QUANTITY SPECIFIED. THE MINIMUM AMOUNTS OF PRESERVATIVE RETAINED SHALL BE AS SPECIFIED BY AASHTO M 133 WHICH ARE THOSE SET FORTH IN THE REFERENCED AMERICAN WOOD-PRESERVERS' ASSOCIATION STANDARD P5-02. ALL SPECIES OF STRUCTURAL TIMBER AND LUMBER SHALL BE TREATED ACCORDING TO THE CURRENT AWPB STANDARD SPECIFICATIONS.

HARDWARE

HARDWARE SHALL BE OF A GOOD QUALITY AND STANDARD MAKE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECT DIMENSIONS.

BOLTS, WASHERS, LAG SCREWS, NAILS, SPIKES, TWISTED DRIVE DOWELS, ANCHOR PLATES (FOR FLOOR) AND SIMILAR ITEMS SHALL BE CONSIDERED HARDWARE.

CAST IRON OGGEE OR MALLEABLE RIBBED WASHERS SHALL BE USED UNDER THE HEADS OF LAG SCREWS AND AT BOTH ENDS OF BOLTS BEARING ON TIMBER.

ALL HARDWARE NAILS, SPIKES, TWISTED DRIVE DOWELS, CAST IRON AND MALLEABLE WASHERS SHALL BE GALVANIZED STEEL ACCORDING TO CMS 711.02.

GENERAL

HOLES FOR BOLTS SHALL BE DRILLED TO THE EXACT SIZE OF BOLTS. HOLES FOR DOWELS AND DRIFT BOLTS SHALL BE DRILLED 1/16 INCH SMALLER THAN THE DIAMETER OF THE DOWEL OR DRIFT BOLT. HOLES FOR LAG SCREWS SHALL BE NEAT SIZE IN THE HELD TIMBER AND THE SIZE OF THE SCREW AT ROOT OF THREADS FOR THE HOLDING TIMBER.

STRIP FLOOR:

THE TIMBER SHALL BE ALL OF THE SAME SPECIES IN ANY ONE STRUCTURE, SURFACED ON ALL SIDES. THE DECK SHALL HAVE A NOMINAL HEIGHT OF 6 INCHES, WITH A FINISHED HEIGHT OF 5 1/2 INCHES. STRIPS SHALL HAVE A WIDTH NOT TO EXCEED 3 INCHES EXCEPT FOR END BLOCKS AT DECK JOINTS. THERE SHALL BE NO VARIATION OF MORE THAN 1/8 INCH FROM THE SPECIFIED DIMENSIONS IN MATERIAL HAVING THE SAME AMOUNT OF SURFACING AND NO VARIATION OF DEPTH OF MORE THAN 1/8 INCH BETWEEN ADJACENT STRIPS. ALL STRIPS ON A STRUCTURE SHALL HAVE THE SAME SURFACING. STRIPS SHALL EXTEND ENTIRELY ACROSS THE ROADWAY WITH NO SPLICES.

EACH STRIP OF FLOOR SHALL BE PLACED AGAINST THE PRECEDING STRIP LAID, THE GREATER DIMENSION BEING VERTICAL, AND SHALL BE SPIKED TO THE PRECEDING STRIP AT EACH END AND AT APPROXIMATELY 12 INCH INTERVALS USING CUT SPIKES OR DRIVE DOWELS OF 1/4 INCH NOMINAL SIZE THAT WILL REACH THROUGH THE ADJACENT STRIP. THE STRIPS SHALL BE SECURELY FASTENED TO THE STEEL STRINGERS BY THE USE OF APPROVED METAL CLIPS. CARE SHALL BE TAKEN TO HAVE EACH STRIP VERTICAL AND TIGHT AGAINST THE PRECEDING ONE AND BEARING EVENLY ON ALL THE JOISTS. ANY SPECIAL TOOLS OR EQUIPMENT NECESSARY TO SECURE THIS RESULT SHALL BE USED. THE STRIPS SHALL BE LAID IN STRAIGHT PARALLEL LINES. IF THE LAST STRIP PLACED DOES NOT FIT SNUGGLY AGAINST THE ADJACENT STRIP, CAREFUL MEASUREMENTS OF THE OPENING SHALL BE MADE AND STRIPS OF LENGTH TO PROPERLY STAGGER THE JOISTS SHALL BE RIPSAWN TO MAKE A TIGHT FIT. IN NO CASE WILL SPREADING OF ADJACENT STRIPS TO TAKE UP THIS FINAL GAP DISTANCE BE PERMITTED.

METHOD OF MEASUREMENT:

STRIP FLOORS, INCLUDING THE END PLANKS FOR STRIP FLOORS, SHALL BE MEASURED IN SQUARE FEET.

BASIS OF PAYMENT

PAYMENT WILL BE MADE AT CONTRACT PRICES PER SQ. FT. FOR ITEM SPECIAL - STRUCTURE, MISC.: 6" STRIP FLOOR

ITEM SPECIAL 530 - STRUCTURE, MISC.: REMOVE AND REPLACE BROKEN STONES

1.0 **DESCRIPTION**
 WORK UNDER THIS ITEM INCLUDES REMOVING AND REPLACING PLAN DESIGNATED STONES OR STONES DESIGNATED BY THE COUNTY ENGINEER ON SITE DURING CONSTRUCTION IN THE BRIDGE ABUTMENTS.

2.0 **MATERIALS**
 2.1 STONE MASONRY, IF NEEDED FROM OFF-SITE SOURCES, SHALL BE TOUGH, DENSE, SOUND, AND DURABLE AND FREE OF SEAMS, CRACKS, INCLUSIONS OR OTHER STRUCTURAL DEFECTS. PRIOR TO SHIPMENT OF STONE TO THE JOB SITE THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE PROPOSED SOURCE AND SHALL SUBMIT A REPRESENTATIVE SAMPLE OF STONE TO THE ENGINEER FOR INSPECTION AND, IF NECESSARY, TESTING. THE SAMPLE SHALL BE DRESSED AND FINISHED AS SPECIFIED FOR USE IN THE WORK AND SHALL NOT BE LESS THAN 11 INCHES IN ANY DIMENSION. ALL STONE USED IN THIS WORK SHALL BE OF A QUALITY COMPARABLE TO THAT OF THE SAMPLE SUBMITTED.

2.2 **SHIPMENT AND STORAGE OF STONE**
 QUARRY OPERATIONS AND DELIVERY OF STONE TO THE POINT OF USE SHALL BE ORGANIZED TO INSURE DELIVERIES WELL AHEAD OF MASONRY OPERATIONS. A SUFFICIENTLY LARGE STOCK OF THE SPECIFIED STONE SHALL BE KEPT ON THE SITE AT ALL TIMES, TO PERMIT ADEQUATE SELECTION OF STONE BY THE MASONS.

THE STONE SHALL BE KEPT FREE FROM DIRT, OIL, OR ANY OTHER INJURIOUS MATERIAL WHICH MAY PREVENT THE PROPER ADHESION OF THE MORTAR OR DETRACT FROM THE APPEARANCE OF THE EXPOSED SURFACES.

2.3 **MORTAR**
 THE INGREDIENTS USED IN MAKING MORTAR SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PORTLAND CEMENT, ADMIXTURES AND WATER: SECTION 8 - AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" (2002)
 MASONRY CEMENT: ASTM C 91
 HYDRATED LIME: ASTM C 207
 QUICK LIME USED TO MAKE LIME PUTTY: ASTM C 5
 SAND AGGREGATE: AASHTO M 45 (ASTM C 144)

THE PROPORTIONS OF MATERIALS SHALL BE SUCH THAT THE VOLUME OF SAND IN A DAMP, LOOSE CONDITION IS BETWEEN 2 1/4 AND 3 TIMES THE VOLUME OF THE CEMENTITIOUS MATERIALS. THE CEMENTITIOUS MATERIALS SHALL CONSIST OF EITHER ONE PART OF PORTLAND CEMENT TO BETWEEN 1/4 AND 1/2 PARTS OF HYDRATED LIME OR LIME PUTTY, OR ONE PART OF PORTLAND CEMENT TO BETWEEN ONE AND TWO PARTS OF MASONRY CEMENT. PREMIXED MATERIALS CONFORMING TO THESE REQUIREMENTS MAY BE USED. ADMIXTURES SHALL BE USED ONLY WHEN SPECIFIED OR APPROVED BY THE ENGINEER.

3.0 **MANUFACTURING OF STONE FOR MASONRY**

3.1 **GENERAL**
 EACH STONE SHALL BE FREE FROM DEPRESSIONS AND PROJECTIONS THAT MIGHT WEAKEN IT OR PREVENT IT FROM BEING PROPERLY BEDDED, AND SHALL BE OF A SHAPE TO MEET THE REQUIREMENTS FOR THE CLASS OF MASONRY SPECIFIED.

INDIVIDUAL STONES DESIGNATED FOR REPLACEMENT IN THESE PLANS OR AS DIRECTED BY THE ENGINEER SHALL BE REPLACED BY STONES CUT TO DIMENSIONS MATCHING THE ORIGINAL DIMENSIONS OF THE DETERIORATED STONES. MULTIPLE STONES CAN BE USED TO REPLACE AN INDIVIDUAL STONE OR GAP, PROVIDED THEY MEET THE MINIMUM SIZE REQUIREMENTS OF THESE SPECIFICATIONS.

WHEN HEADERS ARE REQUIRED, THEIR LENGTHS SHALL BE NOT LESS THAN THE WIDTH OF BED OF THE WIDEST ADJACENT STRETCHER PLUS 12 INCHES.

3.2 **SURFACE FINISHES OF STONE**
 THE SURFACE FINISH OF THE ADDITIONAL STONE BROUGHT IN SHALL REASONABLY MATCH THAT OF THE EXISTING STONE.

3.3 **SIZE**
 INDIVIDUAL STONES SHALL HAVE A THICKNESS OF NOT LESS THAN 11 INCHES AND A WIDTH OF NOT LESS THAN 1 1/2 TIMES THE THICKNESS. NO STONES, EXCEPT HEADERS, SHALL HAVE A LENGTH LESS THAN 1 1/2 TIMES THEIR WIDTH

3.4 **SHAPE**
 THE STONES SHALL BE ROUGHLY SQUARED ON JOINTS, BEDS, AND FACES. SELECTED STONE, ROUGHLY SQUARED AND PITCHED TO LINE, SHALL BE USED AT ALL ANGLES AND ENDS OF WALLS. STONES TO BE USED ADJACENT TO EXISTING STONES SHALL BE FIT SUCH THAT THE ENTIRE END FACES OF THE EXISTING AND NEW STONES ARE WITHIN 1/2" OF EACH OTHER. TO ACCOMPLISH THIS VERTICAL JOINT, NEW STONES MAY REQUIRE CUTTING TO FIT.

3.5 **DRESSING**
 STONES SHALL BE DRESSED TO REMOVE ANY THIN OR WEAK PORTIONS. FACE STONES SHALL BE DRESSED TO PROVIDE BED AND JOINT LINES WITH A MAXIMUM VARIATION FROM TRUE LINE OF 1/2 INCHES UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIAL PROVISIONS.

4.0 **CONSTRUCTION**

4.1 **WEATHER CONDITIONS**
 STONE MASONRY SHALL NOT BE CONSTRUCTED IN FREEZING WEATHER OR WHEN STONE CONTAINS FROST, EXCEPT BY WRITTEN PERMISSION OF THE ENGINEER AND SUBJECT TO SUCH CONDITIONS AS HE OR SHE MAY REQUIRE.

4.2 **MIXING MORTAR**
 THE MORTAR SHALL BE HAND OR MACHINE MIXED. IN THE PREPARATION OF HAND-MIXED MORTAR, THE SAND AND CEMENT SHALL BE THOROUGHLY MIXED TOGETHER IN A CLEAN, TIGHT MORTAR BOX UNTIL THE MIXTURE IS OF UNIFORM COLOR, AFTER WHICH CLEAN WATER SHALL BE ADDED IN SUCH QUANTITY AS TO FORM A STIFF PLASTIC MASS. MACHINE-MIXED MORTAR SHALL BE PREPARED IN AN APPROVED MIXER AND SHALL BE MIXED NOT LESS THAN 3 MINUTES NOR MORE THAN 10 MINUTES. MORTAR SHALL BE USED WITHIN 1/2 HOURS AFTER MIXING AND BEFORE FINAL SET BEGINS. RETEMPERING OF MORTAR SHALL BE DONE AS NECESSARY TO MAINTAIN PROPER CONSISTENCY DURING PLACEMENT.

	DESIGN AGENCY
	DATE: 5-12-14 REVIEWED: MAD DRAWN: BLS DESIGNED: BLS CHECKED: DGB
STRUCTURE FILE NUMBER: 4631838	BRIDGE NO.: LOG-21-0100 OVER THE GREAT MIAMI RIVER
LOG-CR 21-1.00 PID No. 87081	GENERAL NOTES
21 52	

ITEM SPECIAL - STRUCTURE, MISC.: REMOVE AND REPLACE BROKEN STONES: (CONTINUED)

4.3 SELECTION AND PLACING OF STONE
WHEN MASONRY IS PLACED ON A PREPARED FOUNDATION BED, THE BED SHALL BE FIRM AND NORMAL TO THE FACE OF THE WALL, AND APPROVED BY THE ENGINEER BEFORE ANY STONE IS PLACED.

ALL MASONRY SHALL BE CONSTRUCTED BY EXPERIENCED WORKMEN.

EACH STONE SHALL BE CLEANED AND THOROUGHLY SATURATED WITH WATER BEFORE BEING SET AND THE BED WHICH IS TO RECEIVE IT SHALL BE CLEAN AND WELL MOISTENED. ALL STONES SHALL BE WELL BEDDED IN FRESHLY MADE MORTAR. THE MORTAR JOINTS SHALL BE FULL AND THE STONES CAREFULLY SETTLED IN PLACE BEFORE THE MORTAR HAS BEEN SET. NO SPALLS WILL BE PERMITTED IN BEDS.

STONES SHALL NOT BE DROPPED UPON OR SLID OVER THE WALL, NOR WILL HAMMERING, ROLLING, OR TURNING OF THE STONES ON THE WALL BE ALLOWED. THEY SHALL BE CAREFULLY SET WITHOUT JARRING THE STONE ALREADY LAID AND THEY SHALL BE HANDLED WITH A LEWIS OR OTHER APPLIANCE THAT WILL NOT CAUSE DISFIGUREMENT.

IN CASE ANY STONE IS MOVED OR THE JOINT BROKEN, THE STONE SHALL BE TAKEN UP, THE MORTAR THOROUGHLY CLEANED FROM BED AND JOINTS, AND THE STONE RESET IN FRESH MORTAR.

4.4 POINTING
POINTING SHALL NOT BE DONE IN FREEZING WEATHER OR WHEN THE STONE CONTAINS FROST.

WHENEVER POSSIBLE, THE FACE JOINTS SHALL BE PROPERLY POINTED BEFORE THE MORTAR BECOMES SET. JOINTS WHICH CANNOT BE SO POINTED SHALL BE PREPARED FOR POINTING BY RAKING THEM OUT TO A DEPTH OF 2 INCHES BEFORE THE MORTAR HAS SET. THE FACE SURFACES OF STONES SHALL NOT BE SMEARED WITH THE MORTAR FORCED OUT OF THE JOINTS OR THAT USED IN POINTING.

JOINTS NOT POINTED AT THE TIME THE STONE IS LAID SHALL BE THOROUGHLY WET WITH CLEAN WATER AND FILLED WITH MORTAR. THE MORTAR SHALL CONFORM TO ARTICLE 2.3 EXCEPT THAT THE PROPORTIONS OF HYDRATED LIME PUTTY SHALL BE INCREASED TO 1.2 TO 2 TIMES THE VOLUME OF THE CEMENT OR THE CEMENT SHALL BE ALL MASONRY TYPE CEMENT. THE MORTAR SHALL BE WELL DRIVEN INTO THE JOINTS AND FINISHED WITH AN APPROVED POINTING TOOL. THE WALL SHALL BE KEPT WET WHILE POINTING IS BEING DONE AND IN HOT OR DRY WEATHER THE POINTED MASONRY SHALL BE PROTECTED FROM THE SUN AND KEPT WET FOR A PERIOD OF AT LEAST 3 DAYS AFTER COMPLETION.

AFTER THE POINTING IS COMPLETE AND THE MORTAR SET, THE WALL SHALL BE THOROUGHLY CLEANED AND LEFT IN A NEAT AND WORKMANLIKE CONDITION.

4.5 MEASUREMENT AND PAYMENT
THE REMOVAL AND REPLACEMENT OF BROKEN STONES IN THE BRIDGE ABUTMENTS WILL BE PAID FOR BY THE CONTRACT PRICE PER SQUARE FEET. SUCH PAYMENT SHALL BE CONSIDERED TO BE FULL COMPENSATION FOR THE COST OF ALL LABOR, TOOLS, MATERIALS, INCLUDING MORTAR FOR BEDDING AND POINTING; AND OTHER ITEMS INCIDENTAL TO THE SATISFACTORY COMPLETION OF THE WORK. THE ESTIMATED PLAN QUANTITY HAS BEEN INCREASED BY A FACTOR OF 100% TO ACCOUNT FOR CHANGES DURING CONSTRUCTION.

ESTIMATED QUANTITY	CONTINGENCY	TOTAL
18 SQ FT	18 SQ FT	36 SQ FT

ITEM SPECIAL 530 - STONE REPAIR SEALING CRACKS BY EPOXY INJECTION

THIS SPECIFICATION COVERS THE REPAIR OF DRY, MOIST OR WET CRACKS OR FRACTURES THAT ARE 0.002" TO 0.375" IN THICKNESS IN ABUTMENT STONE. THE REPAIR IS BY MEANS OF AN EPOXY INJECTION SYSTEM. THIS SYSTEM SHALL CONSIST OF A PASTE EPOXY USED TO SEAL THE SURFACE CRACKS AND AN INJECTION EPOXY USED UNDER LOW PRESSURE, 200 PSI MAX., TO PENETRATE AND FILL THE CRACKS AND BOND THE CRACK SURFACES TOGETHER. MATERIAL FOR EACH EPOXY SHALL CONSIST OF A TWO-COMPONENT MODIFIED RESIN BONDING SYSTEM. THE UNMODIFIED RESIN SHALL BE KNOWN AS COMPONENT A AND THE HARDENER AS COMPONENT B.

ARRANGE TO HAVE A MANUFACTURER'S REPRESENTATIVE AT THE JOB SITE TO FAMILIARIZE HIM AND THE ENGINEER WITH THE EPOXY MATERIALS, APPLICATION PROCEDURES AND RECOMMENDED PRESSURE PRACTICE. THIS REPRESENTATIVE SHALL DIRECT AT LEAST ONE COMPLETE CRACK OR AREA INJECTION AND BE ASSURED PRIOR TO HIS DEPARTURE FROM THE PROJECT THAT THE PERSONNEL ARE ADEQUATELY INFORMED TO SATISFACTORILY PERFORM THE REMAINING REPAIRS.

FURNISH THE ENGINEER A COPY OF THE MANUFACTURER'S COMPREHENSIVE PREPARATION, MIXING AND APPLICATION INSTRUCTIONS WHICH HAVE BEEN DEVELOPED ESPECIALLY FOR USE WITH THE PROPOSED EPOXY INJECTION SYSTEM. ENSURE THAT ANY SIGNIFICANT CHANGES TO THESE INSTRUCTIONS WHICH ARE RECOMMENDED BY THE REPRESENTATIVE FOR AN UNANTICIPATED SITUATION HAVE BEEN APPROVED BY THE COUNTY ENGINEER PRIOR TO THE ADOPTION OF SUCH CHANGES.

CLEAN STONE SURFACES ADJACENT TO THE CRACKS TO BE SEALED ONLY TO THE EXTENT NECESSARY TO ACHIEVE AN ADEQUATE BOND WITH THE PASTE EPOXY, AND ONLY BY PROCEDURES WHICH WILL NOT CAUSE ABRASIVE GRITS OR CONCRETE DUST TO PENETRATE THE CRACKS. DO NOT PERMIT THE USE OF SOLVENTS OR THINNERS IN CRACKS OR ON BONDING SURFACES.

INSTALL INJECTION PORTS OR TEES IN CRACKS TO BE INJECTED. SPACE INJECTION PORTS OR TEES AT 6 TO 12 INCHES VERTICALLY AND 6 TO 18 INCHES HORIZONTALLY BUT IN NO CASE CLOSER TOGETHER THAN THE THICKNESS OF THE CONCRETE MEMBER IF FULL DEPTH PENETRATION IS DESIRED UNLESS OTHERWISE SPECIFIED OR DIRECTED. SET PORTS OR TEES IN DUST FREE HOLES MADE EITHER WITH VACUUM DRILLS OR CHIPPING HAMMERS. SEAL ALL SURFACE CRACKS IN THE AREA TO BE REPAIRED, AFTER INJECTION PORTS OR TEES HAVE BEEN INSERTED INTO THE HOLES, WITH PASTE EPOXY BETWEEN PORTS TO ENSURE RETENTION OF THE PRESSURE INJECTED EPOXY WITHIN THE CONFINES OF THE MEMBER. THE DEPARTMENT WILL ALLOW AN ALTERNATIVE PROCEDURE OF SEALING THE CRACKS BEFORE THE INJECTION HOLES HAVE BEEN MADE. LIMIT THE APPLICATION OF PASTE EPOXY TO CLEAN AND DRY SURFACES. LIMIT SUBSTRATE TEMPERATURES TO NOT LESS THAN 45 °F DURING EPOXY APPLICATIONS.

BEGIN THE EPOXY INJECTION AT THE BOTTOM OF THE FRACTURED AREA AND PROGRESS UPWARD USING A PORT OR TEE FILLING SEQUENCE THAT WILL ENSURE THE FILLING OF THE LOWERMOST INJECTION PORTS OR TEES FIRST.

ESTABLISH INJECTION PROCEDURES AND THE DEPTHS AND SPACINGS OF HOLES AT INJECTION PORTS OR TEES. USE EPOXY WITH FLOW CHARACTERISTICS AND INJECTION PRESSURE THAT ENSURE NO FURTHER DAMAGE WILL BE DONE TO THE MEMBER BEING REPAIRED. ENSURE THAT THE EPOXY WILL FIRST FILL THE INNERMOST PORTION OF THE CRACKED CONCRETE AND THAT THE POTENTIAL FOR CREATING VOIDS WITHIN THE CRACK OR EPOXY WILL BE MINIMIZED.

REMOVE THE INJECTION PORTS OR TEES FLUSH WITH THE CONCRETE SURFACE AFTER THE FRACTURED AREA HAS BEEN FILLED AND THE EPOXY HAS PARTIALLY CURED (24 HOURS AT AMBIENT TEMPERATURE NOT LESS THAN 60°F, OTHERWISE NOT LESS THAN 48 HOURS). ROUGHEN THE SURFACES OF THE REPAIRED AREAS TO ACHIEVE UNIFORM SURFACE TEXTURE. REMOVE ANY INJECTION EPOXY RUNS OR SPILLS FROM CONCRETE SURFACES.

OBTAIN TWO 4-INCH DIAMETER CORE SAMPLES IN THE FIRST 100 LINEAR FEET OF CRACK REPAIRED AND ONE CORE FOR EACH 100 LINEAR FEET THEREAFTER. TAKE THE CORE SAMPLES FROM LOCATIONS DETERMINED BY THE ENGINEER AND FOR THE FULL CRACK DEPTH. CORES WILL BE VISIBLY EXAMINED BY THE ENGINEER TO DETERMINE THE EXTENT OF EPOXY PENETRATION. REPAIR THE CORE HOLES IN THE CONCRETE WITH MATERIAL SPECIFIED IN 705.21.

THE EPOXY INJECTION MATERIAL USED SHALL BE ONE THAT IS INCLUDED IN THE OHIO DEPARTMENT OF TRANSPORTATION QUALIFIED PRODUCTS LIST, SPEC. REFERENCE 705.26. A CONTINGENCY QUANTITY HAS BEEN INCLUDED TO ACCOUNT FOR LOCATIONS NOT DELINEATED IN THE PLANS.

ESTIMATED QUANTITY	CONTINGENCY	TOTAL
35 FT	35 FT	70 FT

PAYMENT WILL BE MADE AT THE CONTRACT BID PRICE PER FOOT FOR ITEM SPECIAL-STRUCTURE, MISC.: STONE REPAIR SEALING CRACKS BY EPOXY INJECTION. SUCH PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR THE COST OF ALL LABOR, TOOLS, MATERIALS, AND OTHER ITEMS INCIDENTAL TO THE SATISFACTORY COMPLETION OF THIS WORK.

ITEM SPECIAL 530 - STRUCTURE, MISC.: STONE MASONRY CLEANING

ITEM SPECIAL 530 - STRUCTURE, MISC.: REPOINTING MORTAR JOINTS

A. DESCRIPTION
THE MORTAR JOINTS IN THE STONE ABUTMENTS AND WINGWALLS SHALL BE INSPECTED FOR SOUNDNESS. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE ENGINEER TO INSPECT THE MORTAR JOINTS AND THE ENGINEER SHALL DETERMINE WHICH JOINTS SHALL BE REPOINTED BY TAKING INTO ACCOUNT FACTORS SUCH AS: CRACKING, LOOSE MORTAR AND WATER LEAKING BEHIND THE STONES.

THE FOLLOWING PROCEDURE IS TO BE FOLLOWED IN REPOINTING WORK

1. REMOVE THE OLD MORTAR TO A MINIMUM DEPTH OF 2 1/2 TIMES THE WIDTH OF THE JOINTS TO ENSURE AN ADEQUATE BOND; REMOVE ALL LOOSE AND DISINTEGRATED MORTAR BEYOND THE MINIMUM DEPTH; CAREFULLY INSPECT AND TEST ALL MORTAR JOINTS WITH HAND TOOLS TO DETERMINE THEIR CONDITION - REPLACE ALL LOOSE AND DISINTEGRATED MORTAR.
2. POWER GRINDERS AND SAWS TO REMOVE THE MORTAR SHALL NOT BE USED; REMOVE ALL MORTAR CAREFULLY WITH HAND-HELD POWER TOOLS.
3. LEAVE THE BOTTOM 2" OF EACH VERTICAL JOINT OPEN AS A WEEP HOLE.

B. MATERIALS
SAND IS TO CONFORM TO ASTM C-144. IT'S COLOR, SIZE AND TEXTURE ARE TO MATCH THE EXISTING ORIGINAL WORK (NOT PREVIOUS PARTIAL REPOINTINGS). LIME IS TO CONFORM TO ASTM C-207 TYPE S, HYDRATED LIME FOR MASONRY PURPOSES. CEMENT IS TO CONFORM TO ASTM C-150, TYPE II (WHITE, NON-STAINING) PORTLAND CEMENT. CEMENT SHALL HAVE LESS THAN 0.6 ALKALI CONTENT TO AVOID EFFLORESCENCE. POTABLE WATER SHALL BE USED, CLEAN AND FREE FROM ACIDS, ALKALI OR LARGE AMOUNTS OF ORGANIC MATERIALS.

C. PROPORTIONING:
THE MORTAR MIX SHALL CONSIST OF SIX (6) PARTS SAND, THREE (3) PARTS LIME, ONE-HALF (1/2) PART WHITE PORTLAND CEMENT. THE AMOUNT OF CEMENT SHALL NOT EXCEED 20% OF THE TOTAL OF LIME AND CEMENT.

D. EXECUTION:
MACHINE MIX THE MORTAR FOR A MINIMUM OF FIVE (5) MINUTES AFTER ALL MATERIALS, EXCEPT FOR WATER, ARE IN THE MIXER. MIX THE SAND, LIME AND CEMENT IN THEIR DRY STATE. ADD ONE-HALF THE REQUIRED AMOUNT OF WATER AFTER THOROUGHLY MIXING THE DRY MATERIALS. ADD THE REMAINING WATER IN SMALL AMOUNTS UNTIL THE MIXTURE IS PLASTIC AND A WORKABLE MIX HAS BEEN ATTAINED. AVOID OVER WETTING THE MIXTURE. NO ADMIXTURES SUCH AS ANTI-FREEZES, ETC. ARE PERMITTED. SIZE THE MORTAR MIX FOR USE WITHIN ONE (1) HOUR. EMPTY THE MIXER AND CLEAN IT OUT BEFORE STARTING A NEW BATCH.

CLEAN THE EXCESS MORTAR FROM THE STONE SURFACES WITH A STIFF BRISTLE BRUSH AFTER THE MORTAR HAS DRIED BUT BEFORE IT IS FULLY HARDENED, ABOUT ONE TO TWO HOURS AFTER APPLICATION. FURTHER CLEANING OF ALL MASONRY SURFACES SHALL BE DONE WITH PLAIN WATER AND BRISTLE BRUSHES. THE FURTHER CLEANING SHALL TAKE PLACE WITHIN THIRTY (30) DAYS AFTER THE APPLICATION OR WHEN THE MORTAR HAS FULLY SET. PROTECT THE MORTAR DURING HOT WEATHER FROM DIRECT EXPOSURE TO THE SUN AND WIND FOR AT LEAST 48 HOURS AFTER INSTALLATION. KEEP THE MORTAR BOARD DAMP, IN THE SHADE, OR COVERED. DO NOT REPOINT STONE IN TEMPERATURES BELOW 40 DEGREES F. NO CALCIUM CHLORIDE SHALL BE USED TO ACCELERATE THE SET MORTAR AND NO ANTI-FREEZE ADDITIVES SHALL BE USED.

ALL OF THE STONE MASONRY SURFACES ARE TO BE CLEANED BY THE MILDST AND LEAST ABRASIVE MEANS POSSIBLE. LOW-PRESSURE WATER WASHING WITH BRISTLE BRUSHES IS THE PREFERRED TREATMENT. CARE MUST BE EXERCISED TO AVOID WATER ABSORPTION BY THE MASONRY, WHICH CAN RESULT IN THE FORMATION OF SOLUBLE SALT DEPOSITS ON THE MASONRY SURFACES SOME TIME AFTER COMPLETION OF THE CLEANING OPERATION. WATER CANNOT BE USED TO CLEAN THE SURFACES IN PERIODS WHEN THE TEMPERATURE OVER A PERIOD OF SEVERAL DAYS MIGHT BE EXPECTED TO DROP BELOW FREEZING. PERIODIC INSPECTIONS SHALL BE MADE NOT ONLY OF THE MASONRY ITSELF BUT ESPECIALLY OF THE MORTAR JOINTS TO ENSURE THAT THE TREATMENT IS NOT CAUSING DAMAGE OR UNDUE MOISTURE PENETRATION OF THESE JOINTS.

WATER FOR SURFACE CLEANING SHALL BE CLEAN AND FREE OF CHEMICAL AGENTS THAT MIGHT INTERACT WITH THE MASONRY SURFACES. BRISTLE BRUSHES SHALL BE FLEXIBLE ENOUGH TO AVOID DAMAGE TO MASONRY SURFACES.

E. QUALITY ASSURANCE:
ALL REPOINTING WORK IS TO CONFORM WITH THE STANDARDS RECOMMENDED BY THE BRICK INSTITUTE OF AMERICA (1750 OLD MEADOW ROAD, MELEAN VA, 22101) FOR MASONRY RESTORATION, THE US DEPARTMENT OF THE INTERIOR'S NATIONAL PARK SERVICE PRESERVATION BRIEF NUMBER 2 "REPOINTING MORTAR JOINTS IN HISTORIC BRICK BUILDINGS". THE CONTRACTOR SHALL SUPPLY TWO COPIES OF THIS BRIEF FOR REFERENCE DURING REPOINTING WORK.

ALL MATERIALS AND WORK ARE TO MATCH THE EXISTING ORIGINAL WORK IN SIZE, TEXTURE AND COLOR OF MATERIAL. AN EIGHT FOOT TEST JOINT SHALL BE MADE FOR COMPARISON AND SHALL BE APPROVED BEFORE ADDITIONAL WORK IS DONE. COLOR PHOTOS SHALL BE TAKEN OF THE TEST JOINT FOR COMPARISON WITH OTHER AREAS.

F. BASIS OF PAYMENT:
PAYMENT WILL BE MADE AT THE CONTRACT BID PRICE FOR

ITEM	UNIT	DESCRIPTION
SPECIAL	SQ FT	STRUCTURE, MISC.: STONE MASONRY CLEANING
SPECIAL	FT	STRUCTURE, MISC.: REPOINTING MORTAR JOINTS

ITEM 602 - MASONRY, MISC.: REFURBISHING ABUTMENT BEARING AREAS FOR TRUSS AND STRINGER BEARINGS

WORK UNDER THIS ITEM SHALL INCLUDE ALL MATERIALS, LABOR, TOOLS AND INCIDENTALS REQUIRED TO PREPARE THE EXISTING ABUTMENT SEATS FOR THE BEARING DEVICES. THE BEARING AREAS SHALL BE MADE FLAT AND SMOOTHLY FINISHED.

IF THE BRIDGE SEAT AREA IS HIGH OR UNEVEN, USE A BUSHHAMMER OR GRINDER FOLLOWED BY A THIN FILM OF PORTLAND CEMENT MORTAR OR PASTE TO FILL THE PITTED SURFACE TO BRING THE SEAT AREA TO THE PROPER ELEVATION AND PROVIDE A LEVEL, EVEN SURFACE. IF THE AREA IS LOW, USE ELASTOMERIC SHIMS THE SAME BEARING AREA AS THE ELASTOMERIC BEARINGS TO BRING THE SEAT TO THE PROPER ELEVATION. THE ABUTMENT STONE BRIDGE SEATS SHALL BE MADE TO DRAIN BETWEEN THE BEARING AREAS BY BUSHHAMMER OR GRINDER (1/8 INCH PER FOOT SLOPE). PLACE EPOXY SEALER ON THE BRIDGE SEATS, BUT NOT UNDER THE ELASTOMER BEARING SEAT AREAS.

PAYMENT WILL BE MADE AT CONTRACT BID PRICE FOR ITEM 516, SQ FT, BEARING DEVICE, MISC.: REFURBISHING ABUTMENT BEARING AREAS.

ABBREVIATIONS:

- ABUT. - ABUTMENT
- CLR. - CLEARANCE
- DIA. - DIAMETER
- FF - FAR FACE
- FWD. - FORWARD
- MAX. - MAXIMUM
- NF - NEAR FACE
- SPS - SPACES
- TYP. - TYPICAL

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GENERAL NOTES

BRIDGE NO. LOG-21-0100
OVER THE GREAT MIAMI RIVER

LOG-CR 21- 1.00
PID No. 87081

22
52

DESIGN AGENCY
KOHLER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
2244 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

DATE
5-12-14

REVIEWED
MAD

DRAWN
BLS

DESIGNED
BLS

STRUCTURE FILE NUMBER
4651838

ITEM 509 REINFORCING STEEL, AS PER PLAN

A. THE REINFORCING STEEL SHALL BE ZINC COATED GALVANIZED IN ACCORDANCE WITH ASTM A767, CLASS 1, 3.5 OUNCES PER SQUARE FOOT WITH AN AVERAGE THICKNESS OF 6 MILS. THE BARS SHALL BE GALVANIZED AFTER FABRICATION. THE REQUIREMENTS OF SECTION 5.3 (CHROMATING) OF ASTM A767 SHALL BE WAIVED.

B. REPAIR OF MATERIALS

1. SHOP REPAIR OF COATED BARS - ZINC-COATED REINFORCING STEEL BARS THAT DO NOT MEET THE REQUIREMENTS ABOVE SHALL BE REJECTED AND SHALL NOT BE REPAIRED.

2. FIELD REPAIR OF COATED BARS - THE CONTRACTOR SHALL BE REQUIRED TO FIELD REPAIR DAMAGED AREAS OF THE BAR COATING AND TO REPLACE BARS EXHIBITING SEVERELY DAMAGED COATINGS. FIELD REPAIR MATERIAL SHALL BE ZRC COLD GALVANIZING COMPOUND OR APPROVED EQUAL. THICKNESS OF REPAIR SHALL NOT BE LESS THAN 3.5 MILS.

THE ENGINEER SHALL BE THE SOLE JUDGE OF THE SEVERITY TO DAMAGED AREAS FOR PURPOSES OF REPAIR OR REPLACEMENT. A REINFORCING BAR HAVING A COATING DETERMINED BY THE ENGINEER TO BE SEVERELY DAMAGED SHALL NOT BE INCORPORATED IN THE WORK AND IT SHALL BE REMOVED FROM THE WORK SITE. ALL SUCH BARS SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT.

C. CERTIFICATION. THE CONTRACTOR SHALL SUPPLY CERTIFICATION THAT THE REINFORCING STEEL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS. A REPORT OF THE TEST RESULTS SHALL BE FURNISHED AT THE TIME OF SHIPMENT.

D. HANDLING, PLACING, AND FASTENING - ALL SYSTEMS FOR HANDLING GALVANIZED COATED BARS SHALL HAVE PADDED CONTACT AREAS FOR THE BARS, WHEREVER POSSIBLE. ALL BUNDLING BANDS SHALL BE PADDED AND ALL BUNDLES SHALL BE LIFTED WITH MULTIPLE SUPPORTS OR A PLATFORM BRIDGE SO AS TO PREVENT BAR TO BAR ABRASION FROM SAGS IN THE BAR BUNDLES. THE BARS OR BUNDLES SHALL NOT BE DROPPED OR DRAGGED.

CHAIRS, TIE WIRES, NUTS, BOLTS, WASHERS, OTHER DEVICES, AND MISCELLANEOUS HARDWARE USED TO SUPPORT, POSITION, OR FASTEN THE REINFORCEMENT SHALL BE MADE OF OR COATED WITH, A NON-CONDUCTING MATERIAL, OR GALVANIZED. THE SPECIFIC HARDWARE THAT THE CONTRACTOR PROPOSES TO USE SHALL BE APPROVED BY THE ENGINEER. IF THE SPECIFIC HARDWARE IS GALVANIZED, THE HARDWARE SHALL BE PREPARED AND GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A153.

IN ADDITION TO THE PROVISIONS OF ITEM 509, FIELD BEND AND/OR FIELD CUT THE REINFORCING STEEL, AS NECESSARY IN ORDER TO MATCH FIELD CONDITIONS AND MAINTAIN REQUIRED CLEARANCES AND BAR SPACINGS. REPAIR ALL DAMAGE TO THE GALVANIZED COATING AS A RESULT OF THIS WORK AS INDICATED ABOVE IN PART B.

E. BASIS OF PAYMENT - PAYMENT FOR THE QUANTITY OF EACH CLASS OF REINFORCING STEEL SHOWN IN THE BID SCHEDULE WILL BE MADE AT THE CONTRACT UNIT PRICE PER POUND FOR THE APPROPRIATE ITEM, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING, FABRICATING, GALVANIZING, SPLICING, REPAIRING OR REPLACING, PLACING, AND SECURING REINFORCING STEEL AND INCLUDING ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND INCIDENTALS NECESSARY TO SATISFACTORILY COMPLETE THE WORK. NO ALLOWANCE WILL BE MADE FOR THE WEIGHT OF THE GALVANIZED COATING IN THE CALCULATED REINFORCING BAR PAY WEIGHT. PAYMENT FOR EACH ITEM INCLUDES ALL DIRECT AND INDIRECT COSTS AND EXPENSES REQUIRED TO COMPLETE THE WORK.

**OHIO DEPARTMENT OF TRANSPORTATION SPECIFICATION:
ADMIXTURE FOR WATERTIGHT CONCRETE AND REINFORCEMENT
PROTECTION**

THE CONCRETE ITEMS SPECIFIED IN THIS PLAN SHALL HAVE A LIQUID, INORGANIC ADMIXTURE INCORPORATED DURING THE BATCHING OR MIXING PROCESS. THE WATERPROOFING ADMIXTURE SHALL BE DOSED AT THE RATE OF 13 OZ. PER SACK (13.8 OZ. PER C/WT. OF CEMENTITIOUS MATERIAL) AND SHALL CONTAIN NO CALCIUM CHLORIDE OR OTHER ADDED CHLORIDES. THE ADMIXTURE SHALL BE COMPATIBLE WITH CURRENTLY USED ADMIXTURES MEETING THE STANDARDS OF 705.12; AIR ENTRAINMENT ADMIXTURES 705.10; GROUND BLAST FURNACE SLAG 701.11; MICRO SILICA 701.10; FLY ASH 705.13; OR BLENDED HYDRAULIC CEMENT (701.01, 701.02, 701.03, 701.04, 701.05, 701.06).

THE WATERPROOFING ADMIXTURE SHALL NOT ADVERSELY AFFECT THE DESIGN PROPERTIES OF THE CONCRETE. (COMPRESSIVE STRENGTH, FLEXURAL STRENGTH, SHRINKAGE, ETC.) AND/OR WORKING AND HANDLING PROPERTIES. (SLUMP, AIR CONTENT, WORKABILITY, PUMPABILITY, OR SET TIME).

THE APPROVED WATERPROOFING ADMIXTURE SHALL BE CERTIFIED TO MEETING THE REQUIREMENTS AASHTO T259/260 AND HAVE PASSED AN ACCELERATED PERFORMANCE TEST IN ACCORDANCE WITH CORP OF ENGINEERS CRD C 48. *METHOD OF TEST FOR WATER PERMEABILITY OF CONCRETE, AMENDED AS FOLLOWS:

FOUR (4) 152MM X 305 MM (6 INCH X 12 INCH) CONCRETE CYLINDERS CAST IN ACCORDANCE TO ASTM C 31, SHALL BE TESTED WITH CRD C 48 "STANDARD METHOD OF TEST FOR WATER PERMEABILITY OF CONCRETE", AS AMENDED IN THIS SPECIFICATION.

THE CONCRETE MIX USED FOR CASTING THE FOUR CYLINDERS SHALL BE ODOT CLASS "AA" CONCRETE FROM THE SAME BATCH. TWO (2) TEST CYLINDERS SHALL BE CONTROL, WITHOUT THE WATERPROOFING ADMIXTURE AND TWO (2) CYLINDERS SHALL HAVE THE MANUFACTURERS RECOMMENDED DOSAGE OF WATERPROOFING ADMIXTURE INCLUDED. THE TOP SURFACE OF THE CYLINDERS SHALL BE STEEL TROWELED AND ALL CYLINDERS CURED FOR 28 DAYS IN CONFORMANCE WITH THE REQUIREMENTS OF ASTM C 31.

UPON COMPLETION OF THE 28 DAY CURING PERIOD, THE CONCRETE CYLINDERS SHALL BE CUT IN HALF HORIZONTALLY, 152MM (6 INCH) LENGTH AND AIR DRIED FOR 48 HOURS. UPON AIR DRYING, THE FOUR TOP HALVES OF THE CYLINDERS SHALL BE TESTED AS PER CRD C 48 FOR A PERIOD OF 7 DAYS AT AN APPLIED WATER PRESSURE OF 1380kPa (200 PSJ). A WATER SOLUBLE DYE SHALL BE ADDED TO THE WATER IN THE TEST APPARATUS TO AID IN DETERMINING THE DEPTH OF PENETRATION INTO THE CONCRETE SAMPLE.

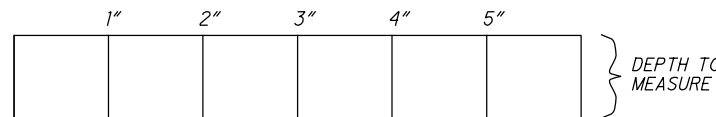
VOLUME TEST RESULTS SHALL BE REPORTED AS FOLLOWS:

$$\frac{\text{AVERAGE VOLUME OF WATER MEASURED FOR CONTROL SAMPLES}}{\text{AVERAGE VOLUME OF WATER MEASURED FOR THE WATERPROOF SAMPLES}}$$

MINIMUM ACCEPTABLE VALUE >2

UPON COMPLETION OF THE SEVEN (7) DAY PRESSURE TESTS, THE SAMPLES SHALL BE TOWEL DRIED AND SPLIT VERTICALLY DOWN THE MIDDLE FOR MEASUREMENT OF THE DEPTH OF PENETRATION. THE CYLINDER SAMPLE SPLITTING METHOD SHALL BE ASTM C 496 OR OTHER SUITABLE METHOD. THE DEPTH OF PENETRATION OF THE DYED WATER UNDER PRESSURE SHALL BE RECORDED IN MM OR INCHES. DIMENSIONAL TEST RESULTS SHALL BE RECORDED AS FOLLOWS:

MEASUREMENTS OF THE WATER DYE DEPTH OF PENETRATION SHALL BE MADE AT 5 POINTS LOCATED 1", 2", 3", 4" AND 5" (25, 50, 75, 100, 125 MM) FROM THE VERTICAL SPLIT EDGE OF THE SAMPLE. MEASURE VERTICALLY AT EACH POINT FROM THE TOP OF THE CYLINDER TO THE VISUAL BOTTOM OF THE DYE ON THE VERTICAL SPLIT SURFACE OF THE SAMPLE. FIVE (5) MEASUREMENTS FOR EACH SAMPLE SHALL BE RECORDED. IN ADDITION, THE AVERAGE VALUE OF ALL TEN (10) READINGS FOR THE TWO WATERPROOF ADMIXTURE SAMPLES AND THE TWO CONTROL SAMPLES SHALL BE RECORDED.



DEPTH VALUES SHALL BE CALCULATED AND REPORTED AS FOLLOWS:

$$\frac{\text{AVERAGE DEPTH OF PENETRATION FOR CONTROL SAMPLE}}{\text{AVERAGE DEPTH OF PENETRATION FOR WATERPROOF ADMIXTURE SAMPLE}}$$

MINIMUM ACCEPTABLE VALUE >2

THE ADMIXTURE MANUFACTURER SHALL BE RESPONSIBLE FOR HAVING THE PERFORMANCE TEST EXECUTED BY AN INDEPENDENT TESTING LABORATORY. TEST RESULTS FROM A MANUFACTURER'S LABORATORY SHALL NOT BE ACCEPTABLE. THE MANUFACTURER SHALL SUBMIT THE INDEPENDENT LABORATORY'S REPORT, INCLUDING A DESCRIPTION OF THE TESTS, THE CONCRETE MIXES AND RESULTS ALONG WITH A CERTIFICATION THAT THE ADMIXTURE IS COMPATIBLE WITH ALL ITEMS REQUIRED BY THIS SPECIFICATION. THE SUBMITTED PACKET SHALL BE APPROVED BEFORE THE ADMIXTURE MAY BE USED.

PAYMENT FOR THE WATERTIGHT ADMIXTURE SHALL BE INCLUDED IN THE INDIVIDUAL CONCRETE ITEMS.

ITEM 511 CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN

ALL CONCRETE ABOVE FOOTING SHALL INCLUDE AN ADMIXTURE FOR WATERPROOFING AND INCREASING DURABILITY OF CONCRETE. THE ADMIXTURE SHALL BE ADDED AT A RATIO AS REQUIRED BY THE MANUFACTURER. (SEE OHIO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR ADMIXTURE FOR WATERTIGHT CONCRETE AND REINFORCEMENT PROTECTION.)

PAYMENT FOR THE ABOVE ITEM SHALL BE INCLUDED IN THE CUBIC YARD PRICE BID FOR ITEM 511, CLASS QC1 CONCRETE ABUTMENT, AS PER PLAN. THE ITEM SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

THE ADMIXTURE FOR WATERTIGHT CONCRETE AND REINFORCEMENT PROTECTION SHALL BE IPANEX OR AN APPROVED EQUAL. IF IPANEX IS SELECTED IT SHALL BE ADDED AT A RATIO OF 13 OZ. PER SACK OF CEMENT. THE WATER/CEMENT RATIO SHALL BE BETWEEN 0.42-0.48. IPANEX, BY ITS PRODUCT FORMULATIONS, WILL ADD 0.5% TO 1% AIR ENTRAINMENT TO THE FINAL MIX DESIGN SO ADJUSTMENTS NEED TO BE MADE IN ORDER TO MEET DESIGN CRITERIA.

IPANEX IS AVAILABLE AT:
MUNICIPAL & CONTRACTOR SEALING PRODUCTS, INC.
7740 REINHOLD DRIVE CINCINNATI, OHIO 45237
1-800-537-5800

ITEM 513 STRUCTURAL STEEL, MISC.: COUPON TENSILE STRENGTH TESTING OF EXISTING STRUCTURAL STEEL

DETERMINE THE Fu (ULTIMATE) AND Fy (YIELD) TENSILE STRENGTH IN ACCORDANCE WITH STANDARD ENGINEERING PRACTICE AS INDICATED IN THESE PLANS, SHEET 30/52.

BASIS OF PAYMENT: THE LUMP SUM BID SHALL INCLUDE THE COST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK INCLUDING REPAIR OF THE FLOOR BEAMS TO REPLACE THE STEEL COUPONS.

ITEM SPECIAL 530 - STRUCTURE, MISC.: LUBRICATE TRUSS PIN-CONNECTED JOINTS

WORK SHALL BE PERFORMED WITH THE BRIDGE ERECTED AND ALL COMPONENTS ON THE BRIDGE IN PLACE, EXCEPT FOR THE RAILING, ASPHALT WEARING SURFACE, AND DECK WATERPROOFING NEED NOT BE INSTALLED AT THE TIME OF PIN LUBRICATION.

ALL PIN-CONNECTED JOINTS ON THE NORTH AND SOUTH TRUSSES SHALL BE SOAKED WITH A LIGHT PENETRATING OIL. ALL INTERFACES BETWEEN LINKS AND BETWEEN LINKS AND PINS SHALL BE WETTED. THE LUBRICANT SHALL BE APPLIED BY PUMPING OR SPRAYING. ALL SPILLS AND RUNS SHALL BE WIPED UP IMMEDIATELY. NO OIL SHALL BE PERMITTED TO DROP FROM THE BRIDGE ONTO THE GROUND OR RIVER BELOW.

THE COST FOR ALL LABOR, MATERIALS, AND EQUIPMENT SHALL BE INCLUDED FOR PAYMENT IN THE LUMP SUM BID FOR ITEM SPECIAL 530 - STRUCTURE, MISC.: LUBRICATE TRUSS PIN-CONNECTED JOINTS.

DESIGN AGENCY KOHLHA KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2244 Baton Rouge Ave., Lima, Ohio 45808 419-221-1155	DATE	5-12-14
	REVIEWED	MAD
	DRAWN	BLS
	DESIGNED	BLS
STRUCTURE FILE NUMBER	4631838	
GENERAL NOTES	BRIDGE NO. LOG-21-0100 OVER THE GREAT MIAMI RIVER	
LOG-CR 21 - 1.00	PID No. 87081	
	23	52

ALTERNATE NO. 1
ITEM SPECIAL 530-00600 - FURNISH AND INSTALL FIBER REINFORCED POLYMER BRIDGE DECK PANELS (COMPOSITE ADVANTAGE SPECIFICATIONS)

DESCRIPTION

THIS WORK SHALL CONSIST OF PROVIDING THE NECESSARY MATERIALS AND EQUIPMENT TO FURNISH FIBER REINFORCED POLYMER (FRP) BRIDGE DECK PANELS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. THIS WORK SHALL INCLUDE THE FABRICATION OF THE PANELS, ALL NECESSARY HOLES AND CLOSEOUTS, SUPPLYING MATERIALS AND PROCEDURES FOR PANEL TO PANEL CONNECTIONS, SUPPLYING MATERIALS AND PROCEDURES FOR PANEL TO SUPPORTING GIRDER CONNECTION AND FOR ALL OTHER OPERATIONS NECESSARY TO COMPLETE THIS WORK ACCORDING TO THE CONTRACT DOCUMENTS.

THE GENERAL CONTRACTOR (CONTRACTOR) WILL BE RESPONSIBLE FOR THE INSTALLATION OF THE PANELS TO SUPPORTING GIRDER CONNECTIONS, BRIDGE RAILING, EXPANSION JOINTS, AND WEARING SURFACE. ANY REFERENCE TO "BY OTHERS" IN THIS DOCUMENT SHALL REFER TO WORK TO BE PERFORMED BY THE CONTRACTOR UNDER A SEPARATE CONTRACT. REFERENCE TO THE ENGINEER IS TO THE OWNER OR HIS ENGINEERING CONSULTANT.

MATERIALS

ALL CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL MEET THE REQUIREMENTS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES WITH ALL PROVISIONS IN EFFECT AT THE DATE OF THIS SPECIFICATION.

THE MANUFACTURER SHALL PROVIDE DATA SHEETS AND MANUFACTURER'S QUALITY CONTROL SHEETS FOR ALL MATERIALS AND METHODS USED IN THE FABRICATION AND INSTALLATION OF THE DECK. MATERIAL PROPERTIES OF THE FRP DECK SHALL BE BASED ON APPLICABLE ASTM MATERIAL TESTING METHODS. CERTIFICATION OF COMPLIANCE WITH INDUSTRY ACCEPTED METHODS OF FABRICATION SHALL BE REQUIRED.

DESIGN REQUIREMENTS

STANDARDS: THE DESIGN OF THE DECK, WHERE APPLICABLE, SHALL BE IN ACCORDANCE WITH AASHTO LFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION WITH ALL PROVISIONS. DIMENSIONS OF THE BRIDGE DECK AND LABELING OF THE PANELS SHALL BE CONSISTENT WITH THE CONSTRUCTION PLANS PREPARED BY THE ENGINEER.

DESIGN LIVE LOADS: THE DESIGN LIVE LOADING SHALL BE AASHTO HS-20 VEHICLE PLUS IMPACT.

ENVIRONMENTAL FACTOR: AN ENVIRONMENTAL DURABILITY FACTOR OF 0.85 SHALL BE APPLIED TO THE MATERIAL PROPERTIES TO ACCOUNT FOR DEGRADATION OF PROPERTIES OVER TIME.

DESIGN STRAINS: THE STRAINS IN THE PANELS UNDER FULL DEAD LOAD AND DESIGN LIVE LOAD SHALL NOT EXCEED 20% OF ULTIMATE CAPACITY OF THE FRP MATERIAL. THE STRAINS IN PANELS UNDER DEAD LOAD ALONE SHALL NOT EXCEED 10% OF ULTIMATE CAPACITY OF THE FRP MATERIAL. THE ULTIMATE STRENGTH IS BASED ON COUPON TESTING AND SHALL BE NOTED IN THE APPROVED PLANS.

FATIGUE: THE DECK SYSTEM SHALL BE DESIGNED FOR A MINIMUM FATIGUE LIFE OF 2,000,000 LOAD CYCLES

LIVE LOAD DEFLECTION: DECK DEFLECTION DUE TO LIVE LOADS PLUS IMPACT SHALL BE LIMITED TO L/400, WHERE L IS DEFINED AS THE DISTANCE BETWEEN THE CENTERLINE OF ADJACENT GIRDERS.

DECK TO SUPPORTING GIRDER CONNECTIONS: THE DESIGN OF THE INTERFACE SHALL EITHER INSURE ADEQUATE CAPACITY TO PREVENT FAILURE OF THE CONNECTION OR PROVIDE A SLIP MECHANISM TO PREVENT TRANSFER OF FORCES BETWEEN THE FRP DECK AND GIRDERS. THE MANUFACTURER SHALL BE RESPONSIBLE TO PROVIDE ALL NECESSARY PROVISIONS TO ACCOMMODATE THE CONNECTIONS (HOLES, CLOSEOUTS, ETC.). THE MANUFACTURER SHALL BE RESPONSIBLE FOR SUPPLYING ALL THE CONNECTION HARDWARE (STUDS, BOLTS, NUTS, CLIPS, SHIMS, WASHERS... ETC.). THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL CONNECTION HARDWARE.

BRIDGE RAILING: THE BRIDGE RAILING SHALL BE SUPPORTED BY THE FASCIA GIRDERS. THERE WILL BE NO RAILING-TO-FRP PANEL CONNECTION.

PANEL FIELD SPLICE: THE FIELD SPLICE BETWEEN PANELS SHALL BE DESIGNED TO BE FULLY STRUCTURAL (CAPABLE OF TRANSFERRING DESIGN SHEAR AND MOMENT) AND WATERTIGHT.

WEARING SURFACE: THE ASPHALT WEARING SURFACE SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR IN THE FIELD. THE MANUFACTURER SHALL BE RESPONSIBLE FOR PROPERLY PREPARING THE PANEL SURFACE IN THE SHOP TO RECEIVE THE ASPHALT WEARING SURFACE.

THERMAL LOADING: THE PANELS SHALL BE DESIGNED FOR A TEMPERATURE DIFFERENTIAL OF 100°F BETWEEN THE TOP AND BOTTOM OF THE PANELS.

SUBMITTALS

THE MANUFACTURER SHALL SUBMIT DESIGN CALCULATIONS, LOAD RATING ANALYSIS FOR OHIO LEGAL LOADS AND DESIGN LOAD HS20, AND SHOP DRAWINGS OF THE FRP BRIDGE DECK PANELS AT LEAST SIX WEEKS PRIOR TO FABRICATION OF ANY COMPONENTS.

THE CALCULATIONS AND SHOP DRAWINGS SHALL BE SIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF OHIO. THE SUBMISSION SHALL ALSO INCLUDE THE MATERIAL PROPERTIES AND DESIGN ASSUMPTIONS UPON WHICH THE PANELS AND CONNECTION DESIGN ARE BASED AS WELL AS DETAILED PROCEDURES FOR INSTALLATION AND MATERIALS TO BE USED BY THE CONTRACTOR DURING INSTALLATION. ENGLISH UNITS SHALL BE USED FOR ALL CALCULATIONS AND DRAWINGS. SHOP DRAWINGS SUBMITTED TO THE ENGINEER SHALL INCLUDE THE FOLLOWING INFORMATION AS A MINIMUM:

- PLAN AND ELEVATION VIEWS SHOWING CENTERLINE OF STRUCTURE, FRAMING SYSTEM AND SUBSTRUCTURE
- CROSS-SECTIONAL AND OVERALL DIMENSIONS
- FRP ARCHITECTURE, EX. PLY THICKNESS, FIBER ORIENTATION, STACKING SEQUENCE
- MATERIAL REFERENCES
- RECOMMENDED LIFTING METHOD AND LOCATIONS
- INSTRUCTIONS AND RECOMMENDATIONS FOR PANEL DELIVERY, STORAGE AND INSTALLATION

THE LOAD RATING ANALYSIS SHALL ASSUME NON-COMPOSITE ACTION BETWEEN THE FRP DECK AND STEEL GIRDERS. A DEAD LOAD OF A FUTURE ADDITIONAL 2 INCHES OF ASPHALT SHALL BE INCLUDED IN THE DESIGN AND LOAD RATING.

THE MANUFACTURER SHOULD INFORM THE ENGINEER AT LEAST TWO WEEKS BEFORE THE FABRICATION OF THE PANELS. THE COUNTY OR ITS REPRESENTATIVE RESERVES THE RIGHT TO INSPECT THE FACILITIES DURING THE FABRICATION OF THE PANELS.

MANUFACTURING

FINISHED GEOMETRIC TOLERANCES: THE FINISHED DIMENSIONS OF THE DECK PANELS SHALL MEET THE TOLERANCES LISTED BELOW:

OVERALL DEPTH OF PANEL: $\pm 1/16$ "
PANEL OUT-OF-STRAIGHTNESS: $\pm 1/8$ " IN 25'
PANEL LENGTH AND WIDTH: $\pm 1/4$ "
ENVIRONMENTAL PROTECTION: ALL EXPOSED SURFACES SHALL BE PROTECTED AGAINST WEATHERING AND ULTRAVIOLET DAMAGE.

CONSTRUCTION DETAILS

SAFETY: MATERIAL DATA SAFETY SHEETS (MSDS) SHALL ACCOMPANY ANY MATERIALS DELIVERED TO THE JOB SITE. A COPY SHALL ALSO BE DELIVERED TO THE ENGINEER UPON REQUEST.

SHIPPING: THE COST OF SHIPPING THE PANELS TO THE BRIDGE SITE SHALL BE INCLUDED IN THE PRICE OF THE PANELS. THE PANELS SHALL BE UNLOADED AND STORED BY THE CONTRACTOR. DELIVERY OF THE DECK PANELS SHALL BE COORDINATED WITH THE CONTRACTOR.

DAMAGES PRIOR TO ACCEPTANCE: THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED PRIOR TO ACCEPTANCE AT THE JOB SITE. .

DAMAGES AFTER ACCEPTANCE: IF THE DECK IS DAMAGED BY THE CONTRACTOR AFTER ACCEPTANCE, THE MANUFACTURER SHALL BE AVAILABLE FOR CONSULTATION AND GUIDANCE FOR FIELD REPAIRS OR REPLACEMENT AT THE EXPENSE OF THE CONTRACTOR.

STORING AND HANDLING: SITE HANDLING AND ERECTION SHALL BE PERFORMED WITH ACCEPTABLE EQUIPMENT AND METHODS, AND BY QUALIFIED PERSONNEL AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE PANELS SHALL BE LIFTED AND SUPPORTED DURING STOCKPILING AND ERECTION OPERATIONS ONLY AT THE LIFTING OR SUPPORTING POINTS, AS SHOWN ON THE SHOP DRAWINGS, AND WITH APPROVED LIFTING DEVICES. THE PANELS SHALL BE KEPT FLAT AND TRUE TO PREVENT WARPING OR TWISTING OF THE PANELS DURING LIFTING AND STORING. THE PANELS SHALL NOT BE TURNED OR PLACED ON THEIR SIDES OR WITH THE TOP SURFACE DOWN. LIFTING OF THE PANELS FROM ONE EDGE WILL NOT BE PERMITTED. ALL PANELS SHALL BE STORED OFF OF THE GROUND AND PROTECTED WITH COVERS THAT ARE IMPERVIOUS TO SUNLIGHT AND WEATHER IN ORDER TO PROVIDE PROTECTION FROM ULTRAVIOLET LIGHT AND KEEP THE PANELS CLEAN AND DRY. STACKED PANELS SHALL BE SUPPORTED ON UNYIELDING SUPPORTS AND SHALL BE SEPARATED BY BATTENS ACROSS THE FULL WIDTH OF EACH PANEL. PANELS DAMAGED BY IMPROPER HANDLING, STORING, OR ERECTION SHALL BE REPAIRED OR REPLACED, AT THE DISCRETION OF THE ENGINEER, AT NO EXPENSE TO THE OWNER.

PERSONNEL REQUIREMENTS: THE MANUFACTURER SHALL PROVIDE A TECHNICAL REPRESENTATIVE TO ASSIST IN THE FIELD ERECTION OF THE PANELS. THE TECHNICAL REPRESENTATIVE SHALL HAVE EXPERIENCE WITH THE MATERIAL AND PERFORMANCE CHARACTERISTICS OF THE FRP, AS WELL AS THE PANEL HANDLING REQUIREMENTS. THE TECHNICAL REPRESENTATIVE SHALL ACT IN AN ADVISORY CAPACITY AND SHALL REPORT TO THE CONTRACTOR AND THE ENGINEER ANY OPERATIONS AND PROCEDURES WHICH ARE CONSIDERED BY THE REPRESENTATIVE AS BEING DETRIMENTAL TO THE INTEGRITY OF THE BRIDGE DECK SYSTEM. THE MANUFACTURER'S TECHNICAL REPRESENTATIVE SHALL BE PRESENT DURING ERECTION, CONNECTING OF PANELS TO THE SUPPORTING GIRDERS AND FIELD SPLICING OF PANELS.

ERECTION: PANELS SHALL BE LIFTED BY MEANS OF SUITABLE LIFTING DEVICES AT POINTS SPECIFIED BY THE MANUFACTURER. PANELS SHALL BE PROPERLY ALIGNED AND INSTALLED TO THE ELEVATIONS SHOWN ON THE CONTRACT DRAWINGS. ALLOWANCES SHALL BE MADE FOR THE WEIGHT OF PERSONNEL, MATERIALS AND EQUIPMENT PRESENT ON THE BRIDGE AT THE TIME OF ERECTION.

MATERIALS FOR FIELD SPLICES: THE MANUFACTURER SHALL PROVIDE THE MATERIALS NECESSARY FOR THE FIELD SPLICE BETWEEN PANELS. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A DRY STORAGE AREA AT THE BRIDGE SITE FOR THESE MATERIALS. PERSONNEL OTHER THAN THOSE APPROVED BY THE MANUFACTURER WILL NOT BE ALLOWED TO PERFORM SUCH WORK. THE FIELD SPLICES SHALL NOT BE DISTURBED OR LOADED UNTIL THE CONNECTION HAS ATTAINED A SUFFICIENT STRENGTH. NO MORE THAN 6 PEOPLE WILL BE ALLOWED ON THE BRIDGE DECK AT ANY ONE GIVEN TIME, DURING AND AFTER ERECTION, UNTIL ALL THE FIELD SPLICES HAVE ATTAINED STRENGTH UNLESS OTHERWISE APPROVED BY THE MANUFACTURER.

MATERIALS FOR PANEL TO SUPPORTING GIRDER CONNECTION: THE MANUFACTURER SHALL PROVIDE THE MATERIALS NECESSARY FOR THE PANEL TO SUPPORTING GIRDER CONNECTION. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A DRY STORAGE AREA AT THE BRIDGE SITE FOR THESE MATERIALS. THE CONTRACTOR SHALL INSTALL THE PANEL TO SUPPORT GIRDER CONNECTION.

PRODUCT WARRANTY

COMPOSITE ADVANTAGE WILL PROVIDE A TEN (10) YEAR LIMITED WARRANTY FOR THE DECK SYSTEM, THE DETAILS OF WHICH WILL BE PROVIDED IN THE RELATED CONTRACT DOCUMENTS.

METHOD OF MEASUREMENT

THIS WORK WILL BE MEASURED AS THE NUMBER OF SQUARE FEET OF FURNISHING AND INSTALLING FIBER REINFORCED POLYMER BRIDGE DECK PANELS SATISFACTORILY FURNISHED.

BASIS OF PAYMENT

THE UNIT PRICE BID SHALL INCLUDE THE COST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO SATISFACTORILY COMPLETE THE WORK.

CONTACT INFORMATION

ANDY LOFF: ALOFF@COMPOSITEADVANTAGE.COM
SCOTT REEVE: SREEVE@COMPOSITEADVANTAGE.COM
OFFICE PHONE: (937)723-9031
WEBSITE: WWW.COMPOSITEADVANTAGE.COM

	DESIGN AGENCY
	LOG-CR 21- 1.00 BRIDGE NO. LOG-21-0100 OVER THE GREAT MIAMI RIVER PID No. 87081
DATE: 5-12-14 MAD: 4631838 STRUCTURE FILE NUMBER: 4631838	REVIEWED: MAD DATE: 5-12-14
DESIGNED: BLS CHECKED: DGB	DRAWN: BLS REVISED:
24 52	

ALTERNATE NO. 2

ITEM SPECIAL 530-0060 - FURNISH AND INSTALL FIBER REINFORCED POLYMER BRIDGE DECK PANELS

(ZELLCOMP FRP DECKING SYSTEM SPECIFICATIONS)

1. DESIGN SUBMITTALS

A. ZELLCOMP SHALL SUBMIT THE FOLLOWING TO THE BRIDGE OWNER/CUSTOMER (THE "CUSTOMER") PRIOR TO MANUFACTURE OF THE ZELLCOMP® DECKING SYSTEM (THE "DECK" OR "DECKING SYSTEM"):

1. THREE (3) COPIES OF DOCUMENTS THAT DETAIL MATERIALS AND MANUFACTURING QUALITY CONTROL, INCLUDING THE FOLLOWING:

- a. DETAILED MODULUS DESCRIPTION OF LAMINATES.
- b. MANUFACTURERS QUALITY CONTROL PROCEDURES.

2. THREE (3) COPIES OF INSTALLATION INSTRUCTIONS FOR THE DECK, INCLUDING THE FOLLOWING:

- a. PROCEDURES FOR STORAGE, HANDLING AND TRANSPORTATION
- b. A DESCRIPTION OF THE INSTALLATION METHOD AND SEQUENCE.
- c. A DESCRIPTION OF TOOLS REQUIRED FOR INSTALLATION.

3. THREE (3) SETS OF SHOP DRAWINGS PREPARED AND SEALED BY AN INDEPENDENT PROFESSIONAL ENGINEER (INDEPENDENT OF THE DECK SUPPLIER AND/OR MANUFACTURER) REGISTERED IN THE STATE OF OHIO. SUCH DRAWINGS SHALL INCLUDE DIMENSIONS AND SPECIFICATIONS OF ALL SECTIONS OF THE DECKING SYSTEM, CONNECTIONS, AND REQUIRED APPURTENANCES. A LAYOUT DRAWING OF THE NUMBERED SECTIONS OF THE DECKING SYSTEM IN THEIR POSITIONS ON THE BRIDGE SHALL BE INCLUDED.

4. THREE (3) COPIES OF CERTIFICATIONS FOR THE PULTRUDED COMPONENTS CERTIFYING THAT THEY WERE MANUFACTURED PER ZELLCOMP, INC.'S SPECIFICATIONS.

B. THE CUSTOMER WILL REVIEW AND EITHER APPROVE, DISAPPROVE, OR APPROVE WITH COMMENTS ALL SUBMITTED DOCUMENTS WITHIN 15 DAYS OF RECEIPT. NO MANUFACTURE OF THE DECK SHALL BE PERFORMED PRIOR TO THE CUSTOMER'S APPROVAL OF ALL SUBMITTALS RELATING TO THE DECK.

2. MATERIAL SPECIFICATIONS

A. FIBER MAY BE OF ANY COMMERCIAL E-GLASS FIBER. THE OVERALL FIBER VOLUME FRACTION IN A GIVEN DECK MODULE SHALL BE NO LESS THAN 25% AND NO GREATER THAN 60%.

B. RESIN SHALL BE COMMERCIAL GRADE THERMOSET POLYESTER RESIN. RESINS SHALL BE MIXED PER MANUFACTURER'S STANDARD PRACTICES AND PROCEDURES.

C. THE FIBER AND RESIN MATERIALS SHALL BE CERTIFIED IN ACCORDANCE WITH ASTM STANDARDS AND ACCOMPANIED BY CERTIFICATION DOCUMENTS. THE MECHANICAL PROPERTIES OF FIBERS, RESINS, AND FRP LAMINATES SHALL BE AS DETERMINED IN ACCORDANCE WITH APPROPRIATE ASTM STANDARD TESTS FOR: FIBER TENSILE STRENGTH AND MODULUS OF ELASTICITY ASTM D 3379 FIBER VOLUME CONTENT ASTM D 3171 RESIN TENSILE STRENGTH AND MODULUS OF ELASTICITY ASTM D 638 LAMINATE TENSILE STRENGTH AND MODULUS OF ELASTICITY ASTM D 638 LAMINATE FLEXURAL STRENGTH AND MODULUS OF ELASTICITY ASTM D 790

3. MANUFACTURING SPECIFICATIONS

THE FRP DECK MANUFACTURER SHALL BE CERTIFIED TO BE QUALIFIED UNDER THE PROVISIONS OF ISO 9000, 9001 OR EQUIVALENT STANDARDS FOR MANUFACTURING PERFORMANCE. IF THE FRP DECK MANUFACTURER'S FACILITY IS NOT QUALIFIED AS AN ISO 9000, 9001 FACILITY, THEN THE FRP DECK MANUFACTURER SHALL SUPPLY A QUALITY ASSURANCE PLAN WHICH CLEARLY STATES HOW THE MANUFACTURER WILL ENSURE THAT THE DECK PRODUCTS PRODUCED WILL BE CONSISTENT AND REQUIRED QUALITY. THE MANUFACTURER SHALL BE RESPONSIBLE FOR QUALITY CONTROL DURING THE MANUFACTURING PROCESS.

4. PRODUCT SPECIFICATIONS

A. DECK TYPE AND DETAILING

1. FRP DECK SYSTEM SHALL BE SUPPLIED BY ZELLCOMP, INC. THE SYSTEM SHALL CONSIST OF PULTRUDED FRP BOTTOM SECTIONS MADE OF A SERIES OF I-SHAPED MEMBERS INTEGRAL WITH A BOTTOM PLATE SPANNING IN THE TRANSVERSE TO TRAFFIC DIRECTION, AND SEPARATE PULTRUDED TOP PLATES THAT ARE MECHANICALLY FASTENED ON SITE TO THE BOTTOM SECTIONS. DECKING SYSTEM DEPTH, WIDTH, AND CROSS SECTIONAL GEOMETRY SHALL BE AS SHOWN ON THE PLANS.

2. JOINTS SHALL BE MECHANICALLY FASTENED LAP-TYPE JOINTS.

3. THE DECK SHALL BE FABRICATED TO ACCOMMODATE THE CONNECTIONS TO THE BEAMS AS SHOWN ON THE MANUFACTURE'S SHOP DRAWINGS.

4. TOLERANCES SHALL BE AS FOLLOWS:

- a. PANEL HEIGHT VARIATION: +/- 1/8" WITH NO ADJACENT PANELS HAVING A DIFFERENCE GREATER THAN 1/8" AT THE TOP SURFACE OF THE PANELS.
- b. PANEL WIDTH VARIATION: +/- 1/4"
- c. STRAIGHTNESS: MAXIMUM DEVIATION FROM STRAIGHT .06"/FT. OF LENGTH WHEN MEASURED WITH A STRING.
- d. SQUARENESS OF END CUT: WITHIN 1/4"
- e. LENGTH TOLERANCE < 20' +/- 1/4"; > 20' +/- 1/2"
- f. ATTACHMENT HOLES: HOLES FOR CONNECTIONS AND OTHER ATTACHMENTS SHALL BE WITHIN +/- 3/4" OF THE DIMENSIONS SHOWN ON THE PLANS.

B. DESIGN REQUIREMENTS/TEST RESULTS

THE DECK SHALL BE DESIGNED TO MEET ALL LOADING REQUIREMENTS FOR HS-20 PLUS IMPACT LOADING. APPLICATION OF LOADING SHALL CONFORM TO THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION (2002). THE FOLLOWING CRITERIA SHALL BE DEMONSTRATED TO BE MET BY ANALYSIS AND/OR TEST RESULTS FROM INDEPENDENT TESTING:

1. FATIGUE AND STATIC RESULTS FROM INDEPENDENT TESTING WITH THE FOLLOWING OR COMPARABLE PARAMETERS, DEPENDING ON THE ACTUAL BRIDGE STRUCTURE:
- SUPPORT BEAM SPACING APPROPRIATE TO PROVIDE RESULTS RELEVANT TO ACTUAL BRIDGE STRUCTURE.
- FOR FATIGUE, APPLIED LOAD OF 14-18 KIPS FOR A MINIMUM OF 2 MILLION CYCLES AT 3HZ OR LESS.
- FOLLOWING FATIGUE, SPECIMEN LOADED IN A STATIC TEST. APPLY ONE LOAD POINT. SHOULD BREAK AT 80 KIPS OR HIGHER IN 3-POINT BENDING.
- LOAD PAD IS A 10" BY 20" BY 1" STEEL PLATE ON A NEOPRENE PAD.

2. DEFLECTION CRITERIA: LIVE LOAD DEFLECTION OF THE DECK RELATIVE TO TWO CONTIGUOUS BEAMS SHALL BE LIMITED TO S/400, WHERE S IS THE CENTER-TO-CENTER DISTANCE BETWEEN BEAMS WITH FIXED BOUNDARY CONDITIONS.

3. FLEXURE CRITERIA: BENDING STRAIN SHALL BE LIMITED TO 25% OF THE ULTIMATE STRAIN UNDER SERVICE LOADS INCLUDING ENVIRONMENTAL AND AGING EFFECTS. BENDING STRAIN UNDER DEAD LOADS, INCLUDING WEARING SURFACES, SHALL BE LIMITED TO 10% OF THE ULTIMATE STRAIN. FACTORED LOADS PRODUCING FLEXURAL BENDING SHALL BE LIMITED TO 50% OF THE ULTIMATE FLEXURAL LOAD CAPACITY.

4. SHEAR CRITERIA: FACTORED LOADS PRODUCING SHEAR SHALL BE LIMITED TO 45% OF THE ULTIMATE SHEAR LOAD CAPACITY. THE MAXIMUM ALLOWABLE SHEAR STRAIN SHALL BE LIMITED TO 25% OF THE ULTIMATE STRAIN UNDER SERVICE LOADS INCLUDING ENVIRONMENTAL AND AGING EFFECTS.

5. PERSONNEL REQUIREMENTS:

THE MANUFACTURER SHALL PROVIDE A TECHNICAL REPRESENTATIVE TO ASSIST IN THE FIELD ERECTION OF THE PANELS. THE TECHNICAL REPRESENTATIVE SHALL HAVE EXPERIENCE WITH THE MATERIAL AND PERFORMANCE CHARACTERISTICS OF THE FRP, AS WELL AS THE PANEL HANDLING REQUIREMENTS. THE TECHNICAL REPRESENTATIVE SHALL ACT IN AN ADVISORY CAPACITY AND SHALL REPORT TO THE CONTRACTOR AND THE ENGINEER ANY OPERATIONS AND PROCEDURES WHICH ARE CONSIDERED BY THE REPRESENTATIVE AS BEING DETRIMENTAL TO THE INTEGRITY OF THE BRIDGE DECK SYSTEM. THE MANUFACTURER'S TECHNICAL REPRESENTATIVE SHALL BE PRESENT DURING ERECTION, CONNECTING OF PANELS TO THE SUPPORTING GIRDERS AND FIELD SPLICING OF PANELS.

6. PRODUCT WARRANTY

ZELLCOMP WILL PROVIDE A TEN (10) YEAR LIMITED WARRANTY FOR THE DECK SYSTEM, THE DETAILS OF WHICH WILL BE PROVIDED IN THE RELATED CONTRACT DOCUMENTS.

7. METHOD OF MEASUREMENT

THIS WORK WILL BE MEASURED AS THE NUMBER OF SQUARE FEET OF FURNISHING AND INSTALLING FIBER REINFORCED POLYMER BRIDGE DECK PANELS SATISFACTORILY FURNISHED.

8. BASIS OF PAYMENT

THE UNIT PRICE BID SHALL INCLUDE THE COST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO SATISFACTORILY COMPLETE THE WORK.

CONTACT INFORMATION

DAN RICHARDS, PH.D., P.E.
PRESIDENT & CEO
ZELLCOMP, INC.
PO BOX 52001
DURHAM, NC 27717-2001
PHONE: (919)401-4000
FAX: (866)243-7884
CELL: (919)949-1735
EMAIL: DAN.RICHARDS@ZELLCOMP.COM
WEBSITE: WWW.ZELLCOMP.COM

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DESIGN AGENCY KOHL & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2244 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155	DATE 5-12-14	REVIEWED MAD	DRAWN BLS	DESIGNED BLS
	STRUCTURE FILE NUMBER 4631838	REVISIONS	CHECKED DGB	GENERAL NOTES
BRIDGE NO. LOG-21-0100 OVER THE GREAT MIAMI RIVER				
LOG-CR 21- 1.00 PID No. 87081				
25 52				

ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	SUPER.	GEN.	SHEET #
202	11203	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN		LUMP		18
202	23501	251	SQ YD	WEARING SURFACE REMOVED, AS PER PLAN		251		18
202	98100	420	EACH	REMOVAL MISC.: EXISTING RIVET OR BOLT		420		18
407	10000	18	GAL	TACK COAT		18		
448	47020	14	CU YD	ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG 64-22		14		
503	21300	LUMP		UNCLASSIFIED EXCAVATION	LUMP			
509	25001	862	POUND	REINFORCING STEEL, AS PER PLAN	862			23
510	10000	114	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	114			
511	45711	6	CU YD	CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN	6			23,28,29
512	10000	11	SQ YD	SEALING OF CONCRETE SURFACES	11			28,29
512	33001	232	SQ YD	TYPE 2 WATERPROOFING, AS PER PLAN (ON TIMBER DECK) (A)		232		18
512	33001	54	SQ YD	TYPE 2 WATERPROOFING, AS PER PLAN (ON STRINGERS) (A)		54		18,31
513	10001	LUMP		STRUCTURAL STEEL MEMBERS; LEVEL UF, AS PER PLAN	LUMP			19,41,42,43,44
513	10121	LUMP		STRUCTURAL STEEL MEMBERS; LEVEL 6, AS PER PLAN	LUMP			18,34,36,37
513	95020	LUMP		STRUCTURAL STEEL, MISC.: PINS AND NUTS	LUMP			18
513	95020	LUMP		STRUCTURAL STEEL, MISC.: DISASSEMBLE EXISTING TRUSS	LUMP			18
513	95020	LUMP		STRUCTURAL STEEL, MISC.: COUPON TENSILE STRENGTH TESTING OF EXISTING STRUCTURAL STEEL	LUMP			23,30,34
513	95020	LUMP		STRUCTURAL STEEL, MISC.: GALVANIZE EXISTING TRUSS MEMBERS	LUMP			19
513	95020	LUMP		STRUCTURAL STEEL, MISC.: REASSEMBLE TRUSS	LUMP			18
513	95030	9	EACH	STRUCTURAL STEEL, MISC.: FLOOR BEAM CLEANING AND INSPECTION	9			19
513	95030	40	EACH	STRUCTURAL STEEL, MISC.: LOWER CHORDS CLEANING AND INSPECTION	40			19
513	95030	20	EACH	STRUCTURAL STEEL, MISC.: LOWER LATERAL BRACES CLEANING AND INSPECTION	20			19
513	95030	1	EACH	STRUCTURAL STEEL, MISC.: FABRICATE PORTAL SIGN, GALVANIZE, AND PAINT	1			35
513	95030	9	EACH	STRUCTURAL STEEL, MISC.: NEW GALVANIZED FLOOR BEAMS [1]	9			19
513	95030	40	EACH	STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER CHORDS [2]	40			19,30,38
513	95030	20	EACH	STRUCTURAL STEEL, MISC.: NEW GALVANIZED LOWER LATERAL BRACES [3]	20			19,34,46
513	95030	1	EACH	STRUCTURAL STEEL, MISC.: CLEAN AND REFURNISH PORTAL SIGN	1			35
513	95030	9	EACH	STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING FLOOR BEAMS [1]	9			19
513	95030	38	EACH	STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER CHORDS [2]	38			19,30,38
513	95030	20	EACH	STRUCTURAL STEEL, MISC.: GALVANIZED EXISTING LOWER LATERAL BRACES [3]	20			19,34,46
513	95030	400	EACH	STRUCTURAL STEEL, MISC.: REMOVE AND REPLACE RIVETS WITH HIGH STRENGTH BOLTS	400			18
513	95030	18	EACH	STRUCTURAL STEEL, MISC.: NEW GALVANIZED HANGER BOLTS, PLATES, AND HARDWARE	18			40
516	10501	30	FEET	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL, AS PER PLAN	30			45
516	41100	4	EACH	1/8" PREFORMED BEARING PADS (11"x13")	4			41
516	41100	4	EACH	1/8" PREFORMED BEARING PADS (10"x13")	4			42
516	41100	12	EACH	1/8" PREFORMED BEARING PADS (9"x9")	12			43
516	41100	12	EACH	1/8" PREFORMED BEARING PADS (8"x8")	12			44
516	43200	2	EACH	ELASTOMERIC BEARING PADS WITH INTERNAL LAMINATES ONLY (NEOPRENE) 11" X 13" X 3"	2			41
516	43200	2	EACH	ELASTOMERIC BEARING PADS WITH INTERNAL LAMINATES ONLY (NEOPRENE) 10" X 13" X 2.5"	2			42
516	43200	6	EACH	ELASTOMERIC BEARING PADS WITH INTERNAL LAMINATES ONLY (NEOPRENE) 9" X 9" X 3"	6			43
516	43200	6	EACH	ELASTOMERIC BEARING PADS WITH INTERNAL LAMINATES ONLY (NEOPRENE) 8" X 8" X 2.5"	6			44
517	70001	302	FEET	RAILING (TWIN STEEL TUBE), AS PER PLAN	302			31,47
SPECIAL	518 22301	356	FEET	STEEL DRIP STRIP, AS PER PLAN	356			31
SPECIAL	530 00200	LUMP		STRUCTURE, MISC.: LUBRICATE TRUSS PIN-CONNECTED JOINTS	LUMP			23
SPECIAL	530 00600	21	SQ FT	STRUCTURE, MISC.: PACK RUST REMOVAL	21			18, 35

- [1] NEW GALVANIZED FLOOR BEAMS / GALVANIZED EXISTING FLOOR BEAMS - THESE ITEMS ARE LINKED (ONLY ONE WILL BE PERFORMED - THE OTHER WILL BE DELETED) *
- [2] NEW GALVANIZED LOWER CHORDS / GALVANIZED EXISTING LOWER CHORDS - THESE ITEMS ARE LINKED (ONLY ONE WILL BE PERFORMED - THE OTHER WILL BE DELETED) *
- [3] NEW GALVANIZED LOWER LATERAL BRACES / GALVANIZED EXISTING LOWER LATERAL BRACES - THESE ITEMS ARE LINKED (ONLY ONE WILL BE PERFORMED - THE OTHER WILL BE DELETED) *

(A) THESE ITEMS WILL BE NON-PERFORMED IF ALTERNATE NO. 1 OR ALTERNATE NO. 2 IS PERFORMED.

* THE FINAL DETERMINATION REGARDING USING NEW MEMBERS VS. EXISTING MEMBERS WILL BE BASED ON THE SHOP INSPECTION OF CLEANED MEMBERS. THE CONTRACTOR SHALL NOT ORDER MATERIALS OR FABRICATE NEW MEMBERS UNTIL AUTHORIZED BY THE COUNTY ENGINEER.

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DESIGN AGENCY

 KOHLI & KALHER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 2244 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

DATE 5-12-14
 REVIEWED MAD
 STRUCTURE FILE NUMBER 4631838

DRAWN ARM
 CHECKED DGB

ESTIMATED QUANTITIES
 BRIDGE NO. LOG-CR 21-0100
 OVER THE GREAT MIAMI RIVER

LOG-CR 21-1.00
 PID No. 87081

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ESTIMATED QUANTITIES								
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	SUPER.	GEN.	SHEET #
SPECIAL	530 00600	2082	SQ FT	STRUCTURE, MISC.: 6" STRIP FLOOR (A)		2082		21,31,43,44
SPECIAL	530 00600	36	SQ FT	STRUCTURE, MISC.: REMOVE AND REPLACE BROKEN STONES	36			21,22
SPECIAL	530 00600	871	SQ FT	STRUCTURE, MISC.: STONE MASONRY CLEANING	871			22
SPECIAL	530 01300	614	FEET	STRUCTURE, MISC.: REPOINTING MORTAR JOINT	614			22
SPECIAL	530 01300	70	FEET	STRUCTURE, MISC.: STONE REPAIR SEALING CRACKS BY EPOXY INJECTION	70			22
602	97000	125	SQ FT	MASONRY, MISC.: REFURBISH ABUTMENT BEARING AREAS FOR TRUSS AND STRINGER BEARINGS	125			
ALTERNATE NO. 1								
SPECIAL	53000600	2082	SQ FT	STRUCTURE, MISC.: FURNISH AND INSTALL FIBER REINFORCED POLYMER BRIDGE DECK PANELS (COMPOSITE ADVANTAGE)		2082		
516	46920	408	SQ FT	BEARING DEVICE, MISC.: 1/2" ELASTOMERIC STRIP 50 DUROMETER (ON STRINGERS)		408		
ALTERNATE NO. 2								
SPECIAL	53000600	2082	SQ FT	STRUCTURE, MISC.: FURNISH AND INSTALL FIBER REINFORCED POLYMER BRIDGE DECK PANELS (ZELL COMP)		2082		
516	46920	408	SQ FT	BEARING DEVICE, MISC.: 1/2" ELASTOMERIC STRIP 50 DUROMETER (ON STRINGERS)		408		
BASE								
625	98200	LUMP		LIGHTING, MISC.: SOLAR BRIDGE LIGHTING SYSTEM (OPTION "A")			LUMP	E2
ALTERNATIVE 1								
625	98200	LUMP		LIGHTING, MISC.: METERED BRIDGE LIGHTING SYSTEM (OPTION "B")			LUMP	E3

(A) THESE ITEMS WILL BE NON-PERFORMED IF ALTERNATE NO. 1 OR ALTERNATE NO. 2 IS PERFORMED.

ESTIMATED QUANTITIES
BRIDGE NO. LOG-CR 21-0100
OVER THE GREAT MIAMI RIVER

LOG-CR 21-1.00
PID No. 87081

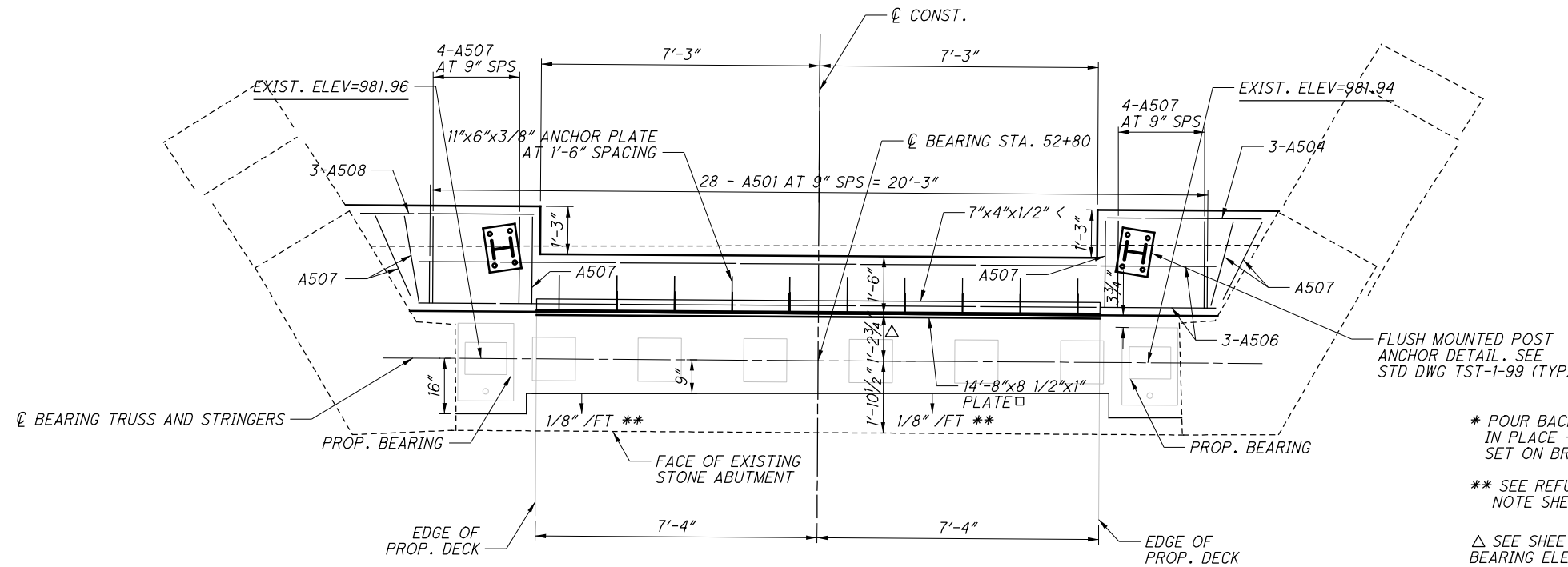
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DESIGN AGENCY
KOHL & KALHER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
2344 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

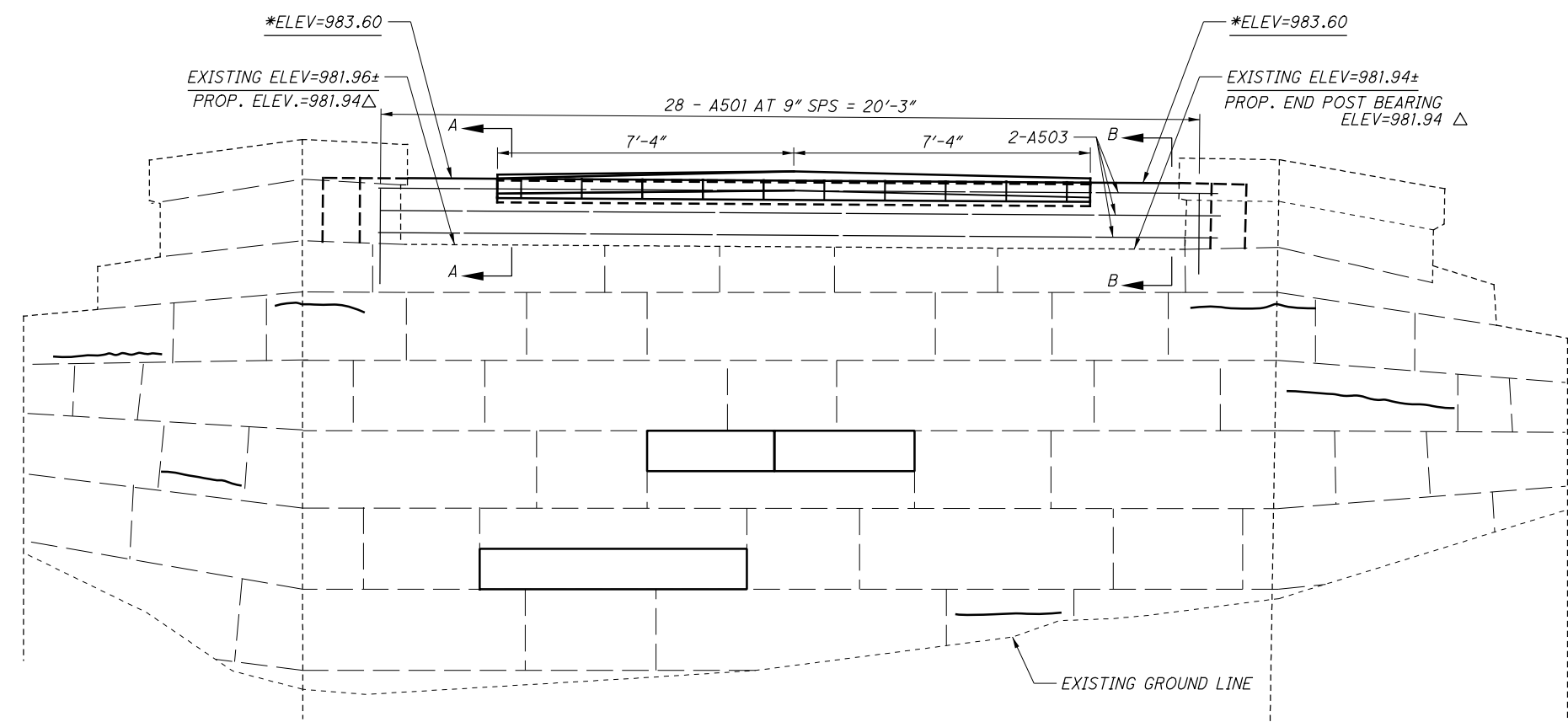
DATE 5-12-14
REVIEWED MAD
STRUCTURE FILE NUMBER 4631838

DRAWN ARM
REVISOR
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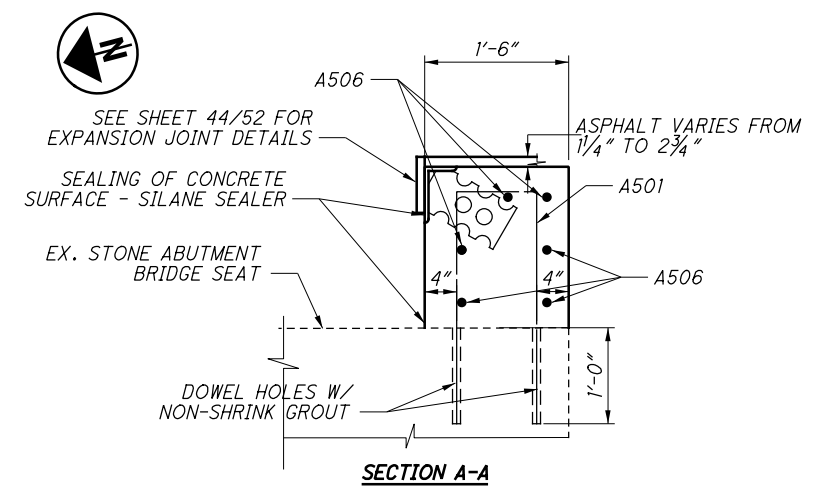


REAR (EAST) ABUTMENT PLAN



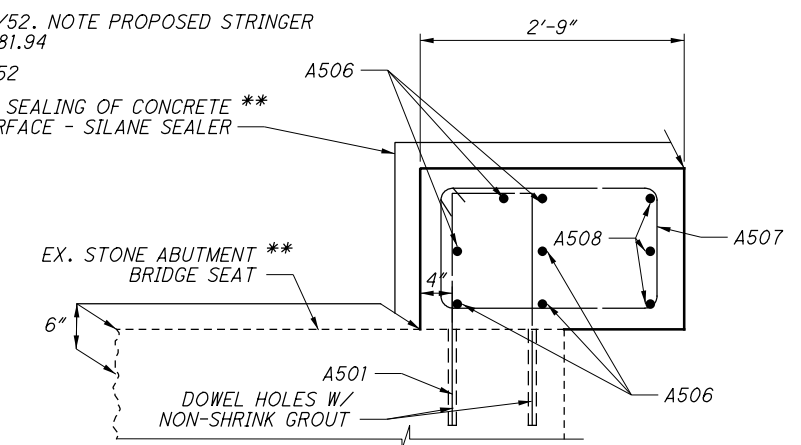
REAR (EAST) ABUTMENT ELEVATION

ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN:
 THE BACKWALL CONCRETE SHALL BE PLACED ON THE ABUTMENT STONES. THE LIMITS OF THE ABUTMENT STONES ARE NOT KNOWN. THE ACTUAL BACK WALL DIMENSION AND SHAPE SHALL BE ADJUSTED TO MATCH EXISTING FIELD CONDITIONS, AS APPROVED BY THE PROJECT ENGINEER. FINAL PAYMENT SHALL BE IN ACCORDANCE WITH FINAL DIMENSIONS AND SHALL BE INCLUDED IN ITEM 511- CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN.

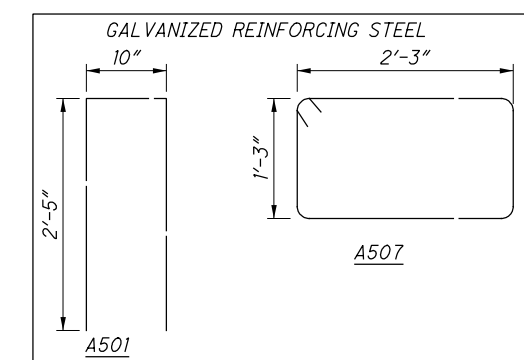


SECTION A-A

* POUR BACKWALL AFTER TRUSS HAS BEEN SET IN PLACE - MATCH TO EXPANSION JOINT STEEL SET ON BRIDGE TRUSS.
 ** SEE REFURBISHING ABUTMENT BEARING AREAS NOTE SHEET 22/52
 Δ SEE SHEET 44/52. NOTE PROPOSED STRINGER BEARING ELEV. 981.94
 □ SEE SHEET 45/52



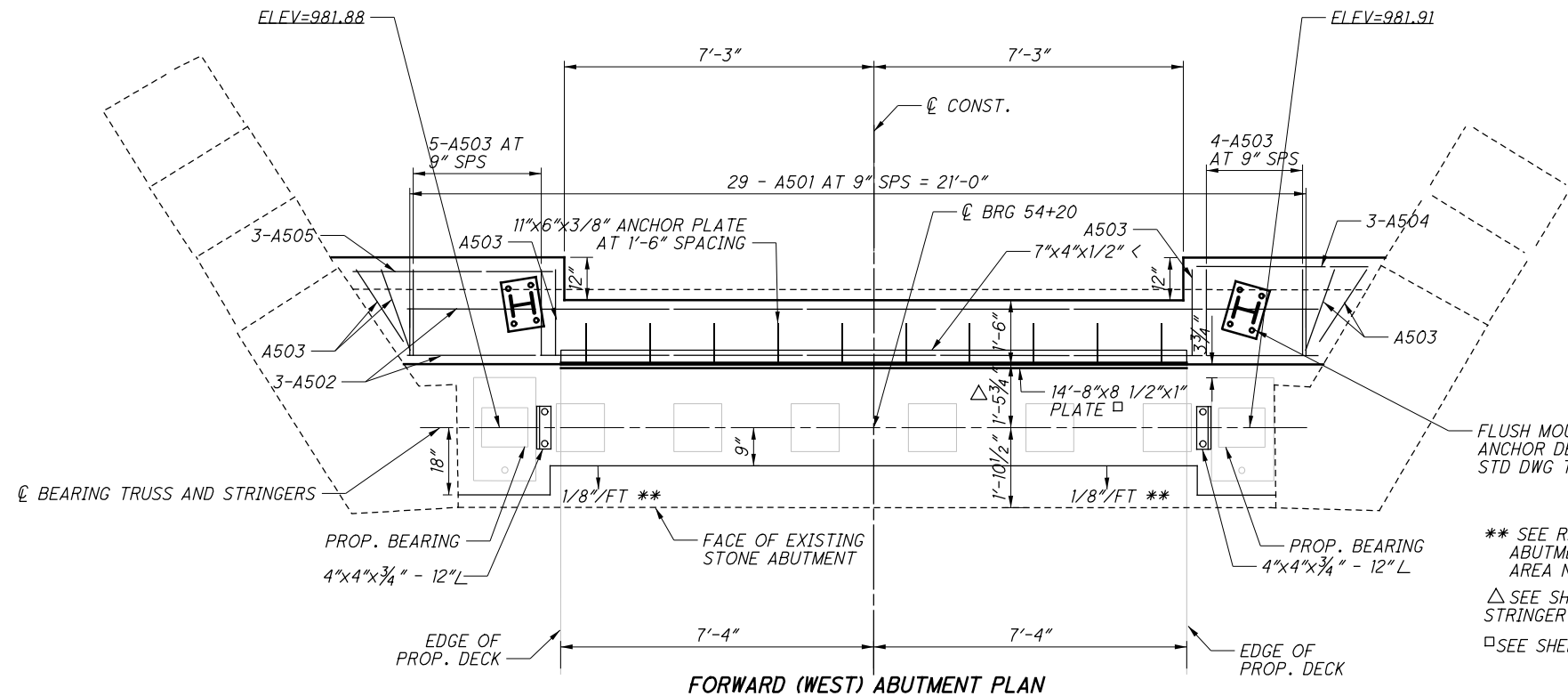
SECTION B-B



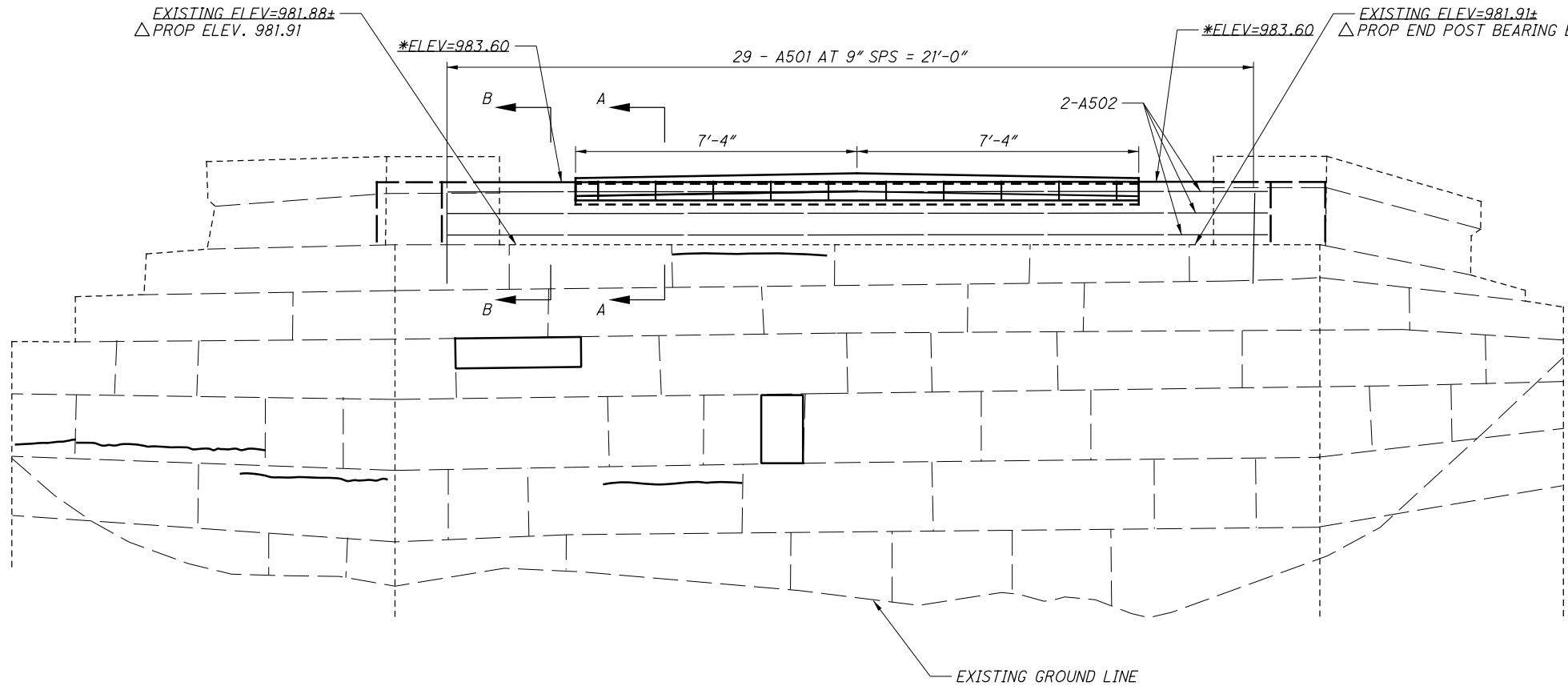
MARK	TOTAL	LENGTH	WEIGHT
A501	28	5'-5"	158
A504	3	4'-0"	13
A506	6	20'-9"	130
A507	14	7'-7"	111
A508	3	4'-6"	14
TOTAL:			426

□ APPROXIMATE BOUNDARY OF STONE TO BE REMOVED AND REPLACED
 ——— CRACKS TO BE REPAIRED WITH EPOXY INJECTION
 SEE NOTES SHEET 21/52 AND 22/52.

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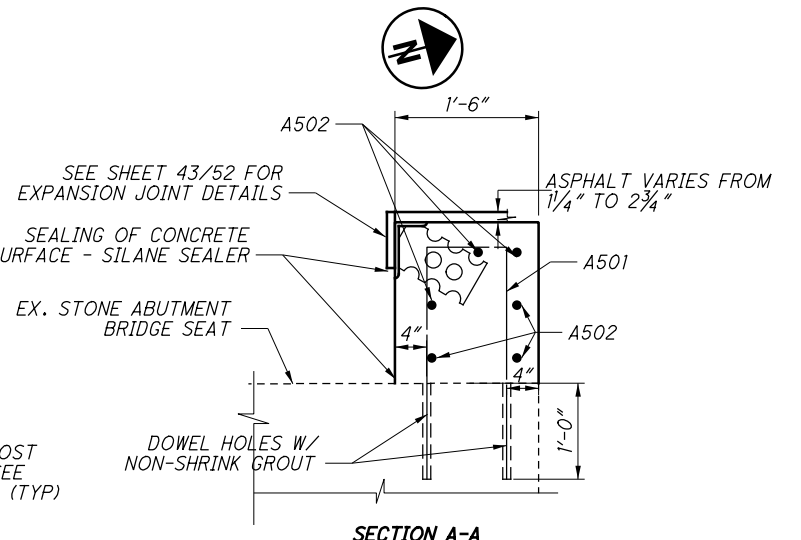


FORWARD (WEST) ABUTMENT PLAN



FORWARD (WEST) ABUTMENT ELEVATION

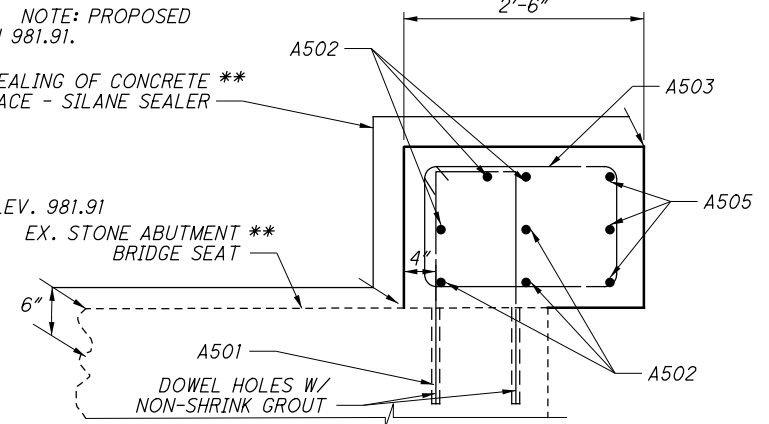
ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN:
 THE BACKWALL CONCRETE SHALL BE PLACED ON THE ABUTMENT STONES. THE LIMITS OF THE ABUTMENT STONES ARE NOT KNOWN. THE ACTUAL BACK WALL DIMENSION AND SHAPE SHALL BE ADJUSTED TO MATCH EXISTING FIELD CONDITIONS, AS APPROVED BY THE PROJECT ENGINEER. FINAL PAYMENT SHALL BE IN ACCORDANCE WITH FINAL DIMENSIONS AND SHALL BE INCLUDED IN ITEM 511- CLASS QC1 CONCRETE, ABUTMENT, AS PER PLAN.



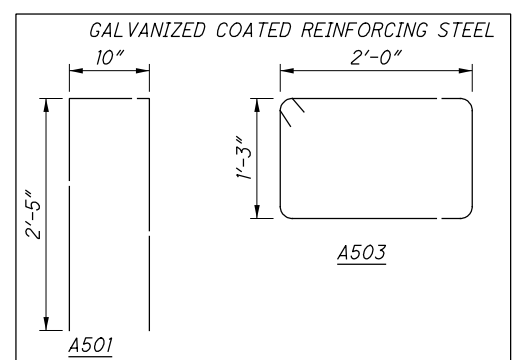
SECTION A-A

SEE SHEET 43/52 FOR EXPANSION JOINT DETAILS
 SEALING OF CONCRETE SURFACE - SILANE SEALER
 EX. STONE ABUTMENT BRIDGE SEAT
 DOWEL HOLES W/ NON-SHRINK GROUT
 ASPHALT VARIES FROM 1/4" TO 2 3/4"

FLUSH MOUNTED POST ANCHOR DETAIL. SEE STD DWG TST-1-99 (TYP)
 ** SEE REFURBISHING ABUTMENT BEARING AREA NOTE SHEET 22/52
 Δ SEE SHEET 43/52. NOTE: PROPOSED STRINGER ELEVATION 981.91.
 □ SEE SHEET 45/52 SEALING OF CONCRETE ** SURFACE - SILANE SEALER



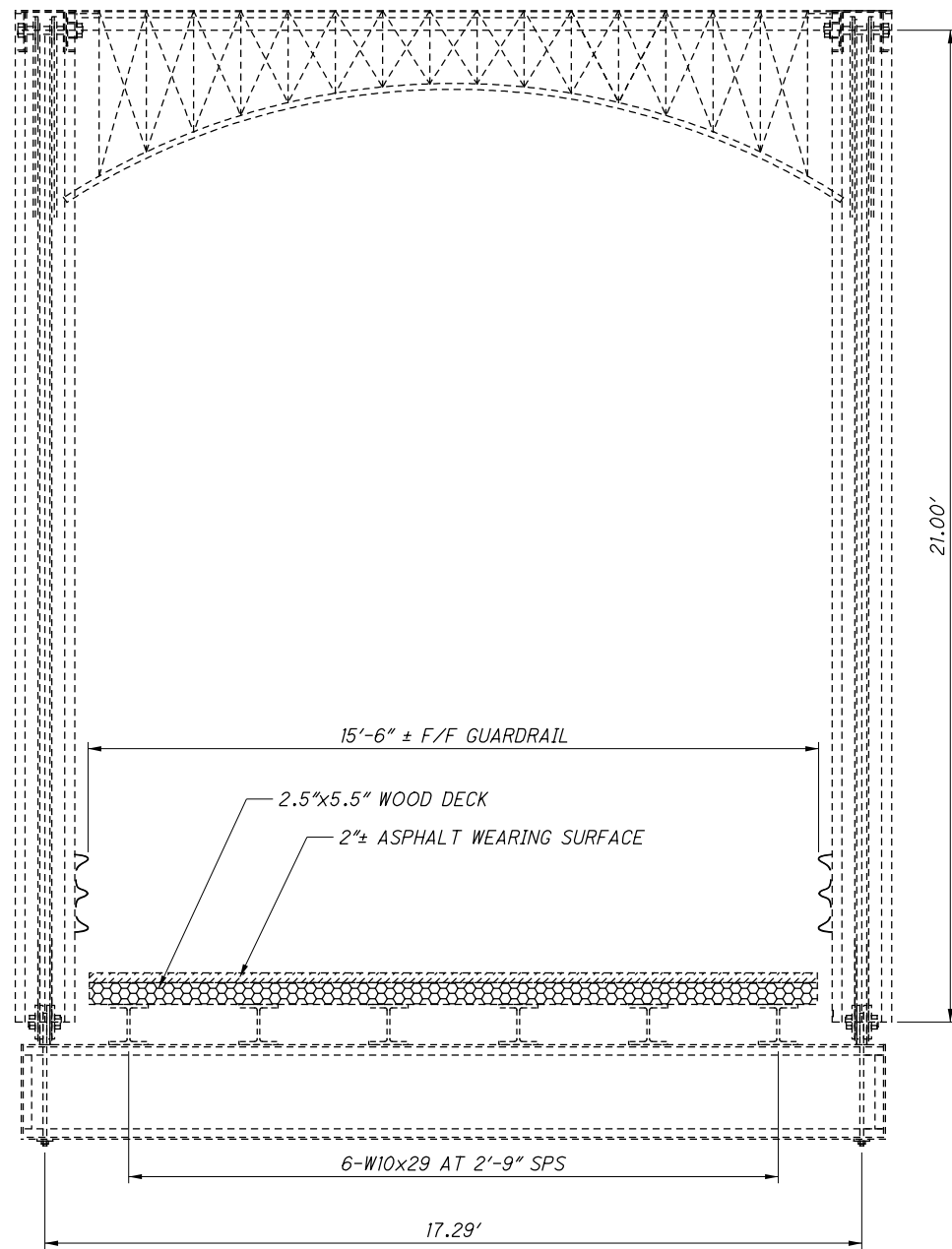
SECTION B-B



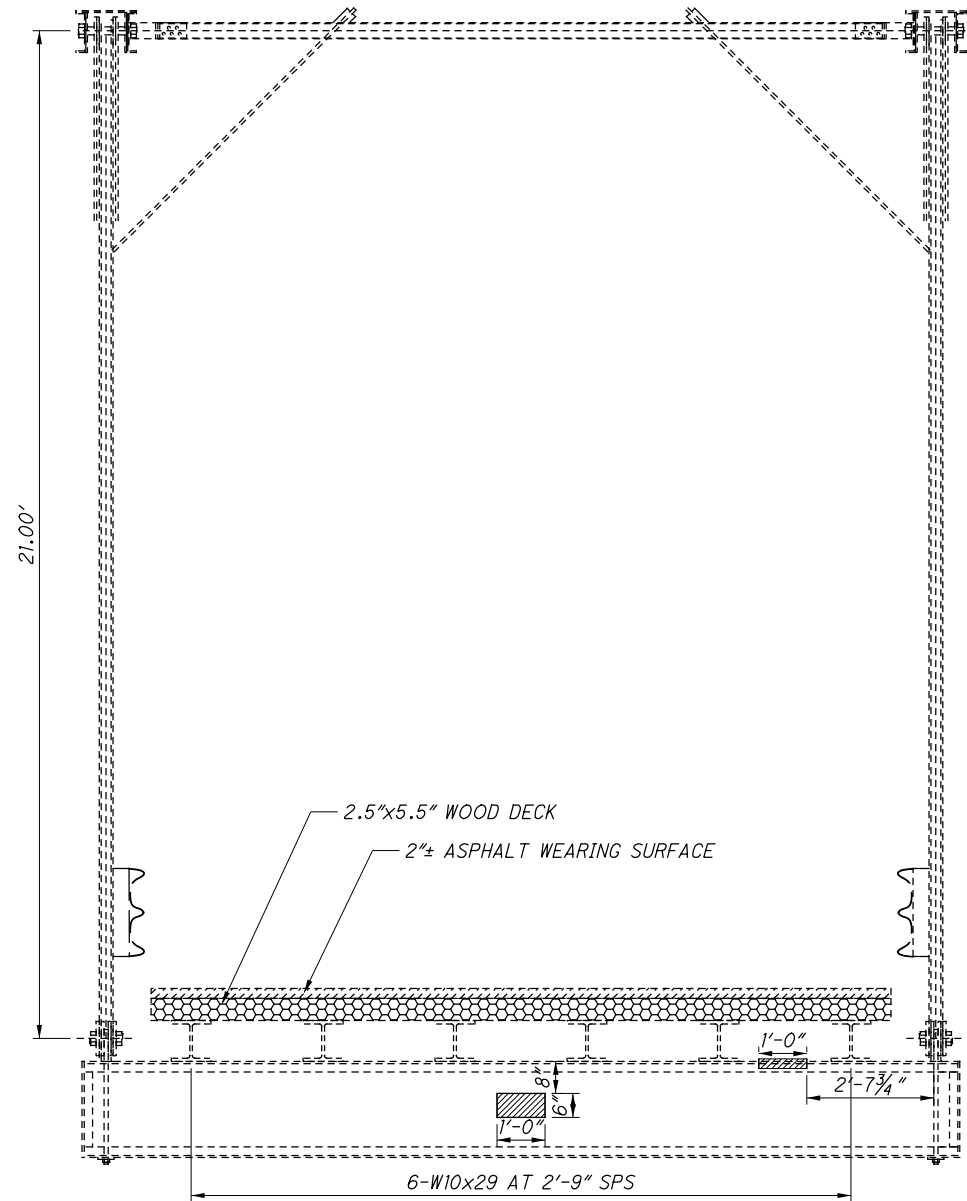
MARK	TOTAL	LENGTH	WEIGHT
A501	29	5'-5"	164
A502	6	2'-4"	133
A503	15	7'-1"	111
A504	3	4'-0"	13
A505	3	4'-8"	15
TOTAL:			436

APPROXIMATE BOUNDARY OF STONE TO BE REMOVED AND REPLACED
 CRACKS TO BE REPAIRED WITH EPOXY INJECTION

SEE NOTES SHEET 21/52 AND 22/52.



EXISTING PORTAL SECTION



▨ COUPON REMOVAL FOR TENSILE STRENGTH TESTING

EXISTING TRANSVERSE SECTION

ITEM 513 - STRUCTURAL STEEL, MISC.: COUPON TENSILE STRENGTH TESTING OF EXISTING STRUCTURAL STEEL:

REMOVE FROM FLOOR BEAMS L1 AND L6 A 12"x6" COUPON FROM THE WEB AS SHOWN, AND A 12"x2" COUPON FROM THE HORIZONTAL LEG OF THE 3"x2 1/2"x1/2" ANGLE AS SHOWN. THE COUPON SHALL BE SAWN AND NOT FLAME CUT. THE MISSING STEEL SHALL BE REPAIRED WITH A709 GR 50 STEEL PLATES BUTT WELDED IN PLACE PRIOR TO CONSTRUCTION.

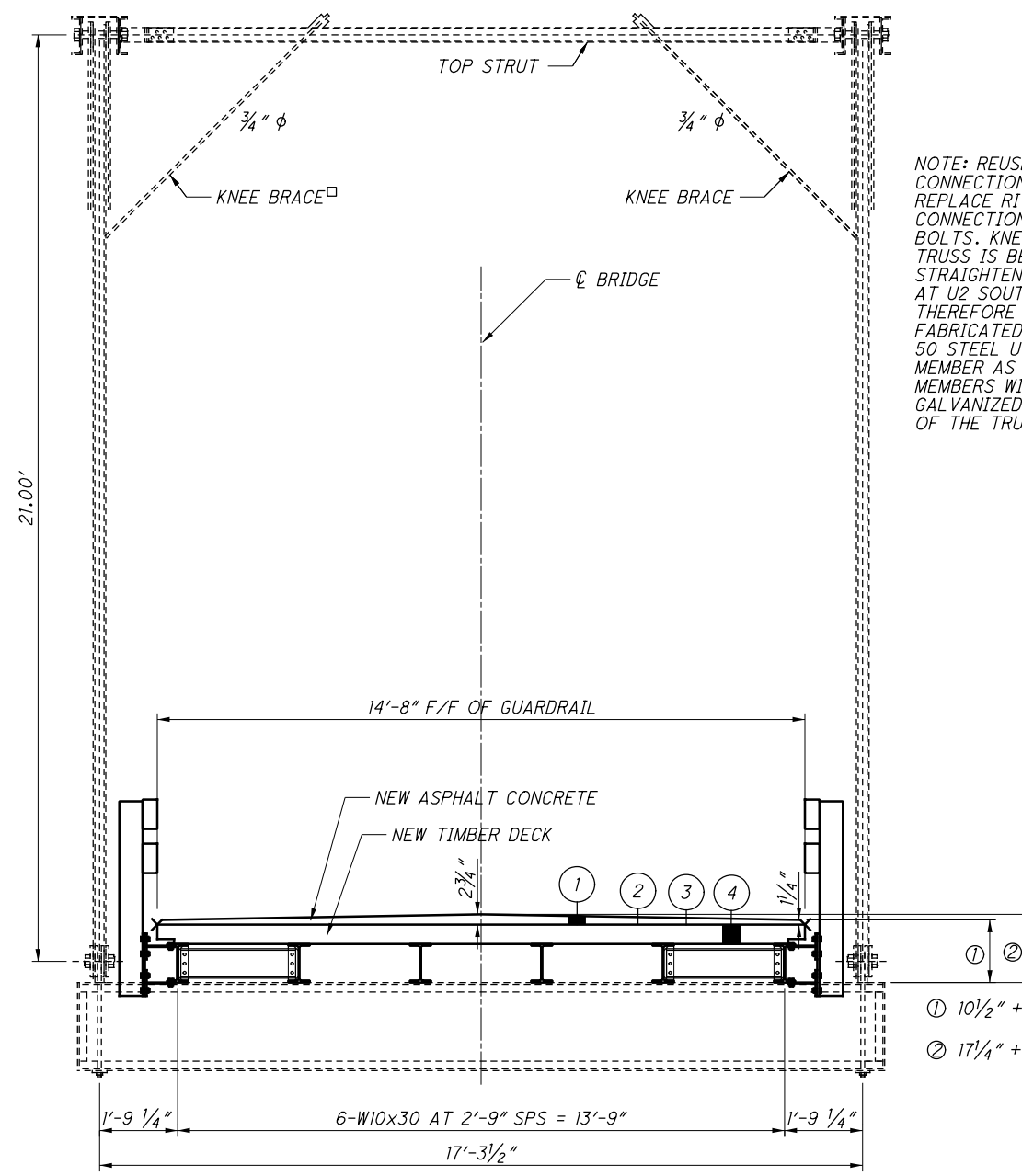
REMOVE A 12" LENGTH OF STEEL (SAWN) FROM LOWER CHORD, L0-L1 SS, AND L5-L6 NN FOR TESTING. REPLACE THE MEMBERS WITH A709 GRADE 50 (CVN) (FCM) (USE THE EXISTING MEMBER AS THE PROTOTYPE FOR THE NEW MEMBER).

REMOVE A 12" LENGTH OF STEEL (SAWN) FROM MEMBERS U1-L2 S, U1-L3, SS, AND U9-L7 N FOR TESTING.

THE COUPON SHALL BE TENSILE STRENGTH TESTED FOR F_y (YIELD STRENGTH) AND F_u (ULTIMATE STRENGTH).

LOG-CR 21-1.00 PID No. 87081	EXISTING TRANSVERSE SECTION BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER		DESIGNED BLS CHECKED DGB	DRAWN BLS REVISED	REVIEWED MAD STRUCTURE FILE NUMBER 4631838	DATE 5-12-14	DESIGN AGENCY KOHLI & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1185
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PROPOSED TRANSVERSE SECTION

- ① ITEM 448 ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG 64-22
- ② ITEM 407 TACK COAT, APPLIED AT 0.075 GAL PER SQ YD ON WATERPROOFING
- ③ ITEM 512 TYPE 2 WATERPROOFING, AS PER PLAN (BASE BID)
- ④ ITEM SPECIAL STRUCTURE, MISC: 6" (5 1/2" NOMINAL) STRIP FLOOR (BASE BID) OR
- ④ ITEM SPECIAL - 5" FRP DECK (ALTERNATIVE 1 OR ALTERNATIVE 2)

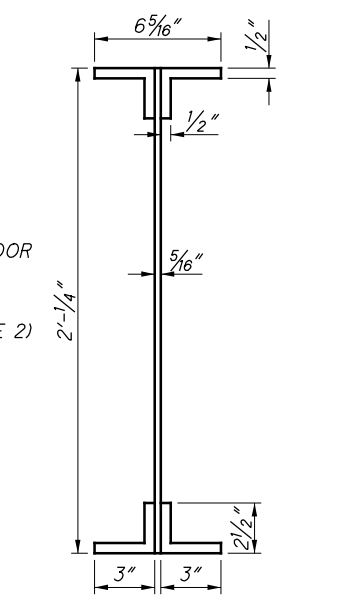
□ KNEE BRACE AT U2 SOUTH TRUSS IS MISSING. A NEW MEMBER SHALL BE FABRICATED FROM A79 GR50 STEEL AND INCLUDED WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT.

□ KNEE BRACE AT U3 SOUTH TRUSS IS BENT AND SHALL BE STRAIGHTENED WITH COST INCLUDED WITH ITEM 513 - STRUCTURAL STEEL MISC., GALVANIZED EXISTING TRUSS MEMBERS FOR PAYMENT.

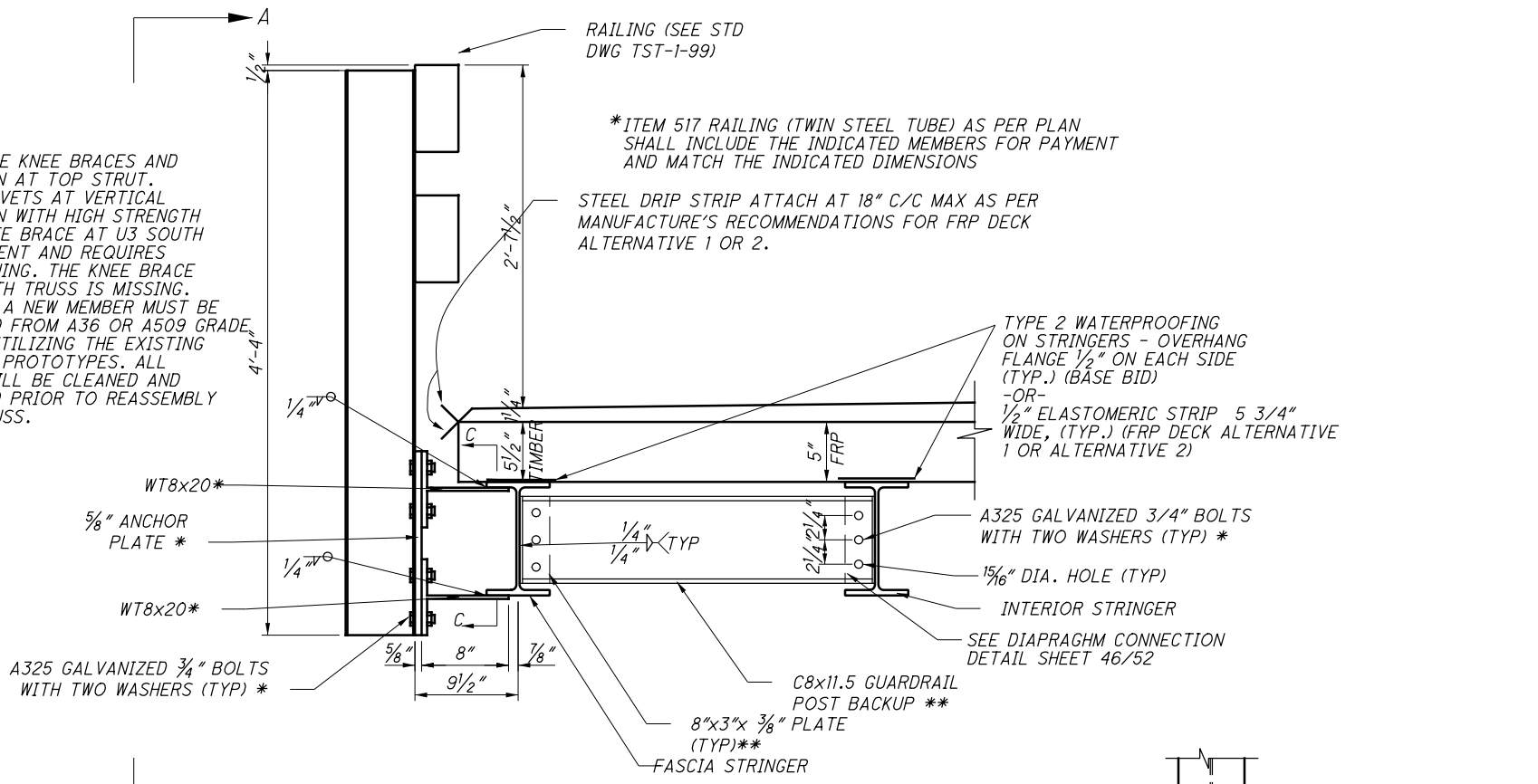
NOTE: REUSE KNEE BRACES AND CONNECTION AT TOP STRUT. REPLACE RIVETS AT VERTICAL CONNECTION WITH HIGH STRENGTH BOLTS. KNEE BRACE AT U3 SOUTH TRUSS IS BENT AND REQUIRES STRAIGHTENING. THE KNEE BRACE AT U2 SOUTH TRUSS IS MISSING. THEREFORE A NEW MEMBER MUST BE FABRICATED FROM A36 OR A509 GRADE 50 STEEL UTILIZING THE EXISTING MEMBER AS PROTOTYPES. ALL MEMBERS WILL BE CLEANED AND GALVANIZED PRIOR TO REASSEMBLY OF THE TRUSS.

① $10\frac{1}{2}'' + 5\frac{1}{2}'' + 1\frac{1}{4}'' = 17\frac{1}{4}''$

② $17\frac{1}{4}'' + 1\frac{1}{2}'' = 18\frac{3}{4}''$

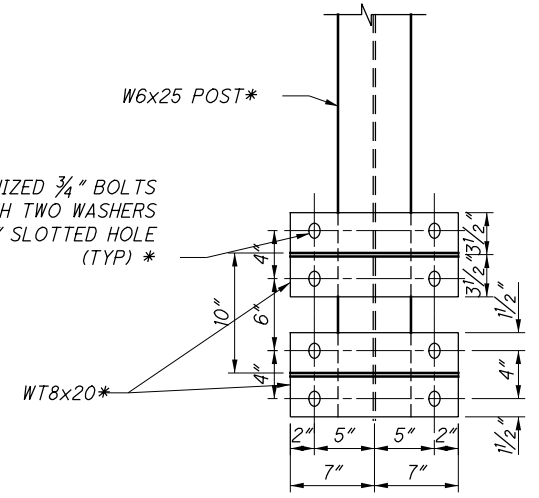


FLOOR BEAM DIMENSIONS

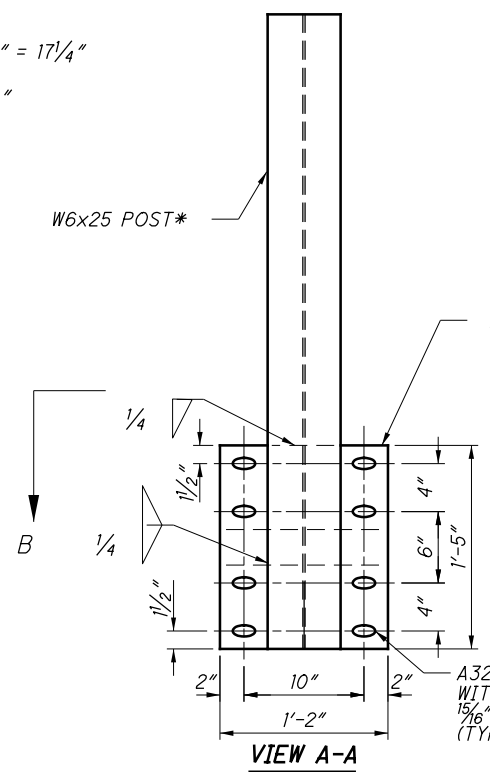


RAILING DETAILS

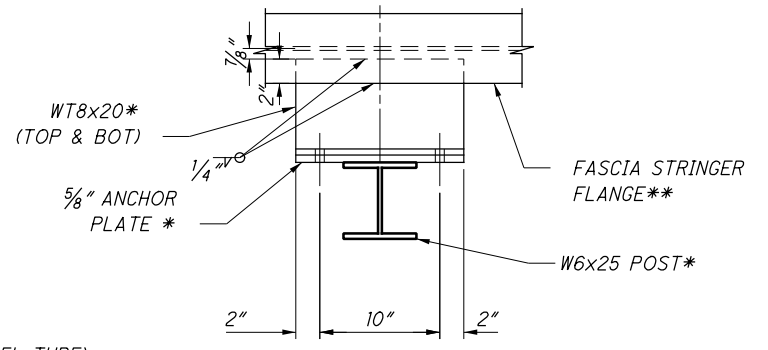
(TRUSS NOT SHOWN)



VIEW C-C



VIEW A-A



VIEW B-B

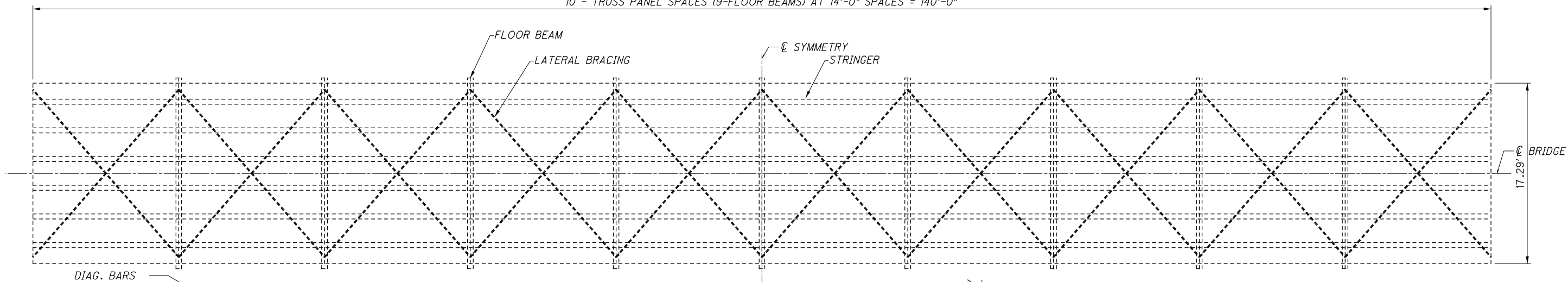
* INCLUDE WITH ITEM 517 - RAILING (TWIN STEEL TUBE), AS PER PLAN FOR PAYMENT. THE STRUCTURAL STEEL SHALL BE GALVANIZED AS DESCRIBED IN THE "GALVANIZED COATING SYSTEM FOR STRUCTURAL STEEL BRIDGES" NOTE.

** INCLUDE WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT

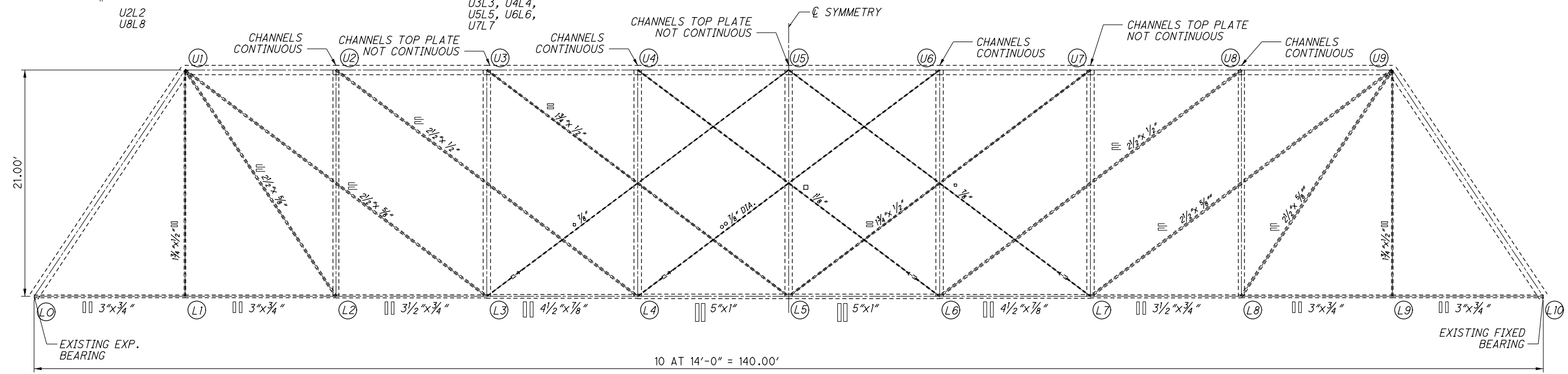
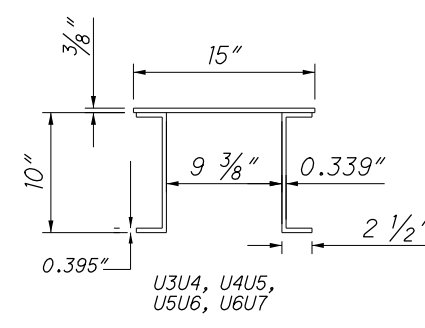
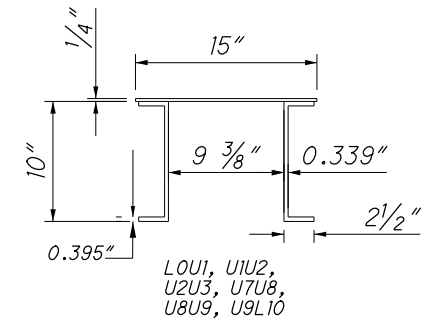
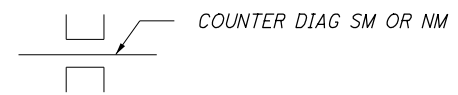
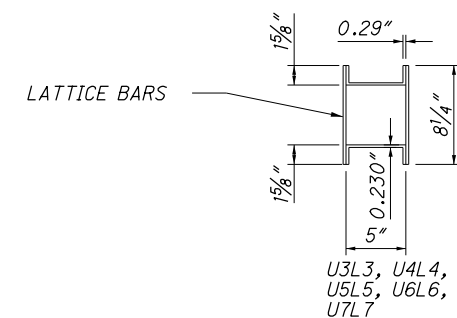
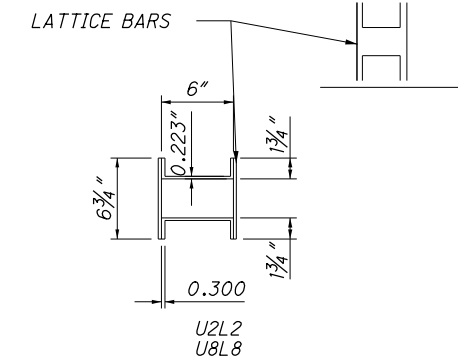
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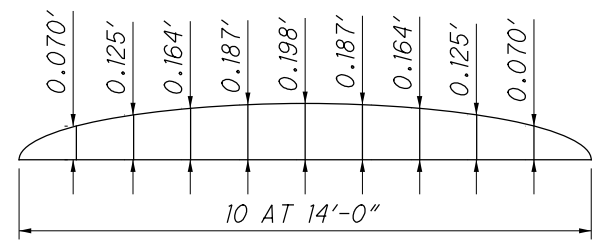
10 - TRUSS PANEL SPACES (9-FLOOR BEAMS) AT 14'-0" SPACES = 140'-0"



EXISTING TRUSS LOWER CHORD - FRAMING PLAN



EXISTING TRUSS ELEVATION

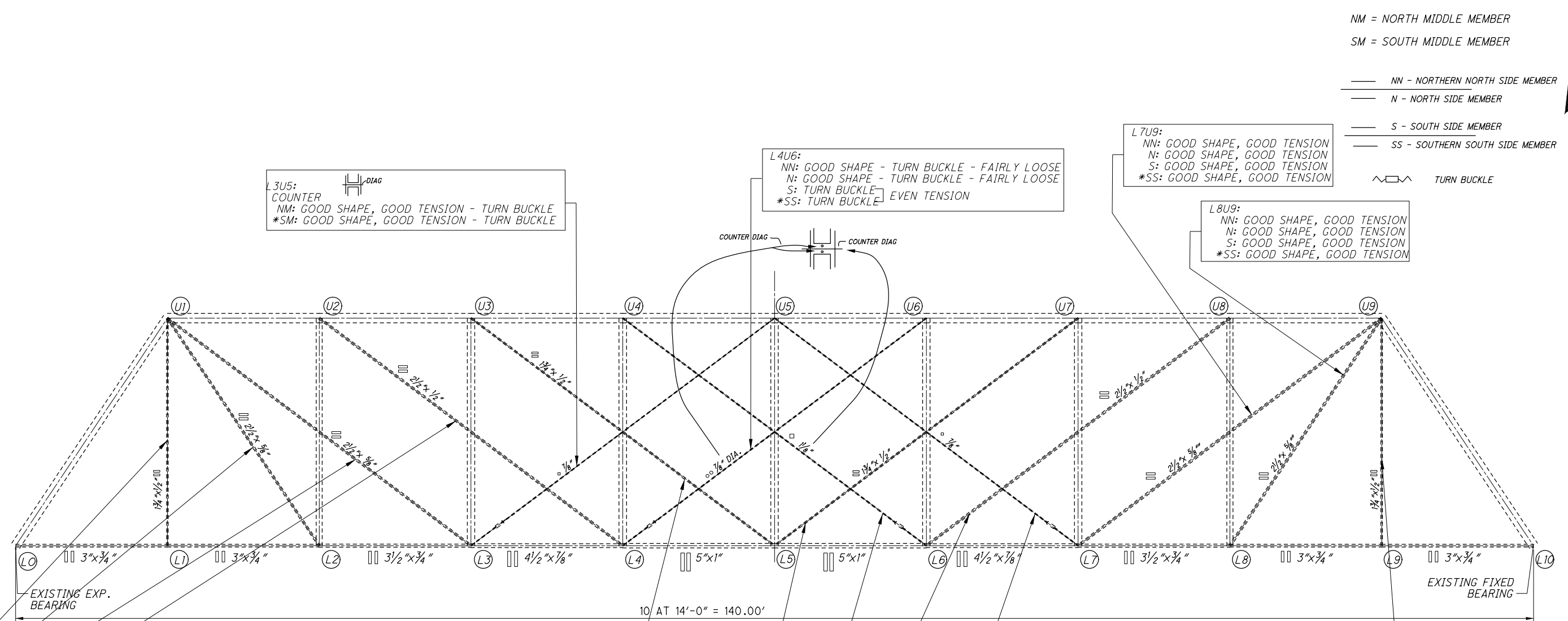


TRUSS CAMBER DIAGRAM

GEOGRAPHICAL GRADE:
THE TOP CHORD MEMBERS ARE THEORETICALLY
1/4" LONGER FOR EACH PANEL LENGTH THAN
THE CORRESPONDING LOWER CHORDS. THE
FINISH DECK GRAPHICAL GRADE MATCHES THE
TRUSS CAMBER DIAGRAM.

DESIGNED BLS	CHECKED DGB	DRAWN BLS	REVIEWED MAD	DATE	DESIGN AGENCY
				5-12-14	
BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER		STRUCTURE FILE NUMBER 4631838		LOG-CR 21-1.00 PID No. 87081	
32		52			

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U1L1:
 NN: GOOD SHAPE - EXTRA BAR
 *N: GOOD SHAPE - GOOD TENSION
 S: BAD SHAPE - WELDED BAR AND TURN BUCKLE - GOOD TENSION
 SS: REPAIRED LESS TENSION THAN S

U1L2:
 NN: GOOD SHAPE, GOOD TENSION
 N: SLIGHTLY BENT, GOOD TENSION
 S: GOOD SHAPE, GOOD TENSION
 *SS: GOOD SHAPE, GOOD TENSION

U1L3:
 *NN: GOOD SHAPE, GOOD TENSION - SLIGHTLY GREATER TENSION THAN N
 N: GOOD SHAPE, GOOD TENSION - SLIGHTLY LESS TENSION THAN NN
 S: GOOD SHAPE, GOOD TENSION
 SS: GOOD SHAPE, GOOD TENSION

U2L4:
 *NN: GOOD SHAPE, GOOD TENSION, BUT MORE THAN N
 N: GOOD SHAPE, GOOD TENSION, BUT LESS THAN NN
 *S: GOOD SHAPE, MORE TENSION THAN SS
 SS: GOOD SHAPE, LESS TENSION THAN S

U3L5:
 NN: GOOD SHAPE, LOOSE
 N: BAD - BROKEN, REPAIRED WITH TURN BUCKLE - GOOD TENSION
 ΔS: BAD - BROKEN, REPAIRED WITH TURN BUCKLE - GOOD TENSION
 *SS: GOOD SHAPE - LOOSE

L5U7:
 NN: GOOD SHAPE, LESS TENSION THAN N
 N: GOOD SHAPE - GOOD TENSION
 *S: GOOD SHAPE - GOOD TENSION
 SS: GOOD SHAPE - LESS TENSION THAN S

U4L6:
 NM: GOOD SHAPE - LESS TENSION THAN SM
 *SM: GOOD SHAPE - GOOD TENSION
 ONE 1 1/8"

L6U8:
 NN: GOOD SHAPE - GOOD TENSION
 N: GOOD SHAPE - GOOD TENSION
 S: GOOD SHAPE - GOOD TENSION
 *SS: GOOD SHAPE - GOOD TENSION

U5L7:
 COUNTER
 NN: GOOD SHAPE - GOOD TENSION
 *SM: GOOD SHAPE - GOOD TENSION

L3U5:
 COUNTER
 NN: GOOD SHAPE, GOOD TENSION - TURN BUCKLE
 *SM: GOOD SHAPE, GOOD TENSION - TURN BUCKLE

L4U6:
 NN: GOOD SHAPE - TURN BUCKLE - FAIRLY LOOSE
 N: GOOD SHAPE - TURN BUCKLE - FAIRLY LOOSE
 S: TURN BUCKLE EVEN TENSION
 *SS: TURN BUCKLE

L7U9:
 NN: GOOD SHAPE, GOOD TENSION
 N: GOOD SHAPE, GOOD TENSION
 S: GOOD SHAPE, GOOD TENSION
 *SS: GOOD SHAPE, GOOD TENSION

L8U9:
 NN: GOOD SHAPE, GOOD TENSION
 N: GOOD SHAPE, GOOD TENSION
 S: GOOD SHAPE, GOOD TENSION
 *SS: GOOD SHAPE, GOOD TENSION

NM = NORTH MIDDLE MEMBER
 SM = SOUTH MIDDLE MEMBER

— NN - NORTHERN NORTH SIDE MEMBER
 — N - NORTH SIDE MEMBER
 — S - SOUTH SIDE MEMBER
 — SS - SOUTHERN SOUTH SIDE MEMBER

TURN BUCKLE

U9L9:
 NN: GOOD SHAPE - WELD FATIGUE PROBLEMS
 *N: GOOD SHAPE, GOOD TENSION
 S: BAD SHAPE - GOOD TENSION, WELDED REPAIR
 SS: BAD SHAPE, GOOD TENSION - WELD FATIGUE PROBLEMS

* USE AS PROTOTYPE FOR NEW MEMBER FABRICATION PAID FOR UNDER 513-STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN - SEE NOTE PG 18.

Δ NOTE: FABRICATE NEW U3L5 SS, S, N, NN THE SAME LENGTH AS THE "S" MEMBER, BUT USE SS MEMBER AS PROTOTYPE FOR SIZE AND SHAPE.

DESIGN AGENCY: KOHL & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS
 2244 Baton Rouge Ave., Lima, Ohio 45806 419-221-1155

DATE: 5-12-14
 REVIEWED: MAD
 DRAWN: BLS
 DESIGNED: BLS
 CHECKED: DGB

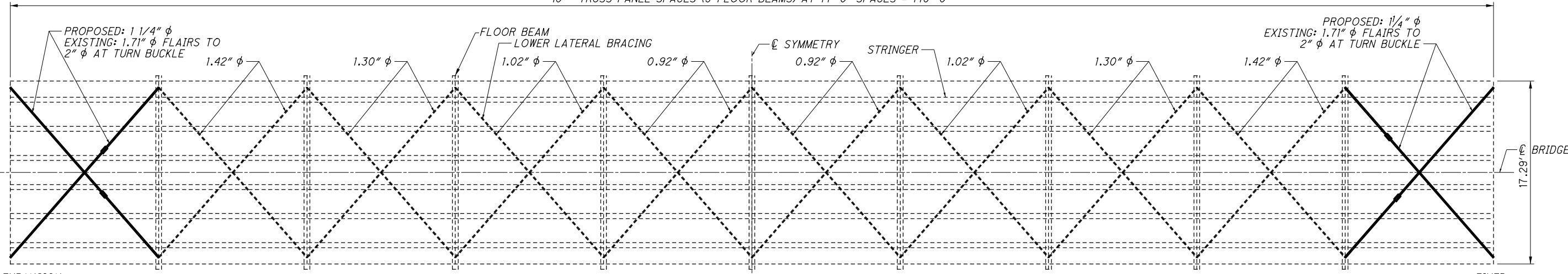
STRUCTURE FILE NUMBER: 4631838

BRIDGE NO. LOG-21-0100
 OVER GREAT MIAMI RIVER

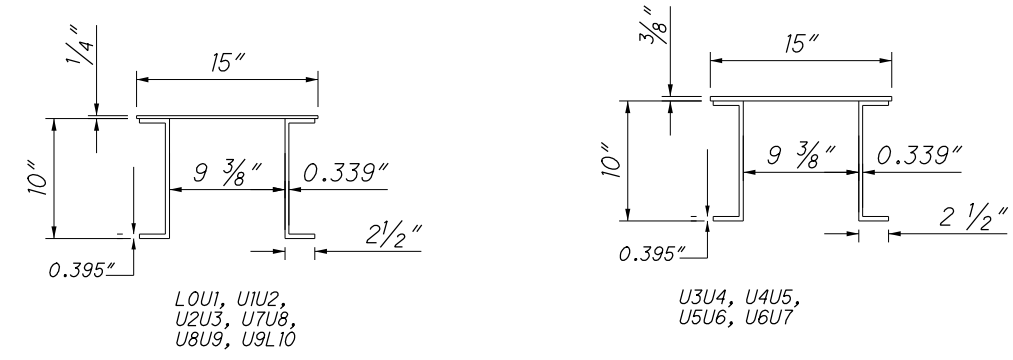
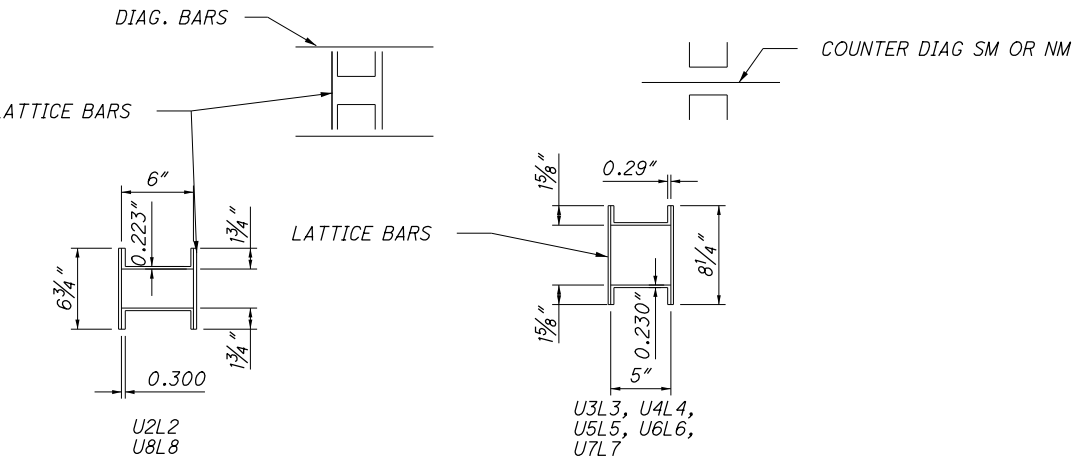
LOG-CR 21-1.00
 PID No. 87081

33
 52

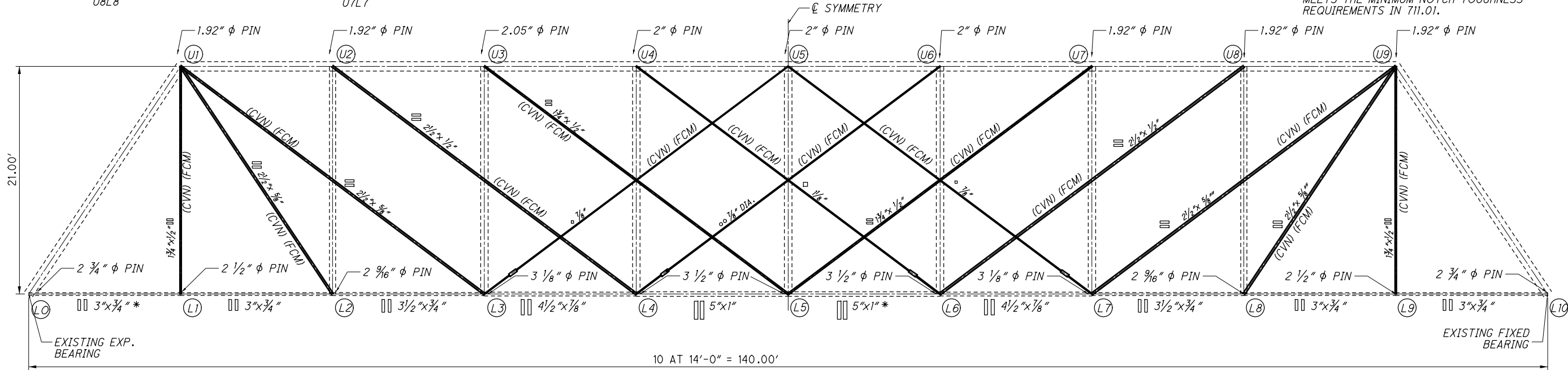
10 - TRUSS PANEL SPACES (9-FLOOR BEAMS) AT 14'-0" SPACES = 140'-0"



PROPOSED TRUSS LOWER CHORD - FRAMING PLAN



NOTE:
 1. MEMBERS U1L1, U9L9; U1L2, U9L8; U1L3, U9L7; U2L4, U8L6; U3L5, U7L5; L3U5, L7U5; AND L4U6, L6U4 SHALL BE REPLACED WITH NEW MEMBERS. UTILIZE THE DESIGNATED MEMBER ON PAGE 33/52 AS THE PROTOTYPE FOR THE NEWLY FABRICATED MEMBER. THE EDGES OF FABRICATED MEMBERS SHALL BE ROUNDED TO 3/32 INCH PRIOR TO GALVANIZING **
 2. REPLACE ALL PINS AND NUTS WITH ASTM 240 STAINLESS STEEL. **USE EXISTING PINS AS PROTOTYPES FOR THE NEW PINS.**
 FCM: FRACTURE CRITICAL NON-REDUNDANT BRIDGE MEMBERS (FCM) SHALL MEET THE PROVISIONS OF SECTION 12, AWS D1.5. BASE METAL CHARPY V-NOTCH (CVN) IMPACT REQUIREMENTS SHALL SATISFY ZONE 2 TEMPERATURES.
 CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN 711.01.



PROPOSED TRUSS ELEVATION

** INCLUDE IN ITEM 513 - STRUCTURAL STEEL, LEVEL 6, AS PER PLAN FOR PAYMENT

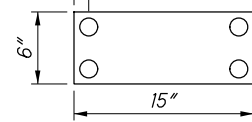
* ITEM 513 - STRUCTURAL STEEL, MISC.: COUPON TESTING OF EXISTING STRUCTURAL STEEL: REMOVE A 12" LENGTH OF STEEL (SAWN) FROM THE LOWER CHORD L0L1 SS AND L5L6 NN FOR TESTING. REPLACE THE MEMBERS WITH A709 GRADE 50 CVN(FCM). USE THE EXISTING MEMBERS FOR THE PROTOTYPE FOR THE NEW MEMBER.

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MATCH EXISTING (TYP.)



EXISTING 3/4" φ BOLTS *
TOP COVER PLATE t=0.18",
REPLACE WITH t=0.25" PLATE (TYP.)

NORTH TRUSS, TOP CHORD SHOWN
NOTE: ALL TOP COVER PLATES SHALL BE REPLACED, SEE DETAIL



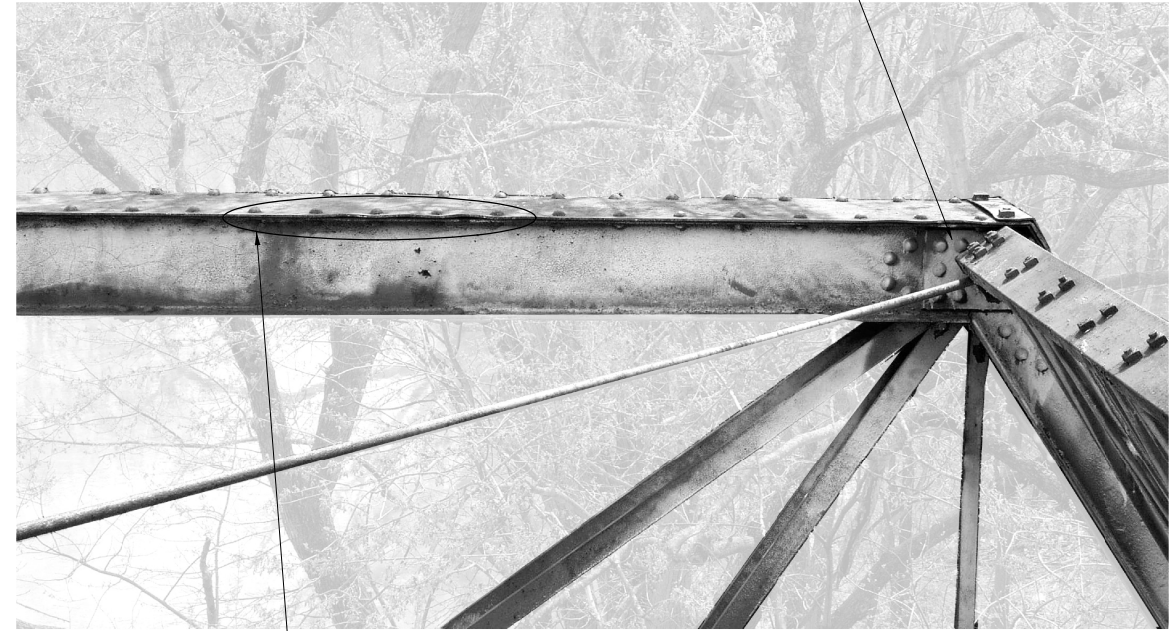
TYPICAL BRIDGE PORTAL

PORTAL SHALL BE CLEANED AND GALVANIZED INTACT - KEEP BOLTS AND NUTS. TIGHTEN ANY LOOSE BOLTS PRIOR TO GALVANIZING. **

* INCLUDE WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT

** INCLUDE WITH ITEM 513 - STRUCTURAL STEEL, MISC.: GALVANIZE EXISTING TRUSS MEMBERS FOR PAYMENT

REPLACE END POST TO TOP CHORD (SPlice/PIN PLATE) *
OUTSIDE AND INSIDE USING ORIGINAL AS THE PROTOTYPE.
REFASTEN WITH HIGH STRENGTH BOLTS.
SEE SHEET 37/52



SOUTH TRUSS, TOP CHORD (U1U2)
REMOVE PACK RUST PRIOR TO GALVANIZING
SEE ITEM SPECIAL-STRUCTURE MISC.:
PACK RUST REMOVAL NOTE SHEET 18/52.



□ WEST PORTAL SIGN - TO BE CAREFULLY REMOVED AND RESTORED.

DO NOT GALVANIZE PORTAL SIGN-CLEAN AND PAINT, COLORS PER LOGAN COUNTY ENGINEER. (FABRICATE SIMILAR SIGN FOR EAST END OF BRIDGE FROM A36 STEEL, GALVANIZE AND PAINT SIMILAR TO WEST SIGN) Δ

Δ INCLUDE WITH ITEM 513 FABRICATE PORTAL SIGN FOR PAYMENT.

DESIGNED		DRAWN		REVIEWED		DATE		DESIGN AGENCY	
BLS	DGB	BLS	DGB	MAD	DGB	5-12-14		KOHLE & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155	
CHECKED		REVISED		MAD		STRUCTURE FILE NUMBER			
DGB		DGB		MAD		4631838			
LOG-CR 21-1.00					TRUSS DETAILS				
PID No. 87081					BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER				
35									
52									

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TYPICAL TOP STRUT LATERAL BRACING TO TOP CHORD CONNECTOR

REPLACE PIN PLATES AT U3, U5, U7 NORTH & SOUTH TRUSS WITH * 14"x8"x1/4" PLATES; WELD SHUT EXISTING HOLES

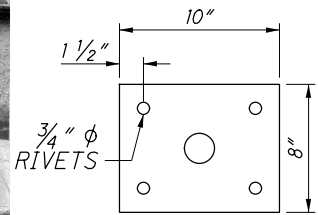
KEEP PIN PLATES & RIVETS AT U2, U4, U6, U8 NORTH & SOUTH TRUSS



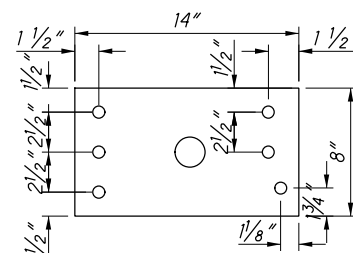
TYPICAL TOP STRUT TO TOP CHORD CONNECTION
SAVE AND REFURBISH TOP CHORDS, TOP STRUTS,
TOP LATERAL BRACES, AND CONNECTIONS.
SEE NOTE PAGE 19/52 **

* INCLUDE WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT. THE ELASTOMERIC PADS ARE INCIDENTAL TO AND INCLUDED IN THE COST OF THIS ITEM.

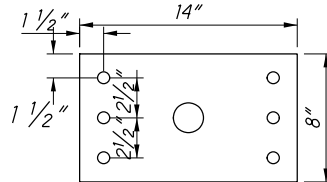
** INCLUDE WITH ITEM 513-STRUCTURAL STEEL, MISC.: GALVANIZE EXISTING TRUSS MEMBERS FOR PAYMENT



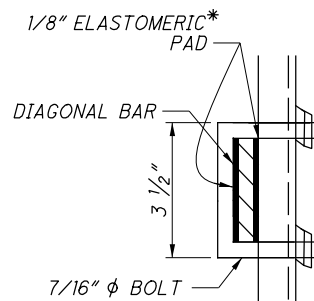
EXISTING 10"x8"x1/4" * PIN PLATE



U3 & U7: NEW 14"x8"x1/4" * PIN PLATE



U5: NEW 14"x8"x1/4" * PIN PLATE



PLACE NEW GALVANIZED BOLTS * AT ALL DIAGONAL-VERTICAL CONNECTIONS

PLACE ELASTOMERIC PAD BETWEEN DIAGONAL TO VERTICAL U BOLT CONNECTION



TYPICAL KNEE BRACE TO TOP STRUT CONNECTION **

CLEAN & GALVANIZE TOP STRUTS, LATERAL BRACES, KNEE BRACES INCLUDING CONNECTIONS.



TYPICAL KNEE BRACE TO VERTICAL CONNECTION - SAVE AND REFURBISH CONNECTIONS. **
REPLACE RIVETS WITH HIGH STRENGTH BOLTS.



KNEE BRACE TO TOP STRUT CONNECTION: KEEP RIVETS, CONNECTION HARDWARE, AND KNEE BRACES. CLEAN AND GALVANIZE

PLACE NEW U-BOLT CONNECTION BOLTS WITH 1/8" ELASTOMERIC PADS.* SEE SHEET 38/52

DESIGNED		BLS	CHECKED	DGB
DRAWN		BLS	REVISED	
REVIEWED	MAD	STRUCTURE FILE NUMBER	4631838	
DATE	5-12-14			
DESIGN AGENCY	KOHLE & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45806 419-221-1855			
TRUSS DETAILS				
BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER				
LOG-CR 21-1.00		PID No. 87081		
36				
52				



TYPICAL COVER PLATE AT END POST TO TOP CHORD CONNECTION
ALL COVER PLATES SHALL BE REPLACED.

REPLACE END POST *
TOP CHORD
COVER PLATES
AND BOLTS.
REFASTEN WITH
HIGH STRENGTH
BOLTS.

REPLACE END POST TO
TOP CHORD (SPLICE/PIN)
PLATE OUTSIDE AND INSIDE
USING THE ORIGINAL AS
THE PROTOTYPE; REFASTEN
WITH HIGH STRENGTH
BOLTS.

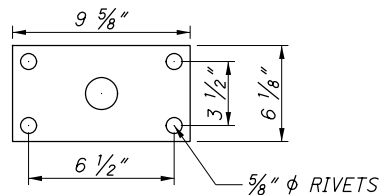


TYPICAL END POST TO TOP CHORD CONNECTION
PIN 1.92" DIA. AT END. REPLACE ALL PINS AND
NUTS WITH STAINLESS STEEL.



TYPICAL LOWER LATERAL BRACE TO FLOOR BEAM CONNECTION/
SAVE AND REFURBISH FLOOR BEAM AND LOWER LATERAL BRACING/
(REPLACE BOLTS, NUTS, AND REINFORCEMENT PLATES AT LOWER
LATERAL CONNECTION POINTS. USE EXISTING BOLT, NUT, AND
WASHER SIZES AS PROTOTYPE FOR NEW HARDWARE.) *

REINFORCEMENT PLATE 1/4" THICK *



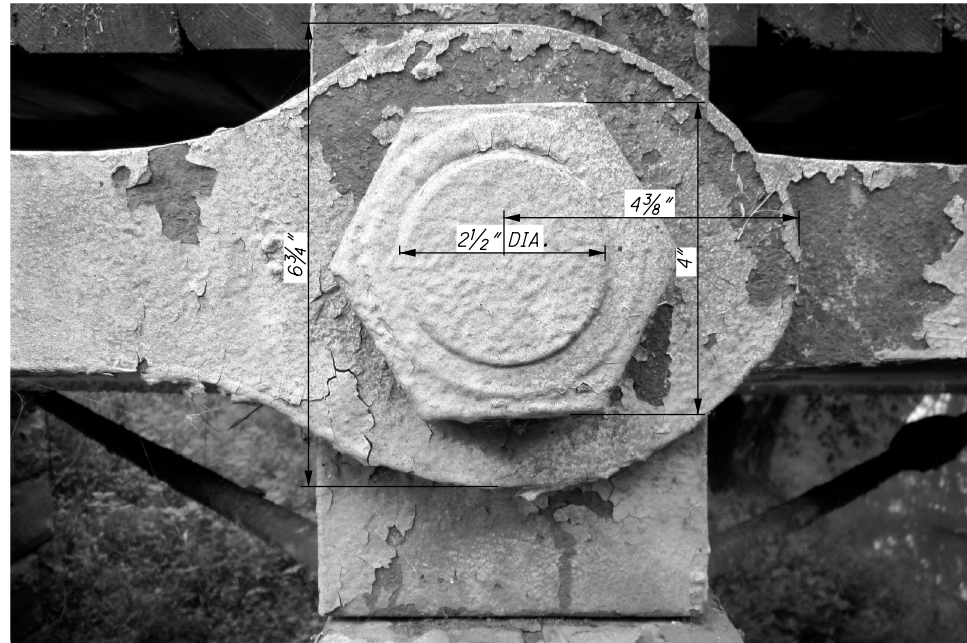
* INCLUDE WITH ITEM 513 - STRUCTURAL STEEL MEMBERS,
LEVEL 6, AS PER PLAN FOR PAYMENT



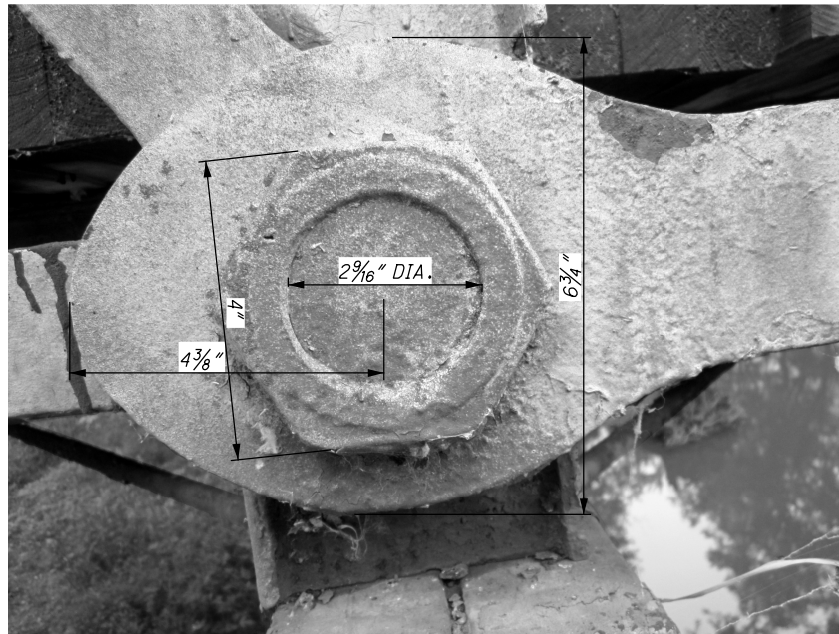
TYPICAL FLOOR BEAM TO TRUSS HANGER BOLT & PLATE
REPLACE ALL HANGER BOLTS, NUTS, AND PLATES.
SEE SHEET 40/52 FOR HANGER BOLT & PLATE DETAILS.

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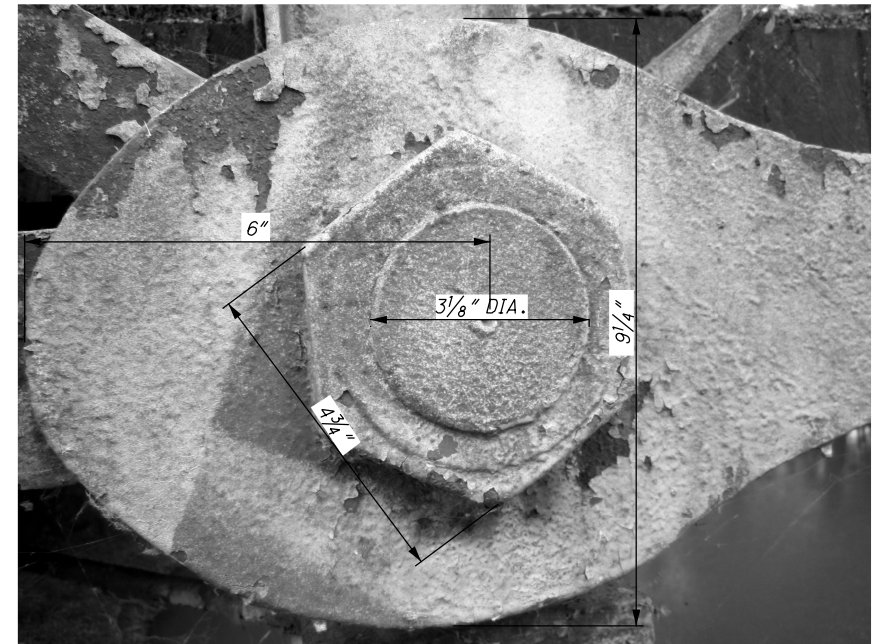
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BLS	5-12-14	KOHLE & KALHER ASSOCIATES, INC.		ENGINEERS AND SURVEYORS	
CHECKED	MAD	2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155			
DGB	4631838				
DRAWN		REVIEWED		TRUSS DETAILS	
BLS	5-12-14	MAD		BRIDGE NO. LOG-21-0100	
REVIS	4631838	STRUCTURE FILE NUMBER		OVER GREAT MIAMI RIVER	
LOG-CR 21-1.00		PID No. 87081			
37		52			



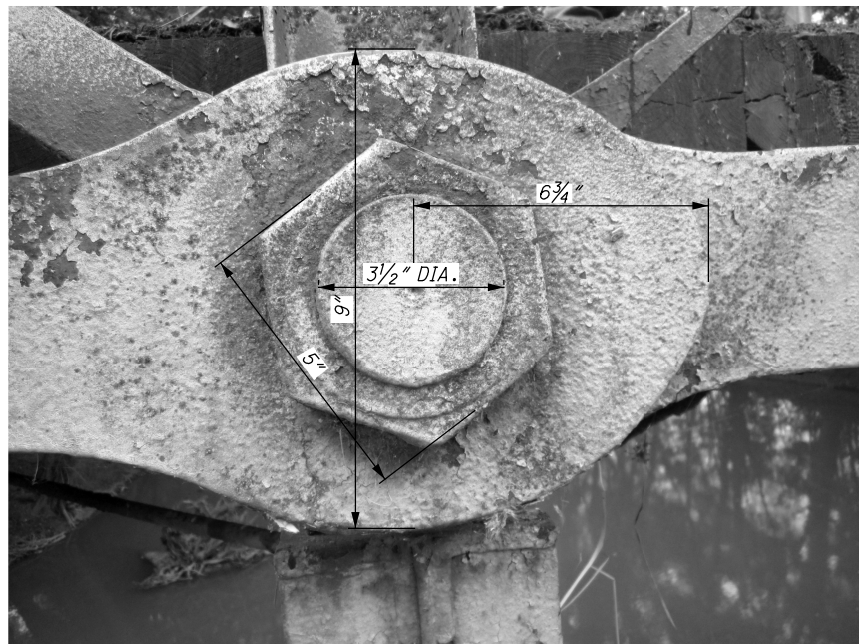
L1/L9 PIN (TYP)



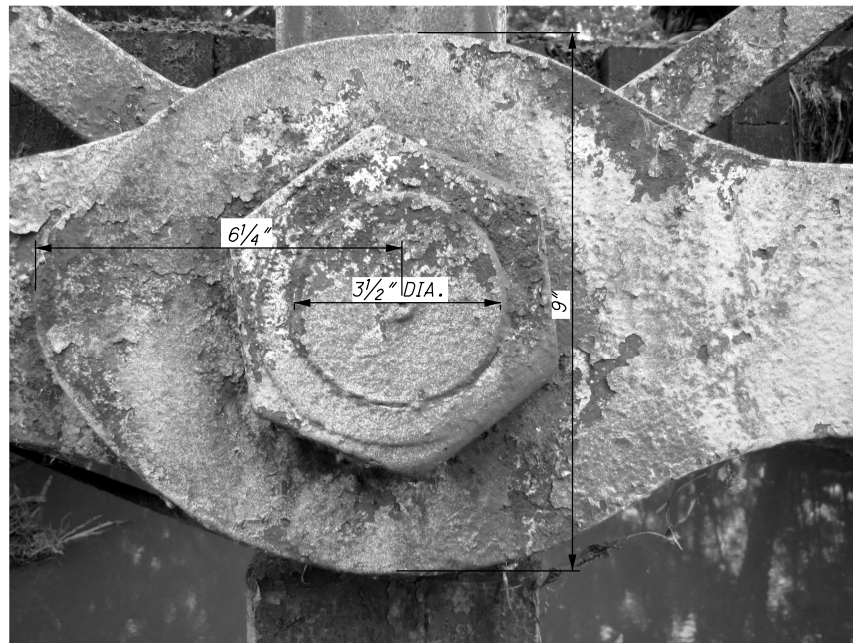
L2/L8 PIN (TYP)



L3/L7 PIN (TYP)



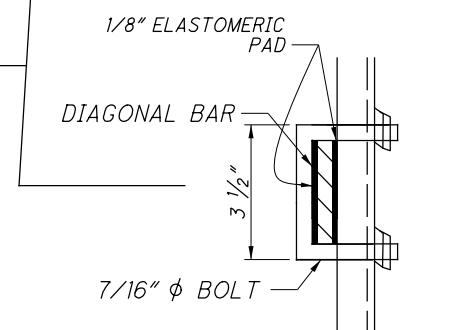
L4/L6 PIN (TYP)



L5 PIN (TYP)



DIAGONAL TO VERTICAL U-BOLT CONNECTION
PLACE NEW U-BOLT CONNECTION
BOLTS WITH 1/8" ELASTOMERIC PADS.
SEE SHEET 36/52 FOR ADDITIONAL DETAILS.



PLACE NEW GALVANIZED BOLTS
AT ALL DIAGONAL-VERTICAL
CONNECTIONS

REPLACE PINS AND NUTS WITH STAINLESS STEEL. AFTER DISASSEMBLING THE TRUSS AND CLEANING THE LOWER CHORDS, CAREFULLY INSPECT THE MEMBERS TO DETERMINE SECTION LOSS AND POSSIBLE CRACKS. TEST PORTIONS OF MEMBERS AS INDICATED ON SHEET 30/52 FOR F_y & F_u . IF F_y IS EQUAL TO OR GREATER THAN 26ksi AND THE MEMBERS ARE ASSESSED TO BE IN GOOD CONDITION, THEN ALL LOWER CHORDS EXCEPT THE TEST SPECIMENS SHALL BE GALVANIZED FOR REUSE IN THE TRUSS. ALL MEMBERS NOT DEEMED ACCEPTABLE FOR REUSE SHALL BE REPLACED WITH NEWLY FABRICATED MEMBERS. NEW MEMBERS WILL BE FABRICATED FROM A709 GR. 50 STEEL TO REPLACE THE NON ACCEPTABLE MEMBERS AND THE TEST MEMBERS. THE TWIN TO THE TEST MEMBERS OR REPLACED MEMBERS SHALL BE USED AS THE PROTOTYPE TO FABRICATE THE NEW MEMBER. THE NEW MEMBER SHALL MEET THE FCM AND CVN REQUIREMENTS FOR FRACTURE CRITICAL MEMBERS.



NORTHEAST END POST - LOOKING NORTH



NORTHEAST END POST - PLAN

REPAIR THE NORTH TRUSS EAST END POST BY STRENGTHENING, WELDING, AND BUTT WELDING A NEW PLATE AS REQUIRED. *



U5L5 - NORTH TRUSS, WEST SIDE



U5L5 - NORTH TRUSS, EAST SIDE

REBUILD LOWER PORTION OF U5L5 TO MATCH ORIGINAL TRUSS. USE HIGH STRENGTH BOLTS IN LIEU OF RIVETS. *

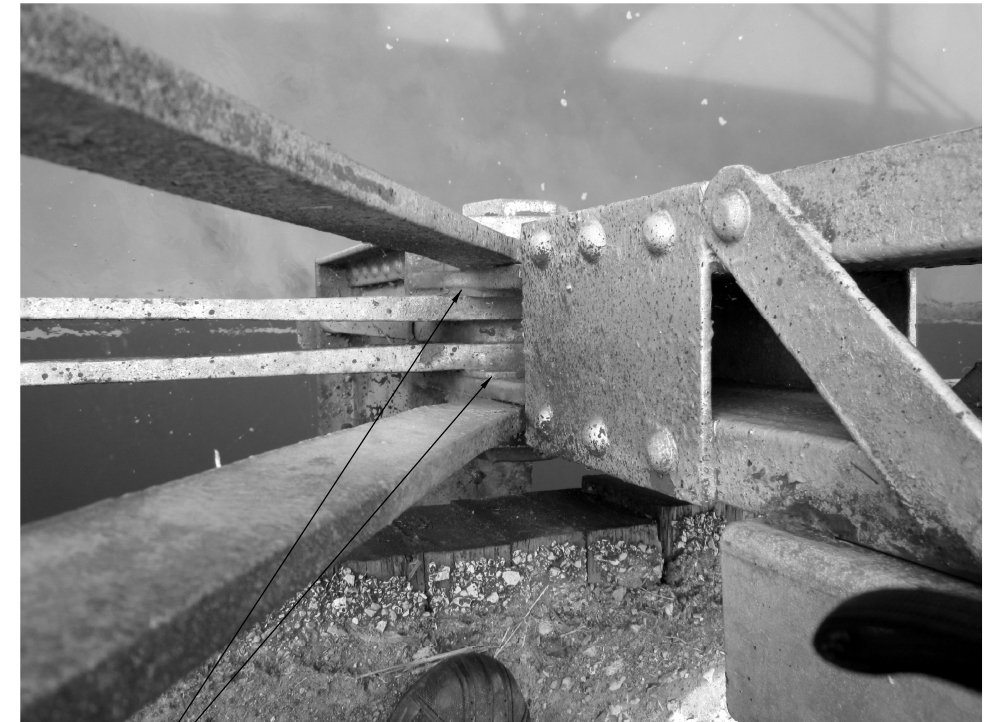


NORTHWEST END POST



NORTHWEST END POST

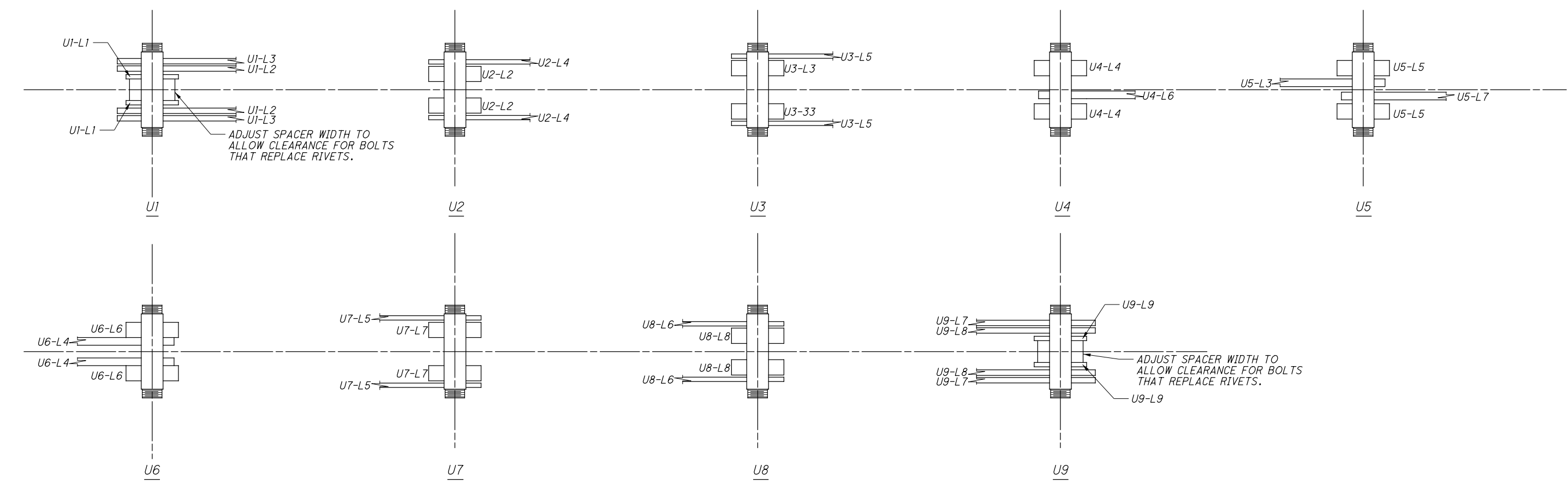
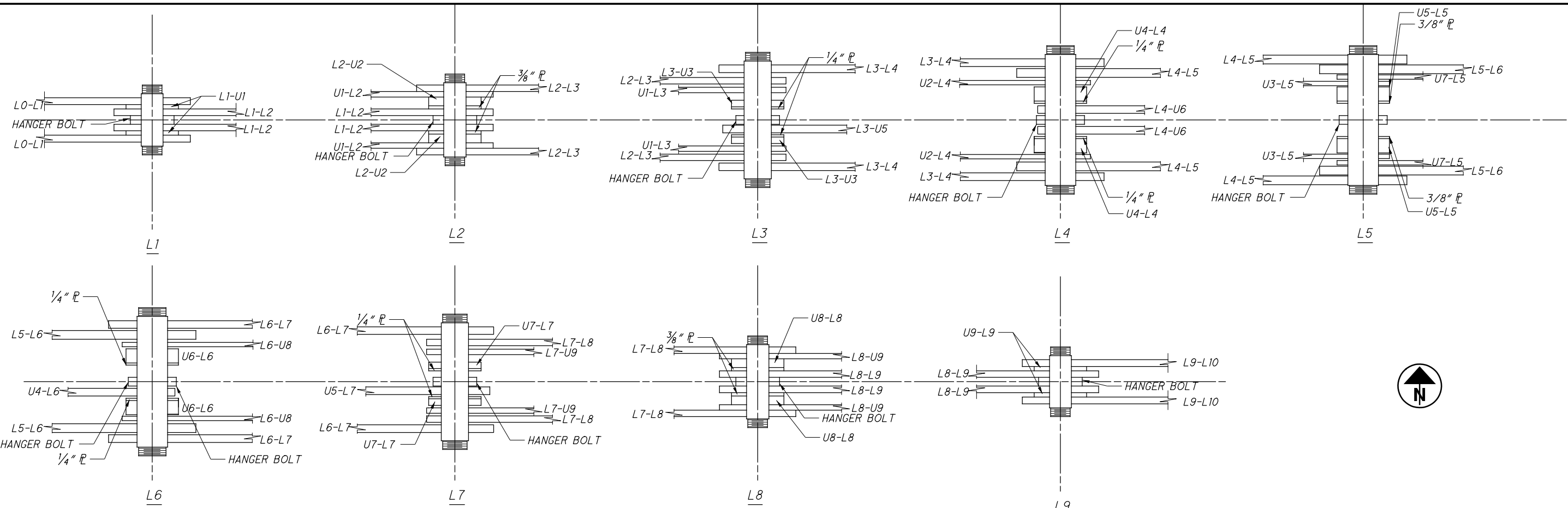
REPAIR THE NORTH TRUSS WEST END POST BY STRENGTHENING THE STEEL MEMBERS AND GRINDING SMOOTH THE DAMAGED EDGES. *



REPLACE THE LOWER CHORD PIN REINFORCEMENT PLATES INSIDE AND OUTSIDE AS REQUIRED - DETERMINE BY THOROUGH INSPECTION AFTER TRUSS HAS BEEN CLEANED IN THE SHOP. INCLUDE IN ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT.

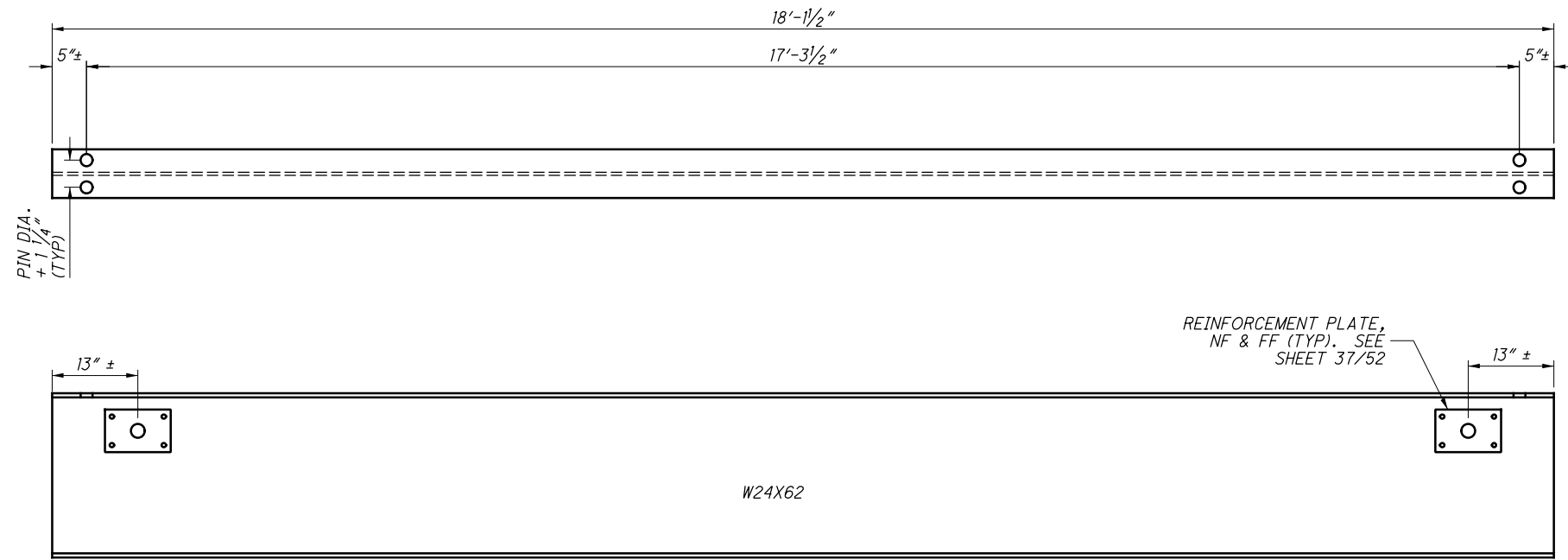
* REPAIR OF THE NORTH TRUSS EAST END POST, NORTH TRUSS WEST END POST, AND NORTH TRUSS U5L5 SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED IN ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT.

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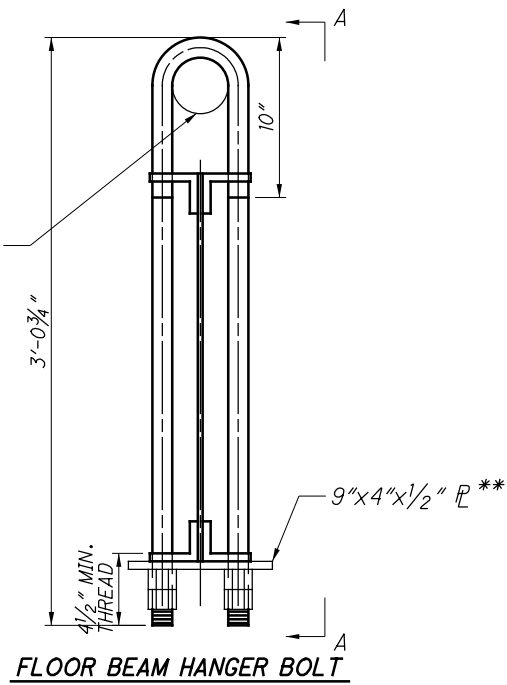
	DESIGN AGENCY
	DATE 5-12-14 REVIEWED MAD STRUCTURE FILE NUMBER 4631838
DRAWN BLS CHECKED DGB	DESIGNED BLS REVISIONS
TRUSS CONNECTION DETAILS BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER	
LOG-CR 21-1.00 PID No. 87081	39 52

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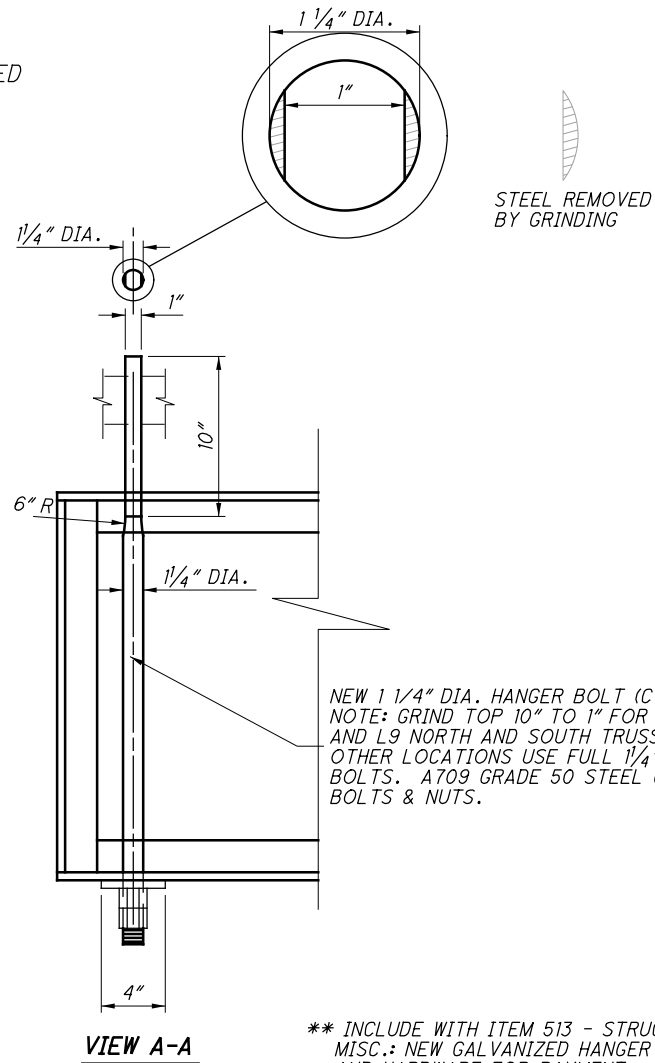
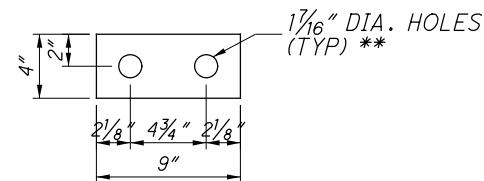


NEW FLOOR BEAM
WHERE REQUIRED
A709 GRADE 50 STEEL/GALVANIZED

EXISTING PIN SIZE*
2 1/2" - L1, L2, L8, L9 N&S TRUSS
3" - L3, L7 N&S TRUSS
3 1/2" - L4, L5, L6 N&S TRUSS

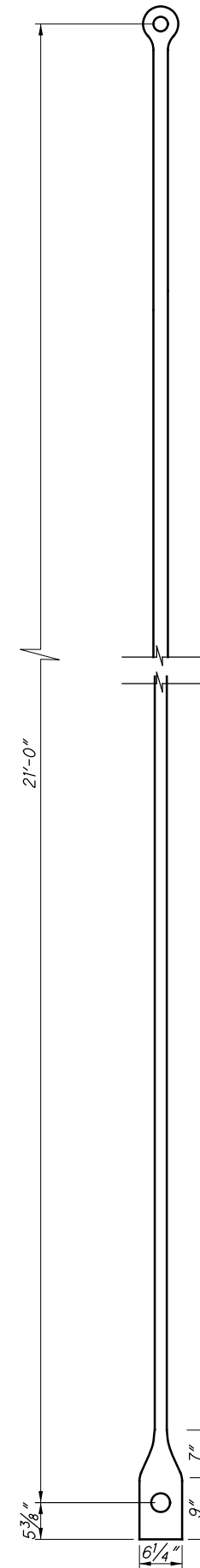


FLOOR BEAM HANGER BOLT



VIEW A-A

** INCLUDE WITH ITEM 513 - STRUCTURAL STEEL, MISC.: NEW GALVANIZED HANGER BOLTS, PLATES, AND HARDWARE FOR PAYMENT

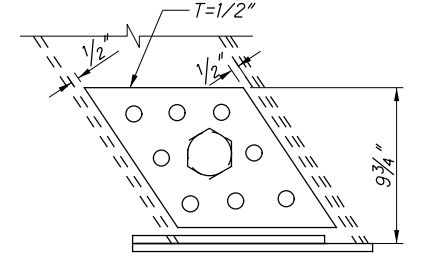
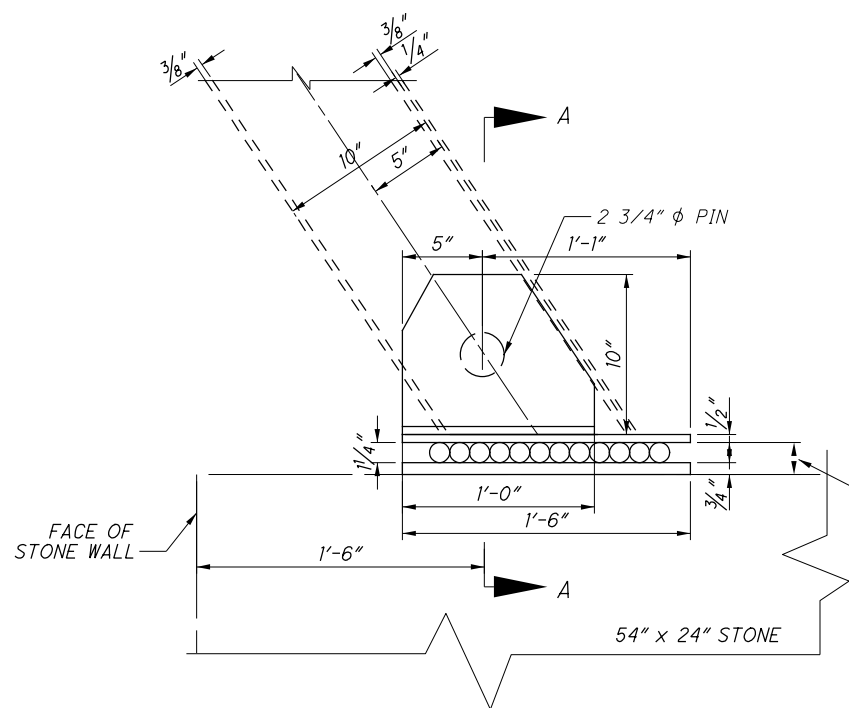


VERTICAL U1L1, U9L9
USE PROTOTYPE TO GET PRECISE DIMENSIONS
(SEE SHEET 33/52)

* CONTRACTOR SHALL FIELD VERIFY PIN SIZES

LOG-CR 21-1.00 PID No. 87081	FLOOR BEAM/HIP VERTICAL/HANGER BOLT BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER		DESIGNED BLS	DRAWN BLS	REVIEWED MAD	DATE 5-12-14	DESIGN AGENCY KOHLI & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155
			CHECKED DGB	REVISED	STRUCTURE FILE NUMBER 4631838		

I:\PROJECTS\LOG-87081\structures\LOG021_0100CBR001.dgn 6/11/2014 8:00:26 AM B



OUTSIDE GUSSET PLATE

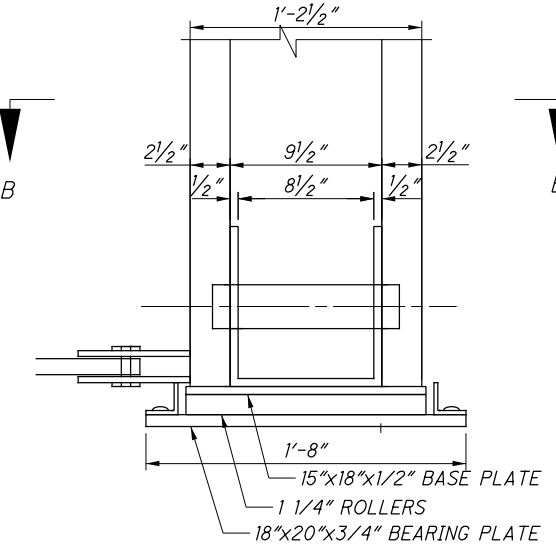
EXISTING (WEST) END POST BEARING

ELASTOMERIC BEARINGS:

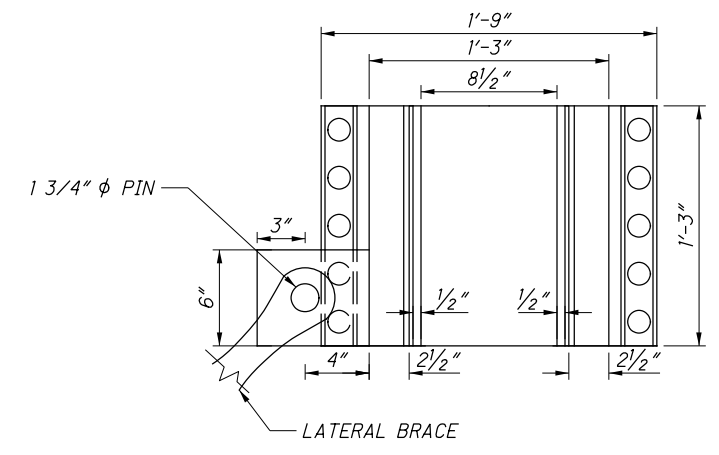
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

BEARING POSITION:

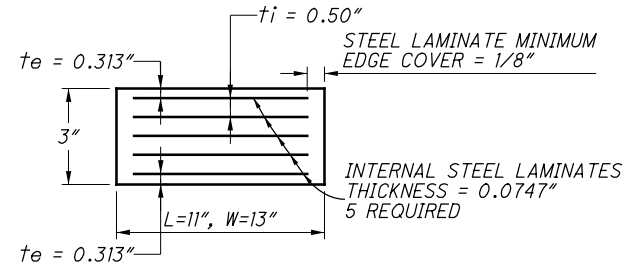
POSITION ELASTOMERIC BEARINGS SO THAT, WHEN THE COMPLETED BRIDGE IS AT 60°F (16°C), THE ELASTOMERIC BEARINGS ARE VERTICAL.



VIEW A-A



VIEW B-B

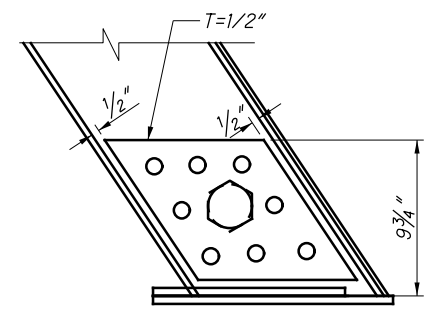
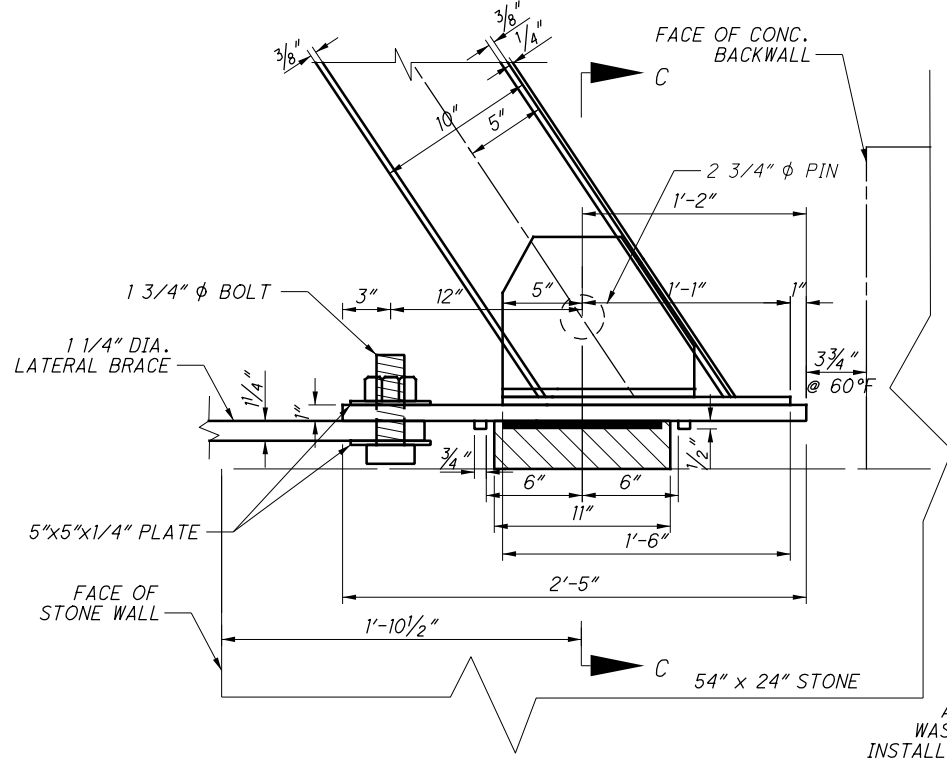


LAMINATED ELASTOMERIC EXPANSION BEARING

50 DUROMETER

EXPANSION BEARING (WEST END) :

DEAD LOAD REACTION = 47.26 k
LIVE LOAD REACTION = 45.72 k
MAXIMUM DESIGN LOAD = 92.98 k

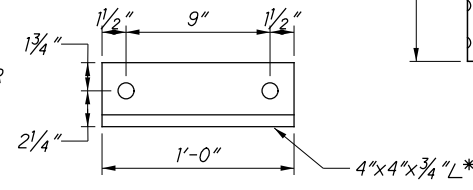


OUTSIDE GUSSET PLATE

KEEP PLATES AND RIVETS CLEAN AND GALVANIZED AS UNITS.

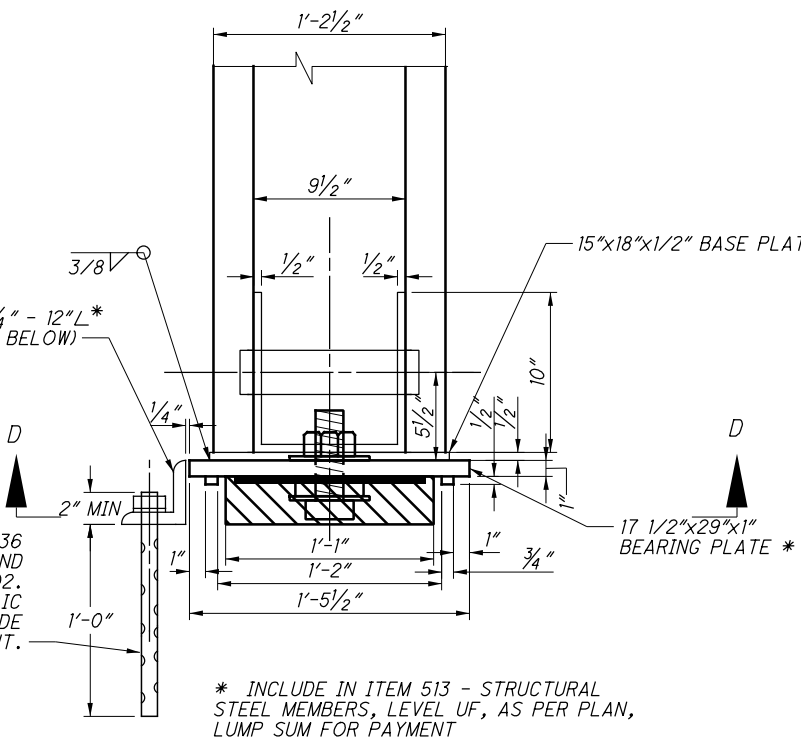
DRILL 1 3/4" DIA. HOLE FOR 1" DIA. F1554 GRADE 36 ANCHOR SWEDGE BOLT. ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED ACCORDING TO 711.02. INSTALL ANCHOR BOLTS PER 510. NONSHRINK NONMETALLIC GROUT SHALL MEET THE REQUIREMENTS OF 705.20. INCLUDE DOWEL HOLES AND ANCHOR BOLTS WITH * FOR PAYMENT.

SEE SHEET 29/52 FOR ADDITIONAL DETAILS



ANGLE DETAIL

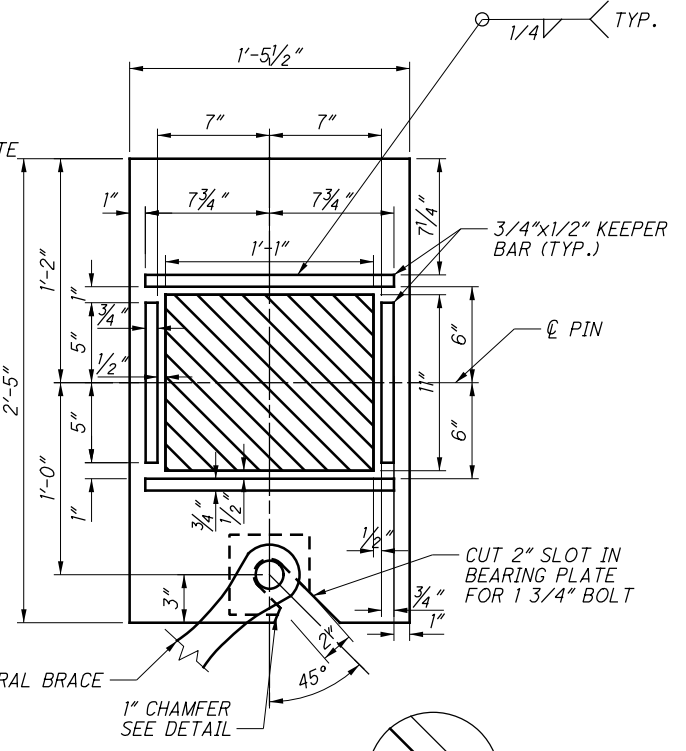
PROPOSED (WEST) END POST BEARING



VIEW D-D

* INCLUDE IN ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UP, AS PER PLAN, LUMP SUM FOR PAYMENT

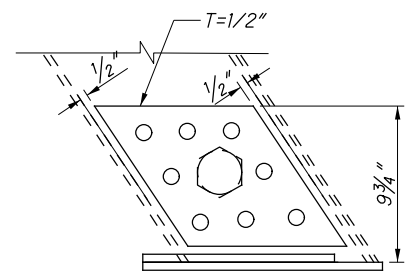
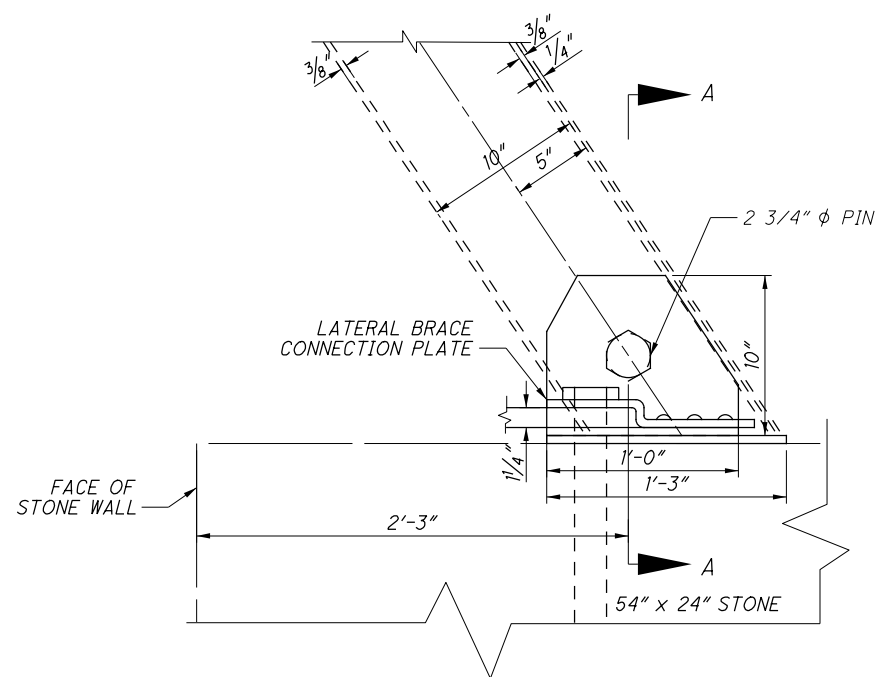
11" x 13" x 3" ELASTOMERIC BEARING PAD



VIEW D-D

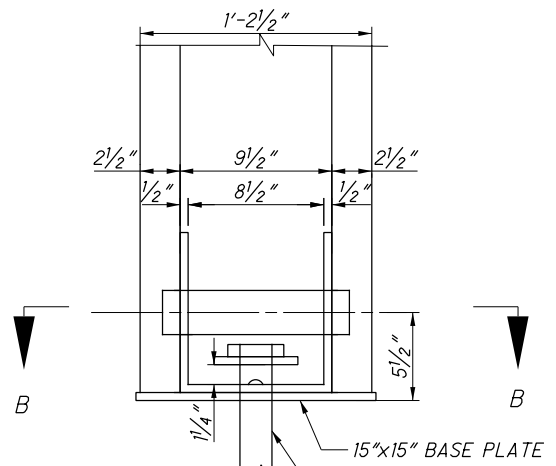
CHAMFER DETAIL

I:\PROJECTS\LOG-87081\structures\LOG021_0100C\sheets\021_0100CBR002.dgn 6/11/2014 8:00:27 AM B

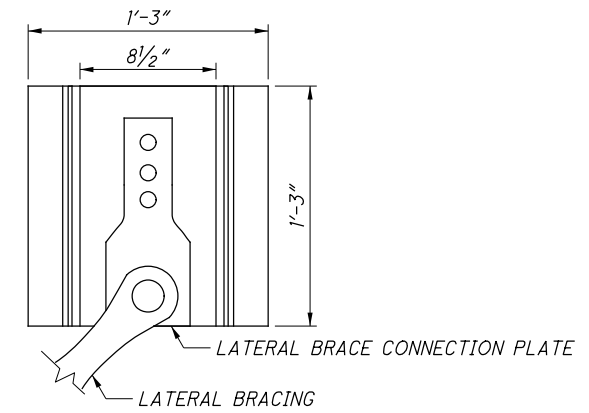


OUTSIDE GUSSET PLATE

EXISTING (EAST) END POST BEARING



VIEW A-A



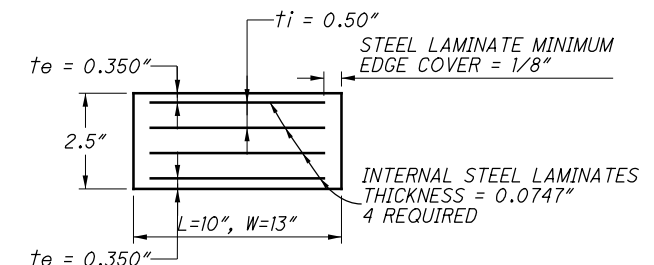
VIEW B-B

ELASTOMERIC BEARINGS:

THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

BEARING POSITION:

POSITION ELASTOMERIC BEARINGS SO THAT, WHEN THE COMPLETED BRIDGE IS AT 60°F (16°C), THE ELASTOMERIC BEARINGS ARE VERTICAL.

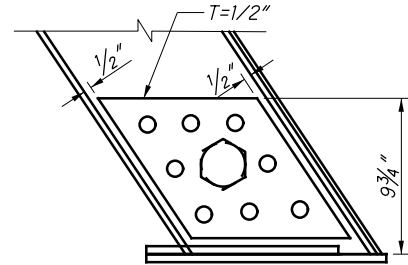
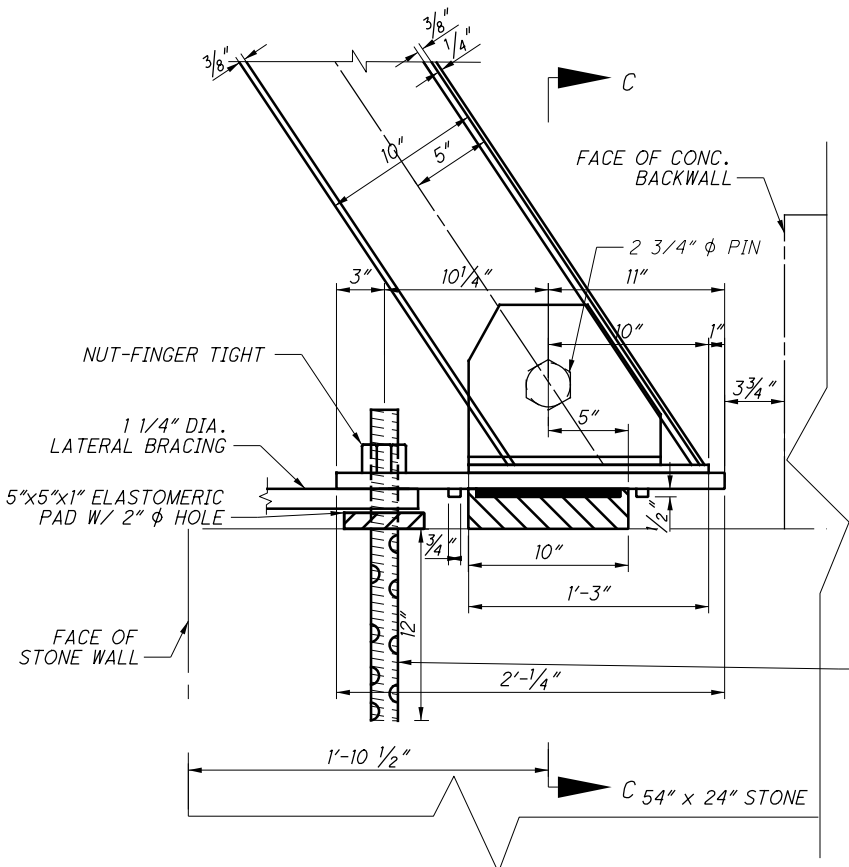


LAMINATED ELASTOMERIC RESTRAINED BEARING

50 DUROMETER

RESTRAINED BEARING (EAST END) :

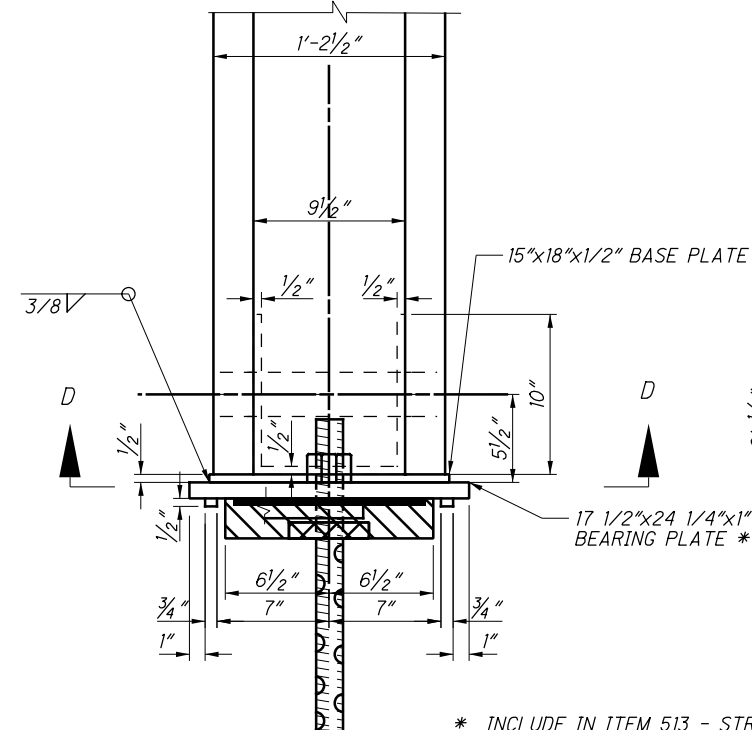
DEAD LOAD REACTION = 47.26 k
LIVE LOAD REACTION = 45.72 k
MAXIMUM DESIGN LOAD = 92.98 k



OUTSIDE GUSSET PLATE

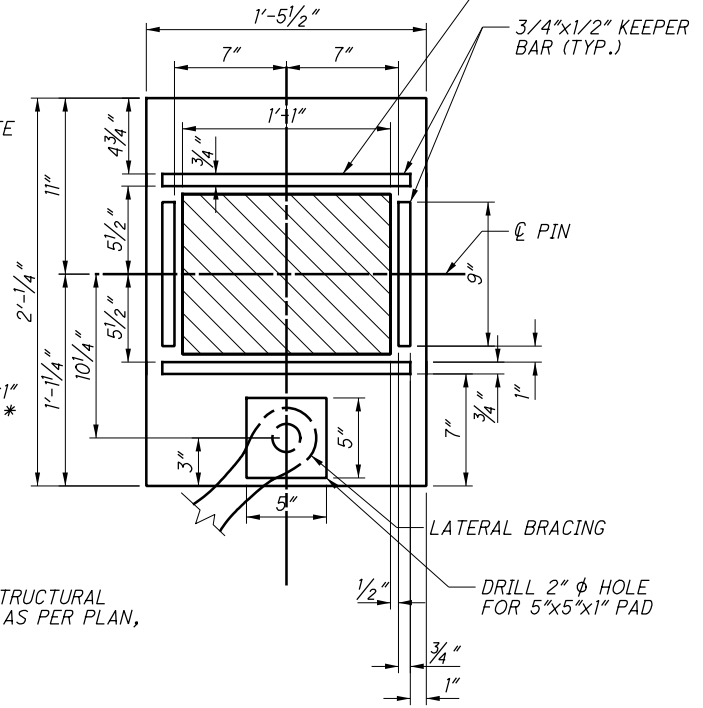
KEEP PLATES AND RIVETS CLEAN AND GALVANIZED AS UNITS

DRILL 2 1/2" φ HOLE FOR 1 3/4" φ F1554 GRADE 36 ANCHOR SWEDGE BOLT. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED ACCORDING TO 711.02. INSTALL BOLT PER 510. FILL WITH 705.04 JOINT SEALER. INCLUDE DOWEL HOLES AND ANCHOR BOLTS WITH * FOR PAYMENT.



VIEW C-C

* INCLUDE IN ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN, LUMP SUM FOR PAYMENT



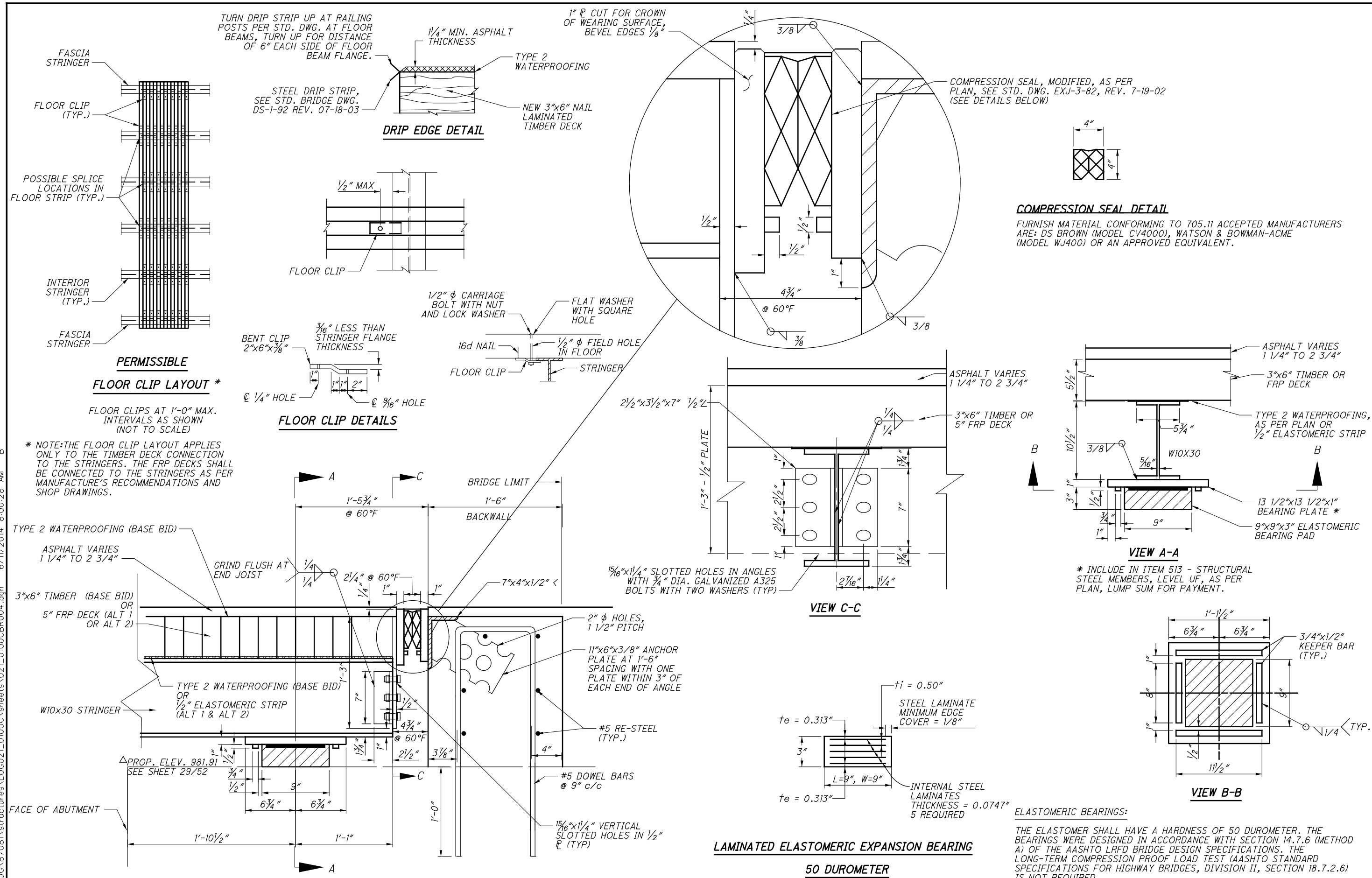
VIEW D-D

10"x13"x2 1/2" ELASTOMERIC BEARING PAD

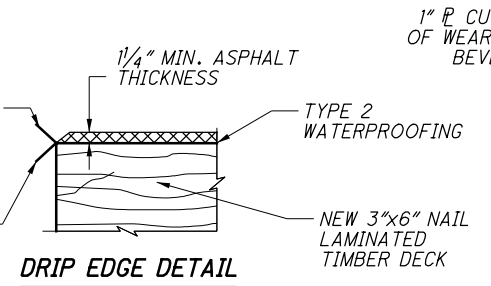
PROPOSED (EAST) END POST BEARING

DESIGN AGENCY	DATE	REVIEWED	DRAWN	DESIGNED	ENDPOST RESTRAINED BEARING (EAST END) BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER
KOHL & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155	5-12-14	MAD	ARM	IMK	
STRUCTURE FILE NUMBER	4631838	REVIS	REVISED	DGB	
LOG-CR	21-1.00	PID	No. 87081		
42	52				

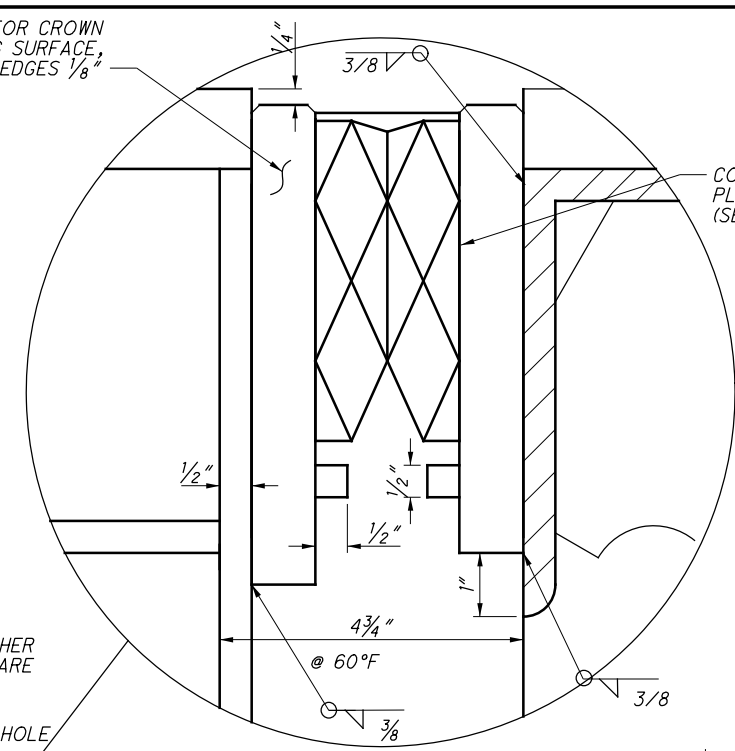
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TURN DRIP STRIP UP AT RAILING POSTS PER STD. DWG. AT FLOOR BEAMS, TURN UP FOR DISTANCE OF 6" EACH SIDE OF FLOOR BEAM FLANGE.

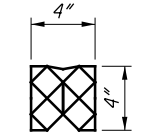


1" P CUT FOR CROWN OF WEARING SURFACE, BEVEL EDGES 1/8"



COMPRESSION SEAL DETAIL

FURNISH MATERIAL CONFORMING TO 705.11 ACCEPTED MANUFACTURERS ARE: DS BROWN (MODEL CV4000), WATSON & BOWMAN-ACME (MODEL WJ400) OR AN APPROVED EQUIVALENT.

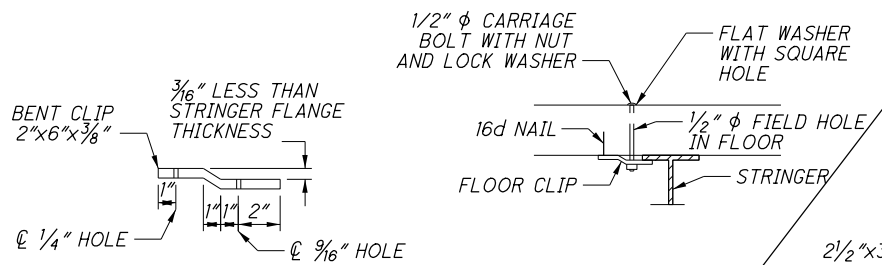


PERMISSIBLE FLOOR CLIP LAYOUT *

FLOOR CLIPS AT 1'-0" MAX. INTERVALS AS SHOWN (NOT TO SCALE)

* NOTE: THE FLOOR CLIP LAYOUT APPLIES ONLY TO THE TIMBER DECK CONNECTION TO THE STRINGERS. THE FRP DECKS SHALL BE CONNECTED TO THE STRINGERS AS PER MANUFACTURER'S RECOMMENDATIONS AND SHOP DRAWINGS.

FLOOR CLIP DETAILS



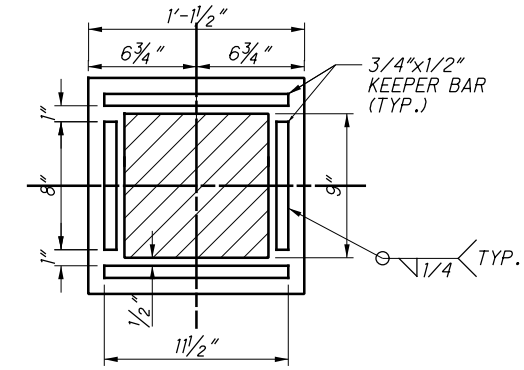
VIEW C-C

15/16"x1/4" SLOTTED HOLES IN ANGLES WITH 3/4" DIA. GALVANIZED A325 BOLTS WITH TWO WASHERS (TYP)

VIEW A-A

* INCLUDE IN ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN, LUMP SUM FOR PAYMENT.

VIEW B-B



LAMINATED ELASTOMERIC EXPANSION BEARING

50 DUROMETER

EXPANSION BEARING (WEST END) :

DEAD LOAD REACTION = 2.70 K
LIVE LOAD REACTION = 20.80 K
MAXIMUM DESIGN LOAD = 23.50 K

ELASTOMERIC BEARINGS:

THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

BEARING POSITION:

POSITION ELASTOMERIC BEARINGS SO THAT, WHEN THE COMPLETED BRIDGE IS AT 60°F (16°C), THE ELASTOMERIC BEARINGS ARE VERTICAL.

EXPANSION STRINGER (WEST END BEARING & EXPANSION JOINT DETAILS)

DESIGN AGENCY: KOHLHAUER ASSOCIATES, INC. ENGINEERS AND SURVEYORS
2244 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155

DATE: 5-12-14
REVIEWED: MAD
STRUCTURE FILE NUMBER: 4631838

DESIGNED: IMK
CHECKED: DGB

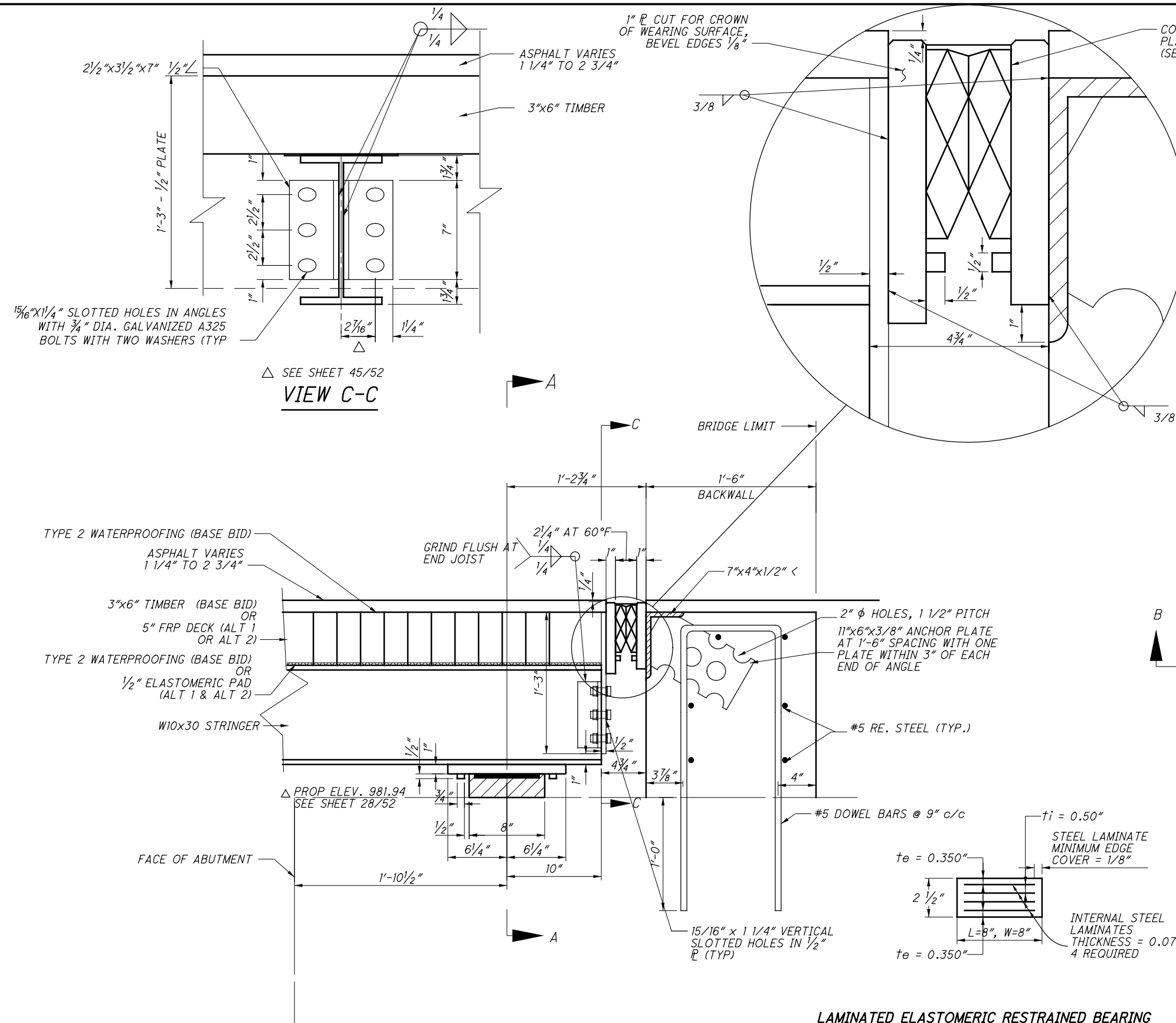
EXPANSION STRINGER (WEST) BEARING DETAILS/JOINT DETAILS

BRIDGE NO. LOG-21-0100
OVER GREAT MIAMI RIVER

LOG-CR 21-1.00
PID No. 87081

43
52

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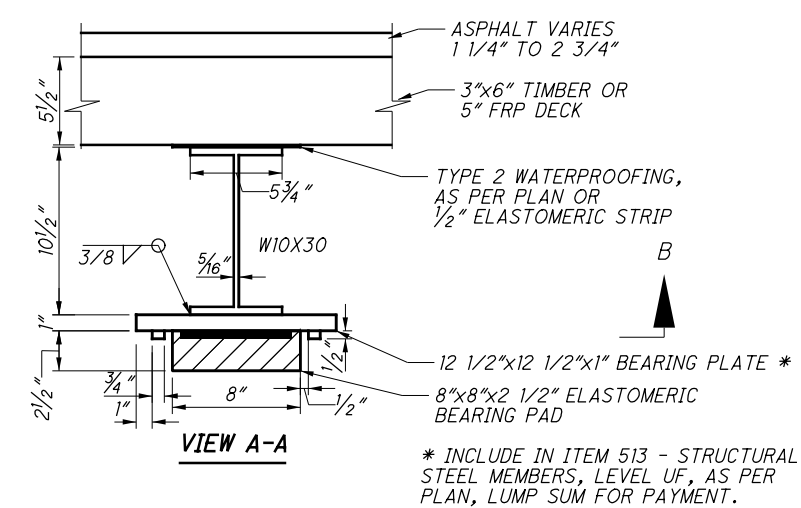
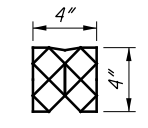


15/16"x1 1/4" SLOTTED HOLES IN ANGLES WITH 3/4" DIA. GALVANIZED A325 BOLTS WITH TWO WASHERS (TYP)

SEE SHEET 45/52
VIEW C-C

COMPRESSION SEAL DETAIL

FURNISH MATERIAL CONFORMING TO 705.11 ACCEPTED MANUFACTURERS ARE: DS BROWN (MODEL CV4000), WATSON & BOWMAN-ACME (MODEL WJ400) OR AN APPROVED EQUIVALENT.



LAMINATED ELASTOMERIC RESTRAINED BEARING

50 DUROMETER

RESTRAINED BEARING (EAST END) :
DEAD LOAD REACTION = 2.70 k
LIVE LOAD REACTION = 20.80 k
MAXIMUM DESIGN LOAD = 23.50 k

ELASTOMERIC BEARINGS:

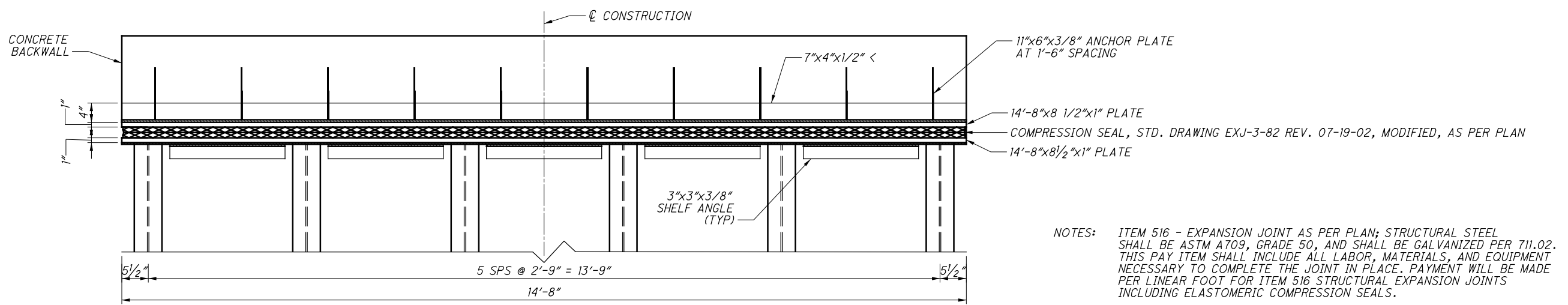
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

BEARING POSITION:

POSITION ELASTOMERIC BEARINGS SO THAT, WHEN THE COMPLETED BRIDGE IS AT 60°F (16°C), THE ELASTOMERIC BEARINGS ARE VERTICAL.

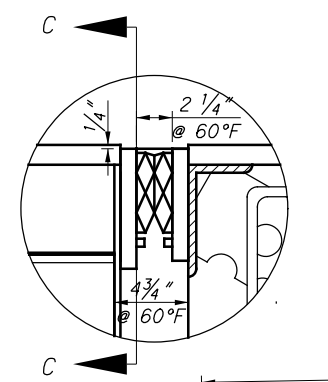
	DESIGN AGENCY	DATE	LOG- CR 21-1.00
	ENGINEERS AND SURVEYORS	5-12-14	PID No. 87081
	STRUCTURE FILE NUMBER	4631838	
	DESIGNED	IMK	CHECKED
DRAWN	ARM	REVIEWED	
RESTRAINED STRINGER EAST BEARING DETAILS/JOINT DETAILS BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER			
44 52			

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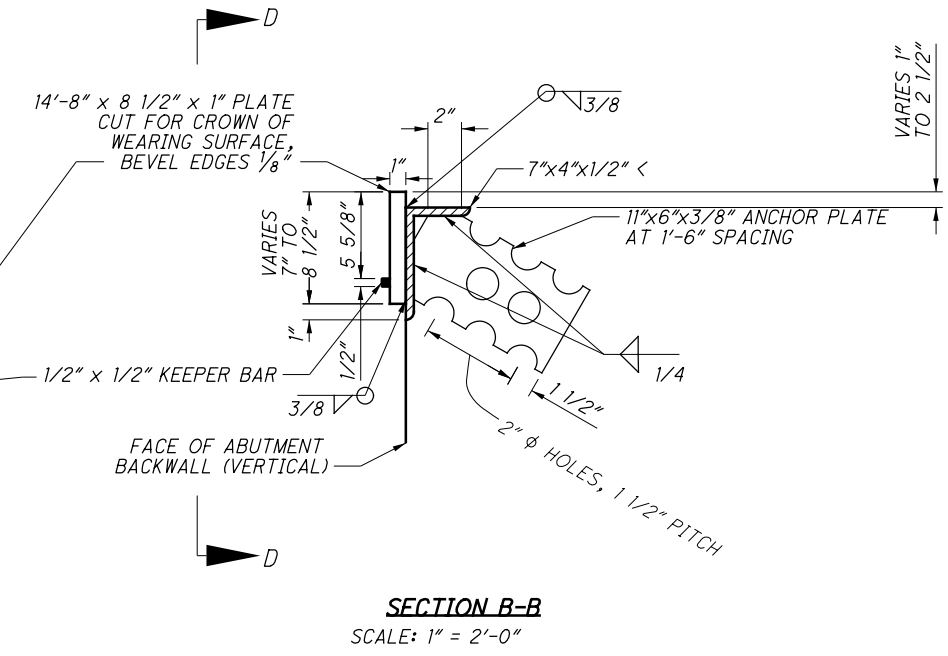
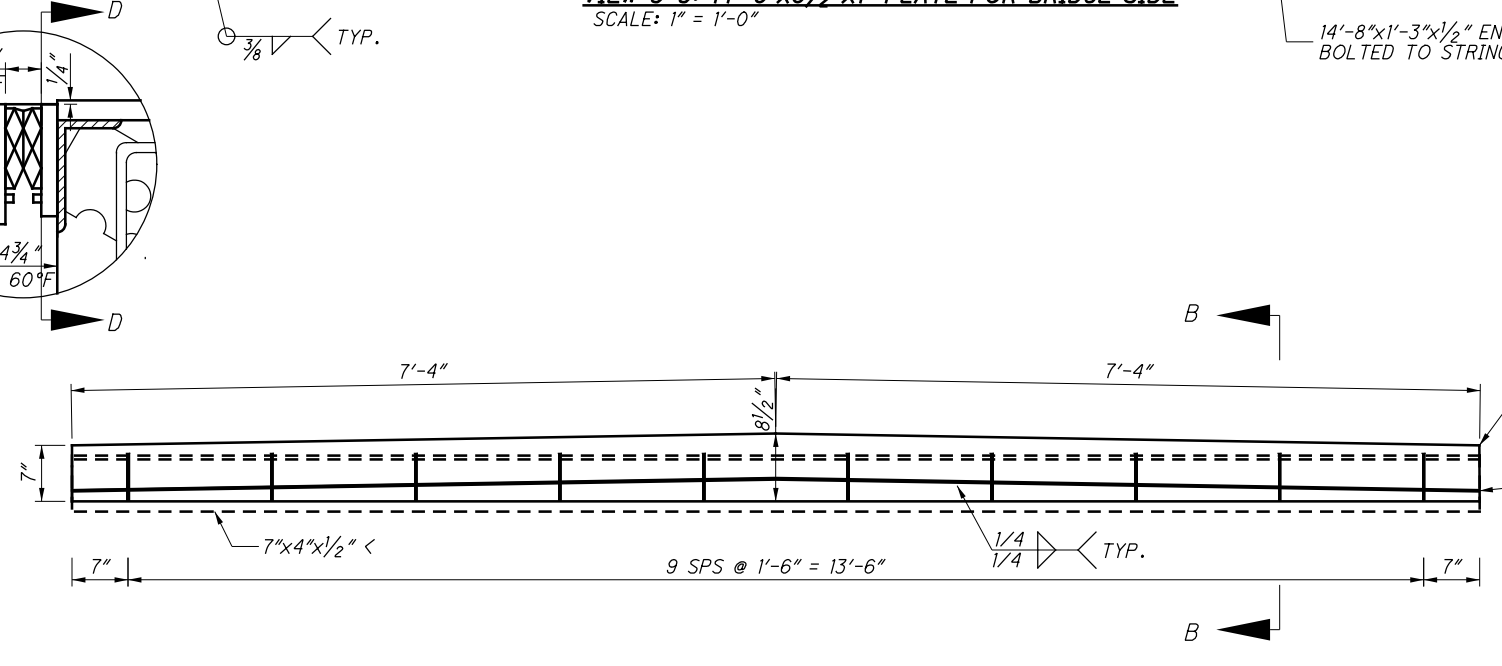
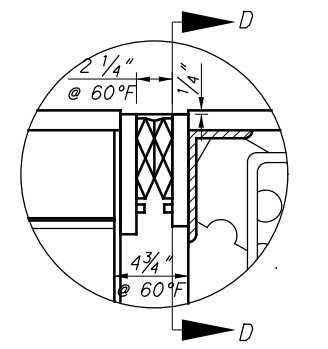
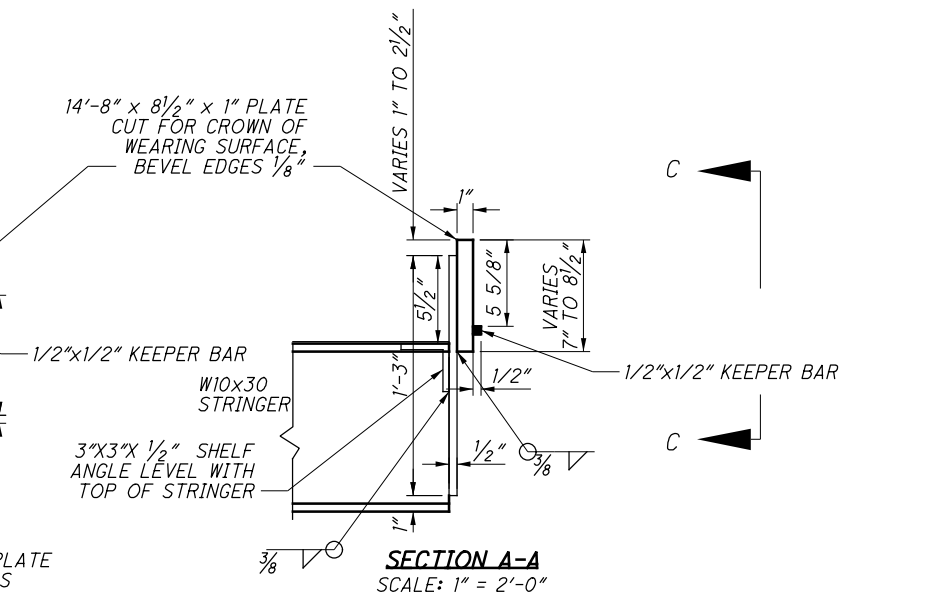
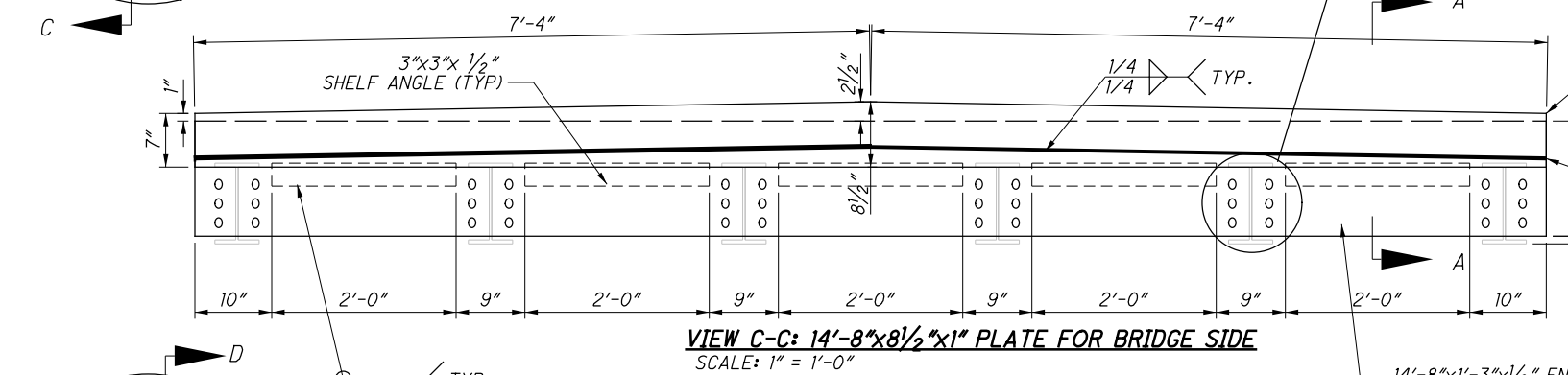
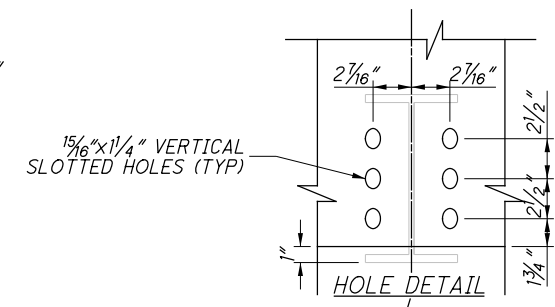


NOTES: ITEM 516 - EXPANSION JOINT AS PER PLAN; STRUCTURAL STEEL SHALL BE ASTM A709, GRADE 50, AND SHALL BE GALVANIZED PER 711.02. THIS PAY ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE JOINT IN PLACE. PAYMENT WILL BE MADE PER LINEAR FOOT FOR ITEM 516 STRUCTURAL EXPANSION JOINTS INCLUDING ELASTOMERIC COMPRESSION SEALS.

COMPRESSION SEALS - FURNISH MATERIAL CONFORMING TO 705.11 ACCEPTED MANUFACTURERS ARE: DS BROWN (MODEL CV4000), WATSON & BOWMAN-ACME (MODEL WJ400) OR AN APPROVED EQUIVALENT.



PLAN SCALE: 1" = 1'-0"



DESIGN AGENCY: KOHL & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805 419-221-1155

DATE: 5-12-14

REVIEWED: MAD

STRUCTURE FILE NUMBER: 4631838

DESIGNED: ARM

CHECKED: DGB

DRAWN: ARM

REVISER:

BRIDGE EXPANSION/RESTRAINED JOINT DETAILS

BRIDGE NO. LOG-21-0100

OVER GREAT MIAMI RIVER

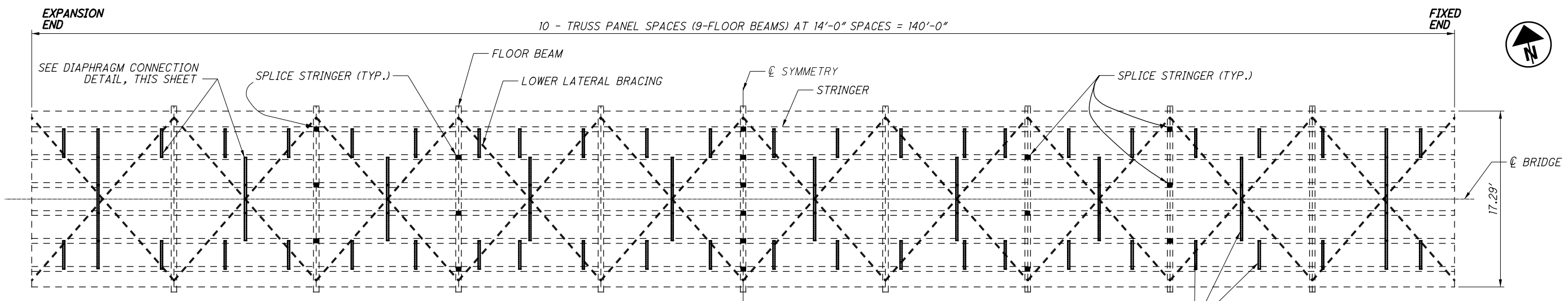
LOG-CR 21-1.00

PID No. 87081

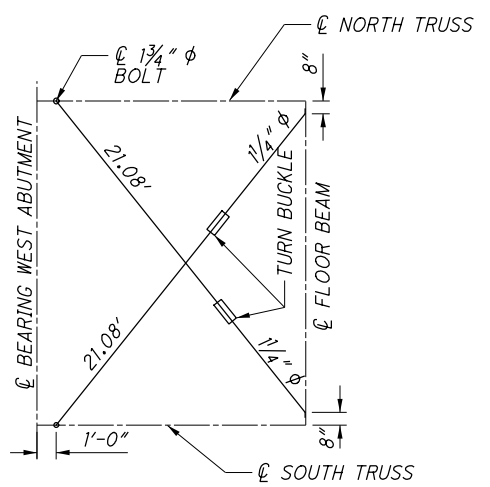
45

52

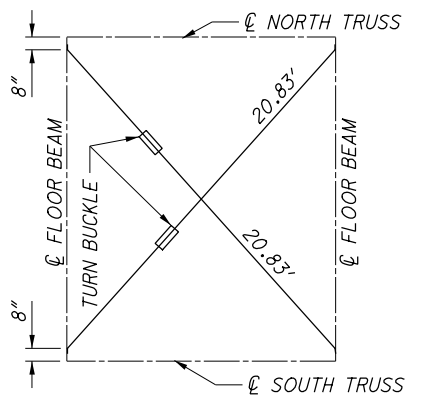
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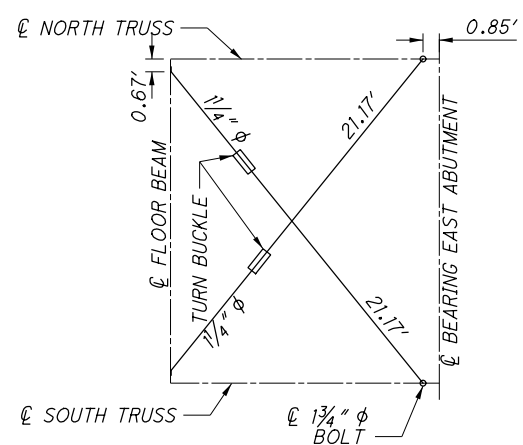
SPLICES AT STRINGER & FLOORBEAM CONNECTIONS



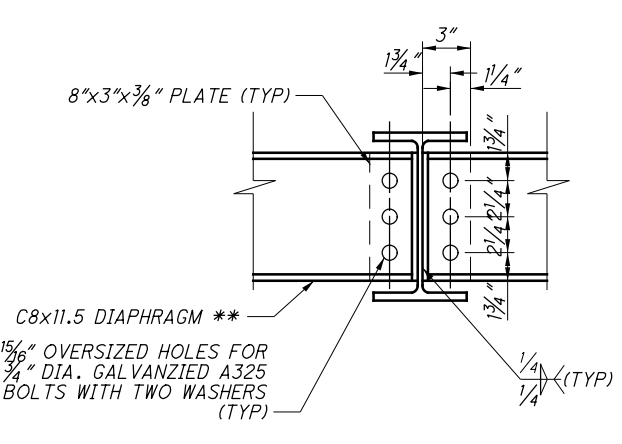
LOWER LATERAL BRACING WEST MOST BAY



LOWER LATERAL BRACING MIDDLE BAYS

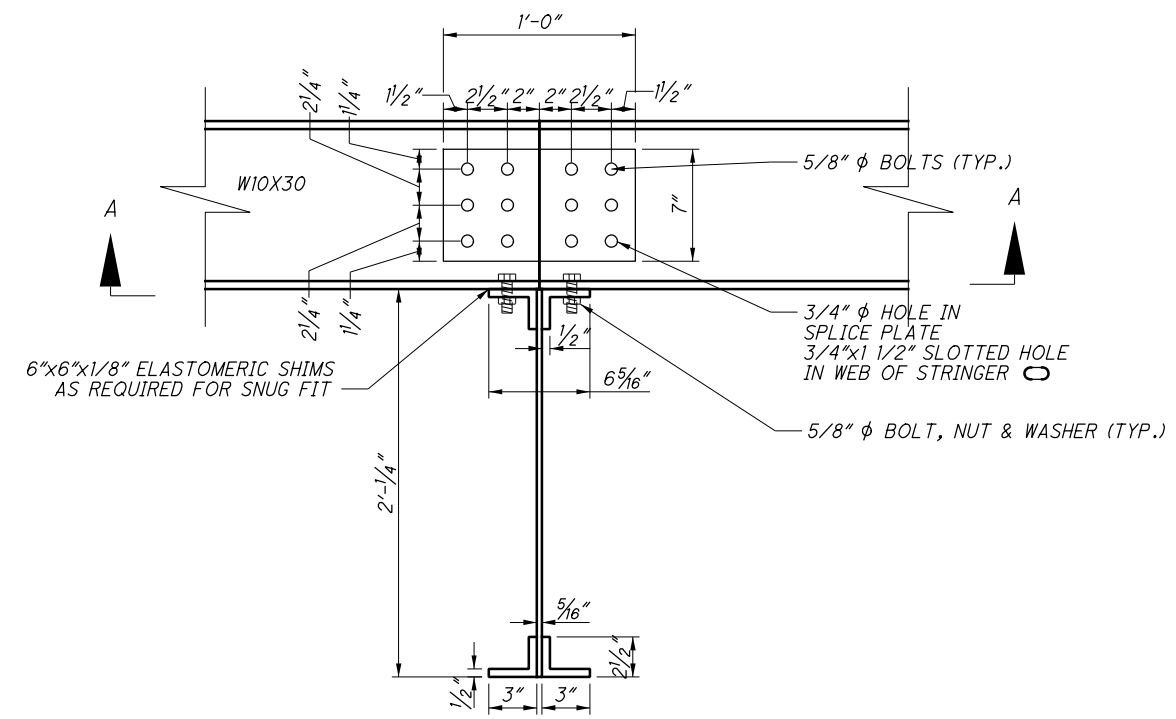


LOWER LATERAL BRACING EAST MOST BAY

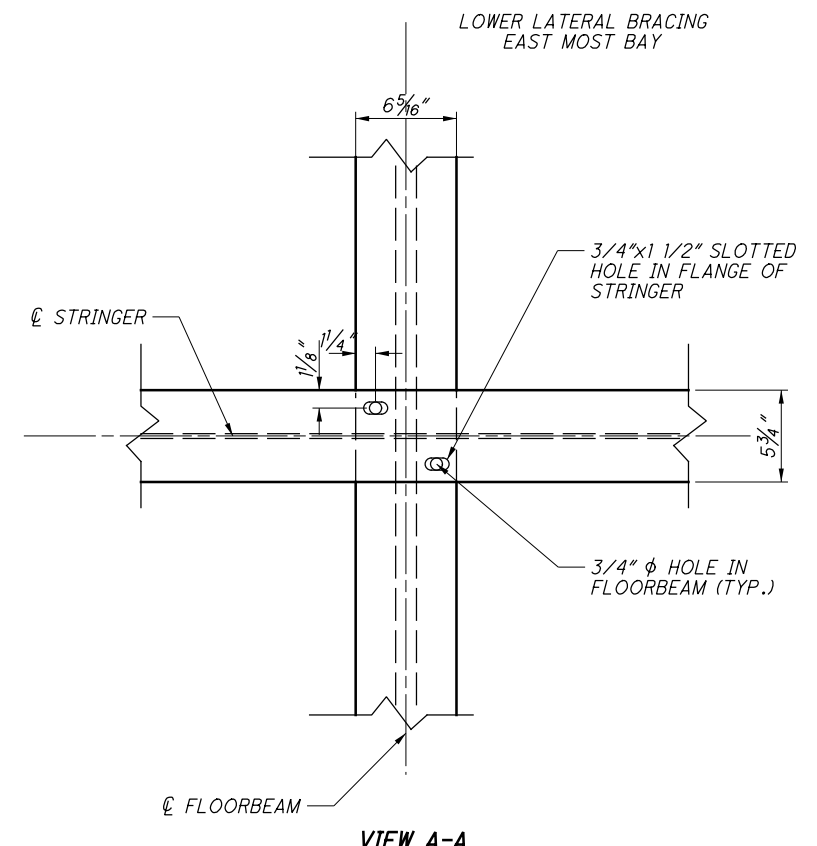


DIAPHRAGM CONNECTION DETAIL

**INCLUDE WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, AS PER PLAN FOR PAYMENT

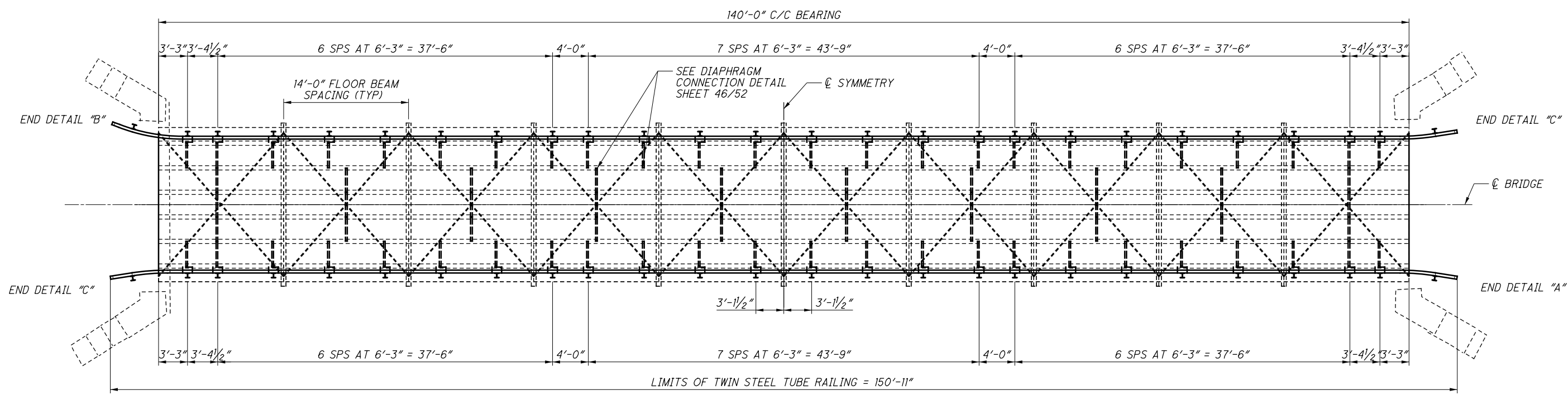


STRINGER CONNECTION & SPLICE AT FLOORBEAMS AT DESIGNATED LOCATIONS

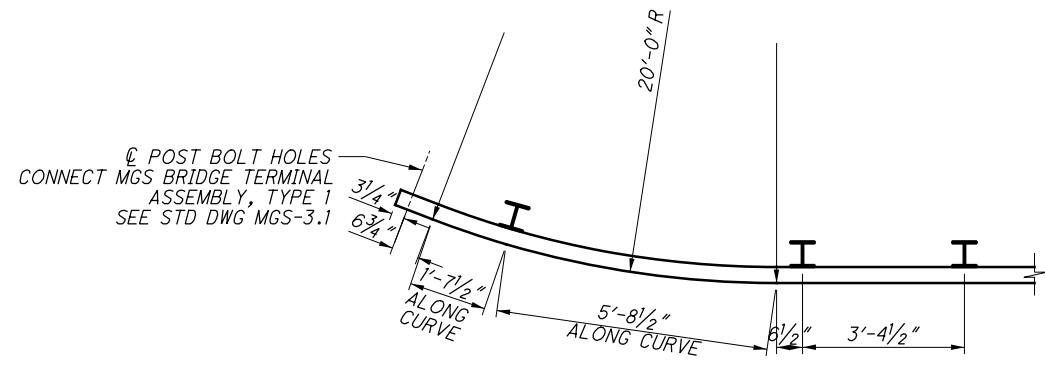


VIEW A-A

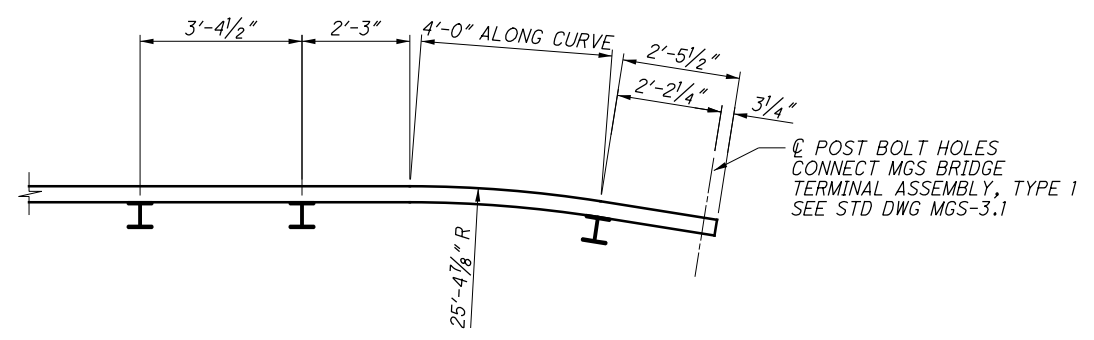
DESIGN AGENCY		KOHLE & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2244 Baton Rouge Ave., Lima, Ohio 45805-419-221-1155	
DATE	5-12-14	REVIEWED	MAD
STRUCTURE FILE NUMBER	4631838	ARM	REVISED
DESIGNED	ARM	CHECKED	DGB
STRINGER BEARINGS & SPLICES AT FLOOR BEAMS			
BRIDGE NO. LOG-21-0100 OVER GREAT MIAMI RIVER			
LOG-CR 21-1.00		PID No. 87081	
46		52	



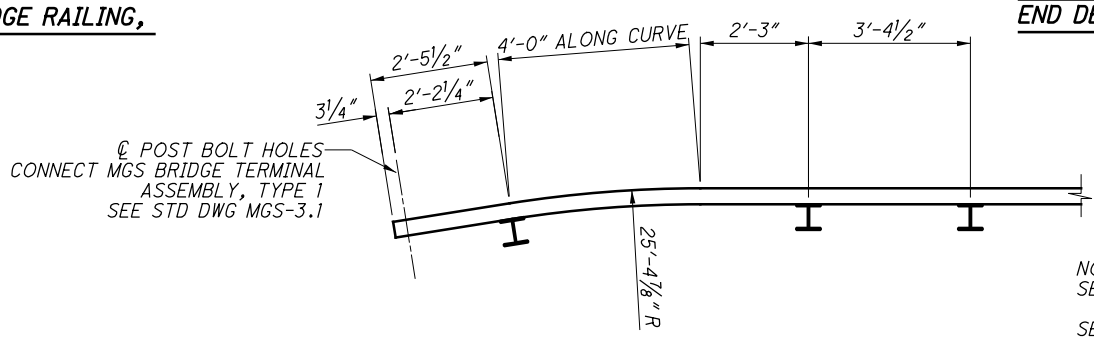
RAILING PLAN



TWIN STEEL TUBE BRIDGE RAILING, END DETAIL "B"



TWIN STEEL TUBE BRIDGE RAILING, END DETAIL "A"



TWIN STEEL TUBE BRIDGE RAILING, END DETAIL "C"

NOTE: SEE ABUTMENT SHEETS 28/52 AND 29/52 FOR FLUSH MOUNTED POST ANCHOR PLATE DETAIL.

SEE SHEET 31/52 FOR TWIN STEEL TUBE RAILING BRIDGE MOUNTING AND GUARDRAIL POST BACK UP DETAILS.

ITEM 517 - RAILING (TWIN STEEL TUBE), AS PER PLAN: INCLUDE FABRICATION OF THE SPECIAL END DETAILS AND PROVIDE SUFFICIENT EXPANSION GAPS TO ACCOMMODATE 1/4" EXPANSION MOVEMENT RELATIVE TO THE FLUSH MOUNTED GUARDRAIL POST IN ITEM 517 - RAILING (TWIN STEEL TUBE), AS PER PLAN FOR PAYMENT.

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	DESIGN AGENCY	DATE	REVIEWED	DRAWN	DESIGNED
	KOHLI & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 2344 Baton Rouge Ave., Lima, Ohio 45805. 419-221-1155	5-12-14	MAD	BLS	IMK
	STRUCTURE FILE NUMBER	4631838	REVIS	CHECKED	DGB
	LOG-CR 21-1.00	PID No. 87081	<p>RAILING PLAN</p> <p>BRIDGE NO. LOG-21-0100</p> <p>OVER GREAT MIAMI RIVER</p>		

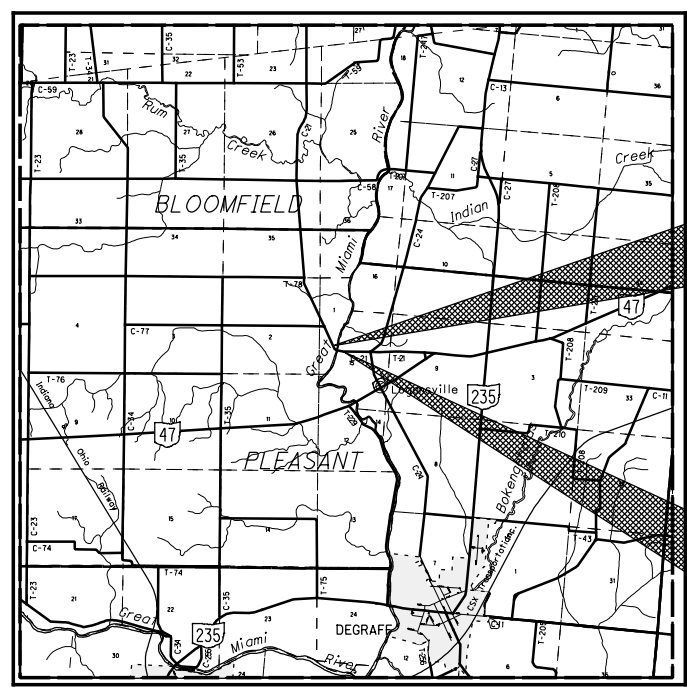
PROJECT DESCRIPTION

REHABILITATION OF A THROUGH TRUSS BRIDGE OVER THE GREAT MIAMI RIVER INCLUDING DISASSEMBLY, GALVAIZING, AND REERECTION WITH A NEW DECK AND WEARING SURFACE WITH RECONSTRUCTION OF THE APPROACH ROADWAY.

THE EXISTING AND PROPOSED RIGHT OF WAY SHALL BE REFERENCED FROM THE CENTERLINE OF RIGHT OF WAY.

RIGHT OF WAY LEGEND SHEET LOG-21-1.00

LOGAN COUNTY
 PLEASANT TOWNSHIP
 SECTION 15, TOWN 2-RANGE 14
 SECTION 1, TOWN 1-RANGE 8



LOCATION MAP

LATITUDE: 40°21'04" N LONGITUDE: 83°56'19" W

UTILITY OWNERS	
TYPE	NAME & ADDRESS
ELECTRIC:	DAYTON POWER & LIGHT COMPANY 1900 DRYDEN ROAD DAYTON, OHIO 45439 937-331-4132 ATTN: JOHN KENTON
ELECTRIC:	LOGAN COUNTY CO-OP 1587 CR 32, NORTH PO BOX 279 BELLEFONTAINE, OHIO 43311 937-592-4781 ATTN: DAVE YANCHIK
TELEPHONE:	CENTURY LINK 127 N. MAIN ST. BELLEFONTAINE, OHIO 43311 937-599-9285 ATTN: AL HOCKLEY

NOTES: THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

CONVENTIONAL SYMBOLS

County Line ————	Ditch / Creek (Ex) ————
Township Line ————	Ditch / Creek (Pr) ————
Section Line ————	Tree Line (Ex) ————
Corporation Line ———— or ————	Ownership Hook Symbol Z, Example ————
Fence Line (Ex) —x—x— (Pr) —x—x—	Property Line Symbol P, Example ————
Center Line ————	Break Line Symbol V, Example ————
Right of Way (Ex) ———— Ex R/W ————	Tree (Pr) ☼, Tree (Ex) ☼, Shrub (Ex) ☼
Right of Way (Pr) ———— R/W ————	Tree (Remove) ✕, Shrub (Remove) ✕
Standard Highway Ease.(Ex) ———— Ex SH ————	Evergreen (Ex) ☼, Stump ☼
Temporary Right of Way ———— TMP ————	Evergreen (Remove) ✕, Stump (Remove) ✕
Channel Ease. (Pr) ———— CH ————	Wetland (Pr) ~, Grass (Pr) ~, Aerial Target Δ
Utility Ease. (Ex) ———— Ex U ————	Post (Ex) □, Mailbox (Ex) □, Mailbox (Pr) □
Railroad ———— or ————	Light (Ex) ☼, Telephone Marker (Ex)+TEL
Guardrail (Ex) ———— (Pr) ————	Fire Hydrant (Ex) ☼, Water Meter (Ex) ☼
Construction Limits ————	Water Valve (Ex) ☼, Utility Valve Unknown (Ex.) ☼
Edge of Pavement (Ex) ————	Telephone Pole (Ex) ☼, Power Pole (Ex) ☼
Edge of Pavement (Pr) ————	Light Pole (Ex) ☼
Edge of Shoulder (Ex) ————	
Edge of Shoulder (Pr) ————	

INDEX OF SHEETS:

LEGEND SHEET	1
CENTERLINE PLAT	2
PROPERTY MAP	3
SUMMARY OF ADDITIONAL R/W	4
R/W DETAIL	5

PLANS PREPARED BY:

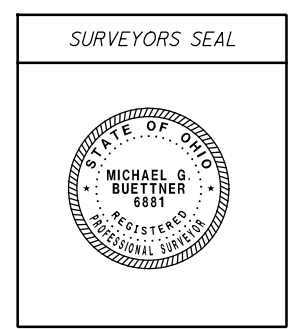
FIRM NAME : KOHLI & KALIHAR ASSOC., INC.
 R/W DESIGNER: BECKY SWORA, P.E.
 R/W REVIEWER: MICHAEL G. BUETTNER, P.S.
 FIELD REVIEWER: MICHAEL G. BUETTNER, P.S.
 PRELIMINARY FIELD REVIEW DATE: 6/14/2013
 TRACINGS FIELD REVIEW DATE: _____
 OWNERSHIP UPDATED BY: _____
 DATE COMPLETED: _____
 PLAN COMPLETION DATE: _____

TYPES OF TITLE LEGEND:
 SH = STANDARD HIGHWAY EASEMENT
 T = TEMPORARY EASEMENT

I, Michael G. Buettner, P. S. have conducted a survey of the existing conditions for the Logan County Engineer through June 14th, 2013. The results of that survey are contained herein. The horizontal coordinates expressed herein are based on the Ohio State Plane Coordinates System North Zone on NAD 83 (CORS96) datum. The Project Coordinates (US Survey Feet) are relative to State Plane Grid Coordinates (US Survey Feet) by a Project Adjustment Factor of 1.00000000. As a part of this project I have reestablished the locations of the existing property lines and the existing centerline of Right of Way for property takes contained herein. As a part of this project I have established the proposed property lines, calculated the Gross Take, present roadway occupied (PRO), Net Take and Net Residue; as well as prepared the legal descriptions necessary to acquire the parcels as shown herein. All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "Minimum Standards for Boundary Surveys in the State of Ohio" unless noted. The words I and my as used herein are to mean either myself or someone working under my direct supervision.

Michael G. Buettner
 Michael G. Buettner, Professional Land Surveyor No. 6881

Date: October 31, 2013



I, Michael G. Buettner, P. S. have conducted a survey of the existing conditions for the Logan County Engineer through June 14th, 2013. The results of that survey are contained herein. The horizontal coordinates expressed herein are based on the Ohio State Plane Coordinates System NAD 83, North Zone using CORS96 adjustment, by ties to the ODOT CORS network using ODOT's VRS network. The Project Adjustment Factor used for this project is 1.00000000. As a part of this project I have reestablished the locations of the existing property lines and centerline of existing Right of Way for property takes contained herein. All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "A Minimum Standards for Boundary Surveys in the State of Ohio" unless noted. The words I and my as used herein are to mean either myself or someone working under my direct supervision.

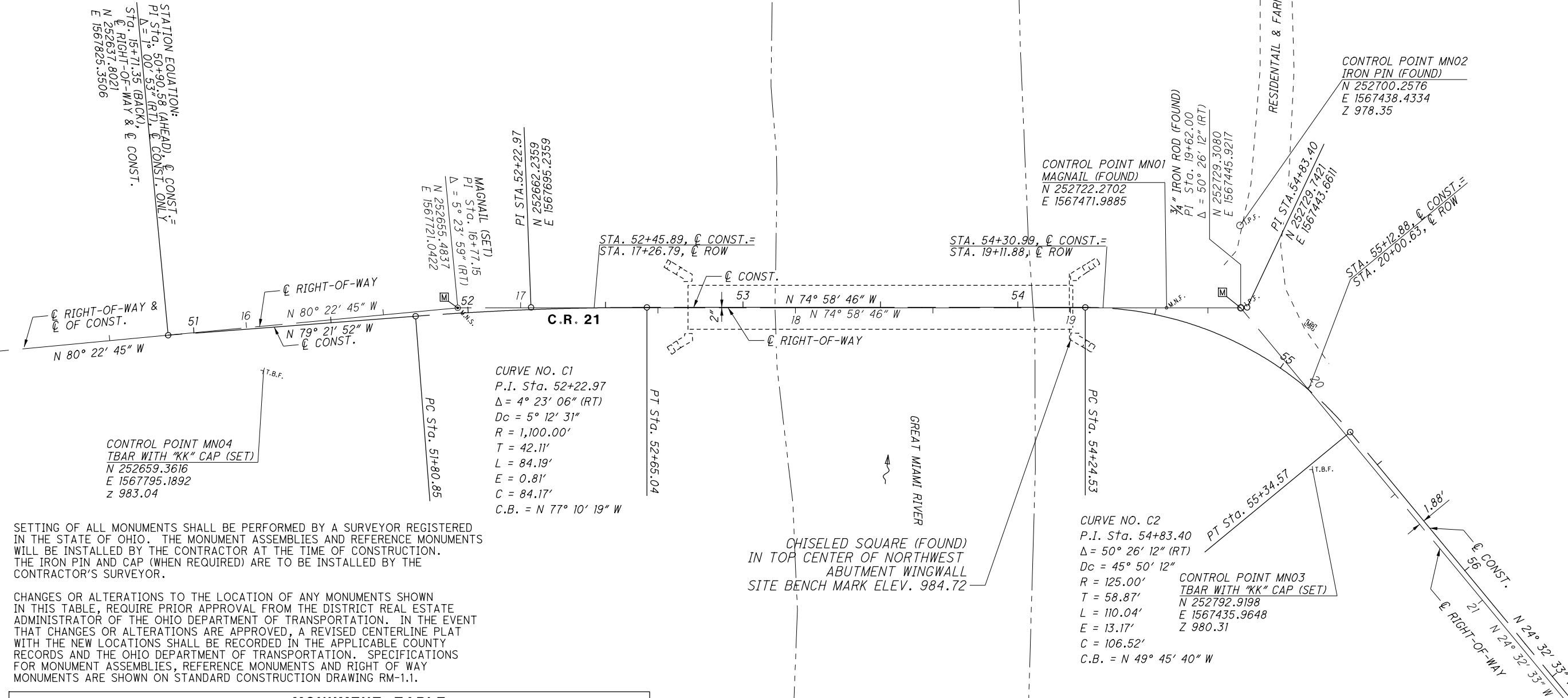
Michael G. Buettner

Michael G. Buettner, Professional Land Surveyor No. 6881

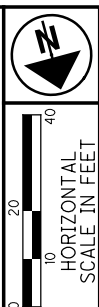
Date: October 31, 2013

**SECTION 1, TOWN 1-RANGE 8
"CONGRESS LANDS WEST OF MIAMI RIVER"
PLEASANT TOWNSHIP
LOGAN COUNTY**

**SECTION 15, TOWN 2-RANGE 14
"BETWEEN THE MIAMIS" SURVEY
PLEASANT TOWNSHIP
LOGAN COUNTY**



- MONUMENT LEGEND**
- ▣ PROPOSED R/W MONUMENT BOX
 - T.B.F. T.B.F. WITH "KK" CAP
 - M.N.F. EXISTING MAGNAIL
 - I.P.F. IRON PIN FOUND
 - M.N.S. MAGNAIL SET



PID NO. **87081**

R/W DESIGNER BS
R/W REVIEWER MGB

CENTERLINE PLAT

LOG-CR 21-1.00

SETTING OF ALL MONUMENTS SHALL BE PERFORMED BY A SURVEYOR REGISTERED IN THE STATE OF OHIO. THE MONUMENT ASSEMBLIES AND REFERENCE MONUMENTS WILL BE INSTALLED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. THE IRON PIN AND CAP (WHEN REQUIRED) ARE TO BE INSTALLED BY THE CONTRACTOR'S SURVEYOR.

CHANGES OR ALTERATIONS TO THE LOCATION OF ANY MONUMENTS SHOWN IN THIS TABLE, REQUIRE PRIOR APPROVAL FROM THE DISTRICT REAL ESTATE ADMINISTRATOR OF THE OHIO DEPARTMENT OF TRANSPORTATION. IN THE EVENT THAT CHANGES OR ALTERATIONS ARE APPROVED, A REVISED CENTERLINE PLAT WITH THE NEW LOCATIONS SHALL BE RECORDED IN THE APPLICABLE COUNTY RECORDS AND THE OHIO DEPARTMENT OF TRANSPORTATION. SPECIFICATIONS FOR MONUMENT ASSEMBLIES, REFERENCE MONUMENTS AND RIGHT OF WAY MONUMENTS ARE SHOWN ON STANDARD CONSTRUCTION DRAWING RM-1.1.

CURVE NO. C1
P.I. Sta. 52+22.97
Δ = 4° 23' 06" (RT)
Dc = 5° 12' 31"
R = 1,100.00'
T = 42.11'
L = 84.19'
E = 0.81'
C = 84.17'
C.B. = N 77° 10' 19" W

CURVE NO. C2
P.I. Sta. 54+83.40
Δ = 50° 26' 12" (RT)
Dc = 45° 50' 12"
R = 125.00'
T = 58.87'
L = 110.04'
E = 13.17'
C = 106.52'
C.B. = N 49° 45' 40" W

CHISELED SQUARE (FOUND)
IN TOP CENTER OF NORTHWEST
ABUTMENT WINGWALL
SITE BENCH MARK ELEV. 984.72

BASIS FOR BEARINGS:
Bearings are based on the grid of the North Zone of the Ohio State Plane Coordinate System.

MONUMENT TABLE

℄ of C.R. 21		PROJECT COORDINATES SEE SURVEY CERTIFICATION		MONUMENTS TO BE SET DURING CONSTRUCTION		DESCRIPTION
STATION	OFFSET	NORTH (Y)	EAST (X)	MON. ASSY.	REF. MON.	
16+77.15	℄	252655.4837	1567721.0422	1		P.I. - ℄ OF R/W
19+62.00	℄	252729.3080	1567445.9217	1		P.I. - ℄ OF R/W
TOTAL CARRIED TO GENERAL SUMMARY SHEET				2		

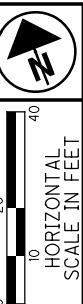
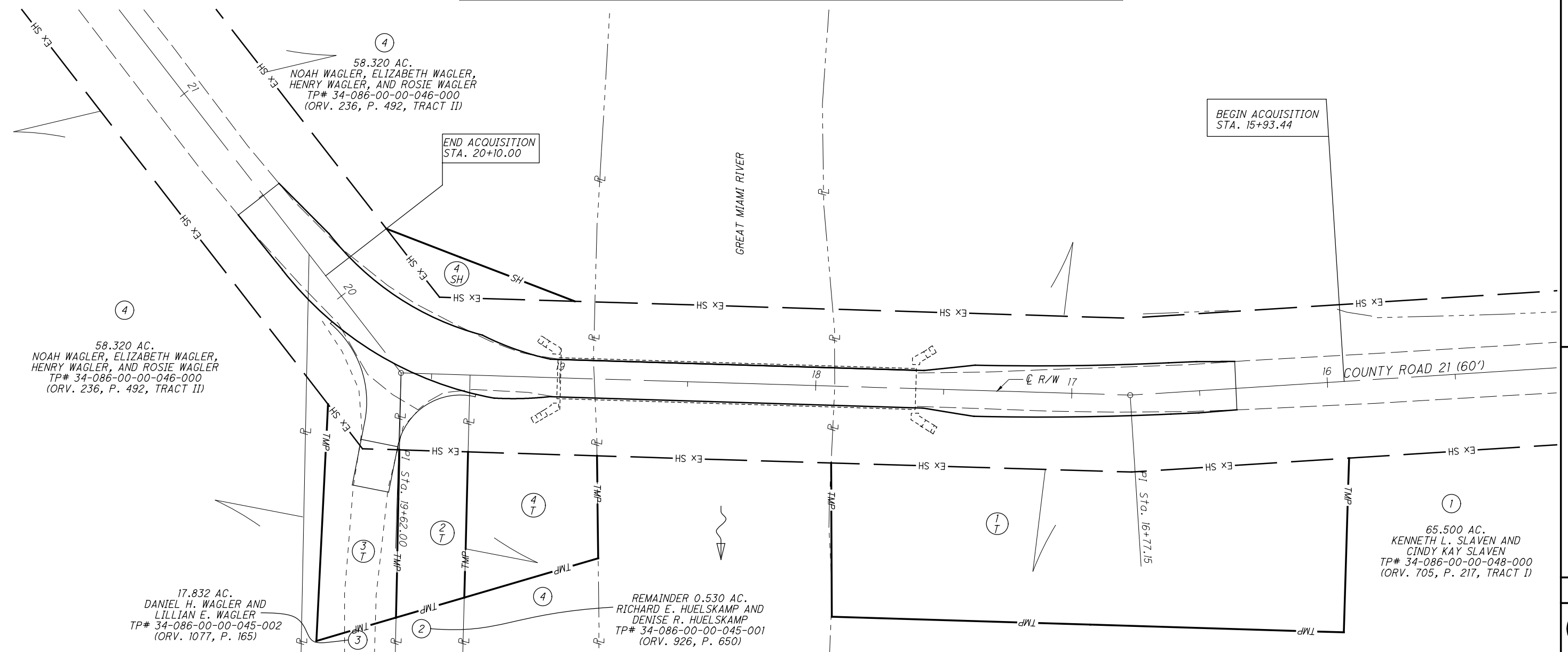
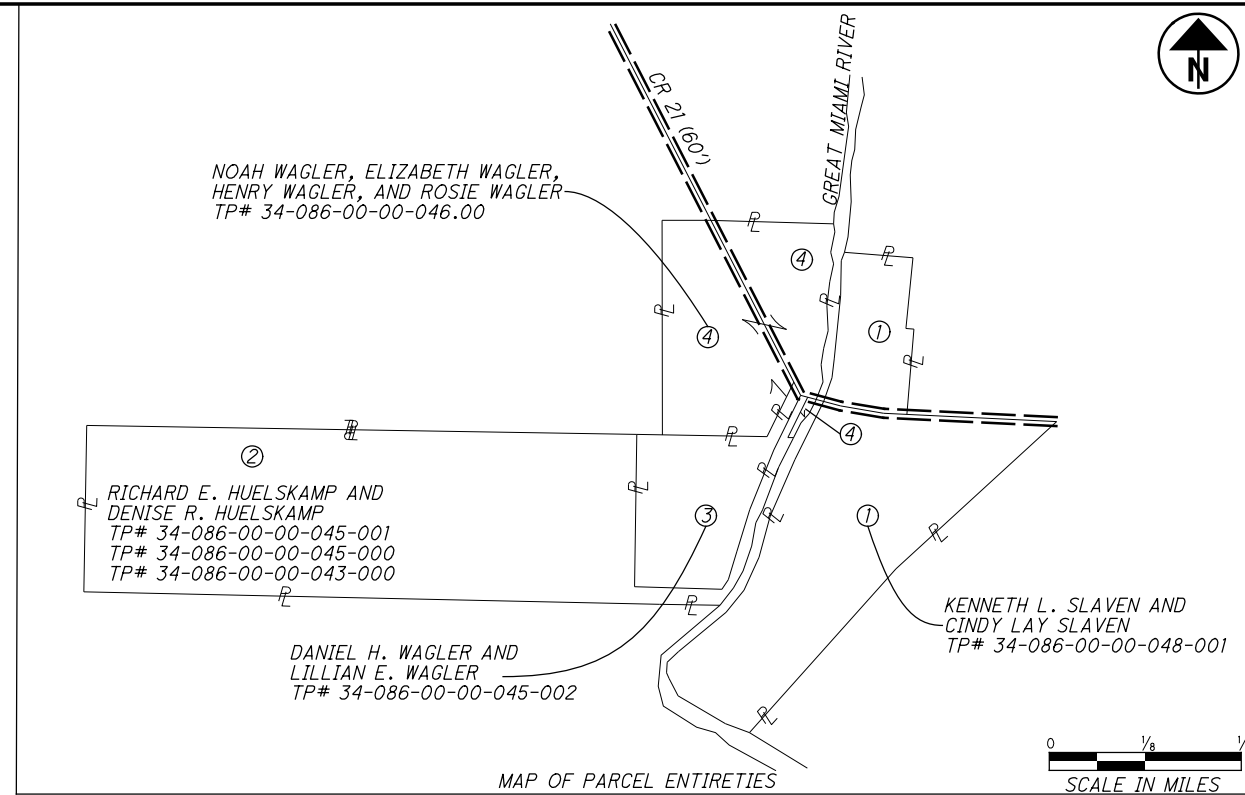
SURVEYORS SEAL

RECEIVED _____, 20____
RECORDED _____, 20____
BOOK _____ PAGE _____
COUNTY RECORDER

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SECTION 1, TOWN 1-RANGE 8
 "CONGRESS LANDS WEST OF
 MIAMI RIVER"
 PLEASANT TOWNSHIP
 LOGAN COUNTY

SECTION 15, TOWN 2-RANGE 14
 "BETWEEN THE MIAMIS" SURVEY
 PLEASANT TOWNSHIP
 LOGAN COUNTY



PID NO.
87081

R/W DESIGNER
 BS
 R/W REVIEWER
 MGB

PROPERTY MAP

LOG-CR 21-1.00

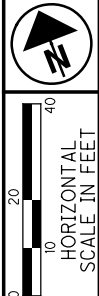
3 / 5
 50
 52

SECTION 1, TOWN 1-RANGE 8
 "CONGRESS LANDS WEST OF MIAMI RIVER"
 PLEASANT TOWNSHIP
 LOGAN COUNTY

SECTION 15, TOWN 2-RANGE 14
 "BETWEEN THE MIAMIS" SURVEY
 PLEASANT TOWNSHIP
 LOGAN COUNTY

MONUMENT LEGEND

- ☐ PROPOSED R/W MONUMENT BOX
- I.P.S. 3/4 INCH DIAMETER IRON PIPE (SET THIS SURVEY WITH ORANGE "K&K/LIMA" PLUG)
- ⊕ T.B.F. TBAR WITH "KK" CAP
- M.N.F. EXISTING MAGNAIL
- I.P.F. IRON PIN FOUND
- M.N.S. MAGNAIL SET



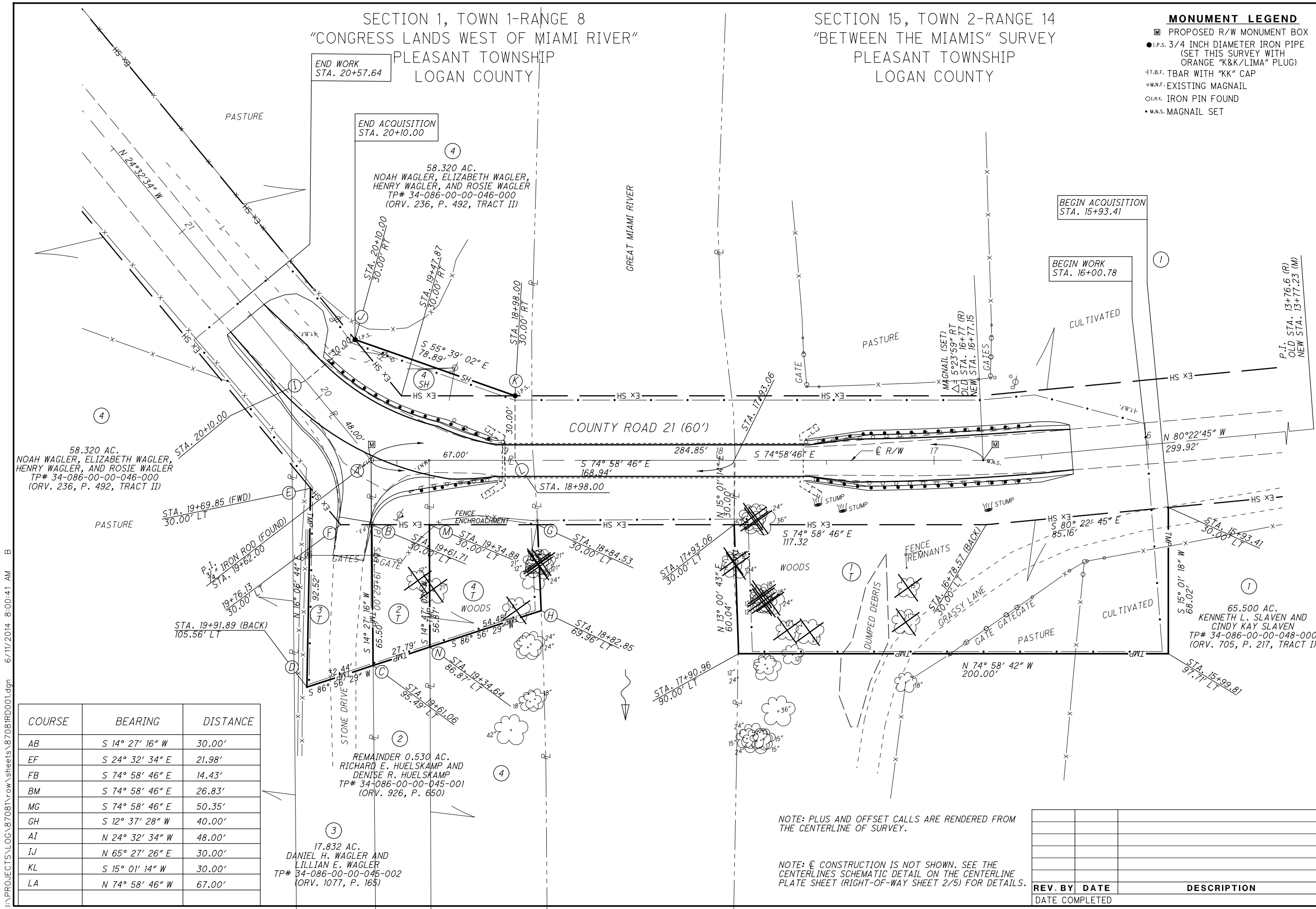
PID NO.
87081

R/W DESIGNER BS
 R/W REVIEWER MGB

RIGHT OF WAY PLAN

LOG-CR 21-1.00

5 / 5
 52
 52



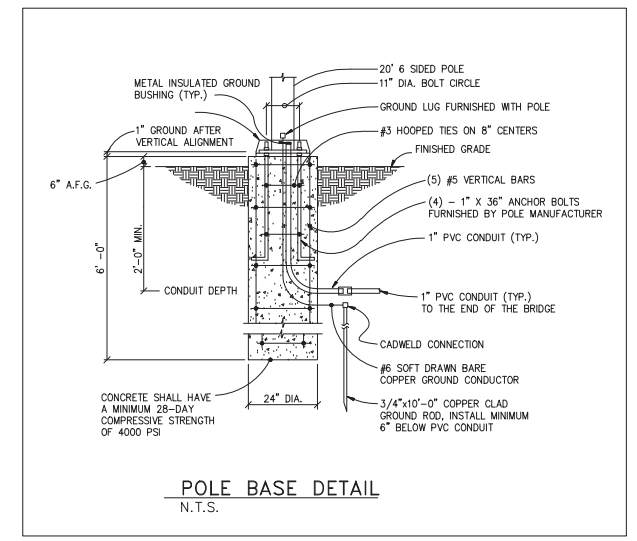
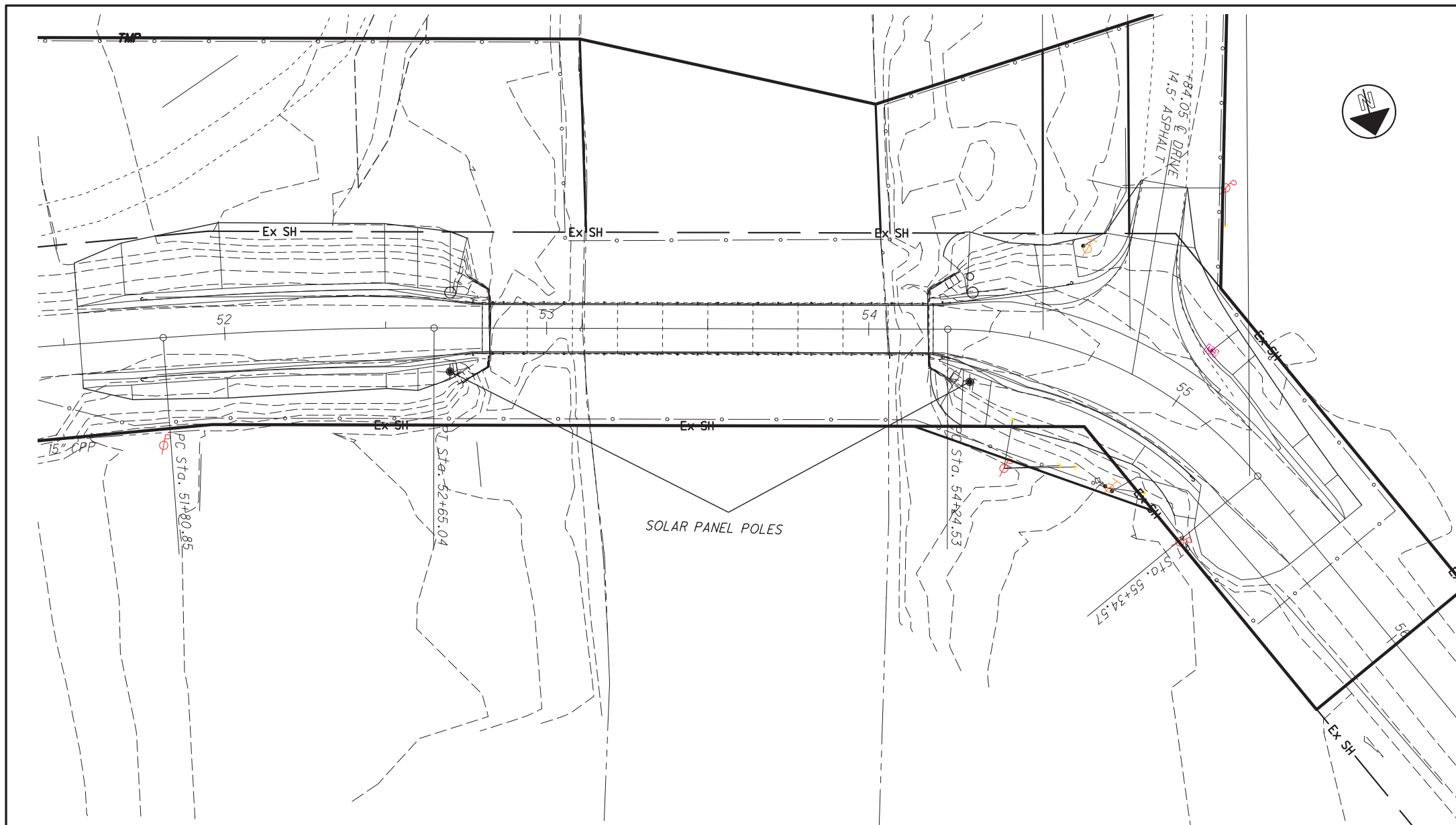
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COURSE	BEARING	DISTANCE
AB	S 14° 27' 16" W	30.00'
EF	S 24° 32' 34" E	21.98'
FB	S 74° 58' 46" E	14.43'
BM	S 74° 58' 46" E	26.83'
MG	S 74° 58' 46" E	50.35'
GH	S 12° 37' 28" W	40.00'
AI	N 24° 32' 34" W	48.00'
IJ	N 65° 27' 26" E	30.00'
KL	S 15° 01' 14" W	30.00'
LA	N 74° 58' 46" W	67.00'

NOTE: PLUS AND OFFSET CALLS ARE RENDERED FROM THE CENTERLINE OF SURVEY.

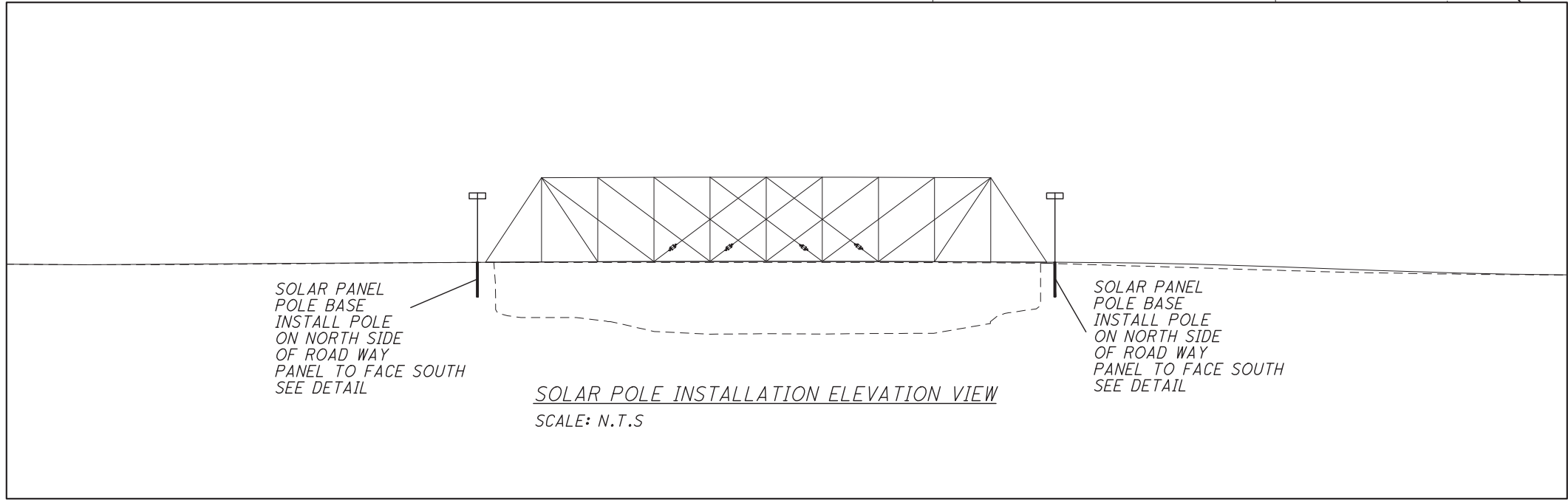
NOTE: @ CONSTRUCTION IS NOT SHOWN. SEE THE CENTERLINES SCHEMATIC DETAIL ON THE CENTERLINE PLATE SHEET (RIGHT-OF-WAY SHEET 2/5) FOR DETAILS.

REV. BY	DATE	DESCRIPTION



POLE & SOLAR PANEL SCHEDULE

POLE	EMBERLED	M-1 (PACKAGE)
EMBERLED M-1 (PACKAGE) INCLUDES A 20' POLE, THE SOLAR PANEL MOUNTING BRACKET, PANEL, THE BATTERY, AND SOLAR COLLECTOR. OR ENGINEER APPROVED EQUAL.		
<p>NOTE:</p> <p>1. THE BATTERY, AND SOLAR CONTROLS WILL NEED TO BE MOUNTED INSIDE THE POLE AT THE BOTTOM</p> <p>2. THE SOLAR PANEL MOUNTING BRACKET AND PANEL, ON THE TOP OF THE POLE WITH THE PANEL FACING SOUTH</p> <p>CALL DAVID KEGELMAYER AT SPECTRUM LIGHTING FOR PRICING ON POLE BASE DESIGN EQUIPMENT 614-486-5354 EXT #42</p>		



CONVERSE ELECTRIC INC.

3783 GANTZ ROAD
GROVE CITY, OHIO 43123
PHONE 871-8700

DESIGN AGENCY

LOG-CR 21-1.00
PID No. 87081

ELECTRIC SITE PLAN
 BRIDGE NO. LOG-21-0100
 OVER GREAT MIAMI RIVER

PERMIT DATE
 3-28-2014

STRUCTURE FILE NUMBER
 4631338

DESIGNED
 BM CHECKED BP

DRAWN
 TOB REVISED 5-13-14

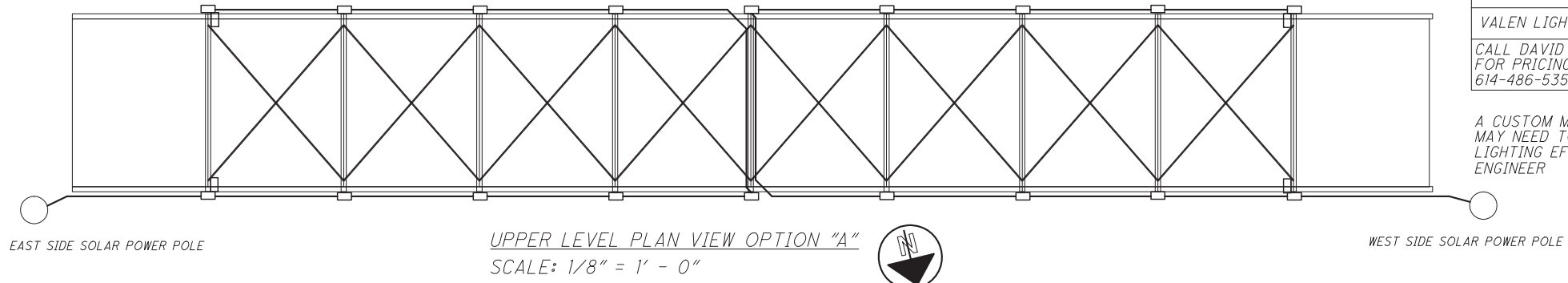
STA. 52+77.27
STA. 54+22.98

E-1

ITEM 625 LIGHTING, MISC.: SOLAR BRIDGE LIGHTING SYSTEM (OPTION "A")

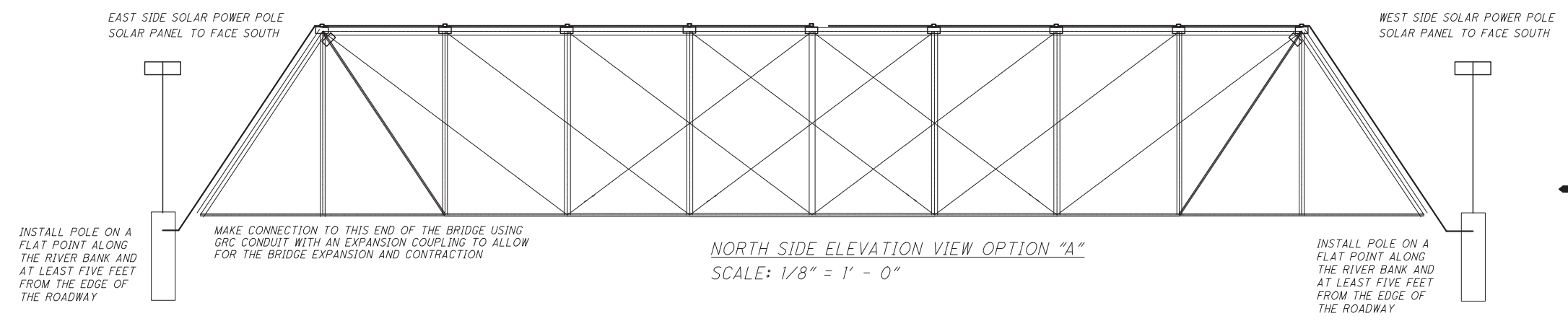
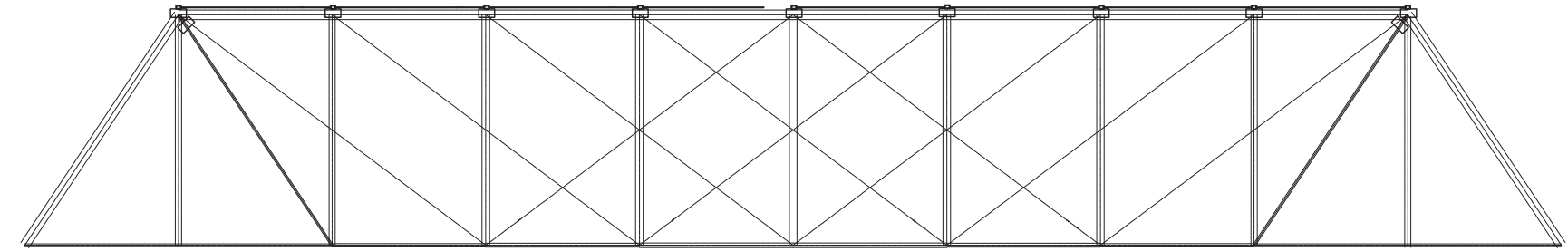
THIS ITEM OF WORK CONSISTS OF THE DESIGN AND CONSTRUCTION OF A SOLAR LIGHTING SYSTEM FOR THE BRIDGE. DETAILS HAVE BEEN PROVIDED IN THE PLANS ON SHEETS E-1 THROUGH E-3. QUANTITIES AND MATERIAL ITEMS SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT NECESSARILY REFLECT ALL REQUIRED MATERIAL AND QUANTITIES NEEDED TO PROVIDE A COMPLETE AND OPERATIONAL LIGHTING SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE AND OPERATIONAL SYSTEM. THE CONTRACTOR'S DESIGN MUST BE SUBMITTED TO THE ENGINEER FOR THEIR APPROVAL. SHOP DRAWINGS OF ALL REQUIRED MATERIALS MUST BE SUBMITTED TO THE ENGINEER FOR THEIR APPROVAL.

THE LUMP SUM PRICE FOR ITEM 625 LIGHTING, MISC.: SOLAR BRIDGE LIGHTING SYSTEM (OPTION "A") SHALL INCLUDE PAYMENT FOR THE DESIGN AND ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO DESIGN AND CONSTRUCT THE SOLAR BRIDGE LIGHTING SYSTEM.



OPTION "A" LIGHT FIXTURE SCHEDULE	
VALEN LIGHT	2.5ESH-MC-D-C503350-V-D5-PG-V4 6/7
VALEN LIGHT	ESH 6/7 (FIXTURE MOUNTING BRACKET)
CALL DAVID KEGELMAYER AT SPECTRUM LIGHTING FOR PRICING ON BASE DESIGN EQUIPMENT 614-486-5354 EXT #42	

A CUSTOM MADE LIGHT FIXTURE MOUNTING BRACKET MAY NEED TO BE CREATED TO INSURE THE PROPER LIGHTING EFFECT DESIRED BY OF THE COUNTY ENGINEER



INSTALL POLE ON A FLAT POINT ALONG THE RIVER BANK AND AT LEAST FIVE FEET FROM THE EDGE OF THE ROADWAY

MAKE CONNECTION TO THIS END OF THE BRIDGE USING GRC CONDUIT WITH AN EXPANSION COUPLING TO ALLOW FOR THE BRIDGE EXPANSION AND CONTRACTION

INSTALL POLE ON A FLAT POINT ALONG THE RIVER BANK AND AT LEAST FIVE FEET FROM THE EDGE OF THE ROADWAY

CONVERSE ELECTRIC INC.
3783 GANTZ ROAD
GROVE CITY, OHIO 43123
PHONE 871-8700

DESIGN AGENCY: **ROHL & KALLER ASSOCIATES, INC.**
 ENGINEERS AND ARCHITECTS
 2244 Baton Rouge Ave., Lima, Ohio 45006 419-227-1088

DESIGNED	DATE
BM	3-28-2014
CHECKED	PERMIT
BP	3-28-2014
	STRUCTURE FILE NUMBER
	4631838
	REVISED
	5-13-14
	TOB
	DRAWN
	TOB

PROPOSED OPTOION "A" 12V LIGHTING PLAN
 BRIDGE NO. LOG-21-0100
 OVER GREAT MIAMI RIVER

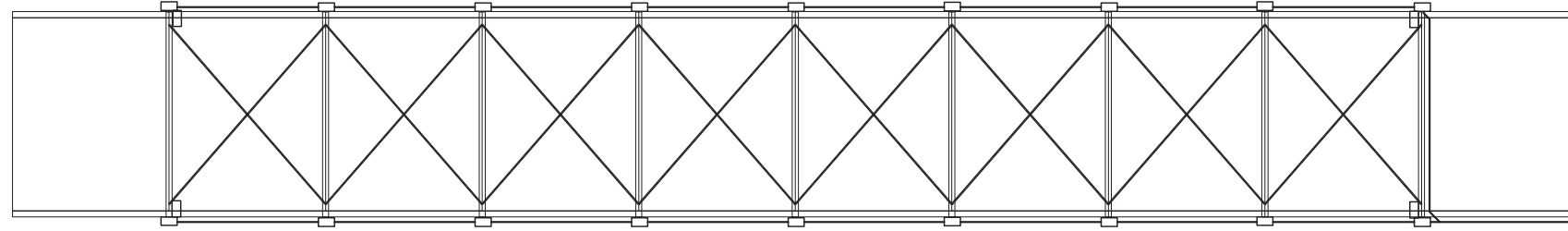
LOG-CR 21-1.00
 PID No. 87081

E-2

ITEM 625 LIGHTING, MISC.: METERED BRIDGE LIGHTING SYSTEM (OPTION B)

THIS ITEM OF WORK CONSISTS OF THE DESIGN AND CONSTRUCTION OF A METERED LIGHTING SYSTEM FOR THE BRIDGE. DETAILS HAVE BEEN PROVIDED IN THE PLANS ON SHEETS E-1 THROUGH E-3. QUANTITIES AND MATERIAL ITEMS SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT NECESSARILY REFLECT ALL REQUIRED MATERIAL AND QUANTITIES NEEDED TO PROVIDE A COMPLETE AND OPERATIONAL LIGHTING SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE AND OPERATIONAL SYSTEM. THE CONTRACTOR'S DESIGN MUST BE SUBMITTED TO THE ENGINEER FOR THEIR APPROVAL. SHOP DRAWINGS OF ALL REQUIRED MATERIALS MUST BE SUBMITTED TO THE ENGINEER FOR THEIR APPROVAL. THE CONTRACTOR SHALL COORDINATE THE DESIGN AND WORK WITH THE ELECTRICAL SERVICE PROVIDER.

THE LUMP SUM PRICE FOR ITEM 625 LIGHTING, MISC.: METERED BRIDGE LIGHTING SYSTEM (OPTION B) SHALL INCLUDE PAYMENT FOR THE DESIGN AND ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO DESIGN AND CONSTRUCT THE METERED BRIDGE LIGHTING SYSTEM.



UPPER LEVEL PLAN VIEW OPTION "B"
SCALE: 1/8" = 1' - 0"

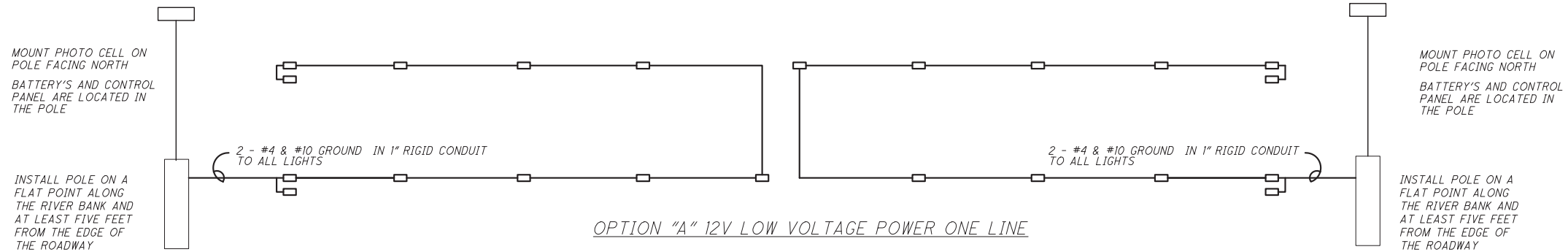
OPTION "B" LIGHT FIXTURE SCHEDULE	
ILLUMITEX	VL504DW45UCA
CALL DAVID KEGELMAYER AT SPECTRUM LIGHTING FOR PRICING ON BASE DESIGN EQUIPMENT 614-486-5354 EXT #42	

A CUSTOM MADE LIGHT FIXTURE MOUNTING BRACKET WILL NEED TO BE CREATED TO INSURE THE PROPER LIGHTING EFFECT DESIRED BY OF THE COUNTY ENGINEER

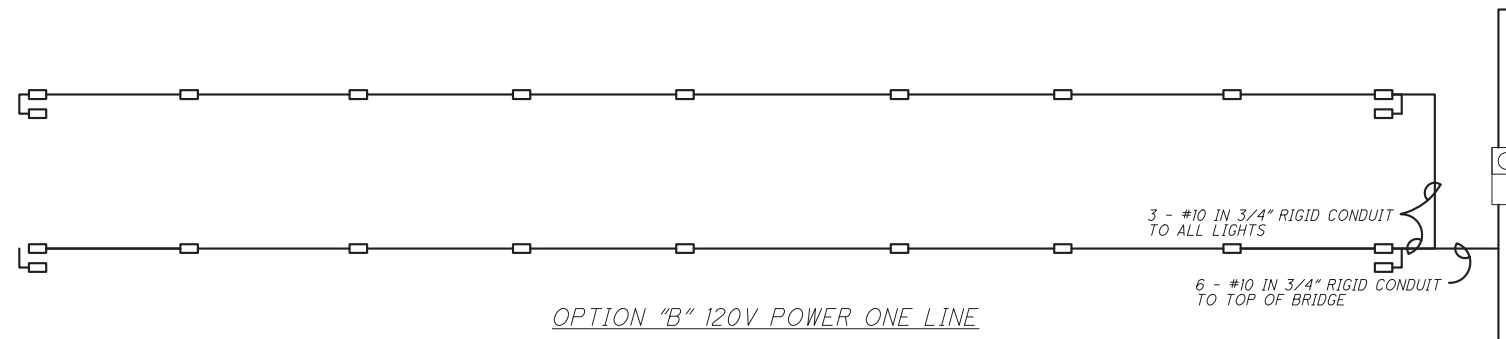
NEW POWER POLE WITH METER AND 120/240V PANEL

EAST SIDE SOLAR POWER POLE

WEST SIDE SOLAR POWER POLE



OPTION "A" 12V LOW VOLTAGE POWER ONE LINE



OPTION "B" 120V POWER ONE LINE

CONVERSE ELECTRIC INC.
3783 GANTZ ROAD
GROVE CITY, OHIO 43123
PHONE 871-8700

DESIGN AGENCY: ROHL & KAHLER ASSOCIATES, INC. ENGINEERS AND ARCHITECTS 2244 Baton Rouge Ave., Lima, Ohio 45808 419-227-1388

PERMIT	DATE	DESIGNED	DRAWN
3-28-2014	3-28-2014	BM	TOB
STRUCTURE FILE NUMBER	4631838	CHECKED	REVISED
		BP	5-13-14

PROPOSED OPTIOIN "B" 120V LIGHTING PLAN AND ONE LINES
BRIDGE NO. LOG-21-0100
OVER GREAT MIAMI RIVER

LOG-CR 21-1.00
PID No. 87081

F-3