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S Ξ -BH-FY2021(B) PID NO. 109131

THIS PROJECT CONSISTS OF VARIOUS REPAIRS INCLUDING REPAIRS, CONCRETE REPAIRS AND GIRDER FLANGE REPAIRS.

0.65 ACRES ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.25 ACRES N/A (NOI NOT REQUIRED)\*

\* ROUTINE MAINTENANCE PROJECT

SEE SHEET 2-5 FOR ROADWAY BRIDGE LOCATION

#### 2019 SPECIFICATIONS

PROJECT DESCRIPTION

PROJECT EARTH DISTURBED AREA:

NOTICE OF INTENT EARTH DISTURBED AREA:

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

JOINT REPAIRS, APPROACH SLAB REPAIRS, BEARING

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

DATE 2/19/2/ DISTRICT DEPUTY DIRECTOR

APPROVED.

DATE\_ DIRECTOR, DEPARTMENT OF TRANSPORTATION

# DEPARTMENT OF TRANSPORTATION CUY-BH-FY2021(B) MISC

STATE OF OHIO

LOCATION	BRIDGE NUMBER	STRUCTURAL FILE NUMBER	CITY	TOWNSHIP	VILLAGE
1**	CUY-008-0127 / SFI	N 1801201 / PROJEC	T BID UNDER CUY-IR071-1640.	/VAR REPAIR / PIL	D NO. 111603
2**	CUY-042-1457 / SFN	1803271 / PROJEC	T BID UNDER CUY-IR071-1640	/VAR REPAIR / PI	D NO. 111603
3	CUY-071-0467	1803875	STRONGSVILLE		
4**	CUY-071-1640 / SFN	1805223 / PROJEC	T BID UNDER CUY-IR071-1640	/VAR REPAIR / PI	D NO. 111603
5	CUY-077-0223	1805762	BRECKSVILLE		
6	CUY-077-0881	1806297	INDEPENDENCE		
7	CUY-077-0909	1806327	INDEPENDENCE		
8	CUY-090-0683	1808508	ROCKY RIVER		
9**	CUY-90-0758 / S	SFN 1808567 / PRO	JECT BID UNDER CUY-90-075	8 REPAIR / PID NO	D. 109531
10	CUY-422-1122	1811258	BEACHWOOD		
11	CUY-422-1827 L	1814958	SOLON		
12	CUY-422-1827 R	1814966	SOLON		
13	CUY-480-1955	1812556	GARFIELD HEIGHTS		
14	CUY-480-2019	1812564	GARFIELD HEIGHTS		
15	CUY-06A-0042	1801074	ROCKY RIVER/LAKEWOOD		
16	CUY-490-0100	1811991	CLEVELAND		

\*\* NOT IN THIS CONTRACT

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MISCELLANEOUS DETAILS	82-88
LOCATION 3 - CUY-71-0467	89-102
LOCATION 5 - CUY-77-0223	103-106
LOCATION 6 - CUY-77-0881	107-115
LOCATION 7 - CUY-77-0909	116-125
LOCATION 8 - CUY-90-0683	126-150
LOCATION 10 - CUY-422-1122	<i>151–170</i>
LOCATION 11 & 12 - CUY-422-1827L&R	171-188
LOCATION 13 - CUY-480-1955	189-205
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OCATION 8 - CUY-90-0683	126-15
OCATION 10 - CUY-422-1122	<i>151–170</i>
OCATION 11 & 12 - CUY-422-1827L&R	171-188
OCATION 13 - CUY-480-1955	189-20
OCATION 14 - CUY-480-2019	206-2
OCATION 15 - CUY-06A-0042	230-2
OCATION 16 - CUY-490-0100	237-2

LOCATION: 3	LOUATIONS: 5-6, 13-13
RYAN RYAN RYAN BP PATRICK MURPHY E-80609 SIGNED: DATE: 1-29-2021	SIGNED: 1-29-2021

CUYANOGAL COUNTY

LOCATION MAP

LATITUDE: 41°24′54″ N LONGITUDE: 81°36′54″ W

(NOTE: FOR COORDINATES PER LOCATION, SEE SHEETS 3-5

ENGINEER'S SEAL:

LOCATION 14

LOCATION 13

LOCATION 5

ENGINEER'S SEAL:

## •OHIO811.org ✓ Before You DIg

LOCATION 6

LOCATION 15

LOCATION 8

LOCATION 3

LOCATION 7

LOCATION 16

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(Non-members must be called directly)

PLAN PREPARED BY:

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

		l
RYAN PATRICK MURPHY E-80609	LOCATIONS: 5-8, 13-15  STATE OF OATO  PATRICK SCHWAN 61571	<i>BP</i>
DATE: 1-29-2021	SIGNED:	BP
ENGINEER'S SEAL:	ENGINEER'S SEAL:	F
LOCATIONS: 10-12  OTHER OF JAMES  A.  O'LEARY  E-59053  O'NAL  O'	LOCATION: 16  LOCATION: 16  MATTHEW  LAWLER  60508	MG MG MG MG MG RM
SIGNED: 1-29-2021	DATE: 01/29/2021	RM RM

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LOCATION 10

306

LOCATION 11 AND 12

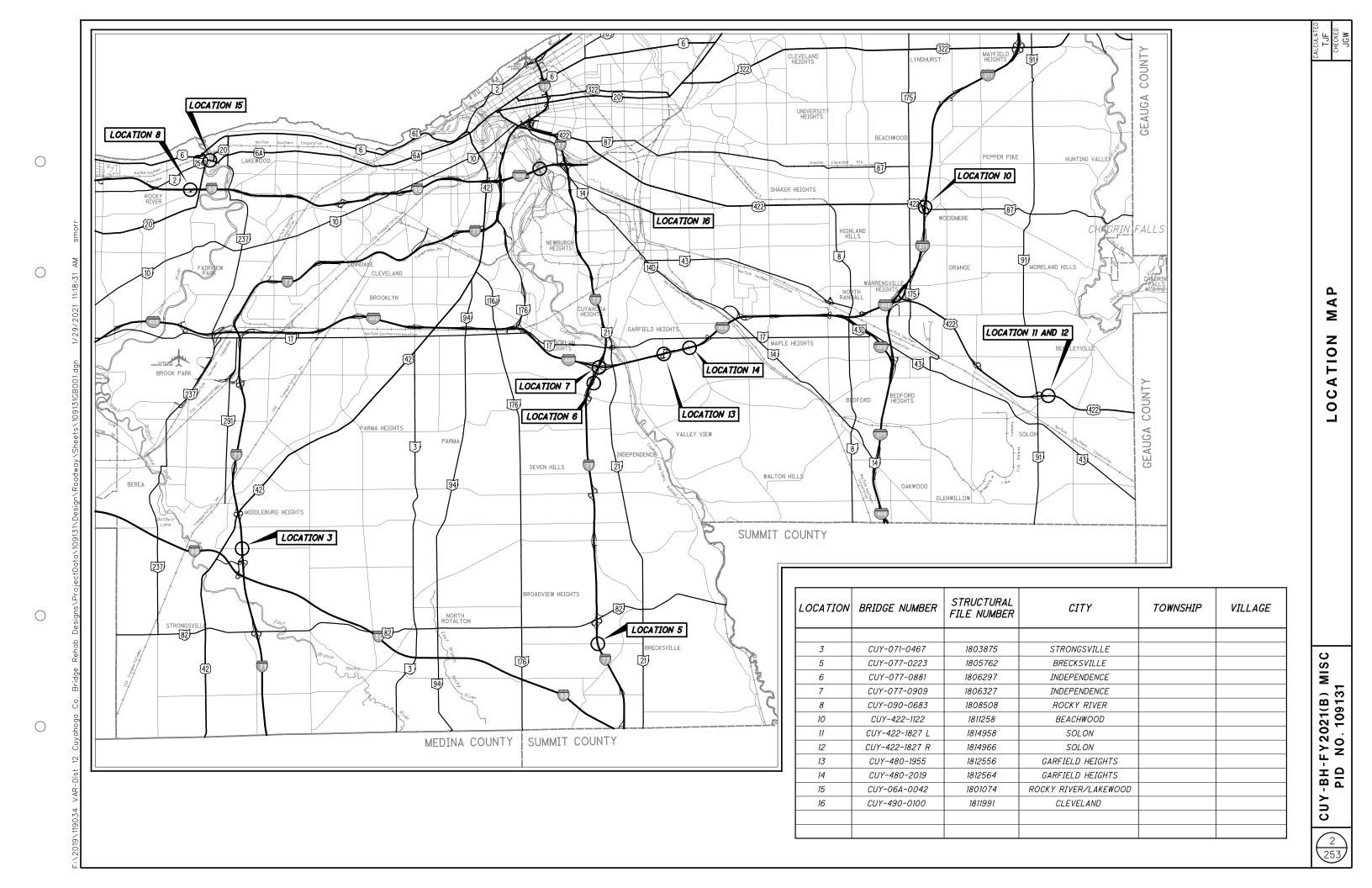
GEAUGA COUNTY

174

STANDARD CONSTRUCTION DRAWINGS											EMENTAL TICATIONS	SPECIAL PROVISIONS
BP-3.1	1-17-20	TC-41.20	10-18-13	MT-95.30	7-19-19	MT-101.60	1-17-20	AS-1-15	7-17-15	800	1-15-21	
BP-5.1	1-18-19	TC-41.30	10-18-13	MT-95.31	7-19-19	MT-101.70	1-17-20	BR-1-13	1-17-14	821	4-20-12	
		TC-42.20	10-18-13	MT-95.32	4-19-19	MT-102.10	1-17-20	BR-2-15	7-17-15	832	10-19-18	
F-1.1	7-19-13	TC-65.10	1-17-14	MT-95.40	1-17-20	MT-102.20	4-19-19	EXJ-4-87	1-19-18	844	4-20-18	
		TC-65.11	7-21-17	MT-95.41	1-17-20	MT-110.10	7-19-13	GSD-1-19	1-15-21	848	1-15-21	
MGS-2.1	1-19-18	TC-71.10	1-19-18	MT-95.45	1-17-20			PCB-91	7-17-20	849	1-18-13	
MGS-3.1	1-19-18			MT-95.50	7-21-17			RB-1-55	7-19-13	902	7-19-19	
MGS-3.2	1-18-13	HL-20.14	4-17-20	MT-96.11	4-17-20			TVPF-1-18	7-20-18	921	4-20-12	
MGS-4.1	1-20-17	HL-30.31	4-17-20	MT-96.20	7-15-16			VPF-1-90	7-20-18	961	4-17-20	
MGS-4.2	7-19-13	HL-50.21	1-15-21	MT-97.10	4-19-19					987	1-16-09	
MGS-4.3	1-18-13	HL-60.11	7-21-17	MT-97.20	4-19-19							
		HL-60.12	1-15-21	MT-98.10	1-17-20							
RM-4.2	4-17-20			MT-98.11	1-17-20							
RM-4.3	7-18-14			MT-98.20	4-19-19							
RM-4.5	7-21-17			MT-98.29	1-17-20							
RM-4.6	7-19-13		·	MT-99.30	1-17-20				·		·	·

UNDERGROUND UTILITIES Contact Two Working Days Before You Dig OHIO811, 8-1-1, or 1-800-362-2764

RICHLAND ENGINEERING LIMITED





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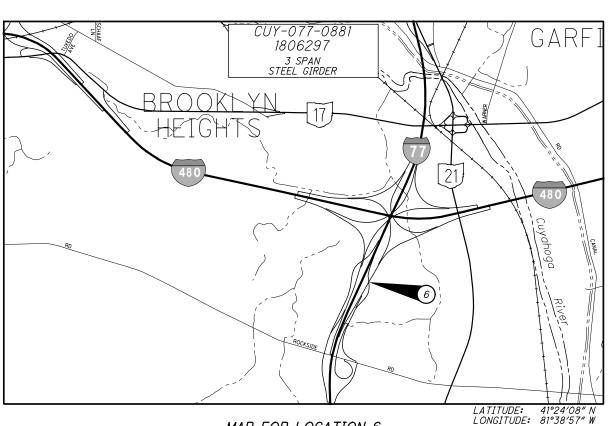
MISC -BH-FY2021(B) | PID NO. 109131 CUY

CUY-071-0467 1803875 4 SPAN CONTINUOUS ROLLED STEEL BEAM  $\bigcirc$ LATITUDE: 41°20′35″ N LONGITUDE: 81°49′03″ W MAP FOR LOCATION 3

 $\bigcirc$ 

 $\bigcirc$ 

PROPOSED WORK (I)
REPLACE EXPANSION JOINT
REPAIR END CROSSFRAMES
INSTALL TIMBER SUB-DECKING
REPAIR PIER COLUMNS

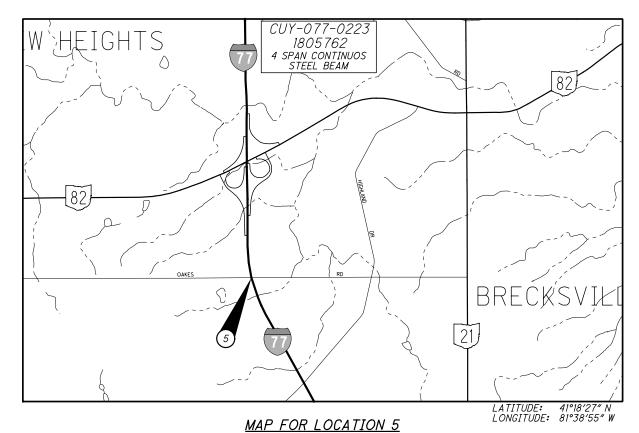


## MAP FOR LOCATION 6

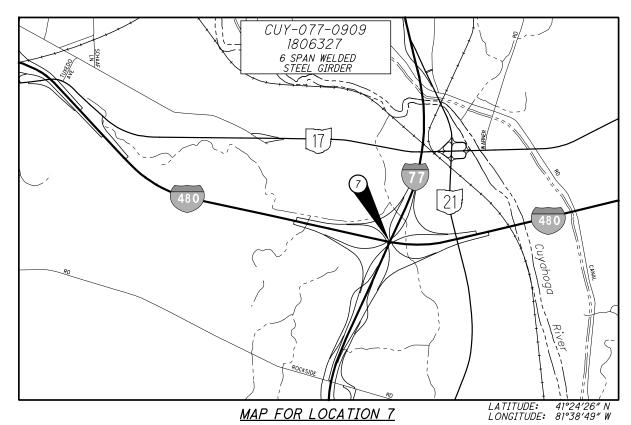
PROPOSED WORK (1)
REPAIR IMPACT DAMAGE TO WEST FASCIA GIRDER
REPAIR PIER COLUMNS
PATCH ABUTMENT SEATS, BREASTWALLS AND DECK
REPLACE DAMAGED CROSSFRAMES

## <u>LEGEND</u>

(I) WORK SHOWN IS REPRESENTATIVE AND DOES NOT INCLUDE ALL WORK REQUIRED.



PROPOSED WORK (1) REPAIR PIER COLUMNS PATCH PIER CAPS



PROPOSED WORK (I)
REPLACE EXPANSION JOINT
PATCH ABUTMENT SEATS, BREASTWALL, BACKWALL AND WINGWALL



CUY-090-0683 1808508 4 SPAN CONCRETE CURVED BUILT UP GIRDER 6 254D Norfolk Souther

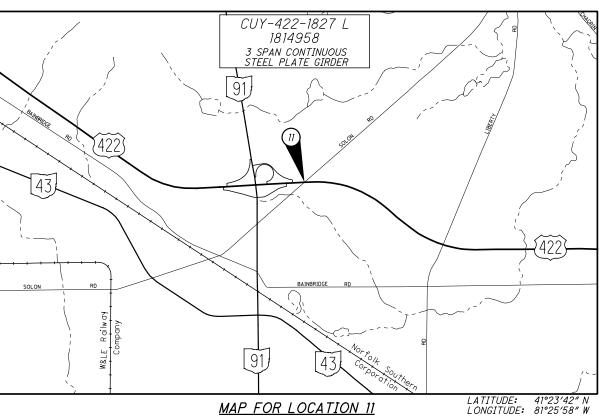
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#### MAP FOR LOCATION 8

PROPOSED WORK ①
REPLACE EXPANSION JOINTS
REPLACE APPROACH SLABS
REPAIR PIER COLUMNS
REPAIR DAMAGED CONCRETE ON ABUTMENT SEATS, BREASTWALLS

LATITUDE: 41°28′19″ N LONGITUDE: 81°50′25″ W

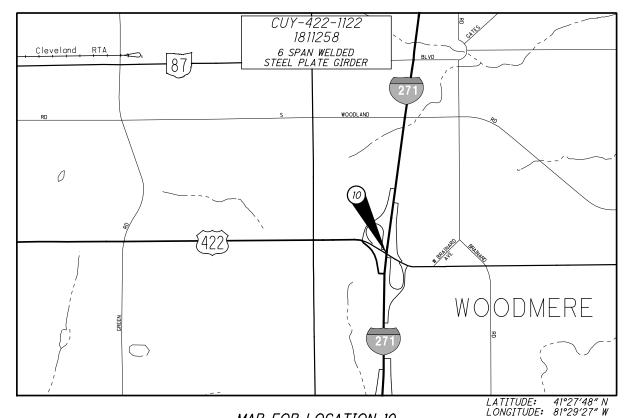


MAP FOR LOCATION 11

PROPOSED WORK (I) REPLACE END CROSSFRAMES REPAIR ABUTMENT REPLACE CONCRETE SLOPE PROTECTION

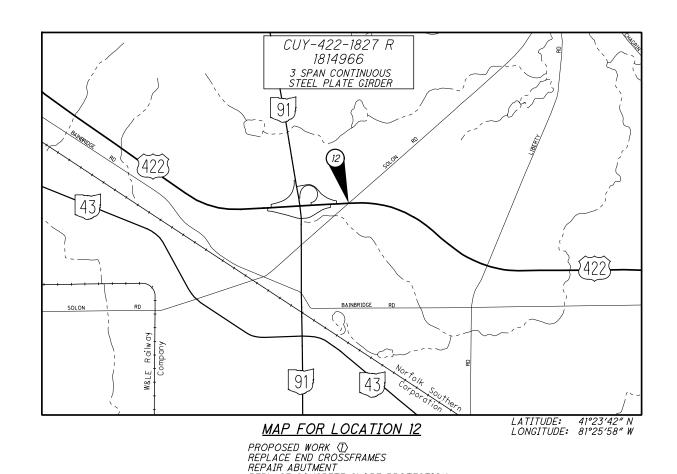
## <u>LEGEND</u>

(I) WORK SHOWN IS REPRESENTATIVE AND DOES NOT INCLUDE ALL WORK REQUIRED.



#### MAP FOR LOCATION 10

PROPOSED WORK (I)
REPAIR PIER COLUMNS
REPLACE EXPANSION JOINT REPAIR ABUTMENT



REPLACE CONCRETE SLOPE PROTECTION

253

-BH-FY2021(B) | PID NO. 109131

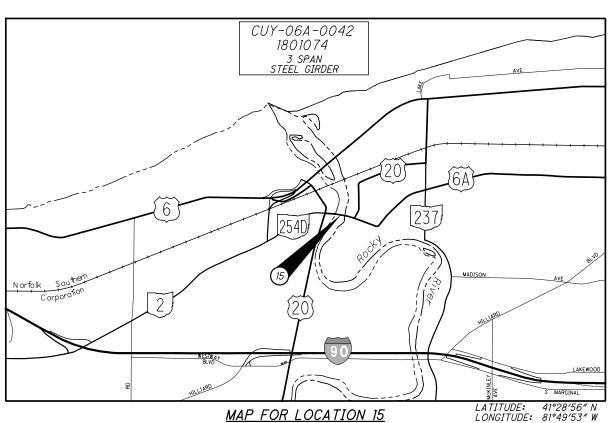
CUY-480-1955 1812556 5 SPAN CONTINUOUS WELDED STEEL PLATE GIRDER

LATITUDE: 41°24′42″ N LONGITUDE: 81°36′57″ W

 $\bigcirc$ 

## MAP FOR LOCATION 13

PROPOSED WORK (1)
REPAIR PIER COLUMNS
RESET BEARINGS
REPLACE SIDEWALK AND RAILING
INSTALL TIMBER SUBDECK

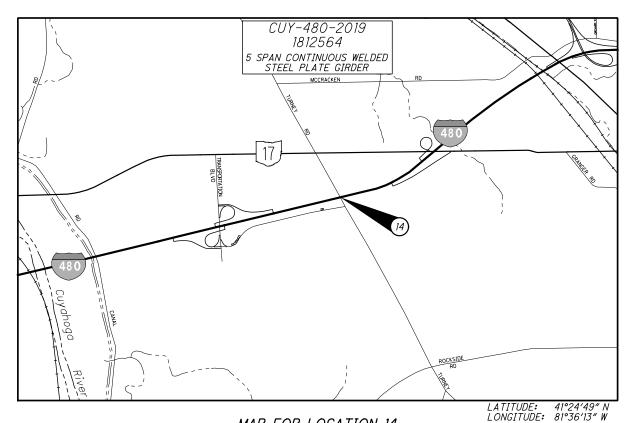


## MAP FOR LOCATION 15

REPLACE BOTTOM CHORD OF END CROSSFRAMES

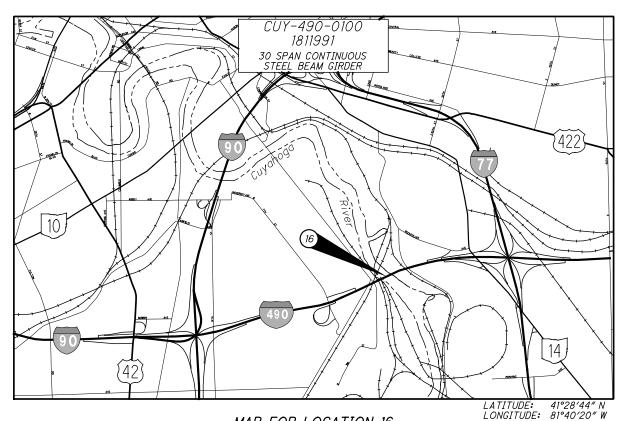
## <u>LEGEND</u>

(I) WORK SHOWN IS REPRESENTATIVE AND DOES NOT INCLUDE ALL WORK REQUIRED.



#### MAP FOR LOCATION 14

PROPOSED WORK (1)
REPAIR PIER COLUMNS
REPAIR DETERIORATED GIRDER ENDS AND CROSSFRAMES
INSTALL STRIP SEAL JOINT
REPAIR ABUTMENT BACKWALL, SEAT AND BREASTWALL



## MAP FOR LOCATION 16

PROPOSED WORK (I) REPAIR BRIDGE DECK REPAIR PARAPETS REPAIR FENCE



	LOCATION	BRIDGE NUMBER	STRUCTURAL FILE NUMBER	STRUCTURE TYPE	STRUCTURE LIMITS	BRIDGE WIDTH (OUT/OUT)	LANES ON	LANES UNDER	SEALER AND PAINT COLOR	PROPOSED WORK (WORK SHOWN IS REPRESENTATIVE AND DOES NOT INCLUDE ALL WORK REQUIRED)	RICHLAND ENGINEERING LIMITED  29 NORTH PARK STREET  MANSFIELD, OHIO 44902
										- REMOVE AND REPLACE VANDAL PROTECTION FENCE	G ∐ ₹ ST
										- REPLACE SIDEWALK AND PARAPET	ERIN P. OF
										- REPLACE EXPANSION JOINT	GINE
										- REPAIR ABUTMENT BACKWALLS, SEATS AND BREASTWALLS	29 N MANS
										- REPLACE END CROSSFRAMES	TA LAN
	3	CUY-71-0467	1803875	4 SPAN CONTINUOUS	282.00′	40′-4″	2	6	N/A	- PATCH AND FIBER WRAP PIER COLUMNS	
$\bigcirc$		001-11-0401	1003013	STEEL BEAM	202.00	40 -4	2		N/ A	- PATCH PIER CAPS	
										- REFURBISH BEARINGS	DATE 2/5/21 ILE NUMBER OUS
										- REPAIR SLOPE PROTECTION AT FORWARD ABUTMENT	2/ FILE STOUS
										- INSTALL TIMBER SUB-DECKING	WED P. CTURE
morr										- SEAL WEARING SURFACE	REVIEWE ALP STRUCTU
σ										- CLEAN OUT SCUPPERS	z <b>-</b> 0
O AM				4 SPAN						- PATCH AND FIBER WRAP PIER COLUMNS	DRAWN SAM REVISED
9:55	5	CUY-77-0223	1805762	CONTINUOUS STEEL BEAM	290.62′	38′-4″	2	6	N/A	- PATCH PIER CAPS	
8				OTELL BEAM							ESIGNED TJF HECKED JGW
2021										- REPAIR IMPACT DAMAGE TO WEST FASCIA GIRDER AND REPLACE DAMAGED CROSSFRAMES	DES OH
11/	6	CUY-77-0881	1806297	3 SPAN STEEL GIRDER	284.22′	30′-4″	1	3	N/A	- PATCH ABUTMENT SEATS, BREASTWALLS AND CONCRETE BRIDGE DECK	
7	Ŭ	001 17 0001	7000207	STEEL GIRDER	207.22	30 ,	,		177.71	- PATCH AND FIBER WRAP PIER COLUMNS	
dan	, and the second									- REPLACE TOP OF BACKWALL	
0001				6 SPAN						- REPLACE EXPANSION JOINT	
131EC	7	CUY-77-0909	1806327	WELDED STEEL GIRDER	884.56′	91'-4"	4	2	N/A	- PATCH ABUTMENT SEATS, BREASTWALL, BACKWALL AND WINGWALL	
,109,				OTELL GINDEN							
e ts,										- REPLACE EXPANSION JOINTS	
She										- REPLACE APPROACH SLABS & ADD TYPE C INSTALLATION	ABLE
γ γ α										- PATCH AND SEAL PARAPET	_
ري 0				4 SPAN						- REPAIR DAMAGED CONCRETE ON ABUTMENT SEATS AND BREASTWALLS	 A⊤A
Sign	8	CUY-90-0683	1808508	CONCRETE GIRDER	379.73′	48′-0″	3	6	N/A	- SEAL EXPOSED ABUTMENT SURFACES	DAT
)   										- PATCH AND FIBER WRAP PIER COLUMNS	URE
0913,										- REPLACE BRIDGE TERMINAL ASSEMBLIES	STRUCTU
ta / 16										- REMOVE AND REERECT GROUND MOUNTED SIGNS	T IN
ctDa										- PATCH AND FIBER WRAP PIER COLUMNS	
. <u>ē</u>										- REPLACE AND PAINT BEAMS	
O S				6 SPAN						- PATCH AND SEAL PARAPETS	
esign	10	CUY-422-1122	1811258	WELDED STEEL PLATE GIRDER	476.00′	69'-0"	4	12	N/A	- REPLACE STRIP SEAL AT THE REAR ABUTMENT	
0 95										- REPAIR ABUTMENTS	
Reho										- REFURBISH ABUTMENT BEARINGS	
d de	n									- REPAIR CURB	္မ
Br.										- PATCH AND SEAL PARAPETS	MISC
S										- REFURBISH BEARINGS	(-BH-FY2021(B)   PID No. 109131
	n									- REPLACE END CROSSFRAMES	021(
ολnΩ	11	CUY-422-1827L	1814958	3 SPAN CONTINUOUS STEEL	242.21′	54′-2″	.3	2	N/A	- REPAIR ABUTMENT	
5	"	001 122 10212	7077000	PLATE GIRDER	2 /2 .2 /	0, 2	J	_	777	- REPLACE CONCRETE SLOPE PROTECTION	<b>─</b>
Dist										- MAKE DRAINAGE IMPROVEMENTS	
'AR-[										- PATCH AND FIBER WRAP PIER COLUMN	CUY
34											1/2
1190.											1/2
019											6 253
:.7											253

	LOCATION	BRIDGE NUMBER	STRUCTURAL FILE NUMBER	STRUCTURE TYPE	STRUCTURE LIMITS	BRIDGE WIDTH (OUT/OUT)	LANES ON	LANES UNDER	SEALER AND PAINT COLOR	PROPOSED WORK (WORK SHOWN IS REPRESENTATIVE AND DOES NOT INCLUDE ALL WORK REQUIRED)	MITED	MANSFIELD, OHIO 44902
										- PATCH AND SEAL PARAPETS		K STF
1										- REFURBISH BEARINGS	- IS	PAR,
				3 SPAN			_			- REPLACE END CROSSFRAMES		SET
1	12	CUY-422-1827R	1814966	CONTINUOUS STEEL PLATE GIRDER	242.21′	54′-2″	3	2	N/A	- REPAIR ABUTMENT		29 NG
										- REPLACE CONCRETE SLOPE PROTECTION	₽	<b>⇒</b> ,
										- MAKE DRAINAGE IMPROVEMENTS	ᅰ┇	
										- PATCH PIER COLUMNS		
r										- RESET BEARING		/ZI
l										- PATCH AND FIBER WRAP PIER COLUMNS AND SEAL PIER CAPS	DA C	Z/5 ILE NI OUS
										- REPLACE SIDEWALK AND RAILING ON EAST SIDE OF BRIDGE		VARIOUS
										- PATCH APPROACH SLABS	VIEWE	- 15
l				5 SPAN						- CLEAN AND PAINT END GIRDERS AND CROSSFRAMES		ST
l	13	CUY-480-1955	1812556	CONTINUOUS WELDED STEEL GIRDER	408.34′	79′-0″	4	10	N/A	- INSTALL TIMBER SUBDECK	N A	SAM
				STEEL SINDER						- REPAIR DAMAGED CONCRETE ON ABUTMENT SEATS AND BACKWALLS	———————————————————————————————————————	ν REI
l										- SEAL EXPOSED ABUTMENT SURFACES		V ED
l										- REPLACE BRIDGE TERMINAL ASSEMBLIES	ESIGN	CHECKE JGW
۱												
										- REMOVE AND REERECT LIGHT POLES ON STRUCTURE		
ŀ										- REPLACE LIGHTING CONDUIT AND WIRE THROUGH BRIDGE LIMITS		
ì										- REPAIR DETERIORATED GIRDER ENDS AND CROSSFRAMES		
										- INSTALL NEW STRIP SEAL JOINT		
										- REPAIR ABUTMENT BACKWALL, SEAT AND BREASTWALL		
										- PATCH AND FIBER WRAP PIER COLUMNS		2
										- PATCH PIER CAPS		1
										- REMOVE CURB BARRIER		ABLE
				5.6844						- REPLACE SIDEWALK, RAILING AND FENCE ON BRIDGE		<b>⊢</b>
	14	CUY-480-2019	1812564	5 SPAN CONTINUOUS WELDED	361.84′	66′-4″	4	8	N/A	- REPAIR SLOPE PROTECTION		DATA
				STEEL GIRDER						- RESET BEARINGS		
										- TRIM BEAM ENDS		JRE
										- INSTALL TIMBER SUBDECK		STRUCTUR
										- REPLACE CURB AND SIDEWALK ON APPROACH SLABS		P. I
										- REPLACE GUARDRAIL AND CHAIN LINK FENCE		.v
										- REMOVE AND REERECT GROND MOUNTED SIGNS		
										- REMOVE AND REERECT LIGHT POLES ON STRUCTURE		
										- REPLACE LIGHTING CONDUIT AND WIRE THROUGH BRIDGE LIMITS		
										- PATCH APPROACH SLAB		
										- PATCH AND SEAL RAILING		
	<i>15</i>	CUY-06A-0042	1801074	3 SPAN	379.73′	48′-0″	3	6	N/A	- REPLACE FORWARD EXPANSION JOINT		
1	,,,	007 0071 0072	1007077	STEEL GIRDER	070.75	,,,,,			70 71	- REPLACE BOTTOM CHORD OF END CROSSFRAMES		
										- REPLACE TELEPHONE DUCT SUPPORT STINGERS		
										- REPAIR CURB AND SIDEWALK ON NW CORNER		109131
r										- REPAIR BRIDGE DECK	(2021(B)	100
	16	CUY-490-0100	1811991	30 SPAN CONTINUOUS STEEL	3461.82′	69′-1″	8	3	N/A	- REPAIR PARAPETS	} ∴	. ž
				BEAM GIRDER						- REPAIR FENCE	<u> </u>	PID GI
ŀ				1							I >	-
											<b></b>  ∃	5
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L												253

#### **UTILITIES**

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

 $\bigcirc$ 

CHARTER COMMUNICATIONS 8179 DOW CIRCLE STRONGSVILLE, OHIO 44136 PHONE: (216) 575-8016 EX. 5033 ATTN: GARY NAUMANN Gary.naumann1@charter.com

COX COMMUNICATIONS 1221 PLAZA DRIVE PARMA, OHIO 44130 PHONE: (216) 535-3356 ATTN: CRAIG J. SMITH Craig.smith@cox.com

#### COMMUNICATIONS

13630 LORAIN AVENUE - 2ND FLOOR CLEVELAND, OHIO 44111 PHONE: (216) 476-6142 ATTN: JAMES JANIS Pi8191@att.com

EVERSTREAM SOLUTIONS
1228 EUCLID AVENUE, SUITE 250
CLEVELAND, OHIO 44115 PHONE: (216) 923-2206 ATTN: STACEY DASHER <u>sdasher@ecerstream.net</u>

MASTEC UTILITY SERVICES 7300 NORTHFIELD ROAD WALTON HILLS, OHIO 44146 PHONE: (216) 212-2490 ATTN: MICHAEL SHANEE

VERIZON (MCI) 12300 RIDGE ROAD NORTH ROYALTON, OHIO 44133 PHONE: (440) 457-4832 ATTN: DAN ARZ <u>Daniel.arz@verizon.com</u>

WIDE OPEN WEST (WOW) 105 BLAZE INDUSTRIAL PARKWAY BEREA, OHIO 44017 PHONE: (440) 625-0349 ATTN: BOB HAMMOND DIRECTOR, PLANT MAINTENANCE PHONE: (440) 606-6262 bob.hammond@wowing.com LARRY BURRUEL PROJECT CONSTRUCTION COORDINATOR PHONE: (440) 915-9256 Larry.burruel@wowinc.com

WINDSTREAM 560 TERNES AVENUE ELYRIA, OHIO 44035 PHONE: (440) 329-4245 ATTN: GEOFFREY HAMM Geoffrey.p.hamm@windstream.com

ZAYO FIBER SOLUTIONS 305 E. WIGGIN STREET GAMBIER, OHIO 43022 PHONE: (740) 501-6921 ATTN: SCOTT HEINLEN Scott.heinlen@zayo.com JOHN P. BRUCF PHONE: (769) 216-8095 John.bruce@zayo.com

#### **ELECTRIC**

THE ILLUMINATING CO. (FIRST ENERGY) FIRST ENERGY
6896 MILLER ROAD, SUITE 101
BRECKSVILLE, OHIO 44141
PHONE: (440) 546-8706 ATTN: JOHN M. ZASSICK <u>inzassick@firstenergycorp.com</u>

#### <u>GAS</u>

COLUMBIA GAS OF OHIO 7080 FRY ROAD MIDDLEBURG HEIGHTS, OHIO 44130 PHONE: (440) 891-2428 ATTN: DAN SUREN dsuren@nicource.com

DOMINION ENERGY OHIO 320 SPRINGSIDE DRIVE, SUITE 320 AKRON, OHIO 44333 PHONE: (330) 664-2481 ATTN: MICHAEL R. ANTONIUS Michael.r.antonius@dominionenergy.com PLANS TO: DOMINION ENERGY OHIO ATTN.: 2ND FLOOR RELOCATION DESIGN 320 SPRINGSIDE DRIVE, SUITE 320 AKRON, OHIO 44333 FMAII: relocation@dominionenergy.com (20 PAGES OR LESS) PHONE: (330) 664-2409

NORTHEAST OHIO NATURAL GAS CORP. 9081 STATE ROUTE 250 STRASBURG, OHIO 44680 PHONE: (800) 848-5589 ATTN: MARK WETZEL <u>mwetzel@egas.net</u>

FAX: (888) 504-0126

AIR PRODCUTS AND CHEMICALS, INC. 2820 QUIGLEY ROAD CLEVELAND, OHIO 44113 ATTN: JAMES E. JONES

#### **LIGHTING**

OHIO DEPARTMENT OF TRANSPORTATION ROADWAY SERVICES & LIGHTING 5500 TRANSPORTATION BLVD. GARFIELD HEIGHTS, OHIO 44125 ATTN: ANTHONY TOTH

#### OIL AND GAS

ENERGY TRANSFER (SUNOCO) ENCROACHMENT REVIEW
525 FRITZTOWN ROAD
SINKING SPRING, PA 19608
PHONE: (610) 670-3258 ATTN: DEB SCHNECK Debra.Schneck@energytransfer.com

#### SEWER AND WATER

CITY OF GARFIELD HEIGHTS 5407 TURNEY ROAD GARFIELD HEIGHTS, OHIO 44125 PHONE: (216) 475-3855 ATTN: ALLISON HULL ahull@garfieldhts.org

CITY OF INDEPENDENCE 6335 SELIG DRIVE INDEPENDENCE, OHIO 44131 PHONE: (216) 524-1374 ATTN: DONALD RAMM rammdo@independenceohio.org

CITY OF BEACHWOOD SERVICE DEPARTMENT 23355 MERCANTILE ROAD BEACHWOOD, OHIO 44122 PHONE: (216) 282-1922 ATTN: CHRIS ARRIETTA chris.arrietta@beachwoodohio.com

#### SEWER AND WATER

CITY OF LAKEWOOD ENGINEERING DEPARTMENT *12650 DETROIT ROAD* LAKEWOOD, OHIO 44107 PHONE: (216) 529-6692 engineering@lakewoodoh.net SEWER

NORTHEAST OHIO REGIONAL SEWER DISTRICT

CUYAHOGA COUNTY ADMINISTRATIVE HEADQUARTERS

ATTN: STEPHEN N. TOTH, P.E., P.S., MSCE

(NEORSD) NEORSD - WATERSHED PROGRAMS 3900 EUCLID AVE. CLEVELAND, OHIO 44115 PHONE: (216) 881-6600, EXT. 6466

ATTN: MARY MACIEJOWSKI

Maciejowskim@neorsd.org

2079 EAST NINTH STREET

stoth@cuyahogacounty.us

CLEVELAND, OHIO 44115 PHONE: (216) 443-8213

DEPARTMENT OF PUBLIC WORKS

PUBLIC WORKS

ENGINEER IV

CITY OF STRONGSVILLE CITY ENGINEER 17 ENGINEER 16099 FOLTZ PARKWAY STRONGSVILLE, OHIO 44149 PHONE: (440) 580-3120 ATTN: KEN MIKULA ken.mikula@strongsville.com

CITY OF BRECKSVILLE 9069 BRECKSVILLE ROAD BRECKSVILLE, OHIO 44141 PHONE: (440) 526-4351

DONALD BOHNING & ASSOCIATES 7979 HUB PARKWAY VALLEY VIEW, OHIO 44125 PHONE: (216) 642-1130 ATTN: GERALD WISE mailto:gwise@dbohning.com

CITY OF SOLON ENGINEERING DEPARTMENT 34200 BAINBRIDGE ROAD SOLON, OHIO 44139 PHONE: (440) 349-6354 ATTN: JOHN J. BUSCH, P.E.

CITY OF ROCKY RIVER ENGINEERING DEPARTMENT 21012 HILLIARD BLVD. ROCKY RIVER. OHIO 44116 PHONE: (440) 331-0600, EXT. 2581 ATTN: MICHAEL MACKAY, P.E.

CITY OF MIDDLEBURG HEIGHTS MACKAY ENGINEERING & SURVEYING COMPANY 7017 PEARL ROAD CLEVELAND, OHIO 44130 PHONE: (440) 886-4500 ATTN: MICHAEL MACKAY, P.E. www.mackkayeng-surv.com

#### <u>WATER</u>

CITY OF CLEVELAND DIVISION OF WATER 1201 LAKESIDE AVENUE CLEVELAND, OHIO 44114 PHONE: (216) 664-2444, EX. 75590 ATTN: FRED ROBERTS <u>Fred.roberts@Clevelandwater.com</u>

#### WATER POLLUTION CONTROL

CITY OF CLEVELAND DIVISION OF WATER POLLUTION CONTROL 12302 KIRBY AVENUE CLEVELAND, OHIO 44108 PHONE: (216) 664-3785 ATTN: RACHID ZOGHAIB rzoghaib@ClevelandWPC.com

#### **PETROLEUM**

BUCKEYE PARTNERS L.P. FIVE TEK PARK 9999 HAMILTON BOULEVARD BREINIGSVILLE. PA 18031 PHONE: (610) 904-4409 ATTN: DAVID JONES DAJones@buckeye.com

#### **TRAFFIC**

CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING 500 LAKESIDE AVENUE CLEVELAND, OHIO 44114 PHONE: (216) 644-2485 ATTN: MICHAEL E. COX

#### **COOPERATION BETWEEN CONTRACTORS**

THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS/HER OPERATIONS WITH THE CONTRACTORS ON OTHER PROJECTS THAT MAY BE IN FORCE DURING THE LIFE OF THE CONTRACT. NO WAIVER OF ANY PROVISIONS OF 105.08 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS IS INTENDED.

#### LIMITATIONS OF OPERATIONS

THE CONTRACTOR'S ACTIVITIES AND WORK SCHEDULE SHALL BE CONSTRAINED BY THE FOLLOWING LIMITATIONS:

1. MAINTENANCE OF TRAFFIC RESTRICTIONS (REFER TO MAINTENANCE OF TRAFFIC NOTES SHEETS WITHIN THIS PLAN).

#### EQUIPMENT AND MATERIAL STORAGE

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC, THE CONTRACTOR'S ATTENTION IS DIRECTED TO CMS 614.03. IN ADDITION, NO STORAGE OF EQUIPMENT, MATERIALS, AND VEHICLES WITHIN THE HIGHWAY RIGHT-OF-WAY WILL BE PERMITTED WITHOUT PRIOR APPROVAL FROM THE ENGINEER AND OBTAINING AN ODOT R/W PERMIT FROM THE DI2 ROADWAY SERVICES. ALL RESTORATION WILL BE AT NO COST TO THE STATE.

€ RIGHT OF WAY         PROJECT GROUND COORDINATES P.A.F.:=         STATE PLANE COORDINATES P.A.F.:=         ELEVATION NAVD88 DATUM         POINT DESCRIPTION           STATION OFFSET JUSSEPPER         NORTH (Y) U.S. FT.         EAST (X) U.S. FT.         NORTH (Y) U.S. FT.         EAST (X) U.S. FT.         POINT DESCRIPTION           BL RAMP F-6 40+54.08 BL 43+55.11 BL 43+55.11 BL 43+55.11 BL 45+11.16 BL 45+11.16 BL 45+11.16 BL 45+12.15 BL 46+11.16 BL 46-12.16 BL 46-12.1				PROJECT	CONTROL	TABLE			
BL RAMP F-6	€ RIGHT (	RIGHT OF WAY COORDINATES		COORDI	NATES	NAVD88	POINT	DESCRIPTION	
40+54.08   BL   631292_249161   220157_592750   RAMPF602   P.C.	STATION	OFFSET							
40+54.08   BL   631292_249161   220157_592750   RAMPF602   P.C.									
43+55.11   BL   631437.039161   2201317.992750   RAMPF602   P.C.			504000 040454	2224572 502750			D.4.4.D.5.C.0.4		2.0
46+71.16   BL   631731.69161   2201206.002750   RAMPF603   P.C.									
S2+17.95   BL   632257.279161   2201344.322750   RAMPF604   P.T.									
BL RAMP F-3									
40+29.90   BL   631131.039161   2201007.232750   RAMPF305   P.C.			632257.279161	2201344.322750			KAIVIPF604		P.1.
S2+17.95   BL   632266.539161   2201326.562750   RAMPF306   P.T.			621121 020161	2201007 222750			DANADEZOE		D.C.
BL RAMP F-7   S6+13.00   BL   632672.209900   2201548.216500   RAMPF702   P.T.									
S6+13.00   BL   632672.209900   2201548.216500   RAMPF701   P.C.			032200.339101	2201326.362730			KAIVIPF306		P.1.
S8+36.60   BL   632851.149900   2201680.786500   RAMPF702   P.T.			622672 200000	2201549 216500			DAMBEZO1		D.C.
59+87.24   BL   632956.769900   2201788.186500   RAMPF703   P.C.   64+36.36   BL   633565.59900   2201912.666500   RAMPF705   P.C.   66+36.36   BL   633564.39990   2201912.666500   RAMPF706   P.T.   66+36.36   BL   633727.170700   220192.0766700   RAMPF706   C.S.   70+00.00   BL   633915.779533   2201886.249345   RAMPF707   S.T.   CLIR 77									
G4+36.36   BL   G33365.559900   2201934.166500   RAMPF704   P.T.									
66+36.36   BL   633564.399900   2201912.666500   RAMPF705   P.C.   68+00.00   BL   633727.170700   2201920.706700   RAMPF706   C.S.   70+00.00   BL   633915.77953   2201986.249345   RAMPF707   S.T.									
68+00.00         BL         633727.170700         2201920.706700         RAMPF706         C.S.           70+00.00         BL         633915.779533         2201986.249345         RAMPF707         S.T.           460+00.00         CL         633027.762979         2201522.918295         CL07701         CL07702         P.C.           494+99.30         CL         636217.252701         2202962.451484         CL07702         P.C.           531+87.33         CL         640795.440940         2203098.615315         CL07704         CL07704           CL IR 90         CL         658407.703985         2148587.729324         CL0900         CL0900           553+24.11         CL         658445.432350         2151413.596582         CL0901         P.C.           5547-6.16         CL         658405.870606         2154114.088280         CL0903         P.T.           583+76.90         CL         658405.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           532+70.50         BL         79281.561644         45823.977191         T.S.         TEMP100         TS.S.           534+70.50         BL									
T0+00.00									
CLIR 77 460+00.00 CL 633027.762979 2201522.918295 CL07701 494+99.30 CL 636217.252701 2202962.451484 CL07702 P.C. 532+82.47 CL 639915.730983 2203310.469066 CL07703 P.T. 541+87.33 CL 640795.440940 2203098.615315 CL07704 CLIR 90 528+00.00 CL 658407.703985 2148587.729324 CL0900 528+00.00 CL 658445.151059 2151061.555917 CL0901 P.C. 555+76.16 CL 658445.32350 2151413.596582 CL0903 P.T. 583+76.90 CL 658408.870606 2154114.088280 CL0904 P.C. 595+47.37 CL 658219.239372 2155264.656888 CL0906 P.T. BL RAMP B 530+55.67 BL 79105.050200 45701.520508 TEMP10 532+70.50 BL 79281.561644 45823.977191 T.S. 534+70.50 BL 79438.010000 45948.050000 TEMP11 S.C. 538+66.86 BL 79581.605191 46245.777654 TEMP12 C.S. 540+06.86 BL 79581.305966 46445.449987 TEMP12 C.S. 543+84.30 BL 79556.620000 46822.080000 TEMP14 P.C. 552+13.87 BL 79532.340000 47651.110000 TEMP15 P.T. CL TRANSPORTATION BLVD 90+00.00 CL 637938.933280 2211088.918008 CL1302 CL CR72 (TURNEY RD)									
460+00.00		DL	033313.773333	2201300.243343			10/11/11/17/07		3.11
494+99.30         CL         636217.252701         2202962.451484         CL07702         P.C.           532+82.47         CL         639915.730983         2203310.469066         CL07704         P.T.           541+87.33         CL         640795.440940         2203098.615315         CL07704         CL07704           528+00.00         CL         658407.703985         2148587.729324         CL0900         P.C.           553+24.11         CL         658445.151059         2151061.555917         CL0901         P.C.           558+76.16         CL         658408.7870606         2154114.088280         CL0903         P.T.           583+76.90         CL         658408.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         79105.050200         45701.520508         TEMP100         TS.           532+70.50         BL         79281.561644         45823.977191         T.S.           534+0.50         BL         79581.605191         46245.777654         TEMP11         S.C.           538+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.		CI	633027 762979	2201522 918295			CL07701		
S32+82.47									P.C.
541+87.33         CL         640795.440940         2203098.615315         CL07704           CL IR 90         CL IR 90         CL0900         CL0900           528+00.00         CL 658407.703985         2148587.729324         CL0901         P.C.           553+24.11         CL 658445.151059         2151061.555917         CL0901         P.C.           556+76.16         CL 658445.432350         2151413.596582         CL0903         P.T.           583+76.90         CL 658219.239372         2155264.656888         CL0904         P.C.           595+47.37         CL 658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         532+70.50         BL 79105.050200         45701.520508         TEMP100         T.S.           532+70.50         BL 79281.561644         45823.977191         T.S.         T.S.           534+70.50         BL 79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL 79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL 79581.305966         46445.449987         TEMP13         S.T.           552+13.87         BL 79556.620000         46822.080000         TEMP14         P.C.									
CLIR 90         528+00.00         CL         6584407.703985         2148587.729324         CL0900           553+24.11         CL         658445.151059         2151061.555917         CL0901         P.C.           555+76.16         CL         658445.432350         2151413.596582         CL0903         P.T.           583+76.90         CL         658408.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.         S           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.605000         46822.080000         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP15         P.T.           CL TRANSPORTATION BLVD         TEMP15         P.T.									
528+00.00         CL         658407.703985         2148587.729324         CL0900           553+24.11         CL         658445.151059         2151061.555917         CL0901         P.C.           556+76.16         CL         658445.432350         2151413.596582         CL0903         P.T.           583+76.90         CL         658408.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.         TEMP11         S.C.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.305966         46445.449987         TEMP12         C.S.           543+84.30         BL         79581.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637559.176017									
553+24.11         CL         658445.151059         2151061.555917         CL0901         P.C.           556+76.16         CL         658445.432350         2151413.596582         CL0903         P.T.           583+76.90         CL         658408.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.         TEMP11         S.C.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.         S.T.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.         S.T.           543+84.30         BL         79532.340000         47651.110000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.		CL	658407.703985	2148587.729324			CL0900		
556+76.16         CL         658445.432350         2151413.596582         CL0903         P.T.           583+76.90         CL         658408.870606         2154114.088280         CL0904         P.C.           595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.           534+70.50         BL         79438.01000         45948.05000         TEMP11         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79532.340000         47651.110000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/         CL         636242.308996         2211005.413591         CL1301		CL					CL0901		P.C.
595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.305966         46445.449987         TEMP12         C.S.           543+84.30         BL         79586.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         90+00.00         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	556+76.16	CL		2151413.596582					
595+47.37         CL         658219.239372         2155264.656888         CL0906         P.T.           BL RAMP B         530+55.67         BL         79105.050200         45701.520508         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.305966         46445.449987         TEMP12         C.S.           543+84.30         BL         79586.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         90+00.00         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	583+76.90	CL	658408.870606	2154114.088280			CL0904		P.C.
530+55.67         BL         79105.050200         45701.520508         TEMP100           532+70.50         BL         79281.561644         45823.977191         T.S.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637938.933280         2210981.332641         CL1300         CL1300           86+19.48 BK/ 13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302         CL1302	595+47.37	CL	658219.239372	2155264.656888					P.T.
532+70.50         BL         79281.561644         45823.977191         T.S.           534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         OL         637938.933280         2210981.332641         CL1300         CL1300           86+19.48 BK/ 13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302         CL1302	BL RAMP	В							
534+70.50         BL         79438.010000         45948.050000         TEMP11         S.C.           538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	530+55.67	BL	79105.050200	45701.520508			TEMP100		
538+06.86         BL         79581.605191         46245.777654         TEMP12         C.S.           540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	532+70.50	BL	79281.561644	45823.977191					T.S.
540+06.86         BL         79581.305966         46445.449987         TEMP13         S.T.           543+84.30         BL         79556.620000         46822.080000         TEMP14         P.C.           552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	534+70.50	BL	79438.010000	45948.050000			TEMP11		S.C.
543+84.30       BL       79556.620000       46822.080000       TEMP14       P.C.         552+13.87       BL       79532.340000       47651.110000       TEMP15       P.T.         CL TRANSPORTATION BLVD       CL       637938.933280       2210981.332641       CL1300         86+19.48 BK/13+80.52 AHD       CL       637559.176017       2211005.413591       CL1301         27+00.03       CL       636242.308996       2211088.918008       CL1302         CL CR72 (TURNEY RD)       CL1302       CL1302	538+06.86	BL		46245.777654			TEMP12		
552+13.87         BL         79532.340000         47651.110000         TEMP15         P.T.           CL TRANSPORTATION BLVD         90+00.00         CL         637938.933280         2210981.332641         CL1300           86+19.48 BK/ 13+80.52 AHD         CL         637559.176017         2211005.413591         CL1301           27+00.03         CL         636242.308996         2211088.918008         CL1302           CL CR72 (TURNEY RD)         CL1302         CL1302	540+06.86	BL	79581.305966	46445.449987			TEMP13		
CL TRANSPORTATION BLVD       090+00.00       CL 637938.933280       2210981.332641       CL1300         86+19.48 BK/ 13+80.52 AHD       CL 637559.176017       2211005.413591       CL1301         27+00.03       CL 636242.308996       2211088.918008       CL1302         CL CR72 (TURNEY RD)       CL1302									
90+00.00 CL 637938.933280 2210981.332641 CL1300 86+19.48 BK/ CL 637559.176017 2211005.413591 CL1301 27+00.03 CL 636242.308996 2211088.918008 CL1302 CL CR72 (TURNEY RD)				47651.110000			TEMP15		P.T.
86+19.48 BK/ CL 637559.176017 2211005.413591 CL1301 27+00.03 CL 636242.308996 2211088.918008 CL1302 CL CR72 (TURNEY RD)									
13+80.52 AHD									
CL CR72 (TURNEY RD)			637559.176017	2211005.413591			CL1301		
	27+00.03	CL	636242.308996	2211088.918008			CL1302		
1 10+00 00   CL   637086 369996   2214713 616947   CLCR721	CL CR72	TURNEY RE	))						
	10+00.00	CL	637086.369996	2214713.616947			CLCR721		
32+00.00 CL 639019.960185 2213664.222368 CLCR722			639019.960185	2213664.222368			CLCR722		
CL 6A (DETROIT RD)	CL 6A (DET	ROIT RD)							
11+30.72 CL 662074.985911 2150521.098677 CL01 P.C.									
19+31.89 CL 662263.139972 2151275.875902 CL02 P.T.									
26+34.44 CL 662140.692315 2151967.672891 CL04 P.C.									
29+63.66 CL 662046.725456 2152285.442250 CL05 P.T.	29+63.66	CL	662046.725456	2152285.442250			CL05		P.T.

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#### **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 SUBSIDIARY AGREEMENT GOVERNING COMPLETION OF THIS PROJECT.

#### **ENVIRONMENTAL**

NO WORK TO BE WITHIN STREAMS OR WETLANDS WITHOUT PRIOR APPROVAL FROM ODOT.

#### **WORK LIMITS**

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

#### PROFILE AND ALIGNMENT

THE INTENT OF THE PROPOSED PAVEMENT IS TO UTILIZE THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT UNLESS OTHERWISE DETAILED IN THE PLANS.

#### PROTECTION OF RIGHT-OF-WAY LANDSCAPING

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

CONSTRICT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED AS 30 FEET FROM THE EDGE OF PAVEMENT.

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

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

#### CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A W-BEAM, BEAM SPLICE AS SHOWN IN AASHTO M 180-12, EXCEPT THE BEAM WASHERS ARE NOT TO BE USED. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

#### STAGING AREA ON/WITHIN STATE RIGHT-OF-WAY

THERE ARE NO SPECIFIC AREAS GIVEN IN THE PLANS FOR THE CONTRACTOR TO USE AS STAGING AREA(S). IF THE CONTRACTOR WANTS TO USE AN AREA(S) FOR STAGING, REGARDLESS IF IT FALLS WITHIN THE PROJECT LIMITS OR NOT, THE CONTRACTOR IS TO CONTACT MELVIN SAFFORD AT 216-584-2137 AT DISTRICT 12 IN ORDER TO APPLY FOR A PERMIT PER SECTION 107.02 OF THE CMS. IF A PERMIT IS GRANTED, ALL CONDITIONS OF THE PERMIT SHALL BE MET IN ADDITION TO THE REQUIREMENTS OF 104.04 OF THE CMS, AT NO COST TO THE STATE. IF THE PROJECT ENGINEER DEEMS THAT ALL THE CONDITIONS OF THE PERMIT WERE NOT MET, THEN 10% OF THE CONTRACT BID AMOUNT FOR MOBILIZATION SHALL BE WITHHELD UNTIL ALL CONDITIONS OF THE PERMIT ARE SATISFIED.

#### **EXISTING PAVEMENT MARKINGS**

ANY EXISTING PAVEMENT MARKINGS, INCLUDING RAISED PAVEMENT MARKINGS, THAT ARE AFFECTED BY THE PROPOSED WORK SHALL BE REPLACED IN-KIND. PAYMENT FOR THE NEW PAVEMENT MARKINGS IS AS LISTED IN THE PLANS.

#### EARTHWORK FOR PROJECT TRANSITION

A CONTINGENCY OF ITEM 203 - EMBANKMENT AND ITEM 203 - EXCAVATION IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO TRANSITION THE EARTHWORK INTO THE EXISTING AT THE BEGIN/END OF THE PROJECT.

ITEM 203 - EXCAVATION	<u>100</u> CY
ITEM 203 - EMBANKMENT	<u>100</u> CY
ITEM 659 - TOPSOIL	<u>100</u> CY
ITEM 659 - SEEDING AND MULCHING	<u>500</u> SY

#### **EXISTING PLANS**

EXISTING PLANS MAY BE INSPECTED IN THE ODOT DISTRICT 12 OFFICE IN GARFIELD HEIGHTS.

#### CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

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

AN OHIO PROFESSIONAL SURVEYOR SHALL DETERMINE THE MINIMUM VERTICAL CLEARANCES OF ALL EXISTING BRIDGES WITHIN THE PROJECT LIMITS AFTER COMPLETION OF ALL THE WORK, BUT PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. AT A MINIMUM, MEASUREMENTS SHALL BE TAKEN ALONG THE CENTERLINE OF EACH FASCIA BEAM AT THE EDGE OF THE SHOULDERS, EDGE LINES, LANE LINES, AND CROWN OF THE ROADWAY BELOW. THE MEASUREMENTS SHALL BE DOCUMENTED IN THE ODOT VERTICAL CLEARANCE SURVEY FORM. THE FORM SHALL BEAR THE STAMP OR SEAL OF THE OHIO PROFESSIONAL SURVEYOR WHO HAS TAKEN THE MEASUREMENTS. THE OHIO PROFESSIONAL SURVEYOR SHALL SUBMIT THE COMPLETED FORM TO THE PROJECT ENGINEER AND THE DISTRICT BRIDGE MAINTENANCE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

IN ADDITION TO VERTICAL CLEARANCE DETERMINATION, THE CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AS NECESSARY PRIOR TO AND AT COMPLETION OF THE WORK, AT WORK INTERFACES SUCH AS ENDS OF DECK, EXPANSION JOINTS, AND END OF APPROACH SLABS. THESE MEASUREMENTS ARE INTENDED TO ENSURE PROPOSED WORK MEETS EXISTING GRADES AND PROVIDES A SMOOTH RIDING SURFACE FOR THE TRAVELING PUBLIC.

#### SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED FOR LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90); LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480); AND LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480) TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

ITEM 659 - TOPSOIL	<u>31</u> CY
ITEM 659 - SEEDING AND MULCHING	<u>271</u> SY
ITEM 659 - REPAIR SEEDING AND MULCHING	<u>15</u> SY
ITEM 659 - COMMERCIAL FERTILIZER	<u>0.04</u> TON
ITEM 659 - WATER	3 MGAL

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 OF SLOPE EASEMENT.

QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

#### ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THIS PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN, FOR EACH BRIDGE LOCATION IDENTIFIED TO BE USED AS DIRECTED BY THE ENGINEER. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN.

#### ITEM 202 - WALK REMOVED, AS PER PLAN

PORTIONS OF THE EXISTING CONCRETE WALK ALONG US 6A (DETROIT RD.) SHALL BE REMOVED AT THE REAR NW CORNER OFF THE APPROACH SLAB AT LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER).

IN ADDITION TO CMS 202, THIS ITEM SHALL SAW CUT AROUND THE EXISTING PULL BOX AND ALONG THE OUTSIDE EDGE OF THE CONCRETE RAILING AND CAREFULLY REMOVE THE DETERIORATED WALK WITHOUT DAMAGING THE PULL BOX OR OUTSIDE RAILING. THE CONTRACTOR SHALL REPLACE IN KIND ANY DAMAGES THAT OCCUR TO THE PULL BOX OR THE CONCRETE RAILING DURING THE REMOVAL OF THE WALK TO THE SATISFACTION OF THE ENGINEER.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK TO THE SATISFACTION OF THE ENGINEER SHALL BE INCLUDED WITH ITEM 202 - WALK REMOVED, AS PER PLAN.

#### <u>ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN</u>

PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 77 SHALL BE REMOVED TO PROVIDE ACCESS TO PIER 1 AND PIER 3 AT LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77); PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 480 RAMP SHALL BE REMOVED TO PROVIDE ACCESS TO PIER 1 AT LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP) AND PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 271 SHALL BE REMOVED TO PROVIDE ACCESS TO PIER 2 AND PIER 4 AT LOCATION 10: CUY-422-1122 (US 422 ICHAGRIN BOULEVARD) OVER IR 271).

IN ADDITION TO CMS ITEM 202, THIS ITEM SHALL INCLUDE SAWCUTTING THE EXISTING ASPHALT PAVEMENT AT A DISTANCE OF 4" FROM THE TOE OF THE EXISTING CONCRETE BARRIER; CAREFULLY REMOVING 4" OF THE ASPHALT PAVEMENT ADJACENT AND PARALLEL TO THE EXISTING CONCRETE BARRIER; AND SAWCUTTING THE EXISTING CONCRETE BARRIER SAWCUTS SHALL BE LOCATED AT THE EXISTING CONTRACTION JOINTS AROUND THE EXISTING REBAR AND CHIPPING THE CONCRETE AWAY LEAVING THE EXISTING REBAR IN PLACE. THE LENGTH OF EXISTING CONCRETE BARRIER TO BE REMOVED SHALL BE DETERMINED BASED ON THE DISTANCE REQUIRED TO PERFORM THE PIER REPAIRS. THE CONCRETE BARRIER END SECTIONS SHALL REMAIN AND SHALL NOT BE DISTURBED.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN FOR PAYMENT.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN <u>80</u> FT

LOCATION 6: CUY-77-0881 (IR-77 RAMP OVER IR 480 RAMP)

ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN \_\_54 FT

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN 190 FT

#### ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN (A)

THE EXISTING CONCRETE BARRIER ALONG IR 71 SHALL BE REMOVED TO PROVIDE ACCESS TO PIER 1 AND PIER 3 AT LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71). IN ADDITION TO CMS ITEM 202, THIS ITEM SHALL INCLUDE SAWCUTTING THE EXISTING ASPHALT PAVEMENT AT A DISTANCE OF 4" FROM THE TOE OF THE EXISTING BARRIER AND CAREFULLY REMOVING THE EXISTING CONCRETE BARRIER AND THE 4" OF ASPHALT PAVEMENT.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN (A) FOR PAYMENT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN (A) 110 FT

ITEM 202 - GUARDRAIL REMOVED

<u>275</u> FT

#### ITEM 204 - PROOF ROLLING

THE FOLLOWING QUANTITY HAS BEEN INCLUDED IN THE CALCULATIONS AND CARRIED TO THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING. SEE PLAN SHEET Z4\_ FOR ADDITIONAL INFORMATION.

ITEM 204 - PROOF ROLLING

\_\_1\_\_ HOUR

#### ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E (NCHRP 350)

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

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

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

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

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E (NCHRP 350), EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

#### ITEM 609 - CURB, TYPE 6, AS PER PLAN

PORTIONS OF THE EXISTING CURB ALONG TURNEY ROAD SHALL BE REPLACED ALONG THE APPROACH SLABS AT LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480), AND PORTIONS OF THE EXISTING CURB ALONG US 6A (DETROIT RD.) SHALL BE REPLACED AT THE REAR NW CORNER OFF THE APPROACH SLAB AT LOCATION 15: CUY-06A-0042 (US 6A (DETROIT ROAD) OVER ROCKY RIVER).

IN ADDITION TO CMS 609, THIS ITEM SHALL MATCH THE EXISTING CURB HEIGHT OF THE BRIDGE AND SMOOTHLY TRANSITION DOWN TO MATCH TO THE HEIGHT OF THE FXISTING CURB.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 609 - CURB, TYPE 6, AS PER PLAN.

#### ITEM 619 - FIELD OFFICE. TYPE B. AS PER PLAN

A TYPE B FIELD OFFICE IS REQUIRED FOR THIS PROJECT. THE FOLLOWING REVISIONS TO EQUIPMENT SUPPLIED WITH THE TYPE B FIELD OFFICE, AS SPECIFIED IN CMS TABLE 619.02-1, FIELD OFFICE, SHALL APPLY:

THE COPIER SUPPLIED MUST MEET THE REQUIREMENTS OF THE COPIER SUPPLIED WITH THE TYPE C FIELD OFFICE.

THE BROAD BAND INTERNET CONNECTION MUST MEET A MINIMUM DOWNLOAD SPEED OF 10MB PER SECOND AND A MINIMUM UPLOAD SPEED OF 5MB PER SECOND.

THE CONTRACTOR SHALL FURNISH, SET-UP AND MAINTAIN A WI-FI ROUTER MEETING THE REQUIREMENTS OF IEEE 802.11ac FOR THE EXCLUSIVE USE OF THE DEPARTMENT.

ALL OTHER FIELD OFFICE ITEMS SUPPLIED SHALL MEET THE REQUIREMENTS OF A TYPE B FIELD OFFICE.

ITEM 619 - FIELD OFFICE, TYPE B, AS PER PLAN 12

#### ASPHALT PAVEMENT PATCHING

THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR PATCHING ANY DETERIORATED ASPHALT FOLLOWING THE BACKWALL REPAIRS AT LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP), THE APPROACH SLAB REPLACEMENT AT LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90), AND THE JOINT REPAIRS AND CURB REPLACEMENT AT LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480) AND IS TO BE USED AS DIRECTED BY THE ENGINEER.

THE FOLLOWING QUANTITY HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR THE ASPHALT PATCHING AT THE LOCATIONS PROVIDED ABOVE.:

THE ABOVE QUANTITY IS BASED ON A PAVEMENT WIDTH OF TWO FEET ALONG THE LENGTH OF THE ROADWAY AND AN ESTIMATED THICKNESS OF THREE INCHES.

THE COST OF ALL THE WORK DESCRIBED ABOVE INCLUDING LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THIS WORK TO THE SATISFACTION OF THE ENGINEER SHALL BE PAID FOR AT THE UNIT CONTRACT BID PRICE FOR ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR (441).

#### ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN

PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 77 SHALL BE REPLACED AT PIER 1 AND PIER 3 OF LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77); PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 480 RAMP SHALL BE REPLACED AT PIER 1 OF LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP); AND PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 271 SHALL BE REPLACED AT PIER 2 AND PIER 4 OF LOCATION 10: CUY-422-1122 (US 422 ICHAGRIN BOULEVARD) OVER IR 271).

IN ADDITION TO CMS 622, THIS ITEM SHALL INCLUDE CONSTRUCTING A SPREAD FOOTING THAT EXTENDS FROM THE BACK OF THE BARRIER TO 4" FROM THE TOE OF THE CONCRETE BARRIER. THE SPREAD FOOTING SHALL BE PER STANDARD DRAWING RM-4.6. THE CROSS-SLOPE OF THE CONCRETE FOOTING SURFACE SHALL MATCH THE CROSS-SLOPE OF THE EXISTING ASPHALT PAVEMENT ADJACENT TO THE BARRIER. THE ELEVATION OF THE CONCRETE FOOTING SURFACE SHALL MATCH INTO THE EXISTING ADJACENT ASPHALT SURFACE. FORM THE BARRIER AROUND THE EXISTING REBAR TO MATCH INTO THE EXISTING CONCRETE END SECTION.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS ITEM, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN FOR PAYMENT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN

<u>52</u> FT

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN

<u>162</u> FT

<u>40</u> FT

#### ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN (A)

THE EXISTING CONCRETE BARRIER ALONG IR 71 SHALL BE REPLACED AT PIER 1 AND PIER 3 OF LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71). IN ADDITION TO CMS ITEM 622, THIS ITEM SHALL INCLUDE CONTING A SPREAD FOOTING THAT EXTENDS FROM THE BACK OF THE BARRIER TO 4" FROM THE TOE OF THE CONCRETE BARRIER. THE SPREAD FOOTING SHALL BE PER THE STANDARD DRAWING RM-4.6. THE CROSS-SLOPE OF THE CONCRETE FOOTING SURFACE SHALL MATCH THE CROSS-SLOPE OF THE EXISTING ASPHALT PAVEMENT ADJACENT TO THE BARRIER. THE ELEVATION OF THE CONCRETE FOOTING SURFACE SHALL MATCH INTO THE EXISTING ADJACENT ASPHALT SURFACE.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN (A) FOR PAYMENT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN (A)

<u>82</u> FT

ITEM 622 - CONCRETE BARRIER END SECTION, TYPE D

\_2\_ EACH

ITEM 606 - MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1 \_\_\_\_ EACH

ITEM 606 - GUARDRAIL, TYPE MGS

<u>150</u> FT

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E (NCHRP 350) 2 EACH

#### ITEM 622 - CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D, AS PER PLAN

PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 77 SHALL BE REPLACED AT PIER 1 AND PIER 3 OF LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77; PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 480 RAMP SHALL BE REPLACED AT PIER 1 OF LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP); AND PORTIONS OF THE EXISTING CONCRETE BARRIER ALONG IR 271 SHALL BE REPLACED AT PIER 2 AND PIER 4 OF LOCATION 10: CUY-422-1122 [CHAGRIN BOULEVARD] OVER IR 271).

IN ADDITION TO CMS 622, THIS ITEM SHALL INCLUDE CONSTRUCTING A SPREAD FOOTING THAT EXTENDS FROM THE BACK OF THE BARRIER TO 4" FROM THE TOE OF THE CONCRETE BARRIER. THE SPREAD FOOTING SHALL BE PER STANDARD DRAWING RM-4.6. THE CROSS-SLOPE OF THE CONCRETE FOOTING SURFACE SHALL MATCH THE CROSS-SLOPE OF THE EXISTING ASPHALT PAVEMENT ADJACENT TO THE BARRIER. THE ELEVATION OF THE CONCRETE FOOTING SURFACE SHALL MATCH INTO THE EXISTING ADJACENT ASPHALT SURFACE.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS ITEM, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN FOR PAYMENT.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 622 - CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D, AS PER PLAN

<u>\_1</u>\_\_ EACH

LOCATION 6: CUY-77-0881 (IR-77 RAMP OVER IR 480 RAMP)

ITEM 622 - CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D, AS PER PLAN

ITEM 622 - CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D, AS PER PLAN

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#### ITEM SPECIAL - MAINTAIN EXISTING LIGHTING

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF THE EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF EXISTING LIGHTING SHALL BE MADE BY ODOT'S REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE NOT STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE THE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT SHALL BE MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

REPLACEMENT OF KNOCKED DOWN UNITS SHALL BE DONE ONLY WHEN THE ENGINEER HAS DETERMINED THAT THE REPLACEMENT OF THE KNOCKED DOWN UNIT IS NECESSARY AND SHALL BE PAID SEPARATELY ON A UNIT BASIS.

BETTERMENTS SHALL BE COVERED IN ITEMS OF WORK PERTAINING TO THE CONSTRUCTION OF PERMANENT IMPROVEMENT.

WHEN THE SEQUENCE OF CONSTRUCTION ACTIVITIES REQUIRES, OR SHOULD THE CONTRACTOR DESIRE, THE REMOVAL OF THE EXISTING LIGHTING BEFORE THE NEW LIGHTING IS OPERATIONAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LIGHTING OF THIS PORTION OF THE ROADWAY.

PRIOR TO INSTALLING SUCH LIGHTING, THE CONTRACTOR SHALL PREPARE AND SUBMIT FOUR SETS OF THE TEMPORARY LIGHTING PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.

THIS PLAN SHALL SHOW LOCATIONS OF POLES, LENGTHS OF BRACKET ARMS, STYLES OF LUMINAIRES, MOUNTING HEIGHTS, WIRING METHODS AND OTHER PERTINENT INFORMATION. THE TEMPORARY LIGHTING SHALL PROVIDE AN AVERAGE INITIAL INTENSITY OF 1.2 FOOTCANDLES WITH AN AVERAGE TO MINIMUM UNIFORMITY NOT TO EXCEED 3:1. MOUNTING HEIGHT OF TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN 30 FEET, AND THE MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE 20 FEET. TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE "B" FOR STRENGTH REQUIREMENTS AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. WOOD POLES WITH OVERHEAD WIRING MAY BE USED. HOWEVER, TEMPORARY LIGHTING SHALL MEET FEDERAL AND STATE SAFETY CRITERIA. IF BREAKAWAY POLES ARE USED TO MEET THESE CRITERIA, THEN UNDERGROUND WIRING SHALL BE USED. RECONDITIONED OR USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING.

ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WHEN NO LONGER NEEDED, THE TEMPORARY LIGHTING INSTALLATION SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

THE MAINTAINING AGENCY WILL PAY FOR ELECTRICAL ENERGY CONSUMED BY EXISTING POWER SERVICES AND BY PROPOSED PERMANENT POWER SERVICES AFTER ACCEPTANCE OF THE LIGHTING WORK. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL AND MAINTENANCE OF ANY TEMPORARY POWER SERVICES.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL - MAINTAIN EXISTING LIGHTING SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING AS SPECIFIED HEREIN.

THE UNIT PRICE BID FOR ITEM SPECIAL - REPLACEMENT OF EXISTING LIGHTING UNIT SHALL BE FULL PAYMENT FOR THE REPLACEMENT OF AN EXISTING LIGHTING UNIT WHICH HAS BEEN KNOCKED DOWN AFTER THE AFOREMENTIONED INSPECTION AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO PROVIDE A REPLACEMENT FOR SUCH UNIT.

#### ITEM 625 - REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN

IN ADDITION TO CMS 625, THIS ITEM SHALL BE CLEANED, AND REPAIRS NEEDED FOR THE POLE TO BE IN GOOD SERVICEABLE CONDITION MADE. THE EXISTING POLE NUMBER DECAL SHALL BE REMOVED IF IT IS IN POOR CONDITION. A POLE NUMBER DECAL SHALL BE SUPPLIED AND APPLIED IF THE EXISTING DECAL IS REMOVED OR MISSING

THE EXISTING ANCHOR BOLTS SHALL REMAIN TO BE REUSED. IF THE EXISTING ANCHOR BOLTS ARE DAMAGED OR IN POOR CONDITION NEW ANCHOR BOLTS SHALL BE FURNISHED AS PART OF THIS ITEM.

ANY BANNERS OR SIGNS ON THE EXISTING LIGHT POLES SHALL REMAIN ON THE LIGHT POLES AS THEY ARE REMOVED AND REERECTED. ANY DAMAGE TO THE EXISTING BANNERS, ARMS, BRACKETS, OR SIGNS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE PROJECT.

ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO PERFORM THIS ITEM, TO THE SATISFACTION OF THE ENGINEER, SHALL BE INCLUDED WITH ITEM 625 - REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN.

#### ITEM 832 - EROSION CONTROL

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK SPECIFIED IN SUPPLEMENTAL SPECIFICATION 832:

ITEM 832 - EROSION CONTROL

25000 EACH

#### FENCE REMOVED AND REPLACED

PORTIONS OF THE CHAIN LINK FENCE AT LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480) SHALL BE REMOVED AT AN EXISTING POST.

THE FENCE SHALL BE REPLACED WITH A NEW CHAIN LINK FENCE AND TIE INTO THE EXISTING FENCE. ANY DAMAGE TO THE EXISTING FENCE THAT IS TO REMAIN SHALL BE REPLACED IN KIND AT THE EXPENSE OF THE CONTRACTOR. SEE SHEETS 78-79 FOR MORE LOCATIONS.

THE COST OF ALL WORK DESCRIBED ABOVE INCLUDING LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THESE ITEMS, TO THE SATISFACTION OF THE ENGINEER, SHALL BE PAID FOR AT THE UNIT PRICE PER FOOT FOR ITEM 202 - FENCE REMOVED AND ITEM 607 - FENCE, TYPE CL.

#### FENCE LENGTH

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

#### ENVIRONMENTAL COMMITMENTS

TO MINIMIZE IMPACTS TO THE KIRTLAND'S WARBLER DURING MIGRATION, TREES AND BRUSH LOCATED WITHIN 3-MILES OF LAKE ERIE SHORELINE WILL NOT BE REMOVED BETWEEN APRIL 22ND AND JUNE IST OR BETWEEN AUGUST 15TH AND OCTOBER 15TH. IF THIS SPECIES IS ENCOUNTERED WITHIN THE CONSTRUCTION LIMITS DURING CONSTRUCTION OPERATIONS, ALL CONSTRUCTION OPERATIONS WILL CEASE AND THE USFWS COLUMBUS FIELD OFFICE BE NOTIFIED IMMEDIATELY (614-416-8993). ACTIVITY WILL NOT RESUME UNTIL COORDINATION WITH USFWS HAS BEEN CONCLUDED.

THE FOLLOWING ENVIRONMENTAL COMMITMENTS SHALL BE IMPLEMENTED FOR THIS PROJECT:

1. ALL WORK TO BE WITHIN EXISTING RIGHT-OF-WAY.

OR

- 2. NO WORK IN STREAMS AND WETLANDS.
- 3. NO TREE REMOVAL.

#### ASBESTOS NOTIFICATION

A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST SURVEYED THE BRIDGE STRUCTURE SCHEDULED FOR DEMOLITION AND/OR REHABILITATION; THE SURVEY DETERMINED THAT 1062 LINEAR FEET OF ASBESTOS IS PRESENT ON THE CUY-480-1955 BRIDGE.

ODOT SHALL PROVIDE A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORMS FOR EACH BRIDGE, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO ONE OF THE ADDRESSES BELOW AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF ANY DEMOLITION AND/OR RENOVATION.

ASBESTOS PROGRAM OHIO EPA, DAPC P.O. BOX 1049 COLUMBUS, OH 43216-1049

ASBESTOS PROGRAM OHIO EPA, DAPC 50 W. TOWN ST., SUITE 700 COLUMBUS, OHIO 43215

THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF ANY DEMOLITION AND/OR RENOVATION. THE FORM SHALL INCLUDE: 1) THE CONTRACTORS NAME AND ADDRESS, 2) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVAL AND 3) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED. COPIES OF THE OEPA FORM AND BRIDGE INSPECTION REPORT ARE AVAILABLE FOR REVIEW AT THE ODOT DISTRICT 12 OFFICE, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OHIO 44125.

BASIS FOR PAYMENT: THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORM. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN:

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

#### ITEM SPECIAL: SITE ACCESS

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROVIDE ACCESS TO EACH LOCATION FOR THE WORK PROVIDED IN THESE PLANS.

THIS ITEM SHALL INCLUDE, BUT IS NOT LIMITED TO, EARTHWORK, CLEARING AND GRUBBING, FENCE REMOVAL AND REERECTION, GUARDRAIL REMOVAL AND REERECTION, SIGN REMOVAL AND REERECTION, CRUSHED AGGREGATE SLOPE PROTECTION INSTALLATION, ETC. TEMPORARY EROSION CONTROL ITEMS SHALL BE PAID FOR PER SUPPLEMENTAL SPECIFICATION 832. THIS ITEM SHALL INCLUDE ALL RESTORATION WORK NECESSARY TO RESTORE ANY DISTURBED AREAS TO A CONDITION EQUAL TO THAT EXISTING PRIOR TO THE PROJECT PER CMS 104.04. WHEN ACCESSING THE SPECIFIC LOCATIONS, AND SLOPES 3:1 OR STEEPER ARE ENCOUNTERED, THE CONTRACTOR SHALL MAKE EVERY ATTEMPT TO PREVENT FUTURE EROSION PROBLEMS.

ALL SLOPES 3:1 OR STEEPER SHALL HAVE ITEM 670-SLOPE PROTECTION INSTALLED. ALL DISTURBED VEGETATED DITCHES SHALL HAVE ITEM 670-DITCH EROSION PROTECTION INSTALLED. ALL DISTURBED ROCK CHANNEL PROTECTION AND PAVED GUTTERS SHALL BE REPLACED PER THE CURRENT SPECIFICATIONS UNDER THIS ITEM, AT NO ADDITIONAL COST TO THE STATE.

THIS ITEM SHALL ALSO INCLUDE SEEDING, FERTILIZING, AND WATERING PER ITEM 659 FOR ALL DISTURBED AREAS. IT SHALL ALSO INCLUDE THE ADDITION OF 3 INCHES OF TOPSOIL FOR ALL DISTURBED AREAS. THE CONTRACTOR SHALL ENSURE A GOOD STAND OF GRASS AS DESCRIBED PER CMS 659.23. THE COST OF ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS AS APPROVED BY THE ENGINEER FOR THE SLOPE EROSION REPAIR AND DRAINAGE REPAIR LOCATIONS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL: SITE ACCESS.

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#### ITEM 614 - MAINTAINING TRAFFIC

GENERALLY THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS AS TO MAKE THE PROPOSED CONSTRUCTION WITH A MINIMUM HAZARD, DELAY AND INCONVENIENCE TO THE MOTORISTS USING THE HIGHWAY. MAINTENANCE OF TRAFFIC INCLUDES ALL LOCATIONS FOR THIS PROJECT. THIS ITEM SHALL CONSIST OF THE MAINTENANCE OF TRAFFIC ON EXISTING ROADWAYS, RAMPS AND SIDEWALKS IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAY, CURRENT EDITION, LATEST REVISION, THE SPECIFICATIONS, AND THE FOLLOWING:

#### I. <u>NOTIFICATION</u>

SINCE FUNCTIONAL TRAFFIC CONTROL IS A MAJOR CONCERN ON THIS PROJECT, IT IS ESSENTIAL THAT THE MOTORING PUBLIC BE ADEQUATELY FOREWARNED OF FUTURE LANE CLOSURES AND TRAFFIC CONSTRICTIONS. THEREFORE, THE CONTRACTOR MUST SUBMIT A WRITTEN SCHEDULE TO THE ODOT PUBLIC INFORMATION OFFICE (PHONE: 216-584-2007 OR EMAIL: DI2.PUBLIC.INFORMATION@DOT.OHIO.GOV) INDICATING THE LOCATIONS AND DATES OF THE LANE CLOSURES AT LEAST 14 DAYS PRIOR TO THE IMPLEMENTATION OF ANY SUCH CLOSURES. ALSO, NOTIFY THE ENGINEER, RESPONSIBLE LAW ENFORCEMENT AGENCIES AND EMERGENCY SERVICES, AND LOCAL MUNICIPALITIES OF LANE CLOSURES OR OTHER RESTRICTIONS AT LEAST 2 WEEKS PRIOR TO IMPLEMENTATION USE PORTABLE CHANGEABLE MESSAGE SIGNS TO ALERT MOTORISTS 3 DAYS PRIOR TO THE IMPLEMENTATION OF ANY CHANGES SUCH AS LANE CLOSURES OR OTHER RESTRICTIONS.

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM THE SPECIAL HAULING PERMITS SECTION (EMAIL: Hauling.Permits@dot.ohio.gov) AND THE DISTRICT PUBLIC INFORMATION OFFICE (PIO). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHALL LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, NUMBER OF LANES CLOSED, MINIMUM VERTICAL CLEARANCE, MINIMUM WIDTH OF DRIVABLE PAVEMENT, DETOUR ROUTES, IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

#### NOTIFICATION OF TRAFFIC RESTRICTIONS TIME TABLE

< 2 WEEKS

<u>ITEM</u>	DURATION OF CLOSURE	NOTICE DUE TO PERMITS & PIO
RAMP &	≥ 2 WEEKS	21 CALENDAR DAYS PRIOR TO CLOSURE
ROAD	> 12 HOURS & < 2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
CLOSURES	≤ 12 HOURS	4 BUSINESS DAYS PRIOR TO CLOSURE
/ ANF	> 2 WFFKS	14 CALENDAR DAYS PRIOR TO CLOSURE

START OF CONSTRUCTION & N/A
TRAFFIC PATTERN CHANGES

CLOSURES &

RESTRICTIONS

14 CALENDAR DAYS PRIOR TO IMPLEMENTATION

5 BUSINESS DAYS PRIOR TO CLOSURE

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME TABLE.

THE CONTRACTOR SHALL NOTIFY THE LOCAL MUNICIPALITIES OF SIDEWALK CLOSURES, PEDESTRIAN SIGNAL MODIFICATION OR OTHER PEDESTRIAN RESTRICTIONS AT LEAST 2 WEEKS PRIOR TO IMPLEMENTATION. USE ADVANCED WARNING SIGNS TO ALERT PEDESTRIANS 3 DAYS PRIOR TO THE IMPLEMENTATION OF SIDEWALK CLOSURES, PEDESTRIAN SIGNAL MODIFICATION OR OTHER PEDESTRIAN RESTRICTIONS. FOR LOCATION 3, THE STRONGSVILLE CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 10, THE BEACHWOOD CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 13 AND LOCATION 14, THE GARFIELD HEIGHTS CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 15, THE ROCKY RIVER CITY ENGINEER AND THE LAKEWOOD CITY ENGINEER SHALL BE NOTIFIED.

THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, AND SUBSEQUENTLY REMOVE ALL FLAGS, BARRICADES, SIGNS, SIGN SUPPORTS AND FURNISH AND MAINTAIN ALL FLAGGERS, WATCHERS AND INCIDENTALS RELATED THERETO.

#### II. LANE CLOSURE RESTRICTIONS

- 1. LANE CLOSURES MAY ONLY BE IMPLEMENTED AT THE TIMES PERMITTED BY THE "DISTRICT 12 PERMITTED LANE CLOSURE TIMES" LIST, UNLESS OTHERWISE DETAILED IN THESE PLANS, LOCATED ON THE ODOT WEB SITE:

  HTTP://WWW.DOT.STATE.OH.US/DISTRICTS/DI2/HIGHWAYMANAGEMENT/PAGES/
  PERMITTEDLANECLOSURES.ASPX THE LATEST REVISION 14 DAYS PRIOR TO THE BID DATE SHALL BE IN EFFECT FOR THIS PROJECT. ALL NOTES ON THE PERMITTED LANE CLOSURE TIMES SHALL BE PART OF THIS PROJECT.
- 2. UNLESS OTHERWISE NOTED, EXIT AND ENTRANCE RAMP LANES SHALL REMAIN OPEN AT ALL TIMES AND EXHIBIT A MINIMUM WIDTH OF ELEVEN (II) FEET.

- 3. MAINTENANCE OF TRAFFIC SHALL FOLLOW THE INSTRUCTION OF THE STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET AND THE LATEST REVISION OF THE OMUTCD.
- . PEDESTRIAN TRAFFIC SHALL BE PERMITTED AND ACCOMMODATED ON AT LEAST ONE SIDE AT ALL TIMES AT LOCATIONS WHERE PEDESTRIAN TRAFFIC IS CURRENTLY MAINTAINED.
- 5. ALL DRIVES AND SIDE STREETS SHALL BE MAINTAINED AT ALL TIMES.

#### LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

THE CONTRACTOR SHALL PERFORM THE PIER REPAIR, PIER PATCHING, PIER SEALING, AND SUPPLEMENTAL SLOPE PROTECTION IN PHASE ONE OF CONSTRUCTION FOR IR 71. THE WORK WILL REQUIRE THE REMOVAL AND REPLACEMENT OF THE TYPE D CONCRETE BARRIER LOCATED ADJACENT TO PIERS ONE AND THREE. THE CONTRACTOR SHALL REPAIR THE PIER ONE COLUMNS, PATCH THE PIER ONE CAP, SEAL THE PIER ONE CAP AND REPAIR THE PIER THREE COLUMNS DURING THE FIRST PHASE OF CONSTRUCTION. THE CONSTRUCTION PHASE WILL CLOSE THE OUTSIDE SHOULDERS ON IR 71 IN ACCORDANCE WITH MT-95.45 (CLOSING SHOULDER OF A MULTI-LANE DIVIDED HIGHWAY) WHILE MAINTAINING THREE TRAVEL LANES IN EACH DIRECTION.

THE CONTRACTOR WILL INSTALL THE TIMBER SUBDECK IN PHASE 2 OF CONSTRUCTION ON IR 71. THE WORK WILL REQUIRE MULTIPLE LANE CLOSURES TO INSTALL TIMBER SUBDECK BETWEEN THE GIRDERS IN ACCORDANCE WITH MT-98.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY USING DRUMS). LANE CLOSURES WILL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 71 AT THE BRIDGE LOCATION. MULTIPLE CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK.

THE CONTRACTOR WILL REMOVE THE EXISTING PARAPETS IN PHASE 3 OF CONSTRUCTION ON IR 71. THE WORK WILL REQUIRE MULTIPLE LANE CLOSURES TO REMOVE THE EXISTING PARAPETS IN ACCORDANCE WITH MT-98.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY USING DRUMS). LANE CLOSURES WILL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 71 AT THE BRIDGE LOCATION. MULTIPLE CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK. THE PHASING ON IR 71 SHALL OCCUR CONCURRENTLY WITH THE PHASING ON WHITNEY ROAD.

THE CONTRACTOR SHALL CONSTRUCT THE PARAPETS AND SIDEWALKS, AND INSTALL VANDAL PROTECTION FENCE WITH AESTHETIC SIGNING IN PHASE 4 OF CONSTRUCTION ON IR 71. THE WORK WILL REQUIRE MULTIPLE LANE CLOSURES TO CONSTRUCT THE PARAPETS AND SIDEWALK, AND INSTALL VANDAL PROTECTION FENCE WITH AESTHETIC SIGNING IN ACCORDANCE WITH MT-98.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY USING DRUMS). LANE CLOSURES WILL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 71 AT THE BRIDGE LOCATION. MULTIPLE CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK. THE PHASING ON IR 71 SHALL OCCUR CONCURRENTLY WITH THE PHASING ON WHITNEY ROAD. THE CONTRACTOR SHALL TAKE CARE TO INSTALL THE VANDAL PROTECTION FENCE WITH AESTHETIC SIGNING ON THE NORTH SIDE OF THE BRIDGE. THERE ARE UTILITY LINES JUST OUTSIDE THE BRIDGE FOOTPRINT ON THE NORTH SIDE THAT SHALL NOT BE DISTURBED DURING CONSTRUCTION.

THE CONTRACTOR WILL REPLACE THE PARAPETS AND SIDEWALKS, INSTALL VANDAL PROTECTION FENCE WITH AESTHETIC SIGNING, REPLACE THE EXPANSION JOINTS AND SEAL THE DECK IN TWO PHASES OF CONSTRUCTION ON WHITNEY ROAD IN ACCORDANCE WITH THE DETAILS FOR A SIGNALIZED LANE CLOSURE INCLUDED IN THE PLANS.

#### LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

THE CONTRACTOR SHALL PERFORM THE PIER REPAIR, PIER PATCHING AND PIER SEALING IN ONE PHASE OF CONSTRUCTION FOR IR 77. THE WORK WILL REQUIRE THE REMOVAL AND REPLACEMENT OF PORTIONS OF THE TYPE D CONCRETE BARRIER LOCATED ADJACENT TO PIERS ONE AND THREE. THE CONTRACTOR SHALL REPAIR THE PIER ONE COLUMNS, PATCH THE PIER THREE CAP, SEAL THE PIER THREE CAP AND REPAIR THE PIER THREE COLUMNS DURING THE SINGLE PHASE OF CONSTRUCTION. THE CONSTRUCTION PHASE SHALL CLOSE THE IR 77 (SOUTHBOUND) OUTSIDE SHOULDER IN ACCORDANCE WITH MT-95.45 (CLOSING SHOULDER OF A MULTI-LANE DIVIDED HIGHWAY) WHILE MAINTAINING THE THREE SOUTHBOUND TRAVEL LANES. THE CONSTRUCTION PHASE SHALL ALSO CLOSE THE IR 77 (NORTHBOUND) OUTSIDE SHOULDER IN ACCORDANCE WITH MT-95.45 (CLOSING SHOULDER OF A MULTI-LANE DIVIDED HIGHWAY) WHILE MAINTAINING THE THREE NORTHBOUND TRAVEL LANES.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 77 AT THE BRIDGE LOCATION. MULTIPLE WEEKEND CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK.

#### LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

THE CONTRACTOR SHALL PERFORM THE REPAIRS IN TWO PHASES OF CONSTRUCTION ON THE IR 77 RAMP BRIDGE. THE CONTRACTOR SHALL REPAIR THE ABUTMENT BACKWALLS, PATCH THE ABUTMENTS, SEAL PATCHED AREAS OF ABUTMENTS, REPAIR THE BRIDGE DECK AND PATCH THE PAVEMENT AT THE ABUTMENT JOINTS DURING PHASES ONE AND TWO ON THE IR 77 RAMP BRIDGE. THE FIRST PHASE SHALL CLOSE THE WEST HALF OF THE IR 77 RAMP BRIDGE AND SHIFT TRAFFIC TO THE EAST HALF OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE CONTRACTOR SHALL INSTALL TEMPORARY RUMBLE STRIPS PER MAINTENANCE OF TRAFFIC NOTE "ITEM SPECIAL - RUMBLE STRIPS". THE SECOND PHASE SHALL CLOSE THE EAST HALF OF THE IR 77 RAMP BRIDGE AND SHIFT TRAFFIC TO THE WEST HALF OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE CONTRACTOR SHALL INSTALL TEMPORARY RUMBLE STRIPS PER MAINTENANCE OF TRAFFIC NOTE "ITEM SPECIAL - RUMBLE STRIPS".

THE CONTRACTOR SHALL PERFORM THE WORK IN TWO PHASES OF CONSTRUCTION ON THE IR 480 RAMP. THE CONTRACTOR SHALL REPAIR THE PIER ONE COLUMNS DURING PHASE ONE ON IR 480. THE WORK WILL REQUIRE THE REMOVAL AND REPLACEMENT OF PORTIONS OF THE TYPE D CONCRETE BARRIER LOCATED ADJACENT TO PIER 1. THE CONTRACTOR SHALL REPAIR THE GIRDER FLANGE, REPLACE CROSSFRAMES, REPAIR STIFFENERS AND PAINT NEW STEEL DURING PHASE TWO ON IR 480. THE FIRST PHASE SHALL SHIFT THE ACCELERATION LANE WITH AN EARLY MERGE IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP) WHILE MAINTAINING TWO LANES OF TRAFFIC AND THE ACCELERATION LANE. PORTABLE BARRIER SHALL BE PROVIDED AT PIER ONE IN ACCORDANCE WITH MT-95.40 (CLOSING RIGHT OF LEFT LANES OF A MUTLI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER). THE SECOND PHASE SHALL CLOSE THE INSIDE LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND SHALL SHIFT THE ACCELERATION LANE WITH AN EARLY MERGE IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP) WHILE MAINTAINING ONE LANE OF TRAFFIC ON IR 480 AND THE ACCELERATION LANE.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR THE IR 480 RAMP AT THE BRIDGE LOCATION. MULTIPLE OVERNIGHT CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK ON IR 480.

THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

#### LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

THE CONTRACTOR SHALL PERFORM THE WORK IN FIVE PHASES OF CONSTRUCTION ON THE IR 77 SOUTHBOUND BRIDGE. THE CONTRACTOR SHALL PERFORM THE FORWARD ABUTMENT JOINT REPLACEMENT, FORWARD ABUTMENT PATCHING AND SEALING OF PATCHED AREAS OF THE FORWARD ABUTMENT DURING PHASES ONE, TWO AND THREE FOR THE IR 77 SOUTHBOUND STRUCTURE. THE CONTRACTOR SHALL SHIM THE REAR ABUTMENT JOINT DURING PHASES FOUR AND FIVE FOR THE IR 77 SOUTHBOUND STRUCTURE. THE FIRST PHASE SHALL CLOSE THE WEST PORTION OF THE BRIDGE AND SHIFT TRAFFIC TO THE INSIDE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE FIRST PHASE SHALL ALSO MAINTAIN THE EXIT RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.20 (LANE CLOSURE AT EXIT RAMP USING DRUMS). THE SECOND PHASE SHALL CLOSE THE OUTSIDE PORTION OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC TYPICAL SECTION, MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND MT-102.20 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE SECOND PHASE SHALL ALSO MAINTAIN THE EXIT RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.20 (LANE CLOSURE AT EXIT RAMP USING DRUMS). THE CONTRACTOR SHALL PERFORM THE WORK FOR PHASE TWO IN ONE WEEKEND WITH A SINGLE LANE CLOSURE. THE THIRD PHASE SHALL CLOSE THE EAST PORTION OF THE BRIDGE AND SHIFT TRAFFIC TO THE OUTSIDE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE THIRD PHASE SHALL ALSO MAINTAIN THE EXIT RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.20 (LANE CLOSURE AT EXIT RAMP USING DRUMS). THE FOURTH PHASE SHALL CLOSE THE OUTSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE FOURTH PHASE SHALL ALSO MAINTAIN THE EXIT RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.20 (LANE CLOSURE AT EXIT RAMP USING DRUMS). THE FIFTH PHASE SHALL CLOSE THE INSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE FIFTH PHASE SHALL ALSO MAINTAIN THE EXIT RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.20 (LANE CLOSURE AT EXIT RAMP USING DRUMS).

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LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

(CONTINUED FROM SHEET <u>12</u> )

THE CONTRACTOR SHALL PERFORM THE WORK IN FIVE PHASES OF CONSTRUCTION ON THE IR 77 NORTHBOUND BRIDGE. THE CONTRACTOR SHALL PERFORM THE REAR ABUTMENT JOINT REPLACEMENT, REAR ABUTMENT PATCHING AND SEALING OF PATCHED AREAS OF THE REAR ABUTMENT DURING PHASES ONE, TWO AND THREE FOR THE IR 77 NORTHBOUND STRUCTURE. THE CONTRACTOR SHALL SHIM THE FORWARD ABUTMENT JOINT DURING PHASES FOUR AND FIVE FOR THE IR 77 NORTHBOUND STRUCTURE. THE FIRST PHASE SHALL CLOSE THE EAST PORTION OF THE BRIDGE AND SHIFT TRAFFIC TO THE INSIDE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE FIRST PHASE SHALL ALSO MAINTAIN THE ENTRANCE RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP). THE SECOND PHASE SHALL CLOSE THE OUTSIDE PORTION OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC TYPICAL SECTION, MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND MT-102.20 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE SECOND PHASE SHALL ALSO MAINTAIN THE ENTRANCE RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP). THE CONTRACTOR SHALL PERFORM THE WORK FOR PHASE TWO IN ONE WEEKEND CLOSURE. THE THIRD PHASE SHALL CLOSE THE WEST PORTION OF THE BRIDGE AND SHIFT TRAFFIC TO THE OUTSIDE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE THIRD PHASE SHALL ALSO MAINTAIN THE ENTRANCE RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP). THE FOURTH PHASE SHALL CLOSE THE OUTSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE FOURTH PHASE SHALL ALSO MAINTAIN THE ENTRANCE RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP). THE FIFTH PHASE SHALL CLOSE THE INSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE FIFTH PHASE SHALL ALSO MAINTAIN THE ENTRANCE RAMP TO THE SOUTH IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT FNTRANCE RAMP).

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 77 AT THE BRIDGE LOCATION.

THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

#### LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

THE CONTRACTOR SHALL PERFORM THE WORK IN THREE PHASES OF CONSTRUCTION ON RAMP B. THE CONTRACTOR SHALL PERFORM THE ABUTMENT JOINT REPLACEMENT, TRIMMING BEAM ENDS, PAINTING DAMAGED STEEL, APPROACH SLAB REPLACEMENT, FORWARD APPROACH CURB REPLACEMENT, GROUND MOUNTED SIGN REMOVAL AND REERECTION, RAILING PATCHING, RAILING SEALING, FORWARD ABUTMENT DOWNSPOUT MODIFICATION, AND GUARDRAIL REMOVAL AND REERECTION DURING PHASE ONE ON RAMP B. THE CONTRACTOR SHALL PERFORM THE ABUTMENT JOINT REPLACEMENT, TRIMMING BEAM ENDS, PAINTING DAMAGED STEEL AND APPROACH SLAB REPLACEMENT DURING PHASE TWO ON RAMP B. THE CONTRACTOR SHALL PERFORM THE ABUTMENT JOINT REPLACEMENT, TRIMMING BEAM ENDS, PAINTING DAMAGED STEEL, APPROACH SLAB REPLACEMENT, FORWARD APPROACH CURB REPLACEMENT, GROUND MOUNTED SIGN REMOVAL AND REERECTION, RAILING PATCHING, RAILING SEALING, AND GUARDRAIL REMOVAL AND REERECTION DURING PHASE THREE ON RAMP B. THE FIRST PHASE SHALL CLOSE THE INSIDE PORTION OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS, MT-95.40 (CLOSING RIGHT OR LEFT LANES OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER) AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE FIRST PHASE SHALL ALSO CLOSE THE LEFT TURN LANE AT THE INTERSECTION WITH HILLIARD BOULEVARD. THE ADJACENT THRU LANE WILL BE MARKED WITH A THRU/LEFT TURN ARROW DURING PHASE ONE. LANE AND SIGNAL MODIFICATION WILL BE REQUIRED AT THE INTERSECTION WITH HILLIARD BOULEVARD DURING PHASE ONE. THE CONTRACTOR SHALL INSTALL TEMPORARY RUMBLE STRIPS PER MAINTENANCE OF TRAFFIC NOTE "ITEM SPECIAL - RUMBLE STRIPS". THE SECOND PHASE SHALL CLOSE THE OUTSIDE PORTION OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS, MT-95.40 (CLOSING RIGHT OR LEFT LANES OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER), MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND MT-95.32 (CLOSING LEFT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE LANE OF TRAFFIC. THE CONTRACTOR SHALL PERFORM THE WORK FOR PHASE TWO IN ONE WEEKEND WITH A SINGLE LANE CLOSURE. THE THIRD PHASE SHALL CLOSE THE OUTSIDE PORTION OF THE BRIDGE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS. MT-95.40 (CLOSING RIGHT OR LEFT LANES OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER) AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC. THE THIRD PHASE SHALL ALSO CLOSE THE RIGHT TURN LANE AT HILLIARD BOULEVARD. THE ADJACENT LANE WILL BE MARKED WITH A THRU/RIGHT ARROW DURING PHASE THREE, LANE AND SIGNAL MODIFICATION WILL BE REQUIRED AT THE INTERSECTION WITH HILLIARD BOULEVARD DURING PHASE THREE. THE CONTRACTOR SHALL INSTALL TEMPORARY RUMBLE STRIPS PER MAINTENANCE OF TRAFFIC NOTE "ITEM SPECIAL - RUMBLE STRIPS".

THE CONTRACTOR SHALL PERFORM THE WORK IN TWO PHASES OF CONSTRUCTION ON IR 90. THE CONTRACTOR SHALL PERFORM THE PIER ONE REPAIRS, THE PIER THREE REPAIRS, ABUTMENT SEALING AND ABUTMENT PATCHING DURING PHASE ONE ON IR 90. THE CONTRACTOR SHALL PERFORM THE PIER TWO REPAIRS DURING PHASE TWO ON IR 90. THE FIRST PHASE SHALL CLOSE THE EASTBOUND OUTSIDE SHOULDER AND THE WESTBOUND OUTSIDE SHOULDER IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING THREE LANES OF TRAFFIC IN EACH DIRECTION. THE SECOND PHASE SHALL CLOSE THE EASTBOUND INSIDE SHOULDER IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) AND SHALL CLOSE THE WESTBOUND INSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING THREE LANES OF TRAFFIC IN THE EASTBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE WESTBOUND DIRECTION. THE CONTRACTOR MAY CLOSE THE WESTBOUND INSIDE SHOULDER AND THE EASTBOUND INSIDE TRAVEL LANE AS AN ALTERNATIVE FOR PHASE TWO CONSTRUCTION ON IR 90.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 90 AT THE BRIDGE LOCATION.

MULTIPLE WEEKEND CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK ON IR 90.

#### LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

THE CONTRACTOR SHALL PERFORM THE WORK IN FIVE PHASES OF CONSTRUCTION ON CHAGRIN BOULEVARD. THE CONTRACTOR SHALL REPLACE PORTIONS OF THE NORTH GIRDER. REPLACE PORTIONS OF THE NORTH DECK AND REPLACE PORTIONS OF THE NORTH SIDEWALK DURING PHASE ONE ON CHAGRIN BOULEVARD. THE CONTRACTOR SHALL REPLACE PORTIONS OF THE SOUTH GIRDER, REPLACE PORTIONS OF THE SOUTH DECK AND REPLACE PORTIONS OF THE SOUTH SIDEWALK DURING PHASE TWO ON CHAGRIN BOULEVARD. THE CONTRACTOR SHALL PATCH THE NORTH PARAPET AND SEAL THE NORTH PARAPET DURING PHASE THREE ON CHAGRIN BOULEVARD. THE CONTRACTOR SHALL REPLACE THE REAR STRIP SEAL DURING PHASE FOUR ON CHAGRIN BOULEVARD. THE CONTRACTOR SHALL PATCH THE SOUTH PARAPET AND SEAL THE SOUTH PARAPET DURING PHASE FIVE ON CHAGRIN BOULEVARD. THE FIRST PHASE SHALL SHIFT THE TRAVEL LANES TO THE SOUTH IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC IN THE WESTBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE EASTBOUND DIRECTION, SIGNAL MODIFICATION MAY BE REQUIRED AT THE INTERSECTIONS WITH THE IR 271 SOUTHBOUND RAMPS TO THE WEST OF THE BRIDGE AND AT THE INTERSECTION WITH THE IR 271 NORTHBOUND RAMPS TO THE EAST OF THE BRIDGE DURING PHASE ONE, PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE SOUTH SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS) DURING PHASE ONE. THE RAMPS TO THE EAST AND TO THE WEST OF THE STRUCTURE SHALL REMAIN OPEN AT ALL TIMES DURING PHASE ONE. THE SECOND PHASE SHALL SHIFT THE TRAVEL LANES TO THE NORTH IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC IN THE WESTBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE EASTBOUND DIRECTION. SIGNAL MODIFICATION MAY BE REQUIRED AT THE INTERSECTIONS WITH THE IR 271 SOUTHBOUND RAMPS TO THE WEST OF THE BRIDGE AND AT THE INTERSECTION WITH THE IR 271 NORTHBOUND RAMPS TO THE EAST OF THE BRIDGE DURING PHASE TWO. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE NORTH SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS) DURING PHASE TWO. THE RAMPS TO THE EAST OF THE STRUCTURE AND TO THE WEST OF THE STRUCTURE SHALL REMAIN OPEN AT ALL TIMES DURING PHASE TWO. THE THIRD PHASE SHALL CLOSE THE OUTSIDE WESTBOUND LANE IN ACCORDANCE MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE WESTBOUND LANE OF TRAFFIC ON THE EXISTING INSIDE WESTBOUND LANE AND TWO EASTBOUND LANES OF TRAFFIC IN THE EXISTING EASTBOUND LANES. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE SOUTH SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS) DURING PHASE THREE. THE RAMPS TO THE EAST AND TO THE WEST OF THE STRUCTURE SHALL REMAIN OPEN AT ALL TIMES DURING PHASE THREE. PHASE THREE WILL REQUIRE MULTIPLE OVERNIGHT CLOSURES TO COMPLETE. LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS DURING PHASE THREE. THE FOURTH PHASE SHALL REQUIRE 3 SUBPHASES TO COMPLETE. THE FIRST SUBPHASE SHALL CLOSE THE OUTSIDE WESTBOUND LANE AS DESCRIBED FOR PHASE 3. THE SECOND SUBPHASE SHALL CLOSE THE INSIDE WESTBOUND LANE AND THE INSIDE EASTBOUND LANE IN ACCORDANCE MT-95.32 (CLOSING LEFT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE WESTBOUND LANE OF TRAFFIC ON THE EXISTING OUTSIDE WESTBOUND LANE AND ONE EASTBOUND LANE OF TRAFFIC ON THE EXISTING OUTSIDE EASTBOUND LANE. THE THIRD SUBPHASE SHALL CLOSE THE OUTSIDE EASTBOUND LANE AS DESCRIBED FOR PHASE 5. THE REAR STRIP SEAL SHALL BE INSTALLED IN ONE CONTINUOUS PIECE. PHASE THREE WILL REQUIRE ONE SINGLE OVERNIGHT CLOSURE TO COMPLETE, LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLAN HOURS DURING PHASE FOUR. THE FIFTH PHASE SHALL CLOSE THE OUTSIDE EASTBOUND LANE IN ACCORDANCE MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE EASTBOUND LANE OF TRAFFIC ON THE EXISTING INSIDE EASTBOUND LANE AND TWO WESTBOUND LANES OF TRAFFIC IN THE EXISTING WESTBOUND LANES. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE NORTH SIDEWALK IN ACCORDANCE WITH MT-110,10 (PEDESTRIAN DETOUR METHODS) DURING PHASE FIVE. THE RAMPS TO THE EAST OF THE STRUCTURE AND TO THE WEST OF THE STRUCTURE SHALL REMAIN OPEN AT ALL TIMES DURING PHASE FIVE. PHASE FIVE WILL REQUIRE MULTIPLE OVERNIGHT CLOSURES TO COMPLETE. LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS DURING PHASE FIVE.

THE CONTRACTOR SHALL PERFORM THE WORK IN FOUR PHASES OF CONSTRUCTION ON IR 271. THE CONTRACTOR SHALL REPAIR THE ABUTMENTS, REFURBISH THE BEARINGS, REPAIR PIER ONE AND REPAIR PIER FIVE DURING PHASE ONE ON IR 271. THE CONTRACTOR SHALL REPAIR PIER TWO AND REPAIR PIER FOUR DURING PHASE TWO ON IR 271. THE WORK WILL REQUIRE THE REMOVAL AND REPLACEMENT OF PORTIONS OF THE TYPE D CONCRETE BARRIER LOCATED ADJACENT TO PIERS TWO AND FOUR DURING PHASE TWO. THE CONTRACTOR SHALL REPAIR PIER THREE DURING PHASE THREE ON IR 271. THE CONTRACTOR SHALL PROVIDE A SHOULDER CLOSURE IN THE OUTSIDE NORTHBOUND LANE OF IR 271 DURING PHASE FOUR ON IR 271 IN ORDER TO REMOVE THE EXISTING SOUTH GIRDER, DECK AND SIDEWALK ON CHAGRIN BOULEVARD. THE FIRST PHASE SHALL CLOSE THE OUTSIDE SHOULDERS ON IR 271 NORTHBOUND AND IR 271 SOUTHBOUND IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING FOUR LANES OF TRAFFIC IN THE NORTHBOUND DIRECTION ON IR 271, ONE ENTRANCE RAMP ACCELERATION LANE IN THE NORTHBOUND DIRECTION ON IR 271, THREE LANES OF TRAFFIC IN THE SOUTHBOUND DIRECTION ON IR 271, ONE ENTRANCE RAMP ACCELERATION LANE IN THE SOUTHBOUND DIRECTION ON IR 271 AND ALL EXISTING IR 271 EXPRESS LANES. THE SECOND PHASE SHALL CLOSE THE NORTHBOUND INSIDE SHOULDER ON IR 271 AND THE SOUTHBOUND INSIDE SHOULDER ON IR 271 LANE IN ACCORDANCE WITH MT-95.45 (CLOSING SHOULDER OF A MULTI-LANE DIVIDED HIGHWAY) AND THE SECOND PHASE SHALL CLOSE THE NORTHBOUND OUTSIDE SHOULDER ON THE IR 271 EXPRESS AND THE SOUTHBOUND OUTSIDE SHOULDER ON IR 271 EXPRESS IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING FOUR LANES OF TRAFFIC IN THE NORTHBOUND DIRECTION ON IR 271, ONE ENTRANCE RAMP ACCELERATION LANE IN THE NORTHBOUND DIRECTION ON IR 271, THREE LANES OF TRAFFIC IN THE SOUTHBOUND DIRECTION ON IR 271, ONE ENTRANCE RAMP ACCELERATION LANE IN THE SOUTHBOUND DIRECTION ON IR 271 AND ALL EXISTING IR 271 EXPRESS LANES. THE THIRD PHASE SHALL CLOSE THE NORTHBOUND INSIDE LANE AND THE SOUTHBOUND INSIDE LANE ON IR 271 EXPRESS IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING ALL LANES OF TRAFFIC ON IR 271 AND IR 271 EXPRESS. THE FOURTH PHASE SHALL CLOSE THE NORTHBOUND SHOULDER ON IR 271 IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) IN ORDER TO REMOVE THE EXISTING SOUTH GIRDER, DECK AND SIDEWALK ON CHAGRIN BOULEVARD. THE THIRD PHASE SHALL OCCUR CONCURRENTLY WITH PHASE TWO ON CHAGRIN BOULEVARD.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 271 AT THE BRIDGE LOCATION. MULTIPLE OVERNIGHT/WEEKEND CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK ON IR 271 DURING PHASE ONE, PHASE TWO AND PHASE THREE.

#### LOCATION 11: CUY-422-1827 L (US 422 WB OVER SOLON ROAD) LOCATION 12: CUY-422-1827 R (US 422 EB OVER SOLON ROAD)

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

ALL TRAFFIC SHALL BE SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR IS ONLY PERMITTED TO RESTRICT TRAFFIC OR CLOSE LANES ON US 422 FOR WORK NOT ASSOCIATED WITH THE APPROACH SLAB REPLACEMENT PER THE ODOT DISTRICT 12 PERMITTED LANE CLOSURE TIMES PUBLISHED ON THE ODOT WEBSITE LISTED BELOW.

http://www.dot.state.oh.us/districts/D12/HighwayManagement/Pages/ PermittedLaneClosures.aspx

THE REVISION APPLICABLE FOR THIS PROJECT SHALL BE THE MOST CURRENT REVISION PUBLISHED 30 DAYS PRIOR TO THE BID DATE.

NO RAMP CLOSURES TO OR FROM US 422 ARE PERMITTED AT ANY TIMES.

TRAFFIC ON SOLON ROAD SHALL BE MAINTAINED AT ALL TIMES. ONE LANE IS PERMITTED TO BE CLOSED WITH THE USE OF FLAGGERS. BOTH LANES SHALL BE MAINTAINED WEEKDAYS FROM 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM.

THE CONTRACTOR SHALL PERFORM THE PARAPET PATCHING, PARAPET SEALING, AND SCUPPER CLEANING IN TWO PHASES OF CONSTRUCTION ON THE WESTBOUND US-422 BRIDGE. THE WORK WILL REQUIRE CLOSING THE SHOULDERS IN ACCORDANCE WITH SCD MT-95.45 (CLOSING SHOULDER OF A MULTI-LANE DIVIDED HIGHWAY), MT-98.20 LANE CLOSURE AT EXIT RAMP USING DRUMS) AND MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS).

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LOCATION 11: CUY-422-1827 L (US 422 WB OVER SOLON ROAD) LOCATION 12: CUY-422-1827 R (US 422 EB OVER SOLON ROAD) (CONTINUED FROM SHEET <u>13</u>)

THE CONTRACTOR SHALL PERFORM THE REMOVAL AND REPLACEMENT OF THE FORWARD (EAST) APPROACH SLAB, PARAPET PATCHING, PARAPET SEALING, AND SCUPPER CLEANING IN TWO PHASES OF CONSTRUCTION ON THE EASTBOUND US-422 BRIDGE. A 2-WEEK, ONE LANE CLOSURE WILL BE PERMITTED FOR EACH PHASE IN THE EASTBOUND DIRECTION. THE NORTHERN MOST LANE WILL BE CLOSED DURING PHASE 1 IN ACCORDANCE WITH MT-95.40 (CLOSING RIGHT OR LEFT LANES OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER). TEMPORARY PAVEMENT MARKINGS WILL BE REQUIRED TO SHIFT TRAFFIC ON THE BRIDGE AND REDUCE THE LANE WIDTH TO A MINIMUM OF 11'-0". A ONE FOOT OFFSET TO THE PCB FROM THE ADJACENT LANES IS REQUIRED. THE PCB SHALL BE PLACED SO THAT IN PHASE 1. THE NON-TRAFFIC SIDE TOE SHALL BE LOCATED A MINIMUM OF 1'-0" FROM THE PHASE LINE AND TWO ANCHORS PER PCB SEGMENT INSTALLED INTO THE EXISTING APPROACH SLAB. NO RAMP CLOSURES TO OR FROM US-422 ARE PERMITTED AT ANY TIME. DURING PHASE 2, TRAFFIC WILL BE SHIFTED NORTH PRIOR TO THE BRIDGE IN ACCORDANCE WITH MT-95.40 (CLOSING RIGHT OR LEFT LANES OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE BARRIER) AND THE RAMP WILL REMAIN OPEN IN ACCORDANCE WITH MT-98.10 (LANE CLOSURE AT ENTRANCE RAMP). THE PCB SHALL BE PLACED SO THAT THE NON-TRAFFIC SIDE TOE SHALL BE LOCATED A MINIMUM OF 2'-6" FROM THE PHASE LINE. THE PHASE TWO PCB IS NOT TO BE ANCHORED INTO THE NEW APPROACH SLAB. THE CONTRACTOR SHALL PREPARE AND SUBMIT AN MOT PLAN FOR THIS WORK FOR REVIEW AND ACCEPTANCE BY ODOT UNDER ITEM 614 IN ADVANCE OF SCHEDULING

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE ODOT PLCM HOURS FOR US-422 AT THE BRIDGE LOCATION EXCEPT DURING THE 2-WEEK PERIOD WHEN A ONE-LANE CLOSURE WILL BE PERMITTED FOR EACH PHASE IN THE EASTBOUND DIRECTION.

TRAFFIC ON SOLON ROAD SHALL BE MAINTAINED AT ALL TIMES. ONE LANE IS PERMITTED TO BE CLOSED WITH THE USE OF FLAGGERS IN ACCORDANCE WITH MT-97.10. BOTH LANES SHALL BE MAINTAINED WEEKDAYS FROM 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM. DURING CLOSURE OF THE SOUTHBOUND LANE, THE CONTRACTOR SHALL REMOVE THE EXISTING FENCE ALONG THE WEST SIDE OF SOLON ROAD TO REMOVE AND REPLACE THE REAR CONCRETE SLOPE PROTECTION ON BOTH BRIDGES. THE CONTRACTOR SHALL PERFORM THE DITCH CLEANOUT ALONG THE WEST SIDE OF SOLON ROAD INCLUDING CLEAN UP OF DUMPED ASPHALT AND VEGETATION ALONG THE NORTH END OF THE REAR ABUTMENT OF THE RIGHT BRIDGE, PATCH COLUMN 1 ON PIER 1 OF THE LEFT BRIDGE WITH ITEM 844 -CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN PRIOR TO FIBER WRAPPING, PATCH AND SEAL COLUMNS 2 AND 6 ON PIER 1 OF THE LEFT BRIDGE AND COLUMN IN ONE WEEKEND CLOSURE. 2 ON PIER 1 OF THE RIGHT BRIDGE. THE CONTRACTOR SHALL INSTALL THE FENCE IN THE SAME LOCATION AS THE EXISTING FENCE.

DURING CLOSURE OF THE NORTHBOUND LANE, THE CONTRACTOR SHALL REMOVE THE EXISTING FENCE ALONG THE EAST SIDE OF SOLON ROAD TO REMOVE AND REPLACE THE FORWARD CONCRETE SLOPE PROTECTION ON BOTH BRIDGES. THE CONTRACTOR SHALL PERFORM THE DITCH CLEANOUT ALONG THE EAST SIDE OF SOLON ROAD, PATCH AND SEAL COLUMN 6 ON PIER 2 OF THE RIGHT BRIDGE AND INSTALL THE FENCE IN THE SAME LOCATION AS THE EXISTING FENCE.

AS SHOWN IN THE PLANS. THE CONTRACTOR SHALL REPAIR THE ABUTMENTS, REFURBISH THE ABUTMENT BEARINGS, REPAIR THE GIRDER ENDS, REPLACE ALL OF THE END CROSSFRAMES, AND PAINT THE NEW GIRDER ENDS AND END CROSSFRAMES. IF NEEDED, ONE LANE ON SOLON ROAD IS PERMITTED TO BE CLOSED WITH THE USE OF FLAGGERS IN ACCORDANCE WITH MT-97.10. BOTH TRAVEL LANES SHALL BE MAINTAINED WEEKDAYS FROM 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH C&MS 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 LANES OF TRAFFIC IN THE EASTBOUND DIRECTION, THREE LANES OF TRAFFIC IN THE SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 - MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

THE WORK ON BRIDGES CUY-422-1827L AND CUY-422-1827R SHALL BE COMPLETED PRIOR TO 02/01/22 TO ALLOW ACCESS TO ANOTHER CONTRACTOR FOR THE PAINT PROJECT (CUY-422-13.90/VAR PAINT. PID NO. 105260).

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

THE CONTRACTOR SHALL PERFORM THE WORK IN THREE PHASES OF CONSTRUCTION ON TRANSPORTATION BOULEVARD. THE CONTRACTOR SHALL REPLACE THE EAST SIDE SIDEWALK, RAILING, SIDEWALK SLIDING PLATE JOINT, VANDAL PROTECTION FENCE, LIGHTING CONDUIT ON THE BRIDGE, AND BRIDGE TERMINAL ASSEMBLIES; REMOVE AND REERECT THE LIGHT POLES AND LUMINAIRES: REPAIR THE EAST SIDE CURBS ON THE APPROACH SLABS; SEAL EAST SIDEWALK; AND RESET THE EAST BEARING AT THE FORWARD ABUTMENT DURING PHASE ONE ON TRANSPORTATION BOULEVARD. THE CONTRACTOR SHALL PATCH THE APPROACH SLABS DURING PHASES TWO AND THREE ON TRANSPORTATION BOULEVARD. THE FIRST PHASE SHALL CLOSE THE EAST PORTION OF THE BRIDGE, CLOSE THE LEFT TURN LANE ACROSS THE BRIDGE AND SHIFT TRAVEL LANES TO THE WEST IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING TWO LANES OF TRAFFIC IN THE NORTHBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE SOUTHBOUND DIRECTION. A LEFT TURN LANE IS PROVIDED AT THE INTERSECTION WITH ANTENUCCI BOULEVARD PAST THE BRIDGE LIMITS FOR PHASE ONE. SIGNAL MODIFICATION MAY BE REQUIRED AT THE INTERSECTIONS WITH ANTENUCCI BOULEVARD/IR 480 EB RAMP AND PUBLIC ROAD 1/IR 480 WB RAMP DURING PHASE ONE. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE WEST SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS) DURING PHASE ONE. THE SECOND PHASE SHALL CLOSE THE EAST PORTION OF THE BRIDGE (INCLUDING THE TWO NORTHBOUND LANES AND THE LEFT TURN LANE ACROSS THE BRIDGE). ONE NORTHBOUND LANE, ONE SOUTHBOUND LANE AND THE TURN LANE SHALL BE CLOSED. THE INSIDE NORTHBOUND TRAVEL LANE SHALL BE SHIFTED TO THE WEST IN ACCORDANCE WITH MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE NORTHBOUND LANE OF TRAFFIC AND ONE SOUTHBOUND LANE OF TRAFFIC ON THE SOUTHBOUND TRAVEL LANES. SIGNAL MODIFICATION MAY BE REQUIRED AT THE INTERSECTIONS WITH ANTENUCCI BOULEVARD/IR 480 EB RAMP AND PUBLIC ROAD 1/IR 480 WB RAMP DURING PHASE TWO. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE WEST SIDEWALK IN ACCORDANCE WITH MT-110,10 (PEDESTRIAN DETOUR METHODS) DURING PHASE TWO. THE CONTRACTOR SHALL PERFORM THE WORK FOR PHASE TWO IN ONE WEEKEND CLOSURE. THE THIRD PHASE SHALL CLOSE THE INSIDE NORTHBOUND LANE, THE TURN LANE AND THE INSIDE SOUTHBOUND LANE IN ACCORDANCE MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING ONE NORTHBOUND LANE OF TRAFFIC IN THE OUTSIDE NORTHBOUND LANE AND ONE SOUTHBOUND LANE OF TRAFFIC IN THE OUTSIDE SOUTHBOUND LANE. SIGNAL MODIFICATION MAY BE REQUIRED AT THE INTERSECTIONS WITH ANTENUCCI BOULEVARD/IR 480 EB RAMP AND PUBLIC ROAD 1/IR 480 WB RAMP DURING PHASE THREE. THE CONTRACTOR SHALL PERFORM THE WORK FOR PHASE THREE

THE CONTRACTOR SHALL PERFORM THE WORK IN THREE PHASES OF CONSTRUCTION ON IR 480. THE CONTRACTOR SHALL REPAIR PIER ONE, REPAIR PIER FOUR, PATCH THE PIER ONE CAP, PATCH THE PIER FOUR CAP, SEAL THE PIER ONE CAP, SEAL THE PIER FOUR CAP, PATCH THE ABUTMENTS, SEAL THE ABUTMENTS AND PAINT THE STEEL AT THE ABUTMENT ENDS DURING PHASE ONE ON IR 480. THE CONTRACTOR SHALL REPAIR PIER TWO. REPAIR PIER THREE, PATCH PIER CAP TWO. PATCH PIER CAP THREE, SEAL PIER CAP TWO AND SEAL PIER CAP THREE DURING PHASE TWO ON IR 480. THE CONTRACTOR SHALL PROVIDE LANE CLOSURES DURING PHASE THREE ON IR 480 IN ORDER TO REMOVE THE EXISTING EAST PARAPETS ON TRANSPORTATION BOULEVARD. THE INSTALLATION OF THE TIMBER SUB-DECKING IN THE CENTER SPAN WILL NOT REQUIRE MAINTENANCE OF TRAFFIC. THE FIRST PHASE SHALL SHIFT THE EASTBOUND ENTRANCE RAMP ACCELERATION LANE AND THE WESTBOUND ENTRANCE RAMP ACCELERATION LANE IN ACCORDANCE WITH MT-98.11 (LANE CLOSURE AT ENTRANCE RAMP ACCELERATION LANE) WHILE MAINTAINING FOUR LANES OF TRAFFIC IN EACH DIRECTION AND ONE ENTRANCE RAMP ACCELERATION LANE IN EACH DIRECTION. THE SECOND PHASE SHALL CLOSE THE EASTBOUND INSIDE TRAVEL LANE AND THE WESTBOUND INSIDE TRAVEL LANE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING THREE WESTBOUND DIRECTION, THE EASTBOUND ENTRANCE RAMP ACCELERATION LANE AND THE WESTBOUND ENTRANCE RAMP ACCELERATION LANE. THE THIRD PHASE SHALL HAVE MULTIPLE OVERNIGHT/WEEKEND CLOSURES TO BE DETERMINED BY THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS). THE THIRD PHASE SHALL OCCUR CONCURRENTLY WITH PHASE ONE ON TRANSPORTATION BOULEVARD.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 480 AT THE BRIDGE LOCATION. MULTIPLE OVERNIGHT/WEEKEND CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK ON IR 480 DURING PHASE ONE, PHASE TWO, AND PHASE

IR 480 IS CURRENTLY UNDER CONSTRUCTION AND WILL BE UNDER CONSTRUCTION DURING THE CUY-480-1955 REPAIRS. THE CONTRACTOR SHALL CONDUCT HIS WORK WITHOUT INTERFERING WITH OR HINDERING THE PROGRESS, COMPLETION OR WORK BEING PERFORMED BY THE OTHER CONTRACTORS. THE CONTRACTOR SHALL COOPERATE AND COORDINATE WITH THE OTHER CONTRACTORS IN ORDER TO IMPLEMENT THE MOT ZONES REQUIRED TO PERFORM THE REPAIRS FOR CUY-480-1955.

THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 13 (CUY-480-1955) AND LOCATION 14 (CUY-480-2019) CONCURRENTLY.

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

THE CONTRACTOR SHALL PERFORM THE WORK IN TWO PHASES OF CONSTRUCTION ON TURNEY ROAD. THE CONTRACTOR SHALL REMOVE THE CURB BARRIER, REPLACE THE CURB (ON THE BRIDGE AND THE APPROACH SLABS), REPLACE THE SIDEWALK, REPLACE THE RAILING, REPLACE THE VANDAL PROTECTION FENCE, REPLACE THE ABUTMENT JOINTS, PATCH THE ASPHALT AT ABUTMENT JOINTS, CLEAN AND RESET THE ABUTMENT BEARINGS, REPLACE GUARDRAIL ON TURNEY ROAD APPROACHES, REPLACE CHAIN LINK FENCE ON TURNEY ROAD, REMOVE AND REERECT LIGHT POLES AND LUMINAIRES, REPLACE THE LIGHTING CONDUIT ON THE BRIDGE, AND REMOVE AND RE-ERECT SIGNS DURING PHASES ONE AND TWO ON TURNEY ROAD. THE FIRST PHASE SHALL CLOSE THE EAST PORTION OF THE BRIDGE, AND SHALL CLOSE A NORTHBOUND LANE AND A SOUTHBOUND LANE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS, MT-95.41 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH PORTABLE BARRIER), MT-95.32 (CLOSING LEFT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING ONE LANE OF TRAFFIC IN THE NORTHBOUND DIRECTION AND ONE LANE OF TRAFFIC IN THE SOUTHBOUND DIRECTION. THE FIRST PHASE SHALL CLOSE THE WESTBOUND LANE ON WILLARD AVENUE IN ACCORDANCE WITH MT-97.10 (FLAGGER CLOSING I LANE OF A 2-LANE HIGHWAY - STATIONARY OPERATION) AS REQUIRED FOR THE REPLACEMENT OF THE GUARDRAIL AT THE SOUTHEAST CORNER OF THE STRUCTURE, THE FIRST PHASE SHALL CLOSE THE EASTBOUND LANE ON TONSING DRIVE IN ACCORDANCE WITH MT-97.10 (FLAGGER CLOSING 1 LANE OF A 2-LANE HIGHWAY - STATIONARY OPERATION) AS REQUIRED FOR THE REPLACEMENT OF THE GUARDRAIL AT THE NORTHEAST CORNER OF THE STRUCTURE. DURING PHASE ONE, SIGNAL MODIFICATION (TRAFFIC AND PEDESTRIAN) MAY BE REQUIRED AT THE INTERSECTION WITH ANTENUCCI BOULEVARD/WILLARD AVENUE AND AT THE INTERSECTION WITH DAVIS-BENJAMIN WAY. DURING PHASE ONE, PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE WEST SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS). THE CROSSWALK ACROSS TURNEY ROAD AT DAVIS-BENJAMIN WAY WILL BE CLOSED DURING CONSTRUCTION. THE SECOND CONSTRUCTION PHASE SHALL CLOSE THE WEST PORTION OF THE BRIDGE, A NORTHBOUND LANE AND A SOUTHBOUND LANE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS, MT-95.41 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH PORTABLE BARRIER), MT-95.32 (CLOSING LEFT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS) AND MT-102.10 (LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER) WHILE MAINTAINING ONE LANE OF TRAFFIC IN THE NORTHBOUND DIRECTION AND ONE LANE OF TRAFFIC IN THE SOUTHBOUND DIRECTION. THE SECOND PHASE SHALL CLOSE THE WESTBOUND LANE ON ANTENUCCI BOULEVARD IN ACCORDANCE WITH MT-97.10 (FLAGGER CLOSING 1 LANE OF A 2-LANE HIGHWAY -STATIONARY OPERATION) AS REQUIRED FOR THE REPLACEMENT OF THE GUARDRAIL AT THE SOUTHWEST CORNER OF THE STRUCTURE. DURING PHASE TWO, SIGNAL MODIFICATION (TRAFFIC AND PEDESTRIAN) MAY BE REQUIRED AT THE INTERSECTION WITH ANTENUCCI BOULEVARD/WILLARD AVENUE AND DAVIS-BENJAMIN WAY. DURING PHASE TWO, PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE EAST SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS). THE CROSSWALK ACROSS TURNEY ROAD AT DAVIS-BENJAMIN WAY WILL BE CLOSED DURING CONSTRUCTION.

THE CONTRACTOR SHALL PERFORM THE WORK IN SIX PHASES OF CONSTRUCTION ON IR 480. THE CONTRACTOR SHALL REPAIR PORTIONS OF GIRDER END CROSSFRAMES, TRIM GIRDER ENDS, PATCH ABUTMENTS, SEAL THE ABUTMENTS, PAINT GIRDER ENDS AND END CROSSFRAMES, PLACE TYPE C ROCK AT THE FORWARD LEFT ABUTMENT SLOPE, REPAIR THE PIER ONE COLUMNS, REPAIR THE PIER FOUR COLUMNS, SEAL THE PIER ONE CAP, SEAL THE PIER FOUR CAP AND PATCH THE PIER ONE CAP DURING PHASE ONE ON IR 480. THE CONTRACTOR SHALL INSTALL TIMBER SUB-DECKING IN SPANS TWO AND FOUR DURING PHASES TWO AND THREE ON IR 480. THE CONTRACTOR SHALL REPAIR THE PIER TWO COLUMNS. REPAIR THE PIER THREE COLUMNS, SEAL THE PIER TWO CAP AND SEAL THE PIER THREE CAP DURING PHASE FOUR ON IR 480. THE CONTRACTOR SHALL PROVIDE LANE CLOSURES DURING PHASE FIVE ON IR 480 IN ORDER TO REMOVE THE EXISTING EAST PARAPETS ON TURNEY ROAD. THE CONTRACTOR SHALL PROVIDE LANE CLOSURES DURING PHASE SIX ON IR 480 IN ORDER TO REMOVE THE EXISTING WEST PARAPET ON TURNEY ROAD. THE INSTALLATION OF THE TIMBER DECK IN SPAN THREE WILL NOT REQUIRE MAINTENANCE OF TRAFFIC. THE FIRST PHASE SHALL CLOSE THE OUTSIDE EASTBOUND SHOULDER AND THE OUTSIDE WESTBOUND SHOULDER IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING FOUR LANES OF TRAFFIC IN EACH DIRECTION. THE SECOND PHASE SHALL CLOSE THE TWO EASTBOUND OUTSIDE TRAVEL LANES AND THE TWO WESTBOUND OUTSIDE TRAVEL LANES IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING TWO LANES OF TRAFFIC IN THE EASTBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE WESTBOUND DIRECTION. THE THIRD PHASE SHALL CLOSE THE TWO EASTBOUND INSIDE TRAVEL LANES AND THE TWO WESTBOUND INSIDE TRAVEL LANES IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING TWO LANES OF TRAFFIC IN THE EASTBOUND DIRECTION AND TWO LANES OF TRAFFIC IN THE WESTBOUND DIRECTION. THE FOURTH PHASE SHALL CLOSE THE INSIDE EASTBOUND SHOULDER AND THE INSIDE WESTBOUND SHOULDER IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) WHILE MAINTAINING FOUR LANES OF TRAFFIC IN THE EASTBOUND DIRECTION AND FOUR LANES OF TRAFFIC IN THE WESTBOUND DIRECTION.

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THE FIFTH PHASE SHALL HAVE MULTIPLE OVERNIGHT/WEEKEND CLOSURES TO BE DETERMINED BY THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS). THE FIFTH PHASE SHALL OCCUR CONCURRENTLY WITH PHASE ONE ON TURNEY ROAD. THE SIXTH PHASE SHALL HAVE MULTIPLE OVERNIGHT/WEEKEND CLOSURES TO BE DETERMINED BY THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OF LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS). THE SIXTH PHASE SHALL OCCUR CONCURRENTLY WITH PHASE TWO ON TURNEY ROAD.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 480 AT THE BRIDGE LOCATION. MULTIPLE OVERNIGHT/WEEKEND CLOSURES WILL BE REQUIRED TO COMPLETE THE WORK ON IR 480 DURING PHASE ONE, PHASE FOUR, PHASE FIVE AND PHASE SIX. ONE OVERNIGHT CLOSURE WILL BE REQUIRED TO COMPLETE THE WORK DURING PHASE TWO AND PHASE THREE.

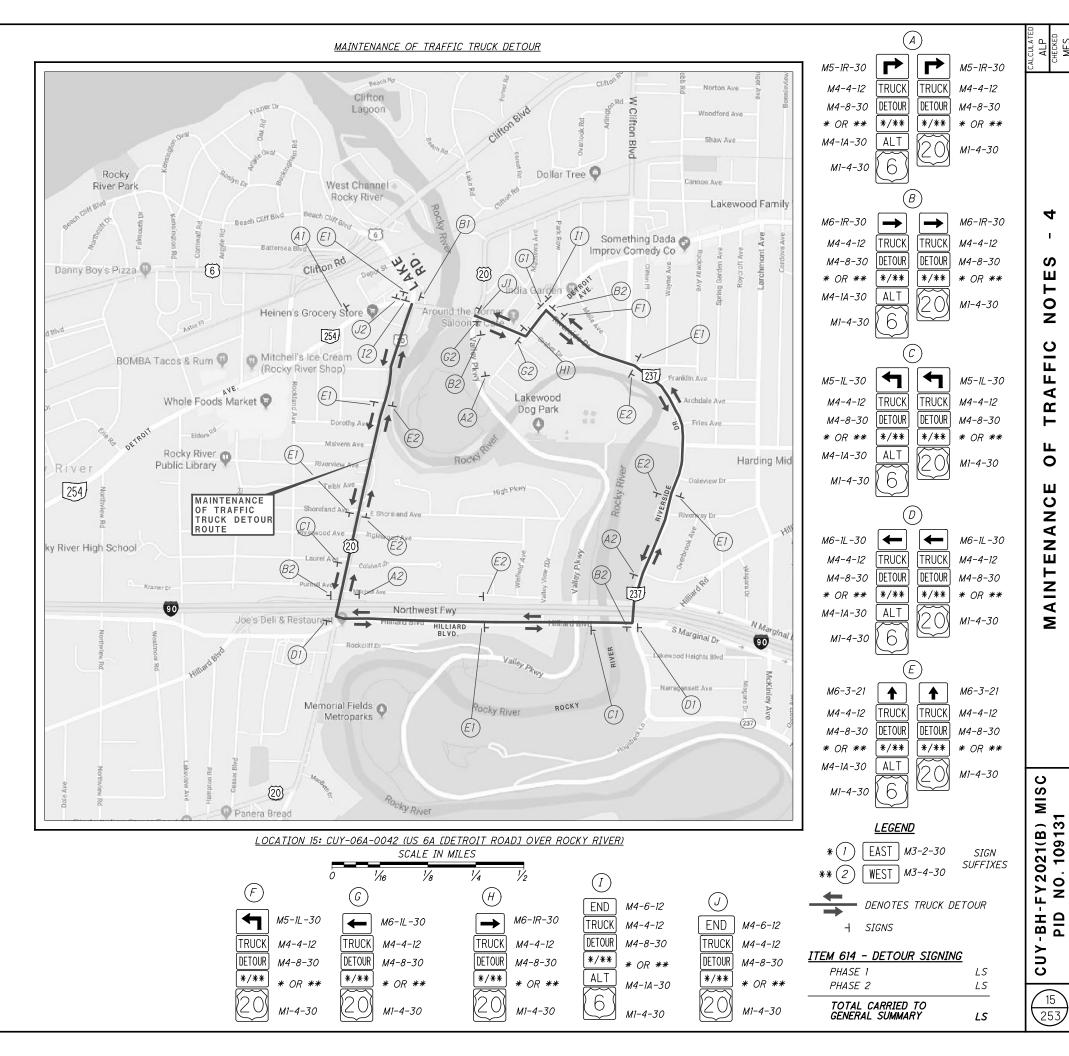
WHERE INTERSECTING ROADS OR DRIVES FALL WITHIN THE LANE CLOSURES, ADDITIONAL FLAGGERS, SIGNING, DRUMS, OTHER TRAFFIC CONTROL DEVICES AND TEMPORARY DRIVES SHALL BE USED TO SUPPLEMENT THE CLOSURE, AS DIRECTED BY THE ENGINEER, TO ALLOW VEHICULAR INGRESS AND EGRESS AT ALL TIMES. DRUMS AT A MAXIMUM 5 FT SPACING SHALL BE USED TO DELINEATE DRIVE OPENINGS WITHIN THE LANE CLOSURES THROUGH THIS SECTION.

IR 480 TO THE WEST OF THE BRIDGE IS CURRENTLY UNDER CONSTRUCTION AND WILL BE UNDER CONSTRUCTION DURING THE CUY-480-2019 REPAIRS. THE CONTRACTOR SHALL CONDUCT HIS WORK WITHOUT INTERFERING WITH OR HINDERING THE PROGRESS, COMPLETION OR WORK BEING PERFORMED BY THE OTHER CONTRACTORS. THE CONTRACTOR SHALL COOPERATE AND COORDINATE WITH THE OTHER CONTRACTORS IN ORDER TO IMPLEMENT THE MOT ZONES REQUIRED TO PERFORM THE REPAIRS FOR CUY-480-2019.

THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 13 (CUY-480-1955) AND LOCATION 14 (CUY-480-2019) CONCURRENTLY.

#### LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

THE CONTRACTOR SHALL PERFORM THE WORK IN TWO PHASES OF CONSTRUCTION ON US 6A (DETROIT ROAD). THE CONTRACTOR SHALL PATCH AND SEAL THE SOUTH RAILING, REPLACE THE FORWARD EXPANSION JOINT, WATERPROOF THE FORWARD APPROACH SLAB, INSTALL THE COMPRESSION SEAL AT THE FORWARD APPROACH SLAB, REPLACE THE BOTTOM LATERAL MEMBER OF THE END CROSSFRAME IN BAY 4 (FORWARD ABUTMENT), REPLACE THE TELEPHONE DUCT SUPPORT STRINGERS IN BAY 4 AT THE FORWARD ABUTMENT AND PAINT THE NEW STEEL AT THE FORWARD ABUTMENT DURING PHASE ONE ON US 6A (DETROIT ROAD). THE CONTRACTOR SHALL PATCH AND SEAL THE NORTH RAILING. REPLACE THE FORWARD EXPANSION JOINT, REPLACE THE BOTTOM LATERAL MEMBER OF THE END CROSSFRAME IN BAY 1 (FORWARD ABUTMENT). REPLACE THE WATER MAIN SUPPORT AT THE FORWARD ABUTMENT, PAINT THE NEW STEEL AT THE FORWARD ABUTMENT, REPLACE THE CURB AND SIDEWALK AT THE NORTHWEST APPROACH, AND PATCH THE APPROACH SLABS DURING PHASE TWO ON US 6A (DETROIT ROAD). THE FIRST PHASE SHALL CLOSE THE EASTBOUND PORTION OF THE BRIDGE AND MAINTAIN ONE LANE OF TRAFFIC IN EACH DIRECTION ON THE TWO EXISTING WESTBOUND LANES IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS). DURING PHASE ONE, A LEFT TURN LANE WILL BE PROVIDED ON THE APPROACHES, TRAFFIC APPROACHING THE BRIDGE WILL HAVE ADVANCED NOTIFICATION OF THE RESTRICTION WITH A PCMS, AND A TRUCK DETOUR ROUTE WILL BE PROVIDED (TO RESTRICT TRUCK TRAFFIC FROM TRAVELING ACROSS THE BRIDGE). SEE MAINTENANCE OF TRAFFIC NOTE "TRUCK TURNING RESTRICTION" AND THE TRUCK DETOUR PLAN. THE SOUTH SIDEWALK ALONG DETROIT ROAD SHALL BE CLOSED DURING PHASE ONE. THE CROSSWALK ALONG DETROIT ROAD AT THE EAST END OF THE STRUCTURE SHALL BE CLOSED DURING PHASE ONE CONSTRUCTION. PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE NORTH SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR METHODS). THE SECOND PHASE SHALL CLOSE THE WESTBOUND PORTION OF THE BRIDGE AND MAINTAIN THREE LANES OF TRAFFIC (ONE EASTBOUND, ONE WESTBOUND AND ONE LEFT TURN LANE) ON THE TWO EXISTING EASTBOUND LANES AND THE EXISTING LEFT TURN LANE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS AND MT-95.31 (CLOSING RIGHT LANES OF A MULTI-LANE UNDIVIDED HIGHWAY WITH DRUMS). DURING PHASE TWO, TRAFFIC APPROACHING THE BRIDGE WILL HAVE ADVANCED NOTIFICATION OF THE RESTRICTION WITH A PCMS AND A TRUCK DETOUR ROUTE WILL BE PROVIDED (TO RESTRICT TRUCK TRAFFIC FROM TRAVELING ACROSS THE BRIDGE). SEE MAINTENANCE OF TRAFFIC NOTE "TRUCK TURNING RESTRICTION" AND THE TRUCK DETOUR PLAN. THE NORTH SIDEWALK ALONG DETROIT ROAD SHALL BE CLOSED DURING PHASE TWO. THE CROSSWALK ALONG DETROIT ROAD AT THE EAST END OF THE STRUCTURE SHALL BE CLOSED DURING CONSTRUCTION, PEDESTRIAN TRAFFIC SHALL BE DETOURED TO THE SOUTH SIDEWALK IN ACCORDANCE WITH MT-110.10 (PEDESTRIAN DETOUR



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LOCATION 16: CUY-490-0100 (IR 490 OVER CUYAHOGA RIVER)

THE CONTRACTOR SHALL PERFORM THE DECK PATCHING - OVERLAY REMOVAL USING HYDRODEMOLITION AND MICROSILICA MODIFIED CONCRETE OVERLAY PER ITEM 848 AND FULL DEPTH DECK REPAIR - ITEM 848.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE ODOT PLCM HOURS. THE CONTRACTOR SHALL PREPARE AND SUBMIT A MOT PLAN FOR THIS WORK FOR REVIEW AND ACCEPTANCE BY ODOT UNDER ITEM 614 IN ADVANCE OF SCHEDULING THIS WORK.

IT IS ANTICIPATED THAT THE CONTRACTOR WILL PERFORM THE WORK IN THREE PHASES OF CONSTRUCTION ON IR 490. THE FOLLOWING IS A CONCEPTUAL PHASE SUMMARY FOR REFERENCE.

THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE, PERFORM DECK PATCHING, AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE ONE ON IR 490 WESTBOUND. PHASE ONE WOULD CLOSE THE WESTBOUND OUTSIDE SHOULDER, THE WEST 7TH STREET DECELERATION LANE AND THE ROCKEFELLER AVENUE ACCELERATION LANE IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3) AND MT-98.29 (EXIT RAMP CLOSURE) WHILE MAINTAINING FOUR WESTBOUND LANES OF IR 490 TRAFFIC, THE IR 77 SOUTHBOUND RAMP AND THE IR 77 NORTHBOUND RAMP. PHASE ONE WOULD REQUIRE THE CLOSURE OF THE ROCKEFELLER AVENUE ENTRANCE RAMP AND THE WEST 7TH STREET EXIT RAMP. PHASE ONE WOULD REQUIRE ODOT'S APPROVAL FOR THE CLOSURE OF THE ROCKEFELLER AVENUE ENTRANCE RAMP AND THE WEST 7TH STREET EXIT RAMP.

THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE, PERFORM DECK PATCHING, AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE ONE ON IR 490 EASTBOUND. PHASE ONE WOULD CLOSE THE EASTBOUND OUTSIDE SHOULDER, THE WEST 7TH STREET ACCELERATION LANE AND THE BROADWAY AVENUE DECELERATION LANE IN ACCORDANCE WITH OMUTCD FIGURE 6H-3 (WORK ON THE SHOULDERS - TYPICAL APPLICATION 3), MT-98.11 (LANE CLOSURE AT ENTRANCE RAMP ACCELERATION LANE) AND MT-98.29 (EXIT RAMP CLOSURE) WHILE MAINTAINING FOUR EASTBOUND LANES OF IR 490 TRAFFIC, THE WEST 7TH STREET ENTRANCE RAMP, THE IR 77 SOUTHBOUND RAMP AND THE IR 77 NORTHBOUND RAMP. PHASE ONE WOULD REQUIRE THE CLOSURE OF THE BROADWAY AVENUE EXIT RAMP. PHASE ONE WOULD REQUIRE MULTIPLE WEEKEND CLOSURES TO COMPLETE. PHASE ONE WOULD REQUIRE DOOT'S APPROVAL FOR THE CLOSURE OF THE BROADWAY AVENUE EXIT RAMP.

THE CONTRACTOR SHALL PERFORM DECK PATCHING AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE TWO ON IR 490 WESTBOUND. THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, AND REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE AT THE FORWARD END OF THE STRUCTURE TO THE EAST OF THE ROCKEFELLER ENTRANCE RAMP DURING PHASE TWO ON IR 490 WESTBOUND. THE SECOND PHASE SHALL CLOSE THE TWO OUTSIDE LANES OF THE WESTBOUND BRIDGE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND MT-98.29 (EXIT RAMP CLOSURE) WHILE MAINTAINING TWO WESTBOUND LANES OF IR 490 TRAFFIC. PHASE TWO WOULD REQUIRE CLOSURE OF THE ROCKEFELLER AVENUE ENTRANCE RAMP, CLOSURE OF THE IR 77 SOUTHBOUND ENTRANCE RAMP AND CLOSURE OF THE IR 77 NORTHBOUND ENTRANCE RAMP. PHASE TWO WOULD REQUIRE CLOSURE OF THE EXIT RAMP TO WEST 7TH STREET. PHASE TWO WOULD REQUIRE MULTIPLE WEEKEND CLOSURES TO COMPLETE. PHASE TWO WOULD REQUIRE ODOT'S APPROVAL FOR THE CLOSURE OF THE ROCKEFELLER AVENUE ENTRANCE RAMP, THE IR 77 SOUTHBOUND ENTRANCE RAMP. THE IR 77 NORTHBOUND ENTRANCE RAMP AND THE WEST 7TH STREET EXIT RAMP.

THE CONTRACTOR SHALL PERFORM DECK PATCHING AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE TWO ON IR 490 EASTBOUND. THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, AND REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE AT THE FORWARD END OF THE STRUCTURE TO THE EAST OF THE BROADWAY AVENUE EXIT RAMP DURING PHASE TWO ON IR 490 EASTBOUND. THE SECOND PHASE SHALL CLOSE THE TWO OUTSIDE LANES OF THE EASTBOUND BRIDGE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS), MT-98.11 (LANE CLOSURE AT ENTRANCE RAMP ACCELERATION LANE) AND MT-98.29 (EXIT RAMP CLOSURE) WHILE MAINTAINING TWO EASTBOUND LANES OF IR 490 TRAFFIC, THE WEST 7TH STREET ENTRANCE RAMP, THE IR 77 SOUTHBOUND RAMP LANE AND THE IR 77 NORTHBOUND RAMP LANE. PHASE TWO WOULD REQUIRE MULTIPLE WEEKEND CLOSURES TO COMPLETE. PHASE TWO WOULD REQUIRE MULTIPLE WEEKEND CLOSURES TO COMPLETE.

THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE, PERFORM DECK PATCHING, AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE THREE ON IR 490 WESTBOUND. THE THIRD PHASE SHALL CLOSE THE TWO INSIDE LANES OF THE WESTBOUND BRIDGE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) AND MT-101.60 (ROAD CLOSURE USING TYPE 3 BARRICADES) WHILE MAINTAINING TWO WESTBOUND LANES OF IR 490 TRAFFIC ON THE STRUCTURE, THE ROCKEFELLER AVENUE ENTRANCE RAMP, THE IR 77 SOUTHBOUND ENTRANCE RAMP, THE IR 77 NORTHBOUND ENTRANCE RAMP AND THE WEST 7TH STREET EXIT RAMP. PHASE THREE WOULD REQUIRE CLOSING THE WESTBOUND LANES OF IR 490 TO THE EAST OF THE STRUCTURE (CLOSURE PERMITTED BY THE PLCM FOR WEEKEND CLOSURES). PHASE THREE WOULD REQUIRE MULTIPLE WEEKENDS TO COMPLETE.

THE CONTRACTOR SHALL REPLACE PORTIONS OF THE BRIDGE RAILINGS, REPAIR OR REPLACE PORTIONS OF VANDAL PROTECTION FENCE, PERFORM DECK PATCHING, AND PERFORM FULL DEPTH DECK REPAIR DURING PHASE THREE ON IR 490 EASTBOUND. THE THIRD PHASE SHALL CLOSE THE TWO INSIDE LANES OF THE EASTBOUND BRIDGE IN ACCORDANCE WITH MT-95.30 (CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS) WHILE MAINTAINING TWO EASTBOUND LANES OF IR 490 TRAFFIC, THE BROADWAY AVENUE EXIT RAMP, THE IR 77 SOUTHBOUND EXIT RAMP, THE IR 77 NORTHBOUND EXIT RAMP AND THE WEST TH STREET ENTRANCE RAMP. PHASE THREE WOULD REQUIRE MULTIPLE WEEKENDS TO COMPLETE.

LANE CLOSURES SHALL ONLY BE PERMITTED DURING THE PLCM HOURS FOR IR 490 AT THE BRIDGE LOCATION. ALL MOT SHALL BE COORDINATED WITH ODOT PRIOR TO SCHEDULING THE WORK.

TO ACCOMMODATE THE OPENING OF THE OPPORTUNITY CORRIDOR PROJECT, ALL WORK (DECK REPAIRS, PARAPET REPAIRS AND FENCE REPAIRS) ON BRIDGE NO. CUY-490-0100 (SFN 1811991) SHALL BE COMPLETED BY SEPTEMBER 24, 2021.

#### III. MAINTENANCE OF TRAFFIC SYSTEMS

#### 1. <u>WHEN REQUIRED</u>

WHENEVER ANY PART OF THE TRAVELED SURFACE IS BEING WORKED UPON OR IS OTHERWISE NOT SUITABLE FOR SAFE AND CONVENIENT USE BY VEHICLES, TRAFFIC CONTROL DEVICES SUFFICIENT TO PROTECT SUCH AREAS TO ASSURE THE SAFE AND CONVENIENT PASSAGE OF VEHICULAR TRAFFIC SHALL BE INSTALLED AND MAINTAINED. SUCH TRAFFIC CONTROL DEVICES AND THE MANNER IN WHICH THEY ARE USED SHALL BE CONSISTENT WITH THESE PLANS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, HEREINAFTER REFERRED TO AS THE "MANUAL". THE TRAFFIC CONTROL DEVICE SYSTEM SHALL CONSTITUTE THE MINIMUM PROVISIONS FOR TRAFFIC CONTROL FOR EACH PARTICULAR SITUATION. WHENEVER THE ENGINEER DEEMS IT NECESSARY ESPECIALLY WHERE A GRADE, CURVE, OR MERGE CONDITION EXISTS, THE ENGINEER MAY DIRECT THAT ADDITIONAL OR ALTERNATIVE DEVICES BE USED.

#### 2. <u>CONDITIONS</u>

DURING ALL PARTS OF THIS PROJECT, FLAGGERS, SIGNING, BARRICADES, FLASHING ARROWS, ETC. SHALL BE LOCATED AS INDICATED IN THE "MANUAL" OR AS SHOWN IN THE STANDARD DRAWINGS.

#### 3. <u>ADVANCE WARNING SIGNS</u>

ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHENEVER THEY ARE NOT APPLICABLE.

#### 4. <u>FLAGGERS</u>

AT LEAST TWO FLAGGERS ARE REQUIRED FOR EACH LANE CLOSURE REQUIRING FLAGGERS. THE CONTRACTOR SHALL FURNISH ADDITIONAL FLAGGERS AS DIRECTED BY THE ENGINEER.

#### 5. <u>PROTECTION OF PUBLIC</u>

PERSONAL CARS SHALL NOT BE PARKED WITHIN THE RIGHT OF WAY.

#### 6. <u>FAILURE TO COMPLY</u>

IF THERE IS ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES, OR WITH THE PROVISIONS OF THE "MANUAL", THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL NOT BE CONSIDERED IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY, IN THE VICINITY OF THE WORK AREA, IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

#### IV. MAINTENANCE OF TRAFFIC MATERIALS

#### 1. <u>SIGNS</u>

SIGN DIMENSIONS AND SPECIFICATIONS, INCLUDING LETTER SIZES ARE TO BE AS PROVIDED IN THE "MANUAL", OR IN DESIGN DRAWINGS PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER PRIOR TO THE START OF THE PROJECT.

#### 2. <u>SIGN SUPPORT</u>

SIGN SUPPORTS SHALL BE OF SUFFICIENT SIZE AND MASS AS TO SUPPORT THE SIGNS AT THE APPROPRIATE HEIGHT. SUPPORTS SHALL BE AS SHOWN ON THE STANDARD DRAWINGS.

#### 3. FLASHING ARROW REQUIREMENT

WHENEVER ANY PART OF THE TRAVELED SURFACE OF THE INTERSTATES IS CLOSED, THE MOTORISTS SHALL BE WARNED AND DIRECTED BY THE CONTRACTOR THROUGH THE USE OF ONE FLASHING ARROW PANEL FOR EACH LANE CLOSED. THE CONTRACTOR SHALL REFER TO SUPPLEMENTAL SPECIFICATIONS 821 AND 921, AND THE PROVISIONS SET FORTH IN THE "MANUAL" FOR ALL INFORMATION REGARDING FURNISHING, MAINTAINING, AND USE OF FLASHING ARROW PANELS. PAYMENT FOR THE ABOVE MENTIONED ITEMS SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

#### 4. <u>DRUMS</u>

DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE "MANUAL". ALL COSTS FOR INSTALLING, MAINTAINING, AND SUBSEQUENT REMOVAL OF SAID DRUMS IS TO BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

#### 5. <u>CONES</u>

CONES, IF UTILIZED, ARE TO BE LOCATED AS SHOWN IN THE "MANUAL" AND THE STANDARD DRAWINGS.

#### 6. BARRIER

PORTABLE CONCRETE BARRIER, IF NECESSARY, IS TO BE LOCATED AS SHOWN IN THE "MANUAL" AND THE STANDARD DRAWINGS.

#### 7. <u>FLASHERS</u>

FLASHERS SHALL BE 12 VOLT BATTERY-OPERATED MODELS WITH 7 INCH DIAMETER YELLOW LENSES ILLUMINATED BY RAPID INTERMITTENT FLASHERS OF SHORT DURATION AND ARE TO BE PLACED ON ALL SIGNS AT ALL TIMES AS REQUIRED BY THE "MANUAL" AND THE STANDARD CONSTRUCTION DRAWINGS.

#### . <u>FLOODLIGHTING</u>

FLOODLIGHTING OF THE WORKSITE FOR OPERATIONS CONDUCTED DURING THE NIGHTTIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE ROADWAY. TO ENSURE ADEQUACY OF THE FLOODLIGHT PLACEMENT, THE CONTRACTOR AND ENGINEER SHALL DRIVE THROUGH THE WORKSITE EACH NIGHT WHEN THE LIGHTING IS IN PLACE AND OPERATIVE PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED, THE LIGHT PLACEMENT AND SHIELDING SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER BEFORE WORK PROCEEDS.

PAYMENT FOR ALL LABOR, EQUIPMENT, INCIDENTALS AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

#### 9. WORK VEHICLES

ALL WORK VEHICLES LICENSED TO OPERATE ON THE HIGHWAY, SHALL BE EQUIPPED WITH A FLASHING, ROTATING, OR OSCILLATING AMBER LIGHT VISIBLE TO ALL DIRECTIONS OF TRAFFIC FOR A MINIMUM OF ONE-QUARTER MILE IN BRIGHT SUNLIGHT AND SHALL BE OPERATED WITH LIGHTED HEAD AND TAIL LAMPS. THE AMBER LIGHT SHALL BE IN OPERATION AT ALL TIMES WITHIN THE WORK ZONE AND WHILE TRAVELING TO AND FROM THE WORK ZONE WHENEVER THE VEHICLE SPEED IS BELOW THE POSTED LEGAL LIMIT. VEHICLE HAZARD LIGHTS DO NOT SATISFY THIS REQUIREMENT. ALL OTHER EQUIPMENT SHALL BE EQUIPPED WITH A FLASHING, ROTATING, OR OSCILLATING AMBER LIGHT VISIBLE TO ALL DIRECTIONS OF TRAFFIC FOR A MINIMUM OF ONE-QUARTER MILE IN BRIGHT SUNLIGHT. THE AMBER LIGHT SHALL BE IN OPERATION WHILE THE EQUIPMENT IS WITHIN THE WORK ZONE.

#### V. <u>ALTERNATE MAINTENANCE OF TRAFFIC PLANS</u>

IF THE CONTRACTOR SO ELECTS, HE/SHE MAY SUBMIT ALTERNATE METHODS FOR THE MAINTENANCE OF TRAFFIC, PROVIDED THE INTENT OF THE ABOVE PROVISIONS IS FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE TRAVELING PUBLIC RESULTS THEREFROM. NO ALTERNATE PLANS SHALL BE PLACED IN EFFECT UNTIL APPROVAL HAS BEEN GRANTED IN WRITING BY THE ODOT DISTRICT CONSTRUCTION ENGINEER.



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#### VI. PAYMENT

REMOVING TEMPORARY MAINTENANCE OF TRAFFIC CONTROL DEVICES INCLUDING DETOURS AND INTERSTATE LANE CLOSURES/SHIFTS SHALL BE MADE UNDER THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

#### CONSTRUCTION TRAFFIC

ALL CONSTRUCTION TRAFFIC SHALL USE ACCEPTABLE TRUCK ROUTES TO ACCESS THE CONSTRUCTION AREA. USE OF LOCAL RESIDENTIAL STREETS IS STRICTLY PROHIBITED UNLESS ALLOWED IN WRITING BY THE LOCAL ENFORCEMENT AUTHORITY.

#### CONTINUOUS ACCESS

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IN ORDER TO PROVIDE CONTINUOUS ACCESS FOR PEDESTRIANS, PASSENGER VEHICLES. TRUCKS. AND SAFETY EQUIPMENT TO ALL ADJOINING PROPERTIES. THE COST FOR ALL MATERIALS, EQUIPMENT, INCIDENTALS AND LABOR NECESSARY TO PROVIDE CONTINUOUS ACCESS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

#### MAINTENANCE OF TRAFFIC CONTROL ZONES

THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN THE SIGNS, DRUMS AND TEMPORARY PAVEMENT MARKINGS AT THE LOCATIONS DETAILED IN THE PLANS OR SPECIFIED IN THE STANDARD DRAWINGS, WHEN THE CONTRACTOR IS NOTIFIED OF DEFICIENCIES, HE/SHE SHALL CORRECT THE DEFICIENCIES AS SOON AS POSSIBLE. PREFERABLY WITHIN 12 HOURS AND NO LATER THAN 24 HOURS.

#### TRUCK TURNING RESTRICTION

THIS NOTE APPLIES TO THE FOLLOWING LOCATION:

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

DUE TO THE PROXIMITY OF THE WORK SITE AND THE INTERSECTIONS TO THE WEST OF THE BRIDGE AND TO THE EAST OF THE BRIDGE, AND THE NECESSITY TO MAINTAIN TRAFFIC ON DETROIT ROAD IN A SINGLE NARROW LANE IN EACH DIRECTION, LARGE TRACTOR-TRAILER VEHICLES MAY NOT HAVE SUFFICIENT SPACE TO COMPLETE A RIGHT OR LEFT TURN FROM THE SIDE ROADS ONTO DETROIT ROAD WITHOUT TRACKING OVER THE ADJACENT OPPOSING LANE AND LARGE TRACTOR-TRAILER VEHICLES MAY NOT HAVE SUFFICIENT SPACE TO COMPLETE A RIGHT OR LEFT TURN FROM DETROIT ROAD TO THE SIDE ROADS WITHOUT TRACKING OVER THE ADJACENT OPPOSING LANE. FOR THE DURATION OF THE PROJECT. TRUCK TURNING MOVEMENTS FOR TRUCKS OVER 40' SHALL BE PROHIBITED DURING CONSTRUCTION. SEE MAINTENANCE OF TRAFFIC NOTE ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN AND THE TRUCK DETOUR MAP FOR DETAILS.

#### **OVERNIGHT JOINT TRENCH CLOSING**

THIS NOTE APPLIES TO THE FOLLOWING LOCATIONS:

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMPS)

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

LOCATION 12: CUY-422-1827 R (US 422 EB OVER SOLON ROAD)

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A SAFE WORK SITE BY REDUCING THE RISK OF VEHICLES OR PEDESTRIANS FALLING INTO THE OPEN JOINT TRENCH DURING CONSTRUCTION. THE CONTRACTOR SHALL COVER UNFILLED JOINT REPAIR AREAS AT THE END OF EACH WORKDAY WITH A STEEL PLATE.

#### ITEM 614 - DETOUR SIGNING

THIS NOTE APPLIES TO THE FOLLOWING LOCATION:

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

THE CONTRACTOR SHALL ERECT, MAINTAIN, AND REMOVE ALL DETOUR SIGNING. THE TRUCK DETOUR PLANS SHALL BE PROVIDED BY THE CONTRACTOR AND APPROVED BY ODOT PRIOR TO THE WORK. PAYMENT FOR ALL MATERIAL, LABOR, EQUIPMENT, AND INCIDENTALS REQUIRED TO INSTALL THE TRUCK DETOURS, INCLUDING SIGNS, SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - DETOUR SIGNING.

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

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

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

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

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

IN ADDITION TO THE REQUIREMENT OF CMS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHOULD BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS AS DETERMINED AND PRE-APPROVED BY THE ENGINEER. ANY LEO HOURS WHICH ARE NOT PRE-APPROVED FOR THE FOLLOWING PURPOSES SHALL NOT BE COMPENSABLE:

FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP).

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

WHEN CONSTRUCTION VEHICLES ARE ENTERING/EXITING THE ZONE DIRECTLY FROM/INTO AN OPEN LANE OF TRAFFIC. IF A LANE HAS BEEN CLOSED TO PROVIDE AN ACCELERATION/DECELERATION LANE FOR THE VEHICLE, THE LEO WILL NOT BE REQUIRED.

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

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

ENSURE PROVIDED LEOS HAVE BEEN TRAINED APPROPRIATE TO THE JOB DECISIONS THEY ARE REQUIRED TO MAKE WHILE ON THE PROJECT, IN ACCORDANCE WITH CMS 614.03.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT. IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT, THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

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

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>72</u> HOUR

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>4</u> HOUR

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>72</u> HOUR

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>96</u> HOUR

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>88</u> HOUR

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>32</u> HOUR

LOCATION 11: CUY-422-1827 L (US 422 WB OVER SOLON ROAD)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE SEE STRUCTURE PLANS FOR QUANTITY

LOCATION 12: CUY-422-1827 R (US 422 EB OVER SOLON ROAD)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE SEE STRUCTURE PLANS FOR QUANTITY

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>72</u> HOUR

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>112</u> HOUR

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>64</u> HOUR

LOCATION 16: CUY-490-0100 (IR 490 OVER CUYAHOGA RIVER)

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE

<u>96</u> HOUR

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

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

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## ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER

RAISED PAVEMENT MARKERS IN WORK ZONES, SHALL BE ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER. WZRPMS ARE INTENDED FOR USE ONLY DURING THE NON-SNOW-PLOWING SEASON. WZRPMS SHALL NOT BE PROVIDED DURING THE SNOW-PLOWING SEASON.

THE SNOW-PLOWING SEASON SHALL RUN FROM OCTOBER 15 THROUGH APRIL 1.

THIS ITEM SHALL INCLUDE PURCHASE, INSTALLATION AND REMOVAL OF ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE MAINTENANCE OF TRAFFIC SUBSUMMARIES AND CARRIED TO THE GENERAL SUMMARY.

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER <u>1606</u> EACH

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER <u>288</u> EACH

#### ITEM SPECIAL - RUMBLE STRIPS

THIS NOTE APPLIES TO THE FOLLOWING LOCATIONS:

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

THE RUMBLE STRIPS WILL BE PLACED AS DIRECTED BY THE ENGINEER. RUMBLE STRIPS WILL BE INSTALLED ON TOP OF THE PAVEMENT USING HEAT-FUSED PREFORMED PLASTIC MATERIAL.

HEAT-FUSED PREFORMED PLASTIC RUMBLE STRIPS WILL BE 4" WIDE AND  $rac{1}{2}$ " THICK IN PLACE. THE RUMBLE STRIPS WILL TRAVERSE THE TOTAL LANE WIDTH. THERE WILL BE TWO SECTIONS OF RUMBLE STRIPS. THE RUMBLE STRIPS MAY HAVE TO GO ACROSS TWO LANES OF TRAFFIC.

THE FIRST RUMBLE STRIP SECTION WILL BE PLACED AT THE BEGINNING OF THE WORK ZONE. THE CONTRACTOR SHALL PROVIDE 10 TRANSVERSE STRIPS SIX FEET APART. THE SECOND SECTION WILL BE PLACED A MINIMUM OF 250 FEET IN ADVANCE OF THE TRAFFIC CONDITION. THE CONTRACTOR SHALL PROVIDE 10 TRANSVERSE STRIPS FIVE FEET APART.

MATERIAL USED FOR THE RUMBLE STRIPS WILL BE CMS 740.08 HEAT-FUSED PREFORMED PLASTIC MATERIAL WITH 125 MILS MINIMUM THICKNESS. THE RUMBLE STRIPS SHALL BE ON THE ODOT APPROVED LIST. THE MANUFACTURER'S RECOMMENDATIONS MUST BE FOLLOWED FOR INSTALLATION.

RUMBLE STRIPS WILL BE REMOVED WHEN THEY ARE NO LONGER NEEDED AS DETERMINED BY THE ENGINEER.

A W8-H15a-48 SIGN (RUMBLE STRIPS) WILL BE DUAL MOUNTED APPROXIMATELY 500 FEET IN ADVANCE OF THE RUMBLE STRIP INSTALLATION. THE PROVISION, ERECTION, MAINTENANCE AND REMOVAL OF THE SIGNS AND SUPPORTS WILL BE INCLUDED IN THE COST OF THE RUMBLE STRIPS.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY FOR THE INSTALLATION, MAINTENANCE AND REMOVAL OF THE RUMBLE STRIPS.

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

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM SPECIAL - RUMBLE STRIPS

<u>400</u> FT

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM SPECIAL - RUMBLE STRIPS

<u>880</u> FT

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING EACH

ALONG RUNS OF INCREASED BARRIER DELINEATION WHERE THIS ITEM IS PROVIDED, THE QUANTITY SHALL BE MEASURED AS THE ENTIRE LENGTH OF THE RUN OF INCREASED BARRIER DELINEATION, INCLUDING THE SPACES BETWEEN THE INDIVIDUAL DELINEATION PANELS OR STACKS OF BARRIER REFLECTORS.

#### ITEM SPECIAL - WORK ZONE TRAFFIC SIGNAL

THIS NOTE APPLIES TO THE FOLLOWING LOCATION:

#### LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

THIS ITEM SHALL CONSIST OF CONSTRUCTING AND MAINTAINING TRAFFIC SIGNALS TO BE USED AS WORK ZONE TRAFFIC SIGNALS. THIS ITEM SHALL CONFORM TO CMS 614.10. THE WORK ZONE TRAFFIC SIGNALS SHALL OPERATE IN COORDINATION TO MAINTAIN ONE LANE TWO WAY TRAFFIC OPERATION ACROSS THE WHITNEY ROAD STRUCTURE DURING CONSTRUCTION. THE PROPOSED PRELIMINARY MOT SIGNAL TIMING AND PHASING HAVE BEEN SHOWN ON THE MAINTENANCE OF TRAFFIC PLAN SHEETS. THE TIMING SHOWN IS A BASE TIMING THAT WILL NEED TO BE MONITORED AND ADJUSTED IN THE FIELD DUE TO CONDITIONS OCCURRING DURING CONSTRUCTION. PAYMENT FOR THE ADJUSTMENT OF SIGNAL TIMING SHALL BE INCLUDED IN THE UNIT BID COST FOR ITEM SPECIAL - WORK ZONE TRAFFIC SIGNAL. THIS ITEM SHALL INCLUDE ALL THE SIGNAL EQUIPMENT (POLES, MESSENGER WIRE, SIGNAL CABLE, VEHICULAR SIGNAL HEADS, DETECTOR LOOPS, SIGNAL CONTROLLER EQUIPMENT, ETC.), LABOR, MATERIALS AND INCIDENTALS NECESSARY TO CONSTRUCT AND MAINTAIN THE WORK ZONE SIGNAL INSTALLATIONS.

THIS ITEM SHALL ALSO INCLUDE THE REMOVAL OF THE WORK ZONE TRAFFIC SIGNAL EQUIPMENT AT THE COMPLETION OF THE PROJECT. ANY NECESSARY MAINTENANCE AND/OR REPAIRS TO THE SIGNAL INSTALLATION DURING THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL FINAL ACCEPTANCE OF THE "UN-MODIFIED" SIGNAL HAS BEEN GIVEN TO THE CONTRACTOR IN WRITING FROM THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12.

PAYMENT FOR THIS ITEM SHALL BE MADE AT THE UNIT CONTRACT PRICE BID FOR ITEM SPECIAL-WORK ZONE TRAFFIC SIGNAL AND SHALL INCLUDE ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THIS ITEM OF WORK AS DETAILED IN THIS NOTE AND THE PLANS.

#### DELINEATION OF TEMPORARY AND PERMANENT GUARDRAIL

BARRIER REFLECTORS SHALL BE INSTALLED ON ALL TEMPORARY GUARDRAIL USED FOR TRAFFIC CONTROL: AND ON ALL PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. BARRIER REFLECTORS SHALL CONFORM TO CMS 626 AND THE SPACING SHALL BE APPROXIMATELY 50 FEET.

OBJECT MARKERS SHALL BE INSTALLED ON ALL TEMPORARY AND PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. GUARDRAIL-MOUNTING OF OBJECT MARKERS SHALL BE MADE BY INSTALLING THE OBJECT MARKERS ON THE EXTENSION BLOCKS RATHER THAN DIRECTLY ONTO THE GUARDRAIL ITSELF. OBJECT MARKERS SHALL CONFORM TO CMS 614.03 AND THE SPACING SHALL BE APPROXIMATELY 50 FEET WITH A 25 FOOT OFFSET FROM THE BARRIER REFLECTORS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE MAINTENANCE OF TRAFFIC SUBSUMMARIES AND CARRIED TO THE GENERAL SUMMARY:

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM 614 - BARRIER REFLECTOR, TYPE 2, ONE WAY <u>40</u> EACH ITEM 614 - OBJECT MARKER, ONE WAY <u> 32</u> EACH

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

ITEM 614 - BARRIER REFLECTOR, TYPE 2, ONE WAY <u>40</u> EACH ITEM 614 - OBJECT MARKER, ONE WAY <u> 36</u> EACH

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM 614 - BARRIER REFLECTOR, TYPE 2, ONE WAY <u>25</u> EACH

ITEM 614 - OBJECT MARKER, ONE WAY 

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

SCD MT-101.70.

DELINEATION OF PORTABLE AND PERMANENT BARRIER

ADJACENT TRAVEL LANE.

TO AN OBJECT MARKER, ONE WAY.

GREATER THAN OR EQUAL TO 3 DEGREES.

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE

BARRIER REFLECTORS SHALL CONFORM TO CMS 626, EXCEPT THAT THE SPACING SHALL

BE AS PER TRAFFIC SCD MT-101.70. OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO CMS 614.03 AND SCD MT-101.70. WHEN THE PB CONTAINS GLARE SCREEN.

ONE SET OF THREE VERTICAL STRIPES OF SHEETING SHALL BE CONSIDERED EQUIVALENT

INCREASED BARRIER DELINEATION, AS SPECIFIED HEREIN, SHALL BE INSTALLED ON ALL

PB AND PERMANENT CONCRETE BARRIER LOCATED WITHIN 5 FEET OF THE EDGE OF THE

THE INCREASED BARRIER DELINEATION SHALL CONSIST OF EITHER DELINEATION PANELS

DELINEATION PANELS SHALL CONSIST OF PANELS OF DELINEATION, APPROXIMATELY 34

TRIPLE-STACKED BARRIER REFLECTORS SHALL CONSIST OF ALIGNING THREE BARRIER

REFLECTORS VERTICALLY, AT LOCATIONS WHERE A SINGLE BARRIER REFLECTOR WOULD

BE OTHERWISE ATTACHED. THERE SHALL BE NO OPEN SPACE BETWEEN THE ADJACENT

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE MAINTENANCE OF

<u>10</u> EACH

<u>54</u> EACH

<u>52</u> EACH

<u>10</u> EACH

<u>8</u> EACH

<u>6</u> EACH

<u>39</u> EACH

<u>34</u> EACH

<u>49</u> EACH

<u>70</u> EACH

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<u>69</u> EACH

<u>70</u> EACH

<u>64</u> EACH

<u>4</u> EACH

<u> 3</u> EACH

<u>13</u> EACH

<u>12</u> EACH

<u>36</u> EACH

<u>33</u> EACH

<u> 1491</u> FT

<u>2123</u> FT

<u>229</u> FT

580 FT

BARRIER REFLECTORS. THE TRIPLE-STACKED BARRIER REFLECTORS SHALL CONFORM TO CMS 626, EXCEPT THAT THEY SHALL BE SPACED AND ALIGNED PER TRAFFIC

INCHES LONG AND 6 INCHES WIDE AND SHALL BE "CRIMPED". PANELS SHALL BE

TRAVELED LANE UNDER EITHER OF THE FOLLOWING CONDITIONS: ALONG TAPERS AND

TRANSITION AREAS; OR ALONG CURVES (OUTSIDE ONLY) WITH DEGREE OF CURVATURE

OR THE TRIPLE STACKING OF WORK ZONE BARRIER REFLECTORS.

TRAFFIC SUBSUMMARY AND CARRIED TO THE GENERAL SUMMARY:

ITEM 614 - OBJECT MARKER, TWO WAY

ITEM 614 - OBJECT MARKER, ONE WAY

ITEM 614 - OBJECT MARKER, ONE WAY

ITEM 614 - OBJECT MARKER, ONE WAY

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

ITEM 614 - OBJECT MARKER, ONE WAY

ITEM 614 - OBJECT MARKER, TWO WAY

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM 614 - OBJECT MARKER, ONE WAY

ITEM 614 - INCREASED BARRIER DELINEATION

ITEM 614 - INCREASED BARRIER DELINEATION

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

ITEM 614 - INCREASED BARRIER DELINEATION

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, TWO WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM 614 - INCREASED BARRIER DELINEATION

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, TWO WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

ITEM 614 - BARRIER REFLECTOR, TYPE 1, ONE WAY

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

INSTALLED AND SPACED PER TRAFFIC SCD MT-101.70.

BARRIER (PB) USED FOR TRAFFIC CONTROL; AND ON PERMANENT CONCRETE BARRIER

(INCLUDING BRIDGE PARAPETS) LOCATED WITHIN 5 FEET OF THE EDGE OF THE

1(B) 0913 7.2021(E 0.109 ŦΩ **B** <u>P</u>

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ITEM 616 - WATER

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#### MAINTENANCE OF TRAFFIC SCHEME

THE CONTRACTOR SHALL DEVISE A SIMPLE MAINTENANCE OF TRAFFIC SCHEME FOR EACH LOCATION, WHICH SHALL BE STAMPED BY A PROFESSIONAL ENGINEER (SCHEME MAY BE A HAND SKETCH) AND PRESENT IT TO THE DISTRICT WORK ZONE SAFETY ENGINEER AND PROJECT ENGINEER FOR ACCEPTANCE AT LEAST TWO WEEKS PRIOR TO IMPLEMENTATION. IN GENERAL, THE METHODS FOR MAINTAINING TRAFFIC THAT THE CONTRACTOR PROPOSES TO USE FOR CONDUCTING THE WORK IN A SAFE AND EFFICIENT MANNER SHALL BE SUPPORTED BY HAND SKETCHES AS NECESSARY. THE MAINTENANCE OF TRAFFIC SCHEME SHALL BE IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST REVISION, THE REFERENCED STANDARD CONSTRUCTION DRAWINGS, THE ATTACHED MAINTENANCE OF TRAFFIC SHEETS, AND THE SPECIFICATIONS. THE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE MAINTENANCE OF TRAFFIC SCHEME HAS BEEN ACCEPTED.

IF DURING THE PROJECT, THE ENGINEER DETERMINES THAT THE APPROVED MAINTENANCE OF TRAFFIC PLAN IS NOT PERFORMING AS DESIRED, THE WORK SHALL BE SUSPENDED UNTIL THE PROBLEM IS RESOLVED TO THE SATISFACTION OF THE ENGINEER AND THE MAINTENANCE OF TRAFFIC PLAN IS REVISED ACCORDINGLY. ANY COSTS OR DELAYS INCURRED AS A RESULT OF THE FAILURE OF THE CONTRACTOR TO ADJUST THE MAINTENANCE OF TRAFFIC SCHEME TO THE SATISFACTION OF THE ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. DURING NON-WORKING HOURS, ALL LANES SHALL BE IN FULL OPERATION WITH ALL TRAFFIC CONTROL SIGNS, EXCEPT OW-124 (ROAD CONSTRUCTION AHEAD) SIGNS, REMOVED OR COVERED AND ALL CHANNELIZING DEVICES REMOVED FROM THE PAVEMENT SURFACES. CHANNELIZING DEVICES MAY BE STORED OR DEPLOYED TEMPORARILY ADJACENT TO THE SHOULDER TO MINIMIZE THE NIGHTLY TRAFFIC CONTROL SET-UP TIME. PAYMENT FOR ALL THE ITEMS REQUIRED TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THESE REQUIREMENTS IS INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

#### EXTRA ADVANCE WARNING SIGNS

AN EXTRA ADVANCE WARNING SIGN GROUP CONSISTS OF TWO W20-1 (ROAD WORK AHEAD) SIGNS, TWO W20-5 (RIGHT/LEFT LANE CLOSED AHEAD) SIGNS WITH W16-3A DISTANCE PLATES, AND TWO W3-H7 (WATCH FOR STOPPED TRAFFIC) SIGNS AND REQUIRED WARNING LIGHTS.

THE CONTRACTOR SHALL PROVIDE, ERECT, MAINTAIN AND REMOVE EXTRA ADVANCE WARNING SIGN GROUPS AS SHOWN ON TRAFFIC SCD MT-95.50 AT THE FOLLOWING DISTANCES IN ADVANCE OF THE LANE TAPERS WITH THE APPROPRIATE W16-3A DISTANCE PLATES:

- 1) LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480) LANE TAPER STATION <u>473+16±</u>, PHASE <u>3 (IR 77 NORTHBOUND);</u> PROVIDE SIGN GROUPS AT <u>2</u> MILES, <u>3</u> MILES, AND <u>4</u> MILES.
- LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480) LANE TAPER STATION <u>496+15±</u> , PHASE <u>3 (IR 77 SOUTHBOUND);</u> PROVIDE SIGN GROUPS AT <u>2</u> MILES, <u>3</u> MILES, AND <u>4</u> MILES.

THE CONTRACTOR SHALL HAVE AN ADDITIONAL EXTRA ADVANCE WARNING SIGN GROUP (6 SIGNS AND 2 DISTANCE PLATES) AVAILABLE FOR USE WHEN DIRECTED BY THE ENGINEER. THE DISTANCE PLATES FOR THIS GROUP SHALL BE ABLE TO BE MODIFIED IN THE FIELD TO SHOW APPROPRIATE WHOLE MILES TO THE LANE TAPER.)

PAYMENT FOR PROVIDING, ERECTING, MAINTAINING AND REMOVING EXTRA ADVANCE WARNING SIGN GROUPS SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

## ITEM 614 - WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAPE

THIS ITEM SHALL CONFORM TO CMS 614.11 WORK ZONE PAVEMENT MARKING REQUIREMENTS WITH THE EXCEPTION THAT THE MARKING MATERIAL SHALL BE BLACKOUT TAPE CONFORMING TO SUPPLEMENTAL SPECIFICATION 987. THE BLACKOUT TAPE SHALL BE MANUFACTURED BY A SUPPLIER ON ODOT'S QUALIFIED PRODUCTS LIST FOR THIS ITEM. PAYMENT FOR THIS ITEM SHALL BE MADE AT THE UNIT PRICE BID PER LINEAR FOOT FOR ITEM 614 - WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAPE AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO FURNISH INSTALL MAINTAIN AND REMOVE THIS ITEM FURNISH, INSTALL, MAINTAIN, AND REMOVE THIS ITEM.

THE CONTRACTOR SHALL INSTALL A SINGLE CONTINUOUS PIECE OF BLACKOUT TAPE TO COVER THE EXISTING EDGE LINES AND LANE LINES AS INDICATED IN THE PLANS.

#### ITEM 621 - RAISED PAVEMENT MARKER REMOVED. AS PER PLAN

THIS ITEM SHALL CONSIST OF REMOVING THE EXISTING RAISED PAVEMENT MARKER REFLECTORS FROM THE EXISTING RAISED PAVEMENT MARKERS PRIOR TO MAINTENANCE OF TRAFFIC PHASE 1 OF LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP), LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480) AND LOCATION 8: CUY-90-0683 (RAMP B

ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO REMOVE THE EXISTING RAISED PAVEMENT MARKER REFLECTORS SHALL BE INCLUDED WITH ITEM 621 - RAISED PAVEMENT MARKER REMOVED, AS PER PLAN.

#### ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN. THE SIGN SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS AVAILABLE ON THE OFFICE OF MATERIALS MANAGEMENT WEB PAGE. THE LIST CONTAINS CLASS A AND B UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 800 FEET AND 650 FEET. RESPECTIVELY.

EACH SIGN SHALL BE TRAILER-MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM. TO DIM THE SIGN DURING DARKNESS. AND A TAMPER AND VANDAL PROOF ENCLOSURE. EACH SIGN SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY AN ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY. THE PCMS SHALL BE DELINEATED IN ACCORDANCE WITH CMS 614.03.

PLACEMENT, OPERATION, MAINTENANCE AND ALL ACTIVATION OF THE SIGNS BY THE CONTRACTOR SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION YET PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS SHALL BE TURNED OFF. ADDITIONALLY, WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME, THE PCMS SHALL BE TURNED AWAY FROM ALL TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT, AND TO REVISE SIGN MESSAGES, IF NECESSARY.

ALL MESSAGES TO BE DISPLAYED ON THE SIGN WILL BE PROVIDED BY THE ENGINEER. A LIST OF ALL REQUIRED PRE-PROGRAMMED MESSAGES WILL BE GIVEN TO THE CONTRACTOR AT THE PROJECT PRECONSTRUCTION CONFERENCE. THE SIGN SHALL HAVE THE CAPABILITY TO STORE UP TO 99 MESSAGES. MESSAGE MEMORY OR PRE-PROGRAMMED DISPLAYS SHALL NOT BE LOST AS A RESULT OF POWER FAILURES TO THE ON-BOARD COMPUTER. THE SIGN LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD. THREE-LINE PRESENTATION FORMATS WITH UP TO SIX MESSAGE PHASES SHALL BE SUPPORTED. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT LEAST TWICE.

THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC WHICH WILL ALLOW THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF CMS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 6 PCMS SIGNS FOR 1 MONTH)

<u>6</u> SNMT

LOCATION 5: CUY-77-0223 (OAKES ROAD OVER IR 77)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 2 PCMS SIGNS FOR 1 MONTH)

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LOCATION 6: CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 4 PCMS SIGNS FOR 1 MONTH)

<u>4</u> SNMT

LOCATION 7: CUY-77-0909 (IR 77 OVER IR 480)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 4 PCMS SIGNS FOR 1 MONTH)

<u>4</u> SNMT

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 6 PCMS SIGNS FOR 1 MONTH)

<u>6</u> SNMT

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 7 PCMS SIGNS FOR 1 MONTH)

LOCATION 11: CUY-422-1827 L (US 422 WB OVER SOLON ROAD)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN (ASSUMING 2 PCMS SIGNS FOR 1 MONTH)

\_\_2\_\_ SNMT

LOCATION 12: CUY-422-1827 R (US 422 EB OVER SOLON ROAD)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 2 PCMS SIGNS FOR 1 MONTH)

\_2\_\_ SNMT

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN (ASSUMING 6 PCMS SIGNS FOR 1 MONTH)

<u>6</u> SNMT

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN (ASSUMING 8 PCMS SIGNS FOR 1 MONTH)

<u>8</u> SNMT

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 12 PCMS SIGNS FOR 1 MONTH)

<u>12</u> SNMT

LOCATION 16: CUY-490-0100 (IR 490 OVER CUYAHOGA RIVER)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN. AS PER PLAN (ASSUMING 15 PCMS SIGNS FOR 1 MONTH)

<u>15</u> SNMT

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#### ITEM 614 - WORKSITE TRAFFIC SUPERVISOR

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SUBJECT TO APPROVAL OF THE ENGINEER, THE CONTRACTOR SHALL EMPLOY AND IDENTIFY (SOMEONE OTHER THAN THE SUPERINTENDENT) A PREQUALIFIED WORKSITE TRAFFIC SUPERVISOR (WTS) BEFORE STARTING WORK IN THE FIELD. THE WTS SHALL BE TRAINED IN ACCORDANCE WITH CMS 614.03, SHALL HAVE SUCCESSFULLY COMPLETED ODOT ADMINISTERED WTS TESTING (AND RE-TESTING WHEN APPLICABLE) AND BE LISTED ON THE ODOT PREQUALIFIED WTS ROSTER. PREQUALIFICATION EXPIRES EVERY 5 YEARS. RE-TESTING SHALL BE SUCCESSFULLY REPEATED EVERY 5 YEARS TO REMAIN PREQUALIFIED.

THE NAME OF THE PREQUALIFIED WTS AND RELATED 24-HOUR CONTACT INFORMATION SHALL BE PROVIDED TO THE ENGINEER AT THE PRECONSTRUCTION CONFERENCE. IF THE DESIGNATED WTS WILL NOT BE AVAILABLE FULL TIME (24/7), THE CONTRACTOR MAY DESIGNATE AN ALTERNATE (SECONDARY) WTS TO BE AVAILABLE WHEN THE PRIMARY IS OFF DUTY; HOWEVER THE PRIMARY WTS SHALL REMAIN THE POINT OF CONTACT AT ALL TIMES. ANY ALTERNATE (SECONDARY) WTS IS SUBJECT TO THE SAME TRAINING, PREQUALIFICATION AND OTHER REQUIREMENTS OUTLINED WITHIN THIS PLAN NOTE. AT ALL TIMES THE ENGINEER, OR ENGINEER'S REPRESENTATIVES, MUST BE INFORMED OF WHO THE PRIMARY WTS (AND SECONDARY WTS, IF APPLICABLE) IS AT THE CURRENT TIME

THE WTS POSITION HAS THE PRIMARY RESPONSIBILITY OF IMPLEMENTING THE TRAFFIC MANAGEMENT PLAN (TMP), MONITORING THE SAFETY AND MOBILITY OF THE ENTIRE WORK ZONE, AND CORRECTING TEMPORARY TRAFFIC CONTROL (TTC) DEFICIENCIES FOR THE ENTIRE WORK ZONE. THE WTS, AND ALTERNATE WTS WHEN ON DUTY, SHALL HAVE SUFFICIENT AUTHORITY TO EFFECTIVELY CARRY OUT THE IDENTIFIED WTS RESPONSIBILITIES AND DUTIES. THE DUTIES OF THE WTS ARE AS FOLLOWS:

- 1. BE AVAILABLE ON A 24-HOUR PER DAY BASIS.
- 2. BE ON SITE FOR ALL EMERGENCY TTC NEEDS WITHIN ONE HOUR OF NOTIFICATION BY POLICE OR PROJECT STAFF, AND EFFECT CORRECTIVE MEASURES IMMEDIATELY ON EXISTING WORK ZONE TTC DEVICES.
- 3. ATTEND PRECONSTRUCTION MEETING AND ALL PROJECT MEETINGS WHERE TTC MANAGEMENT IS DISCUSSED.
- 4. BE AVAILABLE ON SITE FOR OTHER MEETINGS OR DISCUSSIONS WITH THE ENGINEER UPON REQUEST.
- 5. BE AWARE OF ALL EXISTING AND PROPOSED TTC OPERATIONS OF THE CONTRACTOR, SUBCONTRACTORS AND SUPPLIERS, AND ENSURE COORDINATION OCCURS BETWEEN THEM TO ELIMINATE CONFLICTING TEMPORARY AND/OR PERMANENT TRAFFIC CONTROL.
- 6. COORDINATE PROJECT ACTIVITIES WITH ALL LAW ENFORCEMENT OFFICERS (LEOS). THE WTS SHALL ALSO BE THE MAIN CONTACT PERSON WITH THE LEOS WHILE LEOS ARE ON THE PROJECT.
- 7. COORDINATE AND FACILITATE MEETINGS WITH ODOT PERSONNEL, LEOS AND OTHER APPLICABLE ENTITIES BEFORE EACH PLAN PHASE SWITCH TO DISCUSS THE WORK ZONE TTC FOR IMPLEMENTING THE PHASE SWITCH. SUBMIT A WRITTEN DETAIL OF MOT OPERATIONS AND SCHEDULE OF EVENTS TO IMPLEMENT THE SWITCH BETWEEN PHASE PLANS TO THE ENGINEER 5 CALENDAR DAYS PRIOR TO THIS MEETING.
- 8. BE PRESENT, ON SITE FOR, AND INVOLVED WITH, EACH TTC SET UP/TAKE DOWN AND EACH PHASE CHANGE IN ACCORDANCE WITH CMS 614.03.
- 9. ON A CONTINUAL BASIS ENSURE THAT THE TTC ZONE AND ALL RELATED DEVICES ARE INSTALLED, MAINTAINED AND REMOVED IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.
- 10. ON A CONTINUAL BASIS FACILITATE CORRECTIVE ACTION(S)
  NECESSARY TO BRING DEFICIENT TTC ZONES AND ALL RELATED
  DEVICES INTO COMPLIANCE WITH CONTRACT DOCUMENTS IN THE
  TIME FRAME DETERMINED BY THE ENGINEER.

- 11. INSPECT, EVALUATE, PROPOSE NECESSARY MODIFICATIONS TO, AND DOCUMENT THE EFFECTIVENESS OF, THE TTC DEVICES AND TRAFFIC OPERATIONS ON A DAILY BASIS (7 DAYS A WEEK). IN ADDITION, PERFORM ONE WEEKLY NIGHT INSPECTION OF THE WORK ZONE SETUP FOR DAYTIME WORK OPERATIONS; AND ONE DAYTIME INSPECTION PER WEEK FOR NIGHTTIME PROJECTS. THIS SHALL INCLUDE (BUT NOT BE LIMITED TO) DOCUMENTATION ON THE FOLLOWING PROJECT EVENTS:
  - A. INITIAL TTC SETUP (DAY AND NIGHT REVIEW).
  - B. DAILY TTC SETUP AND REMOVAL.
  - C. WHEN CONSTRUCTION STAGING CAUSES A CHANGE IN THE TTC SETUP.
  - D. CRASH OCCURRENCES WITHIN THE CONSTRUCTION AREA AND WITHIN THE INFLUENCE AREA(S) APPROACHING THE WORK ZONE.
  - E. REMOVAL OF TTC DEVICES AT THE END OF A PHASE OR PROJECT. F. ALL OTHER EMERGENCY TTC NEEDS.
- 12. COMPLETE THE DEPARTMENT APPROVED LONG TERM INSPECTION FORM (CA-D-8) AFTER EACH INSPECTION AS REQUIRED IN # 11 AND SUBMIT IT TO THE ENGINEER THE FOLLOWING WORKDAY. THESE REPORTS SHALL INCLUDE A CHECKLIST OF ALL TTC MAINTENANCE ITEMS TO BE REVIEWED. A COPY OF THE FORM WILL BE PROVIDED AT THE PRE-CONSTRUCTION MEETING. ANY DEFICIENCIES OBSERVED SHALL BE NOTED, ALONG WITH RECOMMENDED OR COMPLETED CORRECTIVE ACTIONS AND THE DATES BY WHICH SUCH CORRECTIONS WERE, OR WILL BE, COMPLETED. A COPY OF THE CURRENT CA-D-8 DOCUMENT CAN BE FOUND ON THE OFFICE OF CONSTRUCTION ADMINISTRATION'S INSPECTION FORMS WEBSITE.
- 13. HAVE COPIES OF THE ODOT TEMPORARY TRAFFIC CONTROL MANUAL AND CONTRACT DOCUMENTS AVAILABLE AT ALL TIMES ON THE PROJECT.

#### THE DEPARTMENT WILL DEDUCT:

- A. THE PRORATED DAILY AMOUNT OF ITEM 614 MAINTAINING TRAFFIC FOR ANY DAY IN WHICH THE WTS FAILS TO PERFORM THE DUTIES SET FORTH ABOVE. THE PRORATED DAILY AMOUNT WILL BE EQUAL TO THE ORIGINAL BID AMOUNT FOR ITEM 614 MAINTAINING TRAFFIC DIVIDED BY THE DIFFERENCE BETWEEN THE ORIGINAL COMPLETION DATE AND THE FIRST DAY OF WORK, IN CALENDAR DAYS.
- B. 1% OF THE ORIGINAL BID AMOUNT FOR ITEM 614 MAINTAINING TRAFFIC FOR ANY DAY THAT A TTC ISSUE IS IDENTIFIED IN THE FIELD AND IS NOT CORRECTED IN THE GIVEN TIMEFRAME PER THE ENGINEER. DEDUCTION B SHALL NOT APPLY TO SITUATIONS COVERED BY DEDUCTION C.
- C. 1% OF THE ORIGINAL BID AMOUNT FOR ITEM 614 MAINTAINING TRAFFIC FOR ANY DAY THAT A LANE OR RAMP IS BLOCKED (FULLY OR PARTIALLY) WITHOUT TTC, AS DETERMINED BY THE ENGINEER. THIS DEDUCTION SHALL BE IN ADDITION TO ANY OTHER DISINCENTIVES ESTABLISHED FOR UNAUTHORIZED LANE USE.

FOR DAYS IN WHICH MORE THAN ONE DEDUCTION LISTED ABOVE OCCURS, THE HIGHEST DEDUCTION AMOUNT WILL APPLY.

IF THREE OR MORE TOTAL DAYS RESULT IN TTC ISSUES DESCRIBED IN DEDUCTION B OR C ABOVE, THE PRIMARY WTS SHALL BE IMMEDIATELY REMOVED FROM THE WORK IN ACCORDANCE WITH CMS 108.05. UPON REMOVAL, THE ENGINEER SHALL NOTIFY ODOT CENTRAL OFFICE (WTSPREQUALIFICATION@ODT.OHIO.GOV) TO REGISTER A REMOVAL AGAINST THE STATEWIDE PREQUALIFICATION FOR THE PRIMARY WTS. THREE REMOVALS SHALL CAUSE STATEWIDE DISQUALIFICATION FOR ANY PREVIOUSLY PREOUALIFIED WTS.

PAYMENT FOR THE ABOVE REQUIREMENTS, RESPONSIBILITIES AND DUTIES SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

#### ITEM 614 - WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)

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

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

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

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

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

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

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LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

IF VEHICLE DETECTION BECOMES UNEXPECTEDLY DISABLED, REQUIRES MODIFICATION, OR IS SCHEDULED TO BE TEMPORARILY REMOVED DURING THE CONSTRUCTION PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE APPROPRIATE CITY ENGINEER. FOR LOCATION 3, THE STRONGSVILLE CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 8, THE ROCKY RIVER CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 10, THE BEACHWOOD CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 13 AND LOCATION 14, THE GARFIELD HEIGHTS CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 15, THE ROCKY RIVER CITY ENGINEER AND THE LAKEWOOD CITY ENGINEER SHALL BE NOTIFIED.

IF THE LOSS OF VEHICLE DETECTION IS KNOWN PRIOR TO THE START OF CONSTRUCTION, IT SHALL BE DISCUSSED AT THE PRECONSTRUCTION MEETING. AT SUCH TIME, THE APPROPRIATE CITY ENGINEER (AS LISTED ABOVE) SHALL ADVISE THE PROJECT ENGINEER AND CONTRACTOR ON THE APPROPRIATE ACTION TO RECTIFY ANY LOSS OF VEHICLE DETECTION. THIS MAY INCLUDE PLACING THE TRAFFIC SIGNAL ON MINIMUM OR MAXIMUM RECALL, MODIFYING THE MINIMUM GREN TIMES, AND REMOVING THE MALFUNCTIONING DETECTION FROM SERVICE. WHERE NON-INTRUSIVE DETECTION (I.E. VIDEO, RADAR) ALREADY EXISTS, THE CONTRACTOR SHALL ENSURE THAT DETECTION IS OPERATING AND MAINTAINED BY RECONFIGURING THE DETECTION UNITS ACCORDINGLY DURING ALL CONSTRUCTION PHASES, THIS IS TO AVOID THE SIGNAL FROM MAXING OUT THE EFFECTED SIGNAL PHASE AND CREATING UNNECESSARY DELAYS.

LOCATIONS WHERE NON-INTRUSIVE DETECTION IS PROPOSED AND THE EXISTING VEHICLE DETECTION IS TO BE ABANDONED, THE NON-INTRUSIVE VEHICLE DETECTION SHALL BE INSTALLED, CONFIGURED AND MADE FULLY FUNCTIONAL PRIOR TO THE EXISTING DETECTION BEING DISABLED. THE CONTRACTOR SHALL CONTINUE TO MAINTAIN AND MODIFY THE DETECTION UNTIL FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL. THIS IS TO ENSURE VEHICLE DETECTION REMAINS FULLY FUNCTIONAL THROUGHOUT CONSTRUCTION.

#### **WORK INSPECTION**

THIS NOTE APPLIES TO THE FOLLOWING LOCATIONS:

LOCATION 3: CUY-71-0467 (WHITNEY ROAD OVER IR 71)

LOCATION 8: CUY-90-0683 (RAMP B OVER IR 90)

LOCATION 10: CUY-422-1122 (US 422 [CHAGRIN BOULEVARD] OVER IR 271)

LOCATION 13: CUY-480-1955 (TRANSPORTATION BOULEVARD OVER IR 480)

LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)

LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)

THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AND THE APPROPRIATE CITY ENGINEER WITH 72 HOUR NOTICE OF ANY SIGNAL WORK TO BE PERFORMED AT THE INTERSECTION SITE(S) SO THAT INSPECTION SERVICES CAN BE SUPPLIED. FOR LOCATION 3, THE STRONGSVILLE CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 8, THE ROCKY RIVER CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 10, THE BEACHWOOD CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 13 AND LOCATION 14, THE GARFIELD HEIGHTS CITY ENGINEER SHALL BE NOTIFIED. FOR LOCATION 15, THE ROCKY RIVER CITY ENGINEER AND THE LAKEWOOD CITY ENGINEER SHALL BE NOTIFIED.

MAIN	TENANCE O				MARY	7		
	LOCATION	N 5: CUY-	77-02	<u>23</u>		614		
						614		622
STA	TION	SIDE			WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	BARRIER REFLECTOR, TYPE 1, ONE WAY	OBJECT MARKER, ONE WAY	PORTABLE BARRIER, UNANCHORED
FROM	ТО				EACH	EACH	EACH	FT
LOCATIO	ON 5				2	8	6	160
TOTALS CARRIE	D TO GENERAL	SUMMARY			2	8	6	160

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STATION TO STATION	SIDE	VANDAL FENCE, B	INCREASED BARRIER DELINEATION	ZONE EDGE LINE, CL. 1, 6", 740.06, TYPE 1	WORK ZONE STOP LINE, CLASS 1, 740.06, TYPE 1	WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAPE	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARD (UNIDIRECTIONAL)	REFLECTOR, TYPE 1, WAY	ER REFLECTOR, TYPE TWO WAY	ECT MARKER, ONE WAY	MARKER, TWO WA	SPECIAL - WORK ZONE TRAFFIC SIGNAL	BARRIER.	PORTABLE BARRIER. UNANCHORED	EDGE LINE, 4″	CENTERLINE	CA
		TEMPORARY	INCREAS	WORK ZO	WC	WORK Z	WORK Zu 24" WIDE	BARRIER	BARRIER	OBJECT	OBJECT	    %	PORTABLE	PORTAB			
FROM TO		FT	FT	MILE	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	FT	FŤ	MILE	MILE	1
LOCATION 3: PHASE 1																	]
 BLACKOUT TAPE																	-
45+63 47+63	CEN					200											<b></b>
51+90 53+86	CEN					196											<u> </u> ~
47+20 52+30	LT					510											⋖
WORK ZONE DAVENENT HARKING															-		ĮΣ∣
WORK ZONE PAVEMENT MARKING 45+63 53+86	LT			0.16													┤⋛┍│
45+63 53+86	RT/LT			0.16		†											⊥Տ 16
45+63	RT				10												og [
53+86	LT				10												ا ∜† ا
BARRIER					-												ا≾"∖
46+48 S2+70	LT/RT		190			<del>                                     </del>	2		11		11		280	356			ن ن ∣
45+63 53+86	LT/RT		100			†	۷.		16		15		200	300			ᅦᇤᆇᅦ
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TEMPORARY VANDAL FENCE		000															RAFFIC SUBSUMMA - CUY-071-0467
47+80 51+85	RT	280						-									ای ۲
																	∣ ຕ
LOCATION 3: PHASE 2																	d pal
																	] 0
BLACKOUT TAPE	2511																ENANCE OF LOCATION 3
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WORK ZONE PAVEMENT MARKING																	∤ ₹ ઇ ∣
45+63 53+86	RT			0.16													<u>                                   </u>
45+63 53+86	RT/LT			0.16													╛╙┸╽
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46+48 52+70	LT/RT		190				2	<u> </u>	11		11		280	356			† <sup>-</sup>
45+63 53+86	LT/RT								16		15						]
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IR 71 OUTSIDE SHOULDER	LT		100					5		5				180			-{
IR 71 OUTSIDE SHOULDER	RT		100			†		5		5				180			†
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TEMPORARY VANDAL FENCE		000															$\vdash$
48+10 51+97	L	280															၂ပ္က ၂
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WORKZONE TRAFFIC SIGNAL																	] (3 E
46+60	LT/RT											2					5 6
52+60	LT/RT											2					7 6
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FINAL PAVEMENT MARKINGS																	ᅥᇉᆇᅥ
45+60 53+86	LT/RT														0.32	0.16	BH-FY2021(B) MIS PID NO.109131
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		560	580	0.64	40	1,426	4	10	54	10	52	4	560	1,072	0.32	0.16	253
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				M TOR, RDS, NL)	CTOR, 4 Y	CTOR,	6.	740.06,	1	S A	۵-	N.T ED,	RIER,	,,		LINE, 12"	DIAGONAL		
STA	TION	SIDE	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	BARRIER REFLECTOR, TYPE 1, ONE WAY	BARRIER REFLECTOR, TYPE 2, ONE WAY	OBJECT MARKER, ONE WAY	MORK ZONE CLASS I, 6", TYPE I	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	YELLOW WHITE	LANE LINE, 6"	CHANNEL IZING 1	TRANSVERSE/D LINE		
FROM	TO		FT	EACH	EACH	EACH	EACH	MILE	FT	SY	EACH	EACH	FT	MILE	MILE	FT	FT		
LOCATION 6	PHASE I																		
WORK ZONE PAVE																			
49+95.25	52+17.95	RT RAMP F-6						222.70											
52+17.95 53+50.00	53+50.00 56+80.13	RT RAMP F-3 RT RAMP F-3						132.05 132.05 330.13	330.13										
56+80.00	70+00.00	RT RAMP F-7						1342.00											
470+00.00	472+35.36	RT IR-77						235.36 235.36											
472+35.36	474+21.36	RT IR-77						186.00 372.00											
49+95.25	52+17.95	LT RAMP F-6						222.70											
56+13.00	56+58.00	LT RAMP F-7	<u> </u>					45.00	45.00										
56+58.00	70+00.00	LT RAMP F-7						1342.00											
BAR	 RRIER																		
55+20.00	56+80.13	RT RAMP F-3				4	3												
56+13.00 60+97.00	57+49.00 63+80.00	RT RAMP F-7 RT RAMP F-7				7	3 6												
63+80.00	67+16.00	RT RAMP F-7			8	/	7												
67+16.00	70+00.00	RT RAMP F-7				7	6												
470+00.00	470+70.31	RT IR-77				2	1												
62+42.00	66+71.36	LT RAMP F-7		1	10		9						387.00						
02142.00	00111.50	ET NAME T		,	10								307.00						
INCREASED BARRIER DELINE																			
63+80.00	64+36.36	RT RAMP -7	56																
CREASED BARRIER DELINEA	TION (PORTABLE BARRIER)																		
66+36.36	66+71.36	RT RAMP -7	35																
TEMPORARY	PAVEMENT																		
57+49.00	59+21.35	RT RAMP F-7								71.43									
<i>59+21.35</i>	60+92.06	RT RAMP F-7								94.84									
60+92.06	61+03.70	RT RAMP F-7								<i>3.23</i>									
LOCATION 6	⊥ 5: PHASE 2																		
WORK ZONE PAVE		DT DAMP C 7						F7 74 F7 74											
52+63.31 53+20.65	53+20.65 56+80.13	RT RAMP F-3 RT RAMP F-3						57.34 57.34 359.48											
470+00.00	471+89.28	RT IR-77						189.28 189.28											
F2.72.52	F7:00.05							01.15											
52+39.50 53+20.65	53+20.65 56+80.13	LT RAMP F-3 LT RAMP F-3						81.15 81.15 359.48	359.48							1			
	62+79.50	LT RAMP F-3						599.37 599.37											
56+80.13	70+00.00	LT RAMP F-7						1387 1387											
	1														-				
56+80.13	RARRIER			1	-	6	5									†			
56+80.13 56+13.00 55+82.00	<i>BARRIER</i> 58+09.00	LT RAMP F-3																	
56+80.13 56+13.00 55+82.00 60+16.00	58+09.00 63+17.00	LT RAMP F-7				7	6								1			i 1	1
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00	58+09.00 63+17.00 66+46.00	LT RAMP F-7 LT RAMP F-7			8	7	7											+ + +	
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00	58+09.00 63+17.00	LT RAMP F-7		1	8	7							372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7		1		7	7 2						372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7		1		7	7 2						372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7		1		7	7 2						372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7		1		7	7 2						372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7		1		7	7 2						372.00						
56+80.13 56+13.00 55+82.00 60+16.00 63+17.00 66+46.00 62+76.18	58+09.00 63+17.00 66+46.00 67+55.00	LT RAMP F-7 LT RAMP F-7 LT RAMP F-7 LT RAMP F-7	91	1		7	7 2	4791.73 5352.86	734.61	169.50			372.00 759.00						

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STA	TION	SIDE	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	BARRIER REFLECTOR, TYPE I, ONE WAY	BARRIER REFLECTOR, TYPE 2, ONE WAY	OBJECT MARKER, ONE WAY	MORK ZONE EDGE LINE, CLASS I, 6", 740.06,	WORK ZONE DOTTED LINE, CLASS 1, 6", 740.06, TYPE I	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	EDGE LINE, 6"	LANE LINE, 6″	CHANNELIZING LINE, 12"	TRANSVERSE/DIAGONAL LINE	
FROM	ТО		FT	EACH	EACH	EACH	EACH	MILE	FT	SY	EACH	EACH	FT	YELLOW WHITE MILE	MILE	FT	FT	
CREASED BARRIER DELINEA 63+08.18	TION (PORTABLE BARRIER) 64+36.36	LT RAMP F-7	128															
03.00.10	04730.30	ET NAME T	120															
NCREASED BARRIER DELINE 66+36.36	ATION (BRIDGE PARAPET) 66+46.00	LT RAMP F-7	10															
LOCATION 6: IR 480	   RAMP - PHASE 1			1	4		3						110.00					
PERMANENT PAVE		DT DAMP T 6					-		-					222.70				
49+95.25 52+17 <b>.</b> 95	52+17.95 53+20.00	RT RAMP F-6 RT RAMP F-3									3	3		222.70		102.05		
53+20.00	56+80.13	RT RAMP F-3									5	5		360.13	360.13			
56+13.00	70+00.00	RT RAMP F-7												1387.00		072.5		
470+00.00 472+36.00	472+36.00 474+21.36	RT IR-77 RT IR-77									6 2	6 2		236.00 185.36		236.00		
472+30.00	414+21.50	TO THE T												103.50	103.30			
49+95.25	50+26.00	LT RAMP F-6												30.75				
50+26.00	52+17.95	LT RAMP F-6									5	5				191.95		
52+39.50	53+20.00	LT RAMP F-3									1 5	1		80.50 80.50				
53+20.00 57+25.00	57+25.00 58+67.00	LT RAMP F-3 LT RAMP F-3									5	5 5		405.00 142.00		142.00		
58+67.00	62+79.50	LT RAMP F-3									10	10		412.50		412.50		
56+13.00	56+58.00	LT RAMP F-7									1	1			45.00			
56+58.00	58+10.00	LT RAMP F-7									4	4				152.00	52.00	
58+10.00 69+03.00	69+03.00 70+00.00	LT RAMP F-7 LT RAMP F-7									14 2	14		1093.00		97.00		
69+03.00	70+00.00	LI KAMP F-7									2	2				97.00		
	+						-		-									
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	<u> </u>																	
SUBTOTAL FROM THI		-	138	1	4		3				63	63	110.00	1751.25 2986.24	590.49	1333.50	52.00	
SUBTOTAL FROM SHE TOTALS	EI <u>23</u>		91 229	2	35	40	63	4791.73     5352.86       4791.73     5352.86	734.61 734.61	169.50	67	67	759.00	1751.25 2986.24	500 40	1333.50	52.00	
IUIALS			223	3	35	40	63	0.91 1.02	134.01	169.50	63	63	869.00	1751.25 2986.24 0.34 0.57	590.49 0.12	1555.50	52.00	
CONVERT TO MILES																		

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## STATION    FROM	R   R   L     R   R   R   R   R   R	<b>DE</b>	INCREASED A BARRIER DELINEATION	WORK ZONE TIMPACT ATTENUATOR, S. 24" WIDE HAZARDS, (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER	IER REFLECTOR, 1, ONE WAY	BARRIER REFLECTOR, TYPE 1, TWO WAY	E WAY	R,	o-^		740.06,	LINE, I			1,T D,	IER,	*		LINE, 12"	
### ### ##############################	R   R   L     R   R   R   R   R   R				_ ~ < <	BARRIER TYPE 1, C	BARRIER 1	BARRIER REFL TYPE 2, ONE	OBJECT MARKER, ONE WAY	OBJECT MARKER, TWO WAY	ONE NE.	CLASS I, 6", TYPE I	WORK ZONE CHANNELIZING LI CLASS I, 8", 740.06, TYPE I	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE I	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	FDGE LINE, 64	LANE LINE, 6"	CHANNELIZING LII	DOTTED LINE
## WORK ZONE PAVEMENT MARKING ## 463+88.68	R   R   L     R   R   R   R   R   R				EACH	EACH	EACH	EACH	EACH	EACH	MI		FT	FT	EACH	EACH	FT	MILE	MILE	FT	FT
### ### ### ### ### ### ### ### ### ##	R   R   L     R   R   R   R   R   R																			-	
## 463+88.68 ## 475+07.84 ## 478+72.84 ## 478+72.84 ## 478+72.84 ## 478+72.84 ## 489+12.68 ## 480+20.25 ## 501+54.25 ## 475+07.84 ## 477+52.68 ## 475+07.84 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 489+12.68 ## 477+52.68 ## 489+12.68 ## 477+52.68 ## 489+12.68 ## 477+52.68 ## 489+12.68 ## 480+20.25 ## 493+84.25 ## 493+84.25 ## 493+84.25 ## 478+8.68 ## 480+52.60 ## 480+52.60 ## 480	R   R   L     R   R   R   R   R   R		1																		
### ### ### ### ### ### ### ### ### ##	R L R R R	? <i>T</i>									1119.16		1119.16								
### ### ### ### ### ### ### ### ### ##	L R R										365.00 1039.84	365.00 1039.84	365.00 1039.84	365.00						-	
RAISED PAVEMENT MARKERS  463+88.68	R	<u>: 1</u>									1039.04	1039.04	1039.04								
## 463+88.68 ## 475+07.84 ## 477+52.68 ## 475+07.84 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 477+52.68 ## 489+12.68 ## 489+12.68 ## 489+12.68 ## 489+12.68 ## 489+12.68 ## 489+12.68 ## 489+80.25 ## 493+84.25 ## 467+08.68 ## 501+53.92 ## 478+18.68 ## 480+52.68 ## 488+80.25 ## 478+18.68 ## 480+52.68 ## 488+80.25 ## 472+48.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 472+48.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 480+52.68 ## 472+48.68 ## 480+52.68 ## 470+00.00 ## 473+13.68 ## 476+78.74 ## 492+51.27 ## 476+78.74 ## 492+51.27 ## 476+81.48 ## 477+23.11 ## 504+53.48 ## 477+23.11 ## 504+53.48 ## 477+23.11 ## 477+23.11 ## 477+51.27 ## 476+81.48 ## 477+23.11 ## 491+81.48 ## 493+93.48 ## 493+93.48 ## 493+93.48 ## 493+93.48 ## 493+93.48 ## 493+93.48 ## 493+93.48 ## 493+93.48	R	<u>'</u> T									2134.00	2134.00	2134.00								
### ### ### ### ### ### ### ### ### ##	R																		<del>                                     </del>		
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### ### ### ### ### ### ### ### ### ##		<u>'</u> . T			174																
### BARRIER  ### 467+08.68		<u>'</u> T			2																
## 467+08.68	L	<u>'</u> T			117																
## 467+08.68																					
### ### ### ### ### ### ### ### ### ##		CL					70			69											
### CREASED BARRIER DELINEATION (MEDIAN BARRI 468+20.85		R <i>T</i>		1		6			5								202.00				
### CREASED BARRIER DELINEATION (MEDIAN BARRI 468+20.85		<u>'</u>		,		6			E								202.00		<u></u> '		
### ### ### ### ### ### ### ### ### ##		. 1		1		6			5								202.00		+		-
## ## ## ## ## ## ## ## ## ## ## ## ##																					
## LOCATION 7: PHASE 3  ## WORK ZONE PAVEMENT MARKING  59+26.57		CL	428 828																<u> </u>		
WORK ZONE PAVEMENT MARKING  59+26.57 70+00.00 470+00.00 473+13.68 460+39.27 473+13.68 476+78.74 476+78.74 476+78.74 492+51.27  476+81.48 477+23.11 477+23.11 504+53.48  RAISED PAVEMENT MARKERS 59+26.57 70+00.00 470+00.00 473+13.68 460+39.27 473+13.68 473+13.68 473+13.68 475+39.27 477+51.27 477+51.27 476+81.48 477+23.11 491+81.48 491+81.48		CL	020																		
59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       476+78.74         476+78.74       492+51.27         476+81.48       477+23.11         477+23.11       504+53.48         RAISED PAVEMENT MARKERS         59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       475+39.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48																					
59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       476+78.74         476+78.74       492+51.27         476+81.48       477+23.11         477+23.11       504+53.48         RAISED PAVEMENT MARKERS         59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       475+39.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48																					
## 460+39.27 ## 473+13.68 ## 473+13.68 ## 476+78.74 ## 492+51.27 ## 476+78.74 ## 492+51.27 ## 476+81.48 ## 477+23.11 ## 477+23.11 ## 504+53.48 ## 477+23.11 ## 504+53.48 ## 477+23.11 ## 470+00.00 ## 473+13.68 ## 473+13.68 ## 473+13.68 ## 473+13.68 ## 473+13.68 ## 473+13.68 ## 473+13.68 ## 475+39.27 ## 477+51.27 ## 492+51.27 ## 492+51.27 ## 476+81.48 ## 477+23.11 ## 491+81.48 ## 493+93.48 ## 493+93.48	F	₽ <i>T</i>									1073.43	1073.43									
473+13.68       476+78.74         476+78.74       492+51.27         476+81.48       477+23.11         477+23.11       504+53.48         RAISED PAVEMENT MARKERS         59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       475+39.27         475+39.27       477+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48		R <i>T</i>									313.68	313.68									
### ### ##############################		RT										1274.41		705.00							
### ### ##############################		9 <i>T</i> 9 <i>T</i>									1572.53	365.06 1572.53	365.06 1572.53	365.06					+	<del></del>	
### ### ##############################																					
RAISED PAVEMENT MARKERS  59+26.57 70+00.00  470+00.00 473+13.68  460+39.27 473+13.68  473+13.68 475+39.27  475+39.27 477+51.27  477+51.27 492+51.27  476+81.48 477+23.11  477+23.11 491+81.48  491+81.48 493+93.48		<u>' T</u>									41.63								<u> </u>		
59+26.57       70+00.00         470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       475+39.27         475+39.27       477+51.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48		<u>'</u> T									2730.37	2/30.37	2/30.37						+	<del></del>	
470+00.00       473+13.68         460+39.27       473+13.68         473+13.68       475+39.27         475+39.27       477+51.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48																					
460+39.27       473+13.68         473+13.68       475+39.27         475+39.27       477+51.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48		<i>₹</i>			108																
473+13.68       475+39.27         475+39.27       477+51.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48		<i>२७</i> २ <i>७</i>			32 192														<del>                                     </del>		
475+39.27       477+51.27         477+51.27       492+51.27         476+81.48       477+23.11         477+23.11       491+81.48         491+81.48       493+93.48		<i>२७</i>			22																
476+81.48 477+23.11 477+23.11 491+81.48 491+81.48 493+93.48	R	<i>PT</i>			2																
477+23.11       491+81.48         491+81.48       493+93.48	R	₹ <i>T</i>			225		-	-											<del>                                     </del>		
477+23.11       491+81.48         491+81.48       493+93.48		<u>'</u> T			8														+		
	L	<u>'</u> T			219																
3U4+33.48	L	<u>'</u> T			2 159														<u> </u>		
I		. 1			159														+	<del>                                     </del>	
	L																				
																			+		
																			+		
TOTALS CARRIED TO SHE								-					10683.63				404		<del></del> '		-

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									614							21 	622			646		
STAT	ΓΙΟΝ	SIDE	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER	BARRIER REFLECTOR, TYPE 1, ONE WAY	BARRIER REFLECTOR, TYPE 1, TWO WAY	BARRIER REFLECTOR, TYPE 2, ONE WAY	OBJECT MARKER, ONE WAY	OBJECT MARKER, TWO WAY	M WORK ZONE EDGE LINE,	TYPE I	WORK ZONE CHANNELIZING LINE, CLASS I, 8", 740.06, TYPE I	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE I	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	YELLOW	, , , , , , , , , , , , , , , , , , , ,	LANE LINE, 6"	CHANNELIZING LINE, 12"	DOTTED LINE
FROM	ТО		FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	MILE		FT	FT	EACH	EACH	FT		ILE	MILE	FT	FT
BARR		0.7						-												<u> </u>		
67+12.00 470+00.00	70+00.00	RT						7	6											<u> </u>	ļ	
477+92.62	473+13.68 479+87.00	RT RT						5	6											<u> </u>		
479+87.00	485+46.60	RT				12		3	11											<del>                                     </del>	-	
478+09.27	480+51.27	RT		1		6			5								210.00			<del>                                     </del>	<del>                                     </del>	
470703.27	400 / 31.21	TA I		<del>'</del>													210.00			<u> </u>	<del>                                     </del>	
483+76.00	489+84.00	LT		1		13			12									+				
489+84.00	499+78.94	LT				1		21	20													
488+81.48	491+23.48	LT		1		6		<u> </u>	5								210.00					
		<del>-</del> ·		† ·					1													
ICREASED BARRIER DELINE	EATION (BRIDGE PARAPET)																					
480+51.27	484+86.61	RT	435																			
484+49.83	488+81.48	LT	432																			
PERMANENT PAVI																						
59+26.57	69+04.00	RT													12	12		977.43	977.43			
69+04.00	70+00.00	RT													2	2			96.00		96.00	
470+00.00	472+39.27	RT													6	6			239.27	<u> </u>	239.27	
460+39.27	469+04.00	RT													7	7		864.73	864.73	864.73		
469+04.00	472+39.27	RT													3	3		335.27		335.27	335.27	
472+39.27	480+05.00	RT													6	6		765.73	765.73	765.73		765.73
480+05.00	492+51.27	RT													10	10		1246.27	1246.27	1246.27		
470 : 01 : 40	477.07.11			-											-			41.07	41.07	17.00		
476+81.48	477+23.11	LT.													2	2		41.63	41.63	83.26		
477+23.11	501+57.63	<u>LT</u> LT		-											20	20		2434.52	2434.52	2434.52	205.05	
501+57.63	504+53.48	LI													2	2		295.85		295.85	295.85	
				+														+		<del>                                     </del>	+	
				+														+		<del>                                     </del>	-	
				+																<del>                                     </del>	<del>                                     </del>	
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CURTATAL FRAMETUR	CUEET		067	2		77		10	60						7/)	70	120	6061 47	GGGE FO	600E 07	066.70	765 7
SUBTOTAL FROM THIS SUBTOTAL FROM SHEE			867 1256	2 2	1606	37 12	70	40	69 10	69	12029.11	12029.11	10683.63	730.06	70	70	420 404	6961.43	0000.58	6025.63	966.39	765.73
			2123	4	1606	49	70	40	79	69				730.06	70	70	824	6961 43	6665 58	6025.63	966.39	765.73
Ι() Ι ΔΙ 🛇			6163	+ 7	1000	+ 75	1 10	+ 70	+ '>	00	2.28	2.28	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,50.00	10	+ '0	1 027				1 000.00	100.10
TOTALS  CONVERT TO MILES								1	1		1 228 1	2 2× 1						1.32	1.27	1.15	1 1	

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									614					6.	21	622		646			
ST <i>I</i>	ATION	SIDE	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER	BARRIER REFLECTOR, TYPE 1, ONE WAY	BARRIER REFLECTOR, TYPE 2, ONE WAY	OBJECT MARKER, ONE WAY	WORK ZONE	TYPE I 6", 740.06,	WORK ZONE CHANNELIZING LINE, CLASS I, 8" 740.06, TYPE I	WORK ZONE ARROW, CLASS I, 740.06, TYPE I	WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAPE	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	EDGE LINE, 6"	LANE LINE, 6"	CHANNELIZING LINE, 12"	LANE ARROW	
FROM	ТО		FT	EACH	EACH	EACH	EACH	EACH	YELLOW M.	WHITE ILE	FT	EACH	FT	EACH	EACH	FT	YELLOW WHITE MILE	MILE	FT	EACH	
LOCATION	8: PHASE 1																				
BLACKOL	UT TAPE																				
532+28.00	538+38.00	RT/LT											762.50								
538+38.00	542+55.00	RT/LT							_		1		417.00		1						
542+55.00 544+69.00	544+69.00 546+45.00	RT/LT RT/LT									-		267.50 352.00								
344+09.00	340+43.00	KIZLI											332.00								
WORK ZONE PAV	VEMENT MARKING																				
531+06.95	532+28.00	RT/LT							96.00	121.05	217.00	1									
532+28.00	546+45.00	RT/LT							1417.00	1417.00	1417.00										
546+45.00	549+45.00	RT/LT	+				-	-		300.00	300.00	-	1								
RAISED PAVEM	L MENT MARKERS																				
539+55.00	549+45.00	RT/LT			150																
<u> </u>																					
BARF		DT	+	1		1.0	-	17			+	-	1			610.00					
533+08.00	539+50.00	RT		1		14	-	13	1		+	-				610.00					
532+89.76	533+13.06	LT					1	1			1										
533+13.06	537+26.76	LT				9		8													
537+26.76	538+50.00	LT					3	2													
יייי אייי פארט פארט פייייי	UEATION (DDIDGE DADADET)										1		1								
CREASED BARRIER DELIN 533+13.06	NEATION (BRIDGE PARAPET) 537+26.76	L T	414				-				+	-	1								
000110.00	331120.10	LI	714				+				+	+	1								
LOCATION	8: PHASE 2																				
BARF 533+56.00		DT				10		-			1										
537+84.00	537+84.00 541+57.00	RT RT				10	8	9 7													
533+07.99	539+13.88	RT		1		13		12								574.00					
	EATION (PORTABLE BARRIER)																				
533+07.99	539+13.88	RT	511																		
LOCATION	R: PHASE 3																				
230712011																					
BLACKOL																					
532+79.41	533+30.00	RT/LT									-		50.59								
533+30.00 544+69.00	544+69.00 545+22.51	RT/LT RT/LT	_								-		1423.75 107.02								
J77 ( UJ , U U	J7J122.J1	IVIZEI	+				+				+	-	101.02								
WORK ZONE PAV																					
531+15.93	532+29.41	RT							89.00	113.92		1									
532+29.41 546+45.00	546+45.00 548+22.51	RT RT							1415.59	1415.59 177.51	1415.59 177.51										
J70 F40.00	340722.31	π/					1			111.31	111.31										
RAISED PAVEM	MENT MARKERS																				
537+84.08	546+96.39	RT			138																
2.5																					
BARF 531+57.00	S33+56.00	RT					5	4			1										
533+56.00	537+84.00	RT				10		9			+						<del>                                     </del>				
537+84.00	541+57.00	RT				,,,	8	7													
532+79.41	539+17.51	RT		1		14		13								610.00					
											1	_									
											1										
											+										
	RRIED TO SHEE	T 00		<b>+</b> -	222				7017 71	75.45.45	7776.14		7700								
TATALA ^*'	RRIED TO SHEE	1 40	925	3	288	70	25	85	1.5017.59	3545.07	3731.10	2	3380.36	i	1	1794	1	1	1	1	1

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									614				30	6	521	622			646			
STA	ATION	SIDE	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER	BARRIER REFLECTOR, TYPE 1, ONE WAY	BARRIER REFLECTOR, TYPE 2, ONE WAY	OBJECT MARKER, ONE WAY	AETT OM WORK ZONE FDGE I INF	CLASS TYPE	WORK ZONE CHANNELIZING LINE, CLASS I, 8", 740.06, TYPE I	WORK ZONE ARROW, CLASS I, 740.06, TYPE I	WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAI	RPM REFLECTOR	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	PORTABLE BARRIER, UNANCHORED	L C	EDGE LINE, 62	LANE LINE, 6"	CHANNELIZING LINE, 12"	LANE ARROW	
FROM	ТО		FT	EACH	EACH	EACH	EACH	EACH		ÎLE	FT	EACH	FT	EACH	EACH	FT		MÎLE	MILE	FT	EACH	
REASED BARRIER DELINEA 532+79.41	ATION (PORTABLE BARRIER) 538+45.72	RT	566																			
PERMANENT PAVI 531+06.95 532+50.00 533+24.56	EMENT MARKING 532+50.00 533+24.56 537+52.29	RT/LT RT/LT RT/LT												16 4	16		143.05 74.56 427.73	143.05 74.56 427.73	149.12 855.46	377.00	8	
537+52.29 542+77.00	542+77.00 549+45.00	RT/LT RT/LT												14 25	14 25		524.71	524.71 668.00	524.71	1336.00		
SUBTOTAL FROM TH SUBTOTAL FROM SH			566 925	3	288	70	25	85	3017.59	3545.07	3731.10	2	3380.36	59	59	1794.00	1170.05	1838.05	1529.29	1713.00	8	
TOTALS  CONVERT TO MILES			1491	3	288	70	25	85			3731.10	2	3380.36	59	59		1170.05	1838.05	1529.29 0.29	1713.00	8	
	ED TO GENERAL	SUMMARY	1491	3	288	70	25	85		26	3732	2	3381	59	59	1794		.58	0.29	1713	8	

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STATION  SIDE    10				607				ε	614			6	22		646					
Fig.	STATI	ION	SIDE	EMPORARY VANDAL ROTECTION FENCE, YPE B	YORK ZONE IMPACT TTENUATOR, 24" WIDE MZARDS, (UNIDIRECTIONAL)	AARNIER RELECTOR, YPE 1, ONE WAY	BJECT MARKER, ONE WAY	YORK ZONE ENTER LINE, 1.4SS I, 40.06, TYPE I	1 -	VORK ZONE HANNELIZING LINE, LASS I, 8", 40.06, TYPE I	YORK ZONE AVEMENT MARKING, MISC: REMOVABLE, ION-REFLECTIVE RREFORMED BLACKOUT TAPE	ORTABLE BARRIER, INANCHORED	ORTABLE BARRIER, INCHORED	LINE,	ENTER LINE					
## MACCOL THE STATE   1	FROM	TO																		
## SECTION OF STREET ST	/ OCATION 10:	PHASE 1																		
March   Marc																				
### 15 ST 15			DT /I T								1537 20									
### 19   19   19   19   19   19   19   1	14+43.13	19731.02	NIZLI								1331.23									
### 19   19   19   19   19   19   19   1	W00% 70% BANGA	ENT MARKENS																		
\$18700   1700   17			RT					512.43	512.43	512.43										
M-21.00								,												
Book   Free	14+45.19	19+57.62	LT	1					512.43	512.43							1			
DOCATION DO PRINSE 2	BARRIE																			
### DATE OF THE SECTION AND CONTROL OF THE SECTI	16+97.00	17+60.00	LT		1	2	1					63								
### ### ##############################																				
### BACKOOT TART  ### BACKOOT																				
## 5.59   ## 5.59   ## 5.50   ## 5.5	LOCATION 10	: PHASE 2																		
## 1574   ## 1575   ## 157	BI ACKOUT	TAPF																		
## 194.38   \$8-99.31   FF			RT/LT								2242.26									
## 15-28   \$8-99-37																				
Note   1			RT						743 75	743 75										
### DARRIER #### DARRIER ##################################	111 40.30	10 1 00 110							143.10	143.10										
## 17-03-00   FT -05-00   FT -05   FT -	11+45.38	18+94.77	LT					749.39	749.39	749.39										
## 17-03.00   FF-03.00   RT   66   1   1   1	 BARRIE	-R		+																
SERMINENT FALENET MARKING	16+37.00	17+03.00		66	1	1	1						66							
## 5.08   \$8+51.62   \$17.1   \$1.0   \$	17+03.00	17+58.00	RT			1	1					55								
1945.58	 PERMANENT PAVEI	MENT MARKING																		
FARK E. OR. SOUTH SIDE OF US 422 RT	11+45.38	19+57.62												1624.48	812.24					
US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 TO IF 271 SR PAMP (SOUTH OF US 422)  US 422 NOT SEED OF US 422  UT STOUTH (SOUTH OF US 422)  US 422 NOT IF 271 SR PAMP (MORTH OF US 422)  US 422 TO IF 271 NB PAMP (MORTH OF US 422)  US 422 TO IF 271 NB PAMP (MORTH OF US 422)  US 422 TO IF 271 NB PAMP (MORTH OF US 422)  UT STOUTH (SOUTH OF US 422)  UT STOUTH (S																				
US 422 TO IR 271 SB RAMP (SOUTH OF US 422)  IR 71 NB 70 US 422 RAMP  IR 71 NB 70 US 422 RAMP (NORTH OF US 422)  IR 71 N																				
R 211 NB TO US 422 RAMP	US 422 TO IR 271 SB RAMF	O (SOUTH OF US 422)	RT													46.00				
ORAINE PLACE SOUTH SIDE OF USS 422 RT																				
MALNUT HILLS SOUTH SIDE OF USS 422 RT																				
IR 211 SB TO US 422 RAMP (NORTH OF US 422) US 422 TO IR 271 NB RAMP	WALNUT HILLS SOUTH SIDE	OF USS 422	RT													55.00				
US 422 TO IR 271 SB RAMP (NORTH OF US 422)  US 422 TO IR 271 NB RAMP (NORTH OF US 422)  LT  US 422 TO IR 271 NB RAMP (NORTH OF																				
US 422 TO IR 271 NB RAMP (NORTH OF US 422)  LT  US 422 TO IR 271 NB RAMP (NORT																				
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16				+																
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16				+										+				+		
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
CONVERT TO MILES         0.24         0.48         0.31         0.16				+										-					-	
CONVERT TO MILES         0.24         0.48         0.31         0.16				1										1					1	
CONVERT TO MILES         0.24         0.48         0.31         0.16																				
				66	2	4	3			2518.00	3779.55	118	66			1140.00				
OTALS CARRIED TO GENERAL SUMMARY   66   2   4   3   0.24   0.48   2518   3780   118   66   0.31   0.16   1140		<b>TA ATUTA</b>		+	-		_	0.24	0.48	2518		***			0.16 0.16	1140			+	

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From	STA	ATION	SIDE	VANDAL V FENCE,	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	RELECTOR, ONE WAY	KER,	E, 1	IE 6", 740.06,	yG LINE, ŻE I	E, >E I	SS I,	E MARKING, IOVABLE, CTIVE ) BLACKOUT TAPE	4 <i>RRIER</i> ,	BARRIER,	۷,"	lu lu	VG LINE, 8"			E	
Fig.				TEMPORARY PROTECTION TYPE B	WORK ZONE ATTENUATOI HAZARDS, (L	BARRIER RE. TYPE 1, ONE	OBJECT MAF ONE WAY	WORK ZONE CENTER LINI CLASS I, 740.06, TYI	WORK ZON EDGE LINE CLASS I,	WORK ZONE CHANNELIZIN CLASS I, 12 740.06, TYN	WORK ZONE DOTTED LIN CLASS I, 6" 740.06, TYI	WORK ZONE ARROW, CLA 740.06, TYI	WORK ZONE PAVEMENT A MISC.: REMC NON-REFLEC PREFORMED	PORTABLE E UNANCHOREI	PORTABLE E ANCHORED	ANE		CHANNELIZIN	STOP LINE	ANE	TTED	
Company   Comp	FROM	ТО			EACH				MILE							MILE	MILE	FT	FT	EACH	FT	
Section   Sect	LOCATION	13: PHASE 1																				
2-16-25																						
\$25.00																						
\$145.00 \$515.00 \$7																						
### 1995   1995				-																		
27-75-50	27.00.00	20,00.00	11.1										31.23									
26.57.97   1.7																						
### STATE OF THE PROPERTY WHENCE STATE STATE OF THE PROPERTY WHENCE STATE STATE OF THE PROPERTY WHENCE STATE		24+81.00																				
Section   Sect	24+83.00		LT LT	+									10.00									
Section   Sect	WORK ZONF PA	VEMENT MARKING																				
Depth/SQ			LT/RT								106.98											
27:45.00	13+80.52	14+86.00	LT/RT								210.96											
2243.00																						
23-35.00									100.00		70.00											
23-18-20												,										
24-81.00									99.80		48.20	1										
24-81.00								33.00	33.00	100.00	117.00	,										
### ### ### ### ### ### ### ### ### ##																						
### 1741.50   1741.50   17   1741.50   17   1741.50   17	24+81.00	25+70.00	RT								132.00											
### 1741.50   1741.50   17   1741.50   17   1741.50   17	11.00.00	10 : 01 50	, +						177.50													
First   Street   First   Fir									133.50		90.00											
### 153.00   \$24.80.00   \$1.50									441.50		30.00											
First   String   St										328.00												
First   String   St																						
18			1.7			7	2							100.00								
21:38				320.00		-	<del>                                     </del>							100.00	320.00							
##8.00				320.00		-	-							150.00	320.00							
H-86.00   21+53.00   C1.RT					1																	
H-86.00   21+53.00   C1.RT																						
H+88.00		VEMENT MARKING	DT (1.7																70			
22+23.00		21+53 00														665.00	665.00	665.00	39	10		
22+23.00																		000.00		10		
24+83.00   RT	22+23.00		RT															258.00		4		
22+23.00	24+83.00		RT																40			
22+23.00	14 , 00 00	22107.00	, +													775 00						
24+96.00				+	-	-			1	1	1						258 00	1				
TOTALS  320.00 1 13 12 318.00 1777.80 1469.00 889.14 2 1021.75 250.00 320.00 1986.00 993.00 79.00 14 125.00				+	+				1		1					200.00	200.00	1			125	
		1																				
		+		+																		
		+		1																		
				$\perp$					1													
				+		-										1						
	TOTALS			320.00	1	1.3	12	318.00	1777.80	1469.00	889.14	2	1021.75	250.00	320.00	1986,00	993.00	923.00	79.00	14	125.00	
				1 320.00	<u> </u>	"				1.00.00	1 200.11	_								<b>.</b>		

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	TO:	SIDE  RT  RT	TEMPORARY VANDAL T PROTECTION FENCE, TYPE B	WORK ZONE IMPACT SA ATTENUATOR, 24" WIDE THAZARDS, (UNIDIRECTIONAL)	BARRIER REFLECTOR,	HONE WAY	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	WORK ZONE EDGE LINE,	ASS I, 6", 740.06, PE I	ONE LINE, 6", 7YPE I	E S YPE I	WE TYPE I	MARKING, OVABLE, CTIVE BLACKOUT TAP	ARRIER,	BARRIER,	2		3 LINE, 8″		LINE	/DIAGONAL	307		
BLACKOUT 15+35.80 22+13.00 23+24.00 23+39.00 15+27.80	* PHASE 1 TAPE 15+60.00 23+24.00	RT						YELLOW	ij <sup>Σ</sup> . WHITF	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE	WORK ZONE ARROW, CLASS I, 740.06, TYF	PAVEMENT N MISC.: REMC NON-REFLEC	PORTABLE BARRIER UNANCHORED	PORTABLE BA ANCHORED	LANE LINE, 4	CENTER LINE	CHANNELIZING	STOP LINE	CROSSWALK L.	TRANSVERSE/ LINE	SCHOOL SYMBOL MARKING, 72"	LANE ARROW	WORD ON
BLACKOUT 15+35.80 22+13.00 23+24.00 23+39.00 15+27.80	TAPE 15+60.00 23+24.00	RT				LACIT	MILE	MI		FT	FT	MILE	FT	FT	FT	MILE	MILE	FT	FT	FT	FT	EACH	EACH	EA
15+35.80 22+13.00 23+24.00 23+39.00 15+27.80	15+60.00 23+24.00	RT		+																				
22+13.00 23+24.00 23+39.00 15+27.80	23+24.00	RT																				-	,	
23+24.00 23+39.00 15+27.80													34.00											
23+39.00 15+27.80	25+00.00	RT											<i>145.00 31.00</i>							<u> </u>	<u> </u>			<u> </u>
		RT											40.25											
10 1 20 .00	22+09.00	LT LT	+	-									20.00 771.20							<u> </u>	<u> </u>	<del></del>		<u> </u>
22+09.00	23+24.00	LT	1	1			+						28.75					+				<del>                                     </del>		
23+35.00	26+00.00	LT											331.25											
WORK ZONE PAVEM	MENT MARVING			-																	<u> </u>			<del></del>
13+90.00	WENT MARKING	RT		+			+					1					+	-		<u> </u>		<u> </u>		
14+19.51	15+29.80	RT/LT								112.00		·												
14+22.04	15+27.80	RT/LT							047.05	108.00														<u> </u>
21+02.04 23+45.69	23+45.69 25+35.30	RT RT						189.61	243.65 189.61											<u> </u>	<u> </u>	<del>                                     </del>		
25+35.30	26+00.30	RT						65.00	100.01															
																				ļ				
14+25.79 14+28.85	15+27.80 15+27.80	LT LT								102.01 98.95										<u> </u>	<del></del>			<u> </u>
15+27.80	15+21.60	LT								96.95	15.00							+				+		
15+29.80	20+30.30	LT					500.50		1001.00		70.00													
20+30.30	21+02.04	LT						143.48	143.48															
21+02.04	23+45.69	LT.						487.30	243.65											<u> </u>	<u> </u>			<u> </u>
23+45.69 24+35.30	24+35.30 26+00.30	LT LT						89.61 165.00	89.61 165.00	165.00								$\longrightarrow$			<u> </u>			<u> </u>
	20.00.00							700100	700.00	700.00														
BARRIE					_	_														ļ				
15+47.59	19+49.43	<u>LT</u>			9	8														<u> </u>	<u> </u>			<u> </u>
 BARRIE	 ER																					<del>                                     </del>		
14+90	16+00	LT/RT			3	2								110.00										
16+00 18+80		L T	280.00		5	6 3								150.00	280.00					<u> </u>	<u> </u>			-
10+00	20+30	L I			4	3								150.00								<del>                                     </del>		
LOCATION 14:	PHASE 2																					1		
BLACKOUT 7	TAPE			1																		-	-	<u> </u>
15+31.12	17+00.00	RT											211.10											
17+00.00	20+21.00	RT					<u> </u>						80.25						<u>_</u>	<u> </u>			1	
21+00.00	21+61.00	RT PT	$\perp$										76.25					$\longrightarrow$		<u> </u>	<u> </u>	<del></del>		<u> </u>
22+10.00 23+23.00	23+23.00	RT RT	+	+			+						175.25 30.00									+		
24+37.00	26+36.07	RT											49.77						<del></del>					
24+35.00		LT	+	1									10.00							<u> </u>	<del>                                     </del>	<u> </u>	-	<del>                                     </del>
24+37.00	24+90.00	LT LT											87.00									<del>                                     </del>		
25+37.00	28+17.00	LT											280.00											
																								<u> </u>
			+																	<u> </u>		+	<b> </b>	<u> </u>
																						+		
				1																				
																				<u> </u>		<del></del>		
TOTALS CARRI	IED TA SUES	· т 22	280.00		21	19	500.50	1140 00	2075 00	505.06	15.00	+ . +	2401.07					$\longrightarrow$		<u> </u>		<del>                                     </del>		

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			607	_				0	14				<u> </u>	622 					646 	Τ	T	Τ	T
STA	TION	SIDE	TEMPORARY VANDAL PROTECTION FENCE, TYPE B	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	BARRIER REFLECTOR, TYPE I, ONE WAY	OBJECT MARKER, ONE WAY	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	MORK ZONE  MEDGE LINE;	CLASS TYPE I	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE I	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE I	WORK ZONE ARROW, CLASS I, 740.06, TYPE I WORK ZONE MORK ZONE MISC. REMOVABLE, NON-REFLECTIVE	PREFORMED BLACKOUT TAR PORTABLE BARRIER, UNANCHORED	PORTABLE BARRIER, ANCHORED	LANE LINE, 4"	CENTER LINE	CHANNELIZING LINE, 8"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	SCHOOL SYMBOL MARKING, 72"	LANE ARROW	WORD ON
FROM	ТО		FT	EACH	EACH	EACH	MILE	MĪ		FT	FT	MILE FT	FT	FT	MILE	MILE	FT	FT	FT	FT	EACH	EACH	EA
WORK ZONE PAN	/FMENT MARKING																						+
14+18.43	15+31.12	RT								112.69									<u> </u>	<del>                                     </del>	+	<del>                                     </del>	+
14+20.96	15+29.12	RT								108.16													
14+22.62	15+29.12	RT								106.50													
14+24.75 15+29.12	15+29.12	LT/RT RT	+		+					104.37	11.50									+			+
15+31.12	22+51.07	RT					719.95		1439.90														<u> </u>
22+51.07	23+06.32	RT						110.50	110.50										<u> </u>			<u> </u>	
23+06.32 24+97.13	24+97.13 27+36.07	RT RT			-			381.62 238.94	190.81 238.94														+-
27 · 3/ • 1J	21730.01	π/						250.34	230.34											-			+
23+06.32	24+97.13	LT							190.81														1
24+97.13	26+36.07	LT						138.94	138.94	010.00													
26+36.07	28+46.07	LT						210.00	210.00	210.00													+
BAR	RIER																						
15+35	16+15	RT			2	2							80.00										
16+15 18+95		RT LT/RT	280.00	-	<i>6 5</i>	5					-		270.00	280.00					-	-	-	<del> </del>	_
21+65	21+97	LIZKI		1	2	6							270.00										+
PERMANENT PAV		DT # T																	145.00				
14+06.86 14+13.74	14+22.83 14+75.95	RT/LT RT																	145.00	+	+		-
15+29.80	20+37.00	RT													507.20				114.00	_			+
20+36.78	20+87.90	RT																	87.00				
21+00.00	21+61.00	RT/LT													122.00	122.00						2	
22+10.00 23+23.00	23+23.00	RT/LT RT													226.00	226.00		30.00				2	+
23+37.01	23+47.63	RT/LT																00.00	109.00				
23+44.81	24+36.05	RT																	168.00				
24+35.00 24+37.00	24+90.00	RT/LT RT/LT		-							-				106.00	106.00		10.00				2	+
25+37.00	28+17.00	RT/LT														560.00					1	4	+
30+61.00	31+45.13	RT																	151.00				
31+45.13	31+98.34	RT/LT																	186.00				
14+36.09	15+15.32	LT		1	1														144.00	+	+		
15+27.80		LT																35.00					
15+29.80	15+79.80	LT													50.00	50.00	50.00					3	2
15+79.80 15+94.80	15+94.80 17+50.00	LT LT													15.00 155.20	15.00 310.40				56.00			
17+50.00	19+65.00	LT													215.00	215.00				30.00			
19+65.00	20+37.00	LT														144.00				14.00			
21+63.78	22+02.37	LT																	68.00				+
24+92.17 28+21.05	25+28.76 28+61.74	LT LT	+		1												+ +		64.00 67.00	+			+
31+13.00	31+98.34	LT																	164.00				1
																			1	1		1	
			+										+										+
			+		+																		+
																				1			4
 SUBTOTAL FROM THIS	S SHEET		280.00	1	15	14	719.95	1080.00	2519.90	641.72	11.50		350.00	280.00	2028.40	1748.40	50.00	75.00	1467.00	70.00	1	13	2
SUBTOTAL FROM SHE			280.00		21	19	500.50	1140.00	2076.00	585.96	15.00	1 2401.0	7 260.00	280.00									
TOTALS			560.00	1	36	33	1220.45 . 0.24	2220.00 0.43		1227.68	26.50	1 2401.0	610.00	560.00	2028.40 0.39	1748.40 0.34	50.00	75.00	1467.00	70.00	1	13	2
CONVERT TO MILES																							

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					· · · · · · · · · · · ·	614			41			$\overline{\epsilon}$	646 						
STATION		SIDE	ONE LINE, , TYPE I	WORK ZONE FIGE LINE, TYPE I, 6", 740.06,	WORK ZONE CHANNELIZING LINE, CLASS I, 12" 740.06, TYPE I	ONE ) LINE, I, 6", , TYPE I	WORK ZONE STOP LINE, CLASS I, 6'', 740.06, TYPE I	WORK ZONE ARROW, CLASS I, 740.06, TYPE I	ONE NT MARKING, REMOVABLE, FLECTIVE MED BLACKOUT TAPE	LINE, 4″	LINE	CHANNELIZING LINE, 8"	TINE	VALK LINE	ARROW	ON PAVEMENT, 72"			
			WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE	MORI EDGE TYPE					WORK ZONE PAVEMENT MA MISC.: REMOI NON-REFLECT PREFORMED E		CENTER		STOP	CROSSWALK	LANE	WORD			
FROM	ТО		MILE	MILE	FT	FT	FT	EACH	FT	MILE	MILE	FT	FT	FT	EACH	EACH			
LOCATION	15: PHASE 1																		
BLACKO	   Τ ΤΔΡΕ																		
19+90.00	TAIL	LT							52										
19+90.00	21+65.34	LT							282.34										
21+65.34	23+96.22	LT							57.72										
23+96.22	27+30.00	LT							417.23										
WORK ZONE PAV	 VEMENT MARKING																		
18+75.00		RT						2											
18+80.00	19+75.00	LT/RT				284.00													
19+75.00		LT		1.5			29.00												
19+77.00	27+28.00 19+96.45	LT	751.00	1502.00		-		7						1					
19+77.00 27+07.60	19+96.45 27+28.00	LT LT	+	+	19.45 20.40			3						+					
27+30.00	21720.00				20.70		20.00												
27+30.00	28+41.00	LT/RT				460.00													
28+46.00		LT						3											
27+36.88	27+38.38	LT/RT												300					
27+59.32	28+22.43	LT DT												211					
27+34.75 28+26.89	28+05.58 28+34.29	RT LT/RT			-									219 236					
20120.03	20134.23	LIVINI												250					
LOCATION	15: PHASE 2																		
DI 10//0/	VI. 7.05																		
BLACKOL 19+90.56	23+96.22	RT							507.08										
23+96.22	27+32.30	RT							446.1										
27+32.30		RT							18										
WORK ZONE DAIL	VENENT HARVING																		
WORK ZONE PAV	VEMENT MARKING	RT						2											
18+85.00	19+88.00	LT/RT				416.00													
19+88.00		RT					20.00												
19+90.00	27+30.04	RT	740.04	1480.08															
19+90.00	22+68.88	RT			278.88			5											
24+28.88 27+32.03	27+30.04	RT RT	-	-	301.16		30.00	5						+					
27+32.30	28+41.00	LT/RT				441.00	30.00												
28+46.00								2											
DEDITION C.	VENERAL MARKET																		
PERMANENT PAV	VEMENI MAKKING	RT	+	+	1	1								+	3				
19+90.59		LT											50	+					
19+90.59	27+28.77	LT/RT									738.18								
19+91.04	22+56.41	LT										439.37			6	3			
21+65.34	27+28.77	LT								563.43									
19+90.59	27+30.46	RT		-	-					739.87		207.07		-					
24+31.66 27+32.03	27+29.63	RT RT										297.97	47		5				
28+46.00		LT	+	+	+								7/	+	3				
			-		1														
				+	+									+					
TOTALS	·	·		2982.08	619.89	1601.00	99.00	25	1780.47	1303.30	738.18	737.34	97	966.00	17	3			
CONVERT TO MILES			0.29	0.57	1	-				0.25	0.14			+					
	ED TO GENERA	I CHMMADV	0.29	0.57	620	1601	99	25	1781	0.25	0.14	738	97	966	17	3		1	

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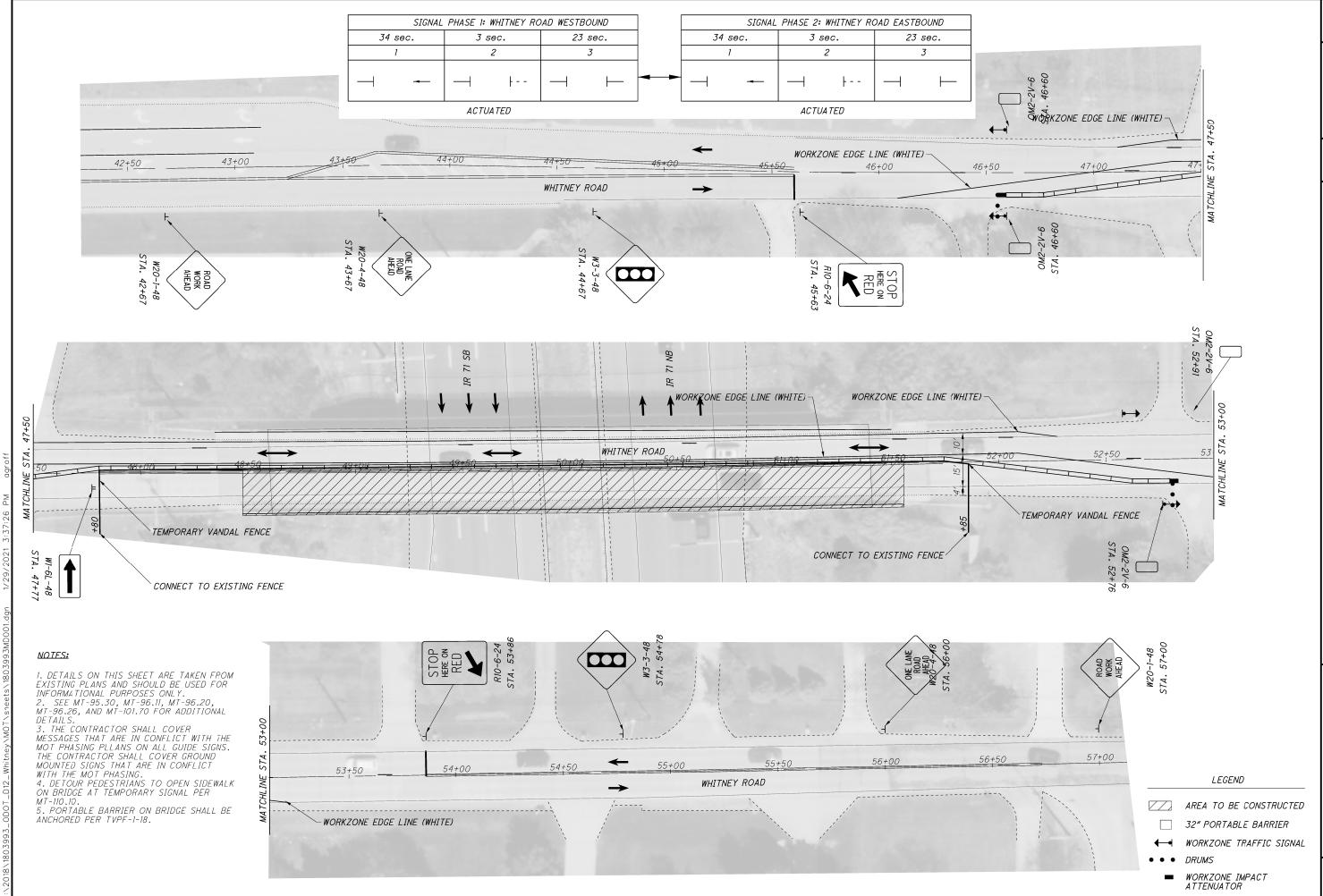
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- TYPICAL SECTIONS CUY-071-0467 MAINTENANCE OF TRAFFIC LOCATION 3

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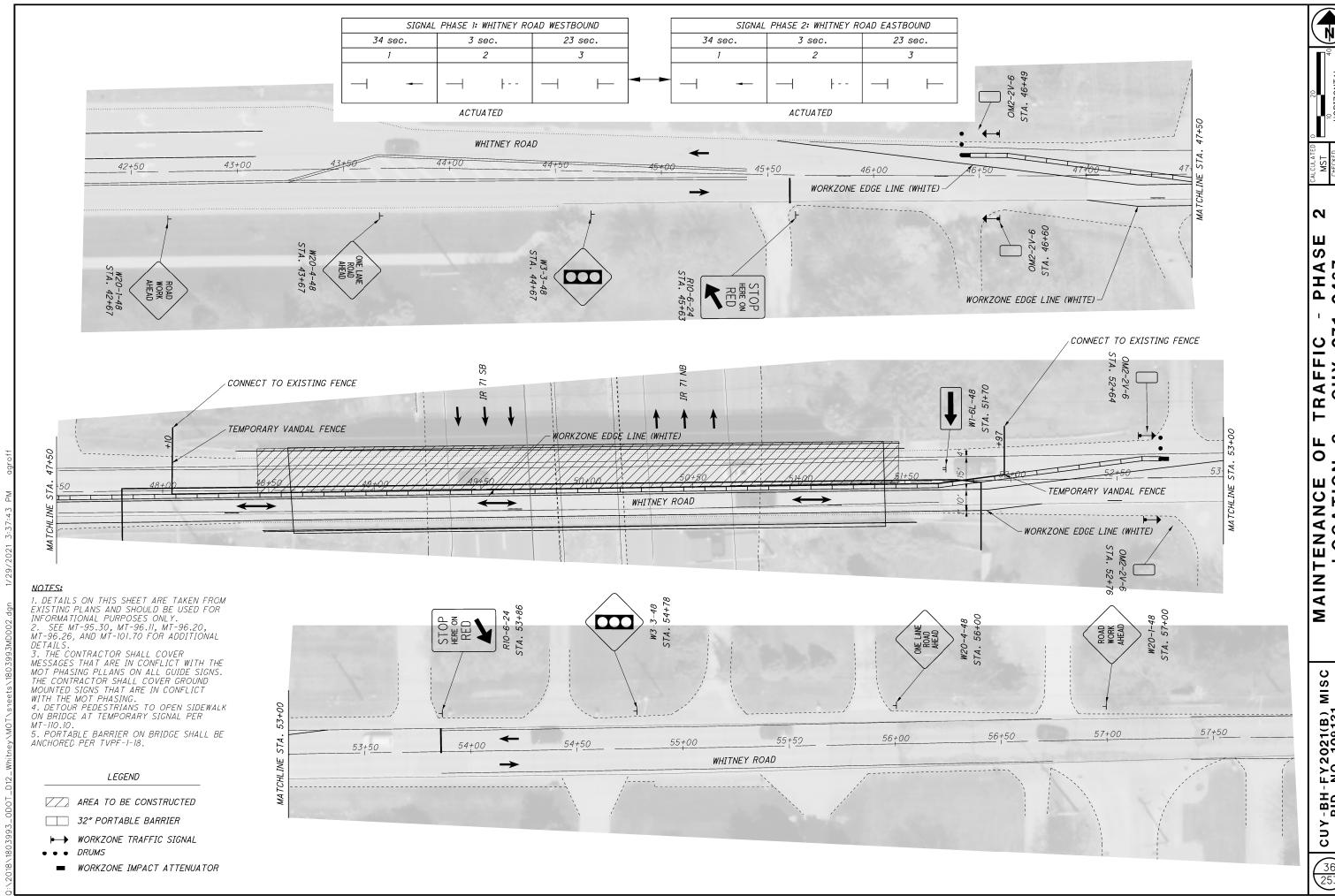


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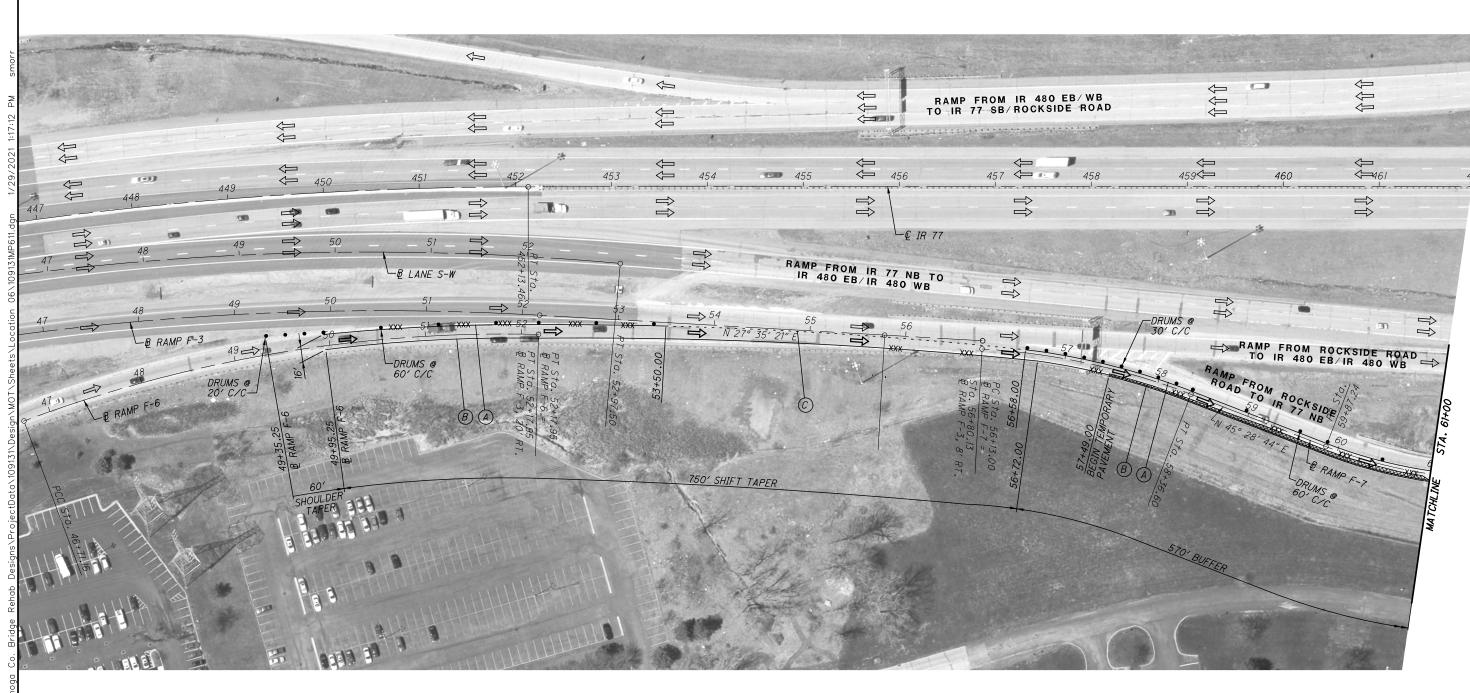
S - PHASE |-0467

\_ RAFFIC CUY-07 ļ<sub>L</sub> σ 0 MAINTENANCE (

> -FY2021(B) I NO. 109131 -BH-PID

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- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- C ITEM 614 WORK ZONE DOTTED LINE

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#### <u>LEGEND</u>

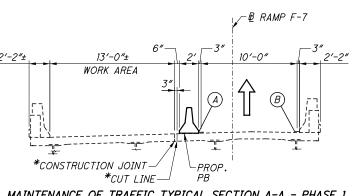
WORK AREA

ITEM 615 - ROADS FOR MAINTAINING TRAFFIC AND ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A

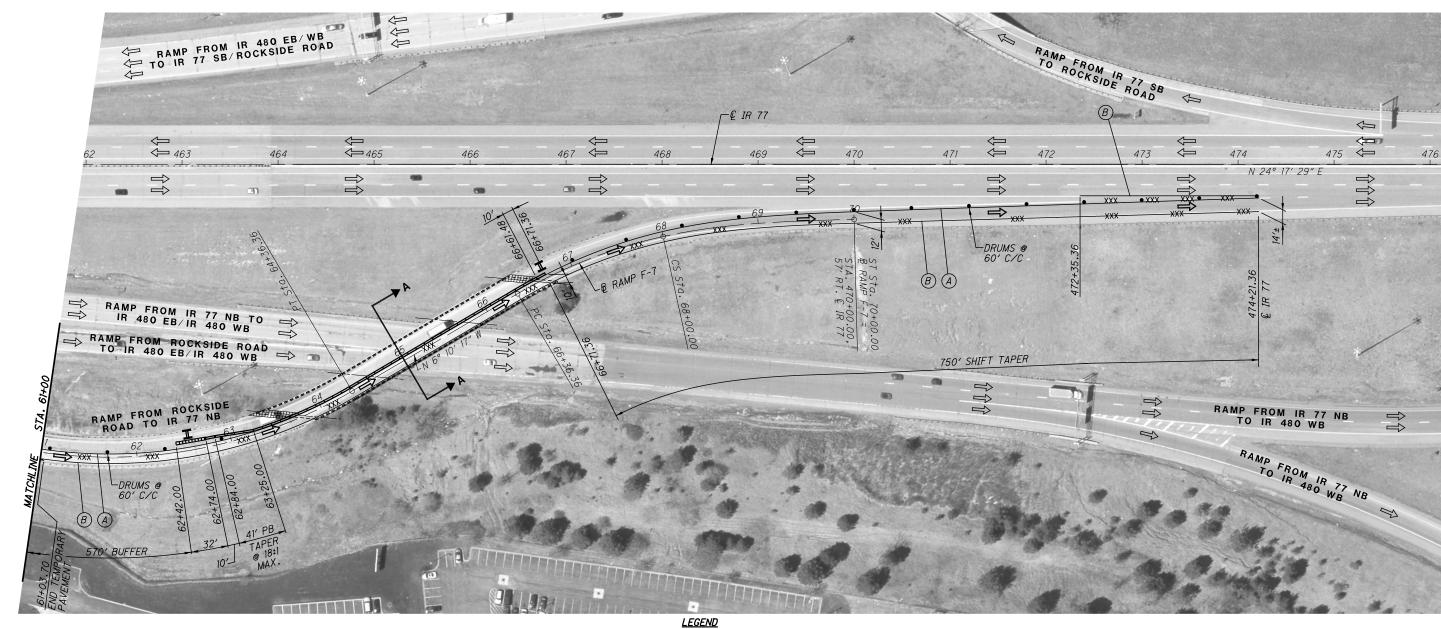
- - **→** PORTABLE BARRIER
  - REMOVE EXISTING MARKINGS
- IMPACT ATTENUATOR
- **⇒** DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

CUY



MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 1 BRIDGE NO. CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)



#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (C) ITEM 614 WORK ZONE DOTTED LINE

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WORK AREA

ITEM 615 - ROADS FOR MAINTAINING TRAFFIC AND ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A

DRUMS

**▼** TYPE III BARRICADE

PORTABLE BARRIER

REMOVE EXISTING MARKINGS

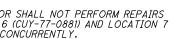
IMPACT ATTENUATOR

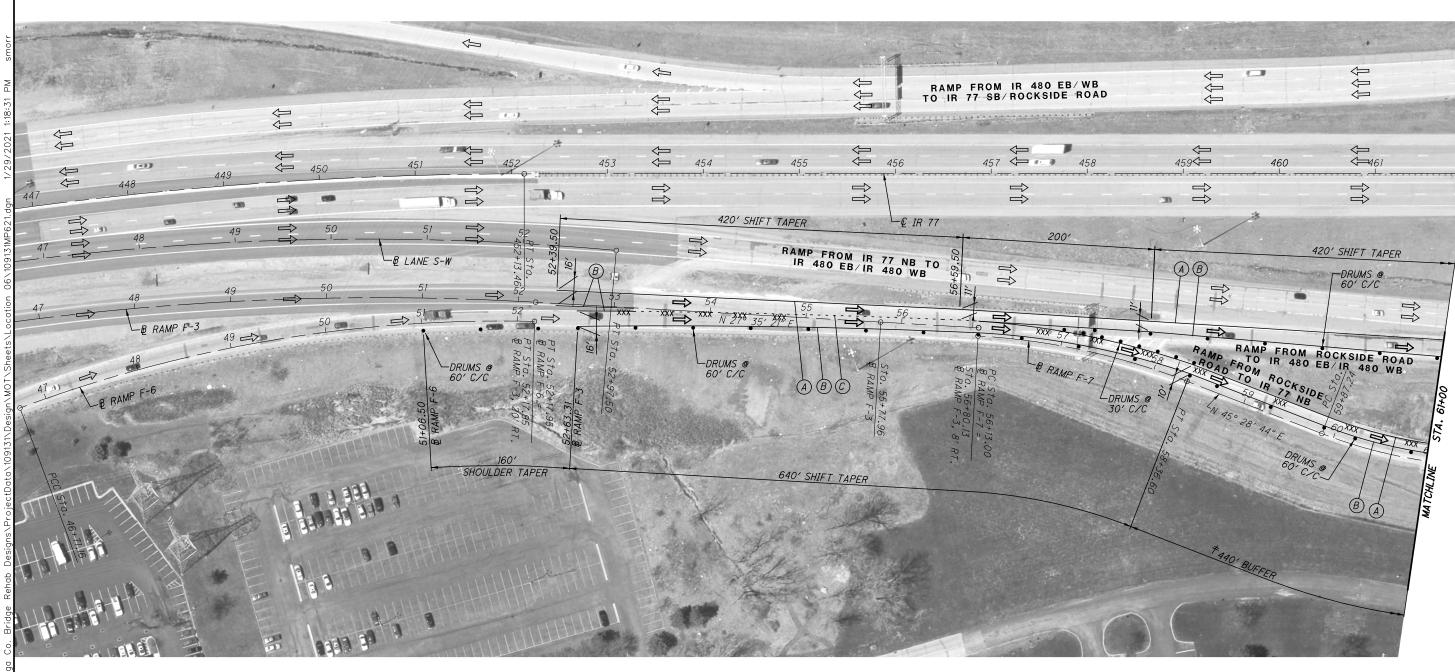
⇒ DIRECTION OF TRAVEL

\* AT WORK AREAS ONLY

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.







#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- C ITEM 614 WORK ZONE DOTTED LINE

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### <u>LEGEND</u>

### WORK AREA

DRUMS

PORTABLE BARRIER

REMOVE EXISTING MARKINGS

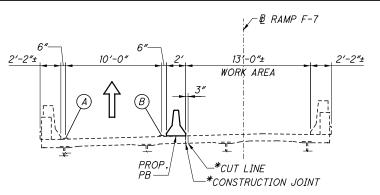
IMPACT ATTENUATOR

⇒ DIRECTION OF TRAVEL

- \* AT WORK AREAS ONLY
- † BUFFER LENGTH REDUCED TO PROVIDE HORIZONTAL CURVE WHILE MAINTAINING TRAFFIC ON RAMP F-3 AND RAMP F-6.

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

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# MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 2 BRIDGE NO. CUY-77-0881 (IR 77 RAMP OVER IR 480 RAMP)



#### MOT PAVEMENT MARKING LEGEND

- A ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (C) ITEM 614 WORK ZONE DOTTED LINE

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## <u>LEGEND</u>

WORK AREA

 DRUMS **T** TYPE III BARRICADE

PORTABLE BARRIER

REMOVE EXISTING MARKINGS

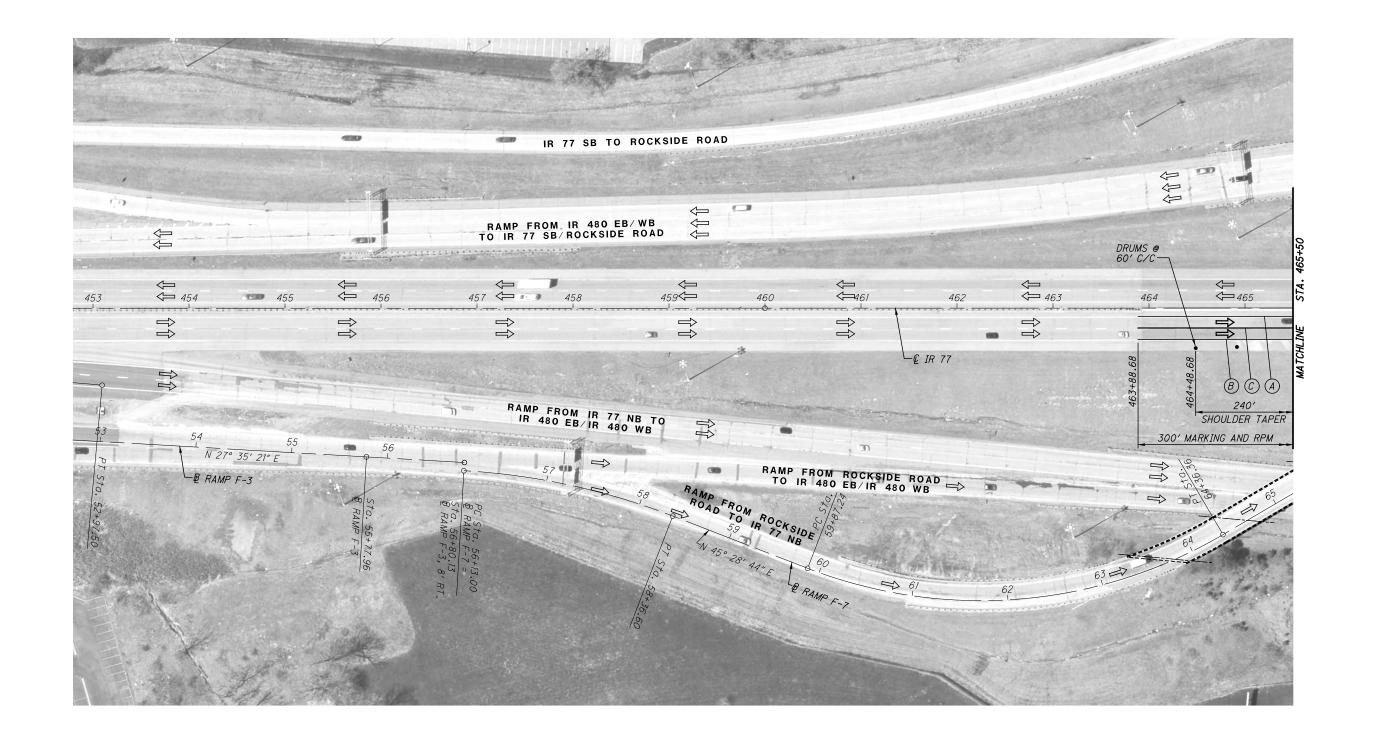
IMPACT ATTENUATOR

⇒ DIRECTION OF TRAVEL \* AT WORK AREAS ONLY

† BUFFER LENGTH REDUCED TO PROVIDE HORIZONTAL CURVE WHILE MAINTAINING TRAFFIC ON RAMP F-3 AND RAMP F-6.

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.





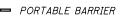
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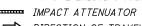
- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

#### <u>LEGEND</u>









- - REMOVE EXISTING MARKINGS
- IMPACT ATTENUATOR ⇒ DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.

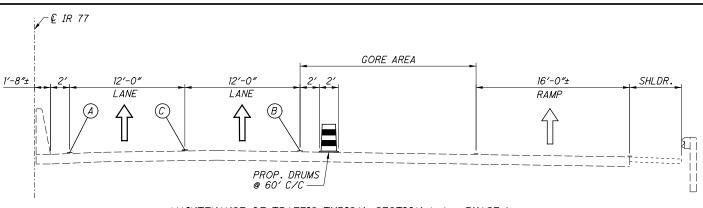
3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.

4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

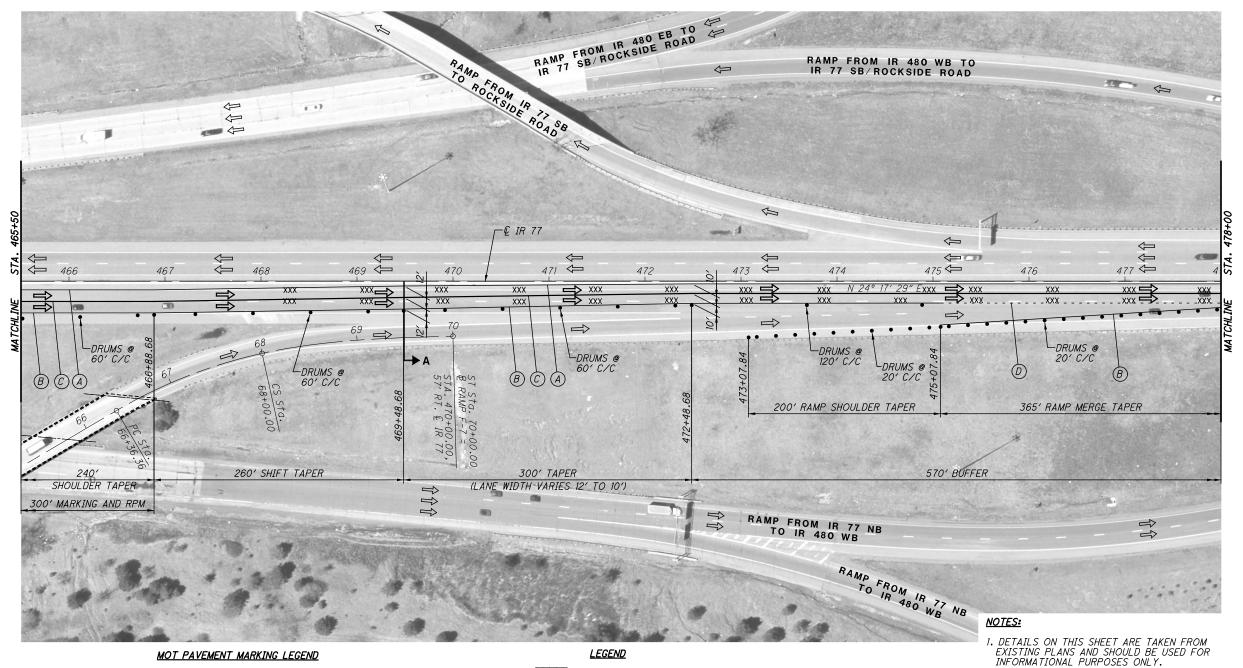








# MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 1 BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)



#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

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## **LEGEND**

DRUMS

REMOVE EXISTING MARKINGS

⇒ DIRECTION OF TRAVEL

WORK AREA

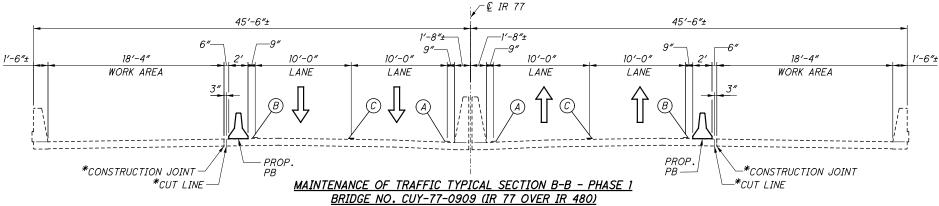
PORTABLE BARRIER

IMPACT ATTENUATOR



- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (C) ITEM 614 WORK ZONE CHANNELIZING LINE
- (D) ITEM 614 WORK ZONE DOTTED LINE

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<u>LEGEND</u>

WORK AREA

DRUMS

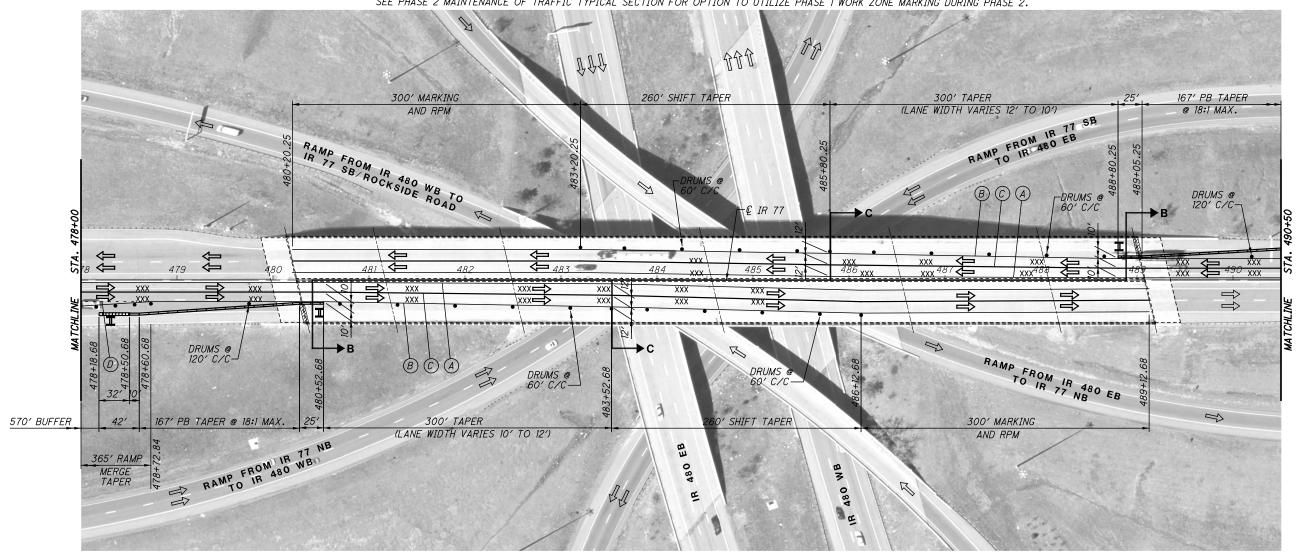
**T** TYPE III BARRICADE

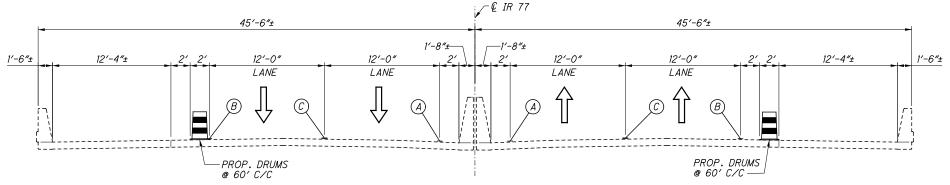
PORTABLE BARRIER REMOVE EXISTING MARKINGS

IMPACT ATTENUATOR

⇒ DIRECTION OF TRAVEL \* AT WORK AREAS ONLY

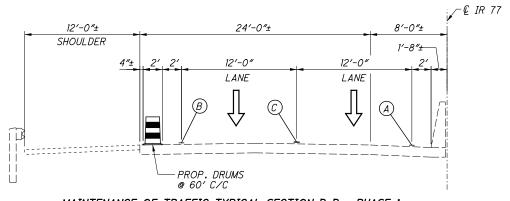
SEE PHASE 2 MAINTENANCE OF TRAFFIC TYPICAL SECTION FOR OPTION TO UTILIZE PHASE 1 WORK ZONE MARKING DURING PHASE 2.



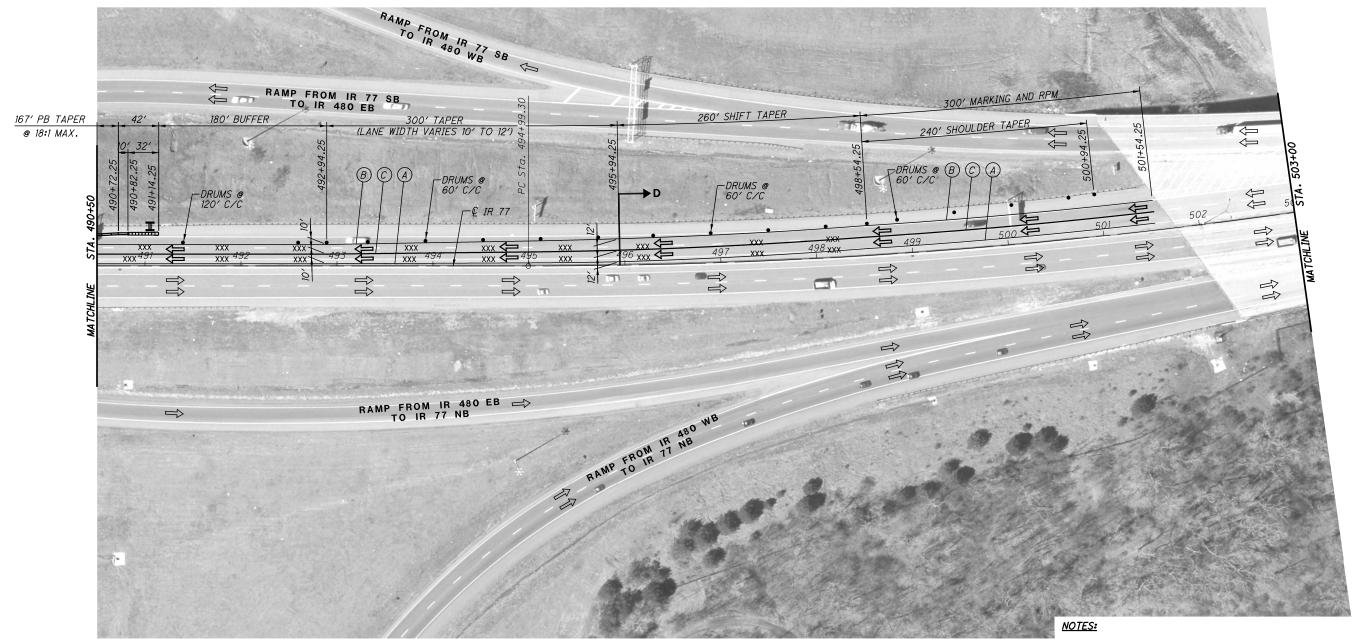


MAINTENANCE OF TRAFFIC TYPICAL SECTION C-C - PHASE 1
BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-088)) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



# MAINTENANCE OF TRAFFIC TYPICAL SECTION D-D - PHASE 1 BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)



#### MOT PAVEMENT MARKING LEGEND

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- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

#### <u>LEGEND</u>

WORK AREA

**I** TYPE III BARRICADE

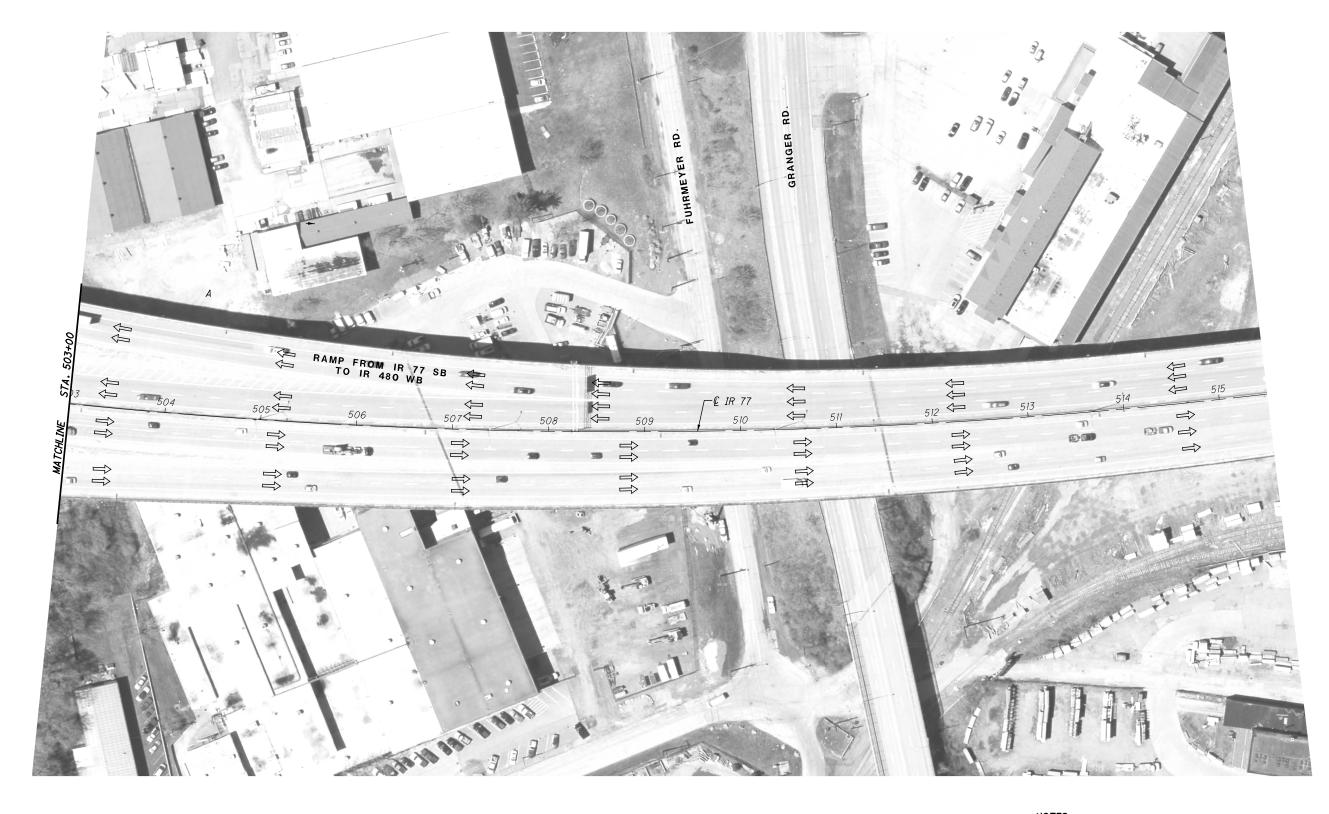
REMOVE EXISTING MARKINGS

IMPACT ATTENUATOR

- DRUMS
  - PORTABLE BARRIER
- **⇒** DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



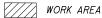


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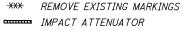
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- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

#### <u>LEGEND</u>







➡ PORTABLE BARRIER

⇒ DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

NOTES:

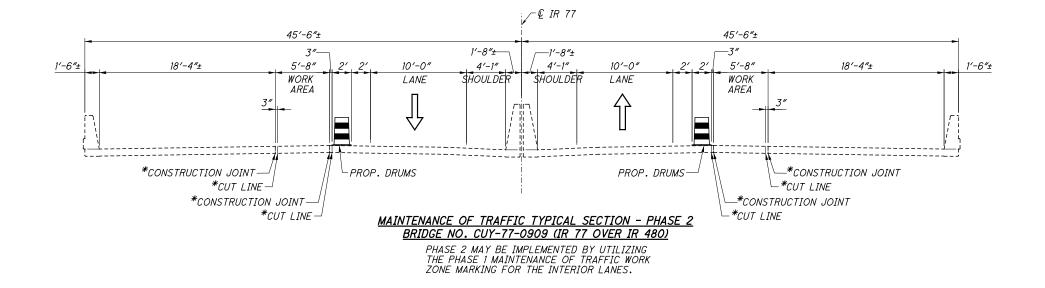
1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.

3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.

4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.

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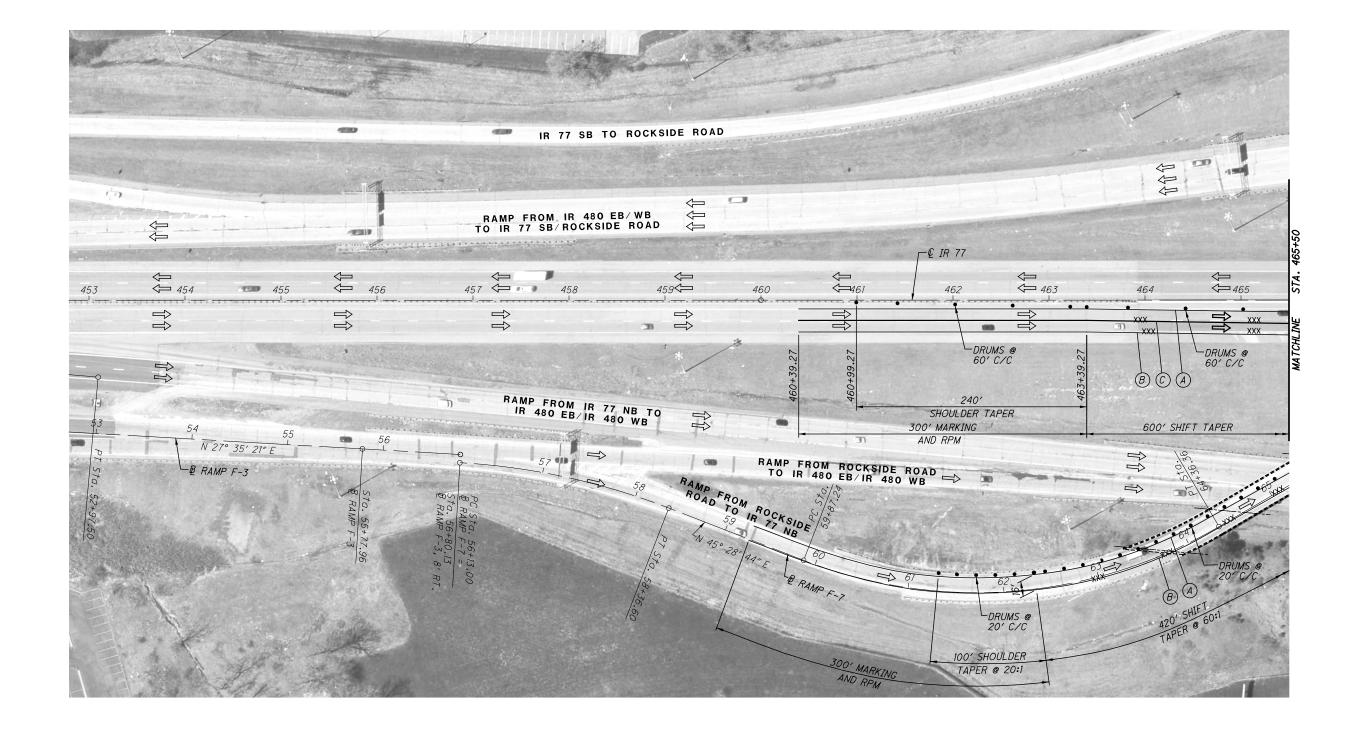
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#### <u>LEGEND</u>

⇒ DIRECTION OF TRAVEL

\* AT WORK AREAS ONLY





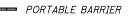
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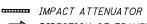
- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

#### <u>LEGEND</u>



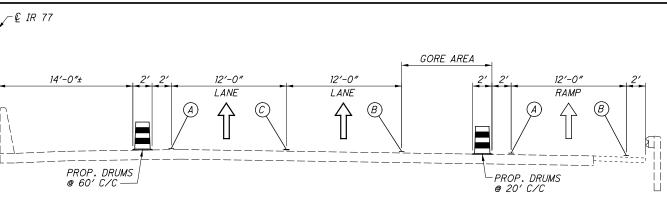




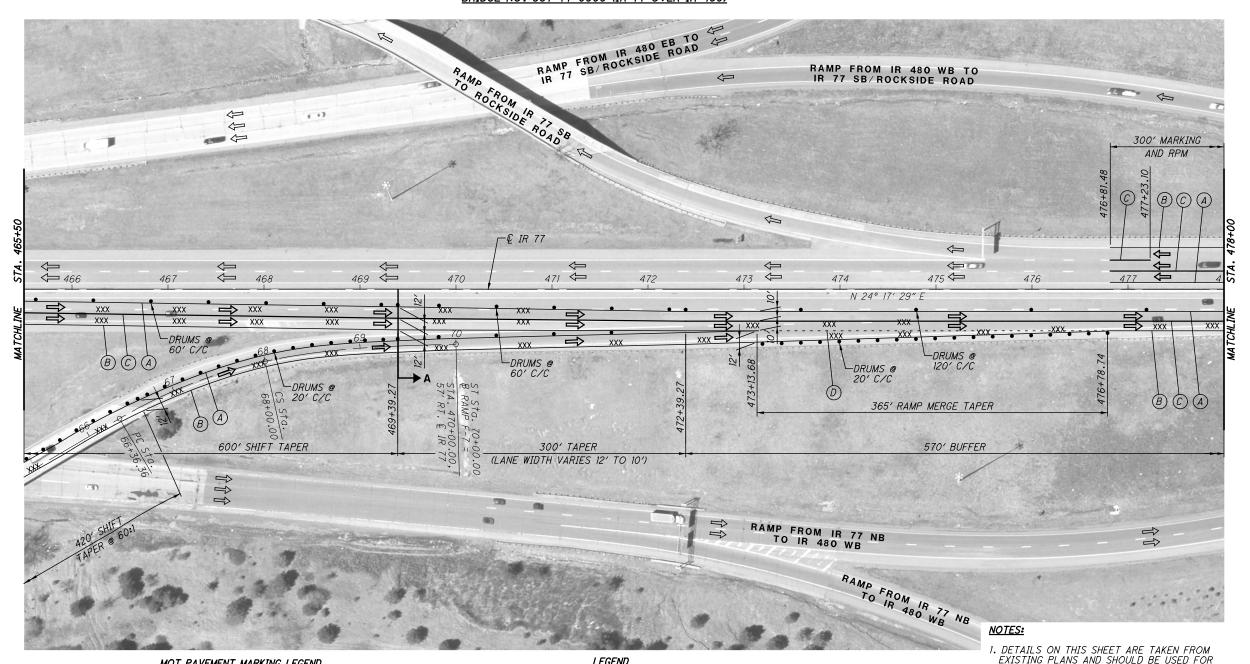


- WORK AREA
- REMOVE EXISTING MARKINGS ⇒ DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



### MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 3 BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)



#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

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#### **LEGEND**

- WORK AREA
- DRUMS
- PORTABLE BARRIER
- REMOVE EXISTING MARKINGS
- IMPACT ATTENUATOR
- ⇒ DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



WORK AREA

DRUMS

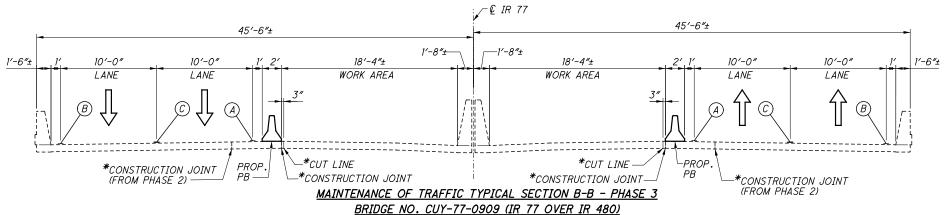
**T** TYPE III BARRICADE PORTABLE BARRIER

REMOVE EXISTING MARKINGS

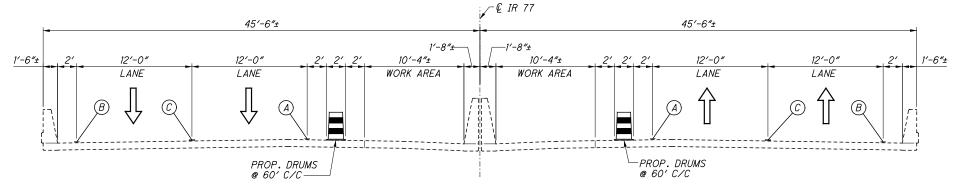
IMPACT ATTENUATOR

⇒ DIRECTION OF TRAVEL

\* AT WORK AREAS ONLY



300' MARKING 300' TAPER 175' PB TAPER AND RPM (LANE WIDTH VARIES 12' TO 10') @ 18:1 MAX. RAMP FROM IR 480 WB TO ROAD (B)(C)(A)60' C/C € IR 77 Ų. √ ×××
√ XXX 485 481 487 I xxx=> XXX XXX XXX DRUMS @ 120' C/C-DRUMS @ 60' C/C-RAMP FROM IR 480 EB 60' C/C 570' BUFFER 175' PB TAPER @ 18:1 MAX. 300' TAPER 600' SHIFT TAPER 300' MARKING (LANE WIDTH VARIES 10' TO 12') AND RPM RAMP FROM IR 77 NB 3E



MAINTENANCE OF TRAFFIC TYPICAL SECTION C-C - PHASE 3 BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)

#### NOTES:

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-088)) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

MOT PAVEMENT MARKING LEGEND

(A) ITEM 614 - WORK ZONE EDGE LINE (YELLOW)

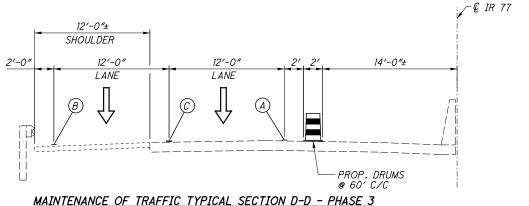
(B) ITEM 614 - WORK ZONE EDGE LINE (WHITE)

(C) ITEM 614 - WORK ZONE CHANNELIZING LINE

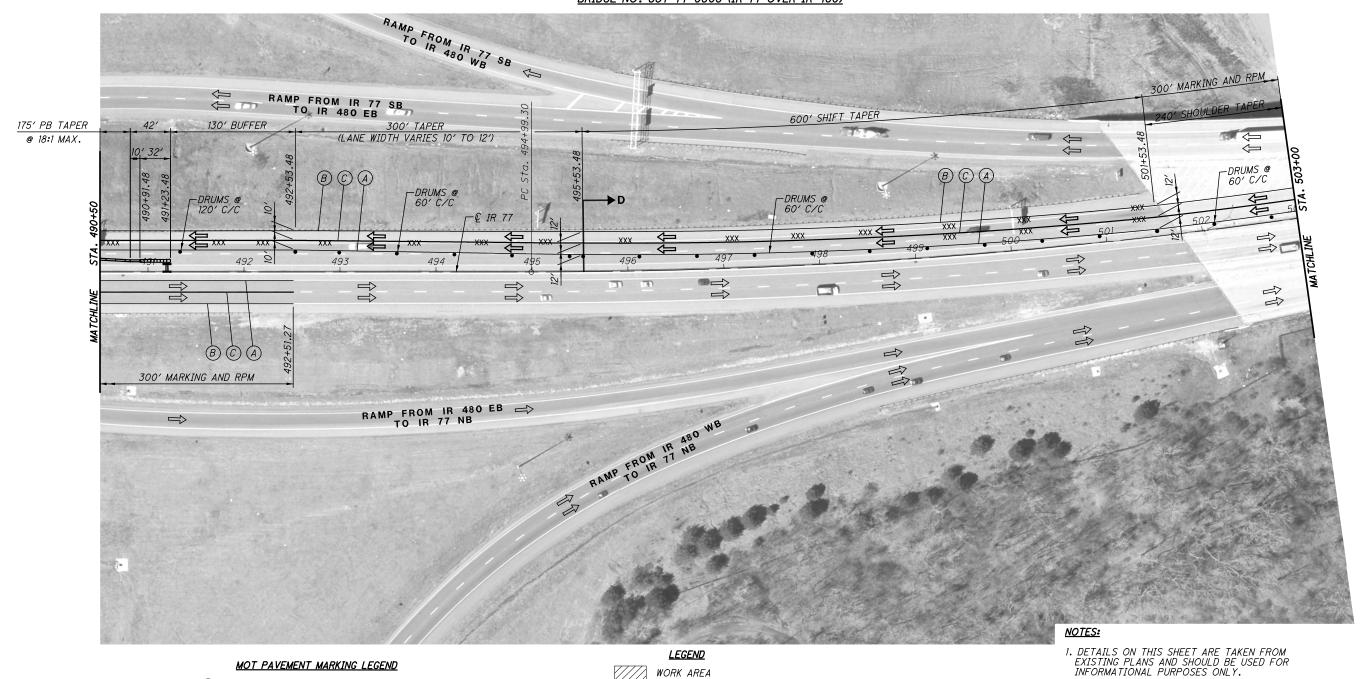
(D) ITEM 614 - WORK ZONE DOTTED LINE

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MAINTENANCE OF TRAFFIC TYPICAL SECTION D-D - PHASE 3 BRIDGE NO. CUY-77-0909 (IR 77 OVER IR 480)

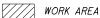


#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

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## <u>LEGEND</u>



DRUMS

**T** TYPE III BARRICADE

**⇒** DIRECTION OF TRAVEL

PORTABLE BARRIER

IMPACT ATTENUATOR

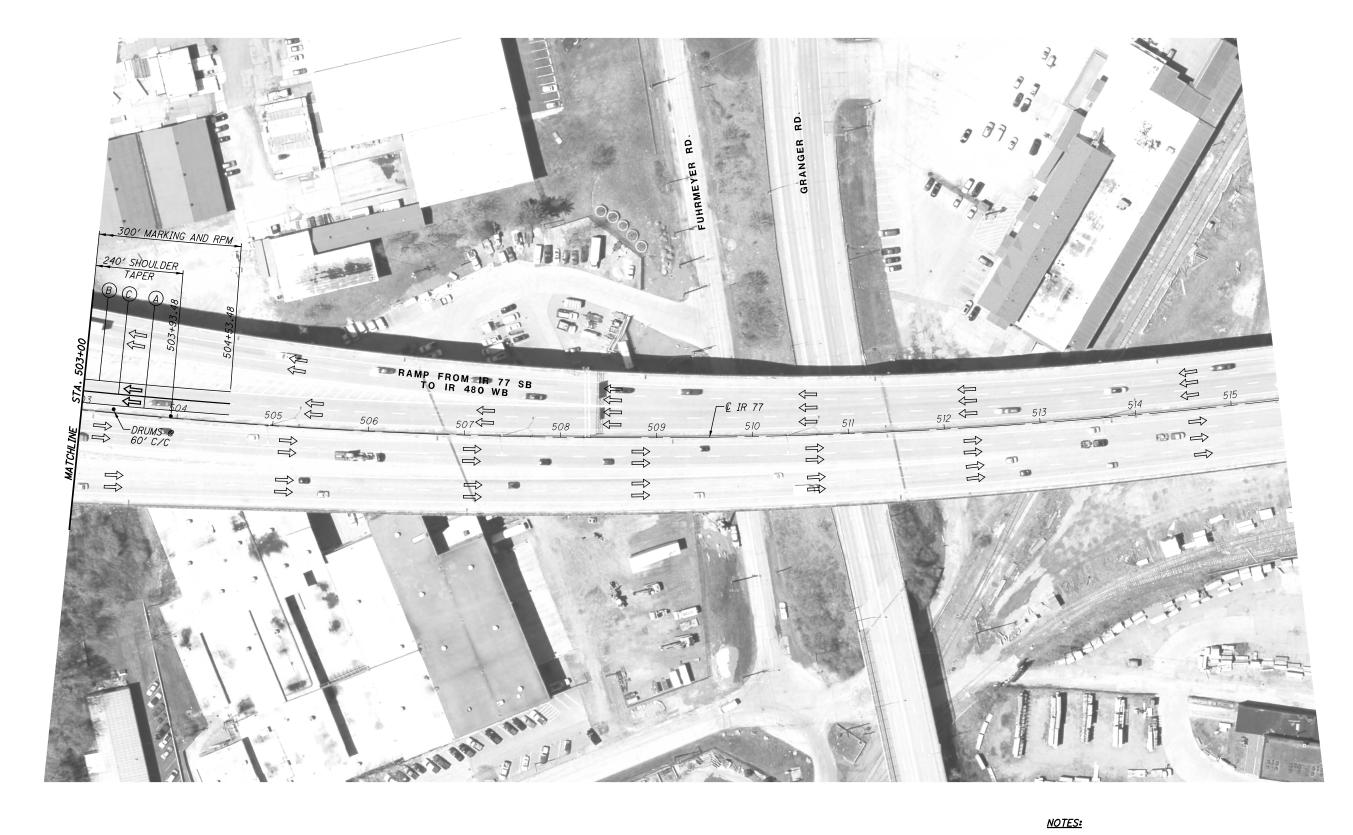
REMOVE EXISTING MARKINGS

4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.

2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.

3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.





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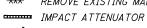
- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE
- D ITEM 614 WORK ZONE DOTTED LINE

#### <u>LEGEND</u>





→ PORTABLE BARRIER

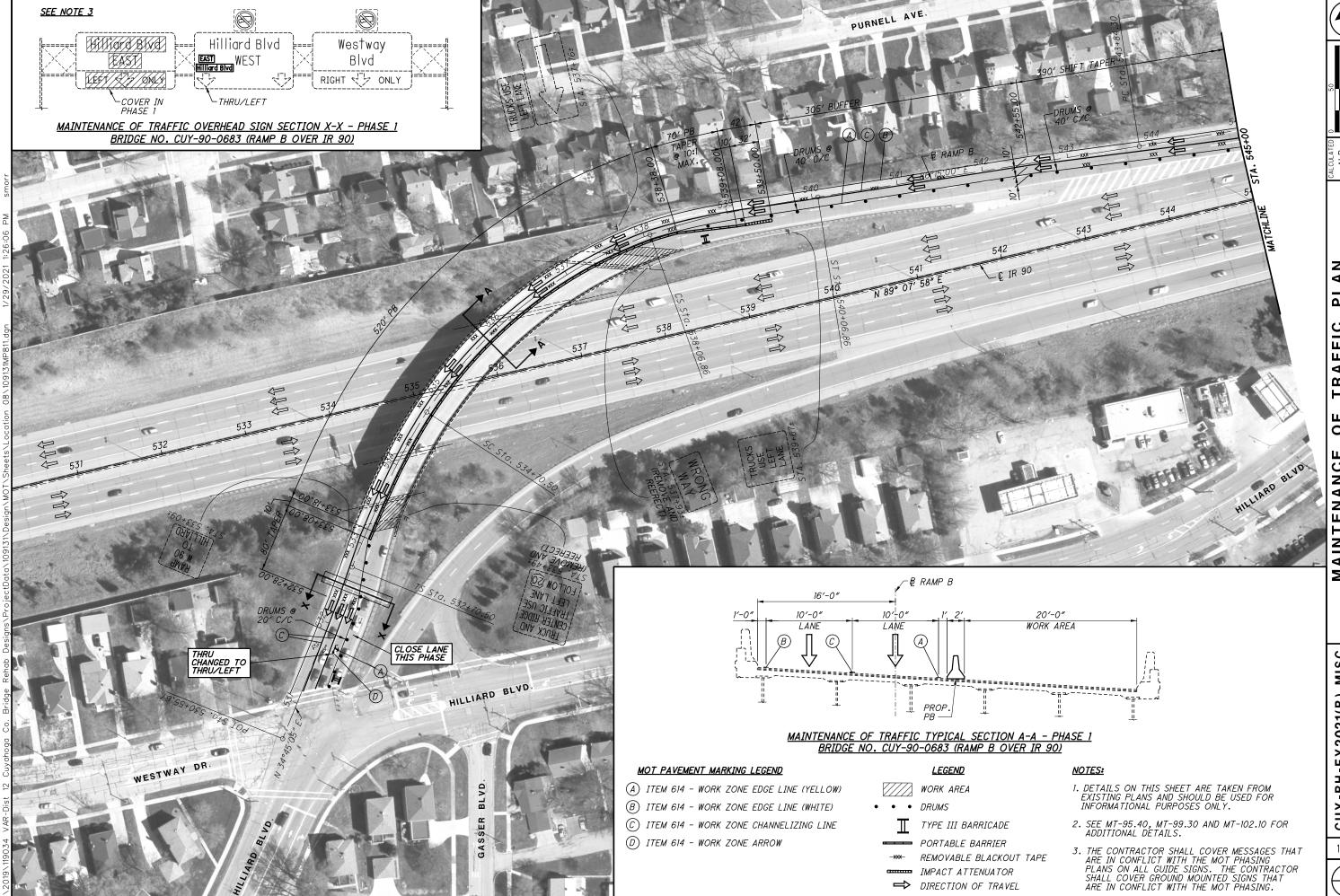


WORK AREA

\*\*\* REMOVE EXISTING MARKINGS

⇒ DIRECTION OF TRAVEL

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS.
- 4. THE CONTRACTOR SHALL NOT PERFORM REPAIRS FOR LOCATION 6 (CUY-77-0881) AND LOCATION 7 (CUY-77-0909) CONCURRENTLY.



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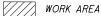


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- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE

#### <u>LEGEND</u>



• • DRUMS

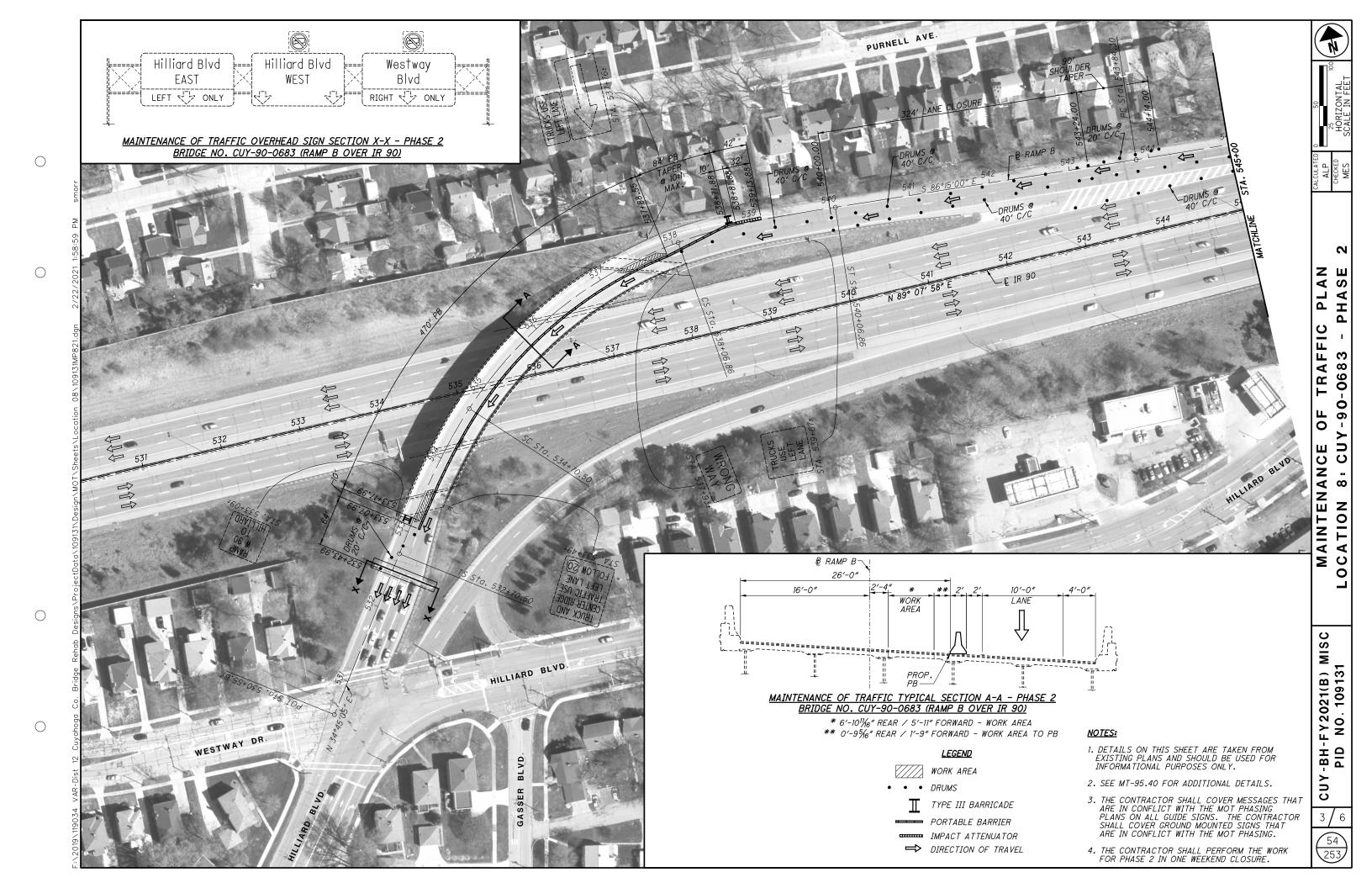
PORTABLE BARRIER

REMOVABLE BLACKOUT TAPE
IMPACT ATTENUATOR

→ DIRECTION OF TRAVEL

#### 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.

- 2. SEE MT-95.40, MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.



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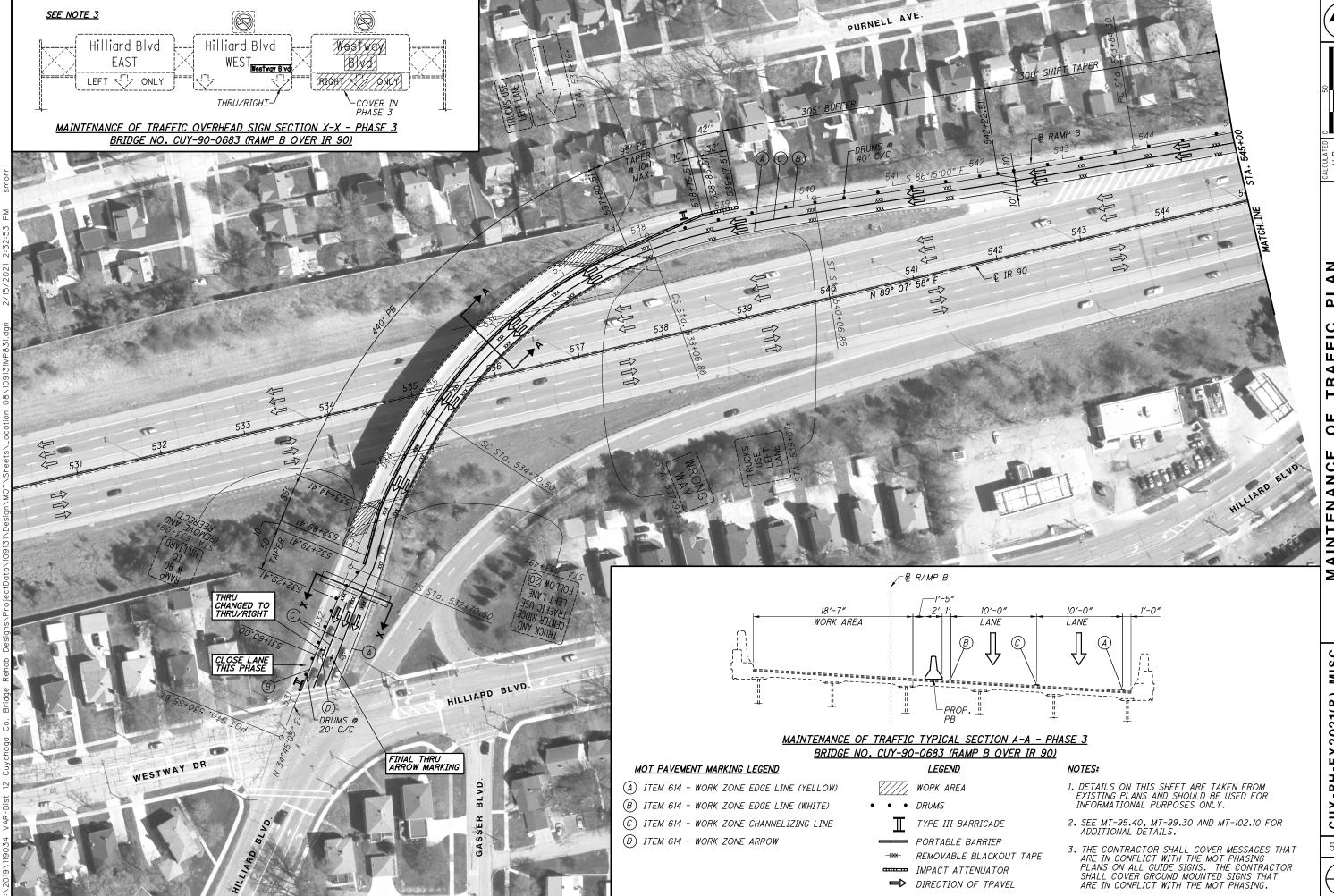
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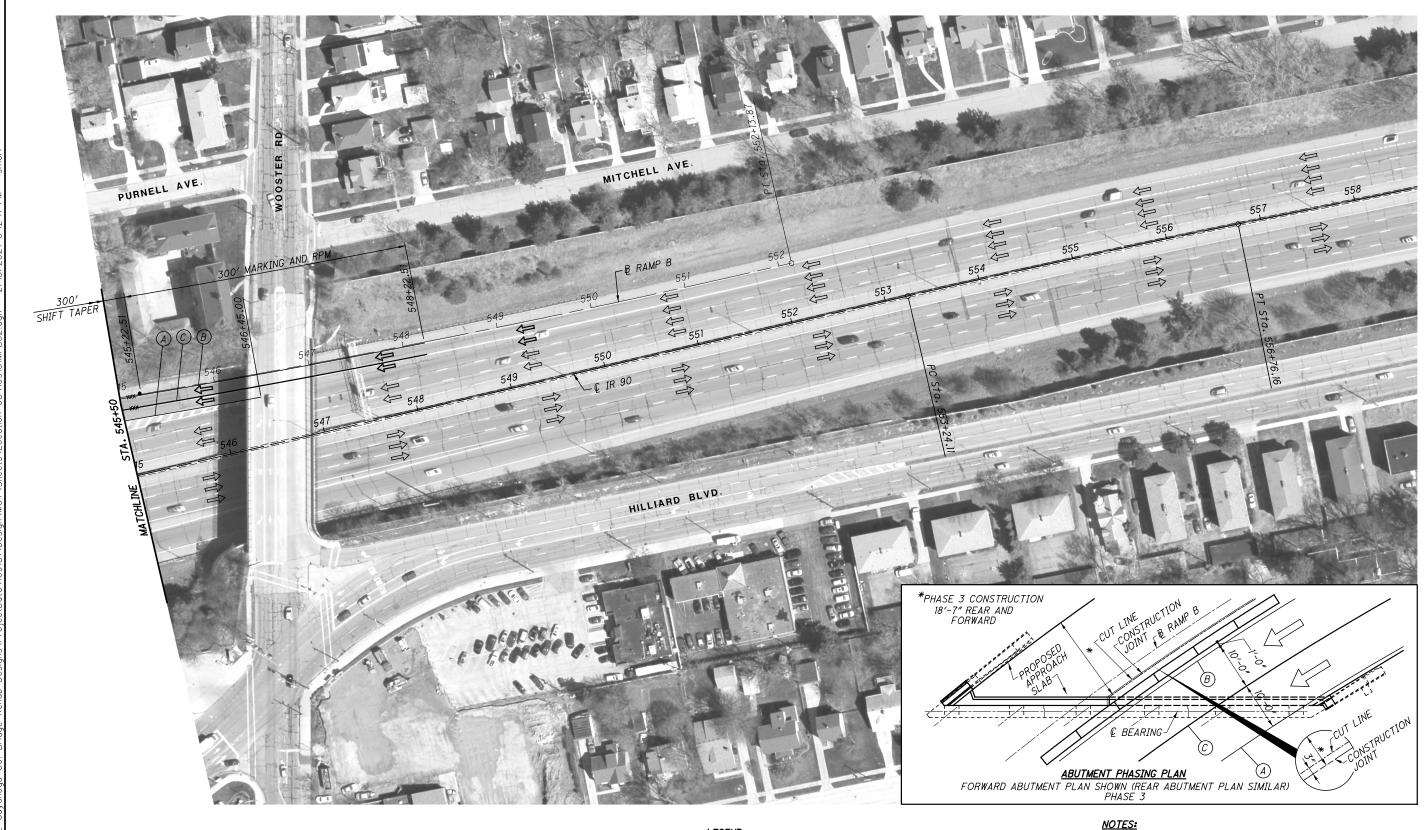
OCATION

1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.

3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.

2. SEE MT-95.40, MT-99.30 AND MT-102.10 FOR ADDITIONAL DETAILS.





#### MOT PAVEMENT MARKING LEGEND

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- (A) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE CHANNELIZING LINE

#### **LEGEND**



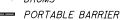
DRUMS

**→** PORTABLE BARRIER

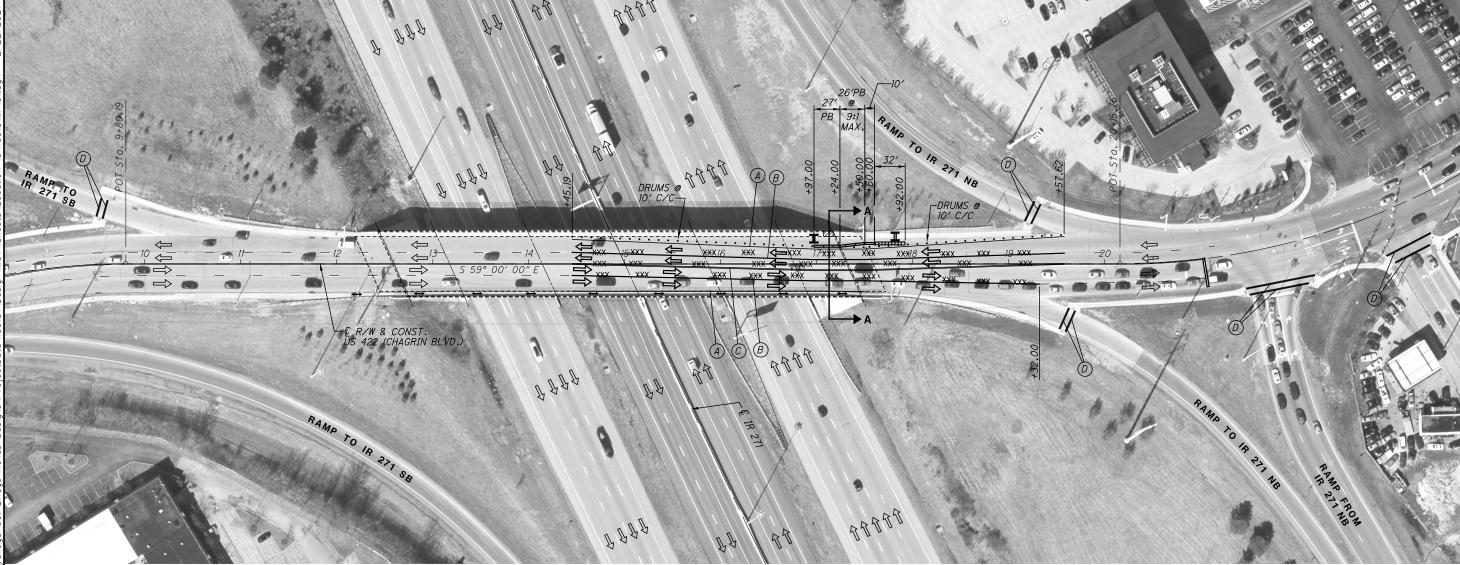
REMOVABLE BLACKOUT TAPE

⇒ DIRECTION OF TRAVEL

### WORK AREA







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- (A) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (B) ITEM 614 WORK ZONE CHANNELIZING LINE
- (C) ITEM 614 WORK ZONE CENTER LINE (DOUBLE, SOLID)
- (D) ITEM 646 CROSSWALK LINE (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION).

  SEE TABLE ON SHEET \_\_59\_ FOR QUANTITIES.

WORK AREA

**→** PORTABLE BARRIER

IMPACT ATTENUATOR

**LEGEND** 

TYPE III BARRICADE

\*\*\* REMOVABLE BLACKOUT TAPE

→ TRAFFIC DIRECTION OF TRAVEL

## ↔ PEDESTRIAN DIRECTION OF TRAVEL

#### NOTES:

- I. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-102.10 AND MT-110.10 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.



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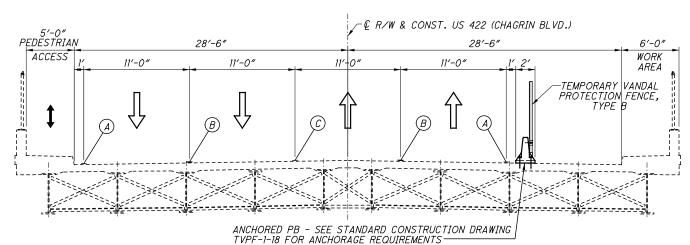
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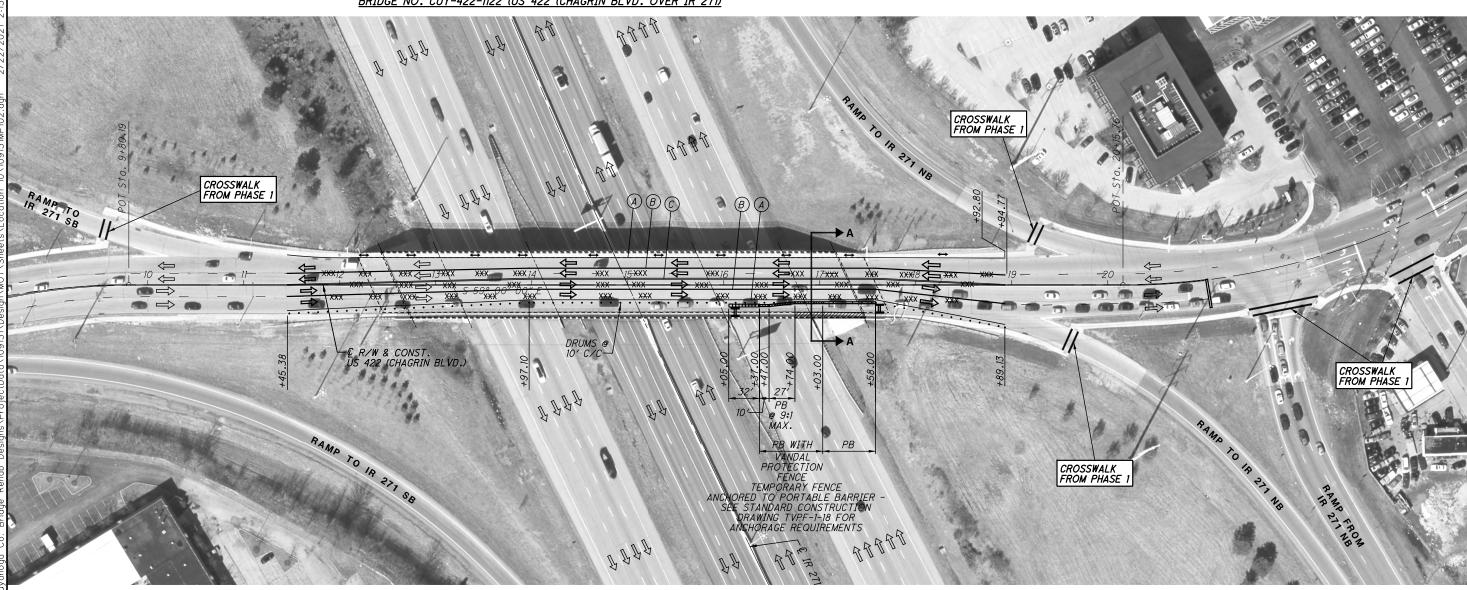
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LOCATION QUANTITY PARK EAST DRIVE NORTH OF US 422 185 FT. PARK EAST DRIVE SOUTH OF US 422 123 FT. 171 FT. US 422 WEST SIDE OF PARK EAST DRIVE US 422 TO IR 271 SB RAMP (SOUTH OF US 422) 46 FT. US 422 TO IR 271 NB RAMP (SOUTH OF US 422) 46 FT. IR 271 NB TO US 422 RAMP 135 FT. ORANGE PLACE SOUTH SIDE OF US 422 87 FT. WALNUT HILLS SOUTH SIDE OF US 422 55 FT US 422 WEST OF MAPLECREST ROAD 83 FT. IR 271 SB TO US 422 RAMP (NORTH OF US 422) 127 FT. US 422 TO IR 271 SB RAMP (NORTH OF US 422) 42 FT. US 422 TO IR 271 NB RAMP (NORTH OF US 422)

(D) ITEM 646 - CROSSWALK LINE 8

MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 2 BRIDGE NO. CUY-422-1122 (US 422 (CHAGRIN BLVD. OVER IR 271)



### <u>MOT PAVEMENT MARKING LEGEND</u>

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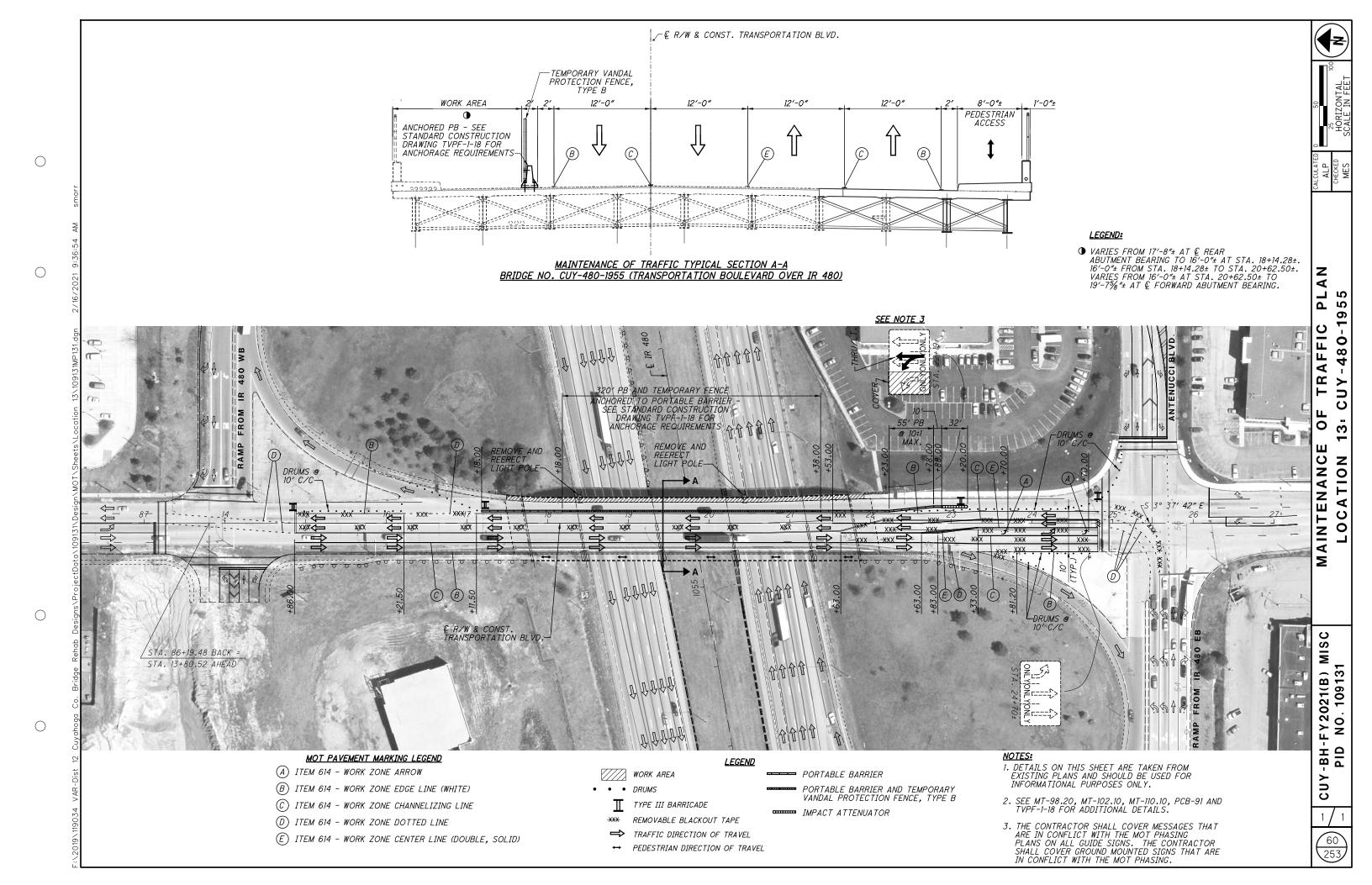
- (A) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (B) ITEM 614 WORK ZONE CHANNELIZING LINE
- (C) ITEM 614 WORK ZONE CENTER LINE (DOUBLE, SOLID)
- (D) ITEM 646 CROSSWALK LINE (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION). SEE TABLE THIS SHEET FOR QUANTITIES.

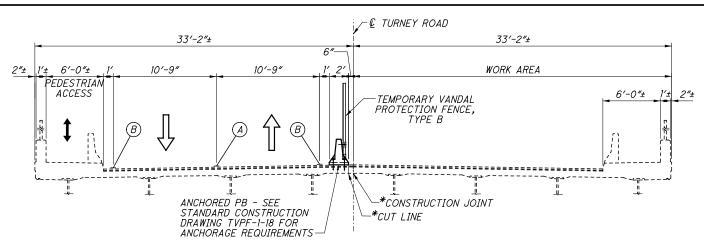
- WORK AREA
- DRUMS
  - TYPE III BARRICADE
- REMOVABLE BLACKOUT TAPE
- ⇒ TRAFFIC DIRECTION OF TRAVEL
- PEDESTRIAN DIRECTION OF TRAVEL

#### **LEGEND**

- PORTABLE BARRIER PORTABLE BARRIER AND TEMPORARY VANDAL PROTECTION FENCE, TYPE B
- IMPACT ATTENUATOR

- I. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-98.20, MT-102.10, MT-110.10, PCB-91 AND TVPF-1-18 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.

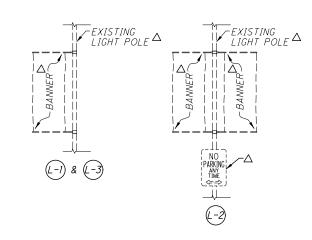


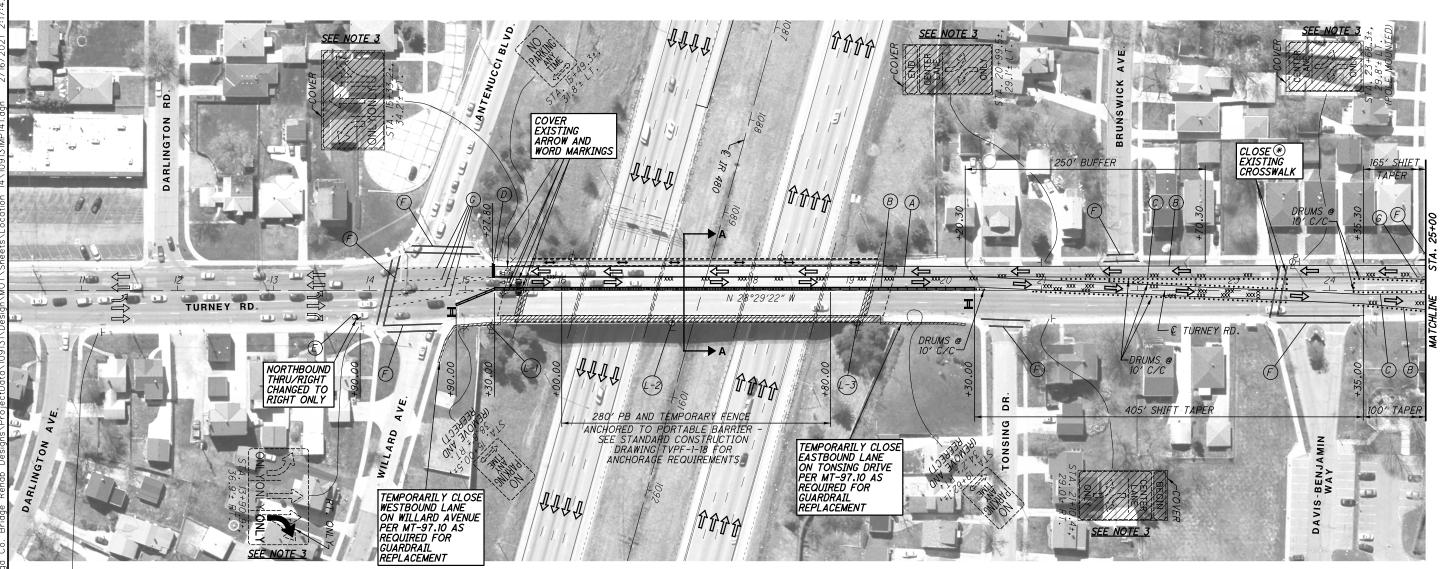


MAINTENANCE OF TRAFFIC TYPICAL SECTION A-A - PHASE 1 BRIDGE NO. CUY-480-2019 (TURNEY ROAD OVER IR 480)

#### LIGHTING AND SIGNING LEGEND

- (L-1) EXISTING LIGHT POLE WITH 1 BANNER (REMOVE AND REERECT) STA. 15+25.9±, 37.5'± RT.
- (-2) EXISTING LIGHT POLE WITH 2 BANNERS AND NO PARKING ANY TIME SIGN (REMOVE AND REERECT) STA. 17+14.7±, 34.0'± RT.
- (-3) EXISTING LIGHT POLE WITH 1 BANNER (REMOVE AND REERECT)
  STA. 19+07.9±, 33.8′± RT.
  - △ REMOVAL AND REERECTION SHALL BE INCLUDED WITH ITEM 625 REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN FOR PAYMENT.





# MOT PAVEMENT MARKING LEGEND

SEE NOTE 3

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- (A) ITEM 614 WORK ZONE CENTER LINE (DOUBLE, SOLID)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (C) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (D) ITEM 614 WORK ZONE STOP LINE
- (E) ITEM 614 WORK ZONE ARROW
- F ITEM 646 CROSSWALK (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION) (8'-0" C/C)
- (G) ITEM 614 WORK ZONE DOTTED LINE

#### WORK AREA

- DRUMS
  - TYPE III BARRICADE

  - REMOVABLE BLACKOUT TAPE
  - TRAFFIC DIRECTION OF TRAVEL
  - PEDESTRIAN DIRECTION OF TRAVEL
  - CROSSWALK TO BE CLOSED DURING CONSTRUCTION. CROSSWALK SHALL BE OPENED AT PROJECT COMPLETION.

**LEGEND** 

PORTABLE BARRIER

IMPACT ATTENUATOR

PORTABLE BARRIER AND TEMPORARY

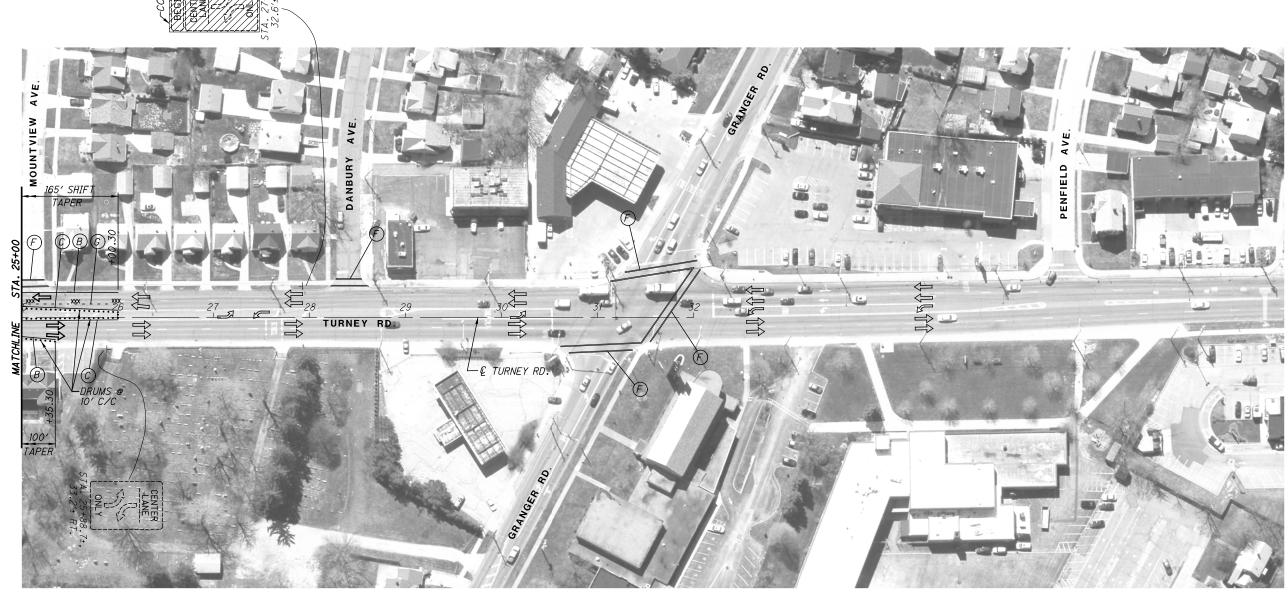
VANDAL PROTECTION FENCE, TYPE B

\* AT WORK AREAS ONLY

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-95.32, MT-95.41, MT-97.10, MT-102.10, MT-110.10, PCB-91 AND TVPF-1-18 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.
- 4. FOR CROSSWALK MARKING DETAIL, SEE SHEET <u>62</u>







- (A) ITEM 614 WORK ZONE CENTER LINE (DOUBLE, SOLID)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- D ITEM 614 WORK ZONE STOP LINE
- (E) ITEM 614 WORK ZONE ARROW

SEE NOTE 3

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- F ITEM 646 CROSSWALK (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION) (8'-0" C/C)
- G ITEM 614 WORK ZONE DOTTED LINE

## WORK AREA

- • DRUMS
  - TYPE III BARRICADE
  - REMOVABLE BLACKOUT TAPE
  - TRAFFIC DIRECTION OF TRAVEL

PEDESTRIAN DIRECTION OF TRAVEL

CROSSWALK TO BE CLOSED DURING CONSTRUCTION. CROSSWALK SHALL BE OPENED AT PROJECT COMPLETION.

<u>LEGEND</u>

- PORTABLE BARRIER

IMPACT ATTENUATOR

PORTABLE BARRIER AND TEMPORARY VANDAL PROTECTION FENCE, TYPE B

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-95.32, MT-95.41, MT-97.10, MT-102.10, MT-110.10, PCB-91 AND TVPF-1-18 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.

EXISTING

ĪIGHT POLE △

SE PH 9 0 S

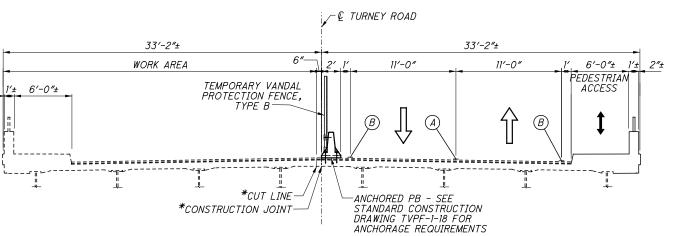
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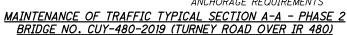
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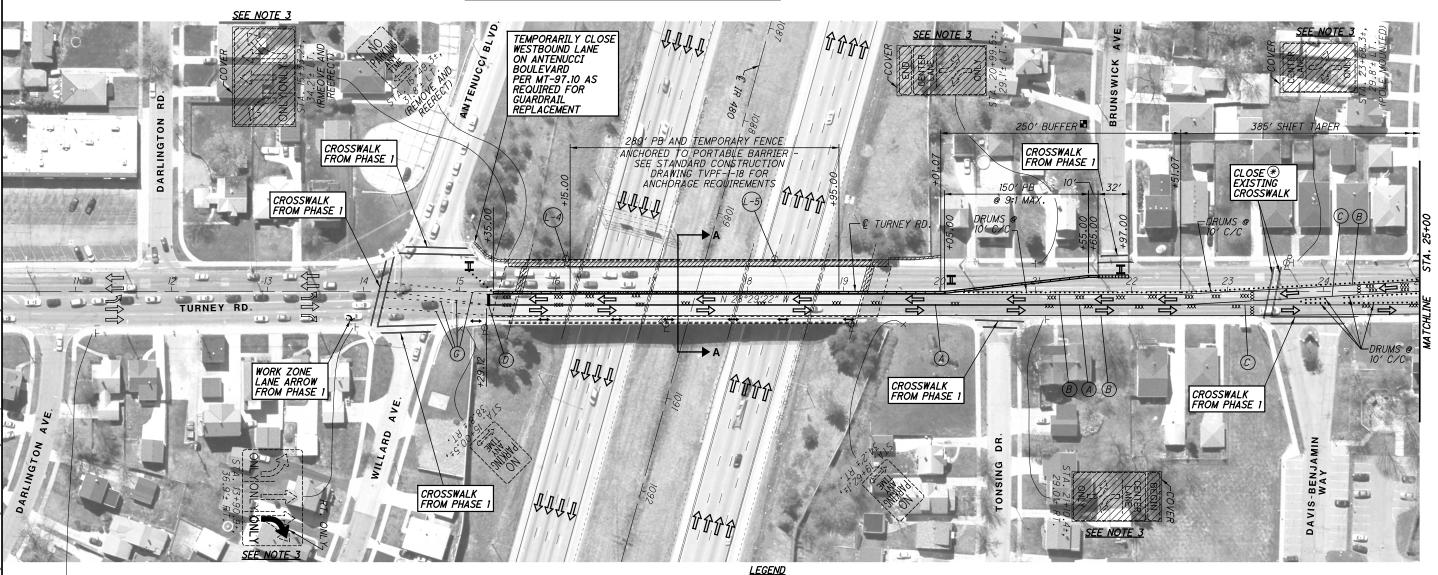
63



## LIGHTING AND SIGNING LEGEND

- (-4) EXISTING LIGHT POLE WITH I BANNER (REMOVE AND REERECT BANNER) STA. 16+10.6±, 34.3′± LT.
- (-5) EXISTING LIGHT POLE WITH I BANNER (REMOVE AND REERECT BANNER) STA. 18+28.2±, 34.1'± LT.
- △ REMOVAL AND REERECTION SHALL BE INCLUDED WITH ITEM 625 REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN FOR PAYMENT.





# SEE NOTE 3

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#### MOT PAVEMENT MARKING LEGEND

- (A) ITEM 614 WORK ZONE CENTER LINE (DOUBLE, SOLID)
- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- (C) ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- (D) ITEM 614 WORK ZONE STOP LINE
- (E) ITEM 614 WORK ZONE ARROW
- F ITEM 646 CROSSWALK (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION) (8'-0" C/C)
- (G) ITEM 614 WORK ZONE DOTTED LINE

- WORK AREA
- DRUMS
- TYPE III BARRICADE
- REMOVABLE BLACKOUT TAPE
- TRAFFIC DIRECTION OF TRAVEL
- PEDESTRIAN DIRECTION OF TRAVEL CROSSWALK TO BE CLOSED DURING CONSTRUCTION. CROSSWALK SHALL BE OPENED AT PROJECT COMPLETION.

PORTABLE BARRIER

**™** IMPACT ATTENUATOR

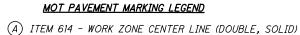
PORTABLE BARRIER AND TEMPORARY

VANDAL PROTECTION FENCE, TYPE B

- AT WORK AREAS ONLY
- BUFFER LENGTH MAY BE REDUCED TO PROVIDE ACCESS TO AND FROM BRUNSWICK AVENUE

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-95.32, MT-95.41, MT-97.10, MT-102.10, MT-110.10, PCB-91 AND TVPF-1-18 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.





- (B) ITEM 614 WORK ZONE EDGE LINE (WHITE)
- © ITEM 614 WORK ZONE EDGE LINE (YELLOW)
- D ITEM 614 WORK ZONE STOP LINE
- (E) ITEM 614 WORK ZONE ARROW
- F ITEM 646 CROSSWALK (FINAL MARKING TO BE PERFORMED PRIOR TO PHASE 1 CONSTRUCTION) (8'-0" C/C)
- G ITEM 614 WORK ZONE DOTTED LINE

## WORK AREA

REMOVABLE BLACKOUT TAPE

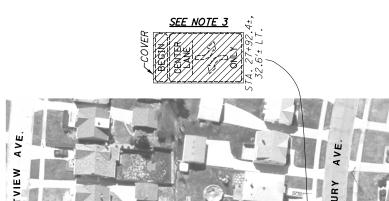
#### <u>LEGEND</u> - PORTABLE BARRIER

PORTABLE BARRIER AND TEMPORARY VANDAL PROTECTION FENCE, TYPE B

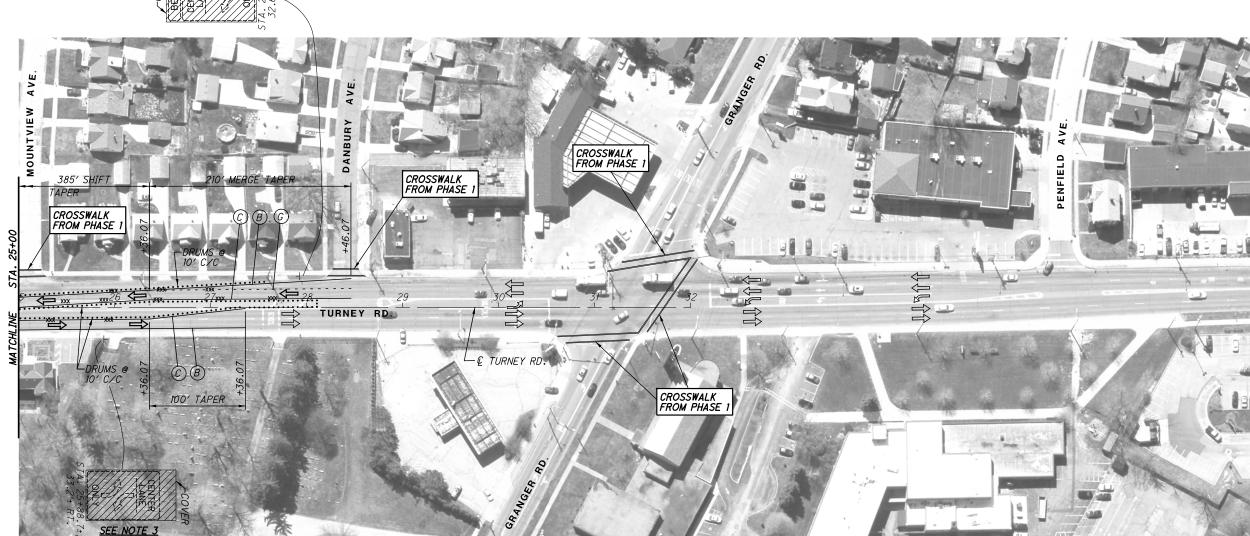
IMPACT ATTENUATOR

#### NOTES:

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. SEE MT-95.32, MT-95.41, MT-97.10, MT-102.10, MT-110.10, PCB-91 AND TVPF-1-18 FOR ADDITIONAL DETAILS.
- 3. THE CONTRACTOR SHALL COVER MESSAGES THAT ARE IN CONFLICT WITH THE MOT PHASING PLANS ON ALL GUIDE SIGNS. THE CONTRACTOR SHALL COVER GROUND MOUNTED SIGNS THAT ARE IN CONFLICT WITH THE MOT PHASING.



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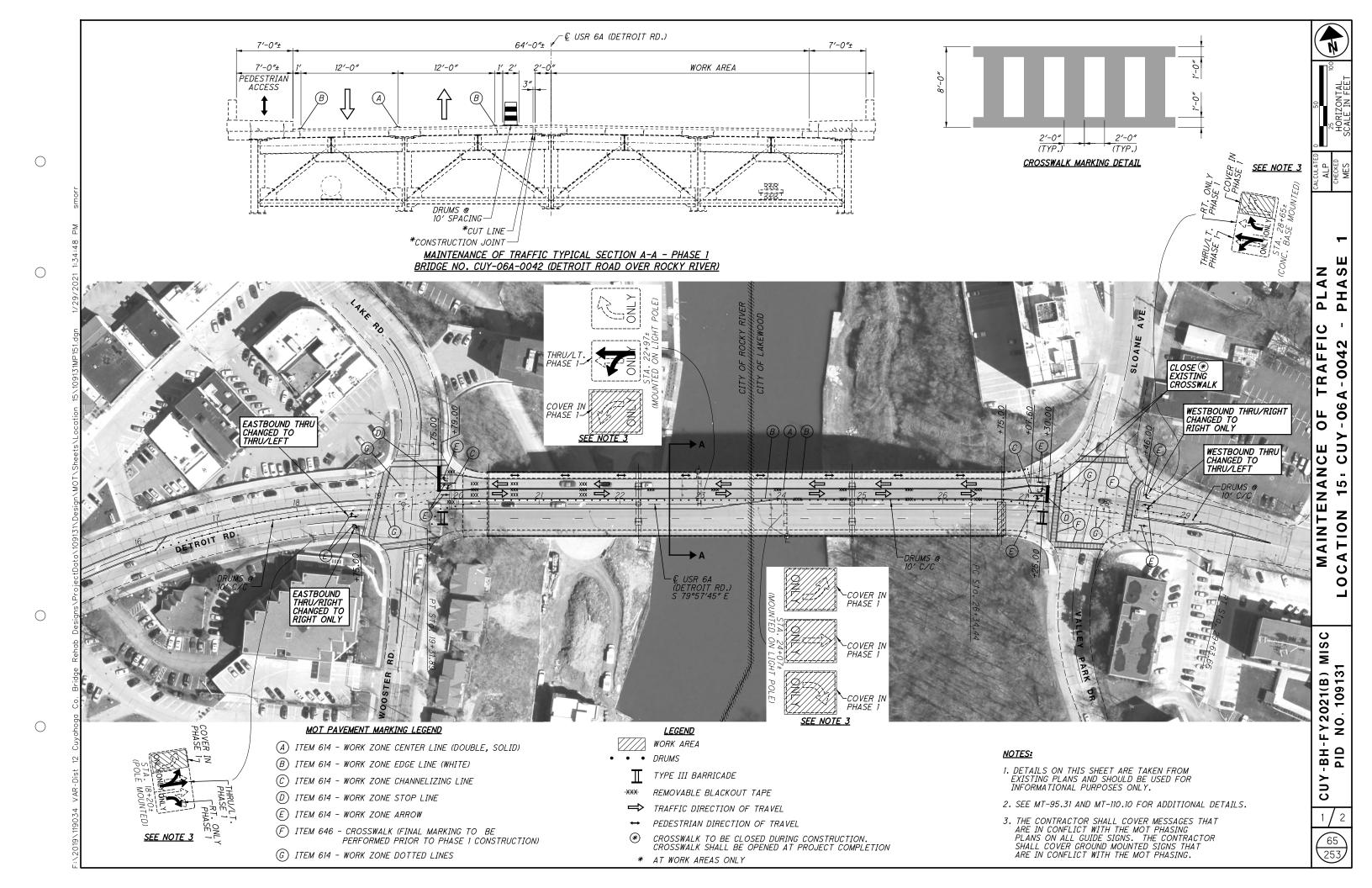


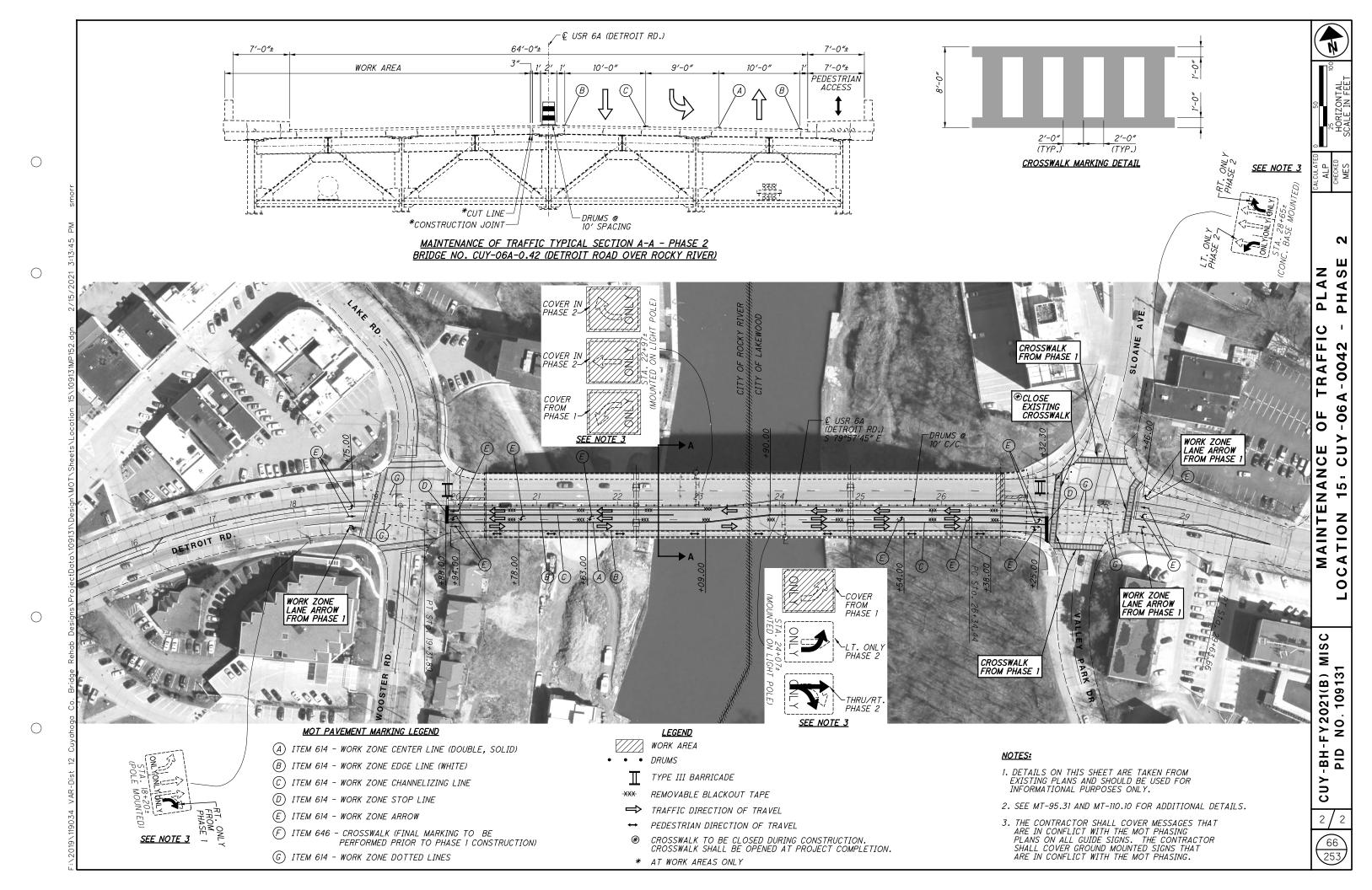
# • • • DRUMS



PEDESTRIAN DIRECTION OF TRAVEL

CROSSWALK TO BE CLOSED DURING CONSTRUCTION. CROSSWALK SHALL BE OPENED AT PROJECT COMPLETION.





							EET							PARTIC	IPATION	ALT	EM	ITEM	GRAND TOTAL	UNIT	DESCRIPTION	S S F
3-11	12-66	74-80	81	89-102	103-106	107-115	116-125	126-150	151-170	171-188 189-20	5 206-229	230-236	237-253	. 01/ NFP/BR	02/ NFP/BR	(X)   · ·		EXI.	IOIAL			ı
																					ROADWAY	
LS														LS		2	01	11001	LS		CLEARING AND GRUBBING, AS PER PLAN	
		605												605				30000	605	SF	WALK REMOVED	
		70												70			02	30001	70	SF	WALK REMOVED, AS PER PLAN	
324		80												80 324				<i>30700</i> <i>30701</i>	324	FT FT	CONCRETE BARRIER REMOVED CONCRETE BARRIER REMOVED, AS PER PLAN	
127														324		2	02	30701	<u> </u>	1 1	CONCRETE DANNIER REMOVED, AS TEN TEAM	
110														110				30701	110	FT	CONCRETE BARRIER REMOVED, AS PER PLAN (A)	
7.5		28		252					28					56				32000	56	FT	CURB REMOVED	
75		385 112.5		250										910 112.5				38000 38200	910 112 <b>.</b> 5	FT FT	GUARDRAIL REMOVED GUARDRAIL REMOVED FOR REUSE	
		110												110			02	75000	110	FT	FENCE REMOVED	
										600				600			02	75201	600	FT		1,174,178
00			5											5 100			02 03	75800 10000	5 100	EACH CY	DISCONNECT EXISTING CIRCUIT EXCAVATION	
00														100				20000	100	CY	EMBANKMENT	
		518								108				626			04	10000	626	SY	SUBGRADE COMPACTION	
		,															0.4	45000		LIOUR.	DDOOF BOLLING	
		1								730				730			04 09	45000 10001	730	HOUR FT	PROOF ROLLING  DITCH CLEANOUT, AS PER PLAN	17.
150		162.5		25						730				337.5			06	15050	337.5	FT	GUARDRAIL, TYPE MGS	
		112.5												112.5			06	16500	112.5	FT	GUARDRAIL REBUILT, TYPE 5	
2		4		2										8		6	06	26150	8	EACH	ANCHOR ASSEMBLY, MGS TYPE E (NCHRP 350)	
				2										2		6	06	26550	2	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
2		4		4	+									10			06	35002	10	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
		2												2			06	35010	2	_	BRIDGE TERMINAL ASSEMBLY REBUILT, TYPE 1	
		2												2			06 06	35102 35110	2	EACH EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2  BRIDGE TERMINAL ASSEMBLY REBUILT, TYPE 2	
		2												2				33110		EACH	DNIDGE TERMINAL ASSEMBLT REDUILT, THE Z	
		110												110				20000	110	FT	FENCE, TYPE CL	
		0.75								600				600			07	70000	600	FT	FENCELINE SEEDING AND MULCHING	
54		675												675 254			08	10000 10161	675 254	SF FT	4" CONCRETE WALK  CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN	
82														82			22	10161	82	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN (A)	
2 4														2				25000	<u>2</u> 4	EACH	CONCRETE BARRIER END SECTION, TYPE D  CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D, AS PER PLAN	
<u>4</u> LS														LS			22 CIAL 6	25051 69098400	LS	EACH	SITE ACCESS	
																					SPACEAU ANUTRAL	
100														31		6	59	00300	100	CY	TOPSOIL	
500														500			59	10000	500	SY	SEEDING AND MULCHING	
15														15			59	14000	15	SY	REPAIR SEEDING AND MULCHING	
.04														0.04				20000	0.04	TON	COMMERCIAL FERTILIZER	
3														3		6	59	35000	3	MGAL	WATER	
000														10000		8	32	30000	25000	EACH	EROSION CONTROL	
																	-				DRAINAGE	
		137												137		6	05	11110	137	FT	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC	
																					PAVEMENT	
10						+								10			251	01010	10	CY	PAVEMENT PARTIAL DEPTH PAVEMENT REPAIR (441)	
		84								18				102				20000	102	CY	AGGREGATE BASE	
									28					28			09	24510	28	FT	CURB, TYPE 4-C	
_		28						-						28		6	09	26001	28	FT	CURB, TYPE 6, AS PER PLAN	
						+											+					+
								-									+					
								1												1		

								NUMBER	P/	ARTICIPAT	TION ALT	ITEM	ITEM	GRAND	TINU	DESCRIPTION	s
8-11	12-66	74-80	81	89-102	103-106	107-115	116-125	126-150 151-170	171-188   189-205   206-229   230-236   237-253 <sub>NF</sub>	01/ 0. FP/BR NFF	D2/ (X) P/BR	–	EXI.	IOIAL			
																LIGHTING	
			16							16		625	00450	16	EACH	CONNECTION, FUSED PULL APART	
			20							20		625	00430	20	EACH	CONNECTION, POSED FOLL AFART  CONNECTION, UNFUSED PERMANENT	
			2808							2808		625	23000	2808	FT	NO. 4 AWG 600 VOLT DISTRIBUTION CABLE	
			1905							1905		625	23200	1905	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	
			347							347		625	23400	347	FT	NO. 10 AWG POLE AND BRACKET CABLE	
			1050					17		1200		625	25.400	1000		CONDUIT 0// 70F 0F1	
			<i>1256</i>					13		1269 7		625 625	25408 27520	1269	FT EACH	CONDUIT, 2", 725.051  REMOVAL OF LUMINAIRE AND REERECTION	
			40							40		625	29002	7 40	FT	TRENCH, 24" DEEP	
			6							6		625	29920	6	EACH	STRUCTURE JUNCTION BOX	
			7							7		625	35011	7	EACH	REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN	
																,	
			40							40		625	36010	40	FT	UNDERGROUND WARNING/MARKING TAPE	
LS										LS		SPECIAL	62540000	LS		MAINTAIN EXISTING LIGHTING	
			6							6		625	75500	6	EACH	LIGHT POLE FOUNDATION REMOVED	
																TRAFFIC CONTROL	
	192									192		621	00300	192	EACH	RPM REFLECTOR	
	192									192		621	54001	192	EACH	RAISED PAVEMENT MARKER REMOVED, AS PER PLAN	
		15								15		626	00102	15	EACH	BARRIER REFLECTOR, TYPE 1, TWO WAY	
		4								4		626	00110	4	EACH	BARRIER REFLECTOR, TYPE 2, ONE WAY	
		13								13		626	00110	13	EACH	BARRIER REFLECTOR, TYPE 2, TWO WAY	
		62								62		670	02100	62	FT	CROUND HOUNTED SUPPORT NO 2 ROST	
		62 44								62 44		630 630	02100 03100	62 44	FT FT	GROUND MOUNTED SUPPORT, NO. 2 POST GROUND MOUNTED SUPPORT, NO. 3 POST	
		13								13		630	04100	13	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
		13								13		630	08600	1	EACH	SIGN POST REFLECTOR	
		7								7		630	85100	7	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
		8								8		630	86002	8	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
										1.00		644	00104	1.00	MILE	EDGE LINE, 6"	
	0.70									0.20		644 646	00204 10000	0.20	MILE MILE	LANE LINE, 6"	
	0.32 4.08									0.32 4.08		646	10010	0.32 4.08	MILE	EDGE LINE, 4"  EDGE LINE, 6"	
	7.00									7.00		040	10010	7.00	WILL	LUGE LINE, O	
	1.33									1.33		646	10100	1.33	MILE	LANE LINE, 4"	
	1.56									1.56		646	10110	1.56	MILE		
	0.99									0.99		646	10200	0.99	MILE	CENTER LINE	
	1711									1711		646	10300	1711	FT	CHANNELIZING LINE, 8"	
	4014									4014		646	10310	4014	FT	CHANNELIZING LINE, 12"	
	251									251		646	10400	251	FT	STOP LINE	
	3573									3573		646	10500	3573	FT	CROSSWALK LINE	
	122									122		646	10600	122	FT	TRANSVERSE/DIAGONAL LINE	
	1									1		646	20100	1	EACH	SCHOOL SYMBOL MARKING, 72"	
	52									52		646	20300	52	EACH	LANE ARROW	
	5									5		646	20400	5	EACH	WORD ON PAVEMENT, 72"	
	891									891		646	20500	891	FT	DOTTED LINE	
	-				-												+
			i	1	1	i .	1	1 1 1		ı	1	i .	İ	1	1		1

								NUN							PARTIC	ALT	ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SH
8-11 1.	12-66 74-8	80 8	81 85	9-102 1	103-106	107-115	116-125	5 126-15	0 151-170	171-188	189-205	206-229	230-236	237-253	, 01/ NFP/BR	02/ NFP/BR		EXI.	TOTAL			N
																					STRUCTURE REPAIR (CUY-71-0467, SFN: 1803875 - LOCATION 3)	
				LS											LS		202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN	9
			24	1264											24264		509	10000	24264	LB	EPOXY COATED REINFORCING STEEL	-
				181											181		511	34449	181	CY	CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET), AS PER PLAN	9
				331											331		512	10050	331	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	<b>—</b> "
				511											511		512	10101	511	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	
				0.40											0.40		F10	10.400	0.40	CV	TREATING OF CONCRETE BRIDGE BEGY WITH CRC	
				940 16											940		512 512	10400 10600	940 16	SY FT	TREATING OF CONCRETE BRIDGE DECK WITH SRS  CONCRETE REPAIR BY EPOXY INJECTION	
				028											1028		513	21500	1028	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES	
				LS											LS		513	95020	LS	20	STRUCTURAL STEEL, MISC.: SIDEWALK COVER PLATE REPAIR	- 9
				88											88		516	11211	88	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	3
				10											10			45705	10	FACU	DEFLIDITELL DEADING DELITOR AC DED DIAM	٠,
				10							-	-			10 LS		516 516	45305 47001	10 LS	EACH	REFURBISH BEARING DEVICE, AS PER PLAN  JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	9
				LS 12							-				12		518	12500	12	EACH	SCUPPER, MISC.: SCUPPER CLEANOUT	9
				596							-				596			51900100	596	SF	COMPOSITE FIBER WRAP SYSTEM	3
				132											132		5/ECIAL 519	11101	132	SF SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	9
				132											152		373	11101	152	3/	TATORINO CONCILEZ STROCTORE, ASTER TEAM	Ť
				1664											4664			53000600		SF	STRUCTURES, TIMBER SUBDECK	9
				34											34		601	20000	34	SY	CRUSHED AGGREGATE SLOPE PROTECTION	
				84								-			84		844	10001	84	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	9
																					STRUCTURE REPAIR (CUY-71-0467, SFN: 1803875 - LOCATION 3) ALTERNATES	
				555									555		555	X	607	39900	555	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC (ALTERNATE 1)	
				555												555 X	SPECIAL	60740000	555	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT WELDED WIRE WITH LETTERING (ALTERNATE 2)	) 1
												-										
																					STRUCTURE REPAIR (CUY-77-0223, SFN: 1805762 - LOCATION 5)	
					<i>153</i>										153		512	10101	153	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	10
					152										152		512	74001	152	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	10
					1604										1604			51900100	1604	SF	COMPOSITE FIBER WRAP SYSTEM	1
					7						1				7		519	11101	7	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	1
					212										212		844	10001	212	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	1
																					STRUCTURE REPAIR (CUY-77-0881, SFN: 1806297 - LOCATION 6)	
						LS									LS		202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	10
						3									3		511	34410	3		CLASS QC2 CONCRETE, SUPERSTRUCTURE	
						248									248		512	10101	248	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	10
				-		241 741					-				241 741		512 513	74001 90000	241 741	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN STRUCTURAL STEEL. MISC.: DAMAGED CROSSFRAME REPLACEMENT	114
						741									741		313	90000	741	LB	STRUCTURAL STEEL, MISC.: DAMAGED CROSSFRAME REPLACEMENT	114
						LS									LS		514	21000	LS		FIELD PAINTING OF DAMAGED STRUCTURAL STEEL	
						1166									1166		SPECIAL	51900100	1166	SF	COMPOSITE FIBER WRAP SYSTEM	1
						67									67		519	11101	67	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	1
						7									7		519	12200	7	SY	PATCHING CONCRETE BRIDGE DECK - TYPE A	1
						34						-			34		844	10001	34	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	1
						LS									LS		849	10000	LS		DAMAGE ASSESSMENT	-
						LS									LS		849	10500	LS		SURFACE PREPARATION	+
						5	1			1		1			5		849	10600		HOUR		
						LS									LS		849	10700	LS		STRAIGHTENING DAMAGED MEMBERS	
														<u></u>								
											-	-										
												1			-							-
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-11	2-66	74-80	81	89-102	103-106	107-115	116-125	126-150	151-170	171-188 189-205	206-229	230-236 237-25.	01/ NFP/BR	02/ NFP/BR	()	EXT.	GRAND TOTAL	UNII	DESCRIPTION	NO.
																			STRUCTURE REPAIR (CUY-77-0909, SFN: 1806327 - LOCATION 7)	
							LS						LS		202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	117
							2779						2779		509	10000	2779	LB	EPOXY COATED REINFORCING STEEL	111
							352						352		510	10000	352	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
							7						7		511	34417	7	CY	CLASS QC SCC CONCRETE, SUPERSTRUCTURE, AS PER PLAN (WITH STEEL FIBERS)	117
							26						26		512	10101	26	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	117
																			,	111
							18						18		512	44450	18	SY	TYPE E WATERPROOFING	
							11						11		512	74001	11	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	117
							LS						LS		513	95020	LS		STRUCTURAL STEEL, MISC.: SHIMMING EXISTING JOINT PLATES	121
							92						92		516	11211	92	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	122
							71						71		519	11101	71	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	117
													1.0			*****			STRUCTURE REPAIR (CUY-90-0683, SFN: 1808508 - LOCATION 8)	107
_								LS					LS		202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	127
								257					257		202	22900	257	SY	APPROACH SLAB REMOVED	
$\perp$								7909			1		7909		509	10000	7909	LB	EPOXY COATED REINFORCING STEEL	
$\perp$								43			1		43		511	34410	43	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	1
+								1283					1283		512	10101	1283	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	127
								669					669		512	74001	669	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	127
								12					12		513	21000	12	EACH	TRIMMING OF BEAM END	
								LS					LS		514	21001	LS		FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN	127
								138					138		516	10010	138	FT	ARMORLESS PREFORMED JOINT SEAL	
								135					135		516	11210	135	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	
								1					1		518	51300	1	EACH	DOWNSPOUT MODIFICATION, 6" DIAMETER 45° RADIUS, GALVANIZED PIPE EXTENSION	
								5609					5609		SPECIA	L 5190010	5609	SF	COMPOSITE FIBER WRAP SYSTEM	127,12
								107					107		519	11101	107	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	127
								122					122		526	25001	122	SY	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	127
								152					152		526	30001	152	SY	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN	127
								702					1 ,,,,		323		702	"	TELLIN ONDER CONTINUE TO THE THE TELLIN CONTINUE TO THE TELLIN CONTI	
								137					137		526	90031	137	FT	TYPE C INSTALLATION, AS PER PLAN	128
								791					791		844	10001	791	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	127
																			STRUCTURE REPAIR (CUY-422-1122, SFN: 1811258 - LOCATION 10)	
									LS				LS		202		LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	153
									90				90		202	75266	90	FT	VANDAL PROTECTION FENCE REMOVED AND RESET	
									6415				6415		509	20000		LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL	
									43				43		511	34444	43	CY	CLASS QC2 CONCRETE, BRIDGE DECK	
									1164				1164		512	10101	1164	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	153
									14				14		512	10600	14	FT	CONCRETE REPAIR BY EPOXY INJECTION	
									1057				1057		512	74000	1057	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	
									452				452		513	10201	452	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN	153
									186				186		513	20000	186	EACH	WELDED STUD SHEAR CONNECTORS	
									12966				12966		513	90000	12966	LB	STRUCTURAL STEEL, MISC.: NEW BEAM ENDS	153
									69				69		513	95000	69	FT	STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED MAIN MEMBER, COMPLETE PENETRATION WELDING	153
+						<del>                                     </del>			90		+		90	+ +	513	95000	90	FT	STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED MAIN MEMBER, FILLET WELDING	153
+									7		+								· · · · · · · · · · · · · · · · · · ·	
+											1		7		513	95030	7	EACH	STRUCTURAL STEEL, MISC.: CROSSFRAME DETACHMENT AND REATTACHMENT	153
+						-			34 32		1		34 32		513 513	95030 95030	34 32	EACH EACH	STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED MEMBERS, DRILLING STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED MEMBERS, COPE HOLES	153 153
+									J2		1		1 32		313	33030	J2	LAUT	STRUCTURAL STELL, MISON RELAIN OF DAMAGED MEMBERS, COPE HOLES	100
									78				78		514	20001	78	SF	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN (THREE COAT)	154
									934				934		514	27700	934	SF	FIELD PAINTING, MISC.: NEW BEAM ENDS	153
$\perp$									74				74		516	01300	74	FT	ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS	
+									8 LS				8 LS		516 516	45305 47001	8 LS	EACH	REFURBISH BEARING DEVICE, AS PER PLAN  JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE. AS PER PLAN	153 153
+																			,	
!									4099				4099			51900100		SF	COMPOSITE FIBER WRAP SYSTEM	154,15
									14				14		519	11101	14	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	153
						i	1	1	110	1 1	1	1 1	110	1 1	844	10001	110	<i>SF</i>	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	154
									110				110		044	10001	110		CONCRETE TATERING WITH GALVANIC ANOBE TROTLETION, AS TEXT FEAR	+
									110				110		044	10001	770		CONCRETE TATORING WITH GALVANIC ANODE THOTECTION, AS TEN TEAM	
									110				110		044	10001			CONCRETE PATCHING WITH GALVANIC ANOBE PROTECTION, AS TER TEAM	

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					SHEET NUM		 			PARTICIPATION	ALT (X)	TEM	ITEM EXT.	GRAND	UNIT	DESCRIPTION	SI
8-11	12-66	74-80	81	89-102 103-10	16 107-115 116-125 126-150	) 151-170 171-188	189-205	206-229 230-236	237-253	NFP/BR NFP/BR	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		- /	. •			
																STRUCTURE REPAIR (CUY-422-1827L, SFN: 1814958 - LOCATION 11)	_
						LS				LS		202	11202	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN	+
						824				824		202	32800	824	SY	CONCRETE SLOPE PROTECTION REMOVED	_
						38				38		512	10100	38	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
						17				17		512	10600	17	FT	CONCRETE REPAIR BY EPOXY INJECTION	
						5558				5558		513	21500	5558	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES	
						77				77		513	90000	77	LB	STRUCTURAL STEEL, MISC.: GIRDER END REPAIR	
						620				620		514	27700	620	SF	FIELD PAINTING, MISC.: GIRDER END REPAIR AND END CROSSFRAMES	
						12				12		516	45305	12	EACH	REFURBISH BEARING DEVICE, AS PER PLAN	
						LS				LS		516	47001	LS	C.F.	JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	
						28				28		PECIAL	51900100	28	SF	COMPOSITE FIBER WRAP SYSTEM	
					+ + +	26				26		519	11101	26	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	
						LS				LS			53000200			STRUCTURES MISC.: CLEANING OF DRAINAGE SYSTEMS	+
						824				824		601	21001	824	SY	CONCRETE SLOPE PROTECTION, AS PER PLAN	_
						28				28		844	10001	28	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	
																,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
																	-
																STRUCTURE REPAIR (CUY-422-1827R, SFN: 1814966 - LOCATION 12)	
						LS				LS		202	11202	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN	
						108				108		202	22900	108	SY	APPROACH SLAB REMOVED	
						929				929		202	32800	929	SY	CONCRETE SLOPE PROTECTION REMOVED	
						54				54		503	21100	54	CY	UNCLASSIFIED EXCAVATION	
						80				80		512	10100	80	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
						<u> </u>											
						31				31		512	10600	31	FT	CONCRETE REPAIR BY EPOXY INJECTION	_
						6503				6503		513	21500	6503	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES	_
						325				325		513 514	90000 27700	325 728	LB SF	STRUCTURAL STEEL, MISC.: GIRDER END REPAIR FIELD PAINTING, MISC.: GIRDER END REPAIR AND END CROSSFRAMES	$\rightarrow$
						728				728		51 <del>4</del> 516	45305	14	EACH	REFURBISH BEARING DEVICE, AS PER PLAN	$\rightarrow$
					+ + +	14				14		310	40300	14	EALH	REFUNDISH BEARING DEVICE, AS FER FLAN	+
					+ + + + + + + + + + + + + + + + + + + +	LS				LS		516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	+
						50				50		519	11101	50	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	$\overline{}$
						108				108		526	25000	108	SY	REINFORCED CONCRETE APPROACH SLABS (T=15")	-
						LS				LS	5		53000200			STRUCTURES MISC.: CLEANING OF DRAINAGE SYSTEMS	-
						929				929		601	21001	929	SY	CONCRETE SLOPE PROTECTION, AS PER PLAN	
																STRUCTURE REPAIR (CUY-480-1955, SFN: 1812556 - LOCATION 13)	
							LS			LS		202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	
							441			441		202	75260	441	FT	VANDAL PROTECTION FENCE REMOVED	$\rightarrow$
							18361			18361		509	10000	18361	LB	EPOXY COATED REINFORCING STEEL	
							564			564		510	10000	564	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT  CLASS QC2 CONCRETE. SUPERSTRUCTURE	-
							183			183		511	34410	183	CY	CLASS QUZ CONCRETE, SUPERSTRUCTURE	-
							255			255		512	10050	255	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	-
							999			999		512	10101	999	SY	SEALING OF CONCRETE SURFACES (RON-EFOXT)  SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	+
							609			609		512	74001	609	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	+
							LS			LS		514	00100	LS		SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	+
							LS			LS		514	00200	LS		FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	+
																· · · · · · · · · · · · · · · · · · ·	$\neg$
							LS			LS		514	00300	LS		FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	$\neg$
							LS			LS		514	00401	LS		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN	
							1			1		<i>516</i>	46701	1	EACH	RESET BEARING, AS PER PLAN	
							LS			LS		<i>516</i>	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	
							6061			6061		SPECIAL	51900100	6061	SF	COMPOSITE FIBER WRAP SYSTEM	
																	$\perp$
							429			429		519	11101	429	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	$\perp$
							30			30		519	12200	30	SY	PATCHING CONCRETE BRIDGE DECK - TYPE A	$\rightarrow$
							34			34		526	98200	34	FT	APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT	-
							4901			4901			53000600		SF	STRUCTURES: TIMBER SUBDECK	_
							441			441		607	39901	441	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	-
							665			665		844	10001	665	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	-
				<del>                                     </del>			000		1	003	<del>                                     </del>	044	10001	000	) SF	CONSINETE FATORING WITH GALVANIS ANODE PROTECTION, AS PER PLAN	-
											<del>                                     </del>						+
						1 1				<del>                                     </del>	+						-+
								1	1				1				

			1			IEET NUME						PARTICIPATIO	ALT (X)	ITEM	GRAND	UNIT	DESCRIPTION	SEE SHEE NO
-11	12-66	74-80	81	89-102 103-106	107-115	116-125 126-150	151-170 171-188	189-205	206-229 2	30-236	237-253	01/ 02/ NFP/BR NFP/BI	R	EXI.	TOTAL			NO
																	STRUCTURE REPAIR (CUY-480-2019, SFN: 1812564 - LOCATION 14)	
									LS			LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	207
									779			779	202	75260	779	FT	VANDAL PROTECTION FENCE REMOVED	
									19996			19996	509	10000	19996	LB	EPOXY COATED REINFORCING STEEL	
									150			150	509	20001	150	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	207
									980			980	510	10000	980	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
									243			243	511	34410	243	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	
									534			534	512	10050	534	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	
									1270			1270	512	10101	1270	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	207
									181			181	512	74001	181	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	207
									16			16	513	21000	16	EACH	TRIMMING OF BEAM END	
									73			73	513	21500	73	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES	
_									LS			LS	513	00100	LS	LB	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	+
$\rightarrow$									LS			LS	514	00200	LS		FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	+
									LS			LS	514	00300	LS		FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT	
									LS			LS	514	00401	LS		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN	207
									133			133	516	11210	133	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	1
_									16			16	516	46701	16	EACH	RESET BEARING, AS PER PLAN	207
_									LS			LS	516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	207
									774			774	517	75122	774	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING AND VANDAL PROTECTION FENCE)	
									7			7	518	21200	7	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
									993			993	SPECIAL	51900100	993	SF	COMPOSITE FIBER WRAP SYSTEM	208
									55			55	519	11101	55	SF SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	207
									80			80	526	98200	80	FT	APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT	225
									8396			8396		53000600		SF	STRUCTURES: TIMBER SUBDECK	207
									20			20	601	27000	20	CY	DUMPED ROCK FILL, TYPE C	201
									87			87	844	10001	87	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	207
																	STRUCTURE REPAIR (CUY-06A-0042, SFN: 1801074 - LOCATION 15)	
										LS		LS	202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN	231
										LS		LS	202	98000	LS		REMOVAL MISC.: REMOVAL OF EXISTING STEEL	233
										119		119	512	10101	119	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	231
										108		108	512	74001	108	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	231
										2120		2120	513	10201	2120	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN	231
-										LS		LS	SPECIAL	51480110	LS		FIELD PAINTING OF STRUCTURAL STEEL CROSSFRAMES	231
$\neg$										78		78	516	12301	78	FT	STRIP SEAL EXPANSION JOINT ANCHORED WITH ELASTOMERIC CONCRETE, AS PER PLAN	
										20		20	519	10000	20	SY	PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE	
										105		105	519	11100	105	SF	PATCHING CONCRETE STRUCTURE	
										78		78	526	98200	78	FT	APPROACH SLABS, MISC.: PLACE WATERPROOFING AND COMPRESSION SEAL	231
_																	STRUCTURE REPAIR (CUY-490-0100, SFN: 1811991 - LOCATION 16)	
											LS	LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	237
$\neg$											797	797	509	10000	797	LB	EPOXY COATED REINFORCING STEEL	1
											200	200	509	20001	200	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	237
											8	8	511	34448	8	CY	CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)	
											914	914	512	10600	914	FT	CONCRETE REPAIR BY EPOXY INJECTION	
$\dashv$											28	28	516	14600	28	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL	237
-											28 1590	1590	519	10000	28 1590	SY	PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE	23/
$\dashv$											8160	8160	607	22001	8160	FT	FENCE REBUILT, TYPE CL, AS PER PLAN	237
											994	994	844	10001	994	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	237
+																		
$\dashv$																		
$\neg$			1		1													

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SHEET NUMBER														PARTICIPATION ALT ITEM GRAND UNIT DESCRIPTION				DECCRIPTION	SE		
-11	12-66	6 74-6	80 81	89-10	2 103-106	5 107-115	5 116-12	125   126-150	151-170	171-188	189-205	206-229	230-236 237-253	01/ NED /RD	02/ NEP /RP	EXT.	TOTAL		DESCRIPTION	SE SHE NO	
														NITZUN	INFT 7 DIX						
																				MAINTENANCE OF TRAFFIC	<b>—</b>
	1506													1506		607	39994		FT	TEMPORARY VANDAL FENCE, TYPE B	<b>—</b>
	708	8								64				772		614	11110		HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
	4													4		SPECIAL			EACH	WORK ZONE TRAFFIC SIGNAL	18
	4423	3												4423		614	11630		FT	INCREASED BARRIER DELINEATION	
	20	2								2				22		614	12380	22	EACH	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	<u> </u>
	189	14												1894		614	12800		EACH	WORK ZONE RAISED PAVEMENT MARKER	
	229	9												229		614	13310		EACH	BARRIER REFLECTOR, TYPE 1, ONE WAY	
	124	4												124		614	13310		EACH	BARRIER REFLECTOR, TYPE 1, TWO WAY	
	105	5												105		614	13312	105	EACH	BARRIER REFLECTOR, TYPE 2, ONE WAY	
	294	1												294		614	13350	294	EACH	OBJECT MARKER, ONE WAY	
	121	1												121		614	13360	121	EACH	OBJECT MARKER, TWO WAY	
	74	4												74		614	18601	74	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	19
	0.8	14												0.84		614	21200				
										1.00				1.00		614	22110				
	11.09	9												11.09		614	22210		MILE		
				1												7		1		,,, . , . , ,	
				1		1				1500				1500		614	23210	1500	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 642 PAINT	
-	16934	4		+						1,000				16934		614	23400		FT	WORK ZONE CHANNELIZING LINE, CLASS I, 8", 740.06, TYPE I	
	2089													2089		614	23410		FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 740.06, TYPE I	_
	2000	_								2040				2040		614	24200		FT	WORK ZONE DOTTED LINE, CLASS I, 4", 642 PAINT	$\vdash$
										25				25		614	24202		FT	WORK ZONE DOTTED LINE, CLASS I, 6", 642 PAINT	$\vdash$
-										20				20		014	24202	20	Г	WORK ZONE DOTTED LINE, CLASS 1, 0, 042 FAINT	+
	5185	-												5185		614	24402	5185	FT	WORK ZONE DOTTED LINE, CLASS I, 6", 740.06, TYPE I	+
	166																				-
														166		614	26400		FT	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE I	—
	30													30		614	30400			WORK ZONE ARROW, CLASS I, 740.06, TYPE I	<del></del>
	1379.	02												13792		614	98100		FT	WORK ZONE PAVEMENT MARKING, MISC.: REMOVABLE, NON-REFLECTIVE PREFORMED BLACKOUT TAPE	19
				_										LS		615	10000	LS		ROADS FOR MAINTAINING TRAFFIC	<b>↓</b>
																					<b>—</b>
	170	)												170		615	20000		SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	<b>↓</b>
	1	1												1		616	10000		MGAL	WATER	
	5697									2290				7987		622	41100		FT	PORTABLE BARRIER, UNANCHORED	
	1506	9								45				1551		622	41110	1551	FT	PORTABLE BARRIER, ANCHORED	
	1280	)												1280		SPECIAL	69013000	1280	FT	RUMBLE STRIPS	18
																				INCIDENTALS	
														LS		108	10000	LS		CPM PROGRESS SCHEDULE	
	LS													LS		614	11000	LS		MAINTAINING TRAFFIC	
	LS													LS		614	12420	LS		DETOUR SIGNING	
2														12		619	16011	12	MNTH	FIELD OFFICE, TYPE B, AS PER PLAN	10
s														LS		623	10001	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	9
														LS		624	10000	LS		MOBILIZATION	
				$\perp$																	
				1		1															
-				1																	
				1																	
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FY2021(B	NO. 1091
CUY-BH-	PID

LINE	<u> </u>	DESCRIPTI	O N					CALC	ULATION				QUAN	TITY
	ROADWA	Y CALCULATIONS	S - LOCATION 8: 0	CUY-90-0683 (RA	MP B OV	(ER IR 90)								
		4 - SUBGRADE C				•••								
		SLEEPER SLAB												
1	STA	533+24.56	TO STA.	533+30.56	=	( 6.00	FT X	57	FT ) /	9		=	38.00	
2	STA	537+46 <b>.</b> 29	TO STA.	537+52.29	=	( 6.00	FT X	85	FT ) /	9		=	56.67	SY
			SLAB UNDER APPRO											
3	STA	<i>533+30.56</i>	TO STA.	533+31 <b>.</b> 56		( 1.00	FT X		FT ) /	9		=	6.33	
4	STA	<i>537+45.29</i>	TO STA.	<i>537+46.29</i>	=	( 1.00	FT X	85	FT ) /	9		=	9.44	SY
		APPROACH SLAB												
5	STA	533+31.56	TO STA.	533+49.56	=	( 18.00	FT X		FT ) /	9		=	114.00	
6	STA	537+22.29	TO STA.	537+45.29	=	( 23.00	FT X	85	FT ) /	9		=	217.22	
7	SUM OF	LINES	1	TO	6							= TOTAL CARRIED TO GENERAL SUMMARY =	441.66 <b>442</b>	SY SY
	ITEM 20	4 - PROOF ROL	ING											
8	LINE	4 THOOF HOLD	7		=	441.66	SY X	1	/	2000		=		HOUR
												TOTAL CARRIED TO GENERAL SUMMARY =	1	HOUR
		4 - AGGREGATE EGATE BASE	BASE											
		ELEPER SLAB												
9	STA	533+24.56	TO STA.	533+30.56	=	( 6.00	FT X	.5.5	FT ) X (	6	/ 12 ) / 27	=	6.11	CY
10	STA	537+46.29	TO STA.	537+52.29	=	( 6.00	FT X		FT ) X (	6	/ 12 ) / 27		9.22	
"			SLAB UNDER APPRO								, 21		3.22	
11	STA	533+30.56	TO STA.	533+31.56	=	( 1.00	FT X	55	FT ) X (	15	/ 12 ) / 27	=	2.55	CY
12	STA	537+45.29	TO STA.	537+46.29	=	( 1.00	FT X	83	FT ) X (		/ 12 ) / 27	=	3.84	
		APPROACH SLAB												
13	STA	533+31.56	TO STA.	533+49.56	=	( 18.00	FT X	55	FT ) X (	6	/ 12 ) / 27	=	18.33	
14	STA	537+22.29	TO STA.	537+45.29	=	( 23.00	FT X	83	FT ) X (	6		=	35.35	CY
15	SUM OF	LINES	9	ΤΟ	14							=	75.40	
												TOTAL CARRIED TO GENERAL SUMMARY =	76	CY
	ITEM 60	S - 6# SUALLOW	DIDE UNDERDRATA	IC WITH CEATENT	TI E EAR	DIC								
16	STA.	533+13.06	TO STA.	<u> 533+45.32</u>	ILE FABI REAR							=	53.84	ET
17	STA.	537+26.76	TO STA.	538+08.24	FORW								82.42	
18	SUM OF		16 37A.	TO	17	AND							136.26	
10	30111 01	LINES	10	10								TOTAL CARRIED TO GENERAL SUMMARY =	137	
	_	2 - CURB REMO												
19	STA.	537+26.76	TO STA.	537+36.76	LT							=	10.00	
20	STA.	538+08.24	TO STA.	538+18.24	RT							=	10.00	
21	SUM OF	LINES	19	TO	20							TOTAL ALBEITED TO ASSIST: COMMISSION		FT
-												TOTAL CARRIED TO GENERAL SUMMARY =	20	FT
	ITEM 60	9 - CURB. TYPF	6, AS PER PLAN											
22	STA.	537+26.76	TO STA.	537+36.76	LT							=	10.00	FT
23	STA.	538+08.24	TO STA.	538+18.24	RT								10.00	
24	SUM OF		22	TO	23							=		FT
												TOTAL CARRIED TO GENERAL SUMMARY =		FT
	ITEM 20	2 - GUARDRAIL	REMOVED FOR REU	ISE										
25	STA.	532+88.00	TO STA.	533+13.00	LT							=	25.00	FT
26	STA.	533+30.00	TO STA.	533+55.00	RT							=	25.00	
27	STA.	537+25.00	TO STA.	<i>537+56.25</i>	LT							=	31.25	
28	STA.	537+81.00	TO STA.	<i>538+12.25</i>	RT			-	·	-		=	31.25	
29	SUM OF	LINES	25	ΤΟ	28							=	112.5	
												TOTAL CARRIED TO GENERAL SUMMARY =	112.5	FT
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									QUANTITY
	ROADWAY CALCULATION			MP B OVER IR	90)				
	ITEM 606 - GUARDRAIL								
30	STA. 532+88.00	TO STA.	533+13.00	LT_				=	25.00 FT
31	STA. 533+30.00	TO STA.	533+55.00	RT				=	25.00 FT
<i>32</i> <i>33</i>	STA. 537+25.00 STA. 537+81.00	TO STA. TO STA.	537+56.25 538+12.25	LT RT				= =	31.25 FT 31.25 FT
34	SUM OF LINES	30	536+12.25 TO	33				= =	112.5 FT
34	SOM OF ETIVES		70					TOTAL CARRIED TO GENERAL SUMMARY =	112.5 FT
$= \pm$	ITEM 606 - BRIDGE TE	RMINAL ASSEMBL	Y REBUILT, TYPE 1						
35	STA. 537+25.00	TO STA.	<i>537+56.25</i>	LT				=	1 EACH
36	STA. 537+81.00	TO STA.	<i>538+12.25</i>	RT				=	1 EACH
37	SUM LINES	35	ΤΟ	36				=   TOTAL CARRIED TO GENERAL SUMMARY =	2 EACH <b>2 EACH</b>
	ITEM 606 - BRIDGE TEI	RMINAL ASSEMBL	Y RFBUILT. TYPF 2						
38	STA. 532+88.00	TO STA.	533+13.00	LT				=	1 EACH
39	STA. 533+30.00	TO STA.	533+55.00	RT				=	1 EACH
40	SUM LINES	38	TO	39				=	2 EACH
								TOTAL CARRIED TO GENERAL SUMMARY =	2 EACH
	ITEM 626 - BARRIER RE STA. 532+88.00	FLECTOR, TYPE TO STA.	<b>2, ONE WAY</b> 533+13.00	LT :	= 25.00	FT / 50	FT SPACING	_	1 EACH
41	STA. 532+88.00 STA. 533+30.00	TO STA.	533+55.00		= 25.00 = 25.00	FT / 50 FT / 50	FT SPACING  FT SPACING	= = = = = = = = = = = = = = = = = = = =	1 EACH
43	STA. 537+25.00	TO STA.	537+56.25		= 25.00	FT / 50	FT SPACING  FT SPACING	= = = = = = = = = = = = = = = = = = = =	1 EACH
44	STA. 537+81.00	TO STA.	538+12.25		= 31.25	FT / 50	FT SPACING	=	1 EACH
45	SUM OF LINES	41	TO	44	37.20	,		=	4 EACH
								TOTAL CARRIED TO GENERAL SUMMARY =	4 EACH
	ITEM 630 - REMOVAL (		NTED SIGN AND REEF	RECTION					
46	STA. 533+09.00	LT						=	1 EACH
47	STA. 533+20.00	RT						=	1 EACH
48 49	STA. 537+93.00 SUM OF LINES	RT 46	TO	48				= =	1 EACH 3 EACH
43	SOM OF LINES	70	70	70				TOTAL CARRIED TO GENERAL SUMMARY =	3 EACH
	ITEM 630 - REMOVAL (	OF GROUND MOUN	NTED POST SUPPOR	T AND DISPOS	AL				
50	STA. 533+09.00	LT	·			·		=	1 EACH
51	STA. 533+20.00	RT						=	2 EACH
52	STA. 537+93.00	RT						=	1 EACH
53	SUM OF LINES	50	ΤΟ	52				=   TOTAL CARRIED TO GENERAL SUMMARY =	4 EACH <b>4 EACH</b>
	ITEM 630 - GROUND MO	DUNTED SUPPORT	T. NO. 3 POST						
54	STA. 533+09.00	LT						=	12.5 FT
55	STA. 533+20.00	RT						=	31 FT
56	SUM OF LINES	54	ΤΟ	55				=	43.5 FT
								TOTAL CARRIED TO GENERAL SUMMARY =	44 FT
57	ITEM 630 - GROUND MC STA. 537+93.00	DUNTED SUPPORT	T, NO. 4 POST					=	13 FT
58	LINE	57						=	13 FT
	2010							TOTAL CARRIED TO GENERAL SUMMARY =	13 FT
	ITEM 630 - SIGN POST								
59	STA. 537+93.00	RT						=	1 EACH
$\rightarrow$								TOTAL CARRIED TO GENERAL SUMMARY =	1 EACH
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QUANT		TION	CALCULA					ON	SCRIPTIO	DE	INE	''
					TR 90)	MP B OVER	CUY-90-0683 (RA	5 - LOCATION 8: 0	AI CIII ATIONS	ROADWAY C		ŀ
					1/1 00/	IIII D OVER	001 00 0000 1114	200ATION 0° C		EROSION CO		F
								CHING	ING AND MUL			
00.00	=							583	3: CUY-90-06	LOCATION	1	L
= 84	TOTAL CARRIED TO GENERAL NOTES =								201	050 T00		F
= 9.25	=		1000 SY	CY /	111	SY X	83.33			659 - TOPS	2	ŀ
	TOTAL CARRIED TO GENERAL NOTES =		1000 31				00.00			T NOW LINE		╌
	TOTAL STRINGS TO SELECTE TO TES							TILIZER	MERCIAL FERT	659 - COM		F
= 0.01	=		7410 SY	TON /	1	SY X	83.33			FROM LINE	3	L
= 0.01	TOTAL CARRIED TO GENERAL NOTES =											L
- 0.45		ADDI ICATIONS	CV V 2	11011			07 77			659 - WATE	4	ŀ
0.1.0	TOTAL CARRIED TO GENERAL NOTES =	APPLICATIONS	SY X 2	MGAL /	0.0027	SY X	83.33		1	FROM LINE	4	╌
	TOTAL CARRIED TO GENERAL NOTES -							AND MULCHING	IR SEEDING A	659 - REPA		┢
= 4.17	=				5%	SY X	83.33			FROM LINE	5	
= 5	TOTAL CARRIED TO GENERAL NOTES =											
												$\downarrow$
			R IR 480)	EVARD OVE	TION BOUL	RANSPORTA	CUY-480-1955 (T	5 - LOCATION 13:	ALCULATIONS WALK REMOV			F
= 110.00	=	FT	FT X 5.5	20.00	=	LT	17+68.58	TO STA	17+48.58		1	f
= 110.00	=		FT X 5.5	20.00	=	LT	21+93.21	TO STA	21+73.21	STA	2	
	=					2	TO	1	ES	SUM OF LIN	3	ŀ
= 220	TOTAL CARRIED TO GENERAL SUMMARY =											ŀ
								REMOVED	GUARDRAIL R	ITFM 202 -		ŀ
= 37.50	=					LT	17+50.00	TO STA	17+12.50	STA	4	F
	=					LT	22+88.00	TO STA	21+91.00	STA	5	ı
10 1100	= TOTAL CARRIED TO GENERAL SUMMARY =					5	ΤΟ	4	ES	SUM OF LIN	6	
									GUARDRAIL,		_	-
	= = = = = = = = = = = = = = = = = = = =					LT LT	17+25.00 22+29.10	TO STA TO STA	17+12.50 22+16.60	STA STA	8	ŀ
						8	TO	7 7		SUM OF LIN	9	┢
	TOTAL CARRIED TO GENERAL SUMMARY =											-
							E E (NCHRP 350)	SEMBLY, MGS TYPE	ANCHOR ASS	ITEM 606 -		t
'	=					LT	22+79.10	TO STA	22+29.10	STA	10	L
· ·	TOTAL CAPPIED TO CENERAL CUMAARY							10		LINE	11	ŀ
= 1	TOTAL CARRIED TO GENERAL SUMMARY =											-
							IBLY, TYPE 1	TERMINAL ASSEME	MGS BRIDGE	ITEM 606 -		+
·	=					LT	17+50.00	TO STA	17+24.50	STA	12	
·	=					LT	22+16.60	TO STA	21+91.00	STA	13	F
_	TOTAL CARRIED TO CENERAL SUBMARY -					13	TO	12	LS	SUM OF LIN	14	ŀ
= 2	TOTAL CARRIED TO GENERAL SUMMARY =											ŀ
												F
												-
												- - - -

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	CUY-BH-FY2021(B)	PID NO. 10913
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LINE	DESCRIPT						CALC	ULAI	ION			QUANTIT
	ROADWAY CALCULATION			TRANSPORT	TATION BOUL	EVARD OVER	IR 480)					
15	STA 17+50.00	TO STA	21+91.00	LT	=	441.00	FT /	100	+	1	=	5 EACH
16	LINE	15	27 07700							·	=	5 EACH
											TOTAL CARRIED TO GENERAL SUMMARY =	5 EACH
	ITEM 626 - BARRIER R											
17	STA 17+12.00	TO STA	17+50.00	LT	=	38.00	FT /	50	+	<u> 1</u>	=	2 EACH
18 19	STA 21+91.00 SUM OF LINES	TO STA 17	22+79.10 TO	L T 18	=	88.10	FT /	100	+	1	= = =	2 EACH 4 EACH
13	SUM OF LINES	11	10	10							TOTAL CARRIED TO GENERAL SUMMARY =	4 EACH
	ITEM 608 - 4" CONCRE	TE WALK										
20	STA 17+48.58	TO STA	17+68.58	LT	=	20.00	FT X	5.5	FT		=	110.00 SF
21	STA 21+73.21	TO STA	21+93.21	LT	=	20.00	FT X	5.5	FT		=	110.00 SF
22	SUM OF LINES	20	TO	21							TOTAL CARRIED TO GENERAL SUMMARY =	220 SF <b>220 SF</b>
	ITEM 304 - AGGREGATI	E BASE										
23	STA 17+48.58	TO STA	17+68.58	LT	=	20.00	FT X	5.5		3 IN /	=	1.02 CY
24	STA 21+73.21	TO STA	21+93.21	LT	=	20.00	FT X	5 <b>.</b> 5		3 IN /	=	1.02 CY
25	SUM OF LINES	23	ΤΟ	24							=	2.04 CY
											TOTAL CARRIED TO GENERAL SUMMARY =	3 CY
26	ITEM 204 - SUBGRADE STA 17+48.58	COMPACTION TO STA	17+68.58	LT	=	20.00	FT X	5.5	FT /	Q	=	12.22 SY
27	STA 21+73.21	TO STA	21+93.21	LT	<u>-</u>	20.00	FT X	5.5	FT /	9	=	12.22 SY
28	SUM OF LINES	26	TO	27							=	24.44 SY
											TOTAL CARRIED TO GENERAL SUMMARY =	25 SY
	ROADWAY CALCULATION	NS - LOCATION 13	3: CUY-480-1955 (	TRANSPORT	TATION BOUL	EVARD OVER	IR 480)					
	EROSION CONTROL		3: CUY-480-1955 (	TRANSPORT	TATION BOUL	EVARD OVER	IR 480)					
1		LCHING	3: CUY-480-1955 (	TRANSPORT	TATION BOUL	EVARD OVER	IR 480)				=	33.33 SY
1	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480	LCHING	3: CUY-480-1955 (	TRANSPORT	TATION BOUL	EVARD OVER	IR 480)				= TOTAL CARRIED TO GENERAL NOTES =	33.33 SY 34 SY
,	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL	ILCHING -1955						SY				34 SY
1 2	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1	LCHING -1955	3: CUY-480-1955 (	TRANSPORT	TATION BOUL	EVARD OVER	IR 480)	SY			TOTAL CARRIED TO GENERAL NOTES =	
2	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1 659 - COMMERCIAL FEI	LCHING -1955 RTILIZER	33.33	SY X	111	CY /	1000				TOTAL CARRIED TO GENERAL NOTES =  TOTAL CARRIED TO GENERAL NOTES =	34 SY 3.70 CY 4 CY
,	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1	LCHING -1955 RTILIZER									TOTAL CARRIED TO GENERAL NOTES =	3.4 SY 3.70 CY 4 CY 0.01 TON
2	EROSION CONTROL  659 - SEEDING AND MU  LOCATION 13: CUY-480  659 - TOPSOIL  FROM LINE  1  659 - COMMERCIAL FEI  FROM LINE  1  659 - WATER	LCHING 1-1955 RTILIZER	33.33	SY X	111	CY /	7410				TOTAL CARRIED TO GENERAL NOTES =  TOTAL CARRIED TO GENERAL NOTES =  = = = = = = = = = = = = = = = = = =	3.4 SY 3.70 CY 4 CY 0.01 TON 0.01 TON
2	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1 659 - COMMERCIAL FEI FROM LINE 1	LCHING 1-1955 RTILIZER	33.33	SY X	111	CY /	7410		APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =	3.4 SY 3.70 CY 4 CY 0.01 TON 0.01 TON 0.18 MGA
3	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1 659 - COMMERCIAL FEI FROM LINE 1 659 - WATER FROM LINE 1	LCHING 1-1955 RTILIZER	33.33	SY X	111	CY /	7410	SY	APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =  TOTAL CARRIED TO GENERAL NOTES =  TOTAL CARRIED TO GENERAL NOTES =	3.4 SY 3.70 CY 4 CY 0.01 TON 0.01 TON 0.18 MGA
3	EROSION CONTROL  659 - SEEDING AND MU  LOCATION 13: CUY-480  659 - TOPSOIL  FROM LINE  1  659 - COMMERCIAL FEI  FROM LINE  1  659 - WATER  FROM LINE  1  659 - REPAIR SEEDING	AND MULCHING	33.33 33.33 33.33	SY X SY X	1111	CY /	7410	SY	APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =	3.70 CY 4 CY 0.01 TON 0.01 TON 0.18 MGA 1 MGA
2	EROSION CONTROL 659 - SEEDING AND MU LOCATION 13: CUY-480 659 - TOPSOIL FROM LINE 1 659 - COMMERCIAL FEI FROM LINE 1 659 - WATER FROM LINE 1	AND MULCHING	33.33	SY X	111	CY /	7410	SY	APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =	3.70 CY 4 CY 0.01 TON 0.01 TON 0.18 MGA
3	EROSION CONTROL  659 - SEEDING AND MU  LOCATION 13: CUY-480  659 - TOPSOIL  FROM LINE  1  659 - COMMERCIAL FEI  FROM LINE  1  659 - WATER  FROM LINE  1  659 - REPAIR SEEDING	AND MULCHING	33.33 33.33 33.33	SY X SY X	1111	CY /	7410	SY	APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =   3.4 SY  3.70 CY  4 CY  0.01 TON  0.01 TON  0.18 MGAI  1 MGAI	
3	EROSION CONTROL  659 - SEEDING AND MU  LOCATION 13: CUY-480  659 - TOPSOIL  FROM LINE  1  659 - COMMERCIAL FEI  FROM LINE  1  659 - WATER  FROM LINE  1  659 - REPAIR SEEDING	AND MULCHING	33.33 33.33 33.33	SY X SY X	1111	CY /	7410	SY	APPLICA	TIONS	TOTAL CARRIED TO GENERAL NOTES =   3.70 CY 4 CY 0.01 TON 0.01 TON 0.18 MGAL 1 MGAL	

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INE	DESCRIP	IION					CALC	CULATION		QUANTITY
	ROADWAY CALCULATI	ONS - LOCATION	14: CUY-480-2019 (T	URNEY RO	OAD OVER	IR 480)				
	ITEM 202 - WALK REI									
1	STA 15+47.59		15+53.59	LT	=	6.00	FT X		=	30.00 SF
2	STA 15+53.59		15+67.59	LT	=	14.00	FT X		=	66.50 SF
3	STA 15+33.21	TO STA	15+35.71	RT	=	2.50	FT X		=	12.50 SF
4	STA 15+35.71	TO STA	15+53.21	RT	=	17.50	FT X		=	83.13 SF
5	STA 19+29.43		19+46.93	LT	=	17.50	FT X		=	83.13 SF
6	STA 19+46.93		19+49.43	LT RT	=	2.50	FT X		=	12.50 SF 66.50 SF
8	STA 19+15.05 STA 19+29.05		19+29.05 19+35.05	RT	=	14.00 6.00	FT X		= = = = = = = = = = = = = = = = = = = =	30.00 SF
9	SUM OF LINES	10 37A	TO	8		0.00	FI X	5.00 F1	= = = = = = = = = = = = = = = = = = = =	384.26 SF
9	SUM OF LINES	7	10						TOTAL CARRIED TO GENERAL SUMMARY =	385 SF
	ITEM 202 - CONCRET	F RARRIER REMOV	FN							
10	STA 15+47.59		15+67.59	LT					=	20.00 FT
11	STA 15+33.21	TO STA	15+53.21	RT					=	20.00 FT
12	STA 19+29.43	TO STA	19+49.43	LT					=	20.00 FT
13	STA 19+15.05	TO STA	19+35.05	RT					=	20.00 FT
14	SUM OF LINES	10	TO	13					=	80.00 FT
									TOTAL CARRIED TO GENERAL SUMMARY =	80 FT
	ITEM 202 - GUARDRA									
15	STA 15+30.00		15+55.00	LT					=	25.00 FT
16	STA 14+72.00		15+38.00	RT					=	87 <b>.</b> 50 FT
17	STA 19+50.00		20+00.00	LT					=	50.00 FT
18	STA 19+29.00		20+16.50	RT					=	87.50 FT
19	SUM OF LINES	15	ΤΟ	18					=	250.00 FT
									TOTAL CARRIED TO GENERAL SUMMARY =	250 FT
	ITEM 202 - FENCE RE									
20	STA 15+13.58		15+43.58	RT					=	30.00 FT
21	STA 19+40.00		19+90.00	LT					=	50.00 FT
22	STA 19+20.00		19+50.00	RT					=	30.00 FT
23	SUM OF LINES	20	ΤΟ	22					=   TOTAL CARRIED TO GENERAL SUMMARY =	110.00 FT 110 FT
									POTAL GAMILLE TO GENERAL SCIENCEMENT	110 11
24	ITEM 606 - GUARDRA STA 15+30.00		15+55.00	LT					=	25.00 FT
25	STA 14+80.00		15+13.00	RT						37.50 FT
26	STA 19+75.00		19+87.50	LT						12.50 FT
27	STA 19+29.00		19+91.50	RT					= = = = = = = = = = = = = = = = = = = =	62.50 FT
28	SUM OF LINES	24	TO	27					= -	137.50 FT
20	COM OF LINES								TOTAL CARRIED TO GENERAL SUMMARY =	137.5 FT
	ITEM 606 - ANCHOR	ASSEMBLY. MGS T	YPE E (NCHRP 350)							
29	STA 14+72.00		14+80.00	RT					=	1 EACH
30	STA 19+87.50		20+12.50	LT					= -	1 EACH
31	STA 19+91.50		20+16.50	RT					=	1 EACH
32	SUM OF LINES	29	ΤΟ	31					=	3 EACH
									TOTAL CARRIED TO GENERAL SUMMARY =	3 EACH
	ITEM 606 - MGS BRIL	GE TERMINAL ASS	EMBLY, TYPE 1						+	
33	STA 15+13.00	TO STA	15+38.00	RT					=	1 EACH
34	STA 19+50.00		19+75.00	LT					=	1 EACH
35	SUM OF LINES	33	TO	34		-			TOTAL CAPPIED TO CENEDAL CUMANDY -	2 EACH
									TOTAL CARRIED TO GENERAL SUMMARY =	2 EACH
70	ITEM 606 - MGS BRIL			1 7						1 5400
<i>36</i> <i>37</i>	STA 15+55.00 STA 19+27.10		15+56.90 19+29.00	LT RT					=	1 EACH 1 EACH
38	SUM OF LINES	36		37					= = = = = = = = = = = = = = = = = = = =	2 EACH
50	JOIN OF LINES			<i>J</i> 1					TOTAL CARRIED TO GENERAL SUMMARY =	2 EACH
									+	

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CALCULATIONS

CUY-BH-FY2021(B) MISC PID NO.109131

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LINE	ļ D	ESCRIPT	UN					CALC	ULATIO	IN				QUANTITY
	ROADWAY	CALCULATION	IS - LOCATION 14	1: CUY-480-2019 (	TURNEY P	OAD OVER	IR 480)							
			FLECTOR, TYPE		TONNET N	OAD OVEN	IN 4007							
39	STA	15+38.00	TO STA	19+29.00	RT	=	391.00	FT /	100 +	1			=	5 EACH
40	STA	15+56.90	TO STA	19+50.00	LT	=	393.10	FT /		1			=	5 EACH
41	SUM OF L		39	TO	40								=	10 EACH
												TOTAL CARRIED TO GENERAL SUMMAI	? <i>Y =</i>	10 EACH
	ITEM 626	_ 0100150 00	FLECTOR, TYPE	2 TWO WAY										
42	STA	15+30.00	TO STA	15+55.00	LT	=	25.00	FT /	50 +	1			=	2 EACH
43	STA	14+72.00	TO STA	15+38.00	RT	=	112.50	FT /	50 +	1			=	3 EACH
44	STA	19+50.00	TO STA	20+12.50	LT	=	87.50	FT /	100 +	1			=	2 EACH
45	STA	19+29.00	TO STA	20+16.50	RT	=	112.50	FT /		1			=	2 EACH
46	SUM OF L	INES	42	ΤΟ	45								=	9 EACH
	1TFM 607	- FENCE, TYF	PF CI									TOTAL CARRIED TO GENERAL SUMMAI	? <i>Y =</i>	9 EACH
47	STA	15+13.00	TO STA	15+43.00	RT								=	30.00 FT
48	STA	19+40.00	TO STA	19+90.00	LT								=	50.00 FT
49	STA	19+20.00	TO STA	19+50.00	RT								=	30.00 FT
50	SUM OF L		47	TO	49								=	110.00 FT
												TOTAL CARRIED TO GENERAL SUMMAI	? <i>Y =</i>	110 FT
	ITEM 608	- 4" CONCRE	TE WALK											
51	STA	15+47.59	TO STA	15+53.59	LT	=	6.00	FT X	5.00 FT				=	30.00 SF
52	STA	15+53.59	TO STA	15+67.59	LT	=	14.00	FT X					=	66.50 SF
53	STA	15+33.21	TO STA	15+35.71	RT	=	2.50	FT X					=	12.50 SF
54	STA	15+35.71	TO STA	15+53.21	RT	=	17.50	FT X	4.75 FT				=	83.13 SF
55	STA	19+29.43	TO STA	19+46.93	LT	=	17.50		4.75 FT				=	83.13 SF
56	STA	19+46.93	TO STA	19+49.43	LT	=	2.50	FT X					=	12 <b>.</b> 50 SF
57	STA	19+15.05	TO STA	19+29.05	RT	=	14.00		4.75 FT				=	66.50 SF
58	STA	19+29.05	TO STA	19+35.05	RT	=	6.00	FT X	5.00 FT				=	30.00 SF
59	SUM OF L	INES	51	ΤΟ	58							TOTAL CARRIED TO GENERAL SUMMAI	= ?Y =	384.26 SF <b>385 SF</b>
	ITEM 304	- AGGREGATE	RASE											
60	LINE 5		DAGE				384.26	SF X		( .3	IN / 12	) / 27	=	3.56 CY
61	LINE 6						007,120	<u> </u>		<u>, , , , , , , , , , , , , , , , , ,</u>			=	3.56 CY
												TOTAL CARRIED TO GENERAL SUMMAI	? <i>Y =</i>	4 CY
	ITFM 204	- SUBGRADE	COMPACTION											
62	LINE 5		J J J J J J J J J J J J J J J J J J J				384.26	SF /		9			=	42.70 SY
63	LINE 6												=	42.70 SY
												TOTAL CARRIED TO GENERAL SUMMAI	? <i>Y =</i>	43 SY
	ITEM 630	- REMOVAL C	PF GROUND MOUN	TED SIGN AND REI	ERECTION									
64	STA	15+00.48	R7-4		RT								=	1 EACH
65	STA	15+33.21	R3-H8cg		LT								=	1 EACH
66	STA	15+49.27	R7-4		LT								=	1 EACH
67	STA	19+62.14	R7-4		RT								=	1 EACH
68	SUM OF L	INES	64	ΤΟ	67							TOTAL CARRIED TO GENERAL SUMMAI	= ?Y =	4 EACH <b>4 EAC</b> H
		- PEMOVAL (	PF GROUND MOUN	ITED POST SUPPO		ISPOSAL								
					RT								= =	1 EACH 1 EACH
69	STA	15+00.48												
70	STA STA	15+00.48 15+33.21			LT									/ F// ₩
70 71	STA	15+00.48 15+33.21 15+49.27			LT								= =	1 EACH 1 EACH
70	STA STA STA	15+00.48 15+33.21 15+49.27 19+62.14	69	TO										1 EACH
70 71 72	STA STA STA STA	15+00.48 15+33.21 15+49.27 19+62.14	69	ТО	LT RT							TOTAL CARRIED TO GENERAL SUMMAI	= =	1 EACH 4 EACH
70 71 72	STA STA STA STA	15+00.48 15+33.21 15+49.27 19+62.14	69	ТО	LT RT							TOTAL CARRIED TO GENERAL SUMMAI	= =	1 EACH 1 EACH 4 EACH
70 71 72	STA STA STA STA	15+00.48 15+33.21 15+49.27 19+62.14	69	ΤΟ	LT RT							TOTAL CARRIED TO GENERAL SUMMAI	= =	1 EACH 4 EACH

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	DESCRIPTION CALCULATION	QUANTITY
	ROADWAY CALCULATIONS - LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480)	
	ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST	
74	STA 15+00.48 R7-4 RT	12.00 FT
75	STA 15+33.21 R3-H8cg LT =	26.00 FT
76	STA 15+49.27 R7-4 LT =	12.00 FT
77	STA 19+62.14 R7-4 RT =	12.00 FT
78	SUM OF LINES         74         TO         77	62 FT
	TOTAL CARRIED TO GENERAL SUMMARY =	62 FT
	ROADWAY CALCULATIONS - LOCATION 14: CUY-480-2019 (TURNEY ROAD OVER IR 480) EROSION CONTROL	
	659 - SEEDING AND MULCHING	
1	LOCATION 14: CUY-480-2019 =	152.78 SY
	TOTAL CARRIED TO GENERAL NOTES =  659 - TOPSOIL	153 SY
2	FROM LINE 1 152.78 SY X 111 CY / 1000 SY =	16.96 CY
-	TOTAL CARRIED TO GENERAL NOTES =	17 CY
-	659 - COMMERCIAL FERTILIZER	11 01
3	FROM LINE 1 152.78 SY X 1 TON / 7410 SY =	0.02 TON
_ †	TOTAL CARRIED TO GENERAL NOTES =	0.02 TON
	659 - WATER	
4	FROM LINE 1 152.78 SY X 0.0027 MGAL / SY X 2 APPLICATIONS =	0.83 MGAL
	TOTAL CARRIED TO GENERAL NOTES =	1 MGAL
-	659 - REPAIR SEEDING AND MULCHING           FROM LINE         1         152.78         SY X         5%         =	7.64 SY
5	FROM LINE 1 152.18 SY X 5% = TOTAL CARRIED TO GENERAL NOTES =	8 SY
	ROADWAY CALCULATIONS - LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)  ITEM 202 - CURB REMOVED	
1	ROADWAY CALCULATIONS - LOCATION 15: CUY-06A-0042 (US 6A [DETROIT ROAD] OVER ROCKY RIVER)  ITEM 202 - CURB REMOVED  STA 20+00.00 TO STA 20+08.00 =	8.00 FT
1	ITEM 202 - CURB REMOVED	8.00 FT 8 FT
1	ITEM 202 - CURB REMOVED           STA         20+00.00         TO STA         20+08.00         =           TOTAL CARRIED TO GENERAL SUMMARY =           ITEM 609 - CURB, TYPE 6, AS PER PLAN	8 FT
1 2	ITEM 202 - CURB REMOVED           STA         20+00.00         TO STA         20+08.00         =           TOTAL CARRIED TO GENERAL SUMMARY         =           ITEM 609 - CURB, TYPE 6, AS PER PLAN           STA         20+00.00         TO STA         20+08.00         =	8 FT 8.00 FT
1 2	ITEM 202 - CURB REMOVED           STA         20+00.00         TO STA         20+08.00         =           TOTAL CARRIED TO GENERAL SUMMARY =           ITEM 609 - CURB, TYPE 6, AS PER PLAN	8 FT
1 2	ITEM 202 - CURB REMOVED	8 FT 8.00 FT
	ITEM 202 - CURB REMOVED	8 FT 8.00 FT 8 FT
	ITEM 202 - CURB REMOVED	8 FT 8.00 FT
	TIEM 202 - CURB REMOVED	8 FT  8.00 FT  8 FT  70 SF
3	ITEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF  70 SF
3	TITEM 202 - CURB REMOVED   STA   20+08.00	8 FT  8.00 FT  8 FT  70 SF  70 SF
3	ITEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF  70 SF
3	TITEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF  70 SF
3	ITEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF  70 SF  70 SF  70 SF
3	TITEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF  70 SF  70 SF  70 SF  70 SF
3	TIEM 202 - CURB REMOVED   STA   20+08.00   CURB, TYPE 6, AS PER PLAN   STA   20+00.00   TO STA   20+08.00   STA   20+08.00	8 FT  8.00 FT  8 FT  70 SF  70 SF  70 SF  70 SF
3	TIEM 202 - CURB REMOVED   STA   20+08.00   CURB, TYPE 6, AS PER PLAN   STA   20+00.00   TO STA   20+08.00   STA   20+08.00	8 FT  8.00 FT  8 FT  70 SF  70 SF  70 SF  70 SF  70 SF
3	TIEM 202 - CURB REMOVED	8 FT  8.00 FT  8 FT  70 SF  70 SF  70 SF  70 SF  70 SF
1 2 3 4 5	ITEM 202 - CURB REMOVED	8 FT  8.00 FT  8 FT  70 SF
3 4 5 5	TIEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF
3 4	TIEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF
3	TIEM 202 - CURB REMOVED   STA	8 FT  8.00 FT  8 FT  70 SF

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CALCULATIONS

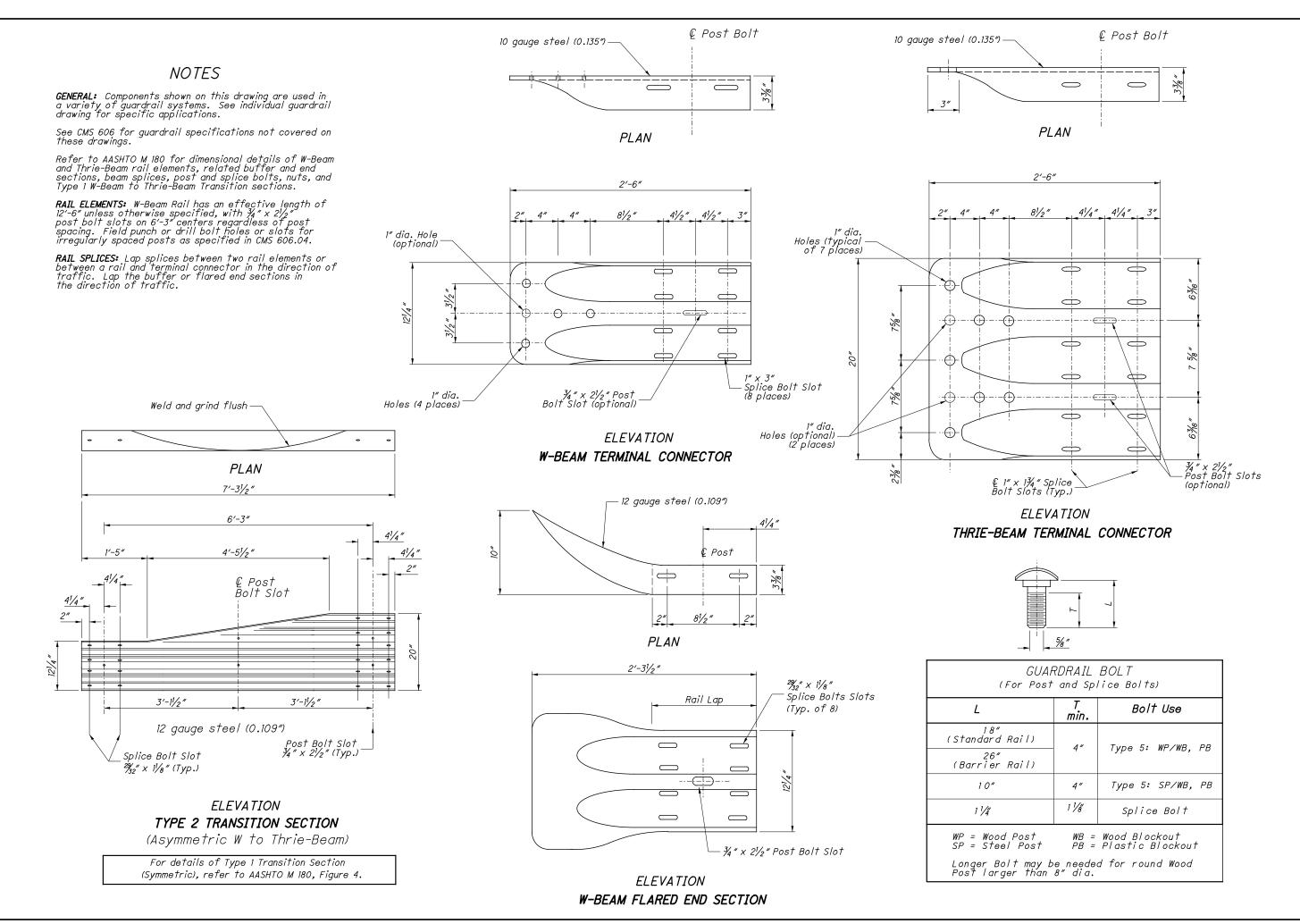
CUY-BH-FY2021(B) MISC PID NO.109131

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			202						62	25									
STA	TION	SIDE	DISCONNECT EXISTING CIRCUIT	CONNECTION, FUSED PULL APART	CONNECTION, UNFUSED PERMANENT		NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	NO. 10 AWG POLE AND BRACKET CABLE	CONDUIT, 2", 725.051	REMOVAL OF LUMINAIRE AND REERECTION		STRUCTURE JUNCTION BOX	REMOVE AND REERECT EXISTING LICHT POLE, AS PER PLAN		LIGHT POLE FOUNDATION REMOVED				480-1955
FROM	ТО		EACH	EACH	EACH		FT	FT	FT	EACH		EACH	EACH		EACH				<u> </u>
LOCAT	TION 13																		
22+20.00	20+25.00	RT	1	4	2		615	60	145.00	1		1	1		1				၂ ပ
20+25.00	18+39.00	RT	<u> </u>	2	1		588	60	186.00	1		1	1		1				<u>ب</u>
18+39.00	16+15.00	RT	/		3		702		89.00										+
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T0.T.V.O							1005	100	400.00										
TOTALS			2	6	6		1905	120	420.00	2		2	2		2				ł
OTALS CARRIE			2	6	6		1905	120	420	2		2	2		2				
	ED TO GENERA	L SUMMARY	202						62										I
	ED TO GENERA	L SUMMARY																	
STA	TION	SIDE		CONNECTION, FUSED PULL APART	CONNECTION, UNFUSED PERMANENT	NO. 4 AWG 600 VOLT DISTRIBUTION CABLE		NO. 10 AWG POLE AND BRACKET CABLE			TRENCH, 24" DEEP	STRUCTURE JUNCTION BOX	REMOVE AND REERECT EXISTING LIGHT POLE, AS PER PLAN	UNDERGROUND WARNING/ MARKING TAPE	LIGHT POLE FOUNDATION REMOVED				-2019
STA			202 LIM3	'APART		NO. 4 AWG 600 VOLT DISTRIBUTION CABLE		POLE AND BLE	2", 725.051	25	24	STRUCTURE JUNCTION BOX	REMOVE AND REERECT SEXISTING LIGHT POLE, AS PER PLAN	UNDERGROUND WARNING/ H MARKING TAPE	는 LIGHT POLE 국 FOUNDATION REMOVED				0-201
FROM	TION		DISCONNECT EXISTING CIRCUIT	CONNECTION, FUSED PULL APART	COMNECTION, UNFUSED PERMANENT			NO. 10 AWG POLE AND BRACKET CABLE	CONDUIT, 2", 725.051	REMOVAL OF LUMINAIRE AND REERECTION	TRENCH, 24	STRUCTURE BOX			LIGHT POLE FOUNDATION				-201
FROM LOCA 15+25.00	TION  TO  TION 14  15+35.00	SIDE	DISCONNECT EXISTING CIRCUIT	CONNECTION, FUSED PULL APART	COMNECTION, UNFUSED PERMANENT	FT 60		J NO. 10 AWG POLE AND BRACKET CABLE	CONDUIT, 2", 725.051	REMOVAL OF LUMINAIRE AND REERECTION	TRENCH, 24	STRUCTURE BOX			LIGHT POLE FOUNDATION				-480-201
FROM  LOCA  15+25.00 15+35.00	TION  TO  TION 14  15+35.00 17+18.00	SIDE  RT  RT	DISCONNECT EXISTING CIRCUIT	S COMMECTION, HD FUSED PULL APART	COMMECTION,	60 579		1 BRACKET CABLE AND 57.0 AWG POLE AND 57.0 AWG P	62 FT CONDUIT, 2", 725.051 10.00 183.00	REMOVAL OF LUMINAIRE AND REERECTION	TRENCH, 24	1 STRUCTURE	EACH	FT	LIGHT POLE FOUNDATION				Y-480-201
FROM  LOCA  15+25.00 15+35.00 17+18.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00	SIDE  RT  RT  RT  RT	DISCONNECT EXISTING CIRCUIT	D CONNECTION, PS FUSED PULL APART	COMMECTION,	60 579 600		J NO. 10 AWG POLE AND BRACKET CABLE	62 62 62 FT 10.00 183.00 190.00	REMOVAL OF LUMINAIRE AND REERECTION	TRENCH, 24	EACH BOX	EACH	FT	TOUNDATION FOLE				-480-201
FROM  LOCA  15+25.00 15+35.00	TION  TO  TION 14  15+35.00 17+18.00	SIDE  RT  RT	DISCONNECT EXISTING CIRCUIT	S COMMECTION, HD FUSED PULL APART	COMMECTION,	60 579		1 BRACKET CABLE AND 57.0 AWG POLE AND 57.0 AWG P	62 FT CONDUIT, 2", 725.051 10.00 183.00	REMOVAL OF LUMINAIRE AND REERECTION	TRENCH, 24	1 STRUCTURE	EACH	FT	LIGHT POLE FOUNDATION				: CUY-480-201
FROM  LOCA  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00	SIDE  RT  RT  RT  RT  RT  RT  RT  RT	DISCOMMECT HOVE EXISTING CIRCUIT	S COMMECTION, HD FUSED PULL APART	L CONNECTION, UNFUSED PERMANENT	60 579 600 111 60		1 BRACKET CABLE AND 57.0 AWG POLE AND 57.0 AWG P	62 10.00 10.00 183.00 190.00 27.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 174 175 10.00	1 STRUCTURE	EACH	10.00 10.00	LIGHT POLE FOUNDATION				4: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00	SIDE  RT  RT  RT  RT  RT  RT  RT  RT  LT	DISCONNECT EXISTING CIRCUIT	S S CONNECTION, FUSED PULL APART	L L CONNECTION,	60 579 600 111 60		1 NO. 10 AWG POLE AND BRACKET CABLE	62 150.00 FT 10.00 183.00 190.00 27.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	17 TRENCH, 24	1 STRUCTURE	EACH	FT 10.00	LIGHT POLE				: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 15+54.00 16+09.00	SIDE  RT  RT  RT  RT  RT  RT  RT  LT  LT	DISCOMMECT HOVE EXISTING CIRCUIT	CONNECTION, FUSED PULL APART	L CONNECTION, UNFUSED PERMANENT	60 579 600 111 60 60 195		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 FT 10.00 183.00 190.00 27.00 10.00 10.00 55.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 174 175 10.00	1 STRUCTURE	EACH	10.00 10.00	LIGHT POLE FOUNDATION				N 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT HOVE EXISTING CIRCUIT	S S CONNECTION, FUSED PULL APART	L CONNECTION, UNFUSED PERMANENT	60 579 600 111 60		1 NO. 10 AWG POLE AND BRACKET CABLE	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 174 175 10.00	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00	1 I I I FOUNDATION				ON 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 15+54.00 16+09.00 18+27.00	RT   RT   RT   RT   RT   RT   RT   RT	DISCOMMECT HOVE EXISTING CIRCUIT	CONNECTION, FUSED PULL APART	L CONNECTION, UNFUSED PERMANENT	60 579 600 111 60 60 195 684		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 218.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 174 175 10.00	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00	1 I I I FOUNDATION				N 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT  EXISTING CIRCUIT  1	CONNECTION, FUSED PULL APART	HONNECTION,	60 579 600 111 60 60 195 684 399		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 173 174 176 176 176 176 176 176 176 176 176 176	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00 10.00	1 I I I FOUNDATION				ATION 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT  EXISTING CIRCUIT  1	CONNECTION, FUSED PULL APART	HONNECTION,	60 579 600 111 60 60 195 684 399		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 173 174 176 176 176 176 176 176 176 176 176 176	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00 10.00	1 I I I FOUNDATION				CATION 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT  EXISTING CIRCUIT  1	CONNECTION, FUSED PULL APART	HONNECTION,	60 579 600 111 60 60 195 684 399		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 173 174 176 176 176 176 176 176 176 176 176 176	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00 10.00	1 I I I FOUNDATION				OCATION 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT  EXISTING CIRCUIT  1	CONNECTION, FUSED PULL APART	HONNECTION,	60 579 600 111 60 60 195 684 399		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 173 174 176 176 176 176 176 176 176 176 176 176	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00 10.00	1 I I I FOUNDATION				CATION 14: CUY-480-201
FROM  LOCAT  15+25.00  15+35.00  17+18.00  19+08.00  19+35.00  15+44.00  15+54.00  16+09.00  18+27.00	TION  TO  TION 14  15+35.00 17+18.00 19+08.00 19+35.00 19+45.00 16+09.00 18+27.00 19+50.00	### ### ##############################	DISCOMMECT  EXISTING CIRCUIT  1	CONNECTION, FUSED PULL APART	HONNECTION,	60 579 600 111 60 60 195 684 399		14 NO. 10 AWG POLE AND BRACKET CABLE 495	62 150.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00	REMOVAL OF LUMINAIRE AND REERECTION	10.00 173 174 176 176 176 176 176 176 176 176 176 176	I I I STRUCTURE	I I I I I I I I I I I I I I I I I I I	10.00 10.00 10.00	1 I I I FOUNDATION				OCATION 14: CUY-480-201
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# NOTES

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

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

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

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

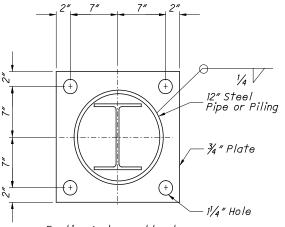
Do not drive posts located over a culvert with less than 4'-3" of cover; instead set in drilled or dug holes. Where the available post embedment depth is less than 3'-5", encase the post with a minimum of 4" concrete.

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

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

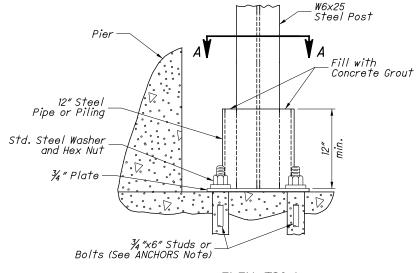
Expansion shield anchors as specified in CMS 712.01 may be substituted except where concrete deterioration has occurred, as determined by the Engineer. Where self-drilling anchors are used, drill the holes with the expansion shield (not by a drill bit) and install the shield flush with the concrete surface.

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



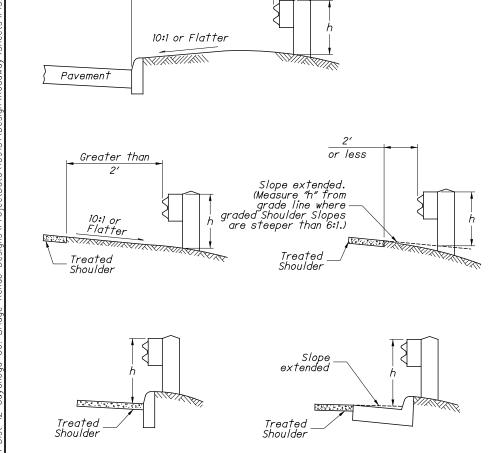
Footing Anchor and hardware need not be galvanized

# SECTION A-A



ELEVATION FOOTING ANCHOR

See SPECIAL POST MOUNTINGS Note.



Normal Offset

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h = Standard Height (See GUARDRAIL HEIGHT Note)

MEASURING GUARDRAIL HEIGHT

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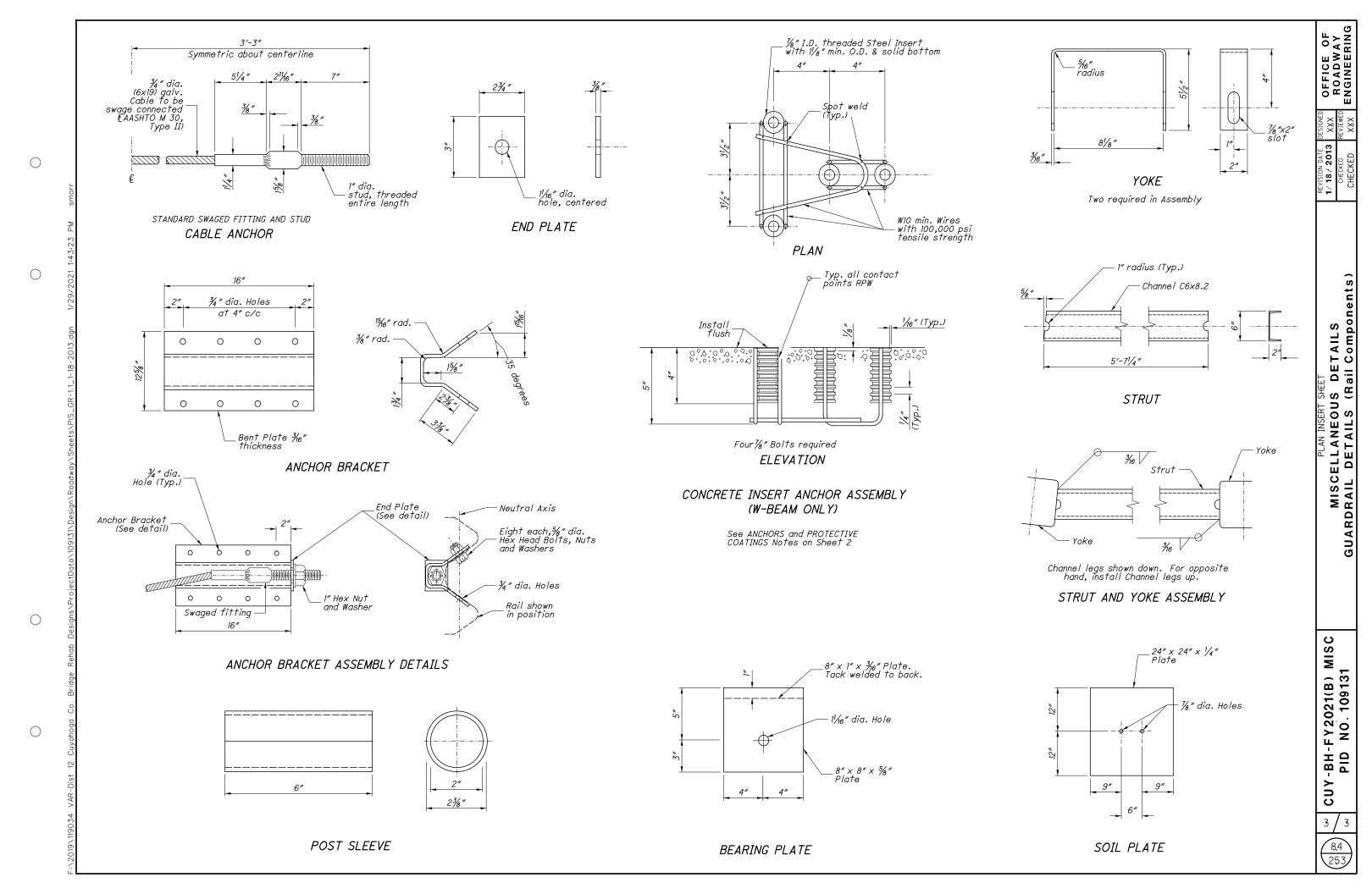
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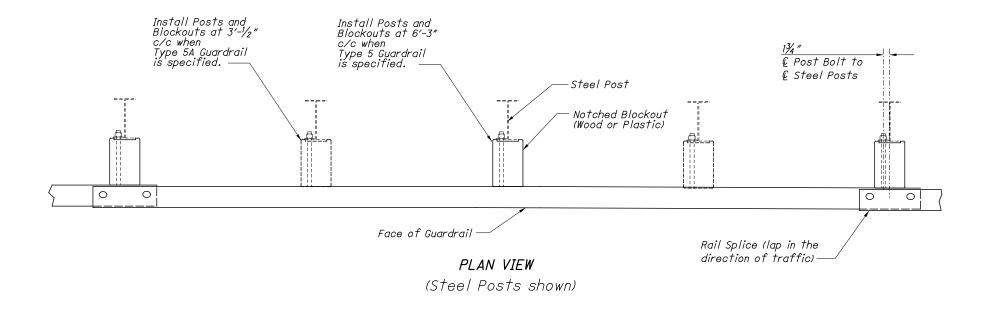
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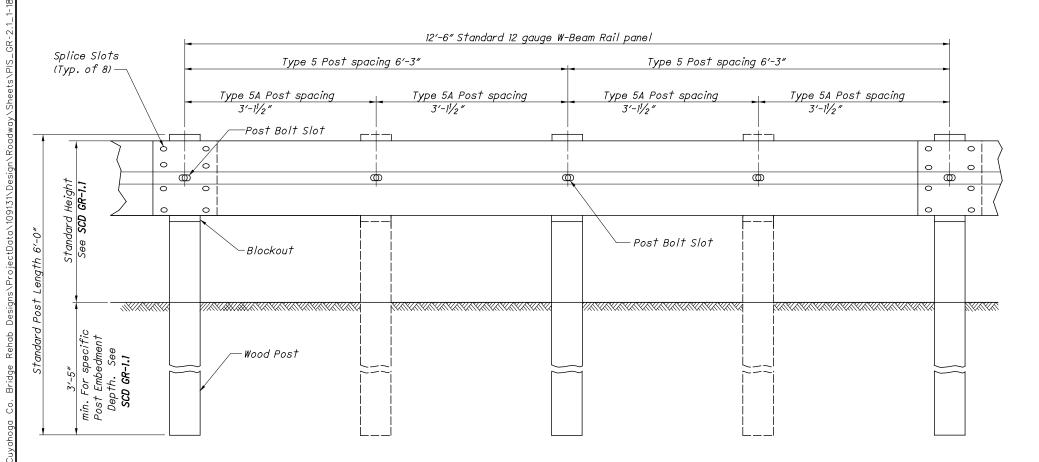
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**ELEVATION** (Wood Posts shown)

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

**NOTES** 

**POSTS:** Posts may be constructed of wood or steel. Wood posts may be round or  $6^{\prime\prime}$ x8" square-sawed.

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

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

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

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

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

- Sec. 7.2 Test reports of tensile properties for each lot shall accompany each shipment.
- Beams that have imperfections repaired by welding shall not be accepted for use in Item 606.
- Random samples shall be tested by the Department from materials delivered to the project site, or other locations designated by the Laboratory.

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

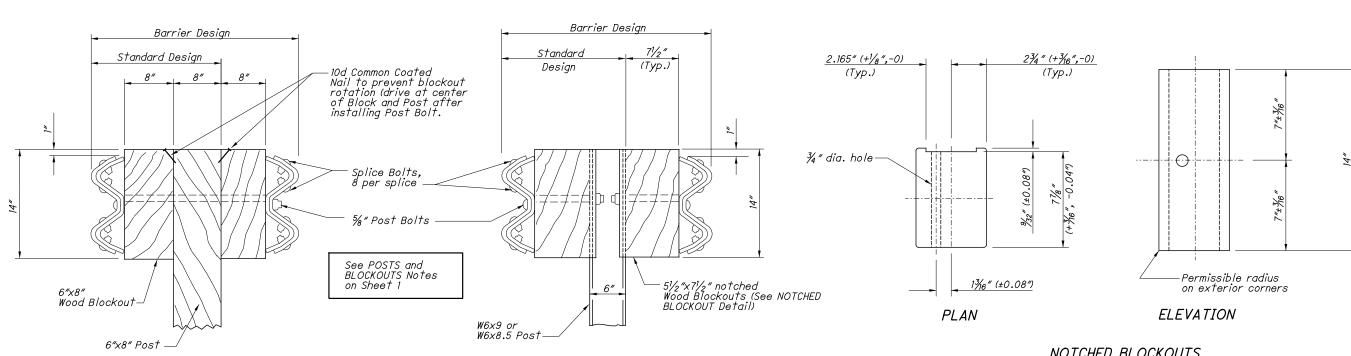
BLOCKOUTS: Blockout dimensions are dependent on post used. Wood Blockouts are to be pressure treated as specified in CMS 710.14. Bore bolt holes. Approved alternate blockouts may be used in lieu of the wood blockouts shown. The approved list is maintained by the Office of Roadway Engineering.

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

**DELINEATION:** For barrier reflectors, see CMS 626.

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

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



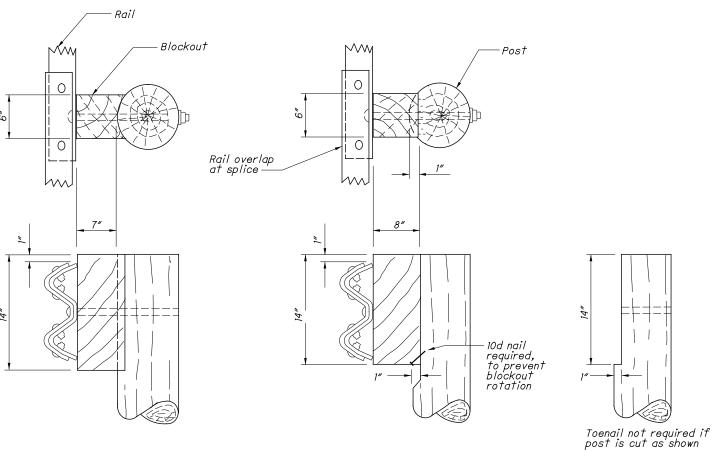
SQUARE WOOD POST

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STEEL POST
See POSTS Note, Sheet 1



Method 1 Routed Blockout

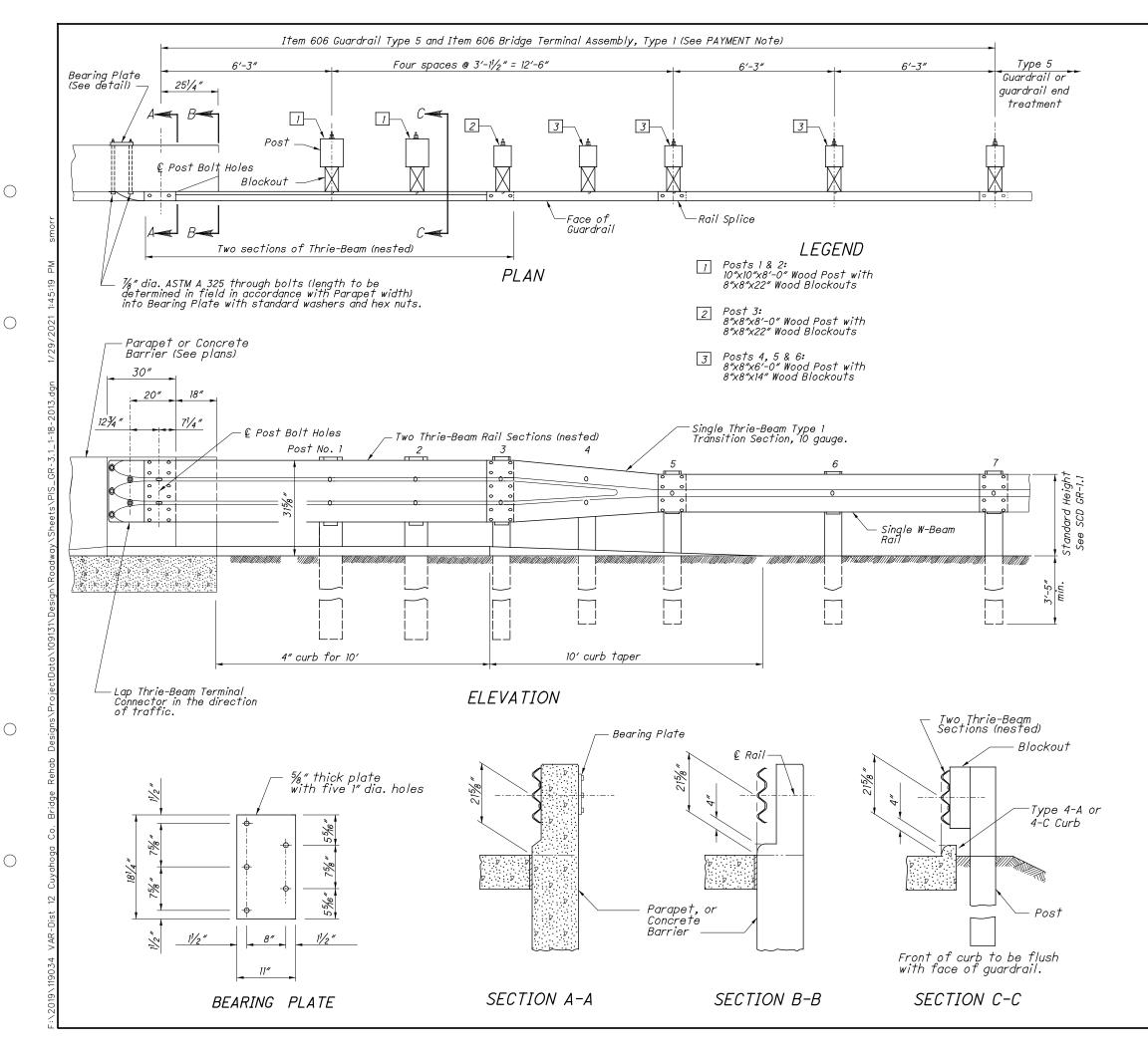
Method 2 Notched Post

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

# ROUND WOOD POSTS

Single Sided runs only (Standard Design)





# **NOTES**

GENERAL: For additional details, see SCD GR-1.1.

APPLICATION: Use Type 1 Bridge Terminal Assembly to connect guardrail runs to bridges having deflector Parapet Type Bridge Railing (see Structural Engineering's SCD BR-1). It may also be used to connect guardrail runs to the approach ends of Concrete Barrier (see SCD RM-4.6).

On undivided, bi-directional roadways, Type I's may be used to anchor guardrail runs to the trailing end of Deflector Parapets or Concrete Barrier installations.

THRIE BEAM TRANSITION: Symmetrical W-Beam to Thrie Beam transition panel shall be 10 gauge.

**POSTS:** Posts may be set in drilled holes or driven to grade. See **SCD GR-1.1** for additional Post embedment

WOOD POSTS - Use square sawed pressure treated wood as per CMS 710.14 and fabricate with square ends. Bore bolt holes and trim the tops of posts, if required, after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W8x24 for 10"x10" wood posts and use W6x25 for 8"x8" posts. Use same post material throughout assembly.

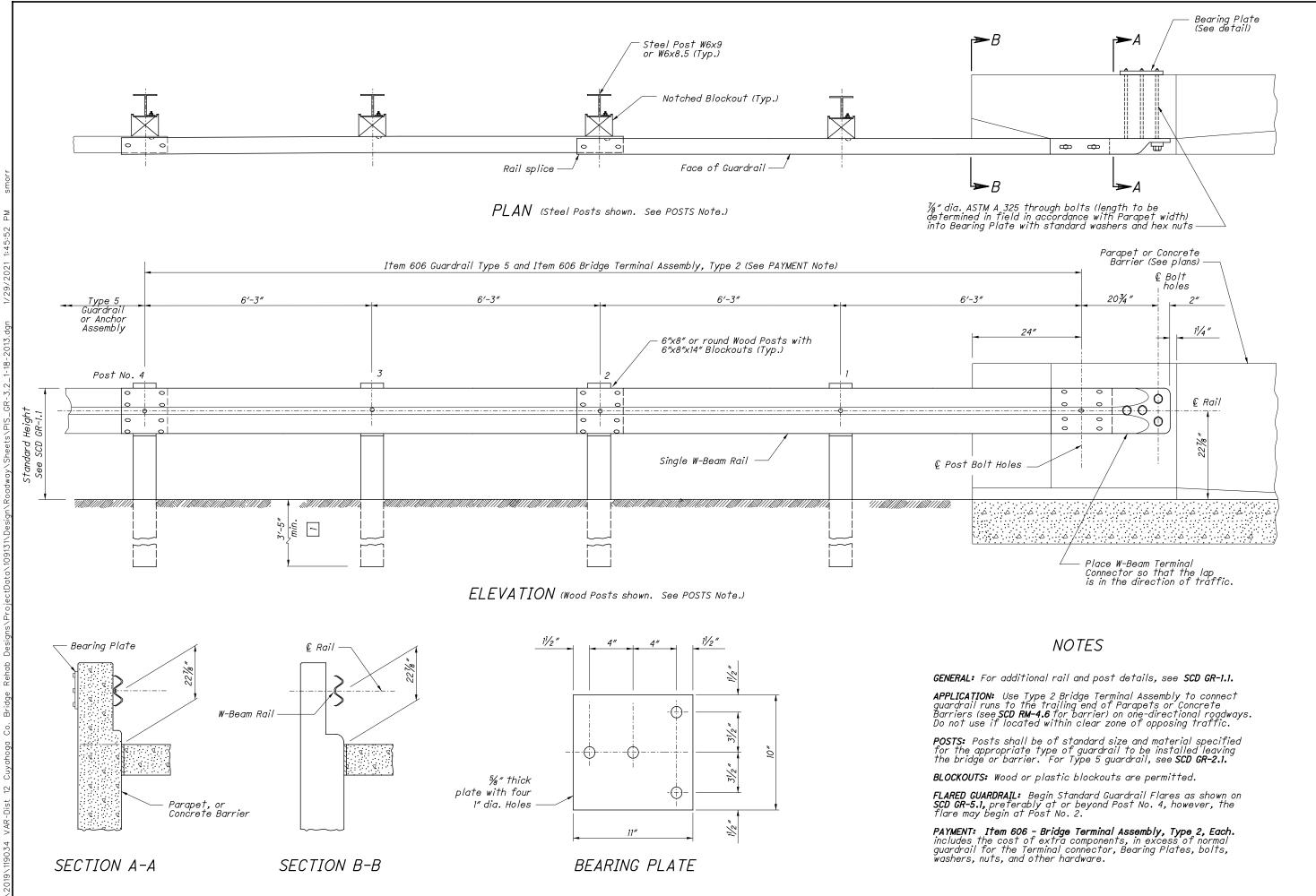
BLOCKOUTS: Use wood blockouts only, steel or plastic blockouts are not permitted. Use notched blockouts with steel posts.

CURB: Provide a Type 4A or 4C concrete curb minimum of 20', or longer as shown on plans, including a 10' taper (from curb height to flush). Front of curb to be flush with face of guardrail.

FLARED GUARDRAIL: Begin Standard Guardrail Flares as shown on SCD GR-5.1 preferably at or beyond Post No. 7; however, the flare may begin at Post No. 5.

PAYMENT: Item 606 - Bridge Terminal Assembly, Type 1, Each, includes the cost of extra components, in excess of normal guardrail, for additional and different size of posts and blockouts, nested Thrie-Beam, transition and connector sections, Bearing Plate, bolts, washers, nuts, and other hardware.

The curb is required in this design, and is paid separately under Item 609 - Curb, Type 4A (or 4C), per Foot, for the curb and taper sections, including materials, forming and labor needéd to constrúct as shown.



OFFICE OF ROADWAY ENGINEERING

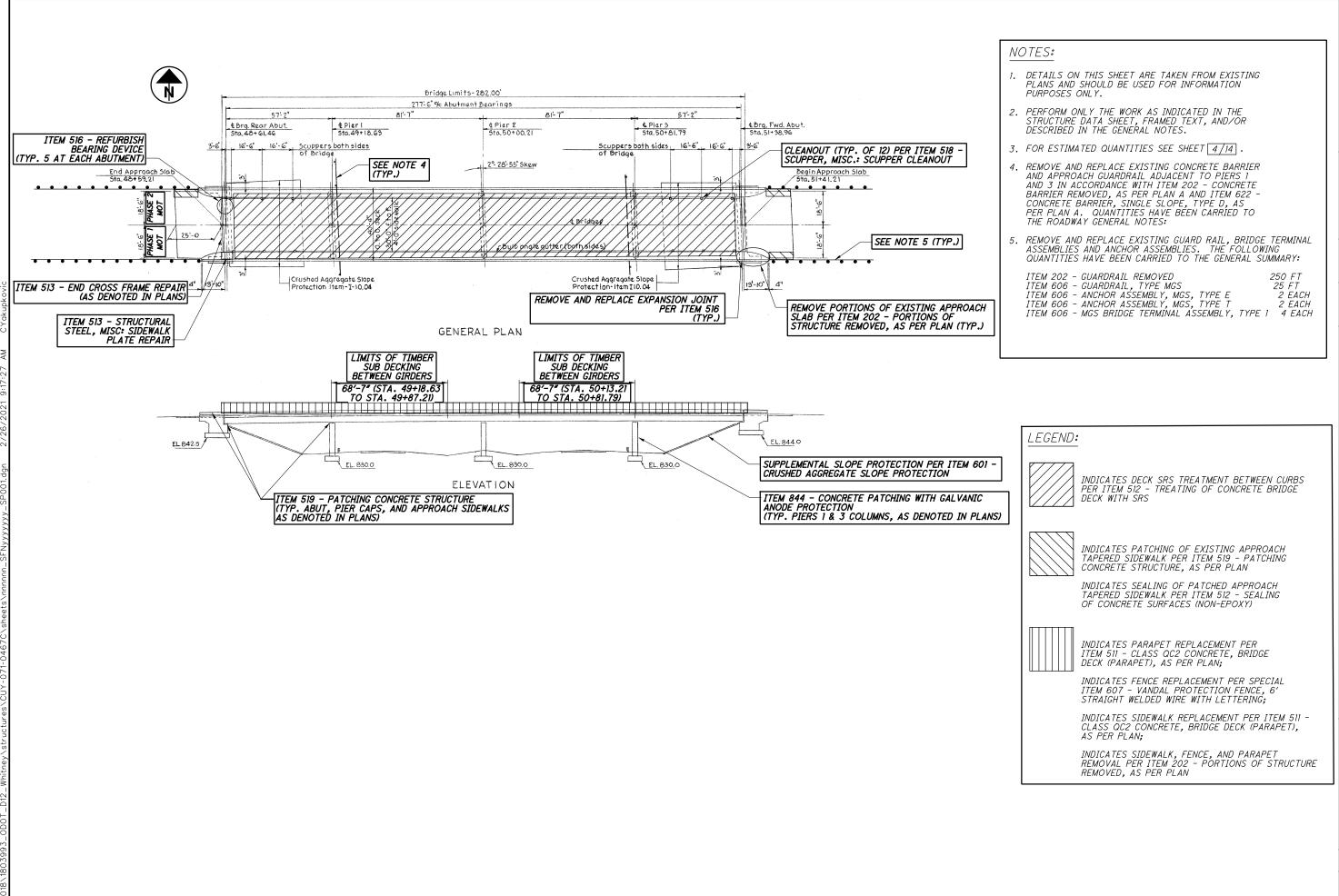
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DESIGN AGENCY

GENERAL PLAN - LOCATION
BRIDGE NO. CUY-71-0467
WHITNEY ROAD OVER IR 71

MISC 109131 CUY-BH-FY2021(B) Š PID

### REFER TO SUPPLEMENTAL SPECIFICATIONS:

SS 800 (DATED 1-15-2021) SS 844 (DATED 4-20-2018)

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### ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

THIS WORK CONSISTS OF THE REMOVAL OF PARAPETS, FENCING, SIDEWALKS, END CROSS FRAMES, ABUTMENT BACKWALL, SLAB AND SIDEWALK CONCRETE, APPROACH SLAB, 1  $\frac{1}{2}$  S.P.C. OVERLAY, ADDITIONAL EPOXY COATED REINFORCEMENT AND EXPANSION JOINTS AS INDICATED IN THE PLANS.

### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL POLICY WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 12 OFFICE
5500 TRANSPORTATION BOULEVARD
GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/ CONTRACTS/PAGES/DESIGNFILES.ASPX

# DESCRIPTION OF WORK:

- 1. PATCH ABUTMENTS
- 2. PATCH PIERS AND FIBERWRAP
- . REFURBISH ABUTMENT BEARING DEVICES REPAIR FORWARD ABUTMENT SLOPE PROTECTION
- 5. REPLACE DETERIORATED CROSS FRAMES
- 5. REPLACE DETERIORATED CROSS FRAMES 6. INSTALL TIMBER SUB DECKING
- 7. CLEAN OUT SCUPPERS
- 8. REMOVE AND REPLACE EXPANSION JOINTS
- 9. REPLACE PARAPETS, VANDAL PROTECTION FENCE, AND SIDEWALKS
- 10. REPAIR SIDEWALK COVER PLATES
- 11. SEAL DECK WITH SRS TREATMENT
- 12. REPLACE GUARDRAIL AT APPROACHES
- 13. PATCH AND SEAL APPROACH SIDEWALK

### CUT LINE CONSTRUCTION JOINT PREPARATION

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

### ITEM 511 - CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET), AS PER PLAN

PROPOSED CONCRETE FOR BOTH THE PARAPET AND SIDEWALK ON THE DECK AND APPROACH SLABS SHALL BE QUANTIFIED IN CUBIC YARDS AND BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET), AS PER PLAN.

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

SEAL ALL PIER CAPS, ABUTMENT BACK WALLS, AND ABUTMENT STEMS WHERE ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN WAS PERFORMED. THE PROPOSED CONCRETE PARAPETS WITH TWIN STEEL TUBE RAILS SHALL ALSO BE SEALED. THE COLOR OF THE FINISH COAT SHALL BE FS NO. 17778 (LIGHT NEUTRAL). CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, FENCE AND POSTS, RAILING AND ALL OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE SEALING OPERATIONS. SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

### ITEM 513 - STRUCTURAL STEEL, MISC .: SIDEWALK COVER PLATE REPAIR

THE PLATES COVERING THE SIDEWALK EXPANSION OPENINGS SHALL BE RETROFIT. TRIM EXISTING BENT SLIDING PLATE AT THE FENCE OF SIDEWALK ARMOR. GRIND THE CUT EDGE FLUSH WITH THE TOP SURFACE OF THE ARMOR. WELD THE NEW SLIDING PLATE TO THE TOP OF THE ABUTMENT ARMOR.

MATERIAL SHALL BE A709 GRADE 36 OR 50.

PAINTING OF THIS REPAIR WORK IS NOT REQUIRED.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO REMOVE THE EXISTING SLIDING PLATE AND INSTALL THE NEW SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL, MISC.: SIDEWALK COVER PLATE REPAIR.

### ITEM 516 - REFURBISH BEARING DEVICE. AS PER PLAN

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN BRIDGE BEARINGS AS WELL AS THEIR CLEANING AND PAINTING. INCLUDED SHALL BE THE DISASSEMBLY OF THE BEARINGS, HAND TOOL CLEANING (GRINDING IF NECESSARY), PAINTING ACCORDING TO ITEM 514, REPLACEMENT OF ANY DAMAGED SHEET LEAD WITH PREFORMED BEARING PADS (711.21), INSTALLATION OF ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT, REALIGNMENT OF THE UPPER BEARING PLATE BY REMOVING EXISTING WELDS AND REWELDING SO THAT THE BEARINGS ARE VERTICALLY ALIGNED AT 60° F (15° C), LUBRICATING SLIDING SURFACES, AND REASSEMBLY OF THE BEARINGS. ASSURE ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING". AT NO ADDITIONAL COST TO THE STATE, THE CONTRACTOR MAY INSTALL NEW BEARINGS OF THE SAME TYPE AS THE EXISTING IN PLACE OF REFURBISHING THE BEARINGS. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 - REFURBISH BEARING DEVICE. AS PER PLAN.

#### <u>ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER</u> PLAN

THIS WORK INCLUDES RAISING OR RE-POSITIONING EXISTING STRUCTURES TO PERFORM THE WORK DEFINED IN THE PROJECT PLANS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS.

THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PI AN.

### ITEM 518 - SCUPPER, MISC .: SCUPPER CLEANOUT

IN ADDITION TO CMS 518, THIS WORK SHALL ALSO CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING SCUPPERS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL DRAINAGE SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

ALL COSTS INCLUDING LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS TO PERFORM THIS WORK AS APPROVED BY THE ENGINEER SHALL BE PAID FOR AT THE UNIT PRICE BID EACH, FOR ITEM 518 - SCUPPER, MISC.: SCUPPER CLEANOUT, EACH.

### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, CONTRACTOR SHALL ENSURE ANY EXISTING BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING OPERATIONS.

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

### ITEM SPECIAL - STRUCTURES: TIMBER SUBDECK

DESCRIPTION:

THIS ITEM SHALL CONSIST OF FURNISHING, CUTTING, FITTING, PLACING AND ERECTING OF TIMBER, AND THE FURNISHING AND INSTALLING OF ALL NECESSARY HARDWARD AS SPECIFIED.

SUBDECK AREAS ABOVE TRAVELED LANES, AS WELL AS PAVED SHOULDERS.

MATERIALS:

TIMBER BEAMS SHALL CONFORM TO CMS 711.26 AND SHALL BE DOUGLAS FIR LARCH WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER OR SOUTHERN PINE WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER. PRESERVATIVE TREATMENT FOR TIMBER BEAMS SHALL CONFORM TO CMS 712.06.

THE TIMBER SHEATHING SHALL BE ¾ "CDX PRESERVATIVE TREATED PLYWOOD MANUFACTURED FROM EITHER DOUGLAS FIR OR SOUTHERN PINE. ALL TRANSVERSE EDGES OF THE PLYWOOD SHALL BE SUPPORTED BY THE TIMBER BEAMS.

THE BOLTS SHALL BE ASTM A449 - TYPE 1 OR SAE J429 - GRADE 5, % "DIAMETER GALVANIZED BOLTS WITH GALVANIZED FENDER WASHERS AND LOCK NUTS. SPACING OF THE BOLTS SHALL BE A MAXIMUM OF 2 FOOT SPACING.

WOOD SCREWS SHALL BE GALVANIZED 3" LONG #10 FASTENERS SPACED AT 2 FOOT MAXIMUM, UNLESS OTHERWISE NOTED.

NERAL:

FIELD MEASUREMENTS SHALL BE TAKEN BEFORE ANY FABRICATION IS PERFORMED.

METHOD OF MEASUREMENT:

THE PAYMENT FOR THIS ITEM SHALL BE SQUARE FOOTAGE IN PLACE AND ACCEPTED. THIS ITEM SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE TIMBER SUBDECKING. PAYMENT SHALL BE MADE UNDER ITEM SPECIAL - STRUCTURES: TIMBER SUBDECK.

NN REVIEWED
G RJM
SED STRUCTURE FIL

DESIGNED DRAWN
PPA JAG
CHECKED REVISED
RPM

LOCATION 3

SENERAL NOTES - LOCA BRIDGE NO. CUY-71-04 WHITNEY ROAD OVER IR

2/14

GENERAL NOTES CONTINUED: SEE SHEET 3/14

### <u>ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM</u>

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMÁLIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DI149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
- 2. BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR.
- 3. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

### ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.



CENERAL NOTES - LOCATION 3	DESIGNED	DRAWN	DESIGNED DRAWN REVIEWED	DATE	
	PPA	JAG	RJM	1/2021	
BRIDGE NO. CUY-71-0467	CHECKED	REVISED	CHECKED REVISED STRUCTURE FILE NUMBER	I F NIMBER	
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WHILINET ROAD OVER IR !!	Z Z		1802872	2/2	

CUY-BH-FY2021(B) MISC PID No. 109131





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BAR BENDI	NG DIAGRAMS
TYPE-1	TYPE-2
TYPE-19  A  A  A  Z''  TYPE-38	A TYPE-30

MADK		NUMBER			WEIGHT		DIMENSIONS							
MARK	REAR	FORWARD	TOTAL	LENGTH	(LBS)	TYPE	А	В	С	D	Ε	R	INC.	
RAILINGS														
R501			160	30'-0"	5007	ST.								
R502			16	10'-0"	167	ST.								
R503			64	11'-6"	768	ST.								
R504			216	5′-6″	1240	ST.								
R505	BAR NOT	USED												
R506			8	11′-6″	96	1	0'-10"	10'-9"						
R507			8	6'-3"	53	1	3′-5″	2'-11"				73/8 "		
R508			8	11'-11"	100	ST.								
R509			4	13'-7"	57	19	12'-2"	1'-41/4"	0'-5"					
R510			4	13′-6″	57	ST.								
R511			16	13′-5″	224	ST.								
R512			16	13′-7″	227	19	12'-2"	1'-41/4"	0′-5″					
R513	BAR NOT	USED												
R514	BAR NOT	USED												
R515			798	9′-10″	8185	30	1'-6"	0'-8"	3′-5″	3′-3″				
R516			112	10'-10"	1266	30	1′-6″	0'-8"	3′-11″	3'-9"				
R517			20	4'-6"	94	1	3′-1″	1'-6"						
R518			20	4'-4"	91	1	2'-11"	1'-6"						
				TOTAL =	17632									

SF | SPECIAL - STRUCTURES, TIMBER SUBDECK

SY CRUSHED AGGREGATE SLOPE PROTECTION

SF CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN

MARK	NUMBER				WEIGHT		DIMENSIONS						
MARK	REAR	FORWARD	TOTAL	LENGTH	(LBS)	TYPE	Α	В	С	D	Ε	R	INC.
SUPERSTRU	<i>JCTURE</i>												
S401			128	2'-4"	200	2	0'-71/4"	1′-5″					
S601			12	14'-6"	262	ST.							
S602			12	7′-0″	127	38	3′-4″						
<i>S701</i>			12	14'-6"	356	ST.							
<i>S702</i>			12	7′-10″	193	38	3′-9″						
				TOTAL =	938	**							

\*\* FOR INFORMATIONAL PURPOSES ONLY. REINFORCING STEEL INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN FOR PAYMENT.

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844

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MARK		NUMBER			WEIGHT				D	IMENSION	IS		
WARN	REAR	FORWARD	TOTAL	LENGTH	(LBS)	TYPE	Α	В	С	D	Ε	R	INC.
DEWALKS													
S501			452	4'-8"	2201	ST.							
S502			120	30'-0"	3755	ST.							
S503			48	13'-6"	676	ST.							
	TOTAL = 6632							•					

34

2/14

3/14

## **NOTES:**

- 1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, R501 IS A NO. 5 BAR.
- 2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. "R" INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.
- 3. "ST." INDICATES A STRAIGHT BAR.
- 4. ALL REINFORCING TO BE EPOXY COATED.
- 5. SEE SHEET 10/14 FOR DETAILS OF RAILING AND SIDEWALK REINFORCING.



LOCATION

QUANTITIES & REINFORCING SCHEDULE
BRIDGE NO. CUY-71-0467
WHITNEY ROAD OVER IR 71

CUY-BH-FY2021(B) Š PID



ENT REPAIRS - LOCATION BRIDGE NO. CUY-71-0467 WHITNEY ROAD OVER IR 71

MISC 109131 CUY-BH-FY2021(B) Š

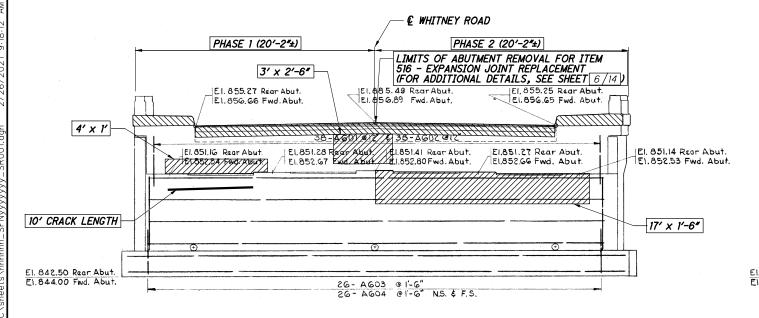
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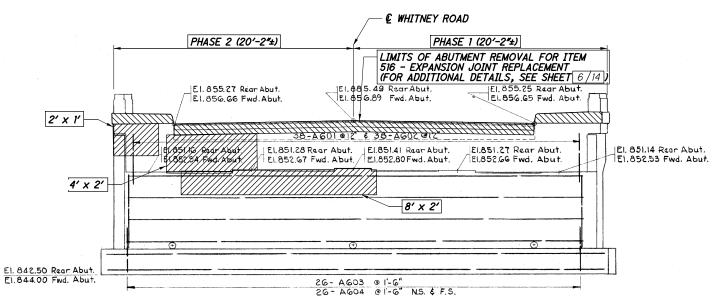
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2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA SHEET, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES. 3. AFTER COMPLETION OF REPAIRS, ALL PATCHED AREAS TO INCLUDE SEALING TREATMENT PER ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATION





FORWARD ABUTMENT REPAIR

*NOTES:* 

PURPOSES ONLY.

REAR ABUTMENT REPAIR

INDICATES CONCRETE STEM REPAIR PER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION



*LEGEND:* 

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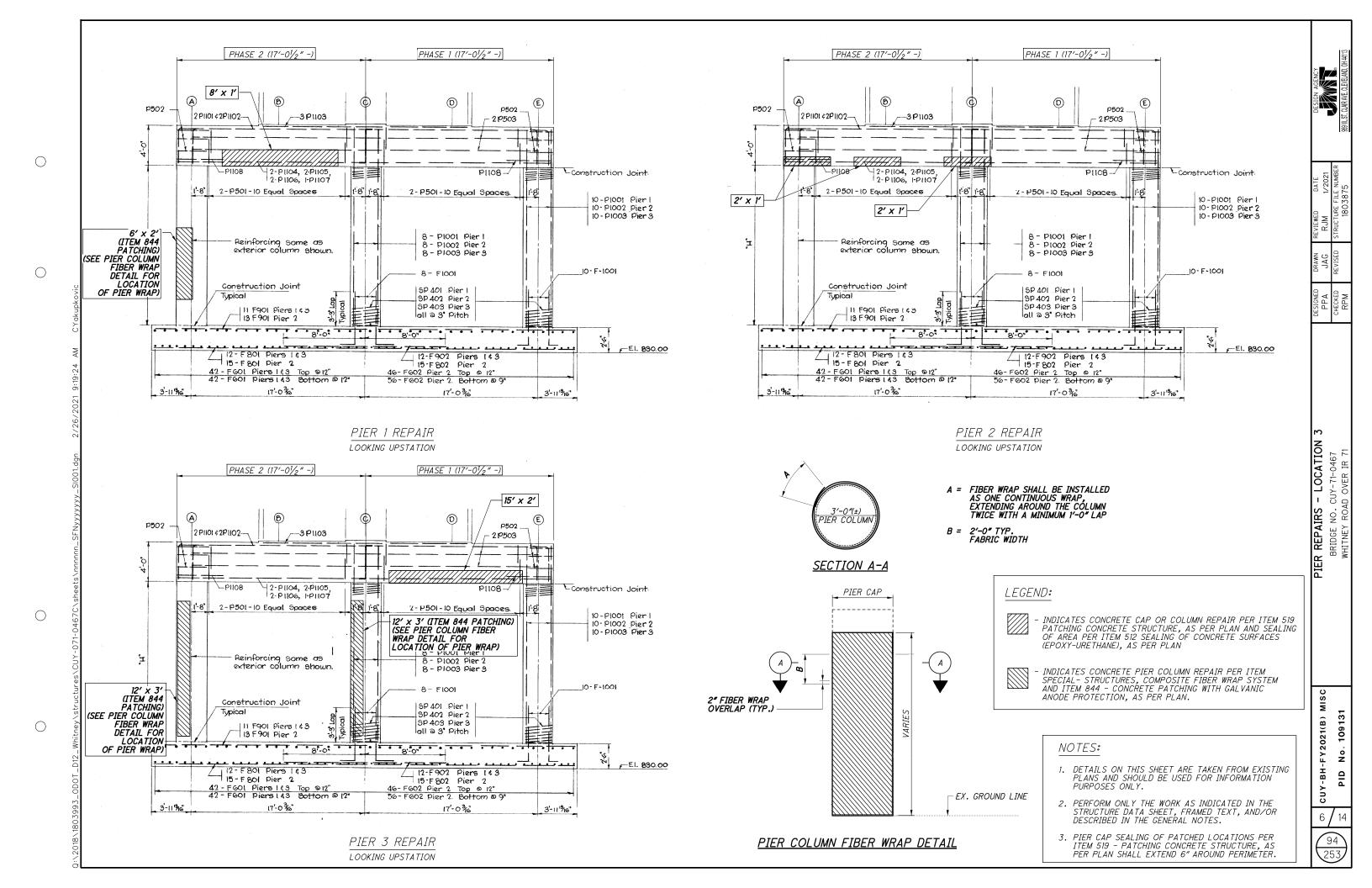
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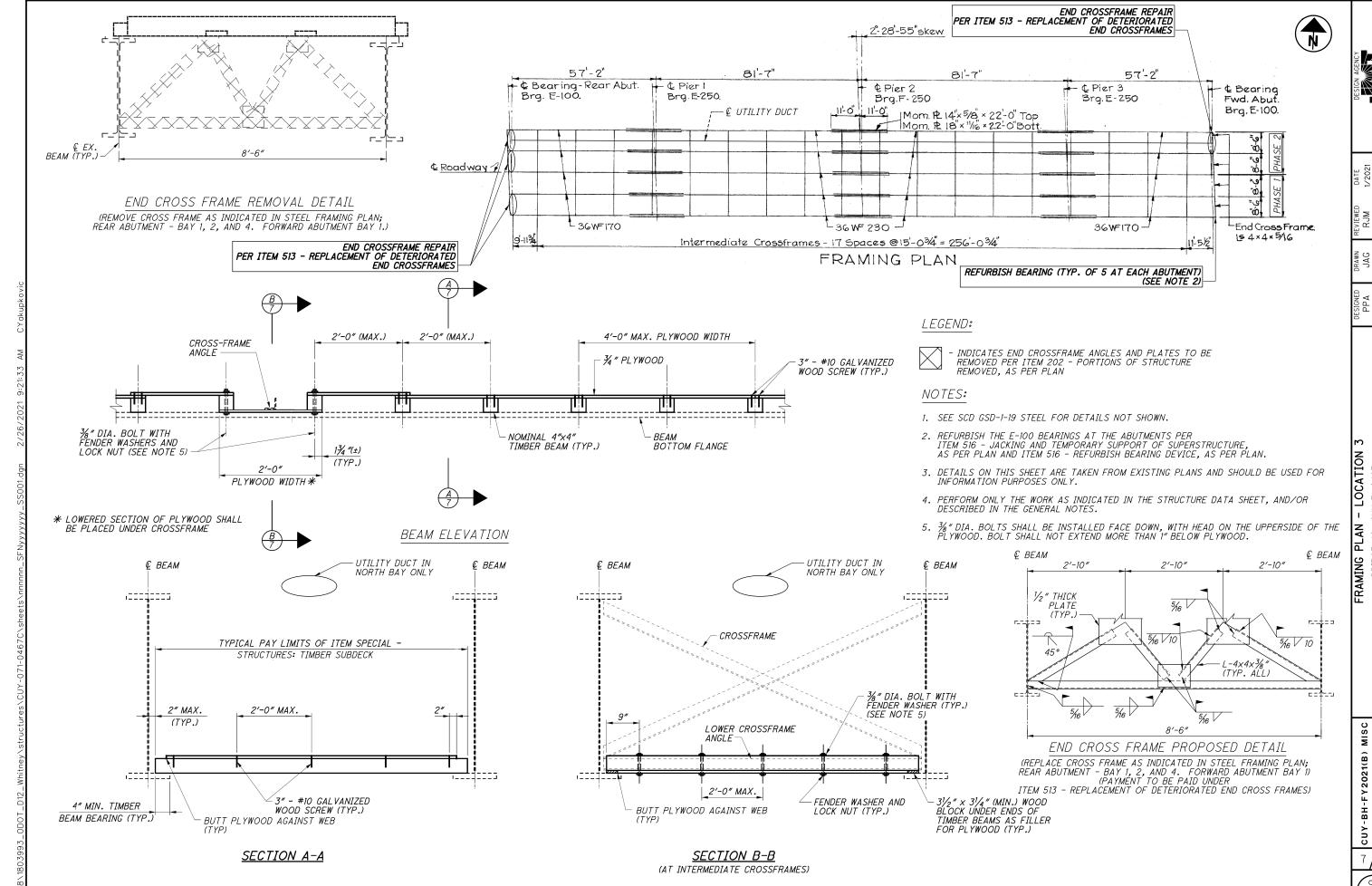
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INDICATES CONCRETE BACKWALL REPAIR PER ITEM 519
PATCHING CONCRETE STRUCTURE, AS PER PLAN



INDICATES CONCRETE BACKWALL REMOVAL PER ITEM 202 PORTIONS OF STRUCTURE REMOVED, AS PER PLAN





TIMBER SUBDECKING DETAIL

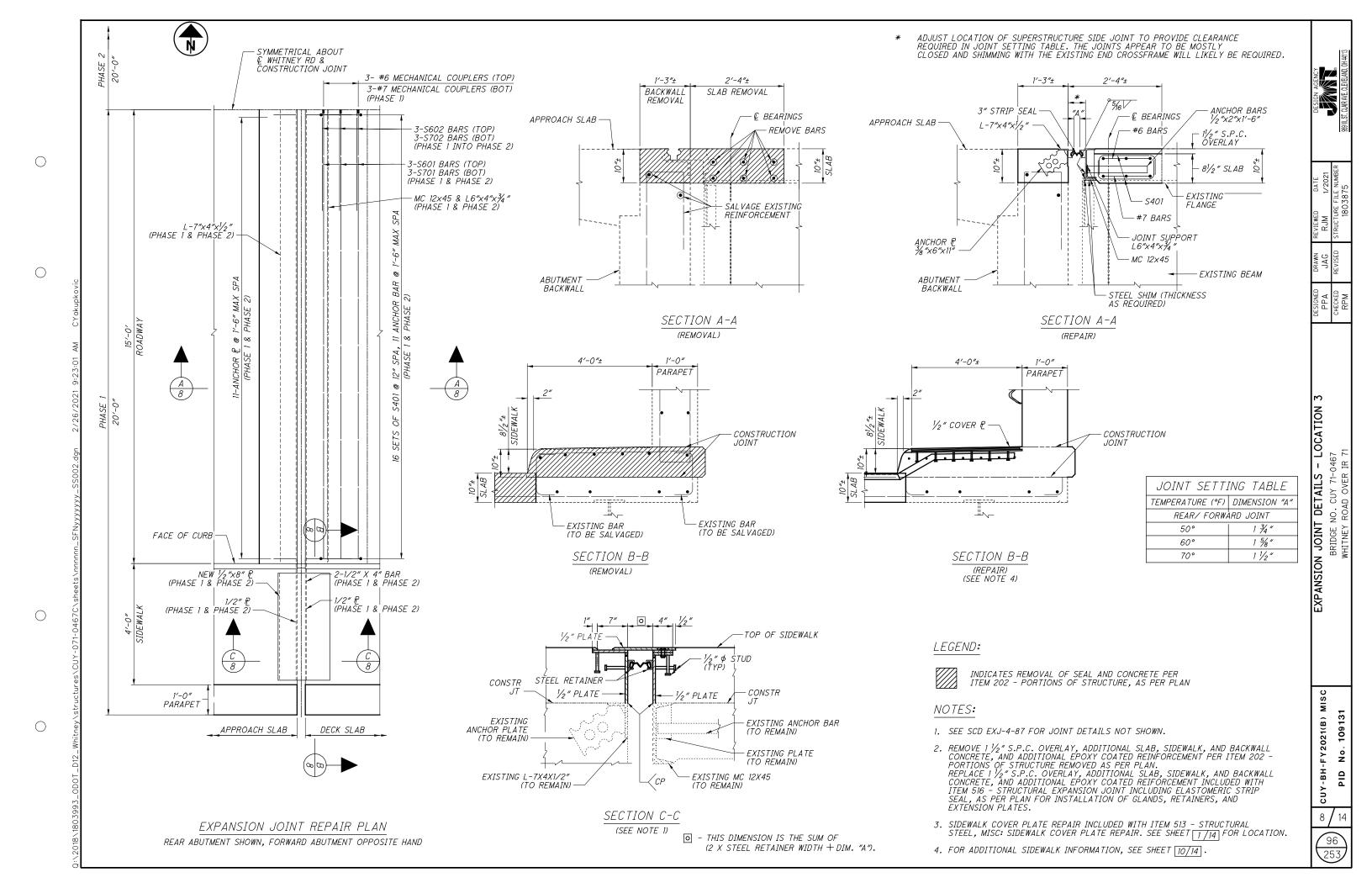
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INDICATES TREATING OF BRIDGE DECK WITH SRS PER ITEM 512



INDICATES REMOVAL OF SIDEWALK TO BE PAID UNDER ITEM 202 - PORTIONS OF STRUCTRE REMOVED, AS PER PLAN



INDICATES REMOVAL OF PARAPET TO BE PAID UNDER ITEM 202 - PORTIONS OF STRUCTRE REMOVED, AS PER PLAN

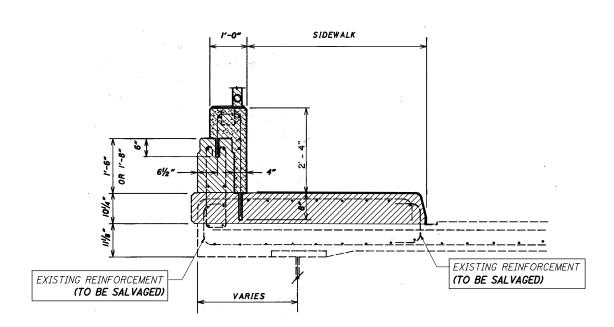
# NOTES:

- 1. SEE SHEET 10/14 FOR SIDEWALK DETAILS.
- 2. SEE SHEET 13/14 FOR VANDAL PROTECTION POST SPACING.
- 3. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY.
- 4. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA SHEET, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES.

HALF TRANSVERSE SECTION

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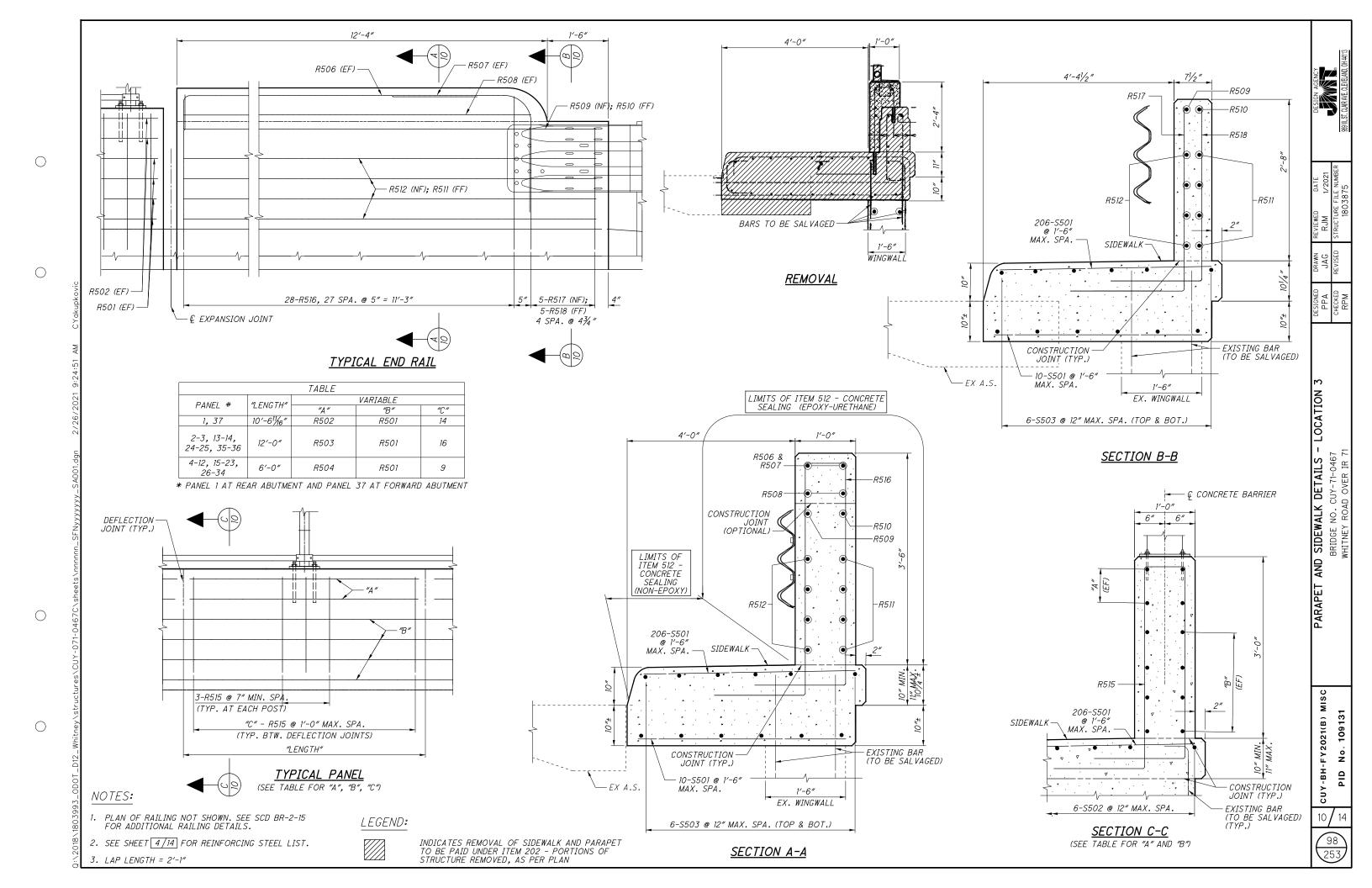


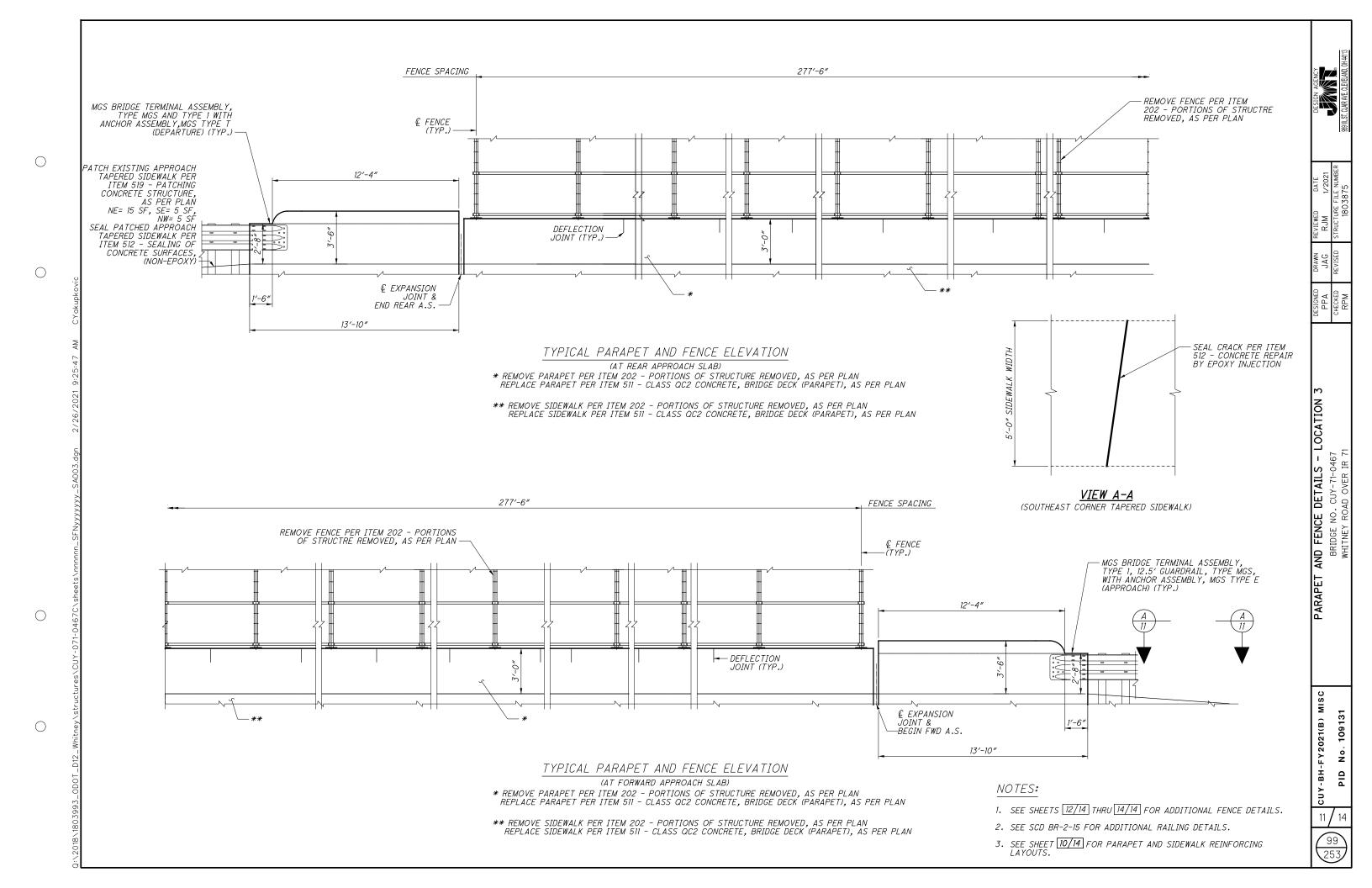
SIDEWALK AND RAILING REMOVAL DETAIL

SEE SHEET 10/14 FOR ADDITIONAL SIDEWALK DETAILS

TRANSVERSE SECTION - LOCATION
BRIDGE NO. CUY-71-0467
WHITNEY ROAD OVER IR 71

CUY-BH-FY2021(B) MISC PID





### ITEM SPECIAL - VANDAL PROTECTION FENCE 6' STRAIGHT WELDED WIRE **WITH LETTERING (ALTERNATE 2)**

THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT; FABRICATE, GALVANIZE, CLEAN, APPLY A TWO-COAT SHOP PAINT SYSTEM (EPOXY/URETHANE) AND INSTALL THE RAILING INCLUDING THE LETTERING. ALL FENCE AND RAILING MATERIALS SHALL BE GALVANIZED AND PAINTED PER THIS NOTE.

- A. FABRICATION OF THE RAILING SHALL BE IN ACCORDANCE WITH C&MS 513, UF LEVEL. COATING OF THE RAILING SHALL BE IN ACCORDANCE WITH C&MS 514, EXCEPT AS NOTED BELOW.
- B. THE ARCHITECTURAL FENCING SHALL SATISFY THE MINIMUM DESIGN REQUIREMENTS FOR POSTS AND ANCHORAGES AS SPECIFIED IN STANDARD BRIDGE DRAWING VPF-1-90, FOR "VANDAL PROTECTION FENCE".
- C. THE FENCING SHALL BE CONSTRUCTED USING WELDED WIRE FABRIC WITH 10.5 GAGE CORE WIRE, GALVANIZED AFTER WELDING TO THE FRAME MEMBERS OF EACH PANEL WELDMENT. THE POST AND ANCHOR PLATE AND THE LETTERS WITH ATTACHMENT TABS SHALL BE SEPARATE WELDMENTS. THE FABRICATOR SHALL PROVIDE DRAIN HOLES AND OTHER DETAILS AS REQUIRED TO ALLOW THE TUBE MEMBERS OF THE WELDMENTS TO BE DIPPED IN THE GALVANIZING TANK WITHOUT DAMAGE.
- D. STEEL PLATES AND SHAPES SHALL BE ASTM A709 GRADE 36 OR 50. ALL OTHER MATERIALS SHALL BE IN ACCORDANCE WITH C&MS 707.10 OR 711.09.
- E. THE GALVANIZED COATING SYSTEM MAY BE APPLIED BY A GALVANIZER NOT PRE-QUALIFIED AS A FABRICATION SHOP UNDER SUPPLEMENT 1078,
  BUT THE PRE-QUALIFIED FABRICATION OF THE STRUCTURAL STEEL SHALL
  BE RESPONSIBLE FOR THE QUALITY OF THE APPLIED GALVANIZED COATING
  SYSTEM AND ANY REPAIRS, RE-FABRICATION AND ADDITIONAL ASSEMBLIES
  REQUIRED TO
- F. THE TWO SHOP COATS SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP HAVING PERMANENT BUILDINGS PER 513.04 AND PREQUALIFIED AT THE UF LEVEL. THE PAINT QUALITY CONTROL SPECIALIST (QCS) SHALL BE QUALIFIED AS SPECIFIED IN 514.04.
- G. PRIOR TO GALVANIZING, ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES SHALL HAVE A 1/16-INCH RADIUS OR EQUIVALENT FLAT SURFACE AT
- H. GALVANIZE THE FABRICATED RAILING AND HARDWARE ACCORDING TO C&MS 711.02, EXCEPT THAT FABRICATED RAILING ELEMENTS SHALL NOT BE POST TREATED WITH WATER QUENCHING OR CHROMATE CONVERSION
- I. AFTER GALVANIZATION, REMOVE ZINC HIGH SPOTS SUCH AS METAL DRIP LINE AND OTHERS THAT WOULD DETRACT FROM THE PAINT APPEARANCE BY SSPC SP2 OR SP3. TAKE CARE THAT THE BASE GALVANIZED COATING IS NOT REMOVED. CHECK REPAIRED AREAS FOR REQUIRED COATING
- J. REPAIR GALVANIZED COATINGS DAMAGED IN THE SHOP ACCORDING TO ASTM A780 METHOD A3. REPAIR GALVANIZED COATINGS DAMAGED IN THE FIELD ACCORDING TO ASTM A780 METHOD A1.
- K. AFTER REMOVING HIGH SPOTS, CLEAN THE GALVANIZED COATING ACCORDING TO SSPC SP-1. THE CLEANING SOLUTION SHALL BE AN ALKALINE SOLUTION WITH A PH RANGING FROM A MINIMUM OF 11 TO A MAXIMUM OF 12. THIS SOLUTION CAN BE APPLIED BY IMMERSION, SPRAY OR SOFT NYLON BRUSH. FOLLOW CLEANING WITH A HOT WATER OR HOT PRESSURE WASHER RINSE. SEPARATE INDIVIDUAL PIECES AND POSITION TO FACILITATE DRAINAGE AND DRYING. THE PIECES SHALL BE COMPLETELY DRY BEFORE PROCEEDING.
- L. AFTER CLEANING, ABRASIVE BLAST THE PIECES ACCORDING TO SSPC-SPT BRUSH-OFF BLAST CLEANING. THE BLASTING OPERATION SHALL ROUGHEN THE GALVANIZED SURFACE TO AN ANGULAR SURFACE PROFILE OF 0.75 TO 1.00 MILS. SELECT THE BLASTING EQUIPMENT, TECHNIQUE AND ABRASIVE MATERIAL TO PROVIDE FOR THE SPECIFIED SURFACE PROFILE WITHOUT REMOVAL OF EXCESSIVE ZINC LAYERS. THE FINAL ZINC MILLAGE SHALL NOT BE LESS THAN 4.0 MILS. REMOVE ALL ABRASIVE RESIDUE WITH CLEAN COMPRESSED AIR OR OTHER METHODS ACCEPTABLE TO THE DFPARTMENT.
- M. AFTER OBTAINING SURFACE PROFILE, SHOP APPLY A TWO COAT PAINT . AFTER OBTAINING SORFACE PROFILE, SHOP APPLY A TWO COAT PAINT SYSTEM CONSISTING OF EPOXY INTERMEDIATE COAT AND A URETHANE FINISH COAT MEETING THE REQUIREMENTS OF C&MS 708.02. THE FINISH COAT OF THE WELDED FABRIC, POSTS, RAILS AND BACK OF LETTERS SHALL MATCH FEDERAL COLOR STANDARD FS 595C-16515 GRAY. THE FRONT OF THE LETTERS SHALL CLOSELY MATCH SHERWIN WILLIAMS SW 4071 (RAIN FOREST GREEN). APPLY THE EPOXY COATING WITHIN 24 HOURS OF THE PRIVALORS BY ASTING 24 HOURS OF THE BRUSH-OFF BLASTING.

- N. PRIOR TO FABRICATION OF THE RAILING SYSTEM, FABRICATE A SAMPLE RAILING PANEL OF A LENGTH AGREEABLE TO THE PROJECT ENGINEER WHICH INCLUDES TWO POSTS, ALL HARDWARE, INCIDENTALS AND COATINGS. THE PROJECT ENGINEER WILL USE THIS SAMPLE PANEL TO JUDGE ACCEPTANCE OF THE FABRICATION, COATINGS AND QUALITY CONTROL PROGRAM. AFTER THE REVIEW OF THIS SAMPLE, THE DEPARTMENT AND THE CONTRACTOR MAY AGREE UPON ANY FABRICATION, COATING, QUALITY CONTROL OR INSTALLATION CHANGES AS A MODIFICATION TO THESE NOTES. THE FABRICATION CAN PROCEED ANY TIME AFTER THE ACCEPTANCE OF THIS SAMPLE PANEL. THE SAMPLE PANEL MAY BE INCORPORATED INTO THE FINISHED WORK AT THE DISCRETION OF THE ENGINEER.
- O. REPAIR DAMAGE TO THE PAINT SYSTEM CAUSED DURING STORAGE, TRANSPORTATION, OR ERECTION, ACCORDING TO C&MS 514.22. EXERCISE EXTREME CARE WHILE HANDLING THE STEEL DURING ERECTION, AND DURING SUBSEQUENT CONSTRUCTION OF THE RAILING AND FENCE. INSULATE THE STEEL FROM THE BINDING CHAINS BY SOFTENERS AND PAD ALL HOOKS AND SLINGS THAT ARE USED TO HOIST/ERECT THE MEMBERS.
- P. ALL FENCE ANCHORS SHALL BE CAST INTO THE PARAPET. A WASHER AND NUT SHALL BE TACK WELDED TO THE BOTTOM OF THE THREADED ROD TO AVOID THE ANCHORS FROM PULLING LOOSE WHEN THE TEMPLATES FOR THE BASE PLATES ARE STRIPPED. FENCE ANCHORAGE SHALL BE STAINLESS STEEL PER C&MS 730.10.
- Q. THE LETTER WELDMENTS SHALL BE FABRICATED TO MATCH THE PANELS THAT WILL SUPPORT THEM. THE BOLTS SHALL BE TEST FIT BEFORE GALVANIZING. AFTER GALVANIZING AND PAINTING, THE LETTERS SHALL BE ATTACHED TO THE FENCE WELDMENT WITH STAINLESS STEEL BOLTS AND DOUBLE WASHERS PER C&MS 730.10. ERECT THE FENCE PANEL AND LETTERS TOGETHER.
- R. THE FENCE PANELS SHALL BE ERECTED AND ATTACHED TO THE FENCE POSTS WITH STAINLESS STEEL BOLT HARDWARE PER C&MS 730.10. THE POSTS AND CONCRETE ANCHORAGE SHALL BE CAREFULLY LOCATED AND SET IN THE NEW CONCRETE SIDEWALK SO FIELD MODIFICATION OF THE BOLT ATTACHMENT IS NOT REQUIRED.

	ESTIMATED QUANTITIES  CALCULATED CHECKED							2/21 2/21
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION		SUPER.	SEE S	HEET
				STRUCTURE REPAIR (CUY-71-0467, SFN: 1803875 - LOCATION 3) ALTERNAT	ES			
607	39900	555	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC (ALTERNATE 1)		555		
SPECIAL	60740000	555	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT WELDED WIRE WITH LETTERING (ALTERNA	TE 2)	555	12/	14



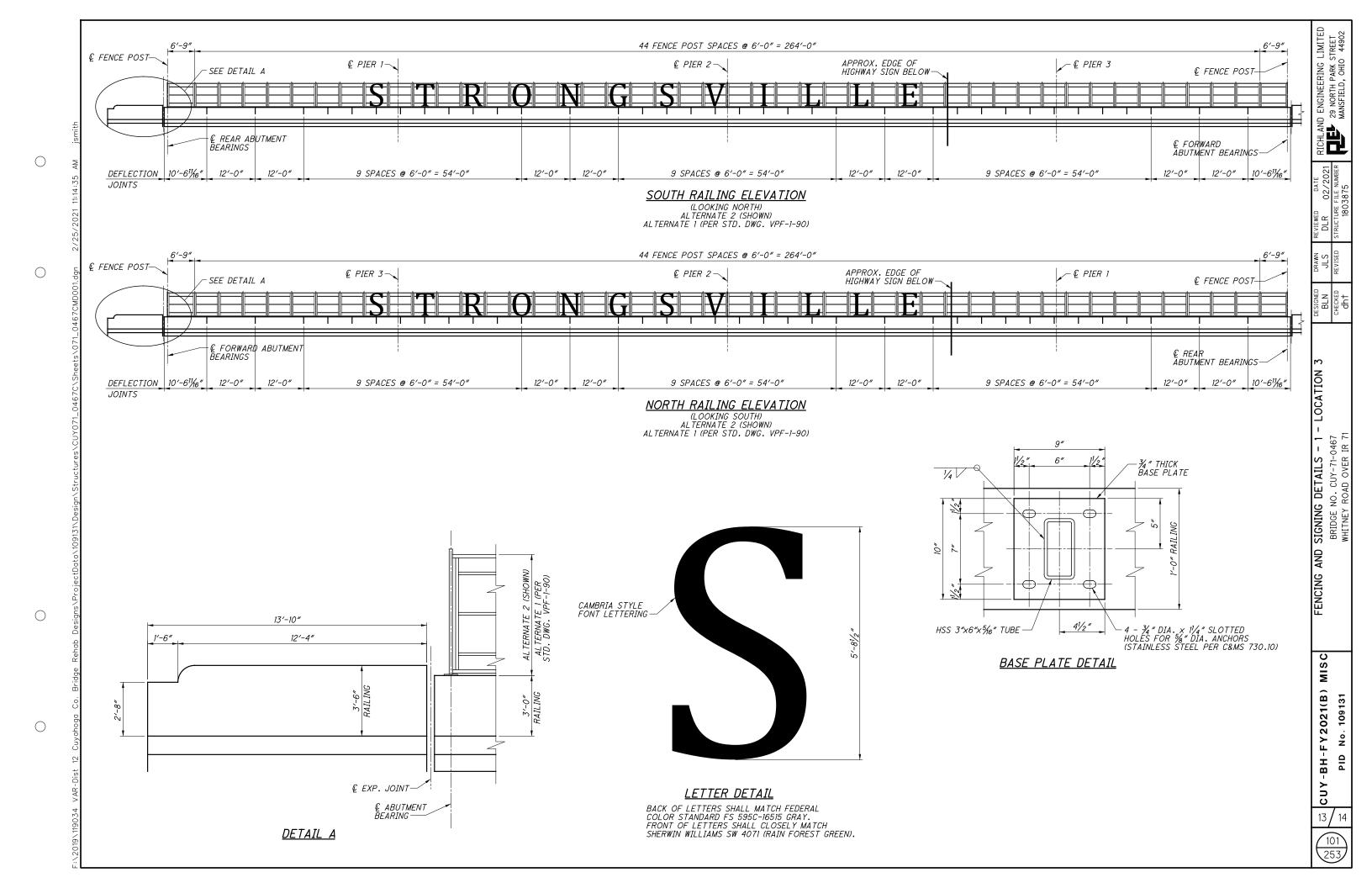
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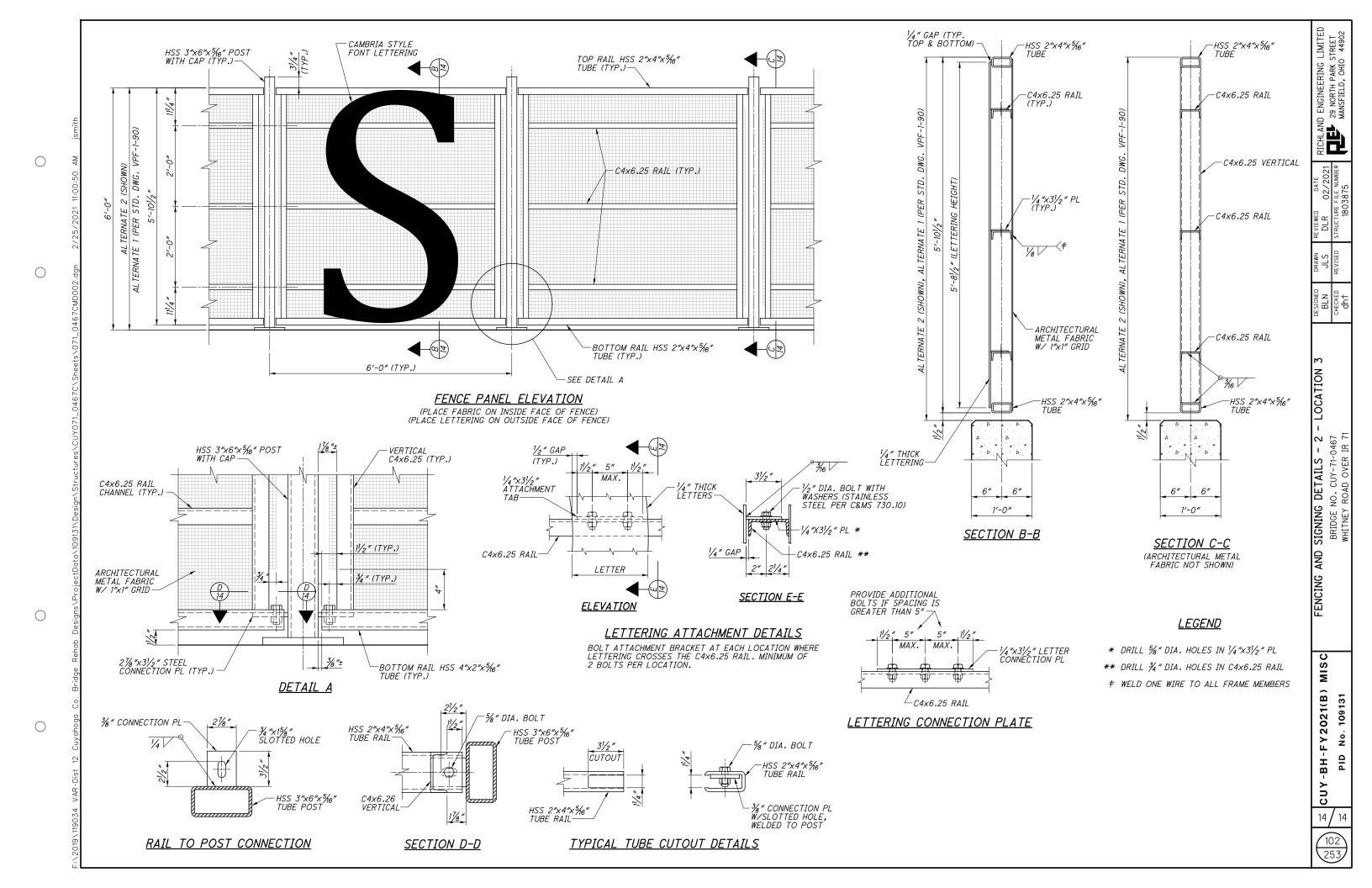
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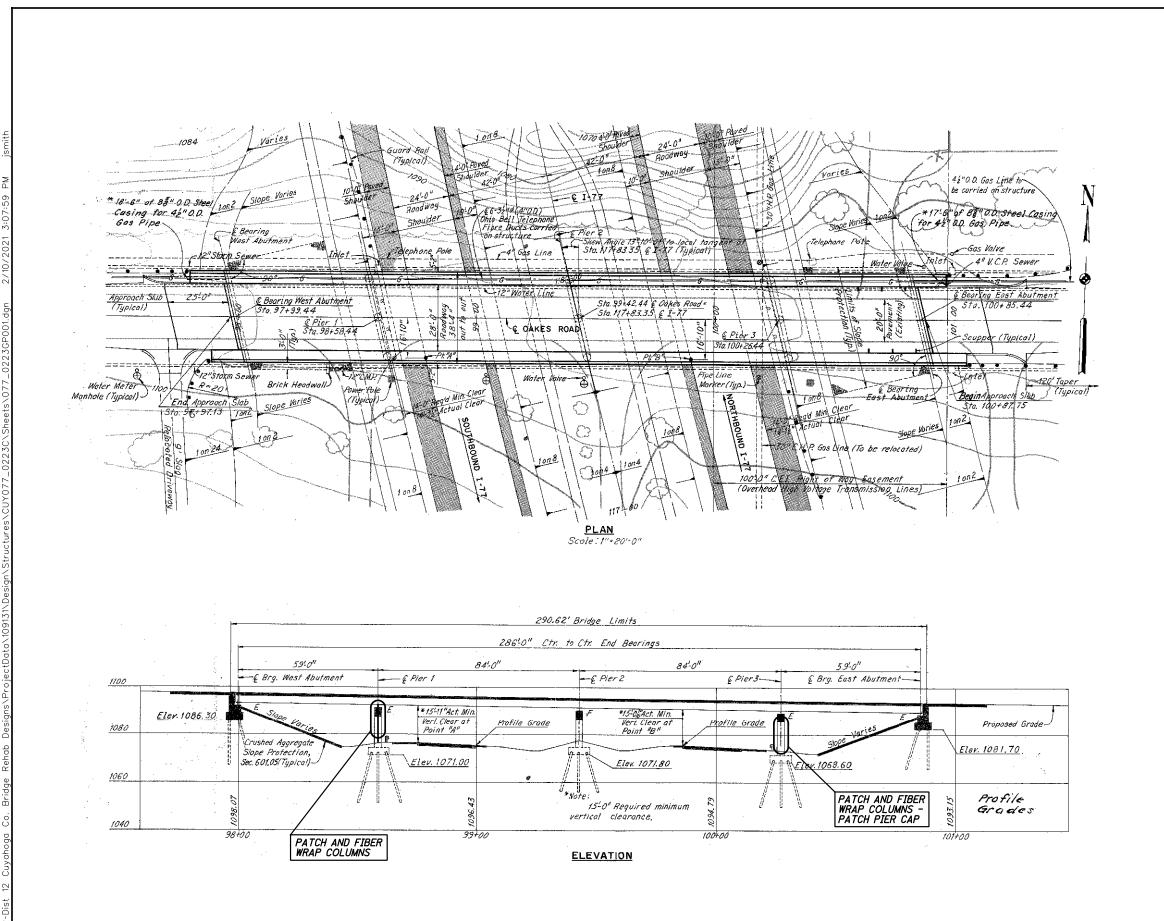
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# NOTES:

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA TABLE, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES.
- 3. FOR ESTIMATED QUANTITIES SEE SHEET 3/4.

CUY-BH-FY2021(B)

MISC

AND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

RICHLAN

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GENERAL PLAN - LOCATION
BRIDGE NO. CUY-77-0223
OAKES ROAD OVER IR 77

103 253

### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE: OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 OFFICE 5500 TRANSPORTATION BOULEVARD GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/ CONTRACTS/PAGES/DESIGNFILES.ASPX

### **DESCRIPTION OF WORK:**

- 1. PATCH AND FIBER WRAP DESIGNATED PIER COLUMNS.
- 2. PATCH AND SEAL DESIGNATED CAP LOCATIONS.

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE). AS PER PLAN

SEAL THE PIER 1, 2, AND 3 CAPS AND THE PIER 2 COLUMNS. REMOVE DEBRIS AND CLEAN SURFACES OF ABUTMENT WALLS AND SEATS PER 512.03 E AND F. THE EPOXY-URETHANE SHALL BE LIGHT NEUTRAL COLOR MEETING FEDERAL COLOR STANDARD NO. 17778, OR CLOSELY MATCH THE SEALER COLOR OF THE EXISTING SUPERSTRUCTURE CONCRETÉ. SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

# ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES SHALL NOT BE INCLUDED IN THIS ITEM.

## ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, THE CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

# <u>ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER</u>

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

### ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DI149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IHE CASING OR IHAI, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
- OR BACK FILLED WITH EPOXY.

  BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE REQUIRED FINISH COATING. THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INSTALLED AND ACCEPTED TO COMPLETE
THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS
AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN
CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD
APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING,
SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL
INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902 

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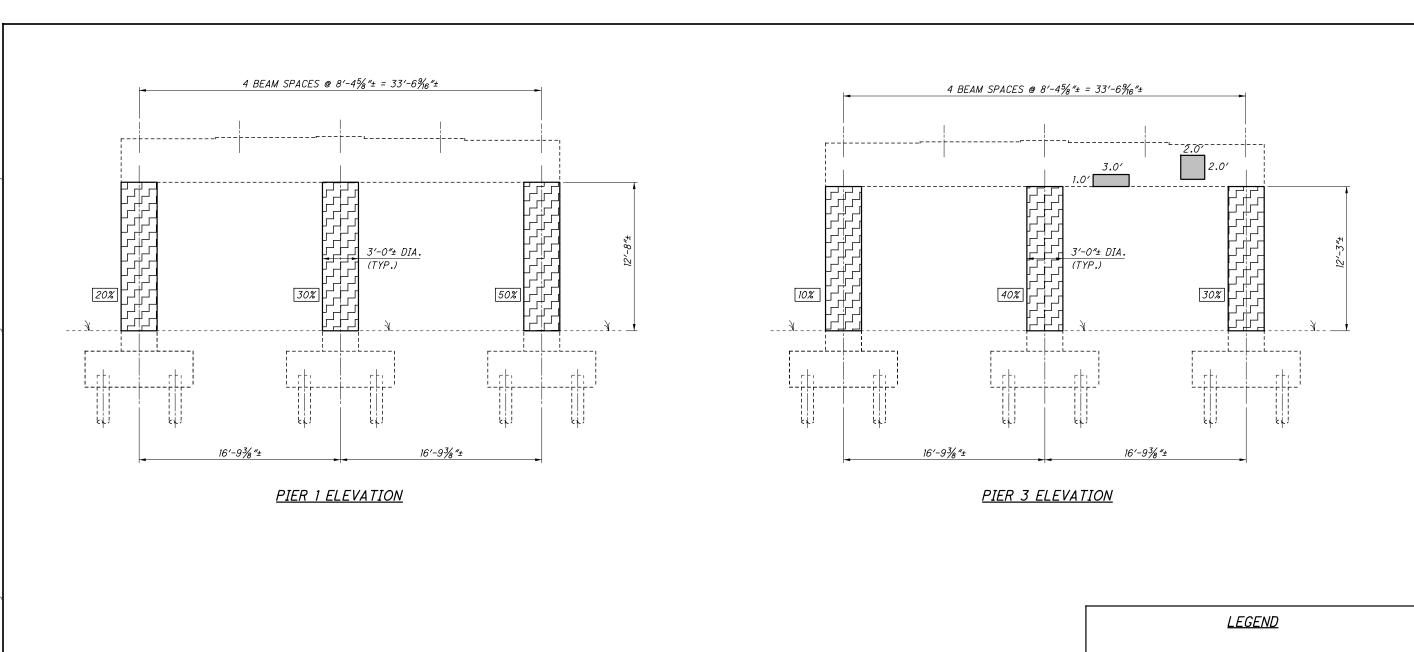
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ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	PIERS	GEN'L	REF. SHEET
512	10101	153	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	153		2/4
512	74001	152	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	I 152		2/4
SPECIAL	51900100	1604	SF	COMPOSITE FIBER WRAP SYSTEM	1604		2/4
519	11101	7	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	7		2/4
844	10001	212	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN	212		2/4

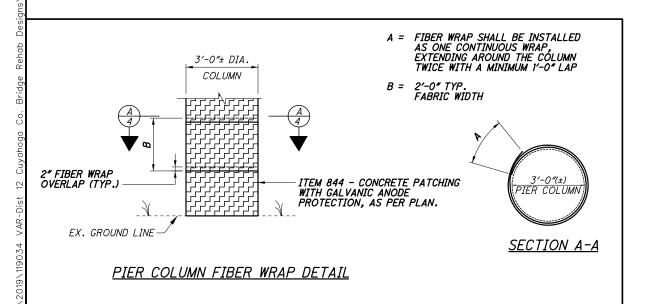
RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902 DESIGNED BLN CHECKED dh† ESTIMATED QUANTITIES - LOCATION 5
BRIDGE NO. CUY-77-0223
OAKES ROAD OVER IR 77

CUY-BH-FY2021(B) MISC





INDICATES CONCRETE PIER COLUMN REPAIR PER ITEM SPECIAL - STRUCTURES, COMPOSITE FIBER WRAP SYSTEM AND ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN.

30%

INDICATES THE APPROXIMATE PERCENTAGE OF COLUMN PATCHING REQUIRED PRIOR TO FIBER WRAPPING.

INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 7 S.F.

# NOTES:

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- 2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA TABLE, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES.
- 3. MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.
- 4. FOR ESTIMATED QUANTITIES SEE SHEET 3/4.

JY-BH-FY2021(B) MISC PID No. 109131

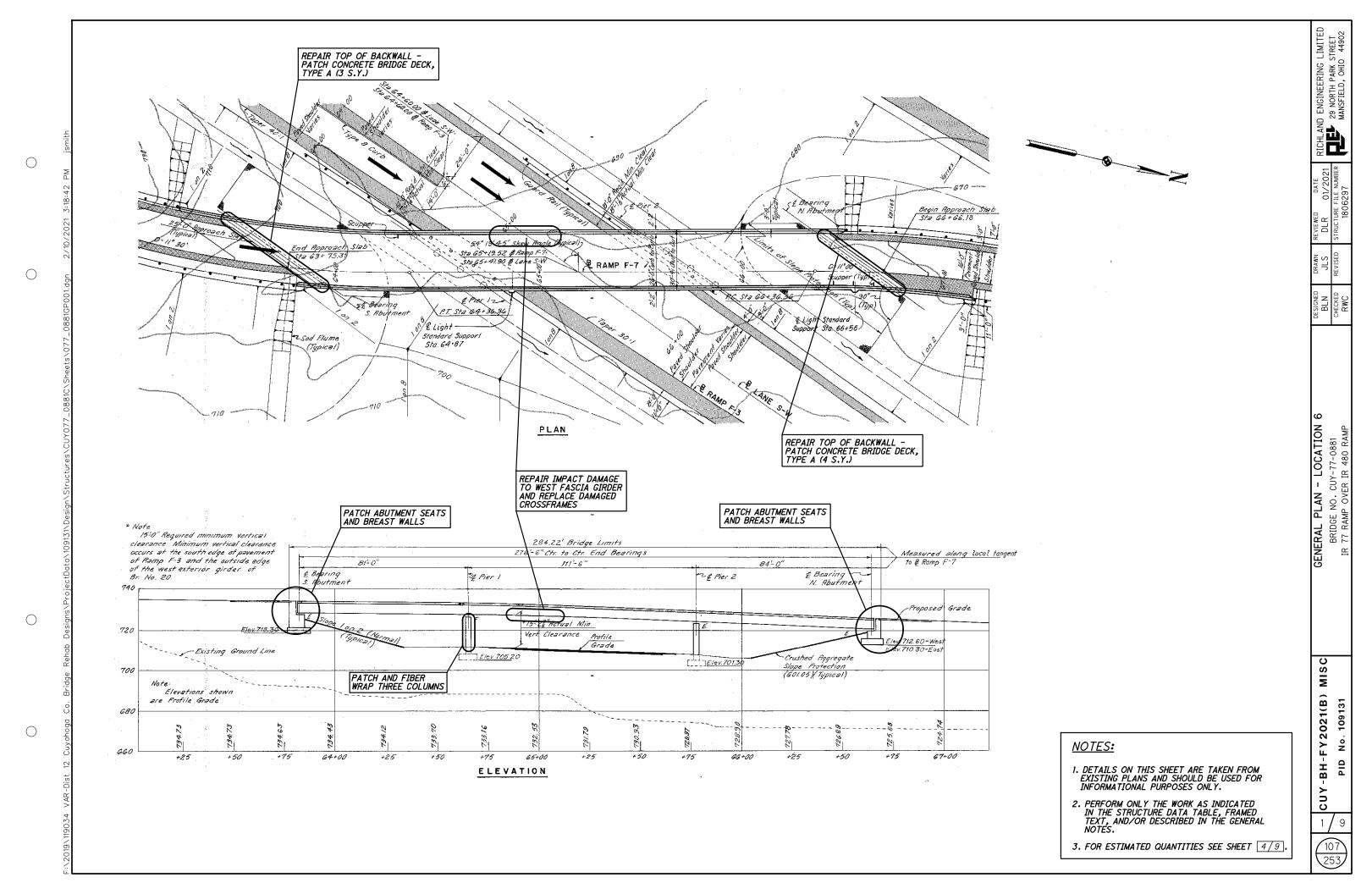
AND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

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REPAIR DETAILS - LOCATION
BRIDGE NO. CUY-77-0223
OAKES ROAD OVER IR 77

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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LOCATION

### REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS

SS844 (DATED 4-20-2018)

SS849 (DATED 1-18-2013)

### DESIGN DATA

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (BACKWALL)

STRUCTURAL STEEL - ASTM A709 GRADE 50 YIELD STRENGTH 50 KSI

### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS MATERIAL SPECIFICATIONS

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING
STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL
PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

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EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/ CONTRACTS/PAGES/DESIGNFILES.ASPX

### DESCRIPTION OF WORK:

- 1. PATCH AND FIBER WRAP DESIGNATED COLUMNS.
- 2. REMOVE AND REPLACE DAMAGED BACKWALL CONCRETE.
- 3. PATCH ABUTMENT SEATS, FACE OF BACKWALLS AND BREASTWALLS.
- 4. PATCH LOCATIONS OF DECK NEAR JOINTS.
- 5. REPAIR AND HEAT STRAIGHTEN GIRDER FLANGE AND STIFFENERS.
- 6. REPLACE DESIGNATED DAMAGED CROSS FRAMES.
- 7. FIELD PAINTING OF DAMAGED STEEL REPAIR AREAS.
- 8. SEAL ABUTMENT AND WINGWALL SURFACES. SEAL PIER 2 COLUMNS AND ONE COLUMN ON PIER 1.

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS, PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

### CUT LINE CONSTRUCTION JOINT PREPARATION

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

# ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED, AREAS OF CONCRETE REQUIRING PATCHES SHALL NOT BE INCLUDED IN THIS ITEM.

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

SEAL ALL ABUTMENT CONCRETE SURFACE AREAS (INCLUDING BACKWALLS, SEATS, BREASTWALLS & WINGWALLS) PER PLAN DETAILS. REMOVE DEBRIS AND CLEAN SURFACES OF WALLS AND SEATS PER 512.03 E & F. ALSO SEAL THE PIER 1 COLUMN NOT BEING FIBER WRAPPED, AND ALL PIER 2 COLUMNS. THE EPOXY-URETHANE SHALL BE LIGHT NEUTRAL COLOR MEETING FEDERAL COLOR STANDARD NO. 17778, OR CLOSELY MATCH THE SEALER COLOR OF THE EXISTING CONCRETE (LIGHT GRAY TYPICAL COLOR). SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - STRUCTURES, COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE ARÉAS DETÁILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 -SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, THE CONTRACTOR SHALL ENSURE ANY EXISTING BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

### ITEM 519 - PATCHING CONCRETE BRIDGE DECK - TYPE A

### A. DESCRIPTION:

THIS ITEM SHALL CONSIST OF FURNISHING THE NECESSARY LABOR, MATERIALS AND EQUIPMENT TO REPAIR CONCRETE BRIDGE DECKS, INCLUDING THE REMOVAL OF ALL LOOSE AND UNSOUND CONCRETE, BITUMINOUS PATCHES, SURFACE PREPARATION, BONDING COAT AND THE MIXING, PLACING, FINISHING AND CURING OF THE MORTAR OR CONCRETE PATCHES.

### B. MATERIALS:

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

FINE AGGREGATE (NATURAL SAND)	703.02
COARSE AGGREGATE (NO. 8)	703.02
PORTLAND CEMENT	701.05
QUICK SETTING CONCRETE MORTAR. TYPE 1 OR 2	705.21
AIR-ENTRAINING ADMIXTURE	705.10
CURING MATERIALS - TYPE A OR B PATCHES	705.07
CURING MATERIALS - TYPE C PATCHES	MFGR'S
	RECOMMENDATIONS

### C. REMOVAL OF UNSOUND CONCRETE:

THE ENGINEER SHALL SOUND AND OUTLINE THE AREAS TO BE REMOVED PER DIRECTION OF THE ENGINEER. SOUNDING MAY HAVE TO BE DELAYED UNTIL THE DECK IS SUFFICIENTLY DRY TO PERMIT DETECTION OF ALL AREAS OF DELAMINATION. THE PERIMETER OF ALL REMOVAL AREAS SHALL BE SAWED TO A DEPTH OF 1 INCH TO PRODUCE A VERTICAL OR SLIGHTLY UNDERCUT FACE. ADDITIONAL SAWCUTS MAY BE REQUIRED TO FACILITATE REMOVAL. ALL UNSOUND CONCRETE INCLUDING ALL PATCHES OTHER THAN SOUND PORTLAND CEMENT CONCRETE, AND ALL LOOSE AND DISINTEGRATED CONCRETE SHALL BE REMOVED. THE UNSOUND CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35 POUND CLASS AND SHALL BE OPERATED AT AN ANGLE OF LESS THAN 45 DEGREES MEASURED FROM THE SURFACE OF THE DECK. CONCRETE SHALL BE REMOVED IN A MANNER THAT PREVENTS CUTTING, ELONGATING OR DAMAGING REINFORCING STEEL. WHERE THE BOND BETWEEN CONCRETE AND A PRIMARY REINFORCING BAR HAS BEEN DESTROYED, OR WHERE MORE THAN ONE HALF OF THE PERIPHERY OF THE ENGINEER SHALL SOUND AND OUTLINE THE AREAS TO BE REMOVED PER HAS BEEN DESTROYED, OR WHERE MORE THAN ONE HALF OF THE PERIPHERY OF HAS BEEN DESTROYED, OR WHERE MORE THAN ONE HALF OF THE PERIPHERY OF SUCH A BAR HAS BEEN EXPOSED, THE ADJACENT CONCRETE SHALL BE REMOVED TO A DEPTH THAT WILL PROVIDE A MINIMUM 3/4 INCH CLEARANCE AROUND THE BAR EXCEPT WHERE OTHER REINFORCING BARS MAKE THIS IMPRACTICABLE. REINFORCMENT WHICH HAS BECOME LOOSE SHALL BE ADEQUATELY SUPPORTED AND TIED BACK INTO PLACE. AFTER COMPLETION OF THE SECONDARY REMOVAL OPERATIONS, THE ENGINEER WILL RE-SOUND THE DECK TO ENSURE THAT ONLY SOUND CONCRETE REMAINS. MINIMIZE CONSTRUCTION JOINTS. CONSTRUCTION OF THE PEROVAL AREAS JOINTS SHALL ONLY BE PLACED ON THE PERIMETER OF THE REMOVAL AREAS.

## D. SURFACE PREPARATION:

CLEANING SHALL CLOSELY PRECEDE APPLICATION OF THE BONDING GROUT AND/OR THE PATCHING MATERIAL. THE SURFACE TO BE PATCHED AND THE EXPOSED REINFORCING STEEL SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. IT MAY BE NECESSARY TO USE HAND TOOLS TO REMOVE SCALE FROM THE REINFORCING STEEL. FOR TYPE A AND TYPE B PATCHES AND TYPE C PATCHES WHICH DO NOT USE WATER AS THE ACTIVATOR, THE PREPARED SURFACE SHALL BE SURFACE DRY. FOR TYPE C PATCHES WHICH REQUIRE WATER AS THE ACTIVATOR, THE PREPARED SURFACE SHALL BE LEFT IN THE CONDITION AS RECOMMENDED BY THE MANUFACTURER. ANY ADDITIONAL SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE PATCHING MATERIAL WHICH IS USED. PATCHING MATERIAL WHICH IS USED.

#### E. BONDING GROUT:

THE GROUT FOR BONDING TYPE A PATCHES SHALL CONSIST OF EQUAL PARTS BY VOLUME OF PORTLAND CEMENT AND SAND, MIXED WITH SUFFICIENT WATER TO FORM A STIFF SLURRY. THE CONSISTENCY OF THIS SLURRY SHALL BE SUCH THAT FORM A STIFF SLURRY. THE CONSISTENCY OF THIS SLURRY SHALL BE SUCH THAT IT CAN BE APPLIED WITH A STIFF BRUSH OR BROOM TO THE EXISTING SURFACE IN A THIN, UNIFORM COATING. THE COATING OF GROUT SHALL BE SCRUBBED ONTO THE DRY SURFACE IMMEDIATELY BEFORE PLACING THE CONCRETE. CARE SHALL BE EXERCISED TO ENSURE THAT NO EXCESS GROUT IS PERMITTED TO COLLECT IN LOW SPOTS. IN NO CASE SHALL THE GROUT BE PERMITTED TO DRY BEFORE PLACING THE NEW CONCRETE. THINNED GROUT SHALL BE PAINTED OVER ALL JOINTS BETWEEN THE NEW AND EXISTING CONCRETE IMMEDIATELY AFTER THE FINISHING HAS BEEN COMPLETED. TYPE B AND TYPE C PATCHES SHALL BE BONDED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

### F. PATCHING:

THE MORTAR OR CONCRETE SHALL BE PLACED AS TYPE A, B, OR C.

- 1. TYPE A THE MIXTURE SHALL CONSIST OF 1 PART HIGH-EARLY-STRENGTH PORTLAND CEMENT, 1½ PARTS FINE AGGREGATE AND 1½ PARTS COARSE AGGREGATE BY VOLUME. SUFFICIENT AIR-ENTRAINING AGENT SHALL BE ADDED TO MAINTAIN AN AIR CONTENT OF 8 PLUS OR MINUS 2 PERCENT. THE SLUMP SHALL BE THE MINIMUM PRACTICAL FOR PLACING AND IN NO CASE SHALL IT EXCEED 2 INCHES. THE MATERIALS SHALL BE MIXED AT THE SITE. READY-MIXED CONCRETE SHALL NOT BE PERMITTED. THE MIX SHALL BE PLACED IN THE AREA TO BE PATCHED WHILE THE BONDING GROUT IS STILL WET, SLIGHTLY OVERFILLED AND STRUCK OFF WITH A VIBRATING SCREED DRAWN SLOWLY ACROSS THE AREA. HAND FINISHING WITH A WOOD FLOAT MAY BE REQUIRED TO PRODUCE A TIGHT, UNIFORM SURFACE.
- 2. TYPE B PATCHING MATERIAL SHALL BE MADE USING QUICK SETTING CONCRETE MORTAR, TYPE I OR 2, 705.21, AND SUITABLE FOR TRAFFIC AFTER OVERNIGHT CLOSURES WITH LIMITED CURING TIME. THE MORTAR SHALL BE MIXED AND PLACED AS PER MANUFACTURER'S RECOMMENDATIONS. COARSE AGGREGATE MAY BE ADDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WHEN THE DEPTH OF THE PATCH EXCEEDS
- 3. TYPE C PATCHING MATERIAL SHALL BE MADE USING A BLEND OF 705.21 TYPE 2 MATERIAL AND SELECTED AGGREGATES WITH AN ACTIVATOR. THESE MATERIALS SHALL BE MIXED AND PLACED AS PER MANUFACTURER'S RECOMMENDATIONS. COARSE AGGREGATE MAY BE ADDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WHEN THE DEPTH OF THE PATCH EXCEEDS 1 INCH.

### G. CURING:

TYPE A PATCHES SHALL BE CURED IN ACCORDANCE WITH SECTION 511.14, METHOD (A), FOR NOT LESS SHALL BE CURED IN ACCORDANCE WITH SECTION 511.14, METHOD (A), FOR NOT LESS THAN 24 HOURS IF MEMBRANE WATERPROOFING IS TO BE APPLIED IMMEDIATELY. IF NOT, METHOD (A) SHALL BE USED FOR 48 HOURS, AFTER WHICH THE MEMBRANE CURING MATERIAL SHALL BE APPLIED AT A RATE OF NOT LESS THAN ONE GALLON PER 200 SQUARE FEET. MEMBRANE CURING MATERIAL SHALL BE REMOVED PRIOR TO PLACING WATERPROOFING. TYPE B AND TYPE C PATCHES SHALL BE CURED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

### H. METHOD OF MEASUREMENT:

THE QUANTIITY SHALL BE THE ACTUAL AREA IN SQUARE YARDS OF THE EXPOSED SURFACE OF ALL PATCHES, IRRESPECTIVE OF THE DEPTH OF THE PATCH, COMPLETE, IN PLACE AND ACCEPTED.

### I. BASIS OF PAYMENT:

PAYMENT SHALL BE MADE AT THE CONTRACT PRICE BID FOR:

11EM	<u>UNIT</u>	DESCRIPTION
519	SQUARE YARD	PATCHING CONCRETE BRIDGE DECK, TYPE A



REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

#### <u> ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM</u>

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DII49 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	GI54 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUEL OF THE THE POXY THICKENED AS DIRECTED BY THE

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
- 2. BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR.
- ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR.

  3. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

RICHLAND ENGINEERING LIMITED
BER
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

ESIGNED	DRAWN	REVIEWED	DATE
BLN	JLS	DLR	01/2021
HECKED	REVISED	STRUCTURE	STRUCTURE FILE NUMBER
RWC		180	1806297

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ESTIMATED QUANTITIES						CALC CH	ULATED IECKED	JLS D	ATED <u>12/20</u> ATED <u>10/20</u>
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	PIERS	ABUTS.	GEN'L	REF. SHEET
202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	2/9
511	34410	3	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE			3		
512	10101	248	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN		88	160		2/9
512	74001	241	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN		88	153		2/9
513	90000	741	LB	STRUCTURAL STEEL, MISC.: DAMAGED CROSSFRAME REPLACEMENT	741				8/9 9/9
514	21000	LS		FIELD PAINTING OF DAMAGED STRUCTURAL STEEL				LS	
SPECIAL	51900100	1166	SF	COMPOSITE FIBER WRAP SYSTEM		1166			3/9
519	11101	67	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN			67		2/9
519	12200	7	SY	PATCHING CONCRETE BRIDGE DECK, TYPE A	7				2/9
844	10001	34	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		34			3/9
849	10000	LS		DAMAGE ASSESSMENT				LS	
849	10500	LS		SURFACE PREPARATION				LS	
849	10600	5	HOUR	REPAIRING DAMAGED MEMBERS BY GRINDING	5				
849	10700	LS		STRAIGHTENING DAMAGED MEMBERS				LS	

RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

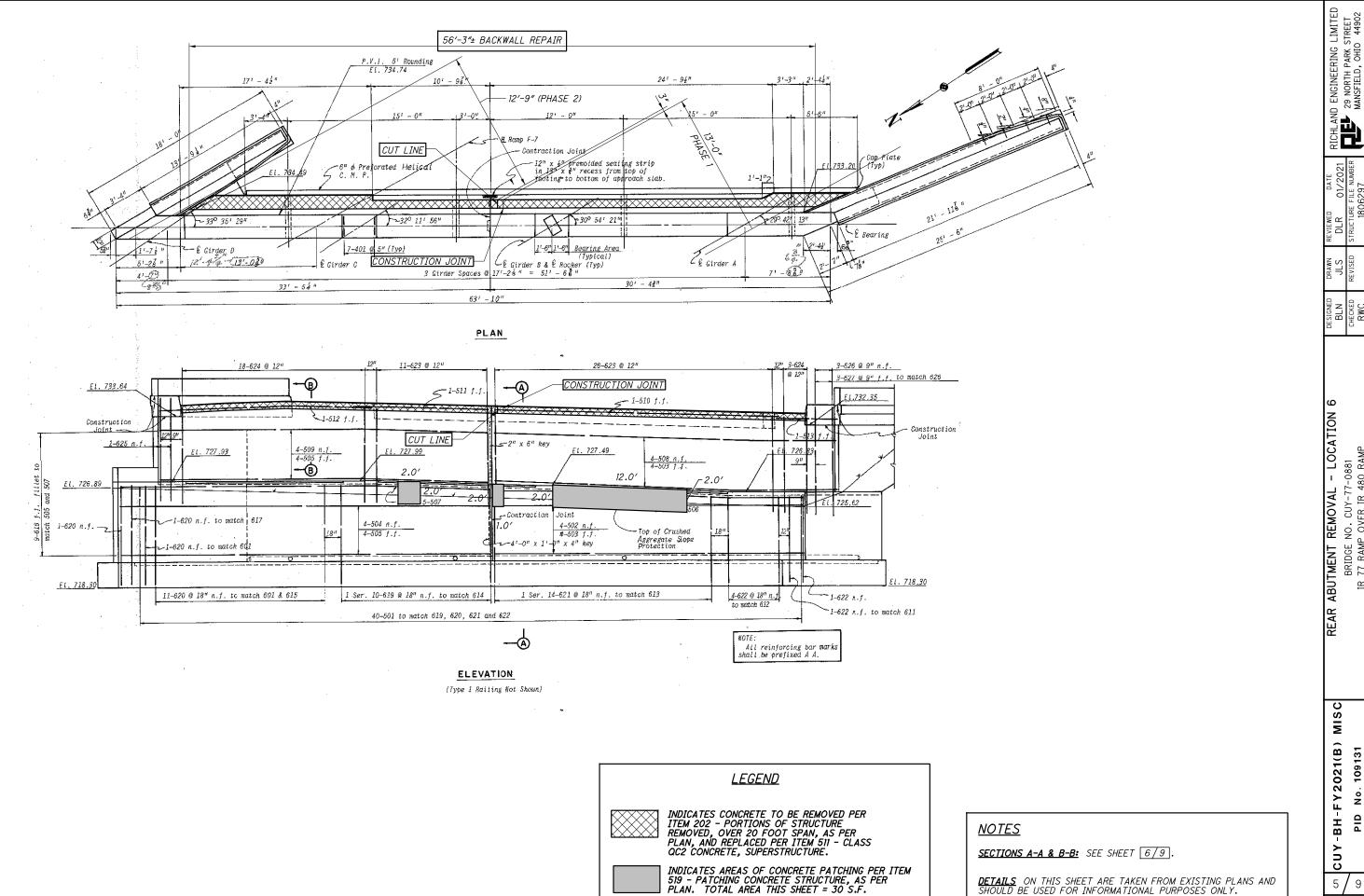
MANSFIELD, OHIO 44902 ESTIMATED QUANTITIES - LOCATION 6

BRIDGE NO. CUY-77-0881
IR 77 RAMP OVER IR 480 RAMP

CUY-BH-FY2021(B) MISC

DID No. 109131

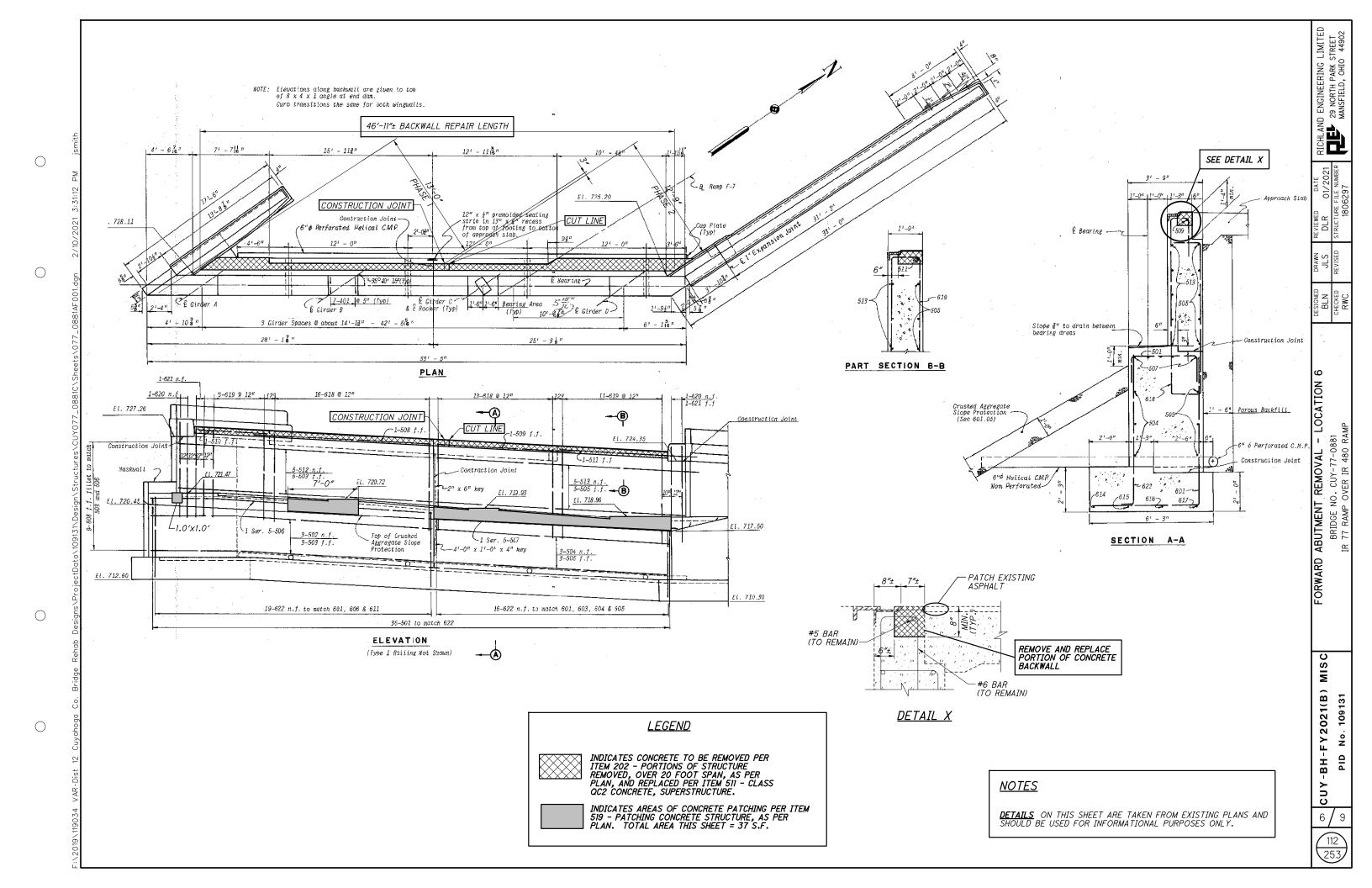




ABUTMENT REMOVAL - LOCATION BRIDGE NO. CUY-77-0881 IR 77 RAMP OVER IR 480 RAMP

MISC -BH-FY2021(B) 109131 PID

CUY 5 / 9



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\* - DELAMINATION Et. 725.80 \* 1'x11 € Gotumn î'-0' Diopeter (Typical) Ground Lin

PIER 1 ELEVATION

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8' 0' Director Pround Line 19-2661

51, 723,29

EL. 723.83

PIER 2 ELEVATION

## **LEGEND**

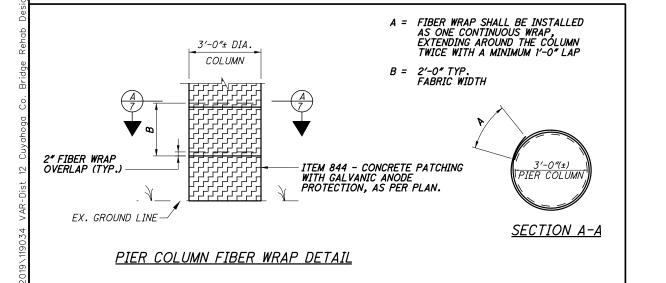


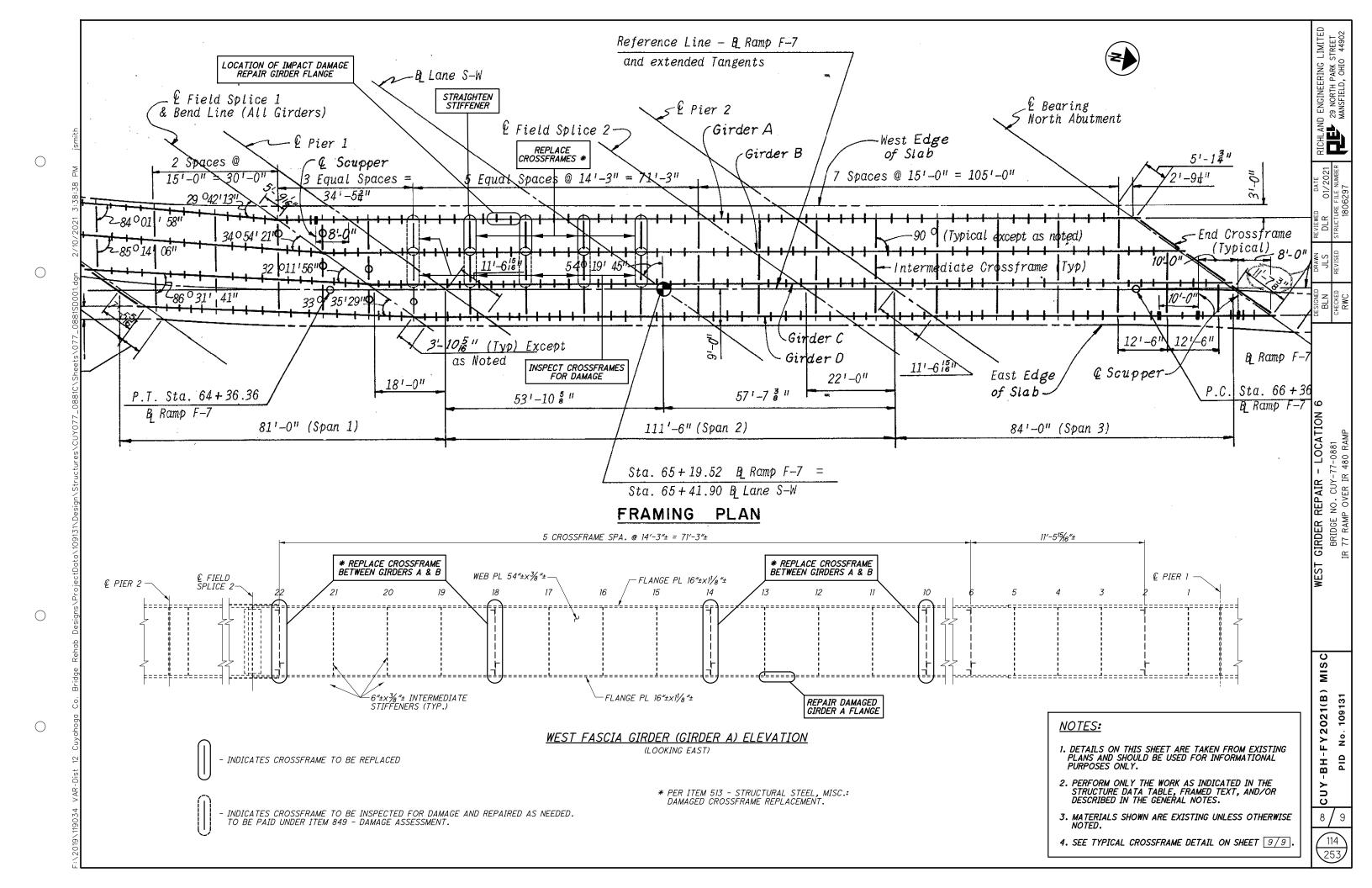
INDICATES CONCRETE PIER COLUMN REPAIR PER ITEM SPECIAL - STRUCTURES, COMPOSITE FIBER WRAP SYSTEM AND ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN. APPROXIMATE AREA OF PATCHING FOR PIER 1 COLUMNS IS 34 S.F.

ALL COLUMNS NOT BEING FIBER WRAPPED WILL BE SEALED USING EPOXY-URETHANE PER ITEM 512 -SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN AND ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN.

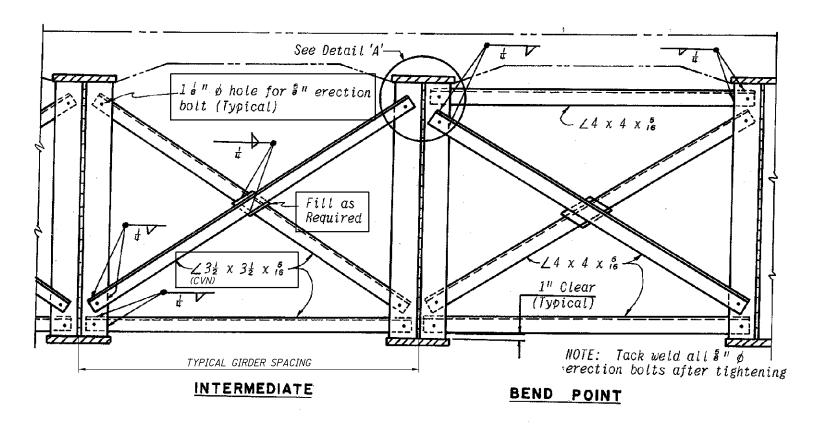
## **NOTES:**

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA TABLE, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES.
- 3. MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.
- 4. FOR ESTIMATED QUANTITIES SEE SHEET 4/9.





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## TYPICAL CROSSFRAME

CROSSFRAMES OR CROSSFRAME MEMBERS TO BE REPLACED SHALL BE REPLACED IN KIND ACCORDING TO THE DETAILS SHOWN ABOVE. EXISTING STIFFENERS TO REMAIN.

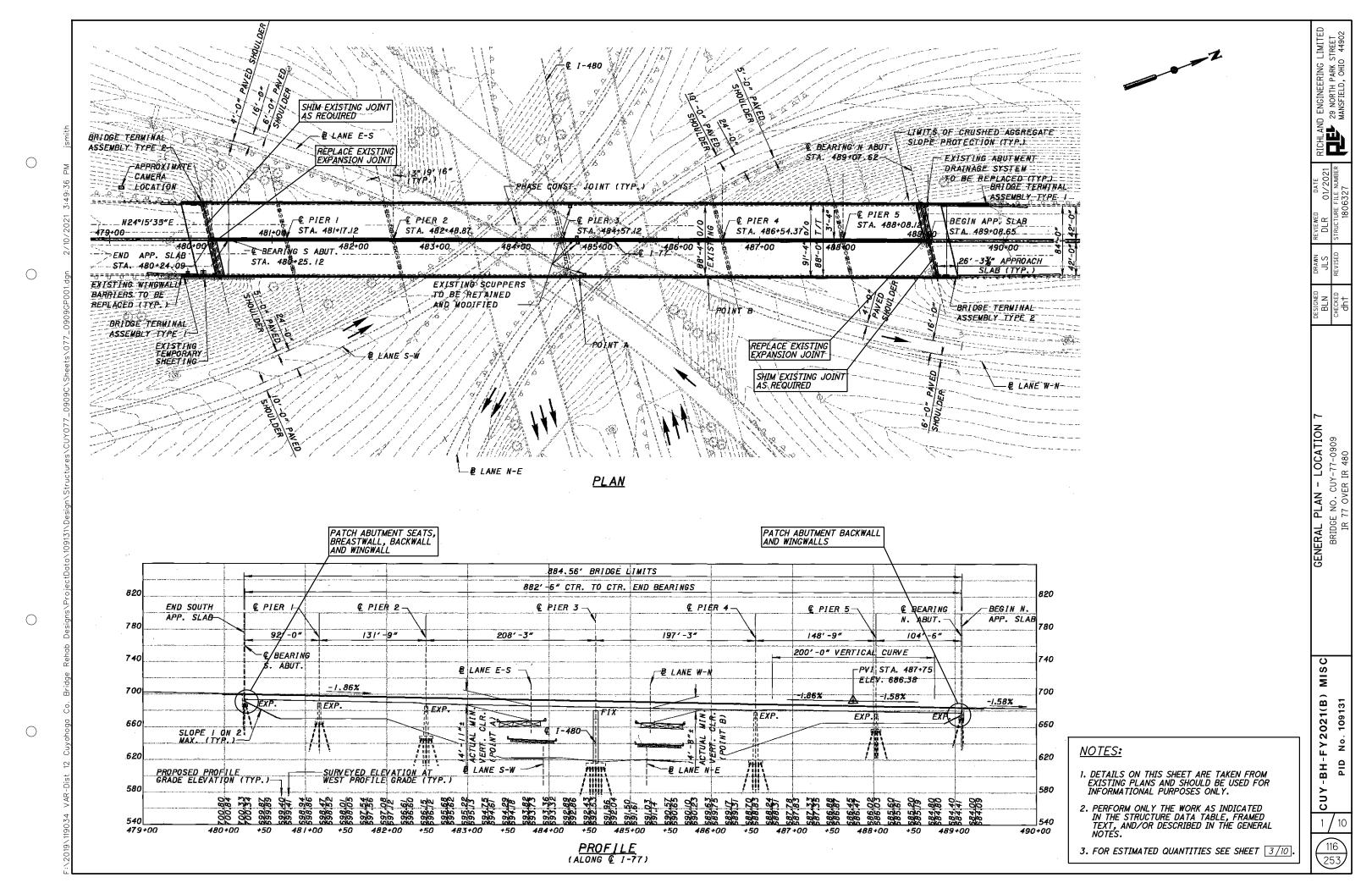
## NOTES:

1" x 1" Clip \

(Typical)

DETAIL 'A'

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA TABLE, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES.
- 3. MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE
- 4. CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS OF
- 5. FOR CROSSFRAME REPLACEMENT LOCATIONS SEE SHEET  $\boxed{8/9}$ .



#### **DESIGN DATA**

CONCRETE CLASS QC SCC - COMPRESSIVE STRENGTH 4.5 KSI (BACKWALL AND PARAPETS)

STRUCTURAL STEEL - ASTM A709 GRADE 50 YIELD STRENGTH 50 KSI

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

#### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 12 OFFICE
5500 TRANSPORTATION BOULEVARD
GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

#### DESCRIPTION OF WORK:

- 1. PATCH ABUTMENT SEATS, FACE OF BACKWALLS, AND BREASTWALLS.
- 2. REMOVE AND REPLACE THE APPROACH SLAB PORTION OF THE NORTHBOUND REAR AND SOUTHBOUND FORWARD PLATED STRIP SEAL ABUTMENT EXPANSION JOINTS. WORK INCLUDES ADDING BACKWALLS; AND MEDIAN AND PARAPET REPUTIONING.
- 3. PERMANENT SHIMMING OF THE NORTHBOUND FORWARD AND SOUTHBOUND REAR EXPANSION JOINT PLATES.
- 4. SEAL NEW PORTIONS OF PARAPETS. SEAL PATCHED PORTIONS OF ABUTMENTS.

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

#### CUT LINE CONSTRUCTION JOINT PREPARATION

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

# <u>ITEM 511 - CLASS QC SCC CONCRETE, SUPERSTRUCTURE, AS PER PLAN (WITH STEEL FIBERS)</u>

60 POUNDS OF STEEL FIBERS (ASTM C1116) SHALL BE ADDED PER CUBIC YARD. THE STEEL FIBERS WILL BE ASTM A 820 MATERIAL WITH A MINIMUM ULTIMATE TENSILE STRENGTH OF 120,000 PSI. THE LENGTH WILL BE 2 INCHES +/- 5 PERCENT. THE AVERAGE EQUIVALENT DIAMETER WILL BE 0.899 mm WITH AN ASPECT RATIO OF 57 +/- 15 PERCENT. THE MATERIAL WILL BE CONTINUOUSLY DEFORMED CIRCULAR SEGMENT, CLEAN AND FREE OF RUST, OIL AND DELETERIOUS MATERIALS AND CORRUGATED FULL LENGTH FOR INCREASED MECHANICAL ANCHORAGE.

MIX CONCRETE IN A CENTRAL MIXING PLANT OR BY A READY MIXED CONCRETE TRUCK CAPABLE OF DISCHARGING PLASTICIZED CONCRETE HAVING A MAXIMUM WATER-CEMENT RATIO OF 0.40. MIXING EQUIPMENT SHALL MEET THE REQUIREMENTS OF 499.05B. INTRODUCE ADMIXTURES AND FIBERS INTO THE CONCRETE SO THAT THEY SHALL BE DISBURSED THROUGHOUT THE ENTIRE LOAD. BATCH PLANTS SHALL MEET THE REQUIRMENTS OF 499.05A AND BE LOCATED SUCH THAT THE MAXIMUM TIME REQUIRED FROM START OF MIXING TO COMPLETION OF CONCRETE DISCHARGE AT THE WORK SITE SHALL NOT EXCEED 90 MINUTES.

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

SEAL THE REBUILT PARAPETS, DECK END BLOCK FASCIA, AND ALL PATCHED ABUTMENT CONCRETE SURFACE AREAS (INCLUDING BACKWALLS, SEATS, BREASTWALLS AND WINGWALLS). REMOVE DEBRIS AND CLEAN SURFACES OF WALLS AND SEATS PER 512.03 E & F. THE EPOXY-URETHANE SHALL BE LIGHT NEUTRAL COLOR MEETING FEDERAL COLOR STANDARD NO. 17778, OR CLOSELY MATCH THE SEALER COLOR OF THE EXISTING CONCRETE (LIGHT GRAY TYPICAL COLOR).

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

#### <u>ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER</u> PLAN

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES SHALL NOT BE INCLUDED IN THIS ITEM.

#### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, CONTRACTOR SHALL ENSURE ANY EXISTING BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING OPERATIONS.

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

ND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

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				ESTIMATED QUANTITIES			ULATED	JLS D	ATED <u>12/20</u> ATED <u>10/20</u>
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	PIERS	ABUTS.	GEN'L	REF. SHEET
202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	2/10
509	10000	2779	LB	EPOXY COATED REINFORCING STEEL			2779		
510	10000	352	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT			352		
511	34417	7	CY	CLASS QC SCC CONCRETE, SUPERSTRUCTURE, AS PER PLAN (WITH STEEL FIBERS)	7				2/10
512	10101	26	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	10		26		2/10
512 512	44450 74001	18 11	SY SY	TYPE E WATERPROOFING  REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	18		11		2/10
513	95020	LS		STRUCTURAL STEEL, MISC.: SHIMMING EXISTING JOINT PLATES				LS	6/10
516	11211	92	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	92				7/10
519	11101	71	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN			71		2/10
-	<u> </u>		ı		I		1		<u> </u>

RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902 ESTIMATED QUANTITIES - LOCATION 7
BRIDGE NO. CUY-77-0909
IR 77 OVER IR 480

CUY-BH-FY2021(B) MISC



REAR ABUTMENT REMOVAL - LOCATION
BRIDGE NO. CUY-77-0909
IR 77 OVER IR 480

MISC CUY-BH-FY2021(B) 109131

DATE
1/2021
RICHLAND ENGINEERING LIMITED
1/2021
E NUMBER
27
MANSFIELD, OHIO 44902

ARAWN REVIEWED DATE

JLS DLR 01/2021

VISED STRUCTURE FILE NUMBER

1806327

CHECKED REVISED STRUCT

7 DESIGNED BLN CHECKED

FORWARD ABUTMENT REMOVAL - LOCATION
BRIDGE NO. CUY-77-0909
IR 77 OVER IR 480

CUY-BH-FY2021(B) MISC

5/10

#6 BARS @ 7"±

#5 BARS

## <u>JOINT SECTION</u>

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AT REAR ABUTMENT SOUTHBOUND LANES AND FORWARD ABUTMENT NORTHBOUND LANES

-C15×50±

## **LEGEND**

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

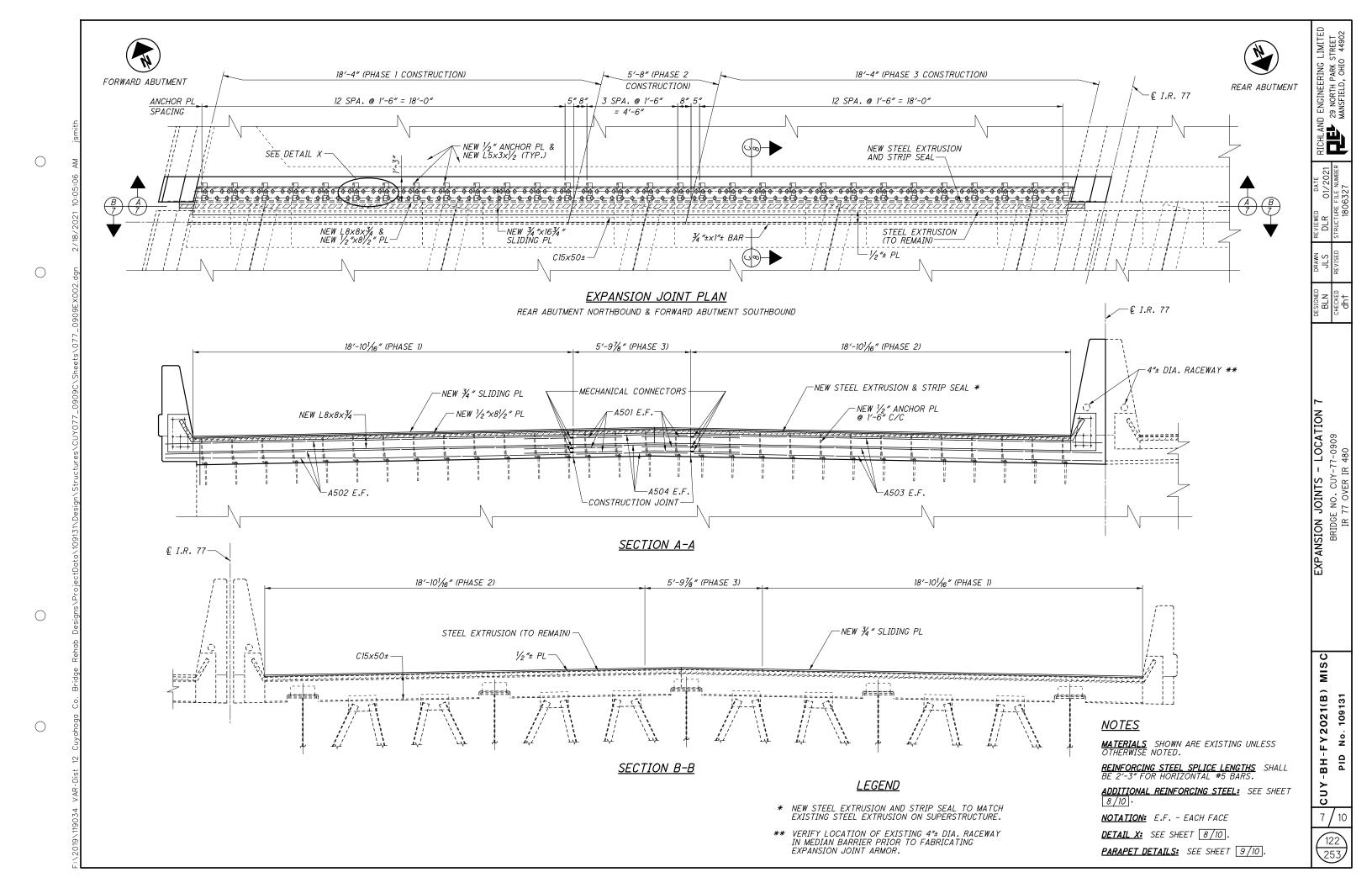
- \* CUT EXISTING #10 BARS AS NECESSARY TO INSTALL EXPANSION JOINT, WITH A MINIMUM OF ONE BAR REMAINING PER EVERY 2'-0". KEEP PORTIONS OF BARS AS POSSIBLE.
- # TO PREVENT THE EXISTING JOINT PLATES FROM STRESSING AND FATIGUING THE ANCHORAGE, STEEL SHIMS SHALL BE INSERTED INTO VERTICAL GAPS GREATER THAN 1/6". THEY SHALL BE TACK WELDED TO THE UPPER PLATE TO HOLD THEM IN POSITION. THEY SHALL BE SPACED AT ABOUT 12" AT LOCATIONS WHERE THE GAP IS GREATER THAN OR EQUAL TO 1/6". THIS WORK SHALL BE PAID PER ITEM 513 STRUCTURAL STEEL, MISC.: SHIMMING EXISTING JOINT PLATES AS A LUMP SUM FOR BOTH LOCATIONS.

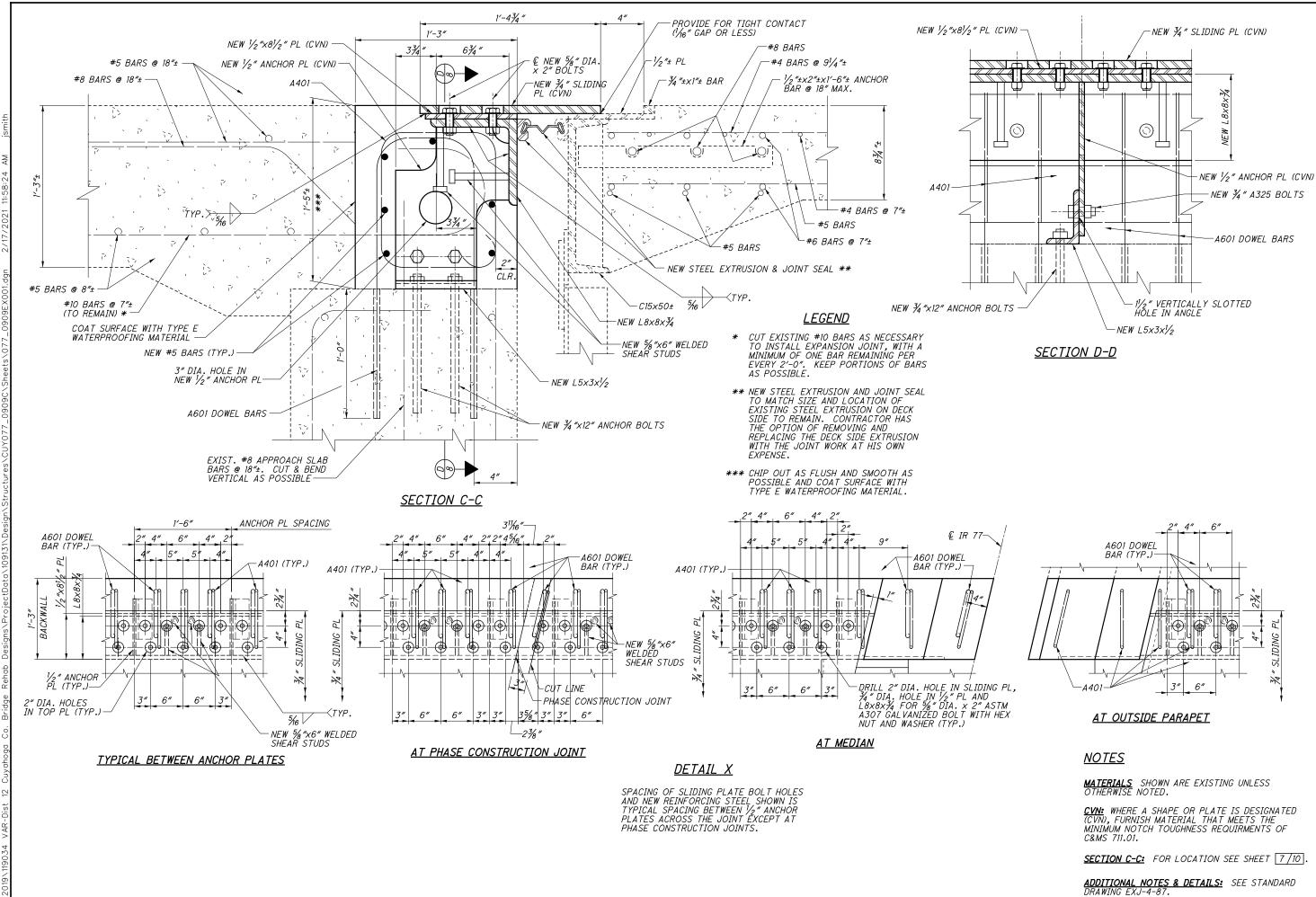
### **NOTES**

SECTION A-A: FOR LOCATION SEE SHEETS  $\boxed{4/10}$  AND  $\boxed{5/10}$ .

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AD ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902 

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S - LOCATION -

N JOINT DETAILS -BRIDGE NO. CUY-77-0 IR 77 OVER IR 48C **EXPANSION** 

MISC

-BH-FY2021(B) 109131 Š PID CUY

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123

A601 DOWEL BARS

SECTION A-A

(SEE NOTE A)

-5-A507

SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

A506

A601 DOWEL BARS

A602 & A603

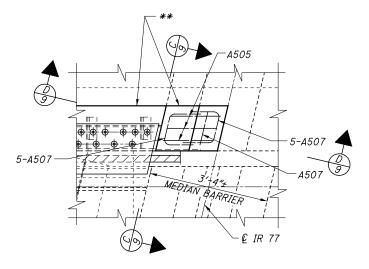


\*\* CHIP OUT AS FLUSH AND SMOOTH AS POSSIBLE AND COAT SURFACE WITH TYPE E WATERPROOFING MATERIAL.

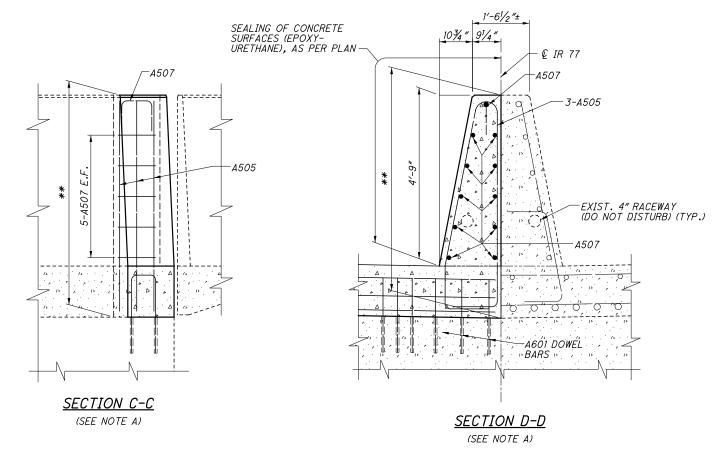
5-4507 E.F.

SECTION B-B

(SEE NOTE A)



MEDIAN BARRIER PLAN



NOTE A: JOINT ARMOR NOT SHOWN FOR CLARITY.

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CUY-BH-FY2021(B) 9 / 10

29 NORTH PARK STREET MANSFIELD, OHIO 44902

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- LOCATION

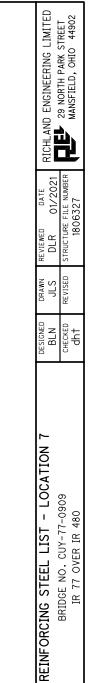
PARAPET & MEDIAN BARRIER DETAILS
BRIDGE NO. CUY-77-0909
IR 77 OVER IR 480

MISC

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## <u>NOTES</u>

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

EXAMPLE: A501 A = LOCATION OF THE BAR IN ABUTMENT 5 = BAR SIZE DESIGNATION 01 = SEQUENCE NUMBER

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

ALL REINFORCING STEEL TO BE EPOXY COATED.

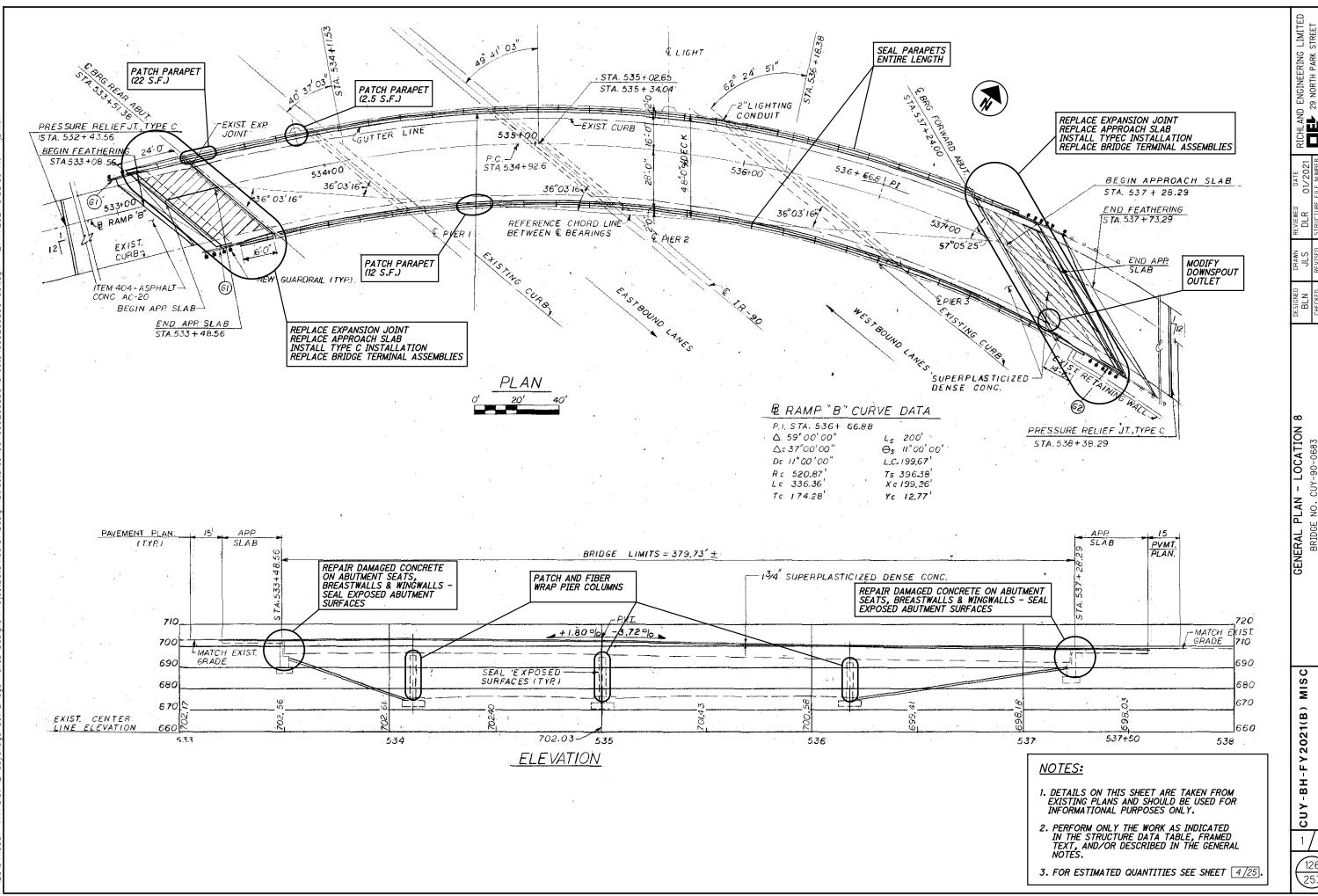


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CUY-BH-FY2021(B)

109131

PID No.



RICHLAN

GENERAL PLAN - LOCATION
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

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#### DESIGN DATA

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE/BACKWALL)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

#### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 12 OFFICE
5500 TRANSPORTATION BOULEVARD
GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

#### DESCRIPTION OF WORK:

- 1. PATCH AND FIBER WRAP DESIGNATED PIER COLUMNS.
- 2. PATCH ABUTMENT SEATS, FACE OF BACKWALLS, AND BREASTWALLS. PATCH DESIGNATED PARAPET LOCATIONS.
- 3. MODIFY FORWARD ABUTMENT DOWNSPOUT TO OUTLET AWAY FROM THE SEAT.
- 4. REMOVE ABUTMENT EXPANSION JOINTS AND APPROACH SLABS, INCLUDING PORTIONS OF PARAPETS AND BACKWALLS.
- 5. TRIM BEAMS/GIRDER ENDS AS REQUIRED.
- 6. INSTALL NEW STRIP SEAL JOINTS, INCLUDING NEW PORTIONS OF DECK, BACKWALLS, AND PARAPETS.
- 7. INSTALL NEW APPROACH SLABS.
- 8. SEAL PARAPETS, ABUTMENT SURFACES, AND WINGWALLS.
- 9. FIELD PAINT TRIMMED BEAM ENDS AND NEW CROSSFRAME ATTACHMENTS.

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

## CUT LINE CONSTRUCTION JOINT PREPARATION

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

#### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE). AS PER PLAN

SEAL CONCRETE PARAPETS, BACKWALLS, SEATS, BREASTWALLS, AND WINGWALLS. REMOVE DEBRIS AND CLEAN SURFACES OF WALLS AND SEATS PER 512.03 E & F. THE COLOR OF THE FINISH COAT SHALL BE FS NO. 17778, LIGHT NEUTRAL. CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, FENCE AND POSTS, RAILING AND ALL OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE SEALING OPERATIONS. SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

#### <u>ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER</u> PLAN

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES OR FIBER WRAP SHALL NOT BE INCLUDED IN THIS ITEM.

#### ITEM 514 - FIELD PAINTING OF DAMAGED STRUCTURAL STEEL. AS PER PLAN

TRIMMED BEAM/GIRDER ENDS, DAMAGED STEEL SURFACES, AND NEW ATTACHMENTS TO THE ABUTMENT CROSSFRAMES SHALL BE TOUCHED-UP WITH SYSTEM OZEU. THE URETHANE FINISH COAT COLOR SHALL CLOSELY MATCH THE EXISTING PAINT COLOR.

#### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

AT LOCATIONS IN THE PLANS, PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING OPERATIONS.

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

#### ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=15" & T=17"), AS PER PI AN

THE CONTRACTOR SHALL SURVEY THE LOCATION AND ELEVATIONS OF THE EXISTING APPROACH SLABS AND CONSTRUCT THE NEW APPROACH SLABS AT A SIMILAR CONFIGURATION TO PROVIDE A SMOOTH TRANSITION WITH THE APPROACH PAVEMENT TO THE EXISTING DECK SURFACE. SUBMIT THIS EXISTING DATA AND PROPOSED APPROACH SLAB LAYOUT TO THE ENGINEER FOR HIS REVIEW AND APPROVAL.

#### <u>ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER</u> PLAN

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

#### ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DII49 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DRAWN REVIEWED DATE RIJ JLS DLR 01/2021 REVISED STRUCTURE FILE NUMBER 1808508

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IERAL NOTES - 1 - LOCATION 8
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

BH-FY2021(B) MI PID No. 109131

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE COR-IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED
- OR BACK FILLED WITH EPOXY.

  BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN 2.
- DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

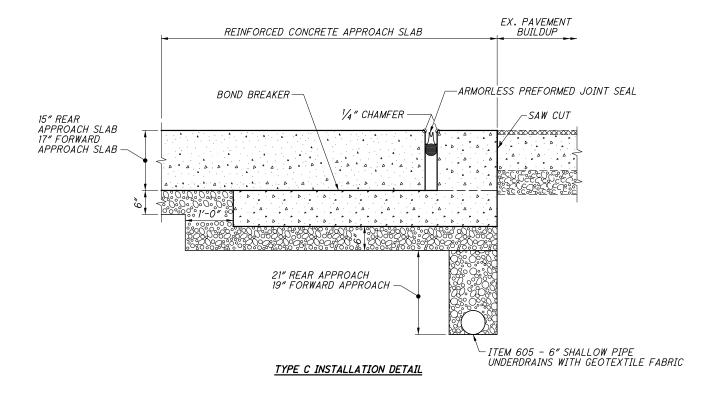
COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD CASING STSTEM USING HIGH STRENGTH, HTBRID FIBERZEFOXT COMPOSITES FIELD
APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING,
SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL
INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE
MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE
AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

#### ITEM 526 - TYPE C INSTALLATION, AS PER PLAN

THE TYPE C INSTALLATION SHALL BE MODIFIED AS SHOWN IN THE TYPE C INSTALLATION DETAIL BELOW. ITEM 605 - 6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC SHALL BE INSTALLED BELOW THE SLEEPER SLAB AS DETAILED. PAYMENT FOR THE UNDERDRAINS SHALL BE INCLUDED WITH ITEM 605 - 6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC FOR PAYMENT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE EXISTING UNDERDRAINS AND SUMAL CONNECT, THE REPORTS OF UNDERDRAINS TO THE UNDERDRAINS AND SHALL CONNECT THE PROPOSED UNDERDRAINS TO THE



MISC -BH-FY2021(B)

ND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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LOCATION 0-0683

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NOTES RIDGE NO. RAMP B (

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3/25

RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902

CUY-BH-F PID
4 / 25

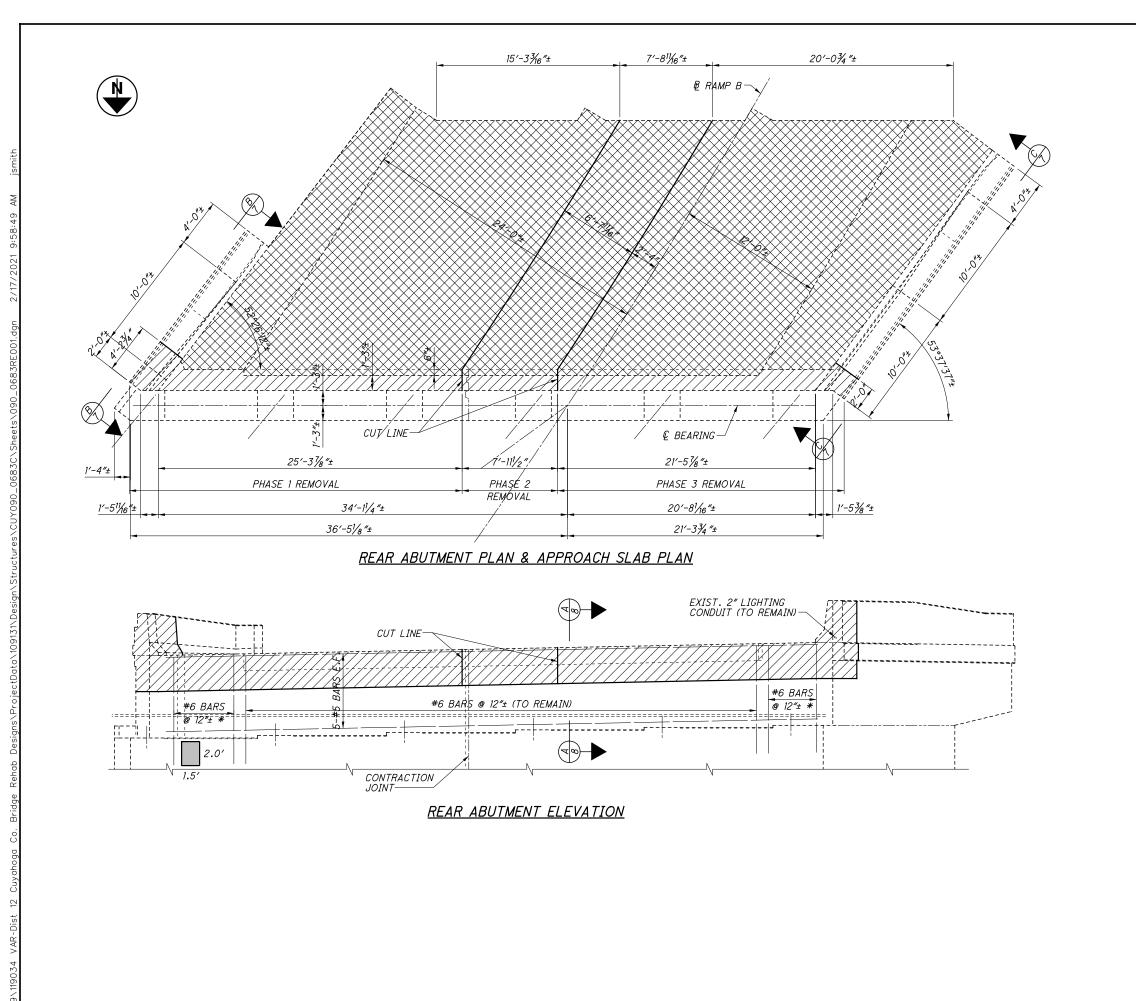
				ESTIMATED QUANTITIES			ULATED HECKED	JLS [	ATED <u>10/20</u> ATED <u>10/20</u>
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	PIERS	ABUTS.	GEN'L	REF. SHEET
202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	2 /25
202	22900	257	SY	APPROACH SLAB REMOVED				257	
509	10000	7909	LB	EPOXY COATED REINFORCING STEEL	2273		5636		
511	34410	43	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	14		29		
512 512	10101 74001	1283 669	SY SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	1006		277 191		2/25
513	21000	12	EACH	TRIMMING OF BEAM END	12		101		[ 2 / 2 0 ]
514	21001	LS		FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN				LS	2/25
516	10010	138	FT	ARMORLESS PREFORMED JOINT SEAL				138	
516	11210	135	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	135				
518	51300	1	EA	DOWNSPOUT MODIFICATION, 6" DIAMETER, 45° RADIUS, GALVANIZED PIPE EXTENSION	LS				
SPECIAL 519	51900100 11101	5609 107	SF SF	COMPOSITE FIBER WRAP SYSTEM  PATCHING CONCRETE STRUCTURE, AS PER PLAN	37	5609	70		2/25 3/25
526	25001	122	SY	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN				122	2 /25
526	30001	<i>152</i>	SY	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN				152	2/25
526	90031	137	FT	TYPE C INSTALLATION, AS PER PLAN				137	3/25
844	10001	791	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		791			2/25



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REAR ABUTMENT/APPROACH SLAB REMOVAL - LOCATION 8

BRIDGE NO. CUY-90-0683

RAMP B OVER IR 90

CUY-BH-FY2021(B) MISC

<u>LEGEND</u>

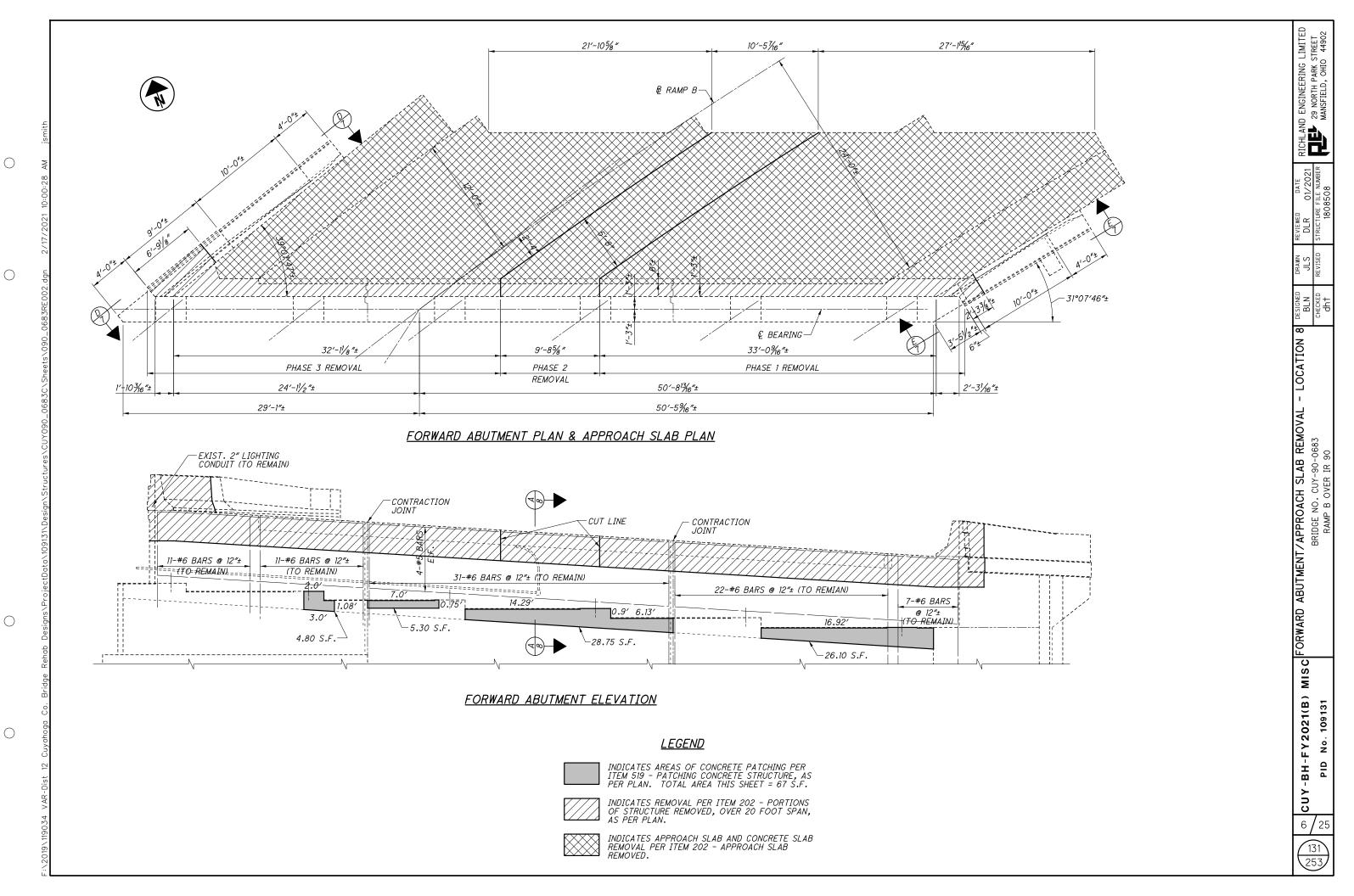
INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 3 S.F.

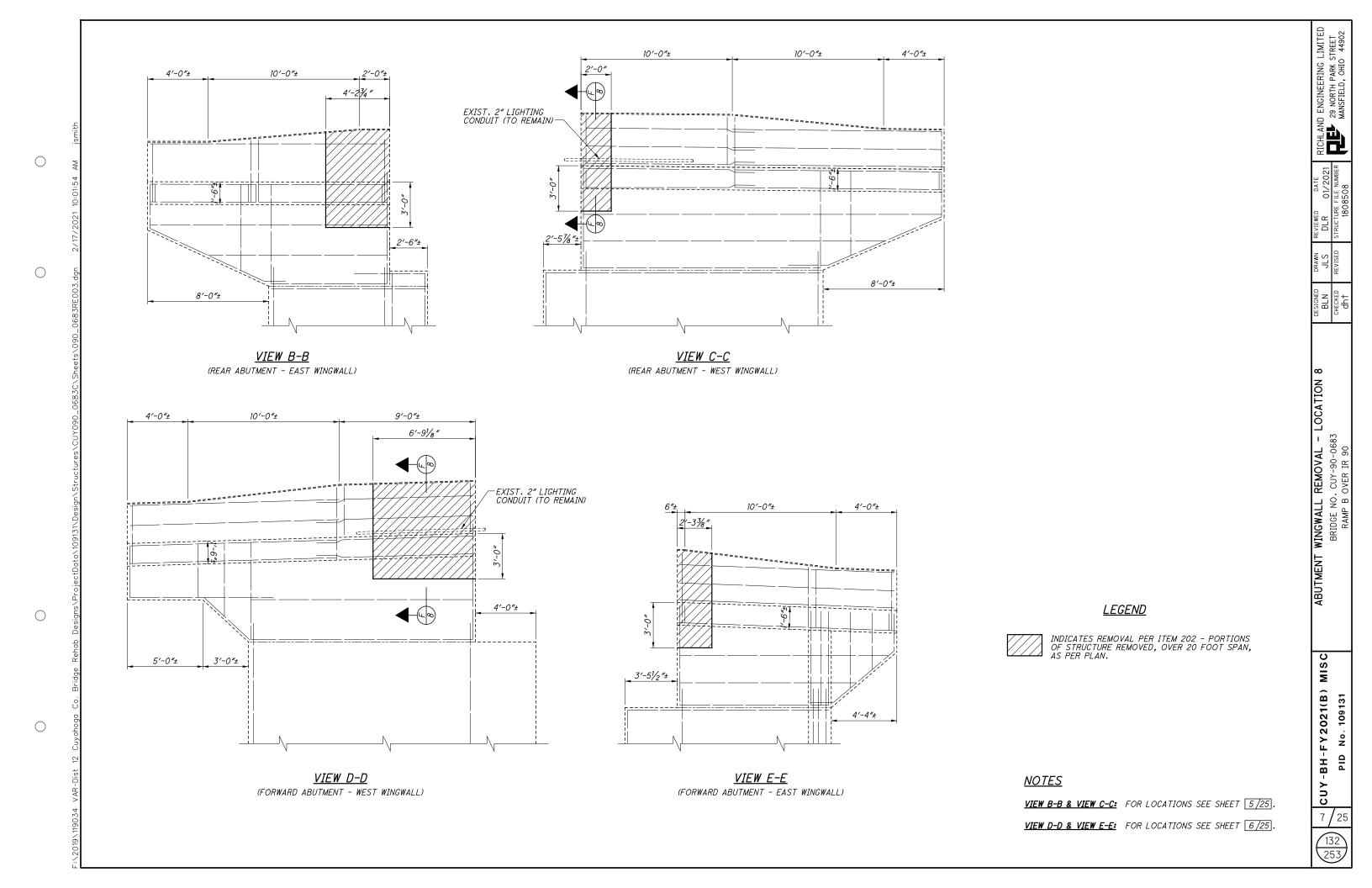
INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.



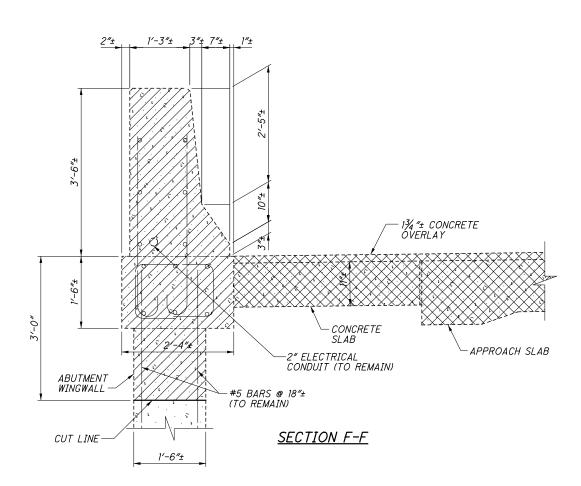
INDICATES APPROACH SLAB AND CONCRETE SLAB REMOVAL PER ITEM 202 - APPROACH SLAB REMOVED.

\* EXISTING BARS TO REMAIN





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## <u>LEGEND</u>

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



INDICATES APPROACH SLAB AND CONCRETE SLAB REMOVAL PER ITEM 202 - APPROACH SLAB REMOVED.

- BARS ARE ALL SKEWED TO JOINT SECTION AND ARE TO REMAIN. SOME TRIMMING MAY BE REQUIRED AS THE JOINT LOCATION IS ADJUSTED SINCE THE JOINT APPEARS TO BE MOSTLY CLOSED.
- \*\* AN ANODE MESH WAS INSTALLED IN THE CONCRETE OVERLAY AS PART OF A CATHODIC PROTECTION SYSTEM. CUT THIS MESH FLUSH WITH THE CUT LINE.

## <u>NOTES</u>

SECTION A-A: FOR LOCATIONS SEE SHEETS 5/25 & 6/25.

SECTION F-F: FOR LOCATIONS SEE SHEET 7/25.

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MISC CUY-BH-FY2021(B)

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2021
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VUNMBER 29 NORTH PARK STREET
MANSFIELD, OHIO 4499

S DLR 01/2021
S DLR 01/2021
SED STRUCTURE FILE NUMBER 1808508

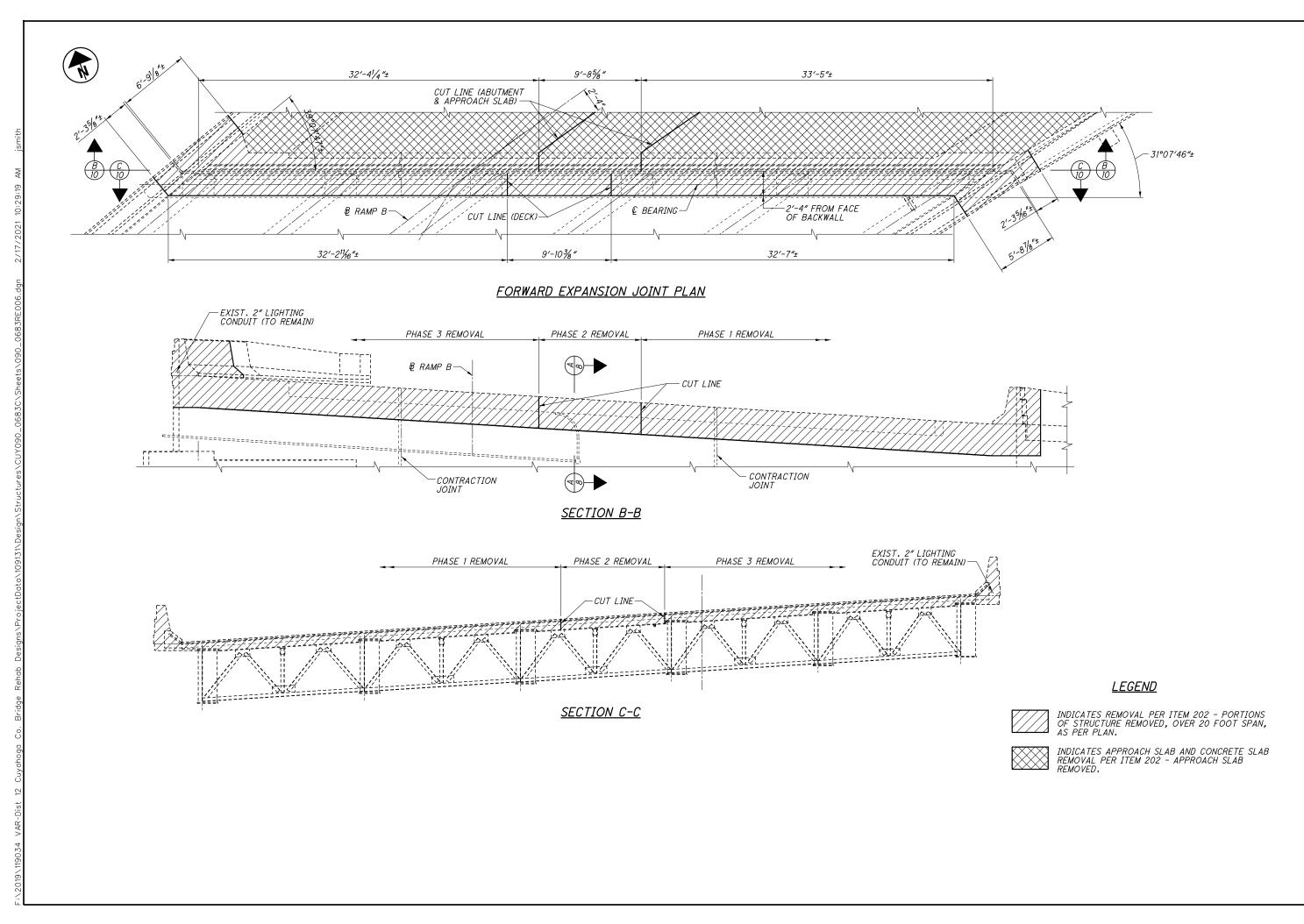
BLN JLS I

- LOCATION 8 DESIGNE BLN ELNE

REAR EXPANSION JOINT REMOVAL DETAILS
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

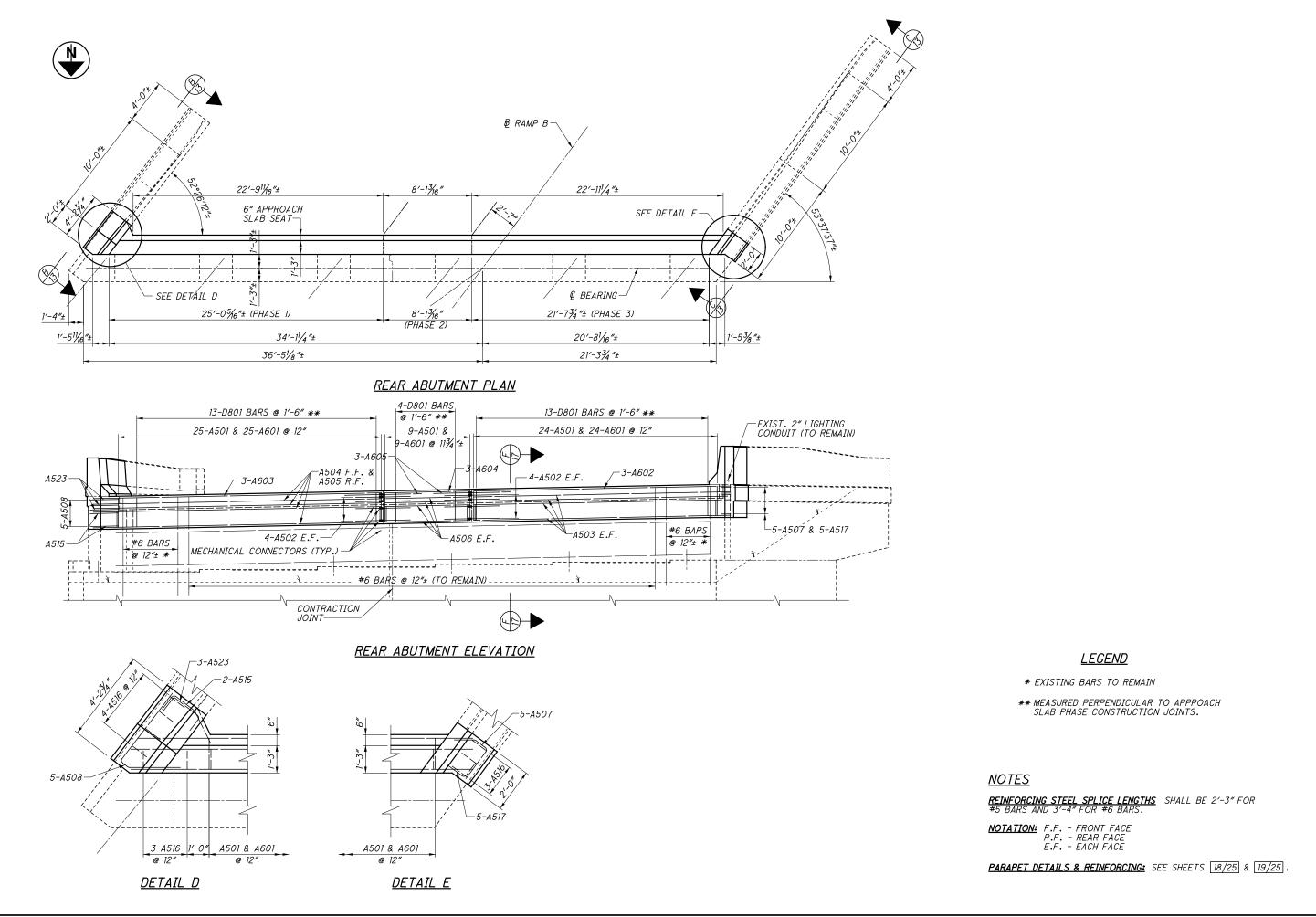
CUY-BH-FY2021(B) MISC PID No. 109131

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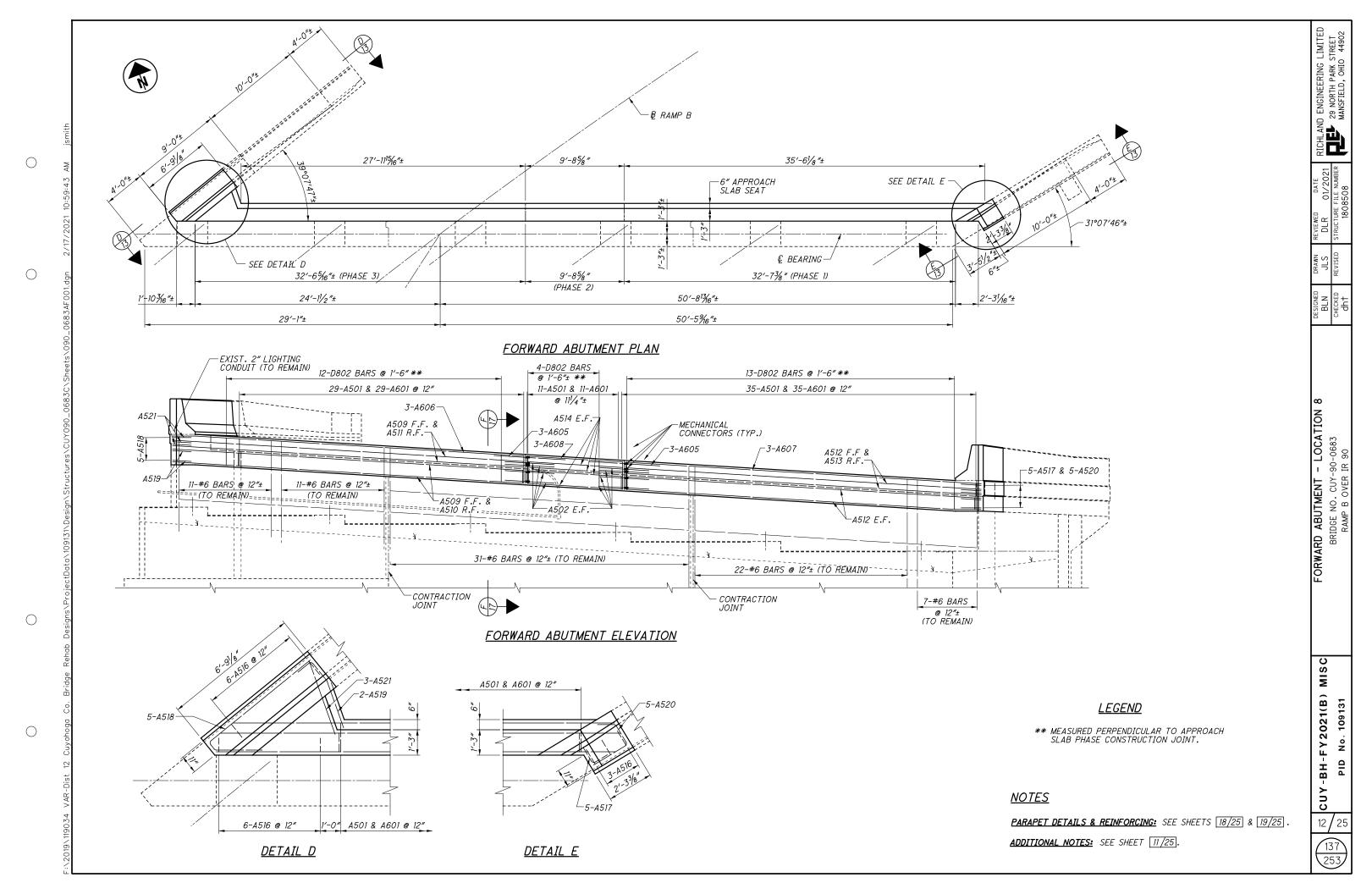
PID

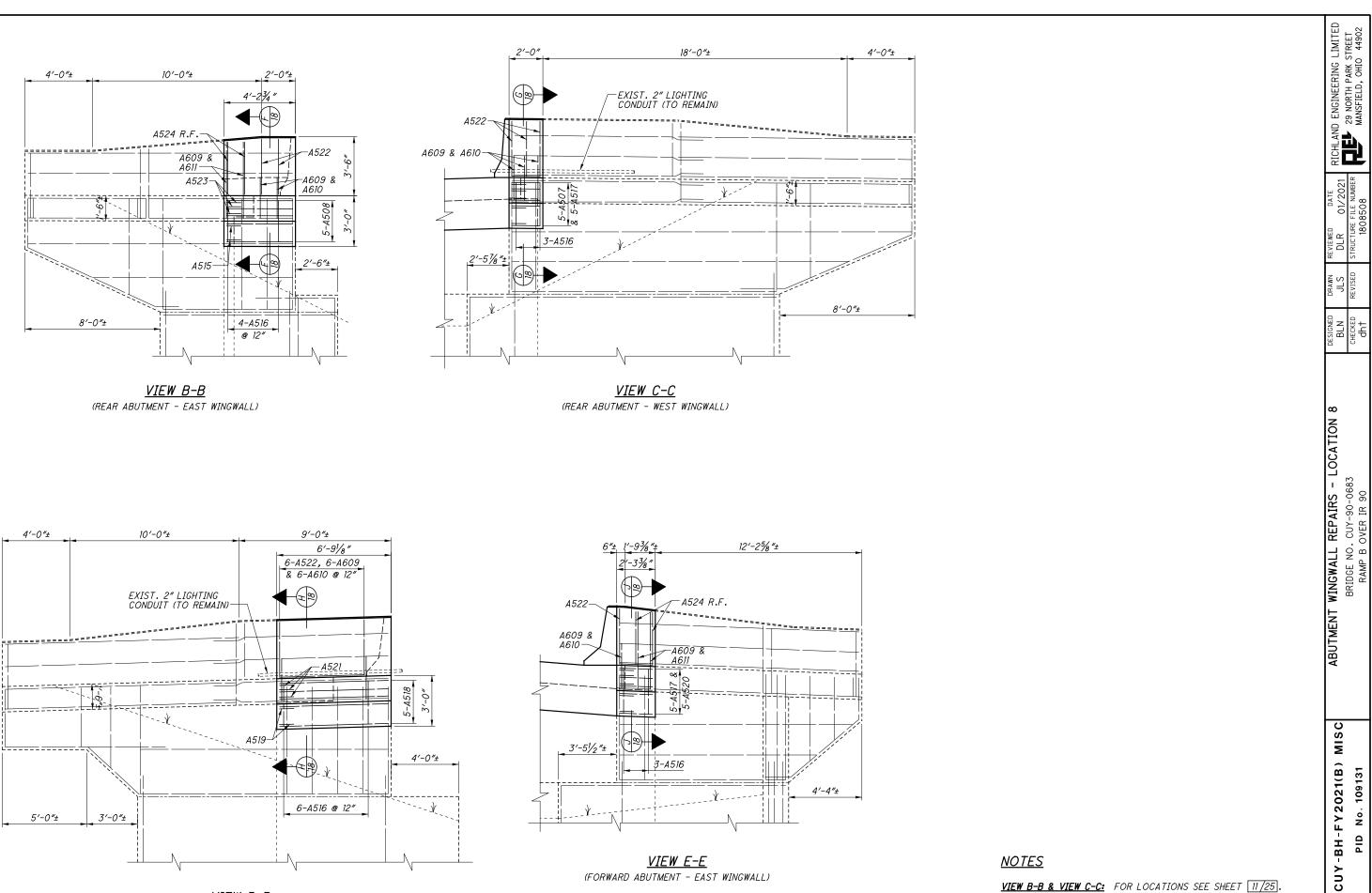


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REAR ABUTMENT - LOCATION
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

MISC CUY-BH-FY2021(B)





(FORWARD ABUTMENT - EAST WINGWALL)

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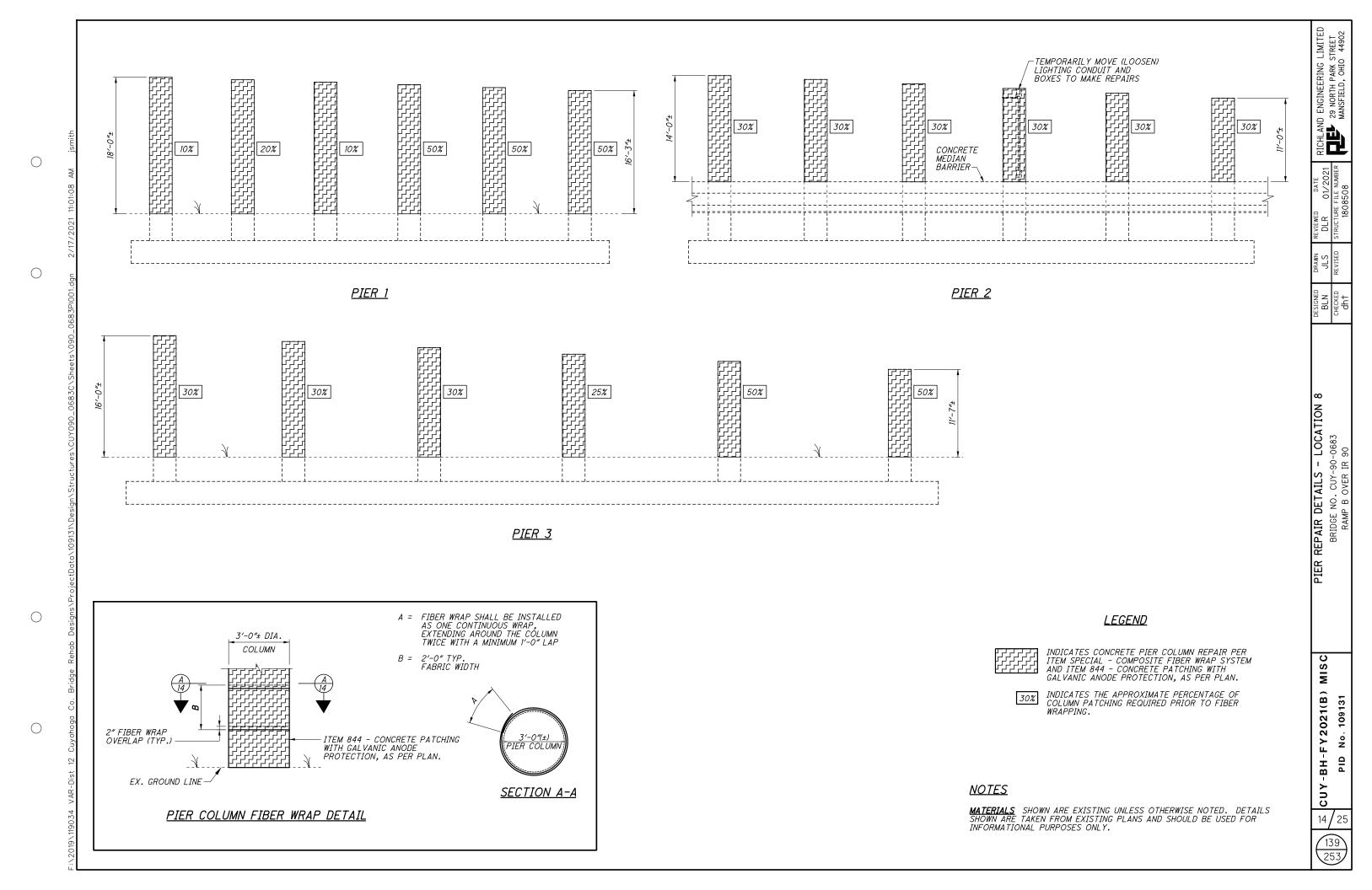
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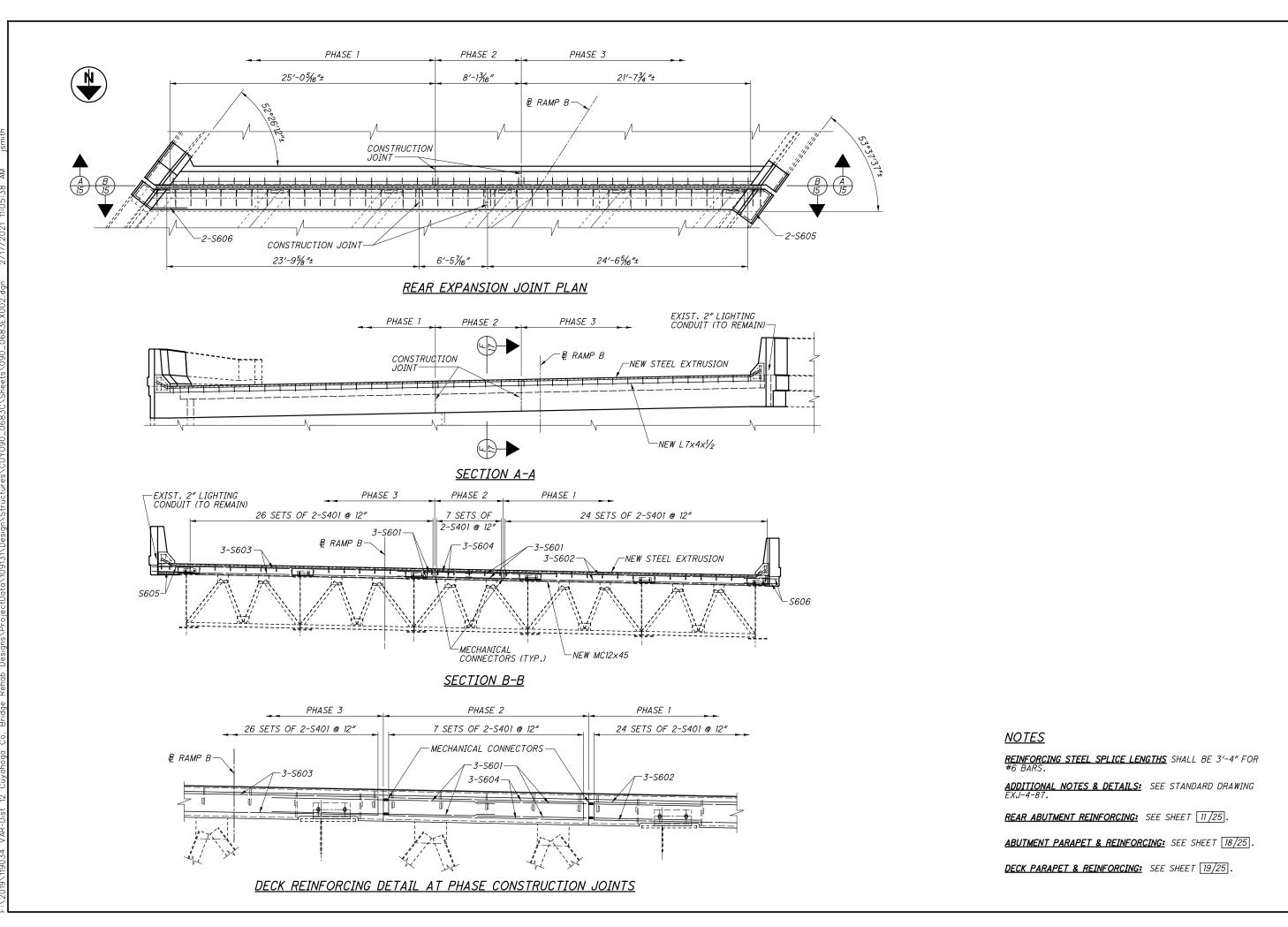
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<u>VIEW D-D</u>

(FORWARD ABUTMENT - WEST WINGWALL)

VIEW B-B & VIEW C-C: FOR LOCATIONS SEE SHEET 11/25. 13/25 VIEW D-D & VIEW E-E: FOR LOCATIONS SEE SHEET 12/25.

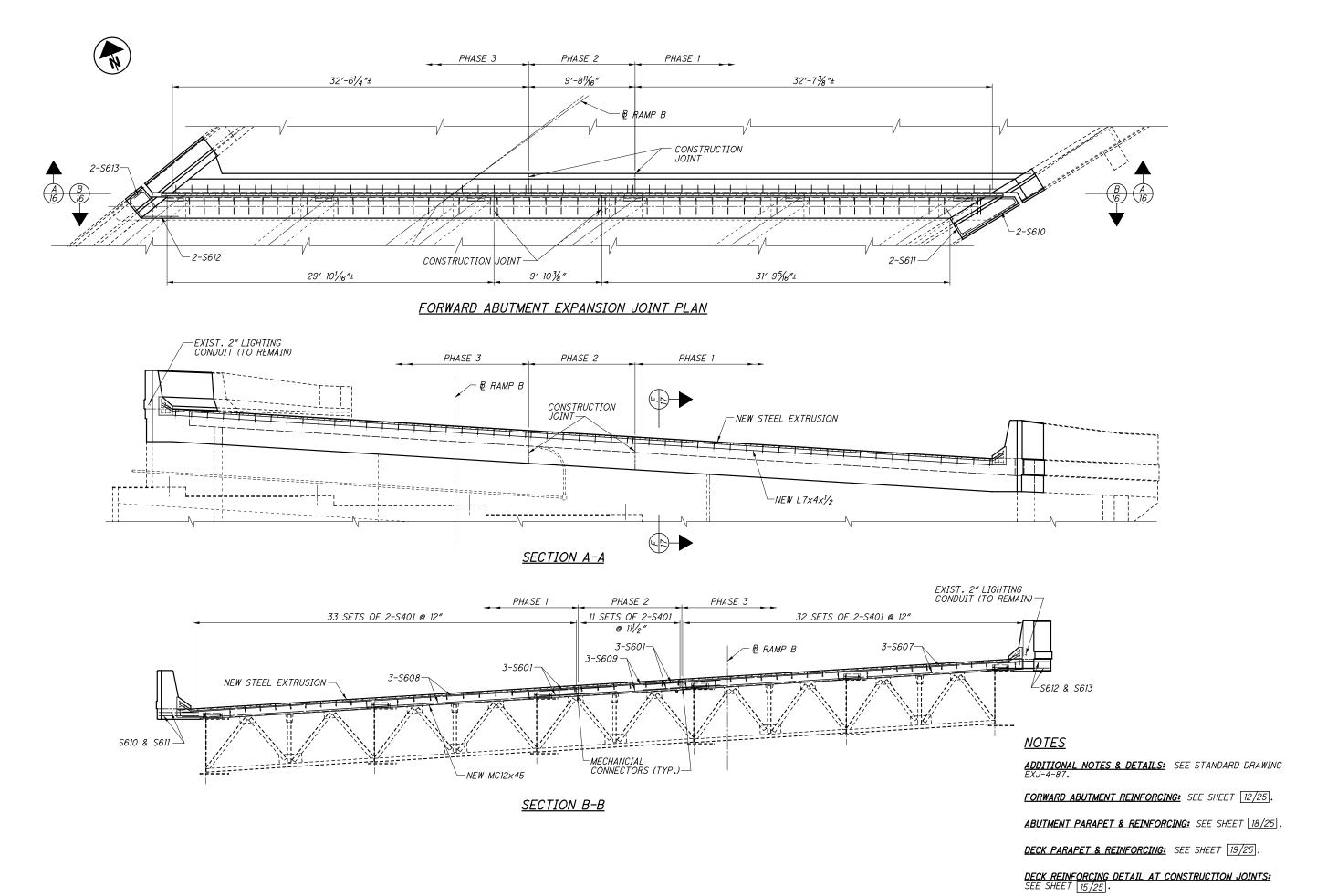




REAR EXPANSION JOINT - LOCATION BRIDGE NO. CUY-90-0683 RAMP B OVER IR 90

CUY-BH-FY2021(B) MISC

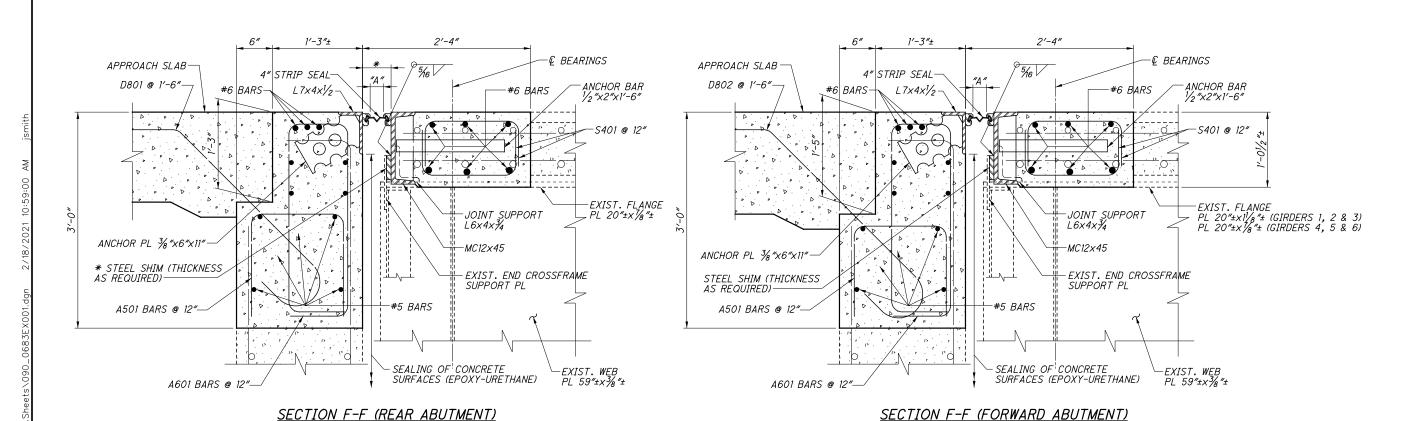
15 / 25



FORWARD EXPANSION JOINT - LOCATION
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

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# **LEGEND**

ADJUST LOCATION OF SUPERSTRUCTURE SIDE OF JOINT TO PROVIDE CLEARANCE REQUIRED IN JOINT SETTING TABLE. THE JOINTS APPEAR TO BE MOSTLY CLOSED AND SHIMMING WITH THE EXISTING END CROSSFRAME WILL LIKELY BE REQUIRED, ALONG WITH TRIMMING THE BEAM ENDS.

VICTAULIC STYLE 99 PLAIN END PIPE COUPLING OR APPROVED EQUAL
CUT OFF EXISTING DAMAGED PIPE  CUT OFF EXISTING RADIUS (5d) STANDARD STEEL PIPE ELBOW  APPROX. BOTTOM
ABUTMENT SEAT—
GALVANIZED WELDED 6" STANDARD SCHEDULE 40 PIPE FORWARD ABUTMENT RIGHT

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#### 50° 21/4" 21/8" 11/8" 70° FORWARD JOINT 50° 21/4" 2" 60° 70° 13/4"

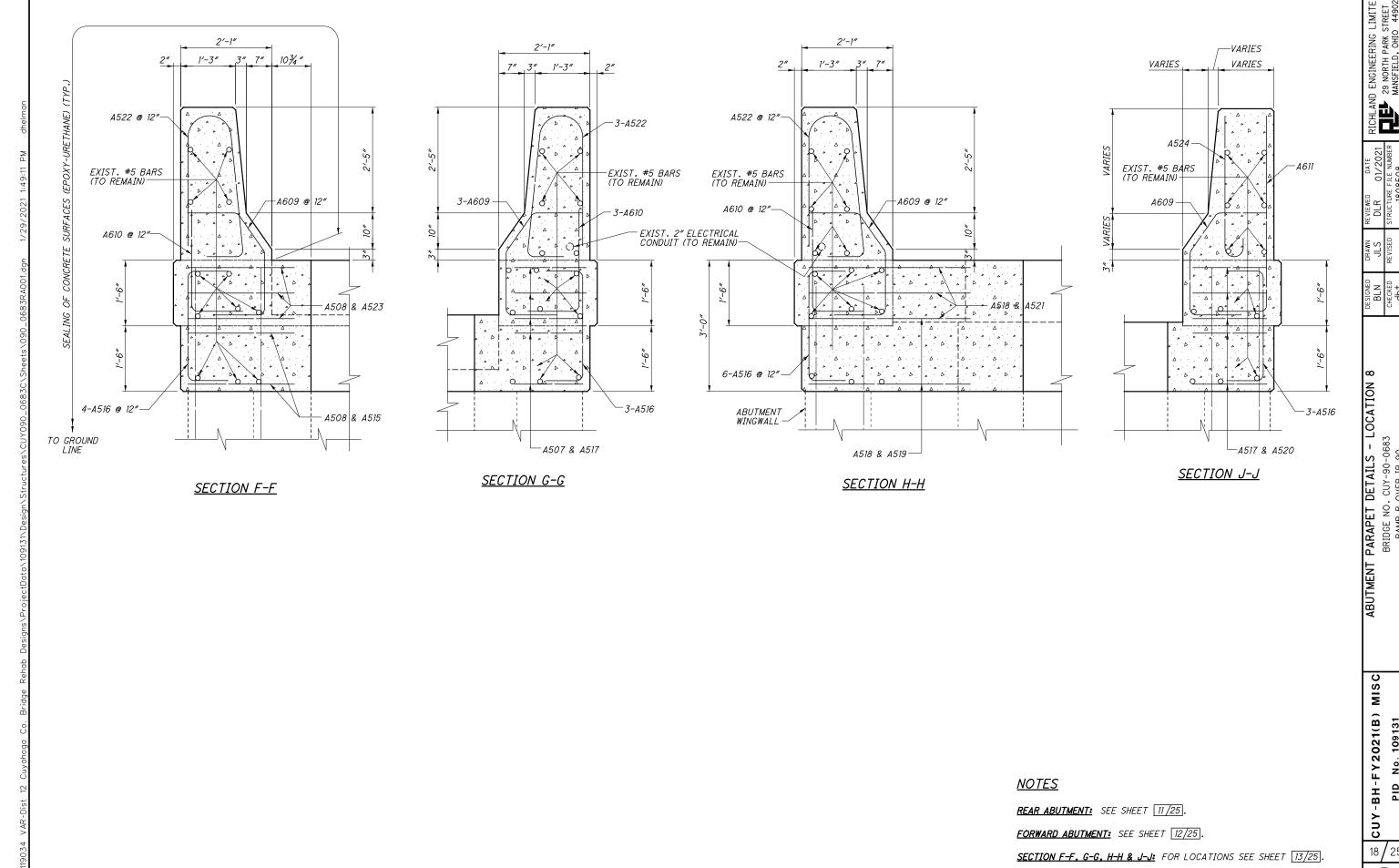
JOINT SETTING TABLE TEMPERATURE (°F) DIMENSION "A" REAR JOINT

### **NOTES**

**SECTION F-F (REAR ABUTMENT):** FOR LOCATION SEE SHEETS 11 /25 & 15/25.

SECTION F-F (FORWARD ABUTMENT): FOR LOCATION SEE SHEETS 12/25 & 16/25

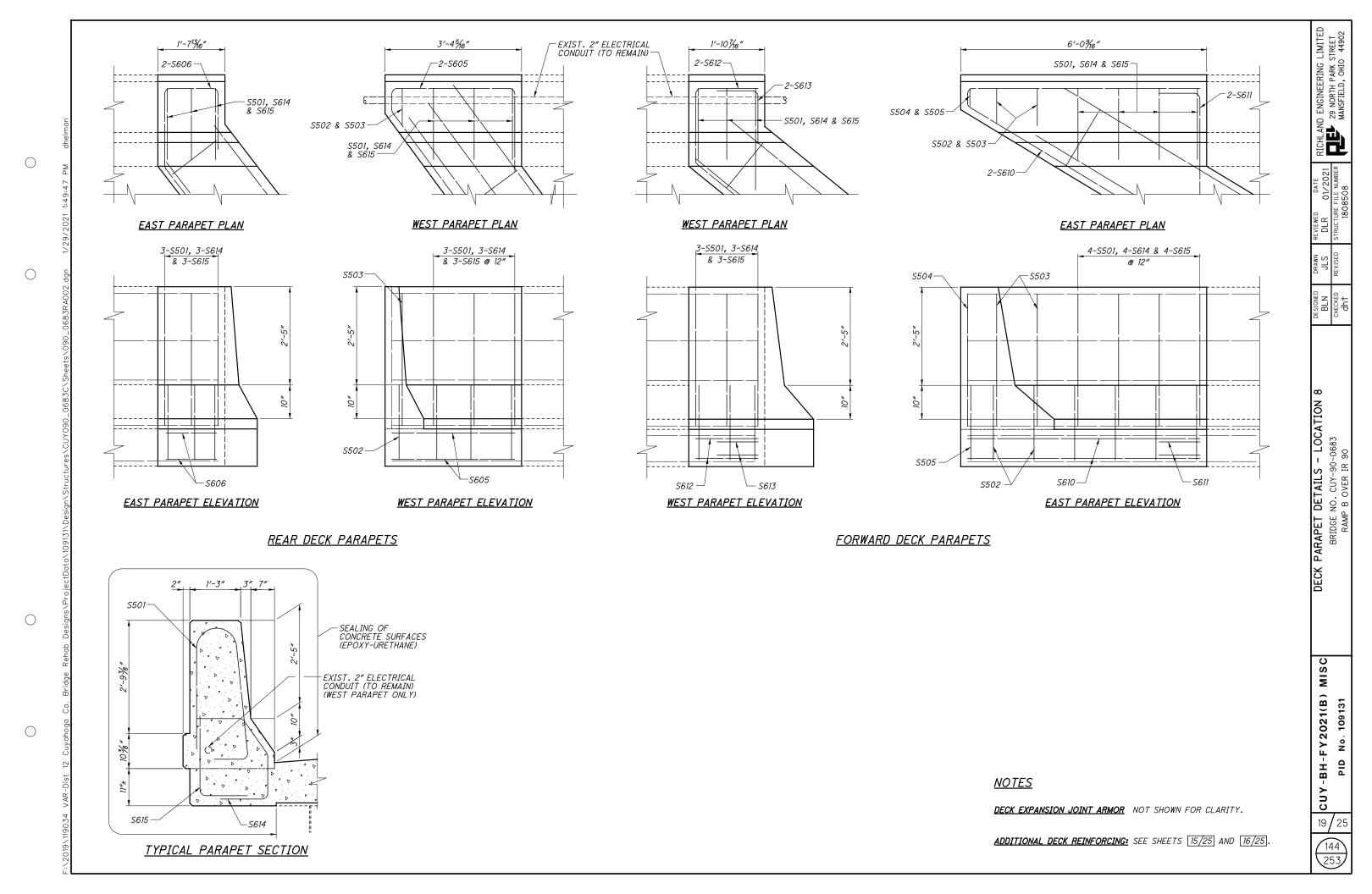
<u>ADDITIONAL NOTES & DETAILS:</u> SEE STANDARD DRAWING EXJ-4-87.



ABUTMENT PARAPET DETAILS - LOCATION BRIDGE NO. CUY-90-0683 RAMP B OVER IR 90

CUY-BH-FY2021(B) MISC

18 / 25



/- 4-AS508 & 4-AS501 @ 1'-6" \*

-CÓNSTRUCTION JOINT

5-AS511

@ 1′-6″±

MECHANICAL

CONNECTORS (TYP.)

REAR APPROACH SLAB - TOP REINFORCING

# <u>LEGEND</u>

- \* TRANSVERSE REINFORCING STEEL SPACING IS MEASURED ALONG PHASE 1 CONSTRUCTION JOINT.
- \*\* MEASURED ALONG & RAMP B.
- † 2" DEEP x 1" WIDE HOT APPLIED JOINT SEALER, 705.04, SHALL ALSO BE APPLIED FOR THE ENTIRE LENGTH OF THE WINGWALLS. 1" PEJF AND JOINT SEALER INCLUDED WITH ITEM 526 REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN FOR PAYMENT.

# **NOTES**

1" PREFORMED EXPANSION JOINT FILLER #

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-3" FOR #5 BARS.

FORWARD APPROACH SLAB: SEE SHEET 21/25.

<u>ADDITIONAL NOTES & DETAILS:</u> SEE STANDARD DRAWING AS-1-15.

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1" PREFORMED-**EXPANSION** 

JOINT FILLER

FACE OF

ABUTMENT BACKWALL

AS512

-BH-FY2021(B) CUY 20/25

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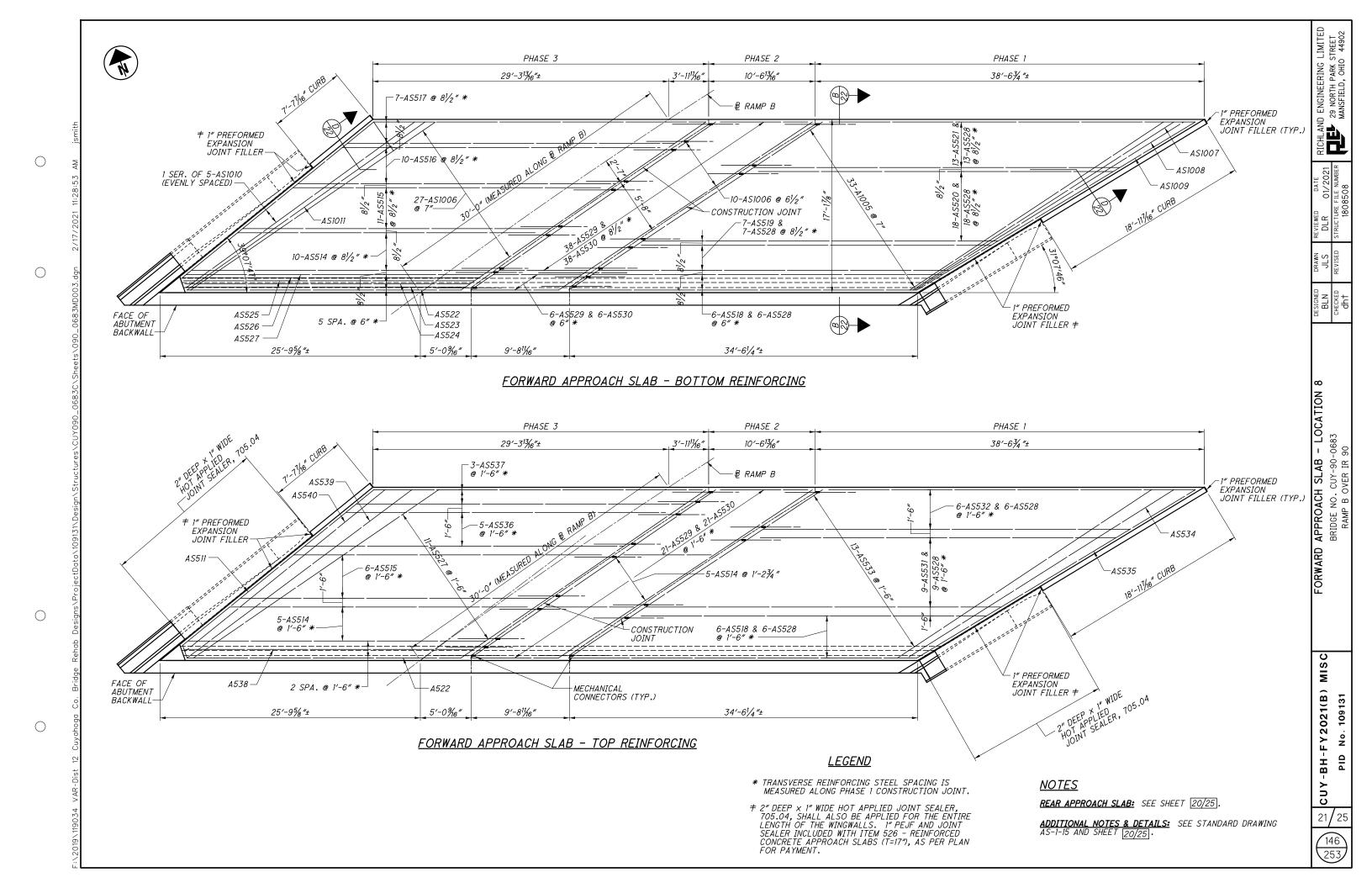
ND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

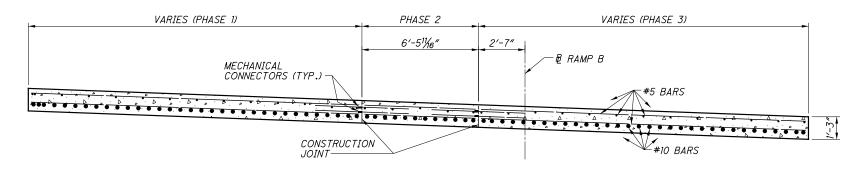
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APPROACH SLAB - LOCATION
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

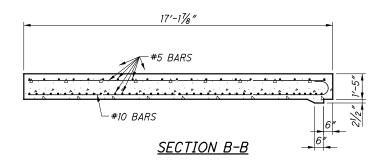
145 253

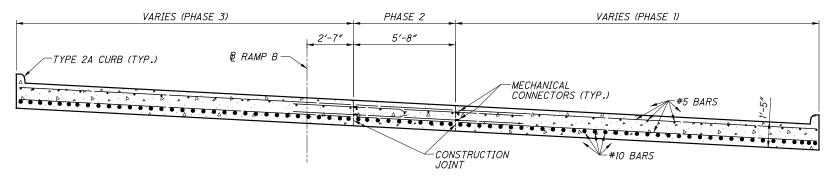
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SECTION C-C





SECTION D-D

# <u>NOTES</u>

SECTIONS A-A & C-C: FOR LOCATIONS SEE SHEET 20/25.

SECTIONS B-B & D-D: FOR LOCATIONS SEE SHEET 21/25.

ADDITIONAL NOTES & DETAILS: SEE STANDARD DRAWING AS-1-15 AND SHEET 20/25.

22/25

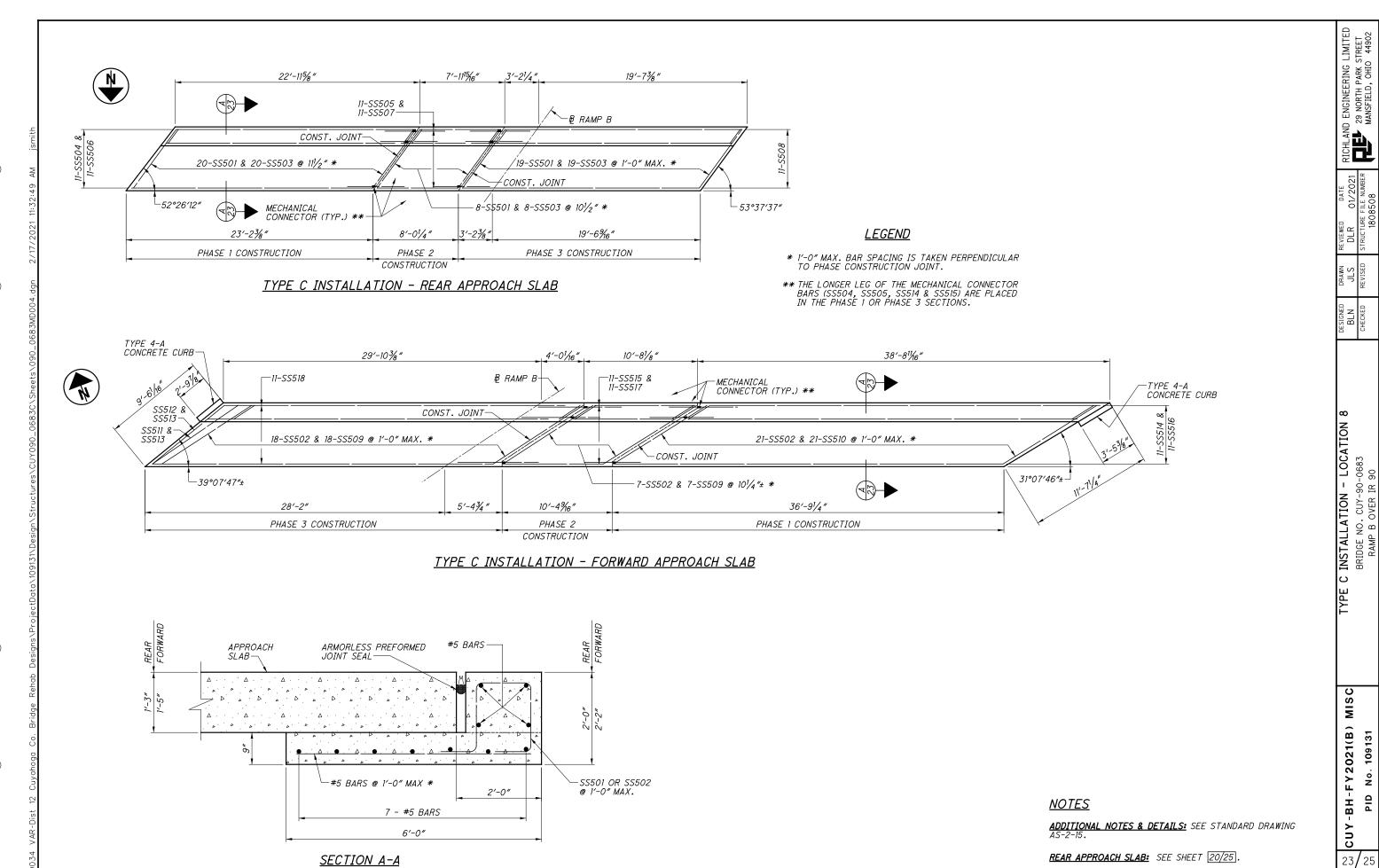
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CUY-BH-FY2021(B) MISC

APPROACH SLAB SECTIONS - LOCATION
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

RICHLAN



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FORWARD APPROACH SLAB: SEE SHEET 21/25.

		NUMBER		1,5,105.	WE***	7 <u>-</u>			D.	IMENSIO	NS			14.00	NUMBER	LENGT	WETCHT	J <sub>o</sub>			D	IMENSIC	NS		
MARK	REAR	FORWARD	TOTAL	LENGTH	WEIGHT	TYPE	Α	В	С	D	E	R	INC	MARK	TOTAL	LENGIH	WEIGHT	TYP	A	В	С	D	Ε	R	INC
					Δ <i>F</i>	BUTMEN	TS				CALCULA	TED JLS	DATE <u>10/20</u> DATE <u>12/20</u>			1	1	± S	UPERS1	TRUCTURI	<u> </u>		CALCULAT	TED <u>JLS</u> KED <u>BLN</u>	DATE 10/2
A501	58	75	133	4'-0"	555		1'-5"	1′-5″	1′-5″		CHEC	KED <u>BLN</u>	DATE <u>12/20</u>	S401	266	2'-3"	400	2			0'-7"		CHECK	NEU <u>BLIN</u>	DATE <u>1272</u>
A502	16	16	32	5'-0"	167		2'-4"																		
A503	8		8	23′-10″	199	STR								S501	13	7′-7″	103	22		3'-2 1/2"				0'-5"	
A504	4		4	26′-3″	110	STR								S502	3	4'-8"	15	2	2'-0"	0'-11"	2'-0"				
A505	4		4	26'-0"	108	STR								S503	3	7'-2"	22	2		0'-11"					
A506	8		8	7′-9″	65	STR	0/ 0//	0/.0%	0/ 10//	1/ 0//				S504 S505	1	6'-8" 4'-2"	7	2	3'-3" 2'-0"	0'-5"	3'-3" 2'-0"				
A507 A508	5 5		5 5	3'-2" 6'-7"	17 34		0'-8"	0'-6"		1'-8"	,			3303	+ '	4 -2	7	-	2 -0	0-3	2 -0				
A509	<u> </u>	4	4	34'-1"	142	STR	3 /2	1 4 /2	0 1 /4	5 10 /2				S601	24	7′-0″	252	38	3'-4"						
A510		2	2	33'-2"	69	STR								S602	6	25′-1″	226	STR							
A511		2	2	33′-11″	71	STR								S603	6	25′-5″	229	STR							
A512		6	6	36′-3″	227	STR								S604	6	6'-1"	55	STR							
A513		2	2	36'-6"	76	STR								S605	2	8'-8"	26	12	1'-11 3/4"	2'-8 1/4"	0'-6 3/4"	" 3'-0 1/4'	2'-0 1/2"		
A514		8	8	9′-5″	79	STR								S606	2	7′-9″	23		2'-0 1/2'	<u>  2'-7 ¾ '</u>	1'-11 1/4"	'   1'-3 ¾ "	1'-6"		
A515	2		2	3′-8″	8			0'-8 ¾"		0'-10"				S607	6	32'-0"	288	STR		1		1			
A516	10	15	25	4'-1"	106		0'-10"	2'-8"	0'-10"					S608	6	35'-7"	321	STR STR		1		+			-
A517	5	5	10	1'-8"	17		1'-0"	0'-10"	0/ 7"	C/ 5"		-		S609 S610	6 2	9'-6"	86 33	10	2'-8"	N'_E"	0'-5 1/4"	1 51-0 1/1	,		<b> </b>
A518 A519		5 2	5 2	9'-1" 4'-5"	47 9		1'-5"	1'-9" 0'-9 ¾"	0'-7"	6'-5" 0'-10"		1		S611	2	3'-10"	12	10	1'-0"	3'-0"	0 -0 74	0 72			<u> </u>
A519 A520		5	5	3'-10"	20			0'-9 1/2"			1			S612	2	6'-6"	20		2'-1 1/4"		1'-10"	1'-6 1/2"			<u> </u>
A521		3	3	3'-10"	12	STR	· /4	0 /2	1 6 /4	1 11 /4				S613	2	3'-1"	9	1	1'-0"	2'-3"	1	1 - /2			
A522	5	7	12	7'-7"	95		1'-0"	3'-2 1/2"	3′-0″			0'-5"		S614	13	4'-3"	83	14	1'-2"		0'-10 3/4	" 0'-7 1/2'	1'-1 1/2"		
A523	3		3	3'-2"	10		0'-10"	1'-9"	0'-10"					S615	13	3'-0"	59	1	1'-2"	2'-0"					
A524	2		2	3′-8″	8	16	3′-1″																		
A601	58	75	133	7′-6″	1476		0'-11"	2'-8"	0'-11"							TOTAL	0.077								
A602	3		3	24'-2"	109	STR										TOTAL	2 <b>,</b> 273								
A603	3		3	26'-4"	119	STR												0				1			
A604 A605	3 6	6	3 12	7′-9″ 7′-0″	35 126	<i>STR</i> 38	3'-4"							1	<u> </u>	1		- C	1 1 <del>- '</del>	-	-	<del>-</del>			-
A606	0	3	3	33'-11"	153	STR	J - <del>4</del>																		
A607		3	3	36'-3"	163	STR								В	7		S				T\			Q	
A608		3	3	9'-5"	42	STR																			<del></del>
A609	7	9	16	4'-6"	108	14	1'-0"	1'-6 1/4"	0'-10 3/4"	0'-7 1/2"	1'-1 1/2"						•			В	В		1-		ااد
A610	5	7	12	3'-3"	59		1'-0"	2'-5"						A		В								0	<u>+</u>
A611	2	2	4	5'-4"	32	1	1'-0"	4'-6"						-		<b>→</b>					•			•	
5001	7.0		7.0		407	<del>  </del>	7/ 1//	** **	., .,					TYPE-1					Α				C		-
D801	30	20	30	5'-4"	427	18 3	3'-1	1'-0" 1'-0"	1'-0" 1'-0"					<u> </u>		<u>TYPE-2</u>		-		-		-	-		TV
D802		29	29	6'-11"	536	10 4	-0 74	7-0	7-0					. E . D											<u>TY</u>
														<del> </del>				<u>T</u>	<u>YPE-5</u>			<u>/ Y</u>	<u> 'PE-10</u>		
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<u>TYPE-30</u>

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RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902

REINFORCING STEEL LIST - 1 - LOCATION 8
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

CUY-BH-FY2021(B) MISC PID No. 109131

24/25

149 253

ALL REINFORCING STEEL TO BE EPOXY COATED.

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REINFORCING STEEL LIST - 2 - LOCATION 8
BRIDGE NO. CUY-90-0683
RAMP B OVER IR 90

RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

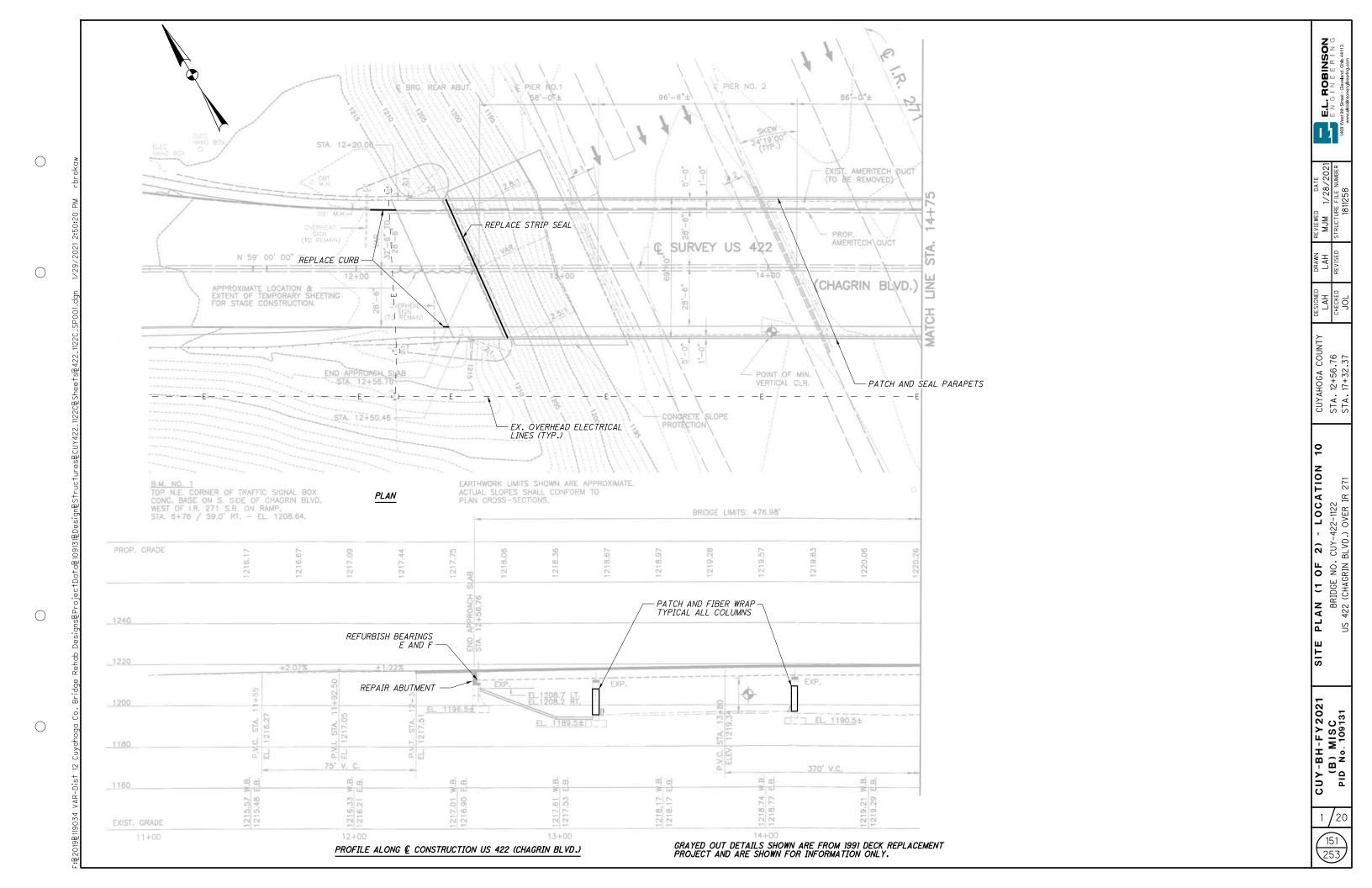
MANSFIELD, OHIO 44902

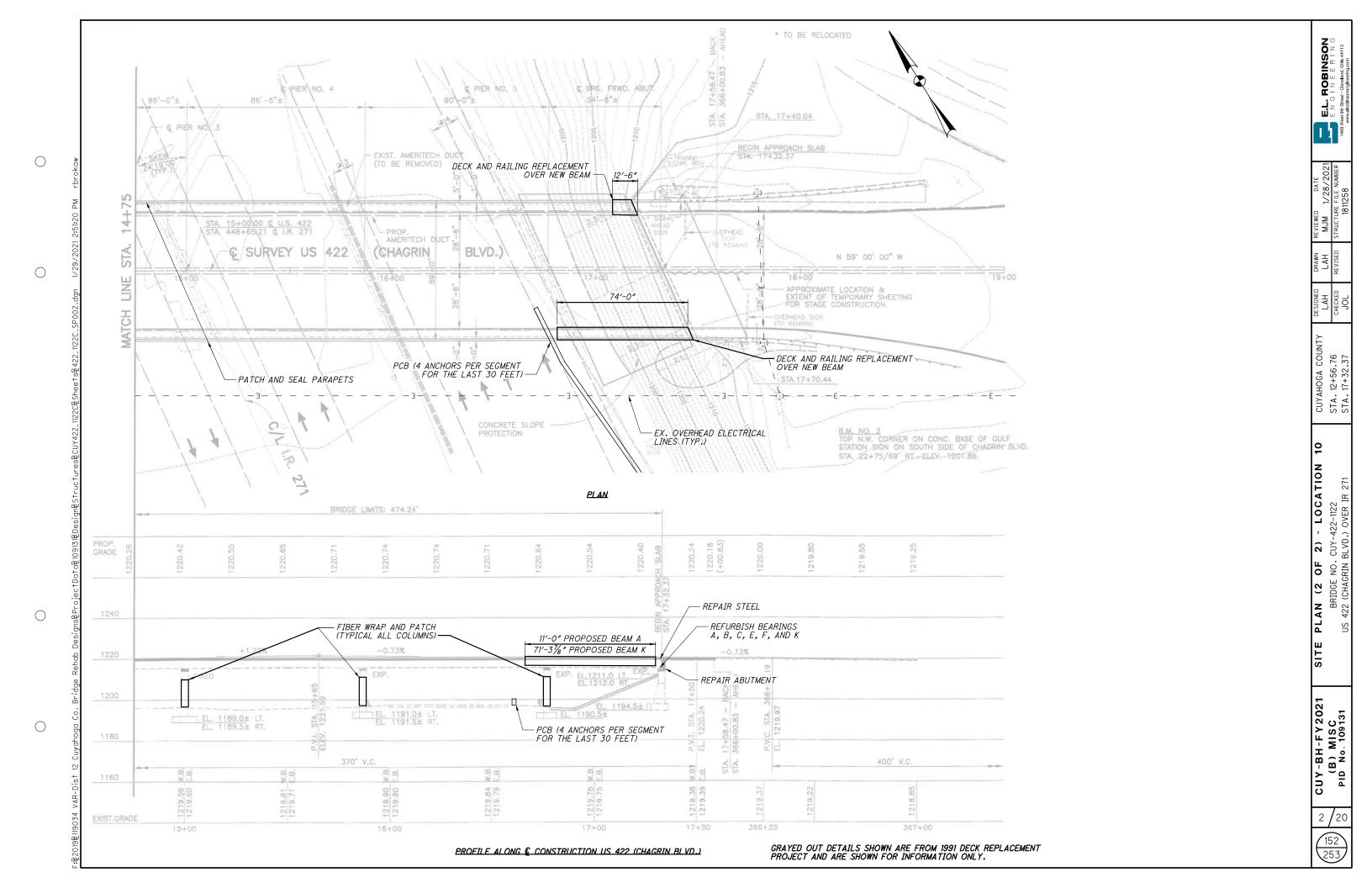
MARK		NUMBER		LENGTH	WEIGHT	TYPE	DIMENSIONS									
MANN	REAR	FORWARD	TOTAL	LENGTH	WEIGHT	77	A	В	С	D	Ε	R	INC			
				1	APPRO	ACH	SLABS				CAL CUL A CHEC		LS DATE <u>12/20</u> LN DATE <u>1/21</u>			
AS501	114		114	5'-2"	614	37	2'-5"	2'-5"			1					
AS502	6		6	22'-11"	143	STR										
AS503	17		17	22'-9"	403	STR										
AS504	12		12	22'-7"	283	STR										
AS505	14		14	22'-5"	327	STR										
AS506	6		6	7′-6″	47	STR										
AS507	33		33	7′-5″	255	STR										
AS508	18		18	7′-4″	138	STR										
AS509	57		57	22'-2"	1318	STR										
AS510	8		8	22'-6"	188	STR										
AS511	30	1	31	24'-5"	790	STR										
AS512	1		1	24'-9"	26	STR										
AS513	1		1	24'-4"	25	STR										
AS514		20	20	29'-6"	615	STR										
AS515		17	17	30′-6″	541	STR										
AS516		10	10	31′-6″	329	STR										
AS517		7	7	32′-5″	237	STR										
AS518		12	12	34'-3"	429	STR										
AS519		7	7	34'-8"	253	STR										
AS520		18	18	35'-2"	660	STR										
AS521		13	13	36'-3"	492	STR										
AS522		2	2	27'-2"	57	STR										
AS523		1	1	27′-8″	29	STR										
AS524		1 1	1	28'-3"	29	STR										
AS525		1	1	28'-9"	30	STR										
AS526		1	1	29'-4" 29'-5"	31	STR STR										
AS527 AS528		<i>12 65</i>	12 65	6'-11"	368 469	37	3'-9"	2'-10"								
AS526 AS529		65	65	8'-8"	588	STR	3-9	2 -10								
AS530		65	65	6'-9"	458	37	3'-1"	3'-4"								
AS531		9	9	35′-3″	331	STR	3 -1	J -4								
AS532		6	6	36'-4"	227	STR										
AS533		13	13	30'-2"	409	STR										
AS534		1	1	31'-2"	33	STR										
AS535		1	1	32'-2"	34	STR										
AS536		5	5	31′-8″	165	STR										
AS537		3	3	32'-7"	102	STR										
AS538		1	1	28'-8"	30	STR										
AS539		1	1	27′-9″	29	STR										
AS540		1	1	25'-6"	27	STR										
AS1001	74		74	25′-10″	8226	16	24′-5″									
AS1002	1		1	26'-0"	112	16	24'-7"									
AS1003	1		1	26'-2"	113	16	24'-9"									
AS1004	1		1	25′-9″	111	16	24'-4"									
AS1005		33	33	31′-7″	4485	16	30′-2″									
AS1006		37	37	30′-10″	4909	16	29′-5″									
AS1007		1	1	32'-2"	138	16	30′-9″				1					
AS1008		1	1	32′-10″	141	16	31′-5″									
AS1009		1	1	33′-7″	145	16	32'-2"				1					
461010		1 SR	1 SR	25′-10″	507	10	24'-5"						0/ 10 1/			
AS1010		OF _	OF -	TO	593	16	TO						0'-10 1/2'			
151011		5	5	29'-4"	170	16	27'-11"				1					
AS1011		1	1	30′-3″	130	16	28'-10"				+					
				TOTAL	30,662	*	I.			l	1					

* FOR INFORMATIONAL	PURPOSES ONLY.	<i>REINFORCING</i>	STEEL INCLUDED	WITH ITEM 526 -	- REINFORCED CONCRETE
APPROACH SLABS (T=	:15" OR T=17"), AS	PER PLAN FOR	PAYMENT.		

		NUMBER				E			D.	DIMENSIONS							
MARK	REAR	FORWARD	TOTAL	LENGTH	WEIGHT	TYPE	A	В	С	D	E	R	INC				
							7										
					TYPE C 1	NST	<i>4LLATIO</i>	N			CAL CUL A CHEC		DATE <u>11/20</u> DATE 1/21				
SS501	47		47	5′-11″	290	30	0'-10"	1′-8″	1′-7″	1′-7″							
SS502		46	46	6'-11"	332	30	0'-10"	2'-4"	1'-9"	1'-9"							
SS503	47		47	6'-9"	331	STR											
SS504	11		11	5′-7″	64	37	2'-9"	2'-6"									
SS505	11		11	5′-5″	62	37	2'-6"	2'-7"									
SS506	11		11	22'-5"	257	STR											
SS507	11		11	7′-7″	87	STR											
SS508	11		11	22'-3"	255	STR											
SS509		25	<i>25</i>	10'-1"	263	STR											
SS510		21	21	10'-4"	226	STR											
SS511		1	1	9′-9″	10	STR											
SS512		1	1	8'-8"	9	STR											
SS513		2	2	6′-7″	14	30	0'-10"	2'-0"	1'-9"	1'-9"							
SS514		11	11	7′-0″	80	37	3′-9″	2'-11"									
SS515		11	11	7′-11″	91	37	3′-5″	4'-2"									
SS516		11	11	36′-7″	420	STR											
SS517		11	11	9′-5″	108	STR											
SS518		11	11	32'-0"	367	STR											
				TOTAL	<i>3,266</i>	**											

<sup>\*\*</sup> FOR INFORMATIONAL PURPOSES ONLY. REINFORCING STEEL INCLUDED WITH ITEM 526 - TYPE C INSTALLATION, AS PER PLAN FOR PAYMENT.





AND THE FOLLOWING SUPPLEMENTAL

SPECIFICATIONS:

800 DATED 1-15-21 844 DATED 4-20-18

#### **DESIGN SPECIFICATIONS:**

THIS STRUCTURE CONFORMS TO THE 9TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, THE ODOT BRIDGE DESIGN MANUAL, 2020.

#### DESIGN LOADING:

EXISTING STRUCTURE: HS20-44 AND THE ALTERNATE MILITARY LOADING FIELD SPLICE: HL-93 AND FUTURE WEARING SURFACE OF 60 PSF

#### **DESIGN STRESSES:**

STRUCTURAL STEEL - ASTM A709 GRADE 36 - YIELD STRENGTH 36 KSI CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

# **EXISTING STRUCTURE VERIFICATION:**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE: OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 OFFICE 5500 TRANSPORTATION BOULEVARD GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

# **DESCRIPTION OF WORK:**

- 1. PATCH AND FIBER WRAP THE PIER COLUMNS.
- 2. REPAIR THE ABUTMENTS.
- 3. REFURBISH THE ABUTMENT BEARINGS
- 4. REPLACE THE STRIP SEAL OF THE EXPANSION JOINT AT THE REAR ABUTMENT.
- 5. REPLACE FASCIA BEAMS AT THE FORWARD ABUTMENT.
- 6. REMOVE FORWARD ABUTMENT CROSSFRAMES AT FASCIA AND REATTACH.
- 7. PAINT NEW BEAM ENDS.
- 8. REPLACE MISSING PORTIONS OF APPROACH CURB.
- 9. PATCH AND SEAL THE PARAPETS.
- 10. PATCH AND SEAL THE CURB AT THE AREAS DESIGNATED IN THE PLANS.
- 11. REPLACE DECK AND RAILING AT BEAMS A AND K.
- 12. REPAIR SOUTH FASCIA BEAM.

# ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN:

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT ARE NOT SEPARATELY LISTED FOR PAYMENT, EXCEPT FOR WEARING COURSE REMOVAL. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NORMAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO C&MS 501.05.

FASCIA BEAM REPAIR:

AN ESTIMATED QUANTITY FOR EACH LOCATION IS PROVIDED FOR FASCIA BEAM REPAIR AS DETERMINED BY FIELD INSPECTION AND AS DIRECTED BY THE ENGINEER. SUPPORT THE EXISTING SECONDARY MEMEBERS. FLAME OR SAW CUT THE EXISTING MEMEBERS TO WITH 1#8 INCH OF THE

EXISTING MAIN MATERIAL USING A MECHANICAL GUIDE ACCORDING TO C&MS 513.12. PROVIDE SHIELDING AS NECESSARY TO PREVENT DAMAGE TO MAIN OR SECONDARY MATERIALS THAT REMAIN. GRIND THE EXISTING MAIN OR SECONDARY MEMBER SMOOTH IN PREPARATION FOR COMPLETE PENETRATION OR FILLET WELDING. PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL (TO ACCOMODATE THE PROPOSED REPLACEMENT MATERIALS). DETERMINE FINAL QUANTITIES BY FIELD MEASUREMENTS. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FOR PAYMENT WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

# STEEL RESTRAINT OR PRELOAD LIMITS:

EXISTING ASTM A709 GRADE 36 - DO NOT SUBJECT ANY PART OF THE STRUCTURE TO A JACKING, PULLING OR RESTRAINING UNIT STRESS EXCEEDING 18,000 PSI (124.1 MPA)

# <u> ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING</u>

REPLACE ALL EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE, REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

SURFACE AREAS AFTER THE CONCRETE REPAIRS ARE COMPLETED AND CURED. APPLY THE SEALER TO LOCATIONS DESCRIBED IN THE PLANS. APPLY THE SEALER LISTED IN THE PAY ITEM DESCRIPTION.

THE CONTRACTOR IS TO ENSURE THAT THE SEALER COLOR MATCHES THE EXISTING SEALER. TO ENSURE THE COLOR MATCHES, A TEST LOCATION SHALL BE SEALED AND ALLOWED 24 HOURS TO DRY.

# <u> ITEM 513 - STRUCTURAL STEEL MISC.: CROSSFRAME DETACHMENT</u> AND REATTACHMENT

DETACH THE END CROSSFRAMES AT THE LOCATIONS DESIGNATED IN THE PLANS. ONCE THE NEW BEAM END IS IN PLACE, REATTACH THE CROSSFRAMES TO THE NEW AND EXISTING BEAM ENDS. PERFORM ALL WORK ACCORDING TO CMS SECTION 513. MATERIAL SHALL BE

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO FURNISH AND INSTALL THE PROPOSED GIRDER ENDS, INCLUDING SPLICES, SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL. MISC.: CROSSFRAME DETACHMENT AND REATTACHMENT.

# ITEM 513 - STRUCTURAL STEEL MISC .: NEW BEAM ENDS

REPLACE THE ENDS OF THE EXISTING GIRDERS AT THE LOCATIONS DESIGNATED IN THE PLANS. PERFORM ALL WORK ACCORDING TO CMS SECTION 513. MATERIAL SHALL BE A709 GRADE 36.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO FURNISH AND INSTALL THE PROPOSED GIRDER ENDS, INCLUDING SPLICES, SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL, MISC .: NEW BEAM ENDS.

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

ALL REQUIREMENTS OF 513 APPLY TO SHOP FABRICATED MEMBERS. PERFORM WORK FOR FIELD
FABRICATED MEMBERS ACCORDING TO ITEM 513, EXCEPT AS MODIFIED HEREIN. THE DEPARTMENT WILL
NOT REQUIRE THE CONTRACTOR PERFORMING FIELD FABRICATION TO BE PRE-QUALIFIED AS SPECIFIED
THIS WORK CONSISTS OF TEMPORARILY SUPPORTING THE EXISTING GIRDERS DURING GIRDER IN SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE, 501.06, TO THE ENGINEER, PROVIDE SHOP DRAWINGS ACCORDING TO 513.06 OR SUPPLY THE ENGINEER WITH "AS BUILT" THE BEARINGS. THIS ITEM WILL ALSO COVER THE COST OF THE MATRIALS AND LABOR DRAWINGS MEETING 513.06 AFTER COMPLETION OF FIELD FABRICATION. THE ENGINEER WILL REVIEW THE SUBMITTED DRAWINGS FOR CONCURRENCE WITH THE FINAL AS-BUILT CONDITION. THE ENGINEER MILE REVIEW ACCORDANCE WITH C&MS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE MY CONTACT THE OFFICE OF STRUCTURAL ENGINEERING FOR TECHNICAL ASSISTANCE. IF THE ENGINEER IS SATISFIED WITH THE "AS-BUILT" DRAWINGS AND THE DELIVERED MATERIALS, SUPPLY A COPY OF THE DRAWINGS, STAMPED, SEALED AND DATED, ACCORDING TO S1002, TO THE STRUCTURAL, WELDING AND METALS SECTION OF THE OFFICE OF MATERIAL MANAGEMENT FOR RECORD TO THE STRUCTURAL SUPPLY AND SUPPLY AN PURPOSES. THE MEMEBERS INCLUDED IN THIS ITEM ARE PROVIDED. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FÓR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN: POUND.

# <u> ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MEMBERS, COPE</u>

HOLES SMOOTH ACCORDING TO C&MS 513.19. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, TOOLS. LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MEMBERS, COPE HOLES: EACH.

# <u>ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MAIN MEMBER, COMPLETE PENETRATION WELDING:</u>

AFTER DAMAGED AREAS HAVE BEEN INSPECTED. PREPARE THE DAMAGED MATERIAL FOR WELDING AFTER DAMAGED ANGES HAVE BEEN INSTELLED, FREFARE THE DAMAGED MATERIAL FOR MELDING. PROVIDE RUNOFF TABS FOR ALL COMPLETE PENETRATION WELDS. PERFORM COMPLETE PENETRATION WELDS ACCORDING TO C&MS 513 USING APPROVED ELECTRODES, PROCEDURES AND WELDERS. REMOVE RUNOFF TABS AND GRIND THE COMPLETED EDGES SMOOTH. GRIND THE COMPLETED WELDS SMOOTH

AND FLUSH WITH THE ADJACENT SURFACES TO PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL. DO NOT OVER GRIND AS TO REDUCE THE MATERIAL THICKNESS OR WIDTH OF THE NEW OR EXISTING MATERIALS. PREPARE ALL REENTRANT CORNERS WITH A ONE INCH RADIUS. REMOVE WELDING, START AND STOP DISCONTINUTIES. RADIOGRAPHIC TEST THE FINISHED WELDS ACCORDING TO C&MS 513.25A AND SUBMIT COPIES OF THE REPORTS TO THE ENGINEER. THE ENGINEER MAY OBTAIN TECHNICAL ASSISTANCE FROM THE OFFICE OF MATERIALS MANAGEMENT. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FOR PAYMENT WITH ITEM 513 STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MAIN MEMBERS, COMPLETE PENETRATION WEI DING: FOOT.

# <u> ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MAIN</u> MEMBER, FILLET WELDING:

AFTER DAMAGED AREAS HAVE BEEN INSPECTED, PREPARE THE DAMAGED MATERIAL FOR WELDING PERFORMING % INCH FILLET WELDS ACCORDING TO ITEM 513 USING APPROVED ELECTRODES, PROCEDURES AND WELDERS. WELD EACH SECONDARY MEMBER ACCORDING TO PLAN DETAILS. MAGNETIC PARTICLE INSPECT ALL FILLET WELDS ACCORDING TO C&MS 513.25B. THE ENGINEER MAY OBTAIN TECHNICAL ASSISTANCE FROM THE OFFICE OF MATERIALS MANAGEMENT. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MAIN OR SECONDARY MEMBERS, FILLET WELDING: FOOT.

#### <u> ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MEMBER, </u> DRILLING:

AN ESTIMATED QUANTITY FOR EACH LOCATION IS PROVIDED FOR DRILLING MAIN OR SECONDARY

MEMBERS AS DETERMINED BY FIELD INSPECTION OR DIRECTED BY THE ENGINEER. DRILL 2 INCH

THIS WORK CONSISTS OF APPLYING AN APPROVED SEALER ON EXISTING AND NEW CONCRETE

THIS WORK CONSISTS OF APPLYING AN APPROVED SEALER ON EXISTING AND NEW CONCRETE

GRIND THE HOLES SMOOTH ACCORDING TO C&MS 513.19. THE DEPARTMENT WILL INCLUDE ALL MATERIALS, TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MISC., REPAIR OF DAMAGED MEMBER, DRILLING: EACH.

# ITEM 514 - FIELD PAINTING MISC .: NEW BEAM ENDS

THIS WORK CONSISTS OF FIELD PAINTING THE PROPOSED GIRDER ENDS AND SPLICES. IN ADDITION, FIELD PAINT ANY PORTIONS OF THE EXISTING STEEL TO REMAIN WHERE THE EXISTING PAINT SYTEM HAS BEEN DAMAGED BY THE REMOVAL PROCESS. PERFORM ALL WORK ACCORDING TO CMS SECTION 514.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO PAINT THE PROPOSED GIRDER ENDS, INCLUDING SPLICES, SHALL BE INCLUDED FOR PAYMENT WITH ITEM 514 - FIELD PAINTING, MISC .: NEW BEAM ENDS.

# <u>ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN:</u>

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN BRIDGE BEARINGS AS WELL AS THEIR CLEANING AND PAINTING. INCLUDED SHALL BE DISASSEMBLY OF THE BEARINGS, HAND TOOL CLEANING (GRINDING IF NECESSARY), PAINTING ACCORDING TO ITEM 514. INSTALLATION OF ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT. REALIGNMENT OF THE UPPER BEARING PLATE BY REMOVING EXISTING WELDS AND REWELDING SO THAT THE BEARINGS ARE VERTICALLY ALIGNED AT 60°F, AND REASSEMBLY OF THE BEARINGS. ASSURE ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING". AT NO ADDITIONAL COST TO THE STATE, THE CONTRACTOR MAY INSTALL NEW BEARINGS OF THE SAME TYPE AS THE EXISTING IN PLACE OF REFURBISHING THE BEARINGS. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 -REFURBISH BEARING DEVICES, AS PER PLAN.

# <u> ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, </u> AS PER PLAN:

END REPLACEMENT AND RAISING THE EXISTING STRUCTURE AS REQUIRED FOR REFURBISHING NEEDED FOR CONSTRUCTION OF THE UTILITY SUPPORT. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH C&MS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH C&MS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS. THE DEPARTMENT AN ESTIMATED QUANTITY FOR EACH LOCATION IS PROVIDED FOR COPING MAIN MEMBERS AS

DETERMINDED BY FIELD INSPECTION OR AS DIRECTED BY THE ENGINEER. PROVIDE A 2 INCH DIAMETER

X 4 INCH LONG COPE ACCORDING TO PLAN DETAILS OR AS DIRECTED BY THE ENGINEER. GRIND THE

SUPPORT OF SUPPRESTRUCTURE. AS PER PLAN. SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

#### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN:

PRIOR TO THE SURFACE CLEANING SPECIFIED IN C&MS 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

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NOTES CUY-422-BLVD.) O' BRIDGE 2 (CHAG

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2.0 GENERAL: C&MS 514.05 THROUGH 514.10 AND 514.13.D APPLY UNLESS MODIFIED BY THESE

.O WASHING EXISTING OZEU OR IZEU PAINTED SURFACES OR UNPAINTED WEATHERING STEEL: CLEAN SURFACES TO BE COATED WITH LOW PRESSURE WATER CLEANING TO REMOVE ALL DIRT, DEBRIS, ANIMAL EXCREMENT, SALT CONTAMINANTS AND OTHER ACCUMULATED FOREIGN MATERIAL IN ACCORDANCE WITH SSPC-SP12 (LP WC), LOW PRESSURE WATER CLEANING. THE PRESSURE WASHER SHALL BE CAPABLE OF ACHIEVING AT LEAST 2000 POUNDS PER SQUARE INCH AT THE NOZZLE. WHEN USING THE POWER WASHING EQUIPMENT, THE NOZZLE SHALL BE MAINTAINED NO MORE THAN 10 INCHES FROM THE SURFACE. SUPPLY AND USE POTABLE WATER. PROVIDE TO THE ENGINEER A LETTER OF WRITTEN ACCEPTANCE FOR ANY BIODEGRADABLE DETERGENTS OR CLEANERS USED IN CONJUNCTION WITH THIS METHOD.

COLLECT AND CONTAIN WATER AND DEBRIS REMOVED DURING WASHING OPERATIONS ABOVE WATER FEATURES IN CONFORMANCE WITH C&MS 514.08 AND C&MS 514.13.D FOR ANY DEBRIS. CREATE SETTLEMENT COLLECTION BASINS AND STRAIN ALL WASH WATER ABOVE LAND FEATURES AS NECESSARY TO PRODUCE VISIBLY CLEAR WATER AND COMPLY WITH C&MS 514.13.D

4.0 SURFACE PREPARATION: AFTER THE PRESSURE WASHED SURFACE HAS DRIED, REMOVE EXISTING PAINT COATING TO CONTRACT LIMITS OR AS DIRECTED BY THE ENGINEER ACCORDING TO SSPC-SP 11, POWER TOOL CLEANING TO BARE METAL, AS SHOWN ON THE PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES SHOWN IN SSPC-VIS 3: SSPC SP6, COMMERCIAL BLAST CLEANING, AS SHOWN ON THE PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SÚRFACES SHOWN IN SSPC-VIS 1: OR SSPC SP12 UHP WJ-4, STANDARDS FOR PAINTING STEEL SURFACES SHOWN IN SSPC-VIS 1: OR SSPC SPIZ UHP WJ-4, ULTRA HIGH-PRESSURE WATER JETTING, AS SHOWN ON THE PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES IN SSPC-VIS 4. SUPPLY BLAST WATER CONTAINING A COMMERCIALLY AVAILABLE RUST INHIBITOR AS A DOSAGE THAT PREVENTS FLASH RUSTING FOR IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE 12 HOURS AND DOCUMENTED AS ACCEPTABLE TO THE COATING'S MANUFACTURER. THE ENGINEER PLACEMENT, ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCE OF THE SURFACE PREPARATION. FEATHER THE EXISTING PAINT TO EXPOSE A MINIMUM OF 1/2 INCH OF EACH COAT. CONTAIN AND DISPOSE OF WASTE GENERATED BY THE CLEANING ACCORDING TO FORFIGN MATERIAL BY THE USE OF WATER. AIR UNDER PRESSURE, OR OTHER METHOD

ROUND ALL EXPOSED CORNERS OF MAIN MATERIAL TO BE PAINTED AS NECESSARY TO ACHIEVE A  $\frac{1}{16}$  INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A 45 DEGREE ANGLE.

5.0 FIELD PAINTING: APPLY THE PRIME, INTERMEDIATE AND FINISH COATS OF THE THREE-COAT PAINT SYSTEM SPECIFIED IN C&MS 708.02, ACCORDING TO C&MS 514.15, 514.16, 514.17, 514.19
AND 514.20 TO CONTRACT LIMITS OR AS DIRECTED BY THE ENGINEER. TINT THE FINISH COAT TO APPROXIMATELY THE SAME COLOR AS THE EXISTING FINISH COLOR, UNPAINTED WEATHERING STEEL OR AS DESIGNATED IN THE CONTRACT. MATCH THE COLOR TO THE ENGINEERS

SATISFACTION. THE ENGINEER WILL DETERMINE THE PRIME AND INTERMEDIATE COAT THICKNESS USING A TYPE 2 MAGNETIC GAGE AT SPOT LOCATIONS. THE PRIME, INTERMEDIATE AND FINISH COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE CONTRACT OF THE PRIME AND ALL INCIDENTAL COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE COAT OF PAINT SHALL MEET THE MINIMUM DRY FILM THICKNESS REQUIREMENTS OF C&MS 514.20.

. APPLY THE PRIME COAT ONLY TO THE PREPARED SURFACE OF THE BARE STEEL AND THE EXISTING PRIME COAT EXPOSED BY FEATHERING. DO NOT APPLY THE PRIME COAT TO THE ADJACENT INTERMEDIATE COAT.

B. APPLY CAULK AFTER PRIMING.

APPLY THE INTERMEDIATE COAT TO THE NEW PRIME COAT AND TO THE EXISTING INTERMEDIATE COATS THAT ARE EXPOSED BY FEATHERING.

D. APPLY THE FINISH COAT TO THE NEW INTERMEDIATE COAT AND TO THE EXISTING FINISH COATS THAT ARE EXPOSED BY FEATHERING.

AT THE PERIMETER OF THE REPAIR AREA, APPLY THE PRIME, INTERMEDIATE AND FINISH COATS WITH A BRUSH. IN LIEU OF BRUSHING, THE CONCRACTOR MAY DOUBLE MASK AREAS NOT TO BE COATED AND SPRAY TO FEATHERED REMOVAL LINES.

BLEND REPAIR AREAS WITH THE ADJACENT COATING TO PROVIDE A FINISHED SURFACE IN THE PATCHED AREAS THAT IS SMOOTH AND HAS AN EVEN PROFILE WITH ADJACENT SURFACES

6.0 MEASUREMENT: THE DEPARTMENT WILL MEASURE FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN BY THE NUMBER OF SQUARE FEET OF STRUCTURAL STEEL PAINTED.

THE DEPARTMENT WILL DETERMINE THE SURFACE AREA BY TAKING EXACT FIELD MEASUREMENTS OF ALL PAINTED SURFACES AND CALCULATIONS.

7.0 BASIS OF PAYMENT: THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICES AS FOLLOWS: THE DEPARTMENT MAY CONSIDER PAINT AS ELIGIBLE FOR PAYMENT FOR MATERIAL ON-HAND AS SPECIFIED IN 109.10, HOWEVER, ONLY PAINT THAT THE CONTRACTOR CAN PROVE TO THE ENGINEER WILL BE USED DURING THE CONSTRUCTION SEASON IS ELIGIBLE FOR PAYMENT. THE CONTRACTOR SHALL PROVIDE THE ENGINEER CALCULATIONS INDICATING THE TOTAL SQUARE FEET OF STEEL TO BE PAINTED DURING THE CONSTRUCTION SEASON. THE CONTRACTOR SHALL ALSO PROVIDE CALCULATIONS SHOWING THE TOTAL NUMBER OF GALLONS REQUIRED.

THE CONTRACTOR CAUSES DAMAGE OR INJURY TO PUBLIC OR PRIVATE PROPERTY, THE DEPARTMENT WILL NOT PAY FOR RESTORING THE PROPERTY TO ITS ORIGINAL CONDITION. THE DEPARTMENT WILL NOT PAY FOR REPAIRING ADJACENT COATINGS DAMAGED DURING THE WASHING, POWER TOOL CLEANING OR BLAST CLEANING OPERATION.

THE DEPARTMENT WILL NOT PAY FOR REMOVING AND REPLACING AN AREA OF COATING BECAUSE A SPOT OR MAXIMUM AVERAGE THICKNESS EXCEEDS THE MAXIMUM SPOT THICKNESS.

THE DEPARTMENT WILL NOT PAY FOR ADDITIONAL TESTING REQUIRED BY ANY HAULER TREATMENT FACILITY, DISPOSAL FACILITY OR LANDFILL.

THE DEPARTMENT WILL NOT PAY FOR ACCESSING, INSPECTING, AND REPAIRING AREAS THAT ARE NOT FOUND TO BE IN CONFORMANCE WITH THE SPECIFICATIONS AND PERTINENT CONTRACT

ALL OTHER REQUIREMENTS OF THIS FIELD PAINTING SPECIFICATION ARE CONSIDERED INCIDENTAL TO THE WORK.

UNIT 1TFM

DESCRIPTION

514 SQUARE FEET

FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN (THREE COAT)

# <u> ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION.</u>

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

# **CUT LINE CONSTRUCTION JOINT PREPARATION:**

CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED PLACEMENT, ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVÉ LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURÉ, OR ÓTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01 PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01 PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DII49 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	GI54 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN 1 SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS

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SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER. THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

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E.L. ROBINSON
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est 9th Street : Cleveland, Ohlo 44113

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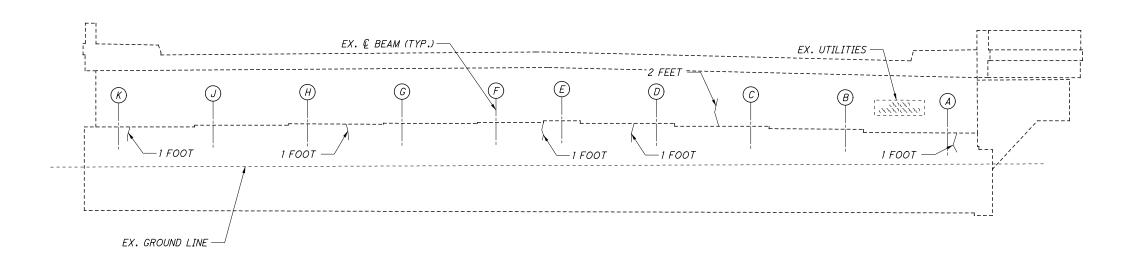
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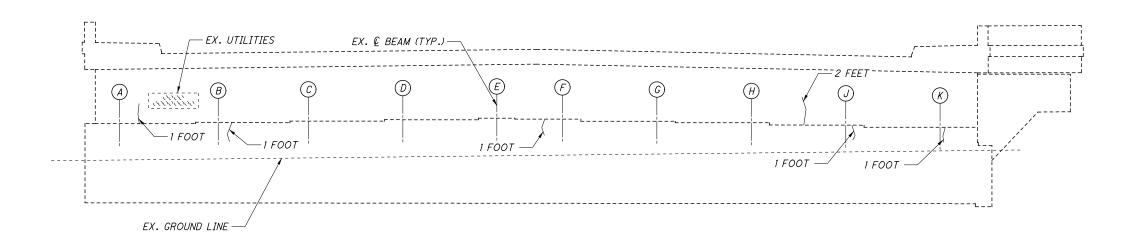
E.L. ROBINSON
E N G I N E E R I N G
st 9th Street · Cleveland, Ohlb 44113

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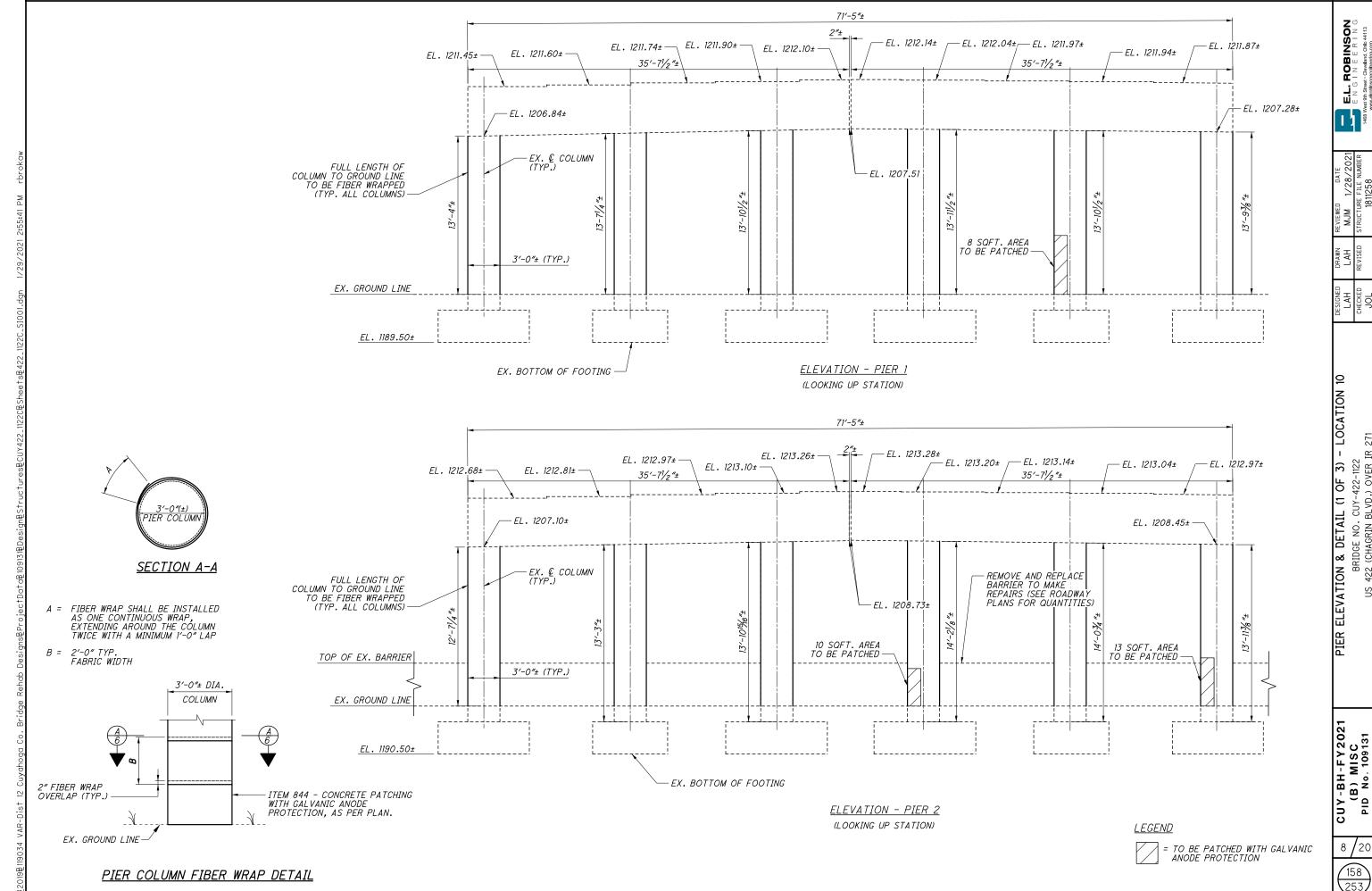
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# ELEVATION - REAR ABUTMENT



ELEVATION - FORWARD ABUTMENT

# <u>LEGEND</u>



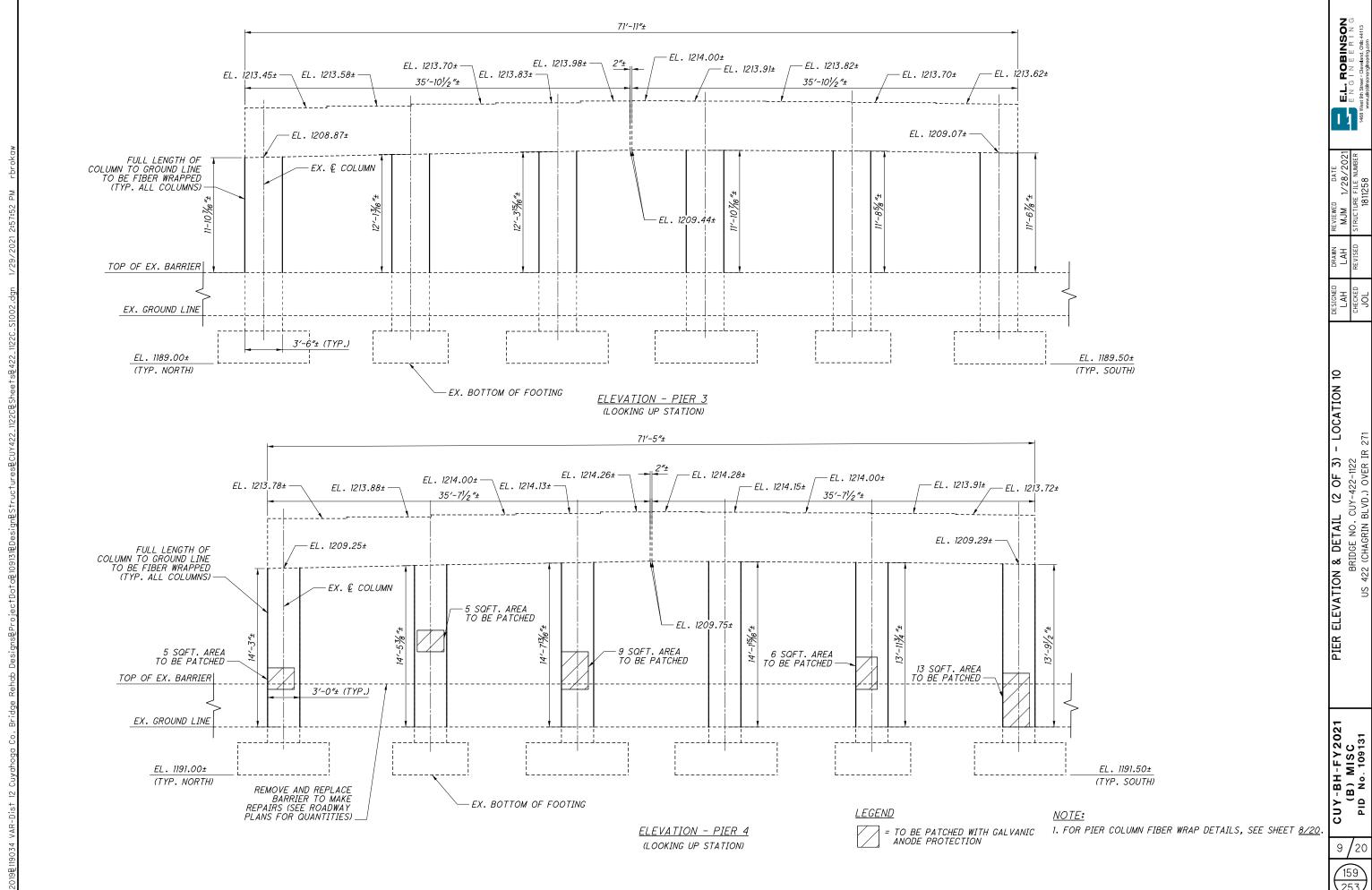
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E.L. ROBINSON
E.N.G.I.N.E.B.R.I.N.G.
est 9th Street · Cleveland, Onlo 44113

ELEVATION & DETAIL (1 OF 3) BRIDGE NO. CUY-422-1122
US 422 (CHAGRIN BLVD.) OVER IR

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E.L. ROBINSON
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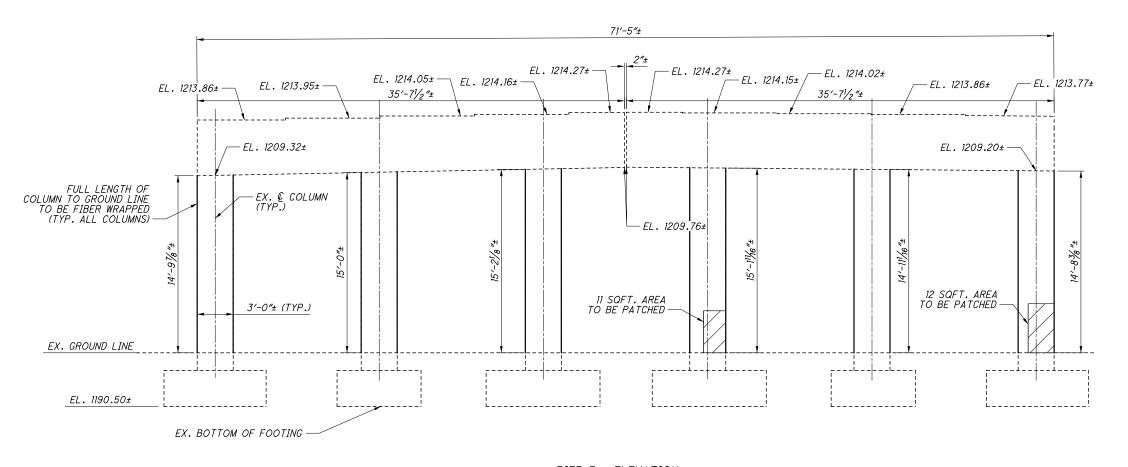
PIER ELEVATION & DETAILS (3 OF 3) - LOCATION 10

BRIDGE NO. CUY-422-1122

US 422 (CHAGRIN BLVD.) OVER IR 271

CUY-BH-FY2021 (B) MISC PID No. 109131

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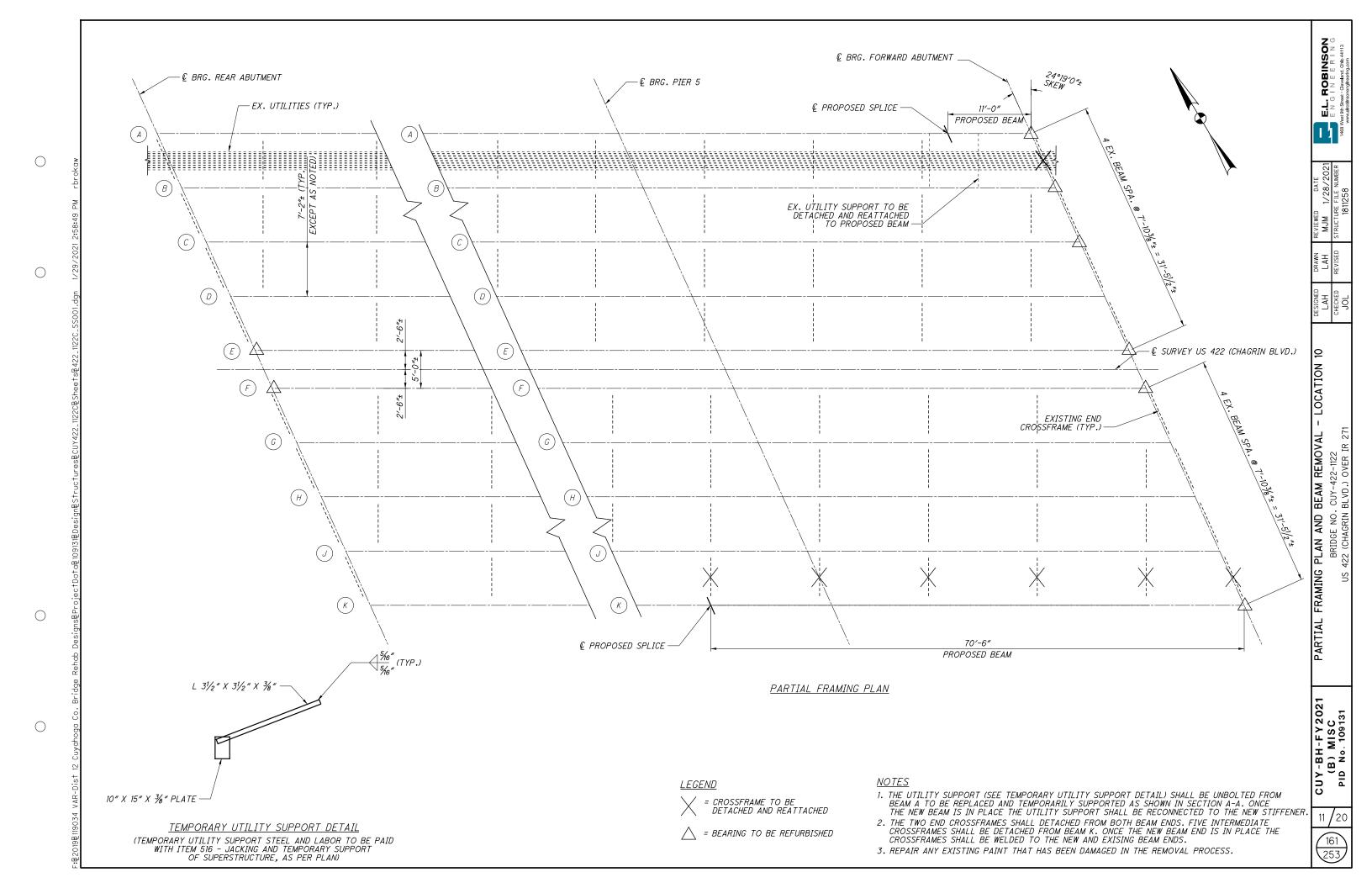
<u>PIER 5 - ELEVATION</u>

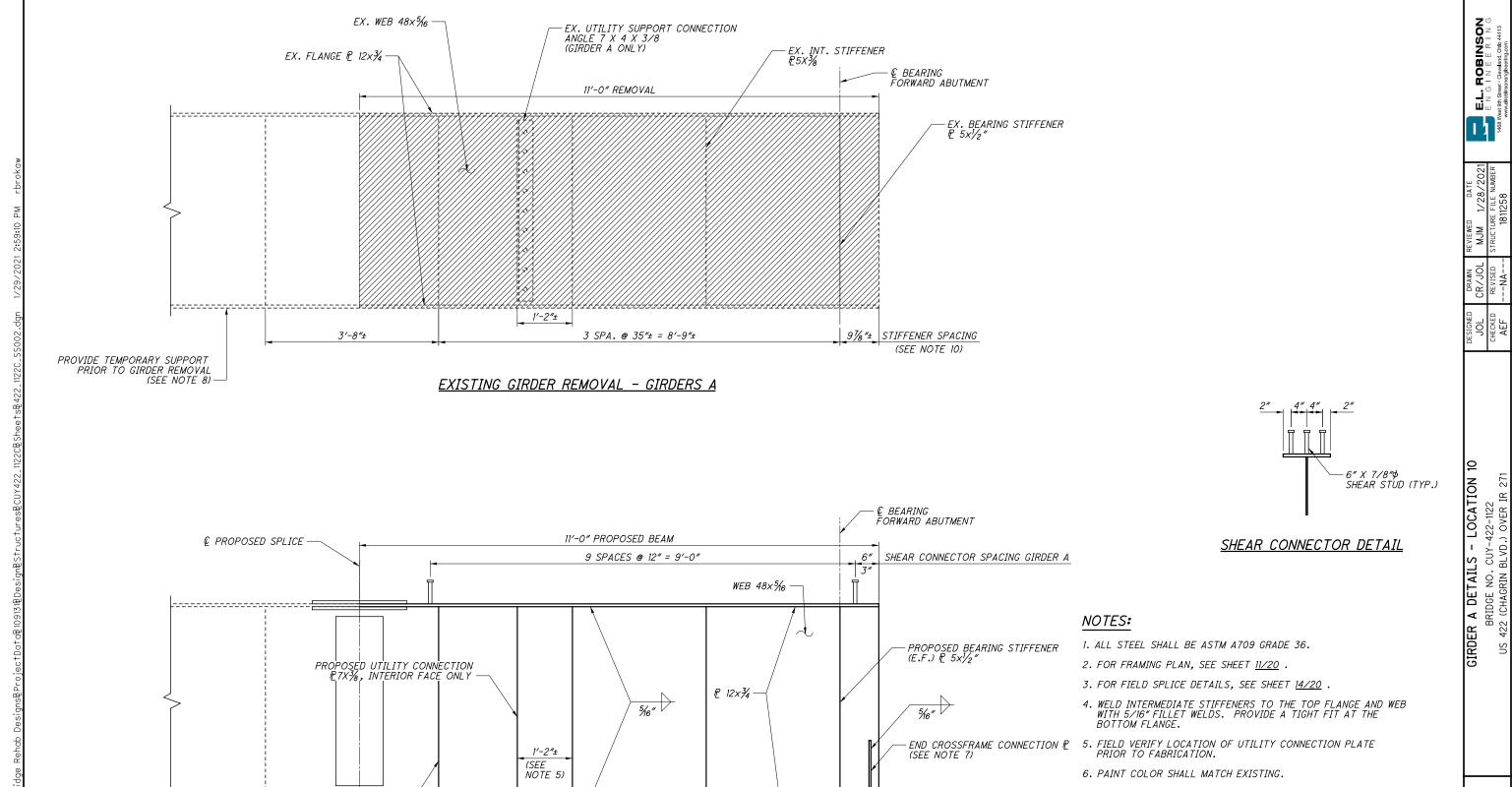
(LOOKING UP STATION)

1. FOR PIER COLUMN FIBER WRAP DETAIL, SEE SHEET 8/20.

# <u>LEGEND</u>







ATTACH REFURBISHED BEARING

3 SPA. @ 35" = 8'-9"

(3 SPA. @ 39" = 9'-9" GIRDER K)

PROPOSED PARTIAL GIRDER ELEVATION - GIRDERS A

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PROPOSED INT. STIFFENER £5X%, INTERIOR FACE ONLY (TYP. EXCEPT AS NOTED)-

**LEGEND** 

91/8" STIFFENER SPACING

= EXISTING GIRDER REMOVAL

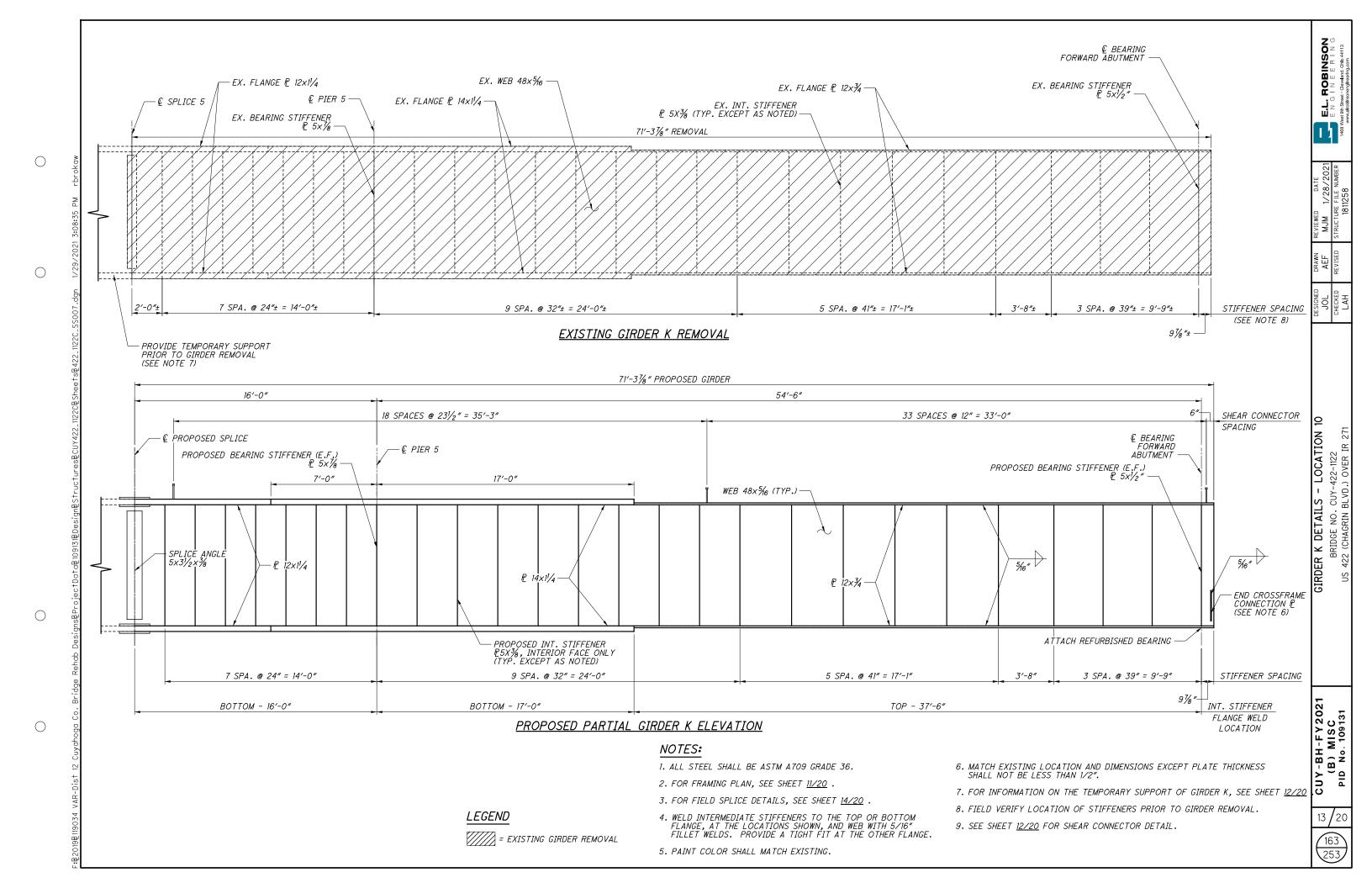
7. MATCH EXISTING LOCATION AND DIMENSIONS EXCEPT PLATE THICKNESS SHALL NOT BE LESS THAN 1/2".

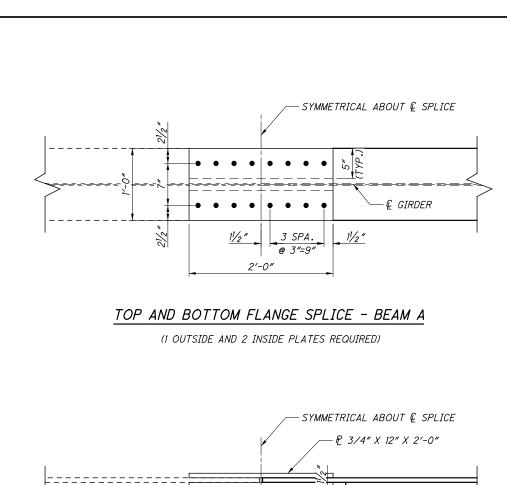
3H-FY2021 ) MISC No. 109131 8. PROVIDE TEMPORARY SUPPORTS FOR BEAMS A AND K. SUPPORT FOR BEAM A SHALL CONSIST OF A CARRIER BEAM SPANNING FROM PIER 5 TO THE FORWARD ABUTMENT OR A COLUMN SUPPORT FOUNDED ON A CONCRETE OR TIMBER FOOTING. REMOVE AND REPLACE THE CONCRETE SLOPE PROTECTION AS REQUIRED. DESIGN COLUMN SUPPORT AT BEAM A FOR A MINIMUM SERVICE LOAD OF 50 KIPS. MINIMUM JACK CAPACITY AT BEAM A SHALL BE 75 KIPS. SUPPORT FOR BEAM K SHALL CONSIST OF A UY-BH (B) I PID No. CARRIER BEAM SPANNING FROM PIER 4 TO PIER 5 OR A COLUMN SUPPORT FOUNDED ON A CONCRETE OR TIMBER FOOTING. DESIGN COLUMN SUPPORT AT BEAM K FOR A MINIMUM SERVICE LOAD OF 100 KIPS. MINIMUM JACK CAPACITY AT BEAM K SHALL BE 150 KIPS.

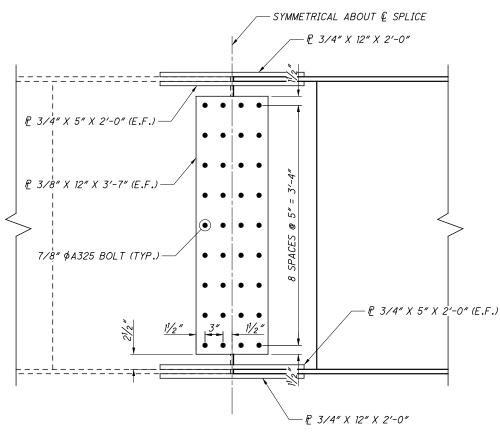
9. PROVIDE TEMPORARY SUPPORT FOR THE EXISTING UTILITY SUPPORTS AT

10. FIELD VERIFY LOCATION OF STIFFENERS PRIOR TO GIRDER REMOVAL.

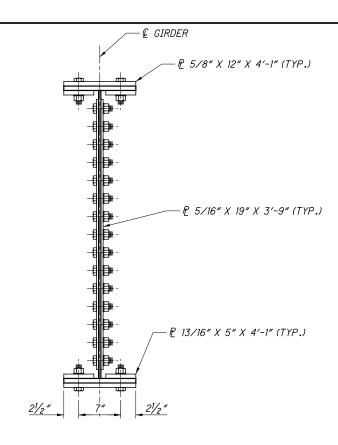
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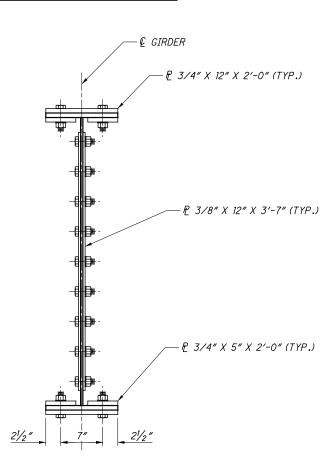




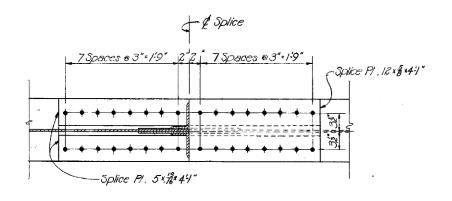
GIRDER WEB SPLICE - BEAM A



# SPLICE SECTION - BEAM K

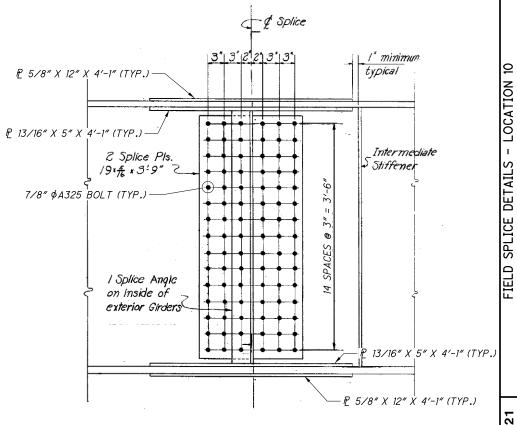


SPLICE SECTION - BEAM A



# TOP AND BOTTOM FLANGE SPLICE - BEAM K

(1 OUTSIDE AND 2 INSIDE PLATES REQUIRED)



# GIRDER WEB SPLICE - BEAM K

# NOTES:

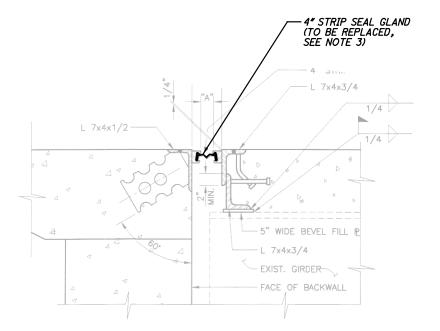
- 1. ALL BOLTS SHALL BE 7/8" \$\phi A325 HIGH STRENGTH BOLTS.
  2. ALL SPLICE PLATES SHALL BE DESIGNATED (CVN) AND SHALL MEET THE MINIMUM NOTCH THICKNESS REQUIREMENTS AS SPECIFIED IN CMS 711.01.
  3. ALL STEEL FOR SPLICE PLATES SHALL BE ASTM A709 GRADE 36.

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FIELD

E.L. ROBINSON
E N G I N E E R I N G
st gin Street: Cleveland, Onlo 44113

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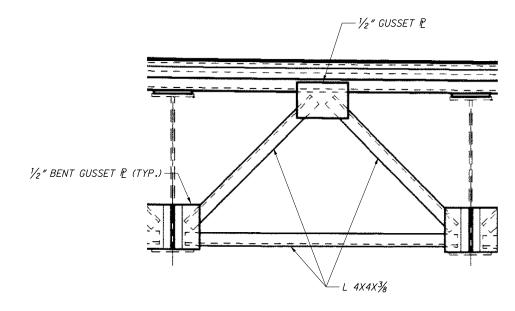
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LATION 1	TABLE
DIMENSIO	N "A"
REAR ABUT.	FRWD. ABUT.
1 3/4"	_
1 15/16"	-
2 1/16"	_
2 1/4"	_
2 7/16"	
2 9/16"	_
2 3/4"	
	DIMENSIO REAR ABUT. 1 3/4" 1 15/16" 2 1/16" 2 1/4" 2 7/16" 2 9/16"

# <u>REAR ABUTMENT - EXPANSION JOINT</u>



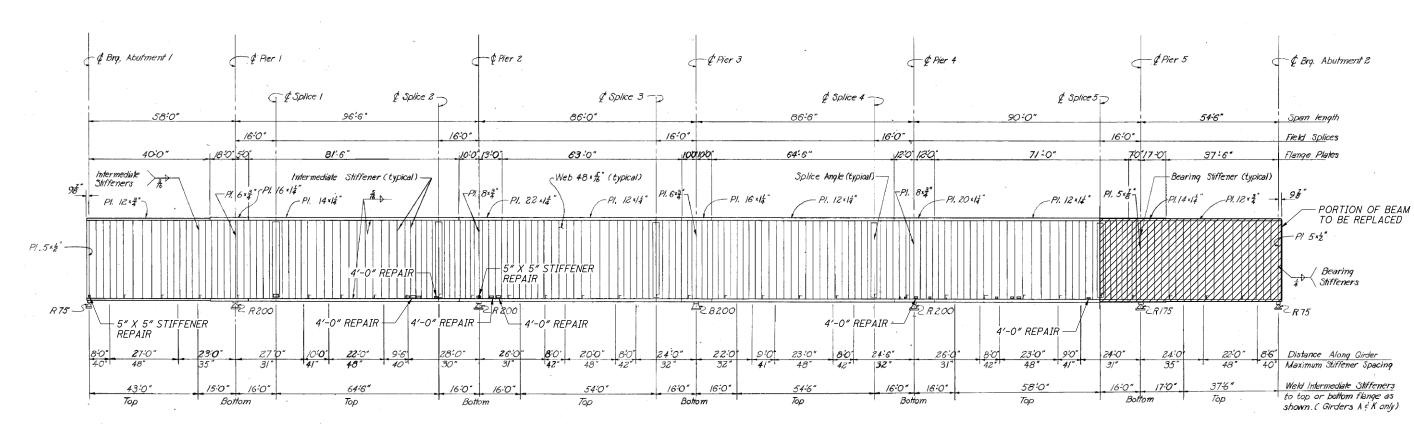
END CROSSFRAME DETAILS

(EX. CROSSFRAME TO BE TEMPORARILY DETACHED AND REATTACHED)

# <u>NOTES:</u>

- 1. FOR LOCATION OF END CROSSFRAMES TO BE DETACHED AND REATTACHED, SEE SHEET  $\underline{11/20}$  .
- 2. REFER TO STANDARD DRAWING GSD-1-19 FOR ADDITIONAL END CROSSFRAME DETAILS.
- 3. USE A CONTINUOUS STRIP SEAL ACROSS THE ENTIRE DECK WIDTH.





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\*ALL BEAM REPAIRS ARE 2'-0" LONG, UNLESS NOTED OTHERWISE.

# SOUTH GIRDER HOLES

	TABLE #3 513 REPAIRS														
No. OF DAMAGED AREAS	REPAIR SIZE	REPAIR DETAIL TYPE	DRILLING HOLES (EACH)	DRILLING HOLES (TOTAL)	COPE HOLES (EACH)	COPE HOLES (TOTAL)	STEEL MEMBER LEVEL UF (POUNDS)	STEEL MEMBER LEVEL UF (TOTAL POUNDS)	CP WELD (FEET)	CP WELD (TOTAL FEET)	FILLET WELD (FEET)	FILLET WELD (TOTAL FEET)			
10	2'-0"	WC1	2	20	2	20	19.2	192	3 <b>.</b> 5	35	4	40			
6	4'-0"	WC1	2	12	2	12	38.3	230	5 <b>.</b> 5	33	8	48			
2	5" × 5"	WC1-7	1	2	0	0	15	30	0.5	1	0.9	1.8			
			TOTAL =	34		32		452		69		90			

# NOTES:

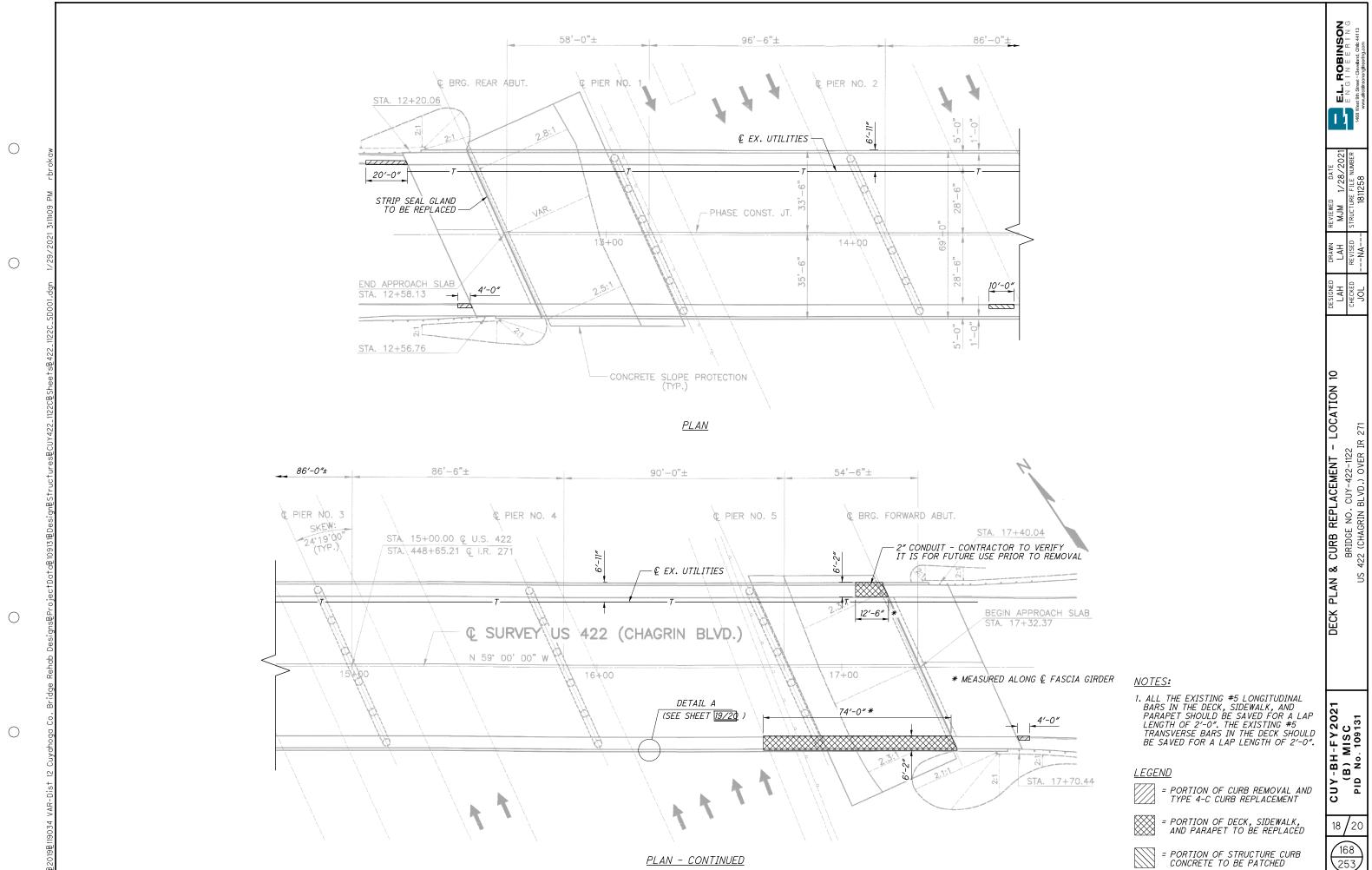
- 1. FOR REPAIR DETAILS, SEE SHEET 17/20.
- 2. FIELD MEASUREMENTS TO BE VERIFIED BY CONTRACTOR.
- 3. THE CONTRACTOR MAY REPAIR THREE LOCATIONS PER SPAN AT ONE TIME, BUT THE REPAIR LOCATIONS SHALL BE TWELVE FEET OR MORE APART FROM ONE ANOTHER.

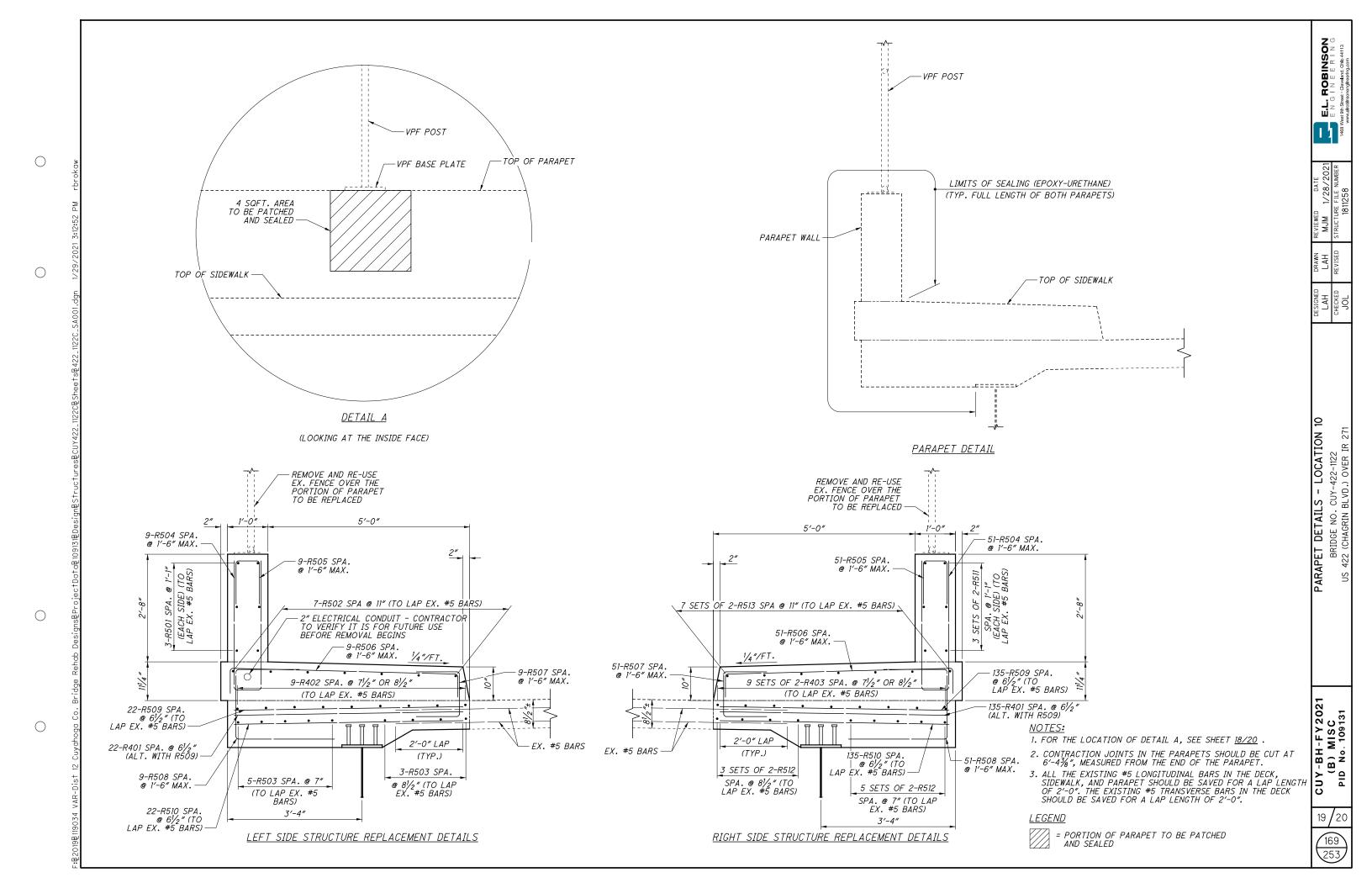
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LOCATION HOLES WC1 ie no. cuy-42 agrin blvd.)

3H-FY2021 ) MISC No. 109131 UY-BH (B) N

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20/20 170 253

	NUMBER			4			П	IMENSION	IS		
MARK	TOTAL	LENGTH	WEIGHT	TYPE				INICIVOIOI			
	TOTAL			'	Α	В	С	D	Ε	R	INC
	•		PA	RAPE	T, SIDEW	'ALK AND	SLAB			•	
R401	157	5′-8″	594	STR							
R402	9	12'-2"	73	STR							
R403	18	38′-6″	463	STR							
R501	6	12'-2"	76	STR							
R502	7	12'-2"	89	STR							
R503	8	12'-2"	102	STR							
R504	60	6′-9″	422	2	3′-2″	8"	3'-2"				
R505	60	2'-3"	141	2	1'-0"	6"	1'-0"				
R506	60	6′-7″	412	2	7"	5′-8″	7"				
R507	60	2'-11"	183	2	1'-0"	1'-2"	1'-0"				
R508	60	5′-1″	318	2	1'-6"	1'-6"	2'-4"				
R509	157	5′-8″	928	STR							
R510	157	5′-8″	928	STR							
R511	12	38′-6″	482	STR							
R512	16	38′-6″	642	STR							
R513	14	38′-6″	<i>562</i>	STR				·			
		SUBTOTAL	6,415		•					•	-

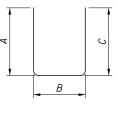
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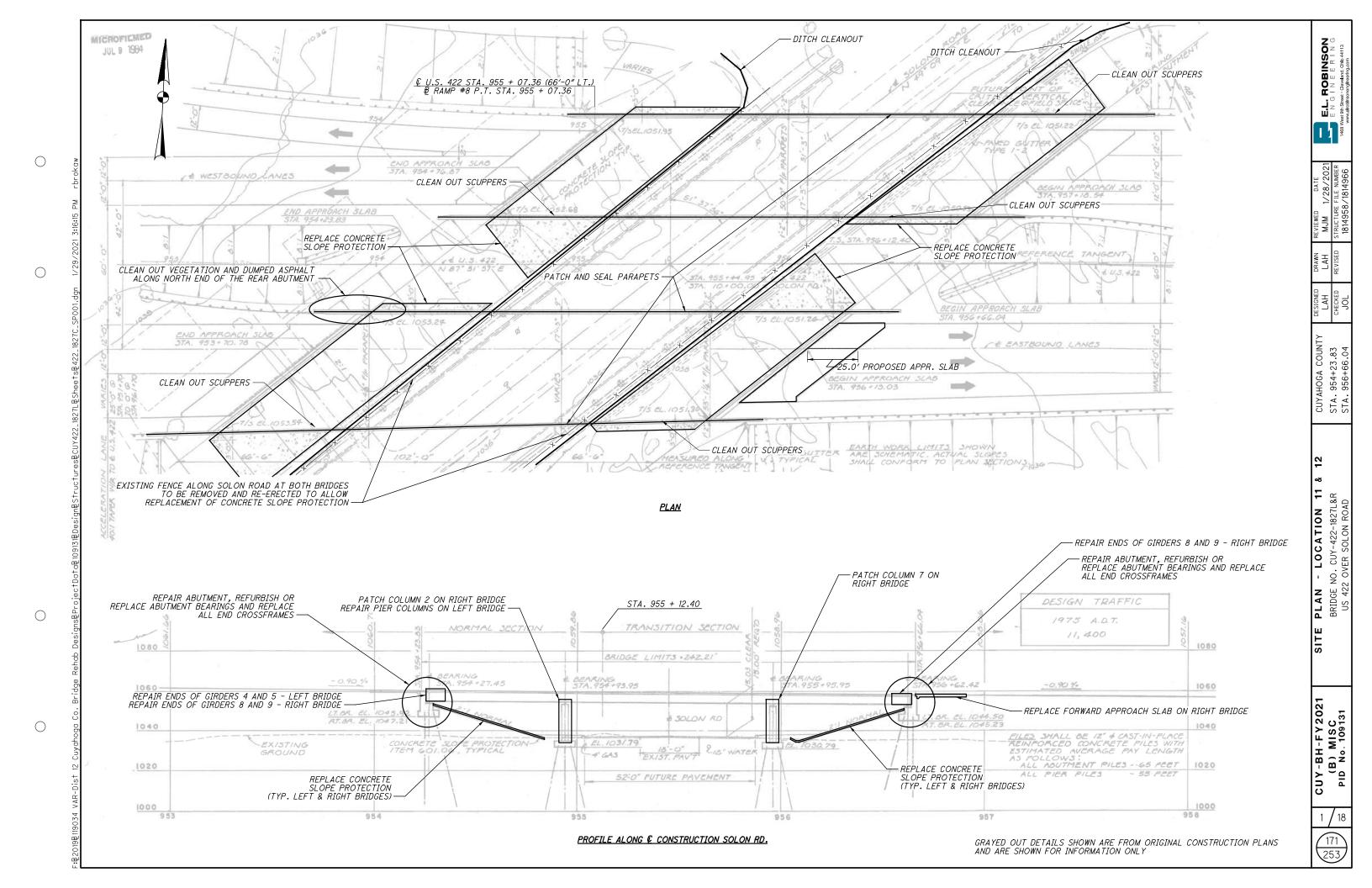
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<u>TYPE-2</u>



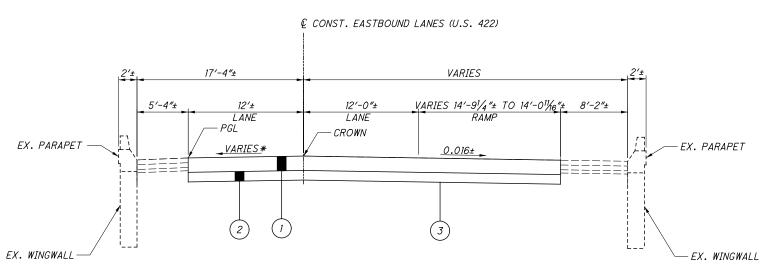
2 / 18

€ CONST. EASTBOUND LANES (U.S. 422) 17′-4″± **VARIES** VARIES 14'-91/4" ± TO 14'-011/6"± 8'-2"±

RAMP 12′± 12'-0" 5′-4″± LANE LANE - PGL - CROWN EX. PARAPET EX. PARAPET **VARIES**\* 0.016± (B)EX. WINGWALL EX. WINGWALL

# EXISTING FORWARD APPROACH TYPICAL SECTION

STA. 956+13.03 TO STA. 956+38.03 = 25.0'



# PROPOSED FORWARD APPROACH TYPICAL SECTION

STA. 956+13.03 TO STA. 956+38.03 = 25.0'

						204		304
STATION TO	O STATION	SIDE	LENGTH	WIDTH	SURFACE AREA	SUBGRADE COMPACTION	PROOF ROLLING	6" AGGREGATE BASE
			FT	FT	SQ YD	SQ YD	HR	CU YD
CUY-422	-1827R							
956+13.03	956+38.03	RT/LT	CADD	CADD	108	108	1	18
SUBTO	TAL					108	1	18
то	TALS CARRIED TO ESTIMATED	QUANTITI	ES	· ·	·	108	1	18

# EXISTING LEGEND:

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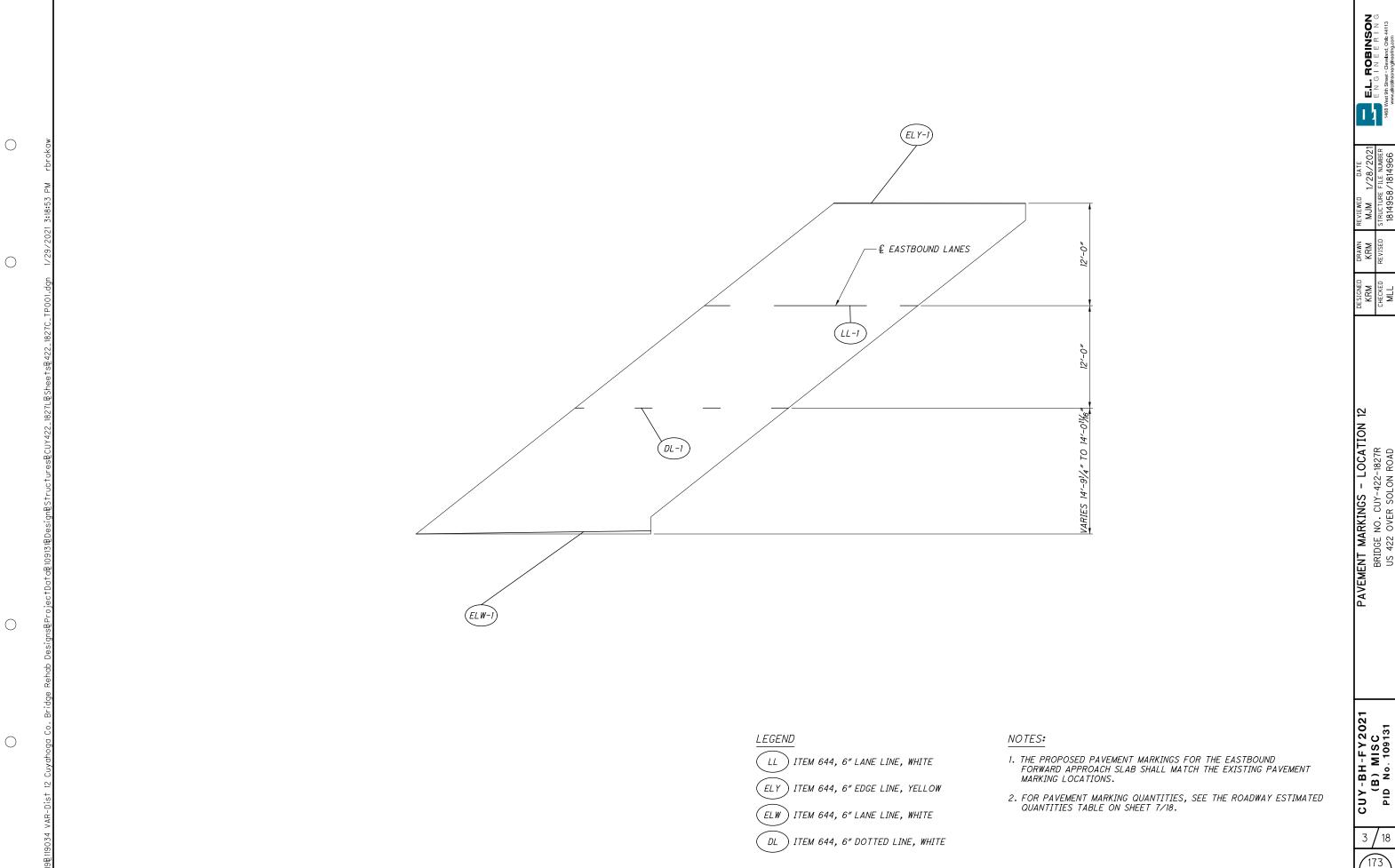
- $(\widehat{A})$  13"± REINFORCED CONCRETE
- (B) 6"± AGGREGATE BASE

# PROPOSED LEGEND:

- 1) ITEM 526 15" REINFORCED CONCRETE APPROACH SLAB
- 2) ITEM 304 6" AGGREGATE BASE
- (3) ITEM 204 SUBGRADE COMPACTION & PROOF ROLLING

NOTES:

1. MATCH EXISTING CROSS SLOPE AT LOCATIONS NOTED WITH SYMBOL \*.



E.L. ROBINSON E.N.G.I.N.E.E.R.I.N.G. test 9th Street · Cleveland, Ohlo 44113

AS-1-15 REVISED 7-17-2015 GSD-1-19 REVISED 1-18-2019 RB-1-55 REVISED 7-9-2013

AND THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

DATED 1-15-21 800 844 DATED 4-20-18

#### **DESIGN SPECIFICATIONS:**

THIS STRUCTURE CONFORMS TO THE 9TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, THE ODOT BRIDGE DESIGN MANUAL, 2020.

# **DESIGN LOADING:**

HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING

#### **DESIGN STRESSES:**

STRUCTURAL STEEL - ASTM A709 GRADE 36 - YIELD STRENGTH 36 KSI

# **EXISTING STRUCTURE VERIFICATION:**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE: OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 OFFICE 5500 TRANSPORTATION BOULEVARD GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/ DESIGNFILES.ASPX

# **DESCRIPTION OF WORK:**

THE FOLLOWING WORK ON BRIDGES CUY-422-1827L AND CUY-422-1827R SHALL BE COMPLETED PRIOR TO 02/01/22 TO ALLOW ACCESS TO ANOTHER CONTRACTOR FOR THE PAINT PROJECT (CUY-422-13.90/VAR PAINT, PID NO. 105260)

- 1. PATCH, SEAL AND FIBERWRAP DESIGNATED PIER COLUMNS.
- 2. REPAIR THE ABUTMENTS.
- 3. REFURBISH OR REPLACE ABUTMENT BEARINGS.
- 4. REPLACE THE FORWARD APPROACH SLAB AT THE RIGHT BRIDGE ONLY.
- 5. REPAIR DESIGNATED BEAM ENDS.
- 6. REPLACE ALL THE END CROSSFRAMES
- 7. PAINT NEW BEAM ENDS AND CROSSFRAMES.
- 8. REPLACE CONCRETE SLOPE PROTECTION.
- 9. PATCH AND SEAL THE PARAPETS.
- 10. MAKE DRAINAGE IMPROVEMENTS

# ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN:

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES THAT ARE NOT SEPARATELY LISTED FOR PAYMENT, EXCEPT FOR WEARING COURSE REMOVAL. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT. ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NORMAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO C&MS 501.05.

#### ITEM 202 - FENCE REMOVED FOR REUSE, AS PER PLAN:

THIS ITEM SHALL CONFORM TO THE SPECIFICATIONS OF ITEM 202 IN THE CMS, WITH THE FOLLOWING CONDITIONS:

THE FENCE SHAL BE INSTALLED IN THE SAME LOCATION AS THE EXISTING FENCE AND SHALL CONFORM TO THE SPECIFICATIONS OF ITEM 607.

# ITEM 209 - DITCH CLEANOUT, AS PER PLANS

THIS ITEM SHALL CONFORM TO THE SPECIFICATIONS OF ITEM 209 IN THE CMS, WITH THE FOLLOWING CONDITIONS:

THE AREAS TO BE CLEANED OUT ARE DESIGNATED IN THE PLANS WHICH INCLUDE ALL THE CATCH BASINS ALONG SOLON ROAD; AND CLEAN UP OF DUMPED ASPHALT AND VEGETATION ALONG THE NORTH END OF THE REAR ABUTMENT AT THE CUY-422-1827R BRIDGE.

# ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE):

THIS WORK CONSISTS OF APPLYING AN APPROVED SEALER ON EXISTING AND NEW CONCRETE SURFACE AREAS AFTER THE CONCRETE REPAIRS ARE COMPLETED AND CURED. APPLY THE SEALER TO LOCATIONS DESCRIBED IN THE PLANS. APPLY THE SEALER LISTED IN THE PAY ITEM DESCRIPTION.

# ITEM 513 - STRUCTURAL STEEL MISC.: GIRDER END REPAIR

REPAIR THE ENDS OF THE EXISTING GIRDERS AT THE LOCATIONS DESIGNATED IN THE PLANS. PERFORM ALL WORK ACCORDING TO CMS SECTION 513. MATERIAL SHALL BE A709 GRADE 36.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO FURNISH AND INSTALL THE PROPOSED GIRDER REPAIRS SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 -STRUCTURAL STEEL, MISC .: GIRDER END REPAIR.

# ITEM 514 - FIELD PAINTING MISC.: GIRDER END REPAIR AND END CROSSFRAMES

THIS WORK CONSISTS OF FIELD PAINTING THE REPAIRED GIRDER ENDS AND NEW END CROSSFRAMES. IN ADDITION, FIELD PAINT ANY PORTIONS OF THE EXISTING STEEL TO REMAIN WHERE THE EXISTING PAINT SYTEM HAS BEEN DAMAGED BY THE REMOVAL PROCESS. PERFORM ALL WORK ACCORDING TO CMS SECTION 514.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO PAINT THE REPAIRED GIRDER ENDS, INCLUDING END CROSSFRAMES, SHALL BE INCLUDED FOR PAYMENT WITH ITEM 514 -FIELD PAINTING, MISC .: GIRDER END REPAIR AND END CROSSFRAMES.

# ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN:

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN BRIDGE BEARINGS AS WELL AS THEIR CLEANING AND PAINTING. INCLUDED SHALL BE DISASSEMBLY OF THE BEARINGS, HAND TOOL CLEANING (GRINDING IF NECESSARY), PAINTING ACCORDING TO ITEM 514, INSTALLATION OF ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT. REALIGNMENT OF THE UPPER BEARING PLATE BY REMOVING EXISTING WELDS AND REWELDING SO THAT THE BEARINGS ARE VERTICALLY ALIGNED AT 60°F, AND REASSEMBLY OF THE BEARINGS. ASSURE ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING". AT NO ADDITIONAL COST TO THE STATE, THE CONCTRACTOR MAY INSTALL NEW BEARINGS OF THE SAME TYPE AS THE EXISTING IN PLACE OF REFURBISHING THE BEARINGS. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN.

# <u> ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, </u> AS PER PLAN:

THIS WORK CONSISTS OF RAISING THE EXISTING STRUCTURE AS REQUIRED FOR REFURBISHING THE BEARINGS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH C&MS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH C&MS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS. THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

# ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLANS

PRIOR TO THE SURFACE CLEANING SPECIFIED IN C&MS 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

#### ITEM SPECIAL - STRUCTURES, MISC.: CLEANING OF DRAINAGE SYSTEMS

THIS WORK SHALL CONSIST OF THE REMOVAL OF DIRT, SAND, SOIL, PAPER, GLASS, CANS, AND OTHER DEBRIS FROM DRAINAGE SYSTEMS. EQUIPMENT MAY CONSIST OF HAND TOOLS, MANUAL BROOMS, POWER BROOMS, AIR COMPRESSORS, WATER TANKS, WATER PUMPS WITH ASSOCIATED DELIVERY HARDWARE TO CLEAN, FLUSH, AND REMOVE DIRT AND DEBRIS.

THE CLEANING OF SCUPPERS SHALL BE PERFORMED PRIOR TO PERFORMING ITEM 601 CONCRETE SLOPE PROTECTION.

THE CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT, LABOR AND INCIDENTAL ITEMS NECESSARY TO PROPERLY REMOVE AND DISPOSE OF ALL DEBRIS AND OTHER FOREIGN MATERIAL BY POWER SWEEPING, SHOVELING, SCRAPING, ETC. FOLLOWED BY PRESSURE WASHING THE SCUPPERS.

CLEANING SCUPPERS AND DOWNSPOUTS:

- A) USE SHOVEL, HAND SCRAPERS, AND OTHER HAND TOOLS TO BREAK UP DEBRIS IN SCUPPERS TO THE MAXIMUM EXTENT PRACTICABLE. COLLECT LOOSE AND LARGE DEBRIS FROM THE SCUPPERS PRIOR TO INTRODUCING WATER.
- B) PRESSURE WASH THE SCUPPERS AND DOWNSPOUTS FOR FINAL CLEANING.
- C) ALL DIRT OR DEBRIS FROM THE CLEANING OPERATION SHALL BE REMOVED.

PRESSURE WASH THE SCUPPERS AS SHOWN IN THE PLANS TO REMOVE DIRT AND DEBRIS. MINIMUM WATER PRESSURE SHALL BE 1,500 PSI. THE CONTRACTOR SHALL NOT PRESSURE WASH NEAR EXISTING UTILITIES OR BRIDGE ITEMS CONTAINING OR COATED WITH ASBESTOS OR TRANSITE.

# ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION.

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

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LOCATION NOTES (1)
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#### <u> ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM</u>

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	DI149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
EL ONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN 1 SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
   BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR.
  - BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

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	ATED BY: MMD ECKED BY: AEF	DATE: DATE:	10/14/2020 1/8/2021	CUY-422-1827L STRUCTURE ESTIMATED QUANTITIES					STRUCTURAL FILE NUMBER: 1814958
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIER	SUPER.	GEN.	REFERENCE SHEET NO.
202	11202	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN					
202	32800	824	SY	CONCRETE SLOPE PROTECTION REMOVED	824				
512	10100	38	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		5	33		
512	10600	17	FT	CONCRETE REPAIR BY EPOXY INJECTION	17				
513	21500	5,558	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES			5,558		
513	90000	77	LB	STRUCTURAL STEEL, MISC.: GIRDER END REPAIR			77		4/18, 15/18
514	27700	620	SF	FIELD PAINTING, MISC.: GIRDER END REPAIR AND END CROSSFRAMES			620		4/18, 15/18
516	45305	12	EACH	REFURBISH BEARING DEVICE, AS PER PLAN			12		4/18
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN					4/18
SPECIAL	51900100	28	SF	COMPOSITE FIBER WRAP SYSTEM		28			4/18, 13/18
519	11101	26	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN		2	24		4/18
SPECIAL	53000200	LUMP		STRUCTURES MISC.: CLEANING OF DRAINAGE SYSTEMS					1/18, 4/18
601	21001	824	SY	CONCRETE SLOPE PROTECTION, AS PER PLAN	824				10/18
844	10001	28	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		28			4/18, 13/18

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	ATED BY: MMD CKED BY: AEF		10/14/2020 1/7/2021	CUY-422-1827L ROADWAY ESTIMATED QUANTITIES					STRUCTURE FILE NUMBER: 1814958
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIER	SUPER.	GEN.	REFERENCE SHEET NO.
202	75201	300	FT	FENCE REMOVED FOR REUSE, AS PER PLAN				300	1/18, 4/18, 8/18
209	10001	350	FT	DITCH CLEANOUT, AS PER PLAN				350	1/18, 4/18
607	70000	300	FT	FENCELINE SEEDING AND MULCHING				300	
614	11110	32	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE				32	
622	41100	918	FT	PORTABLE BARRIER, UNANCHORED				918	

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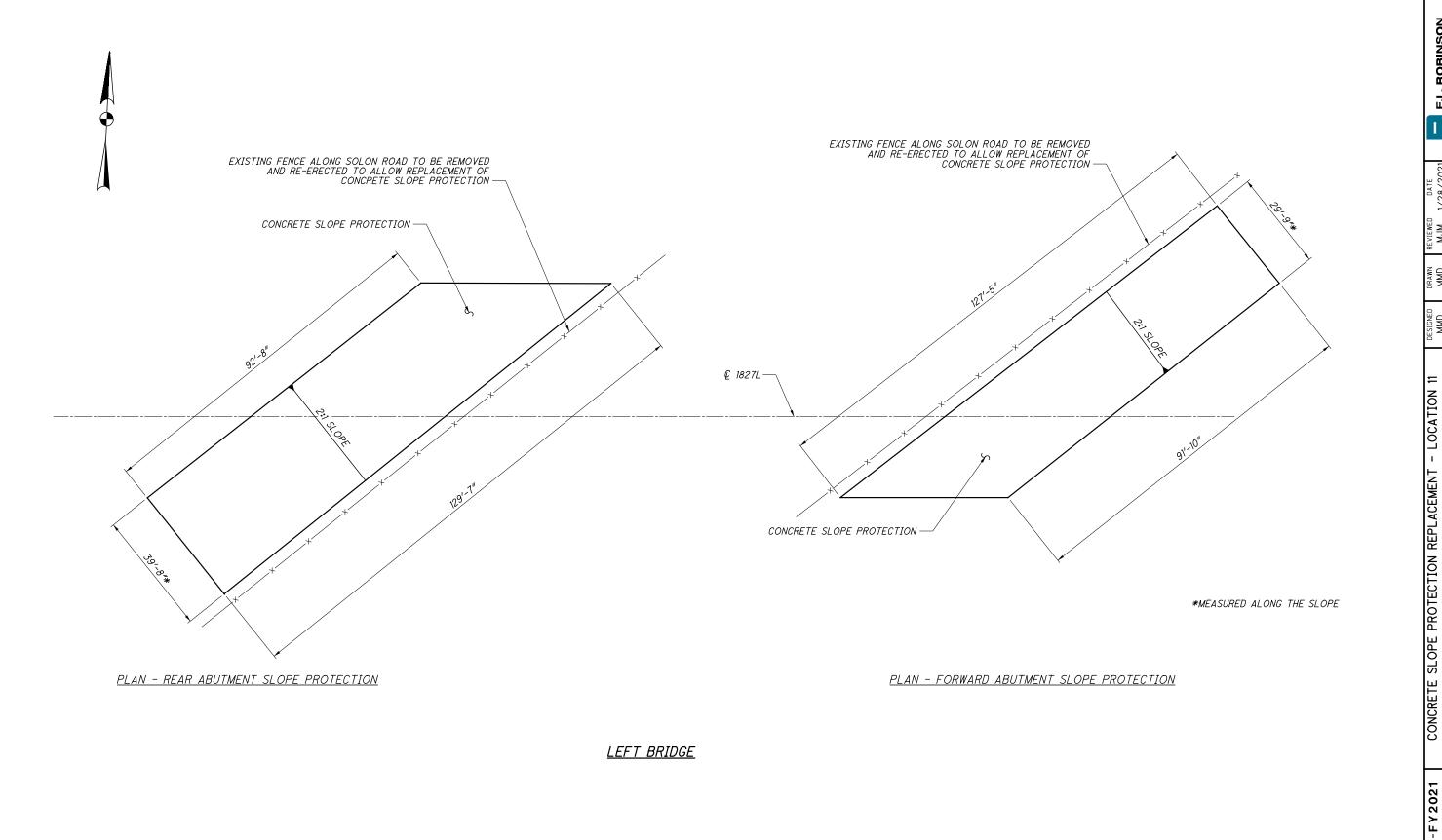
	ATED BY: MMD CKED BY: AEF	DATE: DATE:	10/14/2020 1/7/2020	CUY-422-1827R STRUCTURE ESTIMATED QUANTITIES					STRUCTURE FILE NUMBER: 1814
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIER	SUPER.	GEN.	REFERENCE SHEET NO.
202	11202	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN					
202	22900	108	SY	APPROACH SLAB REMOVED			108		
202	32800	929	SY	CONCRETE SLOPE PROTECTION REMOVED	929				
503	21100	54	CY	UNCLASSIFIED EXCAVATION				54	
512	10100	80	SY			23	57		
512	10600	31	FT	CONCRETE REPAIR BY EPOXY INJECTION	31				
513	21500	6,503	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES			6,503		4/18, 15/18
513	90000	<i>325</i>	LB	STRUCTURAL STEEL, MISC.: GIRDER END REPAIR			325		
514	27700	728	SF	FIELD PAINTING, MISC.: GIRDER END REPAIR AND END CROSSFRAMES			728		4/18, 15/18
516	45305	14	EACH	REFURBISH BEARING DEVICE, AS PER PLAN			14		4/18
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN					4/18
519	11101	50	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN		10	40		4/18
526	25000	108	SY	REINFORCED CONCRETE APPROACH SLABS (T=15")			108		
PECIAL	53000200	LUMP		STRUCTURES MISC.: CLEANING OF DRAINAGE SYSTEMS					1/18, 4/18
601	21001	929	SY		929				10/18

	ATED BY: MMD CKED BY: AEF	DATE: DATE:	10/14/2020 1/7/2021	CUY-422-1827R ROADWAY ESTIMATED QUANTITIES					STRUCTURE FILE NUMBER: 1814966
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIER	SUPER.	GEN.	REFERENCE SHEET NO.
202	75201	300	FT	FENCE REMOVED FOR REUSE, AS PER PLAN				300	1/18, 4/18, 9/18
204	10000	108	SY	SUBGRADE COMPACTION				108	
204	45000	1	HOUR	PROOF ROLLING				1	
209	10001	380	FT	DITCH CLEANOUT, AS PER PLAN				380	4/18
304	20000	18	CY	AGGREGATE BASE				18	
607	70000	300	FT	FENCELINE SEEDING AND MULCHING				300	
614	11110	32	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE				32	
614	12380	2	EACH	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)				2	
614 614	22110 23210	1,500	MILE FT	WORK ZONE EDGE LINE, CLASS I, 6", 642 PAINT  WORK ZONE CHANNELIZING LINE, CLASS I, 12", 642 PAINT				1.500	
614	24200	2,040	FT	WORK ZONE DOTTED LINE, CLASS I, 4", 642 PAINT				2,040	
614	24202	25	FT	WORK ZONE DOTTED LINE, CLASS I, 6", 642 PAINT				25	
622	41100	1,372	FT	PORTABLE BARRIER, UNANCHORED				1,372	
622	41110	45	FT	PORTABLE BARRIER, ANCHORED				45	
644	00104	1	MILE	EDGE LINE, 6"				1	
644	00204	0.20	MILE	LANE LINE, 6"				0.20	

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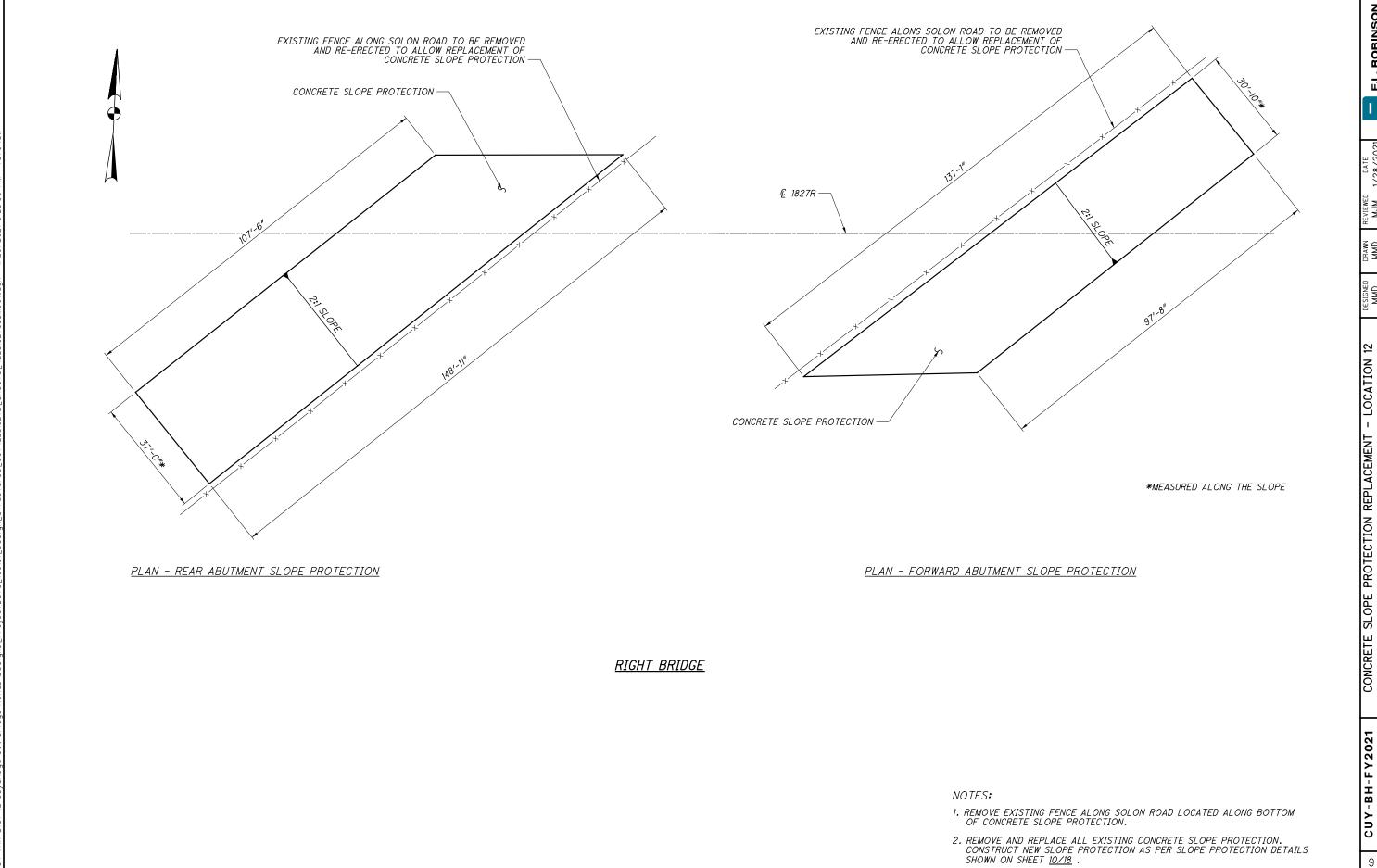
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- 1. REMOVE EXISTING FENCE ALONG SOLON ROAD LOCATED ALONG BOTTOM OF CONCRETE SLOPE PROTECTION.
- 2. REMOVE AND REPLACE ALL EXISTING CONCRETE SLOPE PROTECTION. CONSTRUCT NEW SLOPE PROTECTION AS PER SLOPE PROTECTION DETAILS SHOWN ON SHEET 10/18.
- 3. RE-ERECT FENCE ALONG SOLON ROAD.

E.L. ROBINSON
E N G I N E E R I N G
est 8th Street : Cleveland, Ohlo 44113

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E.L. ROBINSON
E N G I N E E R I N G
est 8th Street : Cleveland, Ohlo 44113

- LOCATION

CUY-BH-FY2021 (B) MISC PID No. 109131

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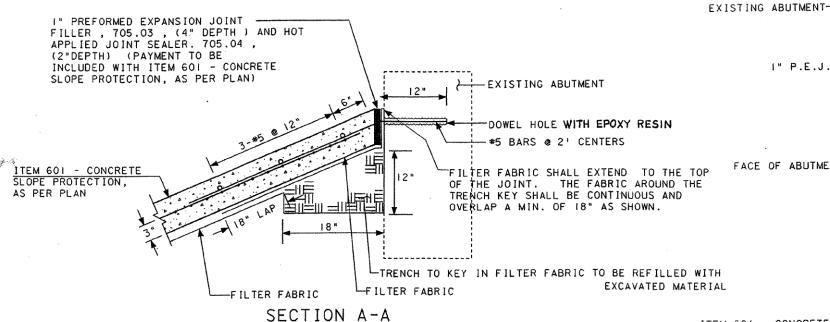
3. RE-ERECT FENCE ALONG SOLON ROAD.

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# SLOPE PROTECTION DETAILS

# CONCRETE SLOPE ANCHORING DETAIL



# BARS AT 2' CENTERS— MINIMUM 3" 6"\* ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN FILTER FABRIC

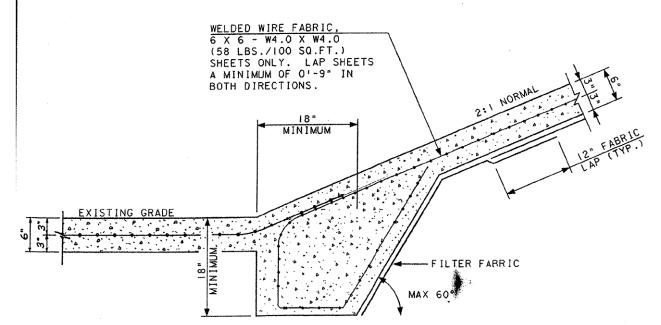
#5 DOWEL

SLOPE PROTECTION REINFORCING DETAIL

PLAN VIEW

\* LENGTH AS MEASURED ALONG SLOPE

# AT TOE OF SLOPE



# ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN

THIS WORK SHALL INCLUDE THE FOLLOWING:

A. EXCAVATION OF EXISTING CRUSHED AGGREGATE SLOPE PROTECTION

TO A DEPTH NECESSARY TO ESTABLISH A PROPER SUBGRADE DEPTH

WHICH WILL ACCEPT THE PROPOSED SIX INCH THICK CONCRETE SLOPE

PROTECTION. THE EXISTING CRUSHED AGGREGATE NEED NOT BE

REMOVED IN ITS ENTIRETY; HOWEVER, THE CONTRACTOR SHALL GRADE

THE REMAINING CRUSHED AGGREGATE TO PROVIDE A UNIFORM PLANE

FOR THE SUBGRADE. ADDITIONAL MATERIAL MEETING THE REQUIREMENTS

OF ITEM 203 MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, TO

FILL VOIDS BETWEEN THE CRUSHED AGGREGATE.

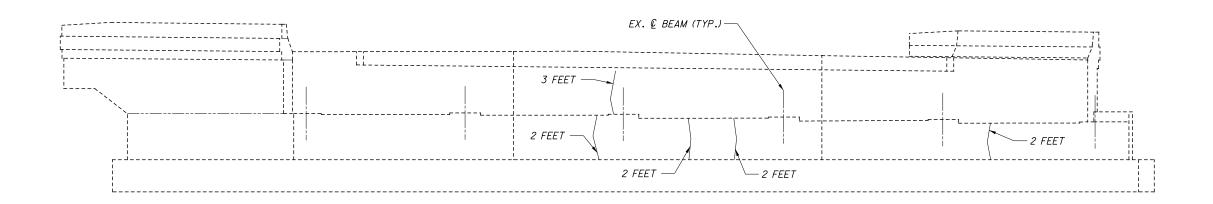
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AT THE CONTRACTOR'S OPTION, THE ENTIRE TWELVE INCH LAYER OF CRUSHED AGGREGATE SLOPE PROTECTION MAY BE EXCAVATED AND REPLACED WITH EMBANKMENT THAT MEETS THE REQUIREMENTS OF 203 AND WILL BRING THE PROPOSED SUBGRADE TO SIX INCHES BELOW THE FINAL GRADE OF THE PROPOSED CONCRETE SLOPE PROTECTION. THIS ADDITIONAL EXCAVATION AND EMBANKMENT WORK MAY BE DONE AT NO ADDITIONAL COST TO THE STATE.

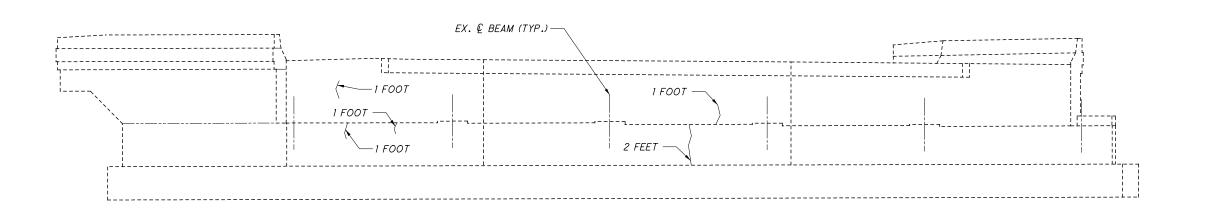
B. PROPOSED SLOPE PROTECTION: THE INSTALLATION OF THE NEW WELDED STEEL WIRE FABRIC REINFORCED SLOPE PROTECTION AS SHOWN ON SHEETS Nº 1¢2 OF25. INCLUDING REINFORCING STEEL, WELDED STEEL FABRIC, 709.10, DOWEL HOLES AND GROUT, GEOTEXTILE FILTER, PREFORMED EXPANSION JOINT FILLER AND CONCRETE. THE FABRIC SHALL MEET THE REQUIREMENTS OF 712.09, TYPE B (NONWOVEN). FIELD SPLICES SHALL CONSIST OF 12 INCHES OVERLAP SECURED IN ANY MANNER SUITABLE TO THE ENGINEER THAT WILL ASSURE THAT THE OVERLAP IS MAINTAINED. OVERLAP CLOSURE AT THE TOP OF THE TRENCH SHALL BE 18 INCHES, SECURED AS ABOVE.

ALL COSTS OF CONSTRUCTING THE NEW SLOPE PROTECTION, INCLUDING ALL NECESSARY EMBANKMENT, EXCAVATION, REBARS, DOWELS, WELDED STEEL WIRE FABRIC, FILTER FABRIC, PREFORMED EXPANSION JOINT FILLER, JOINT SEALER, AND CONCRETE SHALL BE INCLUDED UNDER ITEM 60! - CONCRETE SLOPE PROTECTION, AS PER PLAN.

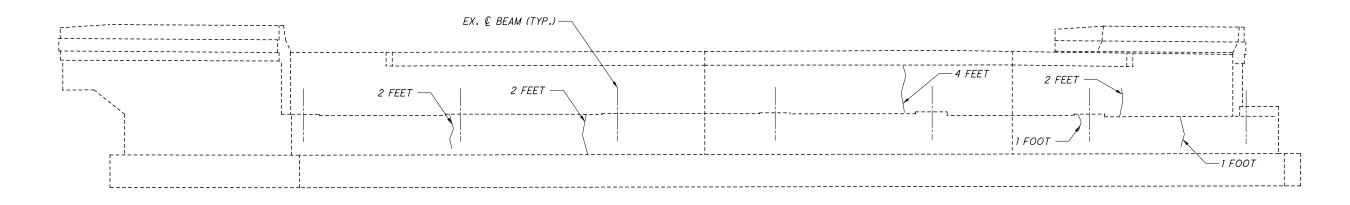


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# <u>ELEVATION - REAR ABUTMENT</u> (LEFT BRIDGE)



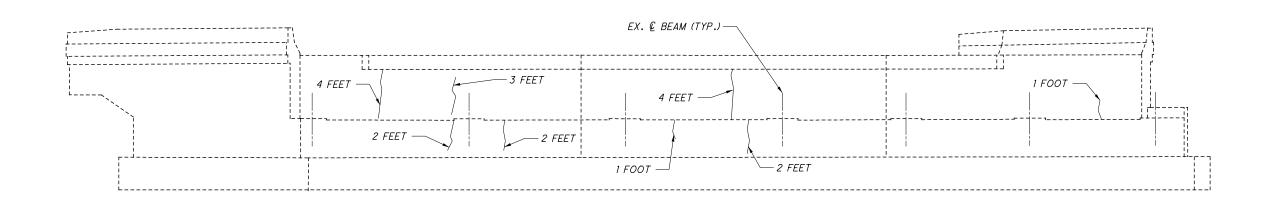
<u>ELEVATION - FORWARD ABUTMENT</u> (LEFT BRIDGE)



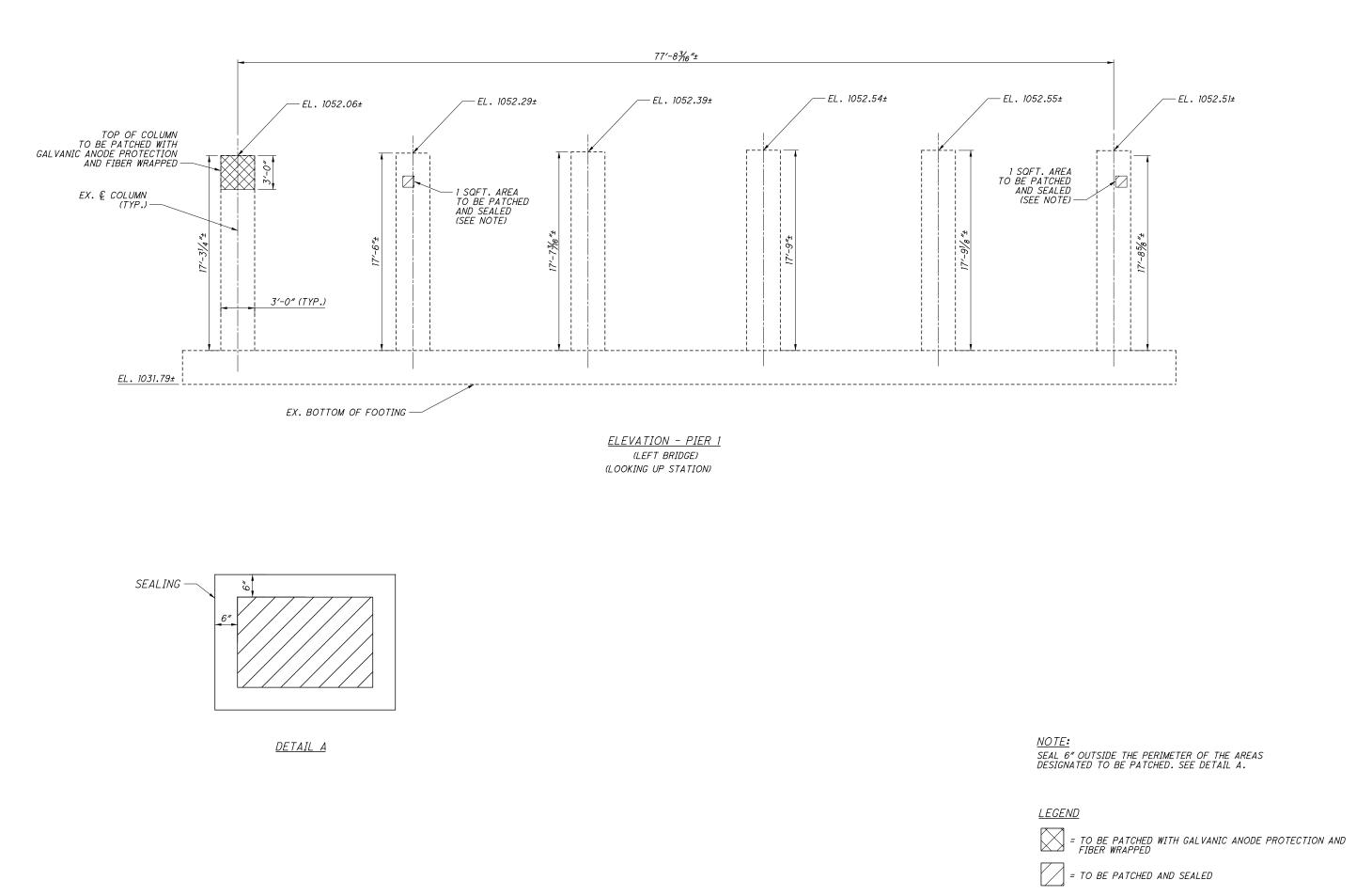
# <u>ELEVATION - REAR ABUTMENT</u> (RIGHT BRIDGE)

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# <u>ELEVATION - FORWARD ABUTMENT</u> (RIGHT BRIDGE)



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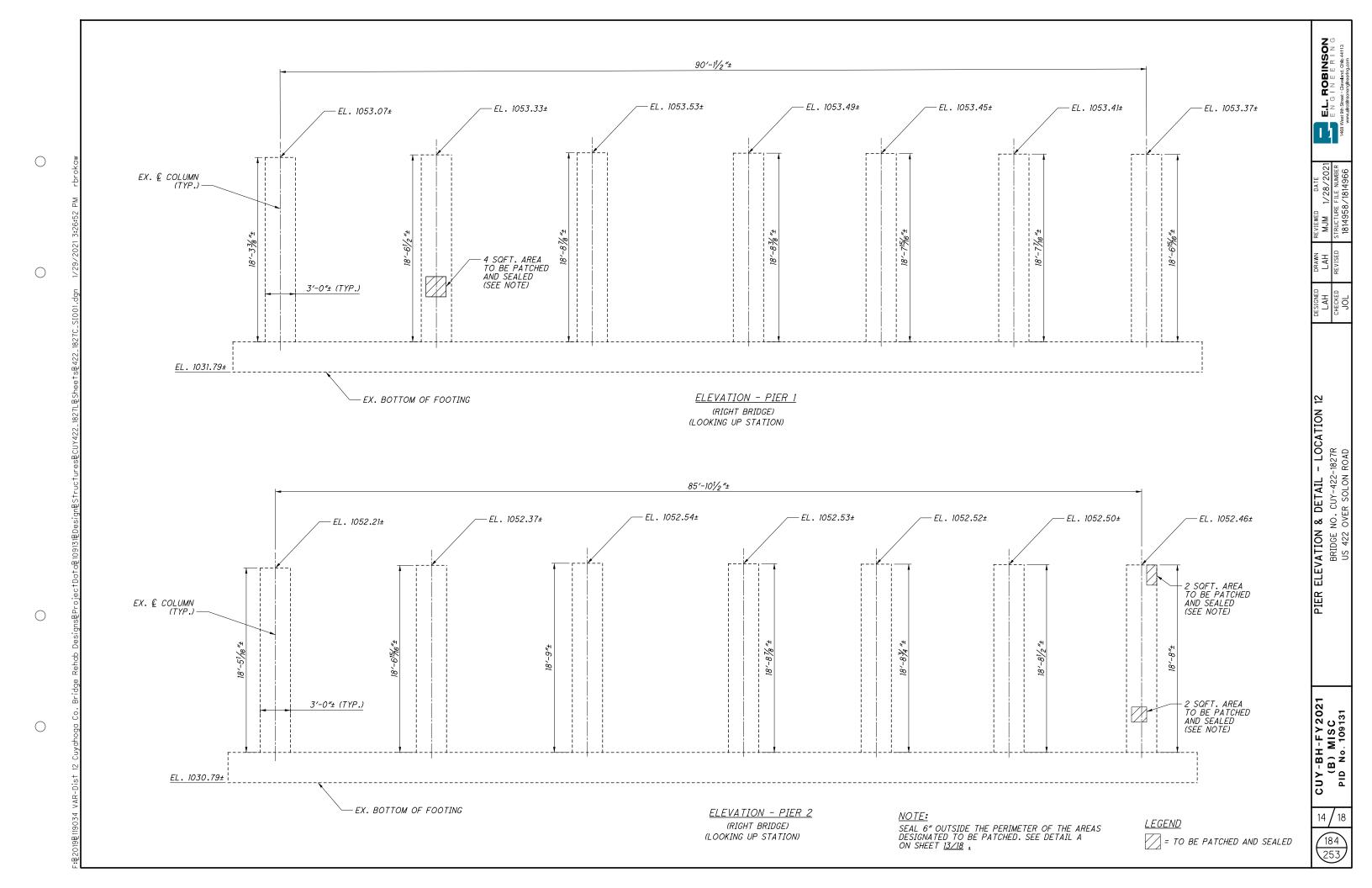
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PIER ELEVATION & DETAIL - LOCATION 11
BRIDGE NO. CUY-422-1827L
US 422 OVER SOLON ROAD

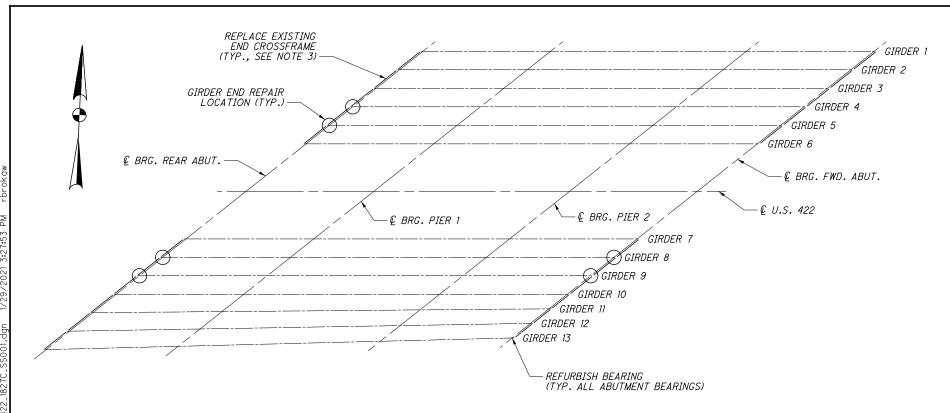
CUY-BH-FY2021 (B) MISC PID No. 109131

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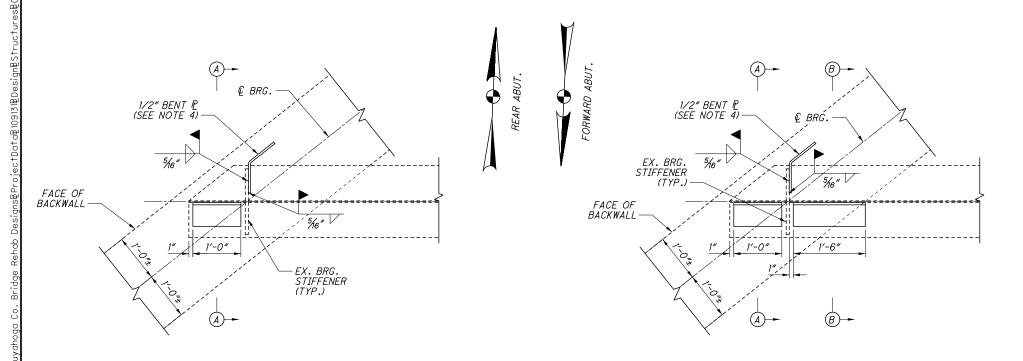


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### FRAMING PLAN



<u>PLAN</u> LEFT BRIDGE, REAR ABUTMENT, GIRDERS 4 AND 5 RIGHT BRIDGE, FORWARD ABUTMENT, GIRDER 8

(PROPOSED END CROSSFRAMES NOT SHOWN FOR CLARITY)

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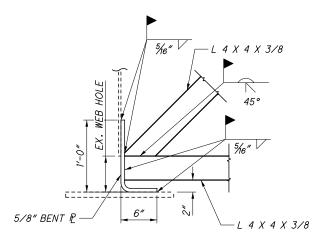
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<u>PLAN</u> RIGHT BRIDGE, REAR ABUTMENT, GIRDERS 8 AND 9 RIGHT BRIDGE, FORWARD ABUTMENT, GIRDER 9

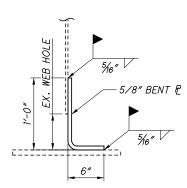
(PROPOSED END CROSSFRAMES NOT SHOWN FOR CLARITY)

### NOTES:

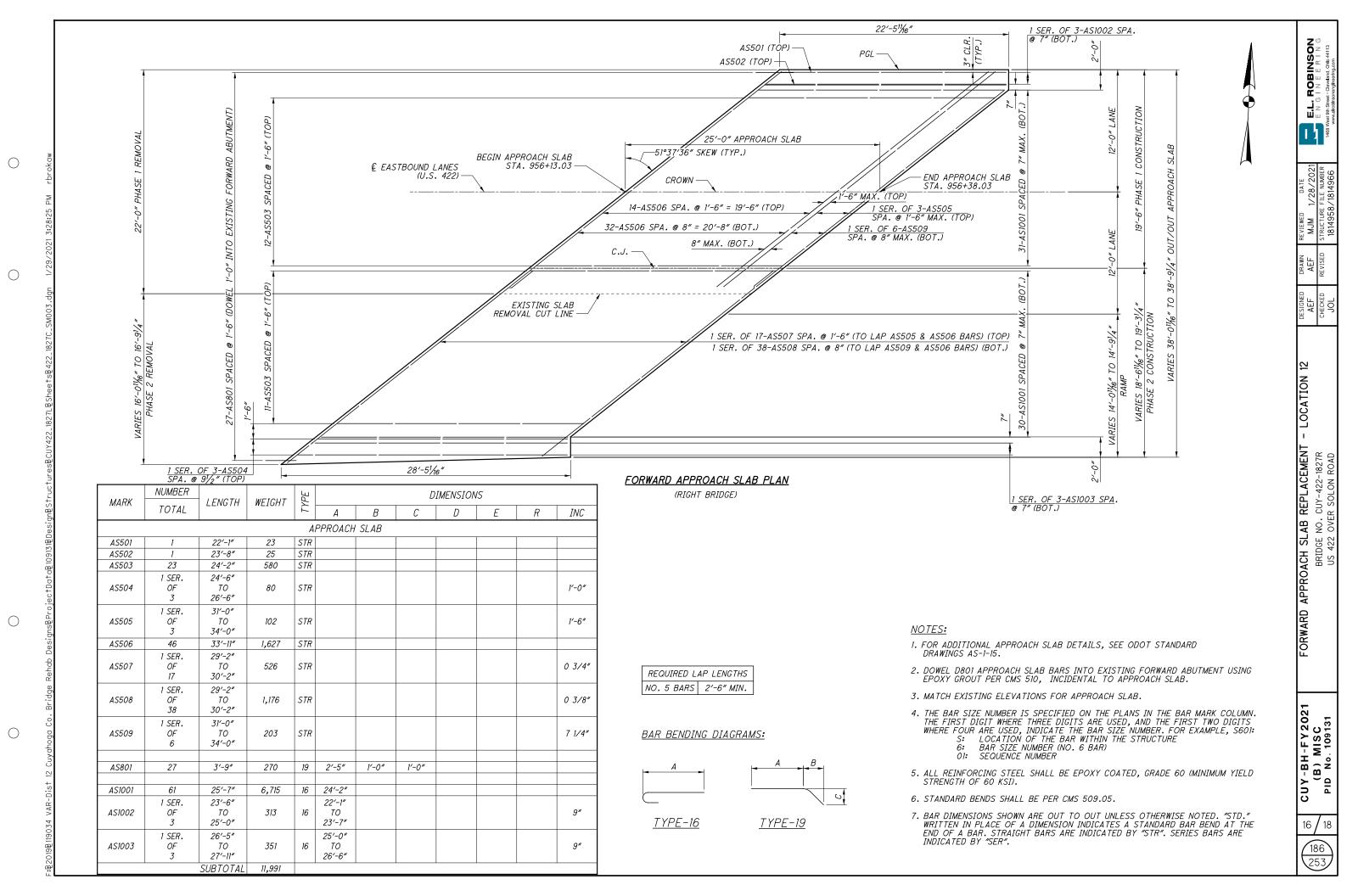
- 1. ALL STEEL SHALL BE ASTM A709 GRADE 36.
- 2. PAINT COLOR SHALL MATCH EXISTING.
- 3. REMOVE AND REPLACE EXISTING CROSSFRAMES INCLUDING LOWER CHORD CONNECTION PLATES. USE 4 X 4 X 3/8 ANGLES. RETAIN AND RE-USE UPPER CONNECTION PLATES. FIELD WELD LOWER CHORD AND DIAGONALS TO BENT PLATE AT ACUTE SIDE OF GIRDER. FIELD WELD LOWER CHORD AND DIAGONALS TO WEB OR REPAIR PLATE AT OBTUSE SIDE OF GIRDER. REFER TO STANDARD DRAWING GSD-1-19 SHEET 3 OF 4 FOR ADDITIONAL DETAILS.
- 4. MATCH EXISTING LOWER CROSSFRAME CONNECTION PLATE LOCATION AND DIMENSIONS EXCEPT PLATE THICKNESS SHALL NOT BE LESS THAN 1/2".
- 5. FIELD MEASURE THE EXISTING CROSSFRAME MEMBER LENGTHS. NEW CROSSFRAMES WILL NOT MATCH THE EXISTING MEMBERS.



# SECTION A-A



SECTION B-B



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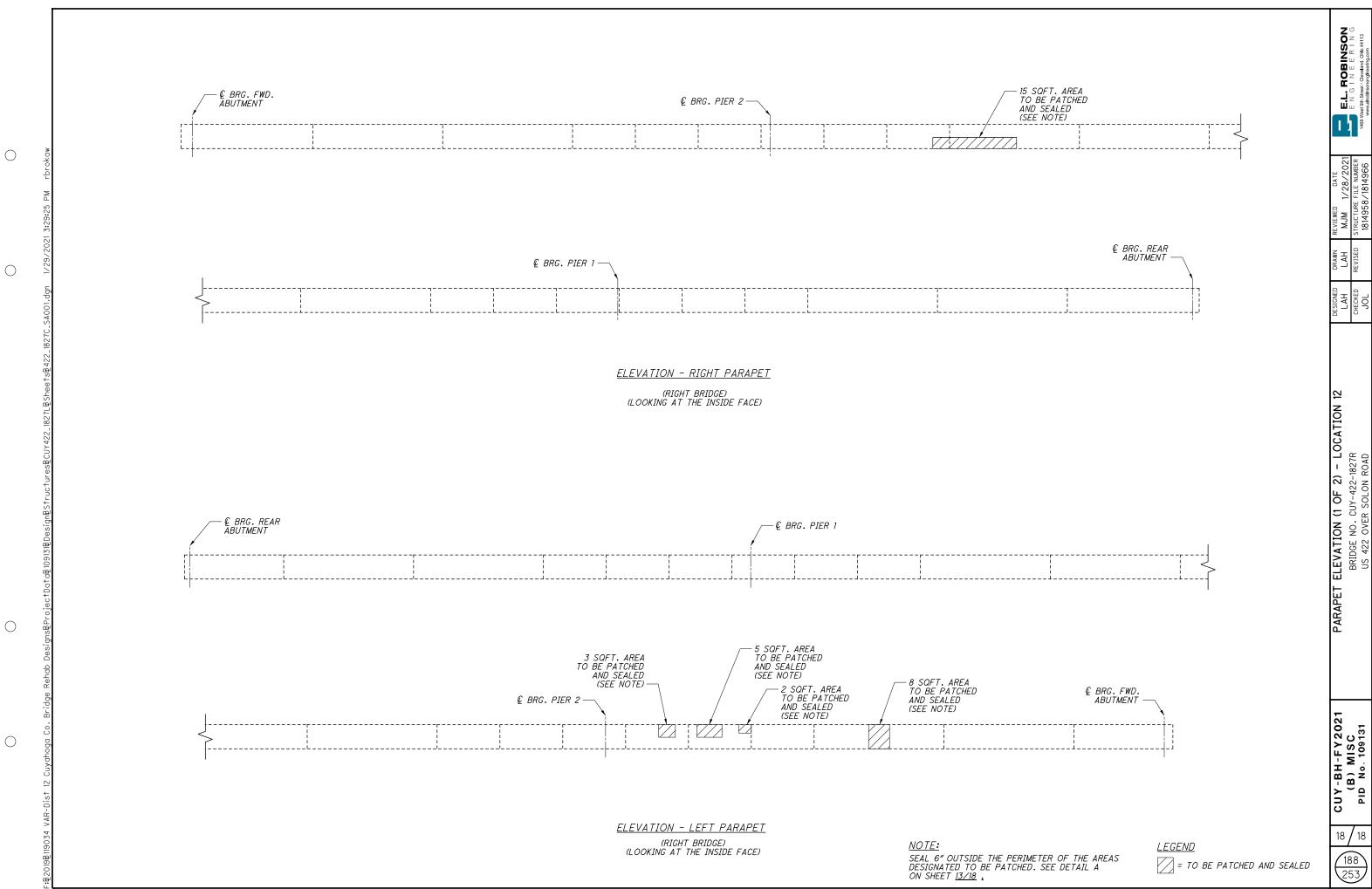
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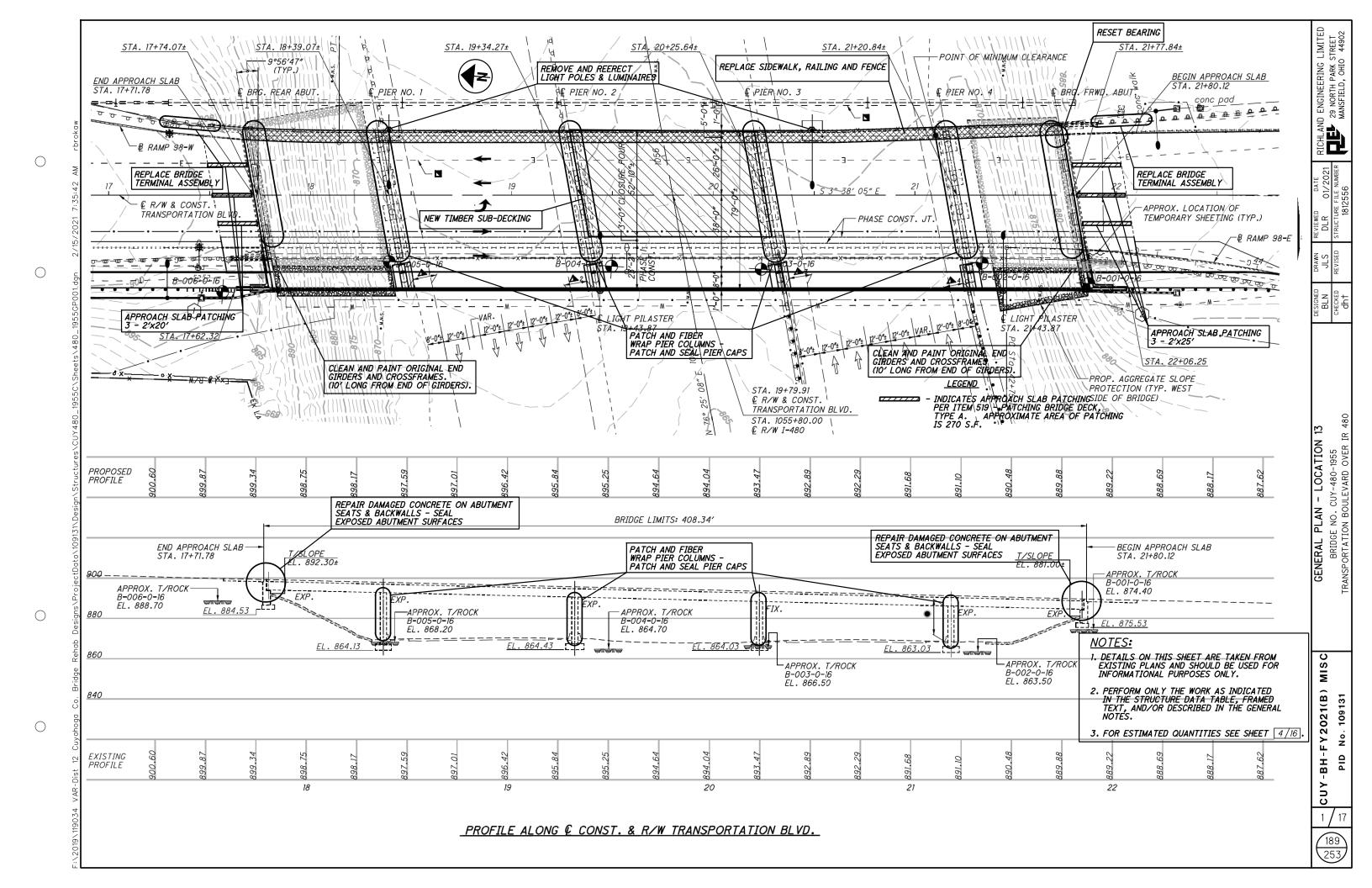
E.L. ROBINSON
E.N. G.I.N. E.E.R.I.N. G. Vest 9th Street · Cleveland, Ohlo 44113

PARAPET ELEVATION (2 OF 2) - LOCATION 11

BRIDGE NO. CUY-422-1827L
US 422 OVER SOLON ROAD

CUY-BH-FY2021 (B) MISC PID No. 109131





ID ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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### REFER TO STANDARD BRIDGE DRAWINGS

VPF-1-90 (7-20-2018) BR-2-15 (7-17-2015) PCB-91 (7-17-2020) TVPF-1-18 (7-02-18) EXJ-4-87 (1-19-2018)

### REFER TO SUPPLEMENTAL SPECIFICATIONS

### RIGHT OF WAY

ALL WORK IS TO BE PERFORMED WITHIN THE EXISTING RIGHT OF WAY OR EASEMENTS OR WITHIN STATE PROPERTY.

### UTILITY OWNERSHIP

THE NATURE OF THE WORK REQUIRED BY THIS PROJECT WILL NOT AFFECT ANY KNOWN UTILITIES IN THE WORK AREAS.

### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE: OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 OFFICE 5500 TRANSPORTATION BOULEVARD GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

### **EXISTING DIMENSIONS**

ALL DIMENSIONS ARE ±.

### MATERIAL REQUIREMENTS

STRUCTURAL STEEL: ASTM A 709 GRADE 50

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)

### **DESCRIPTION OF WORK:**

- 1. PATCH AND FIBER WRAP DESIGNATED PIER COLUMNS.
- 2. PATCH ABUTMENT SEATS, FACE OF BACKWALLS, BREASTWALLS, WINGWALLS AND PIER CAPS.
- 3. REMOVE EAST SIDE SIDEWALK, RAILING AND VANDAL PROTECTION FENCE.
- 4. RESET SOUTHEAST BEARING.
- 5. CONSTRUCT NEW SIDEWALK AND RAILING INCLUDING SIDEWALK SLIDING PLATE JOINTS. REPLACE EAST CURBS ON APPROACH SLABS.
- 6. INSTALL NEW VANDAL PROTECTION FENCE.
- 7. PATCH CONCRETE APPROACH SLABS.
- 8. SEAL RAILING, SIDEWALK (NON-EPOXY), PIER CAPS, ABUTMENT AND WINGWALL SURFACES.
- 9. ADD SUB-DECKING TO EXISTING PORTIONS OF SUPERSTRUCTURE INDICATEDS IN THE PLANS.
- 10. PAINT 10 FEET OF ORIGINAL STEEL GIRDERS AND CROSSFRAMES BEYOND THE ABUTMENTS.
- 11. REMOVE AND RE-ERECT EAST SIDE LIGHT POLES AND LUMINAIRE'S: REPLACE LIGHTING CONDUIT AND WIRING (SEE ROADWAY PLAN DETAILS AND NOTES).

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

### CUT LINE CONSTRUCTION JOINT PREPARATION

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

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

SEAL PIER CAPS, ABUTMENT BACKWALLS, SEATS, BREASTWALLS, WINGWALLS AND RAILINGS. THE COLOR OF THE FINISH COAT SHALL BE FS NO. 17778 (LIGHT NEUTRAL). CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, FENCE AND POSTS, RAILING AND ALL OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE SEALING OPERATIONS. SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - STRUCTURES, COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

# ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES OR FIBERWRAP SHALL NOT BE INCLUDED IN THIS ITEM.

### ITEM 516 - RESET BEARING, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN THE EAST BRIDGE BEARING AT THE FORWARD ABUTMENT, REPLACE ANY DAMAGED SHEET LEAD WITH PREFORMED BEARING PADS (711.21), INSTALL ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT, REALIGN THE LOWER MASONRY PLATE BY RELOCATING IT SO THAT THE BEARING IS VERTICALLY ALIGNED AT 60-DEGREES F (15-DEGREES C), AND INSTALL BEARING RESTRAINING PLATES IF REQUIRED PER PLAN DETAILS.

ASSURE THE BEARING IS SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING".

ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 - RESET BEARING, AS PER PLAN.

# ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER

THIS WORK INCLUDES RAISING OR RE-POSITIONING EXISTING STRUCTURES TO PERFORM THE WORK DEFINED IN THE PROJECT PLANS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON

# ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN (CONT.)

THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER

### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING, WHERE APPLICABLE, THE CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING OPERATIONS.

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

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

THE FINAL PAINT COLOR SHALL CLOSELY MATCH THE EXISTING BRIDGE COLOR, AS APPROVED BY THE

### ITEM 519 - PATCHING CONCRETE BRIDGE DECK - TYPE A

THIS WORK IS REQUIRED FOR THE ABUTMENT PATCHING.

### A. DESCRIPTION:

THIS ITEM SHALL CONSIST OF FURNISHING THE NECESSARY LABOR, MATERIALS AND EQUIPMENT TO REPAIR CONCRETE BRIDGE DECKS, INCLUDING THE REMOVAL OF ALL LOOSE AND UNSOUND CONCRETE, BITUMINOUS PATCHES, SURFACE PREPARATION, BONDING COAT AND THE MIXING, PLACING, FINISHING AND CURING OF THE MORTAR OR CONCRETE PATCHES.

#### B. MATERIALS:

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

FINE AGGREGATE (NATURAL SAND)	703.02
COARSE AGGREGATE (NO. 8)	703.02
PORTLAND CEMENT	
QUICK SETTING CONCRETE MORTAR, TYPE 1 OR 2	
4IR-ENTRAINING ADMIXTURE	
CURING MATERIALS - TYPE A OR B PATCHES	
CURING MATERIALS - TYPE C PATCHES	
	RECOMMENDATIONS

### C. REMOVAL OF UNSOUND CONCRETE:

THE ENGINEER SHALL SOUND AND OUTLINE THE AREAS TO BE REMOVED PER DIRECTION OF THE ENGINEER. SOUNDING MAY HAVE TO BE DELAYED UNTIL THE DECK IS SUFFICIENTLY DRY TO PERMIT DETECTION OF ALL AREAS OF DELAMINATION. THE PERIMETER OF ALL REMOVAL AREAS SHALL BE SAWED TO A DEPTH OF 1 INCH TO PRODUCE A VERTICAL OR SLIGHTLY UNDERCUT FACE.
ADDITIONAL SAWCUTS MAY BE REQUIRED TO FACILITATE REMOVAL. ALL
UNSOUND CONCRETE INCLUDING ALL PATCHES OTHER THAN SOUND PORTLAND
CEMENT CONCRETE, AND ALL LOOSE AND DISINTEGRATED CONCRETE SHALL BE
REMOVED. THE UNSOUND CONCRETE MAY BE REMOVED BY CHIPPING OR HAND
DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35
POUND CLASS AND SHALL BE OPERATED AT AN ANGLE OF LESS THAN 45 DEGREES
MEASURED FROM THE SURFACE OF THE DECK. CONCRETE SHALL BE REMOVED IN
A MANNER THAT PREVENTS CUTTING, ELONGATING OR DAMAGING REINFORCING
STEEL. WHERE THE BOND BETWEEN CONCRETE AND A PRIMARY REINFORCING BAR
HAS BEEN DESTROYED, OR WHERE MORE THAN ONE HALF OF THE PERIPHERY OF
SUCH A BAR HAS BEEN EXPOSED, THE ADJACENT CONCRETE SHALL BE REMOVED
TO A DEPTH THAT WILL PROVIDE A MINIMUM ¾, INCH CLEARANCE AROUND THE BAR
EXCEPT WHERE OTHER REINFORCING BARS MAKE THIS IMPRACICABLE. REINFORCEMENT
WHICH HAS BECOME LOOSE SHALL BE ADEQUATELY SUPPORTED AND TIED BACK INTO A DEPTH OF 1 INCH TO PRODUCE A VERTICAL OR SLIGHTLY UNDERCUT FACE. WHICH HAS BECOME LOOSE SHALL BE ADEQUATELY SUPPORTED AND TIED BACK INTO PLACE. AFTER COMPLETION OF THE SECONDARY REMOVAL OPERATIONS, ENGINEER WILL RE-SOUND THE DECK TO ENSURE THAT ONLY SOUND CONCRETE REMAINS. MINIMIZE CONSTRUCTION JOINTS. CONSTRUCTION JOINTS SHALL ONLY BE PLACED ON THE PERIMETER OF THE REMOVAL AREAS.

### D. SURFACE PREPARATION:

CLEANING SHALL CLOSELY PRECEDE APPLICATION OF THE BONDING GROUT AND/OR THE PATCHING MATERIAL. THE SURFACE TO BE PATCHED AND THE EXPOSED REINFORCING STEEL SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. IT MAY BE NECESSARY TO USE HAND TOOLS TO REMOVE SCALE FROM THE REINFORCING STEEL. FOR TYPE A AND TYPE B PATCHES AND TYPE C PATCHES WHICH DO NOT USE WATER AS THE ACTIVATOR, THE PREPARED SURFACE SHALL BE SURFACE DRY. FOR TYPE C PATCHES WHICH REQUIRE WATER AS THE ACTIVATOR, THE PREPARED SURFACE SHALL BE LEFT IN THE CONDITION AS RECOMMENDED BY THE MANUFACTURER. ANY ADDITIONAL SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE PATCHING MATERIAL WHICH IS USED.

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### E. BONDING GROUT:

THE GROUT FOR BONDING TYPE A PATCHES SHALL CONSIST OF EQUAL PARTS BY VOLUME OF PORTLAND CEMENT AND SAND, MIXED WITH SUFFICIENT WATER TO FORM A STIFF SLURRY. THE CONSISTENCY OF THIS SLURRY SHALL BE SUCH THAT IT CAN BE APPLIED WITH A STIFF BRUSH OR BROOM TO THE EXISTING SURFACE IN A THIN, UNIFORM COATING. THE COATING OF GROUT SHALL BE SCRUBBED ONTO THE DRY SURFACE IMMEDIATELY BEFORE PLACING THE CONCRETE. CARE SHALL BE EXERCISED TO ENSURE THAT NO EXCESS GROUT IS PERMITTED TO COLLECT IN LOW SPOTS. IN NO CASE SHALL THE GROUT BE PERMITTED TO DRY BEFORE PLACING THE NEW CONCRETE. THINNED GROUT SHALL BE PAINTED OVER ALL JOINTS BETWEEN THE NEW AND EXISTING CONCRETE IMMEDIATELY AFTER THE FINISHING HAS BEEN COMPLED. TYPE B AND TYPE C PATCHES SHALL BE BONDED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

### F. PATCHING:

THE MORTAR OR CONCRETE SHALL BE PLACED AS TYPE A, B, OR C.

- 1. TYPE A THE MIXTURE SHALL CONSIST OF 1 PART HIGH-EARLY-STRENGTH PORTLAND CEMENT, 1½ PARTS FINE AGGREGATE AND 1½ PARTS COARSE AGGREGATE BY VOLUME. SUFFICIENT AIR-ENTRAINING AGENT SHALL BE ADDED TO MAINTAIN AN AIR CONTENT OF 8 PLUS OR MINUS 2 PERCENT. THE SLUMP SHALL BE THE MINIMUM PRACTICAL FOR PLACING AND IN NO CASE SHALL IT EXCEED 2 INCHES. THE MATERIALS SHALL BE MIXED AT THE SITE. READY-MIXED CONCRETE SHALL NOT BE PERMITTED. THE MIX SHALL BE PLACED IN THE AREA TO BE PATCHED WHILE THE BONDING GROUT IS STILL WET, SLIGHTLY OVERFILLED AND STRUCK OFF WITH A VIBRATING SCREED DRAWN SLOWLY ACROSS THE AREA. HAND FINISHING WITH A WOOD FLOAT MAY BE REQUIRED TO PRODUCE A TIGHT, UNIFORM SURFACE.
- 2. TYPE B PATCHING MATERIAL SHALL BE MADE USING QUICK SETTING CONCRETE MORTAR, TYPE I OR 2, 705.21, AND SUITABLE FOR TRAFFIC AFTER OVERNIGHT CLOSURES WITH LIMITED CURING TIME. THE MORTAR SHALL BE MIXED AND PLACED AS PER THE MANUFACTURER'S RECOMMENDATIONS. COARSE AGGREGATE MAY BE ADDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WHEN THE DEPTH OF THE PATCH EXCEEDS I INCH.
- 3. TYPE C PATCHING MATERIAL SHALL BE MADE USING A BLEND OF 705.21 TYPE 2 MATERIAL AND SELECTED AGGREGATES WITH AN ACTIVATOR. THESE MATERIALS SHALL BE MIXED AND PLACED AS PER MANUFACTURER'S RECOMMENDATIONS. COARSE AGGREGATE MAY BE ADDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WHEN THE DEPTH OF THE PATCH EXCEEDS 1 INCH.

#### G. CURING:

TYPE A PATCHES SHALL BE CURED IN ACCORDANCE WITH SECTION 511.14, METHOD (A), FOR NOT LESS THAN 24 HOURS IF MEMBRANE WATERPROOFING IS TO BE APPLIED IMMEDIATELY. IF NOT, METHOD (A) SHALL BE USED FOR 48 HOURS, AFTER WHICH THE MEMBRANE CURING MATERIAL SHALL BE APPLIED AT A RATE OF NOT LESS THAN ONE GALLON PER 200 SQUARE FEET. MEMBRANE CURING MATERIAL SHALL BE REMOVED PRIOR TO PLACING WATERPROOFING. TYPE B AND TYPE C PATCHES SHALL BE CURED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

### H. METHOD OF MEASUREMENT:

THE QUANTITY SHALL BE THE ACTUAL AREA IN SQUARE YARDS OF THE EXPOSED SURFACE OF ALL PATCHES, IRRESPECTIVE OF THE DEPTH OF THE PATCH, COMPLETE, IN PLACE AND ACCEPTED.

### I. BASIS OF PAYMENT:

PAYMENT SHALL BE MADE AT THE CONTRACT PRICE BID FOR:

ITEMUNITDESCRIPTION519SQUARE YARDPATCHING CONCRETE BRIDGE DECK-TYPE A

### ITEM 844 - CONCRETE PATCHING WITH GALVANIZED ANODE PROTECTION, AS PER

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

### <u>ITEM SPECIAL - STRUCTURES: TIMBER SUBDECK</u>

### DESCRIPTION:

THIS ITEM SHALL CONSIST OF FURNISHING, CUTTING, FITTING, PLACING AND ERECTING OF TIMBER, AND THE FURNISHING AND INSTALLING OF ALL NECESSARY HARDWARE AS SPECIFIED.

SUBDECK AREAS ABOVE TRAVELLED LANES, AS WELL AS PAVED SHOULDERS.

### MATERIALS:

TIMBER BEAMS SHALL CONFORM TO CMS 711.26 AND SHALL BE DOUGLAS FIR LARCH WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER OR SOUTHERN PINE WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER. PRESERVATIVE TREATMENT FOR TIMBER BEAMS SHALL CONFORM TO CMS 712.06. THE TIMBER SHEATHING SHALL BE ¾" CDX PRESERVATIVE TREATED PLYWOOD MANUFACTURED FROM EITHER DOUGLAS FIR OR SOUTHERN PINE. ALL TRANSVERSE EDGES OF THE PLYWOOD SHALL BE SUPPORTED BY TIMBER BEAMS.

THE BOLTS SHALL BE ASTM A449 - TYPE I OR SAE J429 - GRADE 5, 3/8" DIAMETER GALVANIZED BOLTS WITH GALVANIZED FENDER WASHERS AND LOCK NUTS. SPACING OF THE BOLTS SHALL BE A MAXIMUM OF 2 FOOT SPACING.

WOOD SCREWS SHALL BE GALVANIZED 3" LONG #10 FASTENERS SPACED AT 2 FOOT MAXIMUM, UNLESS OTHERWISE NOTED.

#### GENERAL:

FIELD MEASUREMENTS SHALL BE TAKEN BEFORE ANY FABRICATION IS PERFORMED.

#### METHOD OF MEASUREMENT:

THE PAYMENT FOR THIS ITEM SHALL BE SQUARE FOOTAGE IN PLACE AND ACCEPTED. THIS ITEM SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE TIMBER SUBDECKING. PAYMENT SHALL BE MADE UNDER ITEM SPECIAL – STRUCTURES: TIMBER SUBDECK.

### ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESCRIPTION: THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP INCLUDING PREPARATION, WRAPPING THE PIER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS WORK. THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

REQUIREMENTS ASTM TEST METHOD PROPERTY III TIMATE TENSILE STRENGTH. D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PSI MIN. IN PRIMARY FIBER 60.000 PSI DIRECTION PER MINUTE TESTING SPEED D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL 3.000 PSI FIBER DIRECTION PER MINUTE TESTING SPEED TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE 60,000 PSI C581 TO 100% HUMIDITY TENSILE STRENGTH (MIN. AFTER D1149 FXCFPT NOT UNDFR STRESS DURING OZONE TEST) 1000 HOURS EXPOSURE 60.000 PSI TO OZONE **EXPOSURE** TENSILE STRENGTH (MIN. AFTER D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3% TEST) 1000 HOURS EXPOSURE 60,000 PSI TO ALKALI TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE C581 AND D1141 OMITTING ADDITION OF HEAVY METAL 60,000 PSI TO SALT WATER REAGENTS TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE 60,000 PSI D3045 @ 140 DEGREES F G154 USING FS40 UV-B TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) BULBS FOR A MIN. 40 CYCLES. 60.000 PSI THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C. ELONGATION: PERCENT, MIN. 1.7 % PERCENT. MAX. 5.0 % TENSILE MODULUS, PSI MIN. D.30.39 3,000,000 OF PRIMARY FIBERS VISUAL EFFECTS ACCEPTANCE LEVEL III D2563 COEFFECIENT OF THERMAL 4,300,000 PPM/DEG. H EXPANSION IN THE PRIMARY D696 (+15%) DIRECTION

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR FPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN 1/2 INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER. SHALL BE REPAIRED AS SUCH.

- 1. SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY.
- P. BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN
- 3. BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, URETHANE SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PROT THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

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RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902

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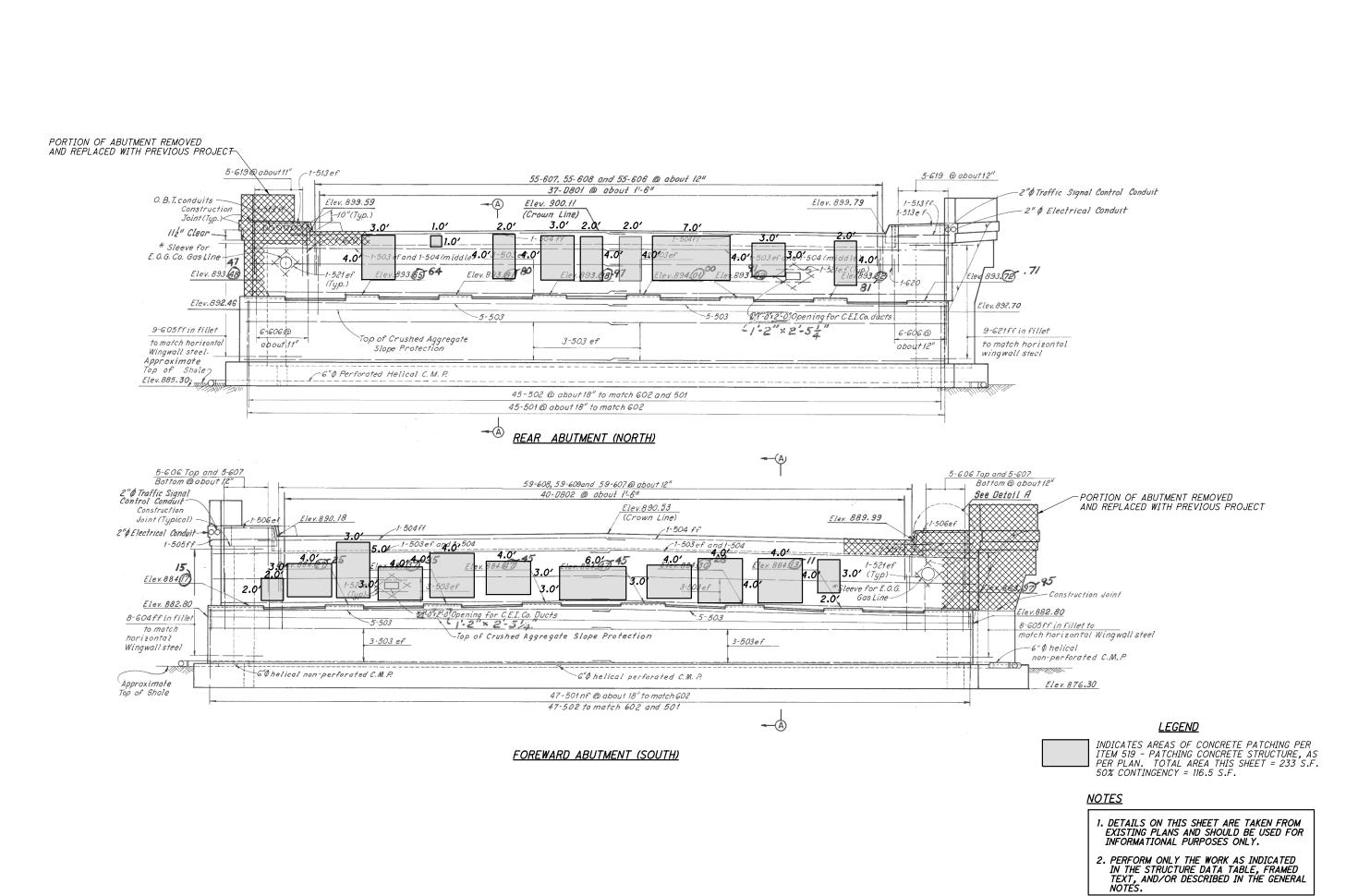
	ESTIMATED QUANTITIES						CALCULATED <u>dh†</u> DATED <u>1</u> CHECKED <u>RRB</u> DATED <u>1</u>			
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	PIERS	ABUTS.	GEN'L	REF. SHEET	
202 202	11203 75260	LS 441	FT	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN  VANDAL PROTECTION FENCE REMOVED				LS	2/17	
509	10000	18,361	LB	EPOXY COATED REINFORCING STEEL	18,361					
510	10000	564	EACH	DOWEL HOLES WITH NON-SHRINK, NON-METALIC GROUT	540		24			
511	34410	183	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	180		3			
512	10050	255	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	255					
512	10101	999	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	553	291	155		2/17	
512	74001	609	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	198	282	129		2/17	
514	00100	LS		SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL				LS		
514	00200	LS		FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT				LS		
514	00300	LS		FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT				LS		
514	00401	LS		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN				LS	2/17	
516	46701	1	EACH	RESET BEARING, AS PER PLAN	1				2/17	
516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LS	2/17	
SPECIAL	51900100	6061	SF	COMPOSITE FIBER WRAP SYSTEM		6061			3/17	
519	11101	429	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN		79	350		2/17	
519	12200	30	SY	PATCHING CONCRETE BRIDGE DECK - TYPE A	30					
526	98200	34	FT	APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT				34	11/17	
SPECIAL	53000600	4901	SF	STRUCTURE: TIMBER SUBDECK	4901				3/17	
607	39901	441	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	441				11/17	
844	10001	665	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		665			3/17	
044	10001	000	3F	CONCRETE FATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		003			3/11	
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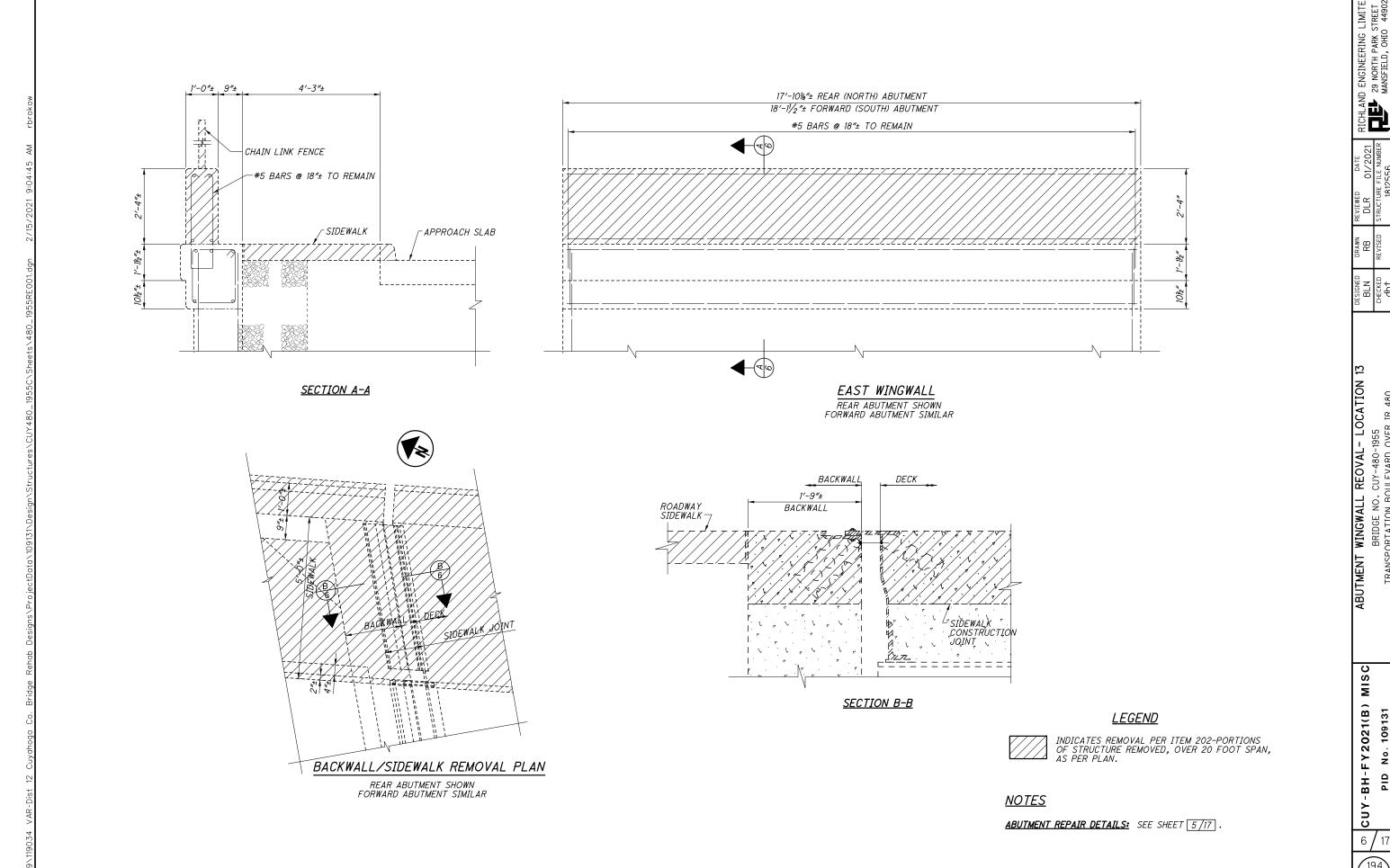
AND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

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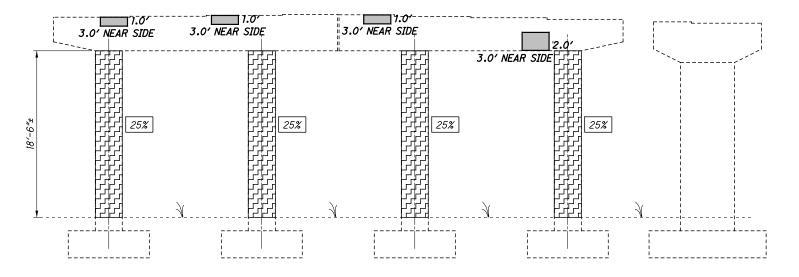
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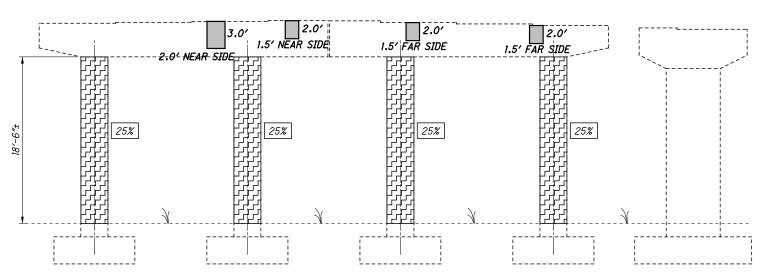
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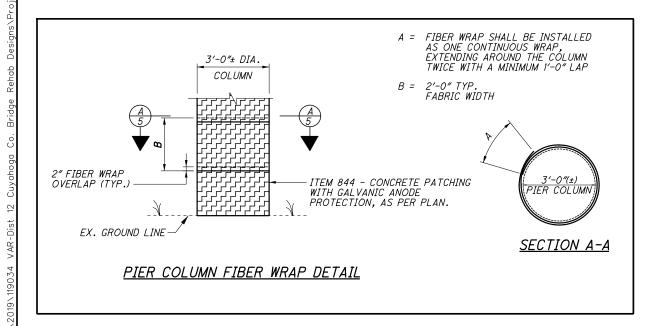




PIER 1



<u> PIER 2</u>



# **LEGEND**



INDICATES CONCRETE PIER COLUMN REPAIR PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM AND ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN.



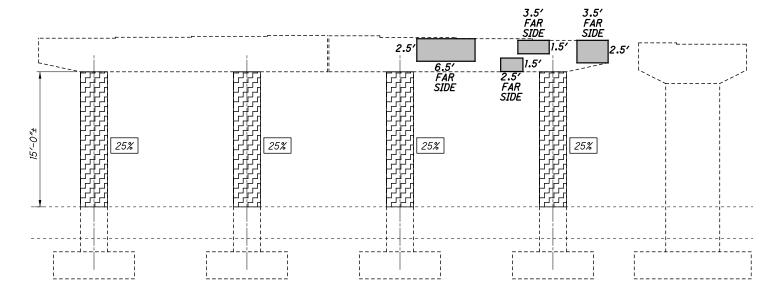
INDICATES THE APPROXIMATE PERCENTAGE OF COLUMN PATCHING REQUIRED PRIOR TO FIBER WRAPPING.



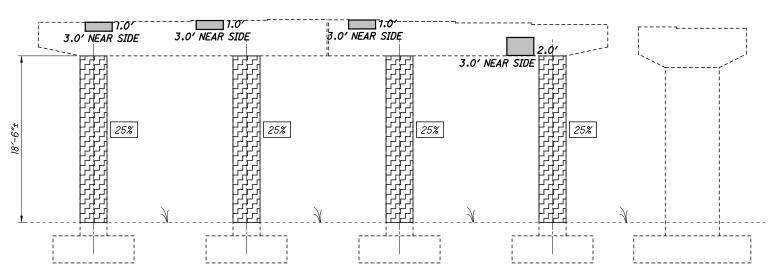
INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 30 S.F.

## <u>NOTES</u>

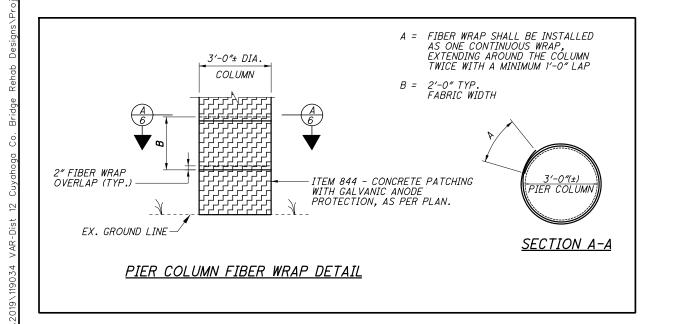
MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED. DETAILS SHOWN ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.



PIER 3



PIER 4



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### **LEGEND**

INDICATES CONCRETE PIER COLUMN REPAIR PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM AND ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN.



INDICATES THE APPROXIMATE PERCENTAGE OF COLUMN PATCHING REQUIRED PRIOR TO FIBER WRAPPING.



INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 49 S.F.

## <u>NOTES</u>

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED. DETAILS SHOWN ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.

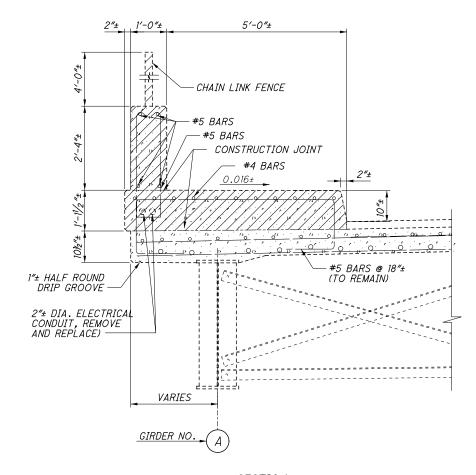


SUPERSTRUCTURE REMOVAL - LOCATION 13
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TRANSPORTATION BOULEVARD OVER IR 480

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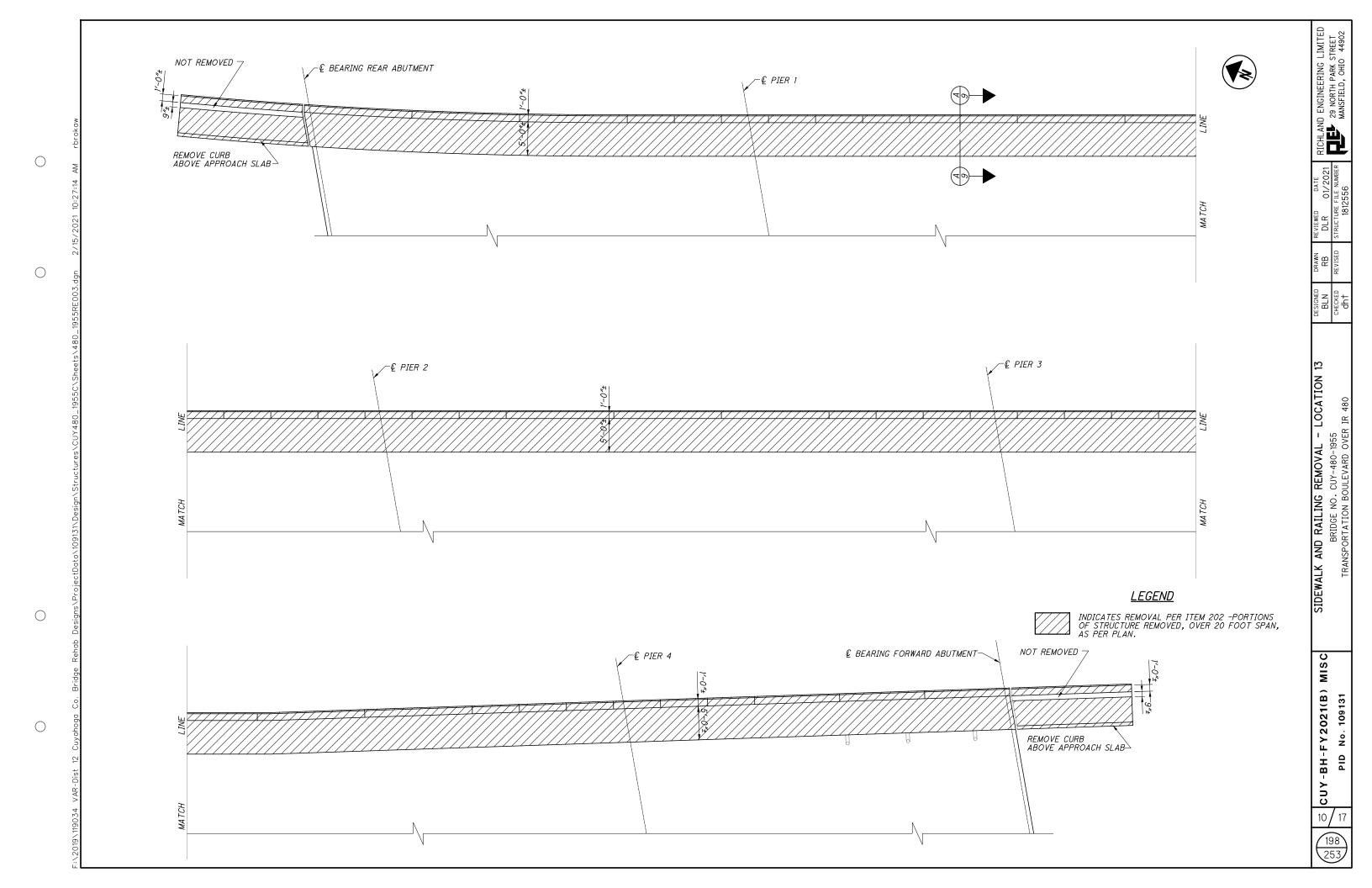
SECTION A-A

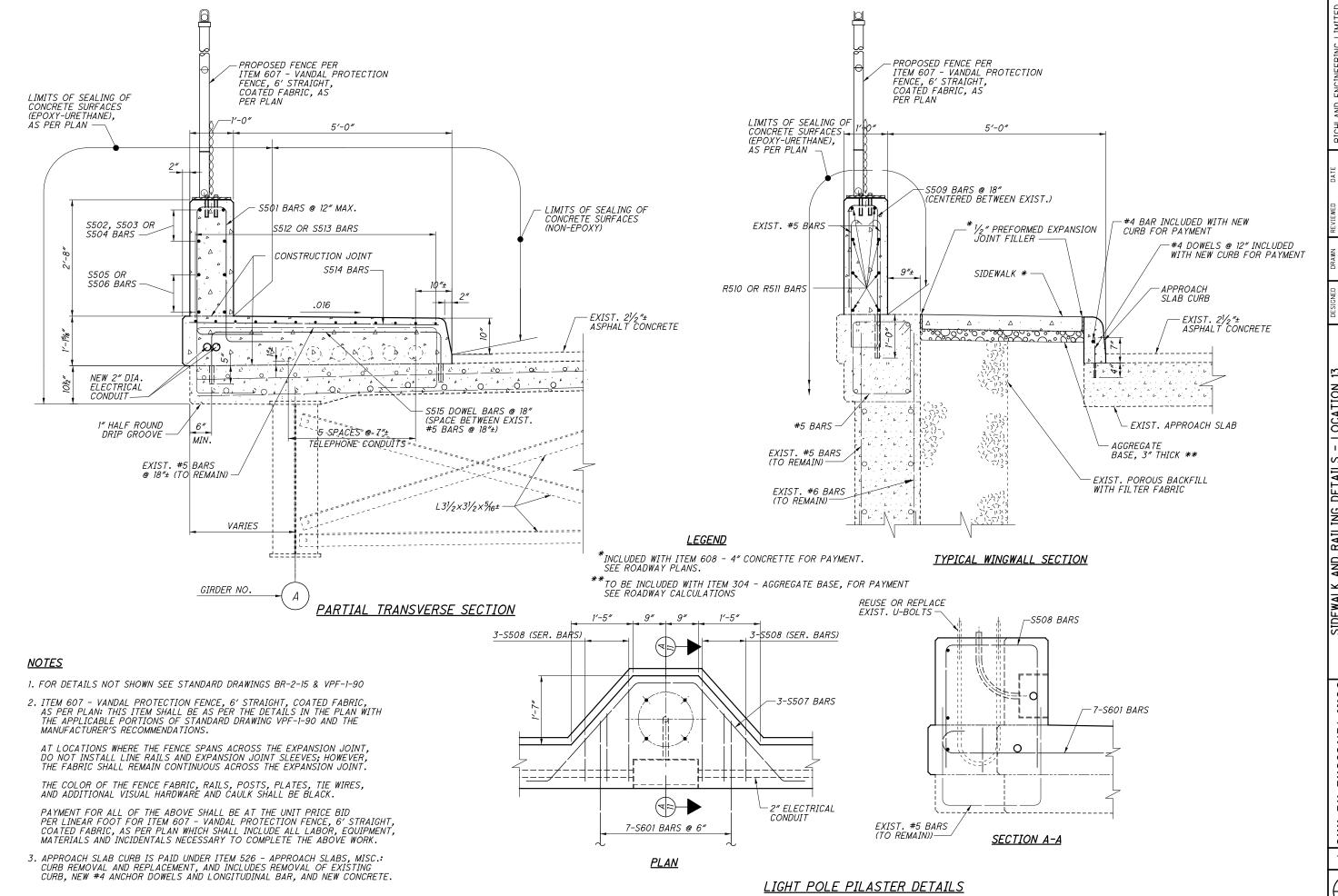
# <u>LEGEND</u>

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

# <u>NOTES</u>

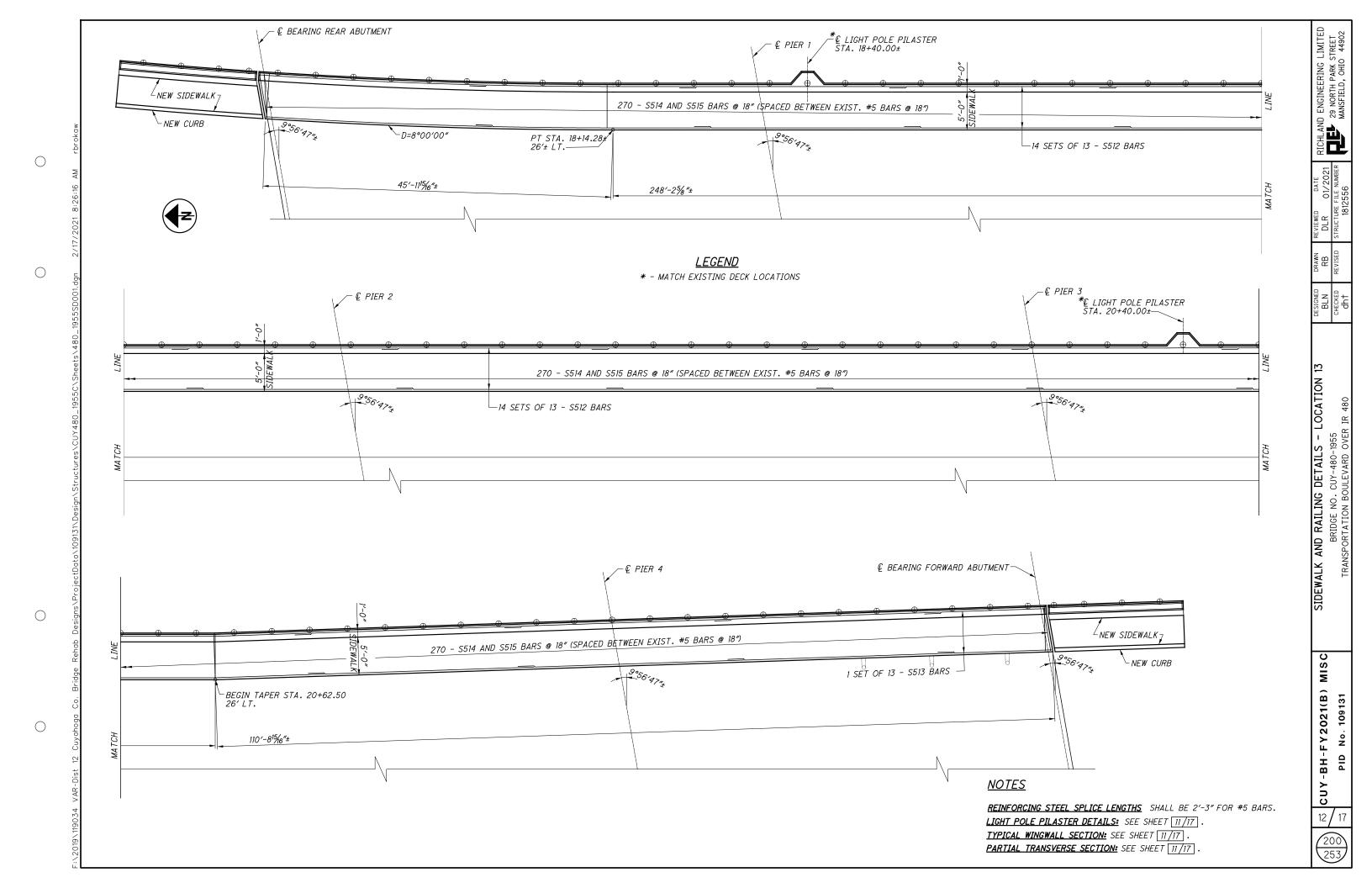
SECTION A-A FOR LOCATIONS SEE SHEET 10/17.

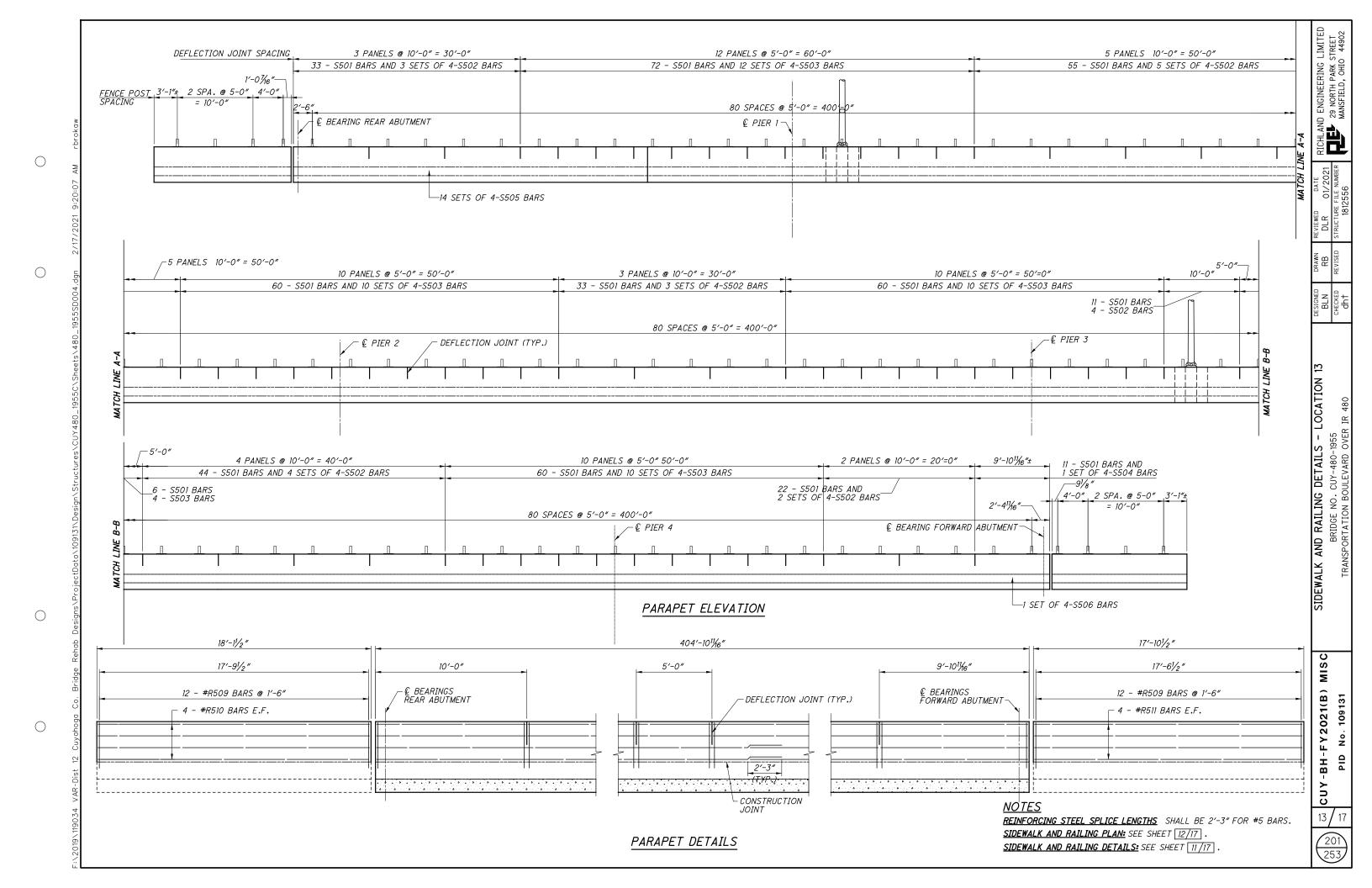


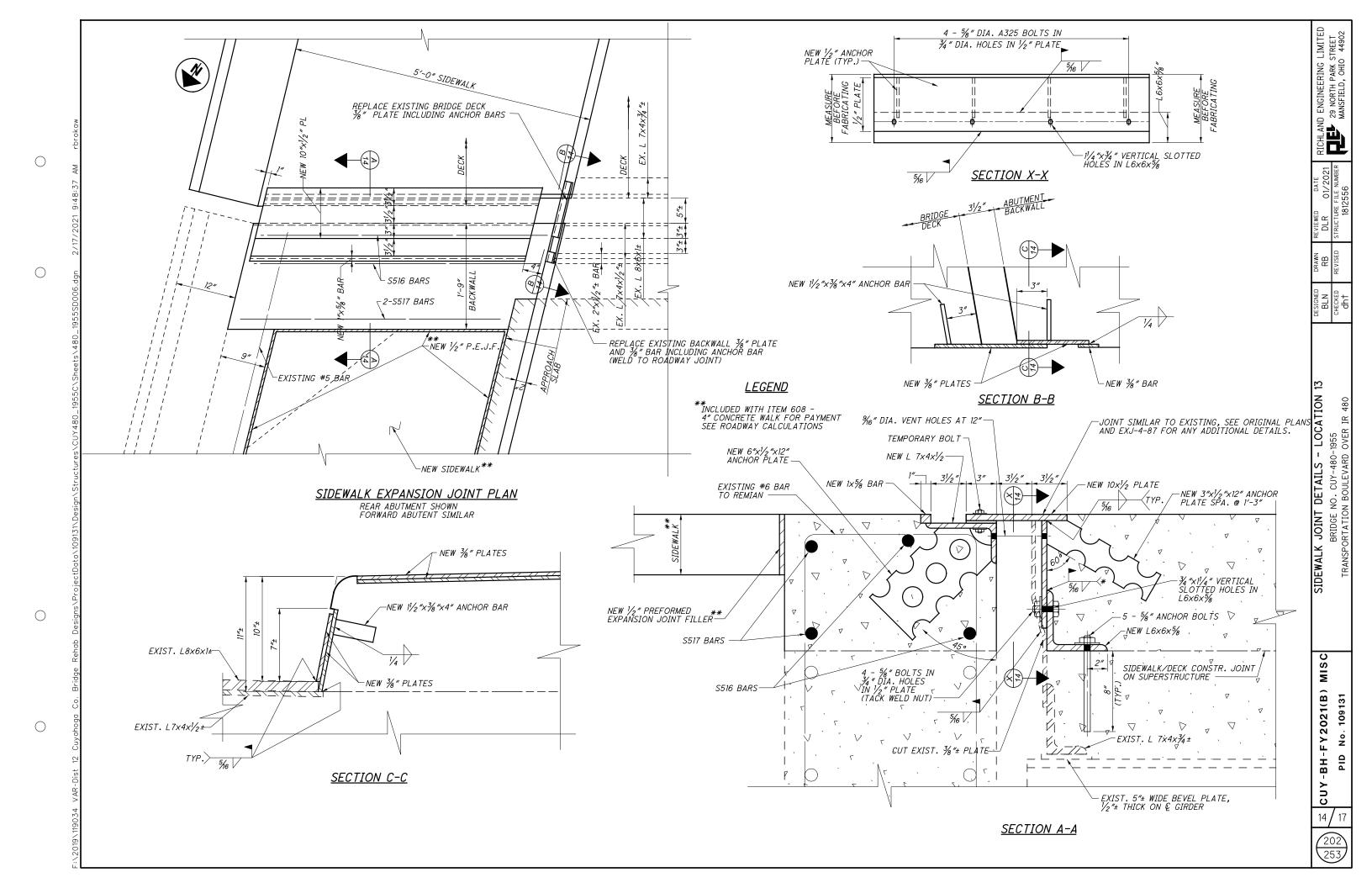


EWALK AND RAILING DETAILS BRIDGE NO. CUY-480-1955
TRANSPORTATION BOLL EVARD OVER

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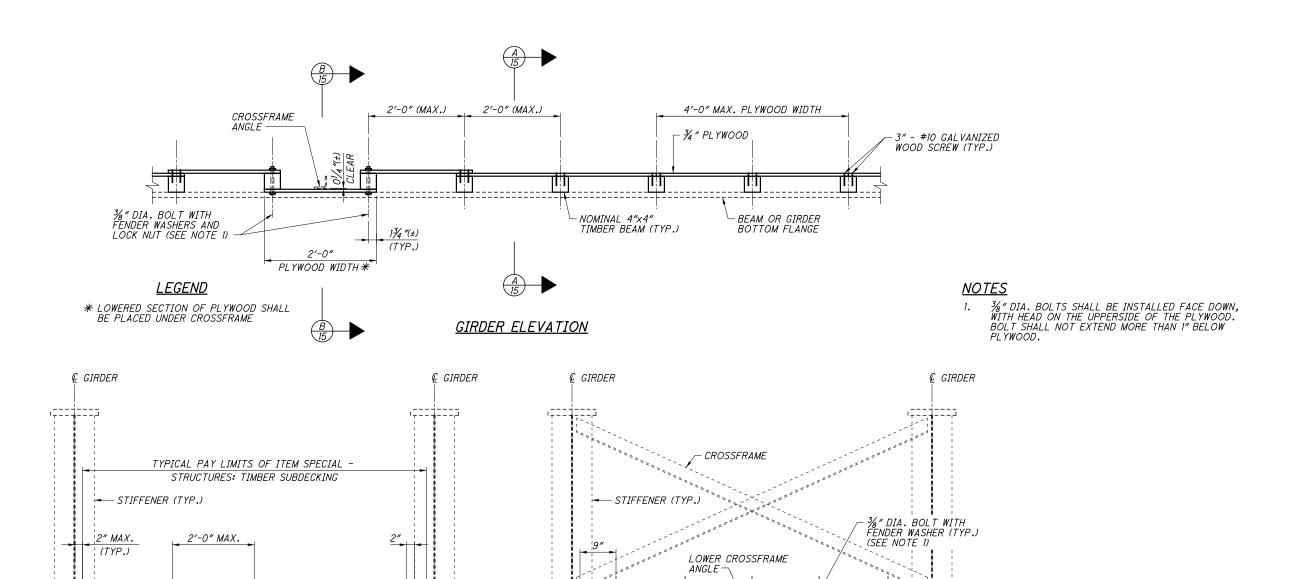
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TIMBER SUBDECKING DETAILS
BRIDGE NO. CUY-480TRANSPORTATION BOULEVARD

MISC CUY-BH-FY2021(B)





SECTION A-A

- BUTT PLYWOOD AGAINST STIFFENERS (TYP.)

4" MIN. TIMBER

BEAM BEARING (TYP.)

-3" - #10 GALVANIZED WOOD SCREW (TYP.)

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SECTION B-B (AT INTERMEDIATE CROSSFRAMES)

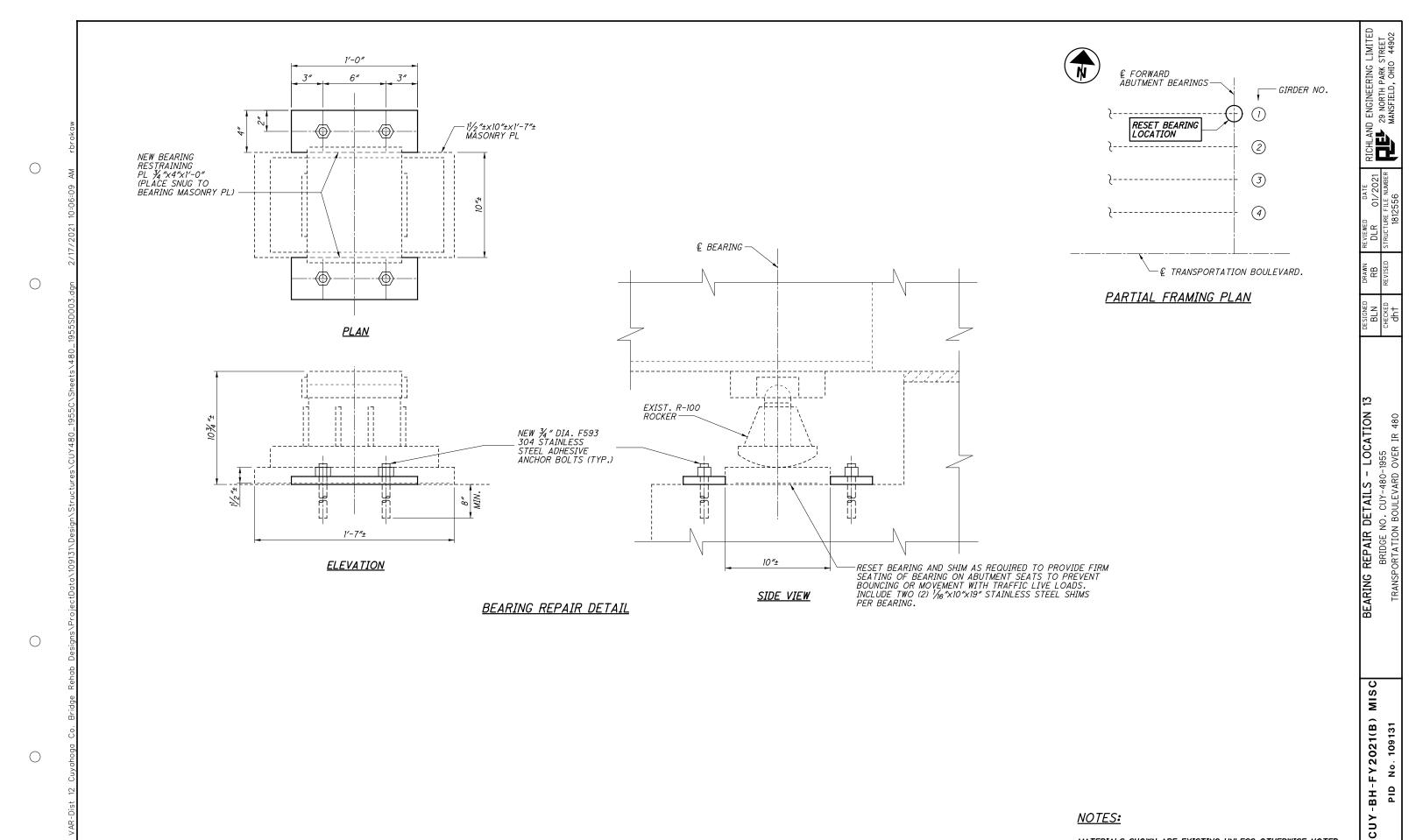
FENDER WASHER AND

LOCK NUT (TYP.)

-3½" x 3¼" (MIN.) WOOD BLOCK UNDER ENDS OF TIMBER BEAMS AS FILLER FOR PLYWOOD (TYP.)

2'-0" MAX.

- BUTT PLYWOOD AGAINST STIFFENERS (TYP.)



# **NOTES:**

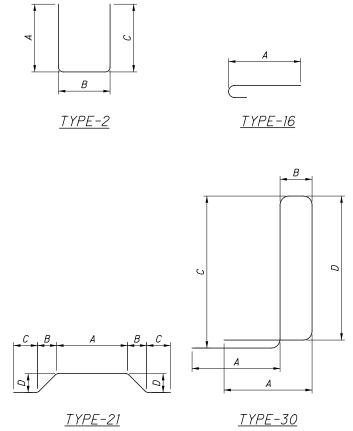
MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED. DETAILS SHOWN ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.

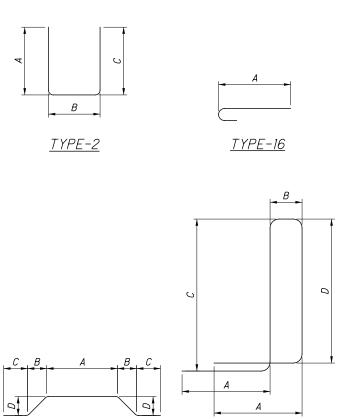
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MARK	LENGTH	WEIGHT	WEIGHT	TYPE		DIMENS	<i>TONS</i>	CALCULA CHECK	TED <u>DP</u> KED <u>BLI</u>	H DATEI V DATEI	12/20 12/20
	TOTAL			7	Α	В	С	D	Ε	R	INC
	1		1.			•	•	•		1	•
S501	467	9'-2"	4465	30	1′-6″	0'-8"	3'-1"	2'-11"			
S502	72	9′-8″	726	STR							
S503	172	4'-8"	837	STR							
S504	4	9′-7″	40	STR							
S505	56	29′-8″	1733	STR							
S506	4	20'-11"	87	STR							
S507	6	8′-1″	51	21	1'-4"	2'-1"	0'-6"	2'-1"			
	4 SR	7′-9″				1'-0"					
S508	OF	TO	103	2	3′-6″	TO	3′-6″				0'-6 1/2"
	3	8′-10″				2'-1"					
S509	24	6'-2"	154	2	3′-5″	0'-8"	2'-4"				
S510	8	17′-9″	148	STR							
S511	8	17′-7″	146	STR							
S512	182	29′-8″	5632	STR							
S513	13	20′-11″	283	STR							
S514	270	5′-8″	1596	STR							
S515	270	7′-9″	2182	2	1'-4"	5'-4"	1'-4"				
S516	4	4'-9"	20	STR							
S517	4	4'-4"	18	STR							
CC01	1.0	C/ 0#	140	10	C/ O//						
S601	14	6′-8″	140	16	6′-0″						
		TOTAL	18,361								





REINFORCING STEEL LISTS - LOCATION 13
BRIDGE NO. CUY-480-1955
TRANSPORTATION BOULEVARD OVER IR 480

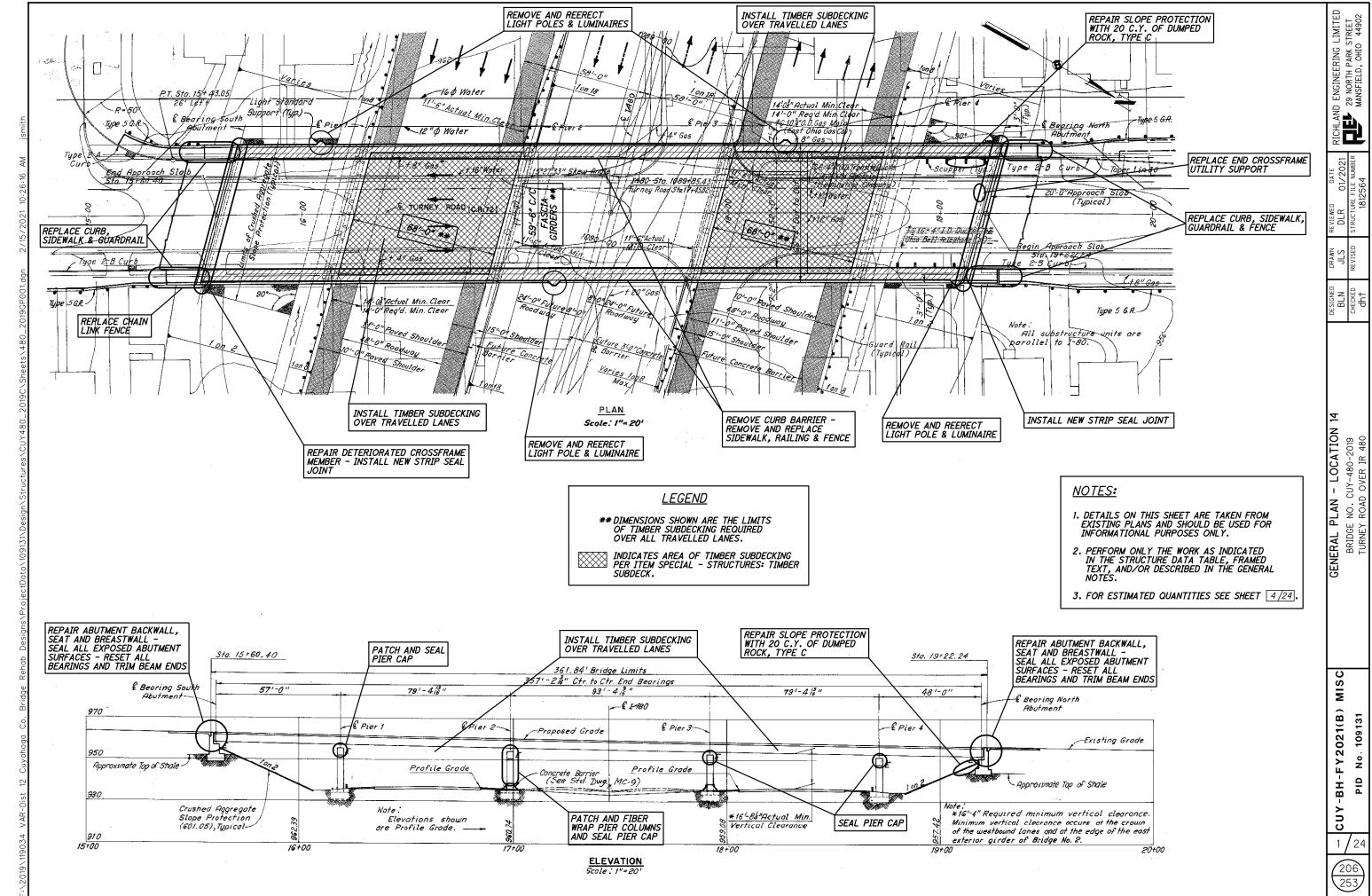
RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902

CUY-BH-FY2021(B) MISC 522 523 MISC PID No. 109131





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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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### REFER TO STANDARD BRIDGE DRAWINGS

EXJ-4-87 (REVISED 1-19-2018) BR-2-15 (7-17-2015) VPF-1-90 (REVISED 7-20-2018) GSD-1-19 (1-15-2021) PCB-91 (7-17-2020) TVPF-1-18 (7-02-2018)

### REFER TO SUPPLEMENTAL SPECIFICATIONS

SS 844 (DATED 4-20-2018)

### EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO SECTIONS 102.05 AND 105.02 OF THE 2019 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 12 OFFICE
5500 TRANSPORTATION BOULEVARD
GARFIELD HEIGHTS, OH 44125

EXISTING PLANS ARE ALSO AVAILABLE THROUGH THE FOLLOWING ODOT WEBSITE: HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

### DESCRIPTION OF WORK

- 1. PATCH AND FIBER WRAP DESIGNATED PIER COLUMNS.
- 2. PATCH ABUTMENT SEATS, FACE OF BACKWALLS, BREASTWALLS, AND PIER CAPS.
- 3. REMOVE SIDEWALKS, RAILINGS, AND VANDAL PROTECTION FENCE.
- 4. REMOVE ABUTMENT EXPANSION JOINTS, PORTIONS OF BACKWALL AND SUPERSTRUCTURE DECK.
- 5. TRIM BEAM/GIRDER ENDS AS REQUIRED.
- 6. REPLACE DETERIORATED ABUTMENT CROSSFRAME MEMBER.
- 7. INSTALL NEW STRIP SEAL JOINTS INCLUDING PORTIONS OF DECK AND BACKWALL AND MODIFY END CROSSFRAMES TO ATTACH TO NEW JOINTS.
- 8. CONSTRUCT NEW SIDEWALKS AND RAILING, REPLACE CURBS ON APPROACH SLABS.
- 9. INSTALL NEW VANDAL PROTECTION FENCE.
- 10. SEAL RAILING, SIDEWALKS (NON-EPOXY SEALER), PIER CAPS, ABUTMENT SURFACES AND WINGWALLS.
- 11. PAINT 10 FEET OF STEEL GIRDERS AND CROSSFRAMES BEYOND THE ABUTMENTS.
- 12. REMOVE AND RE-ERECT LIGHT POLES AND LUMINAIRES. REPLACE LIGHTING CONDUIT AND WIRE ON SUPERSTRUCTURE.
- 13. REPAIR SLOPE PROTECTION AT THE FORWARD ABUTMENT.
- 14. RESET ALL ABUTMENT BEARINGS.
- 15. INSTALL TIMBER SUBDECKING.

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

### CUT LINE CONSTRUCTION JOINT PREPARATION

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

#### ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN

REPLACE ALL EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE

REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

SEAL PIER CAPS; ABUTMENT BACK WALLS, SEATS, BREASTWALLS AND WINGWALLS; AND RAILING. REMOVE DEBRIS AND CLEAN SURFACES OF WALLS AND SEATS PER 512.03 E & F. THE COLOR OF THE FINISH COAT SHALL BE FS NO. 17778 (LIGHT NEUTRAL). THE CONTRACTOR SHALL ENSURE ANY EXISTING UNDERPASS LIGHTING, FENCE AND POSTS, RAILING AND ALL OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE SEALING OPERATIONS. SEALING OF THE FIBER WRAPPED AREAS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

#### <u>ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER-</u> PLAN

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES OR FIBERWRAP SHALL NOT BE INCLUDED IN THIS ITEM.

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

THE FINAL PAINT COLOR SHALL CLOSELY MATCH THE EXISTING STEEL PAINT COLOR, AS APPROVED BY THE ENGINEER.

### <u>ITEM 516 - RESET BEARING. AS PER PLAN</u>

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN BRIDGE BEARINGS, REPLACEMENT OF ANY DAMAGED SHEET LEAD WITH PREFORMED BEARING PADS (711.21), INSTALLATION OF ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT, REALIGNMENT OF THE LOWER MASONRY PLATE BY RELOCATING IT SO THAT THE BEARINGS ARE VERTICALLY ALIGNED AT 60-DEGREES F (15-DEGREES C), AND INSTALLING BEARING RESTRAINING PLATES IF REQUIRED PER PLAN DETAILS.

ASSURE ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING".

ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 - RESET BEARING, AS PER PLAN.

# ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

THIS WORK INCLUDES RAISING OR RE-POSITIONING EXISTING STRUCTURES TO PERFORM THE WORK DEFINED IN THE PROJECT PLANS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS.

THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

### ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED, INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. WHERE APPLICABLE, THE CONTRACTOR SHALL ENSURE ANY EXISTING BRIDGE RAIL OR ANY OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE PATCHING OPERATIONS

SPECIFIC PATCHING LOCATIONS SHALL BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519 UNLESS IDENTIFIED IN THE PLANS. IF EXISTING UTILITIES ARE LOCATED WITHIN THE SPECIFIED PATCHING AREAS, THE COST FOR REMOVAL AND REINSTALLING THE UTILITIES SHALL BE INCLUDED IN THIS ITEM. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT AT THE SQUARE FOOT CONTRACT PRICE FOR ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

### <u>ITEM SPECIAL - STRUCTURES: TIMBER SUBDECK</u>

DESCRIPTION:

THIS ITEM SHALL CONSIST OF FURNISHING, CUTTING, FITTING, PLACING AND ERECTING OF TIMBER, AND THE FURNISHING AND INSTALLING OF ALL NECESSARY HARDWARE AS SPECIFIED.

SUBDECK AREAS ABOVE TRAVELLED LANES, AS WELL AS PAVED SHOULDERS.

MATERIALS:

TIMBER BEAMS SHALL CONFORM TO CMS 711.26 AND SHALL BE DOUGLAS FIR LARCH WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER OR SOUTHERN PINE WITH A COMMERCIAL GRADE OF NO. 2 OR BETTER. PRESERVATIVE TREATMENT FOR TIMBER BEAMS SHALL CONFORM TO CMS 712.06.

THE TIMBER SHEATHING SHALL BE ¾" CDX PRESERVATIVE TREATED PLYWOOD MANUFACTURED FROM EITHER DOUGLAS FIR OR SOUTHERN PINE. ALL TRANSVERSE EDGES OF THE PLYWOOD SHALL BE SUPPORTED BY TIMBER BEAMS.

THE BOLTS SHALL BE ASTM A449 - TYPE 1 OR SAE J429 - GRADE 5,  $\frac{3}{8}$ " DIAMETER GALVANIZED BOLTS WITH GALVANIZED FENDER WASHERS AND LOCK NUTS. SPACING OF THE BOLTS SHALL BE A MAXIMUM OF 2 FOOT SPACING.

WOOD SCREWS SHALL BE GALVANIZED 3" LONG #10 FASTENERS SPACED AT 2 FOOT MAXIMUM, UNLESS OTHERWISE NOTED.

VERAL:

FIELD MEASUREMENTS SHALL BE TAKEN BEFORE ANY FABRICATION IS PERFORMED.

METHOD OF MEASUREMENT:

THE PAYMENT FOR THIS ITEM SHALL BE SQUARE FOOTAGE IN PLACE AND ACCEPTED. THIS ITEM SHALL INCLUDE ALL LABOR, EQUIPMENT, AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE TIMBER SUBDECKING. PAYMENT SHALL BE MADE UNDER ITEM SPECIAL - STRUCTURES: TIMBER SUBDECK.

#### <u>ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER</u> PLAN

REPAIR WORK SHALL BE PER SUPPLEMENTAL SPECIFICATION 844. THE MINIMUM SPACING OF 100 GRAM ZINC ANODE SHALL BE 18" OR EQUIVALENT TOTAL ZINC CONTENT PER AREA. THIS ITEM SHALL BE PER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANDDE PROTECTION, AS PER PLAN AND INCLUDE ALL REQUIRED PATCHING AND PROTECTION WORK TO MAKE THE PIER COLUMNS READY FOR THE COMPOSITE FIBER WRAP SYSTEM.

GENERAL NOTES CONTINUED: SEE SHEET 3/24.

2/24

2 / 24

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140 °F WATER, SALT WATER, ALKALINE SOIL, OZONE AND EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES.

THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI MIN. IN ORTHOGONAL FIBER DIRECTION	3,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	60,000 PSI	D1149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	60,000 PSI	D3038 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	60,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR A MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40 DEGREES C.
ELONGATION:		
PERCENT, MIN.	1.7 %	
PERCENT, MAX.	5.0 %	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL EFFECTS	ACCEPTANCE LEVEL III	D2563
COEFFECIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SURFACE PREPARATION: THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINS, SHARP EDGES, AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO A 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP. THE REMOVAL OF THE EXISTING COATING FROM THE CONCRETE SUPPLIES IN ADDITIONED WITH THE EXISTING COATING FROM THE CONCRETE SURFACES IS INCLUDED WITH THE SURFACE PREPARATION FOR THE COMPOSITE FIBER WRAP SYSTEM AND WILL NOT BE PAID SEPARATELY UNDER ITEM 512.

COMPOSITE APPLICATION: THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55 DEG. F AND 95 DEG. F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5 DEG. F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED. A MANUFACTURER REPRESENTATIVE SHALL BE ON SITE FOR THE FIRST APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM TO APPROVE THE CONTRACTOR'S APPLICATION PROCESS. THIS REQUIREMENT MAY BE WAIVED WITH WRITTEN APPROVAL FROM THE ENGINEER.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL INSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OF FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS AND FABRIC TEARS) MORE THAN I SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH.

- SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INJECTED OR BACK FILLED WITH EPOXY
- BUBBLES LESS THAN 12" DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF ENTRAPPED AIR.
- BUBBLES, DELAMINATIONS AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATING. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESS SO THAT THE FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL PAY FOR THIS ITEM PER SQUARE FOOT OF FIBER WRAP MATERIAL INSTALLED AND ACCEPTED TO COMPLETE THE PROPOSED WORK. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING SURFACE PREPARATION, WRAPPING THE COLUMN, URETHAND SEALER, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURER'S REQUIREMENTS. PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER SQUARE FOOT FOR ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.

ND ENGINEERING LIMITEC 29 NORTH PARK STREET MANSFIELD, OHIO 44902 

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DATE	01/2021	STRUCTURE FILE NUMBER	1812564
REVIEWED	DLR	STRUCTURE	181
DRAWN	DPH	REVISED	
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ES -	BRIDGE NO. CUY-480-2019	THRNEY ROAD OVER IR 480
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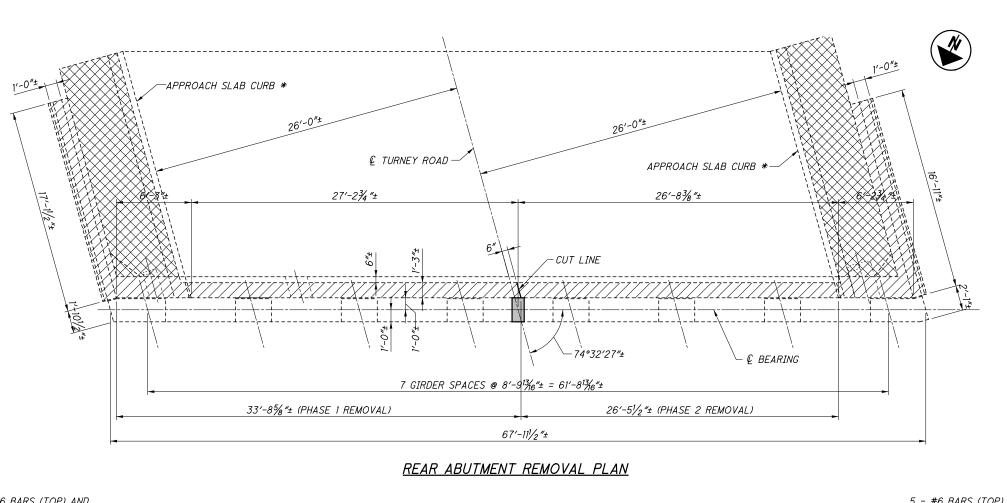
				ESTIMATED QUANTITIES			JLATED — ECKED —	JLS D	ATED <u>12/20</u> ATED <u>10/20</u>
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	PIERS	ABUTS.	GEN'L	REF. SHEET
202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	2/24
202	75260	779	FT	VANDAL PROTECTION FENCE REMOVED	779				
509	10000	19,996	LB	EPOXY COATED REINFORCING STEEL	17,015		2981		
509	20001	150	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	11,013		2301	150	2/24
510	10000	980	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	956		24		
511	34410	243	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	220		23		
512	10050	534	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	528	6			
512	10101	1270	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	779	305	186		2/24
512	74001	181	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN			181		2/24
513	21000	16	EACH	TRIMMING OF BEAM END	16				
513	21500	73	LB	REPLACEMENT OF DETERIORATED END CROSSFRAMES	73				
514	00100	LS		SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL				LS	
514	00200	LS		FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT				LS	
514	00300	LS		FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT				LS	
514	00401	LS		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN				LS	2/24
516	11210	133	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	133				
516	46701	16	EACH	RESET BEARING, AS PER PLAN	16				2/24
516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LS	2/24
517	75122	774	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING AND VANDAL PROTECTION FENCE)	774				
518	21200	7	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC			7		
SPECIAL	51900100	993	SF	COMPOSITE FIBER WRAP SYSTEM		993			3/24
519	11101	55	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN		8	47		2/24
526	98200	80	FT	APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT	80				20/24
SPECIAL	53000600	8396	SF	STRUCTURES: TIMBER SUBDECK	8396				2/24
601	27000	20	CY	DUMPED ROCK FILL, TYPE C			20		
844	10001	87	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN		87			2/24

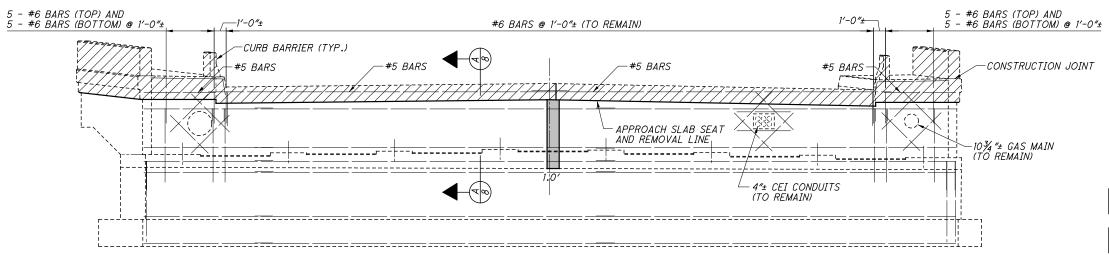
RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902 DESIGNED BLN CHECKED dht ESTIMATED QUANTITIES - LOCATION 14
BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480







### REAR ABUTMENT REMOVAL ELEVATION

# **LEGEND**

INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 8 S.F.

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



INDICATES CURB BARRIER TO BE REMOVED AND SIDEWALK TO BE REMOVED AND REPLACED. FOR QUANTITIES, SEE THE ROADWAY CALCULATIONS.

\* APPROACH SLAB CURB TO BE REMOVED AND REPLACED UNDER ITEM 526 - APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT.

### <u>NOTES</u>

WINGWALL REMOVAL DETAILS: SEE SHEET 7/24.

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REVISED STRUCTURE FILE NUMBER

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OGE NO. CUY-480-2019
NFY ROAD OVER IR 480

REAR ABUTMENT RE
BRIDGE NO
TURNEY RO.

CUY-BH-FY2021(B) MISC PID No. 109131

5/24

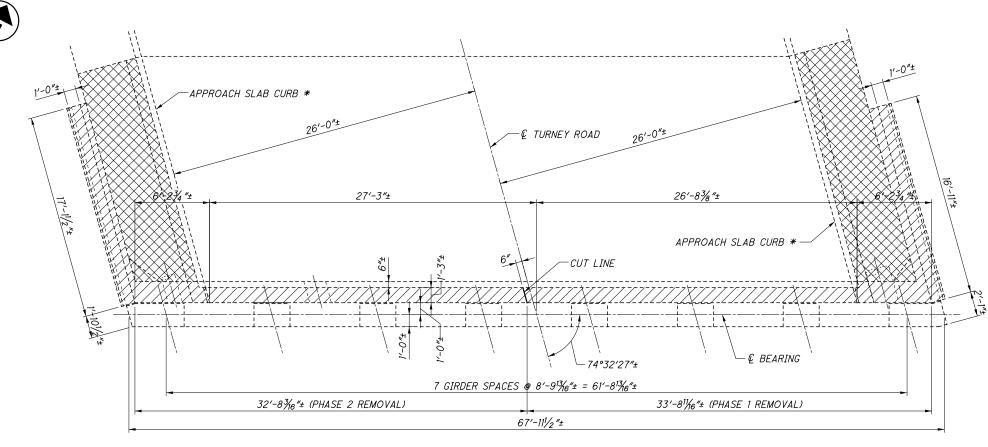


LOCATION

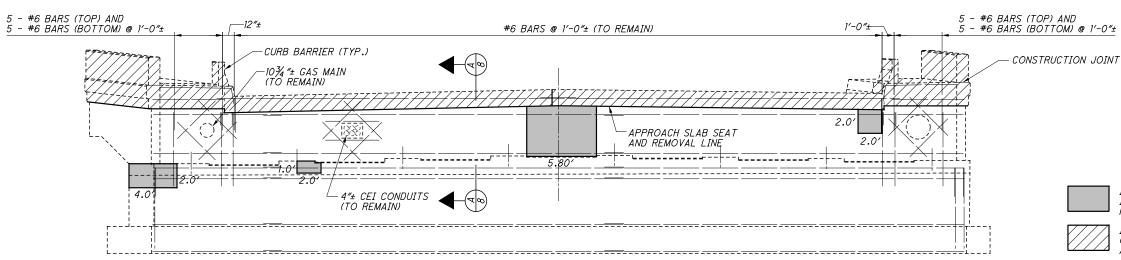
FORWARD ABUTMENT REMOVAL - L BRIDGE NO. CUY-480-2019 TURNEY ROAD OVER IR 480

MISC -BH-FY2021(B) CUY

6/24



## FORWARD ABUTMENT REMOVAL PLAN



# FORWARD ABUTMENT REMOVAL ELEVATION

# <u>LEGEND</u>

INDICATES AREAS OF CONCRETE PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. TOTAL AREA THIS SHEET = 38.5 S.F.

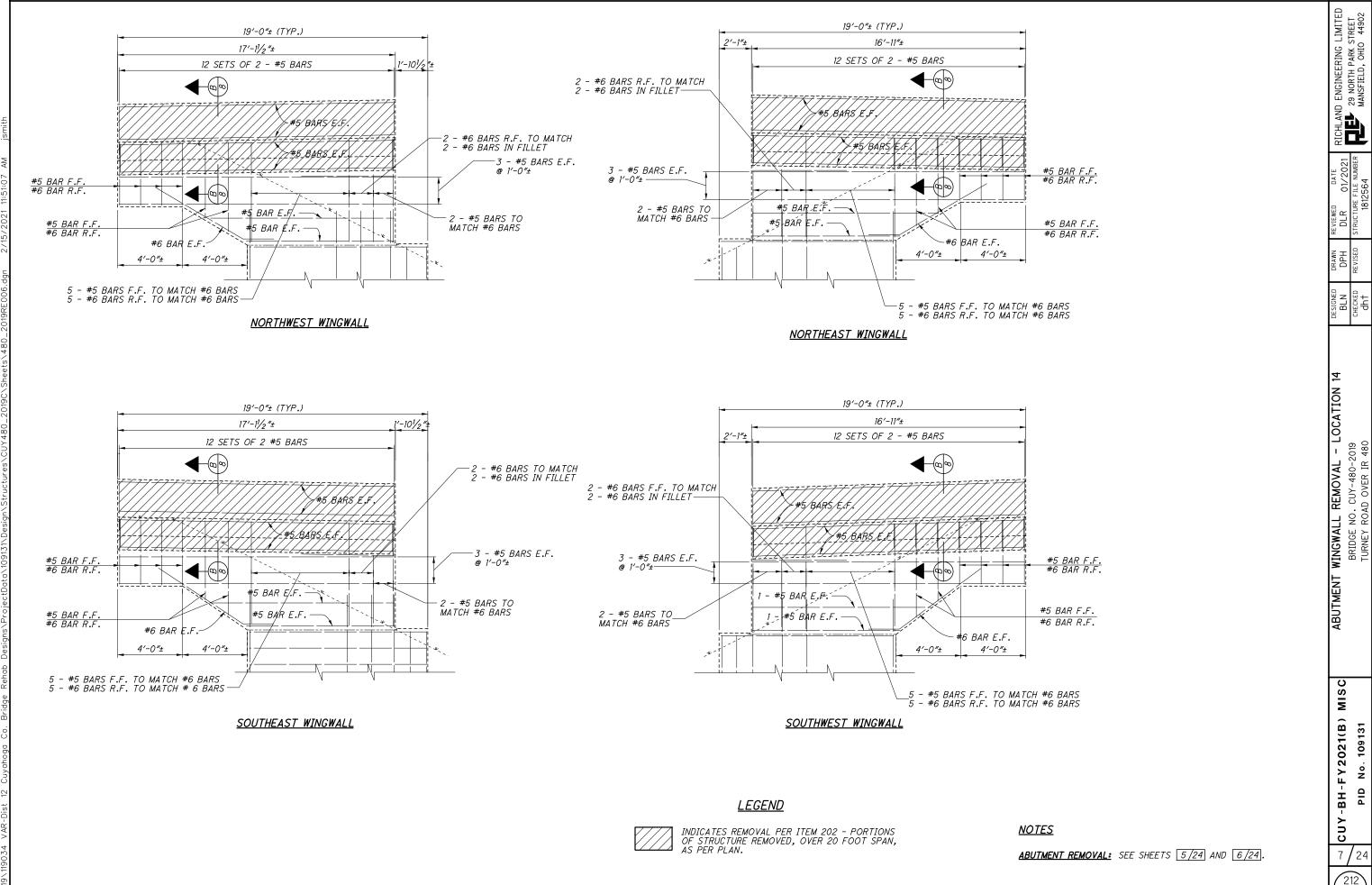
INDICATES REMOVAL PER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

INDICATES CURB BARRIER TO BE REMOVED AND SIDEWALK TO BE REMOVED AND REPLACED. FOR QUANTITIES, SEE THE ROADWAY CALCULATIONS.

\* APPROACH SLAB CURB TO BE REMOVED AND REPLACED UNDER ITEM 526 - APPROACH SLAB, MISC.: CURB REMOVAL AND REPLACEMENT.

# NOTES

WINGWALL REMOVAL DETAILS: SEE SHEET 7/24.

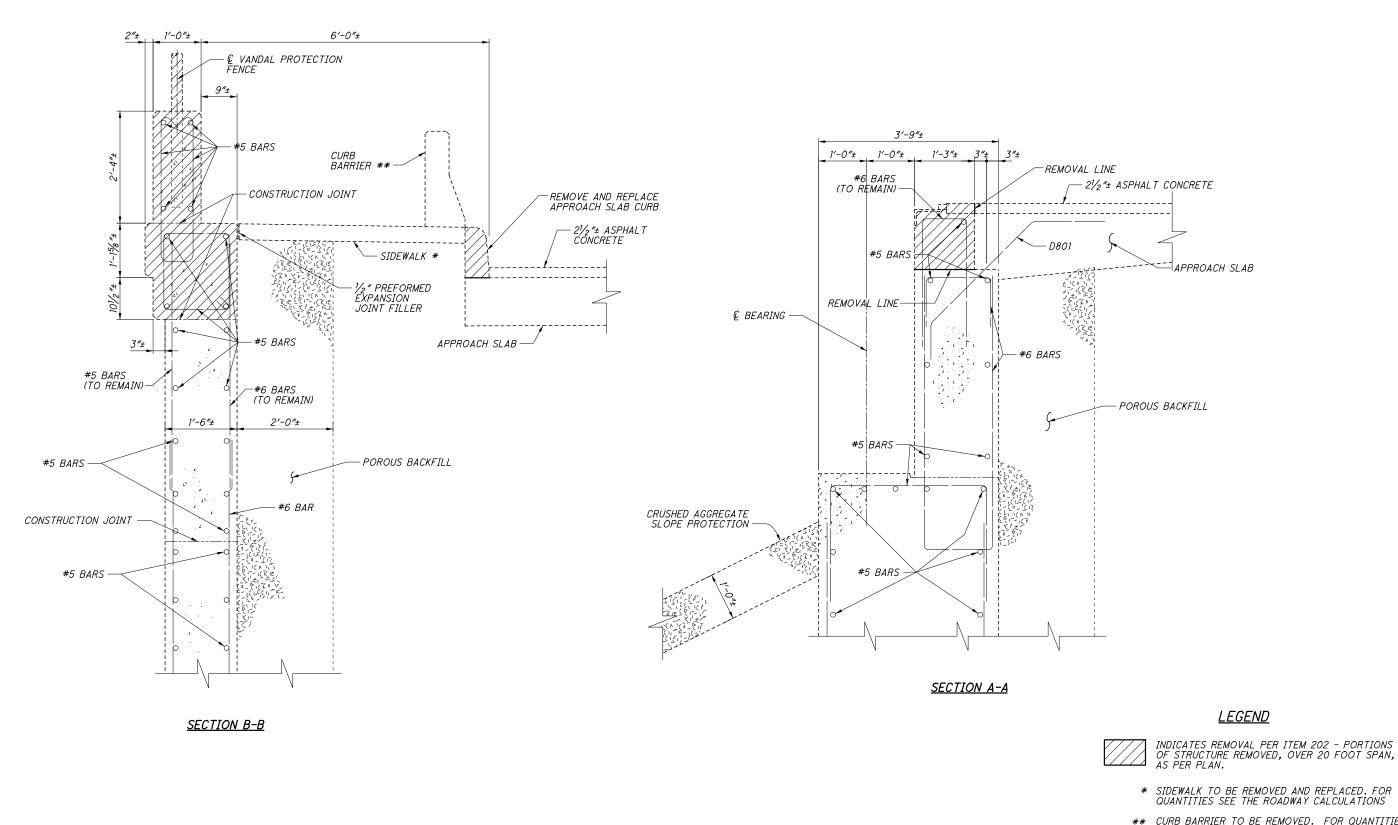


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- \*\* CURB BARRIER TO BE REMOVED. FOR QUANTITIES SEE THE ROADWAY CALCULATIONS.

# <u>NOTES</u>

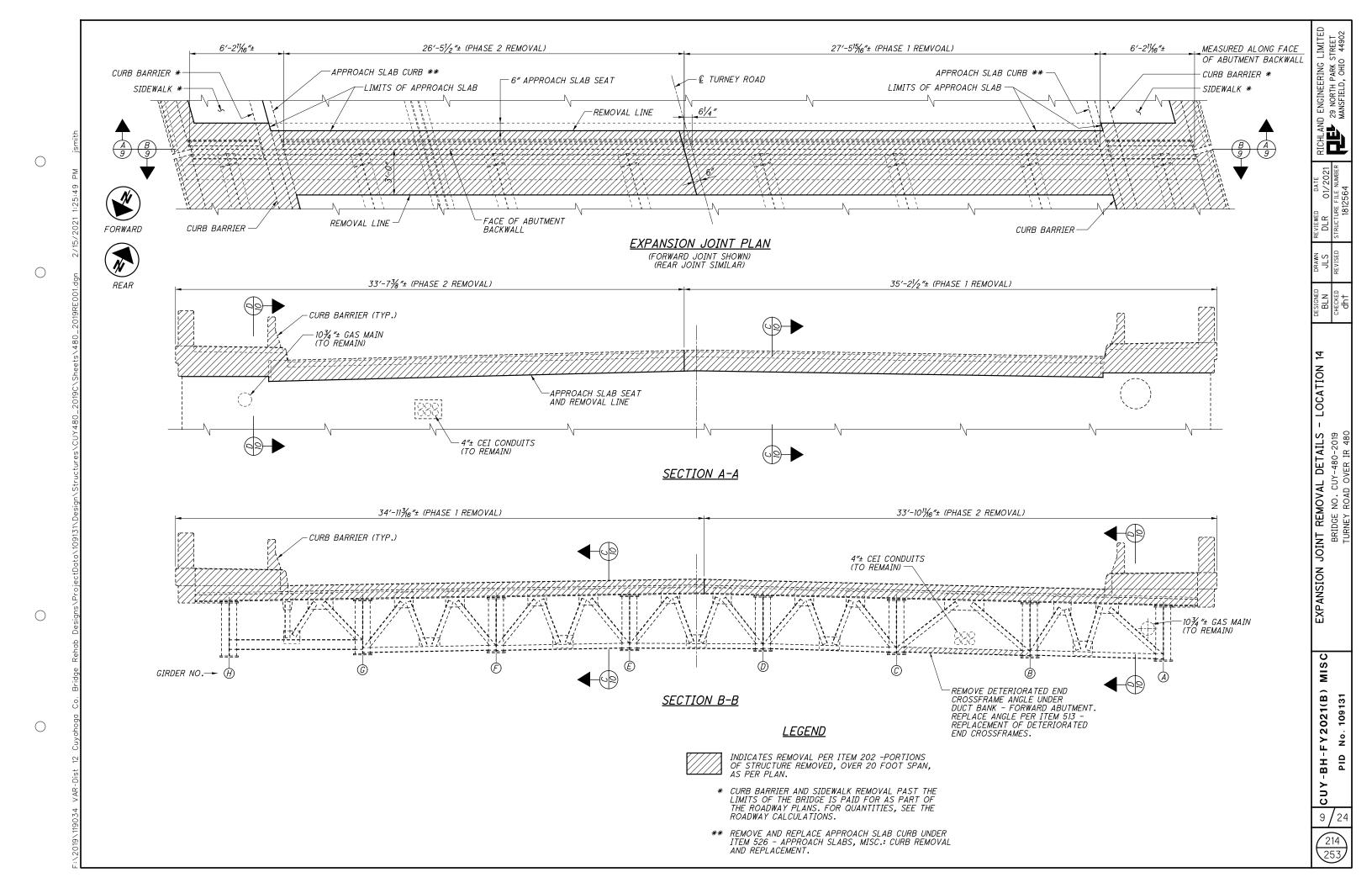
APPROACH SLAB CURB IS TO BE REMOVED AND REPLACED UNDER ITEM 526 - APPROACH SLABS, MISC.: CURB REMOVAL AND REPLACEMENT.

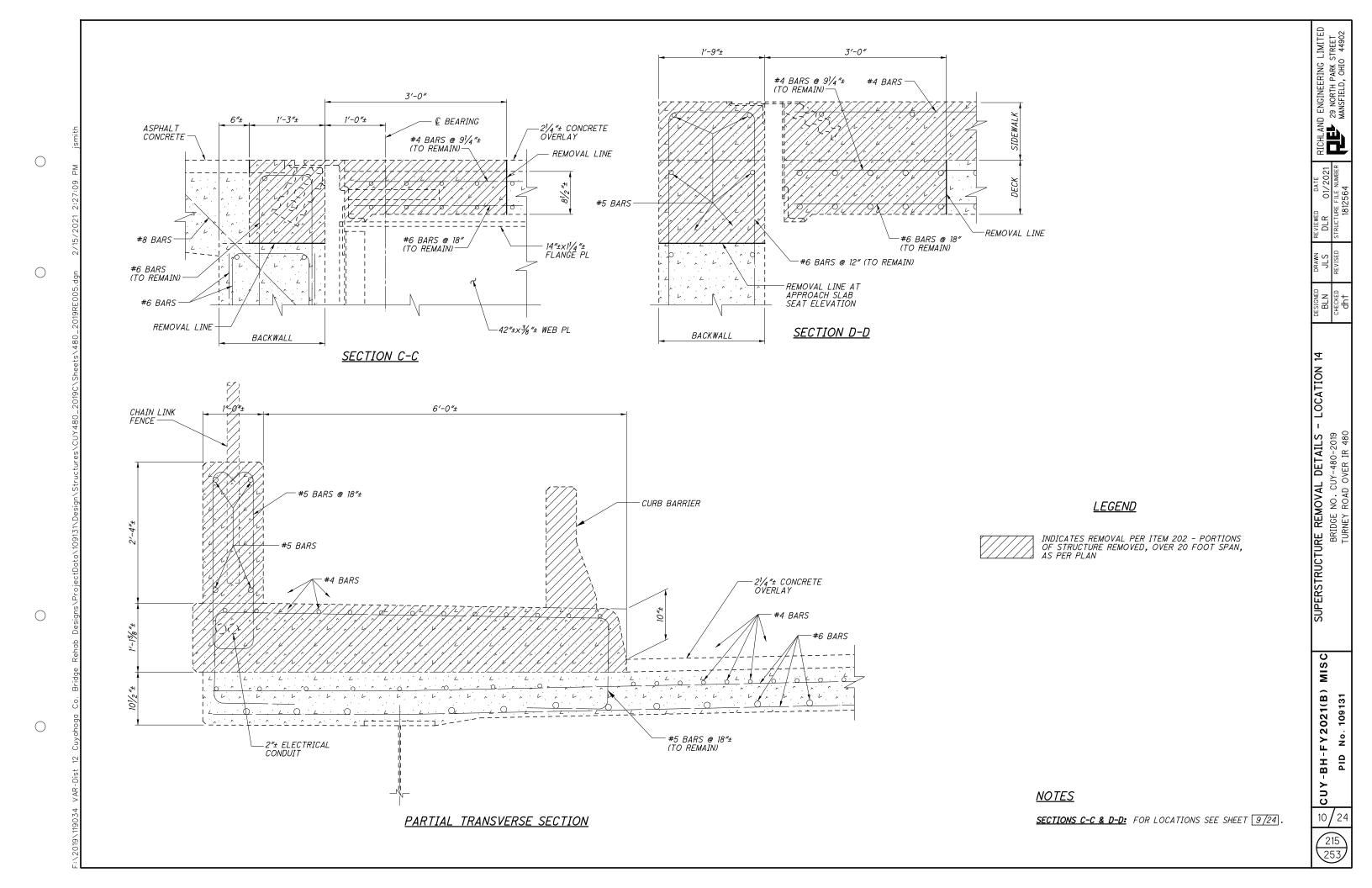
SECTION A-A: FOR LOCATIONS SEE SHEETS 5/24 AND 6/24.

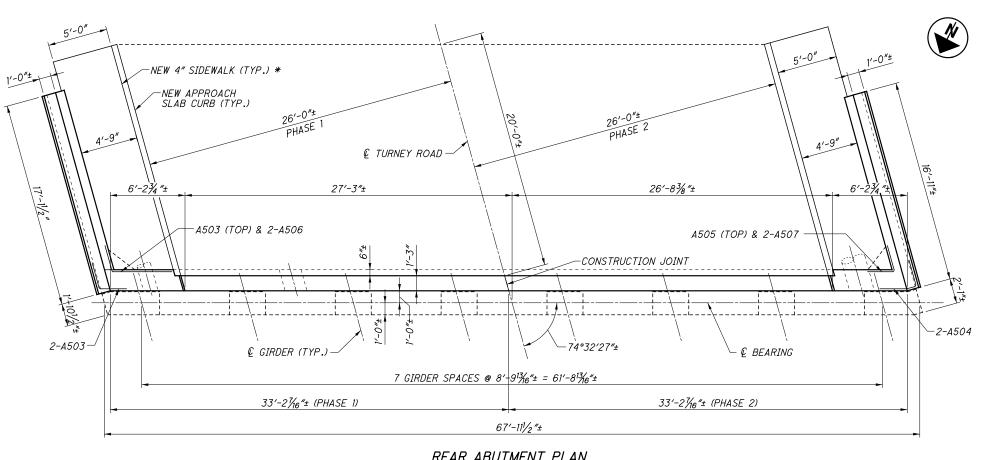
SECTION B-B: FOR LOCATIONS SEE SHEET 7/24.

MISC

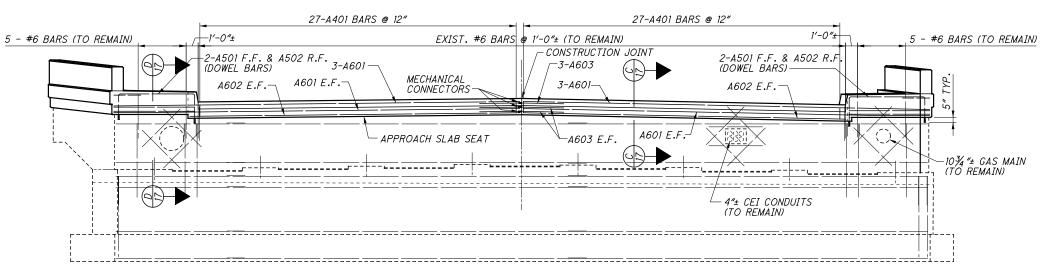
CUY-BH-FY2021(B)







## REAR ABUTMENT PLAN



# REAR ABUTMENT ELEVATION

# <u>LEGEND</u>

\* SIDEWALK AND SUBBASE ARE PAID FOR AS PART OF THE ROADWAY PLANS. FOR QUANTITIES, SEE ROADWAY CALCULATIONS.

# <u>NOTES</u>

<u>REINFORCING STEEL SPLICE LENGTHS</u> SHALL BE 2'-3" FOR #5 BARS AND 3'-4" FOR #6 BARS.

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

 $\underline{\textit{EXPANSION JOINT ARMOR}}$  NOT SHOWN FOR CLARITY. SEE EXPANSION JOINT DETAILS.

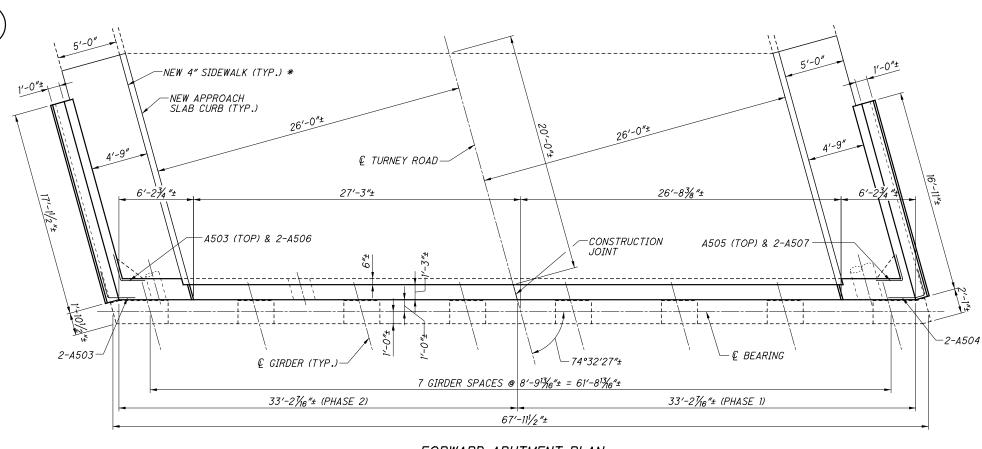
WINGWALL DETAILS: SEE SHEET 13/24.

AND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902 

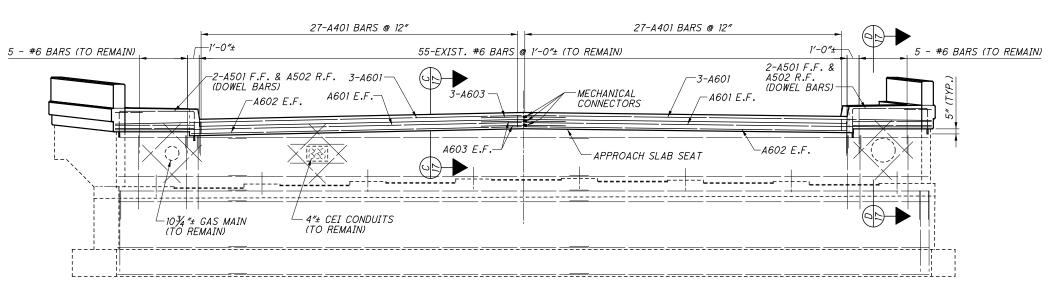
REAR ABUTMENT - LOCATION
BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480

MISC CUY-BH-FY2021(B) 109131

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## FORWARD ABUTMENT PLAN



## **LEGEND**

\* SIDEWALK AND SUBBASE ARE PAID FOR AS PART OF THE ROADWAY PLANS. FOR QUANTITIES, SEE ROADWAY CALCULATIONS.

## FORWARD ABUTMENT ELEVATION

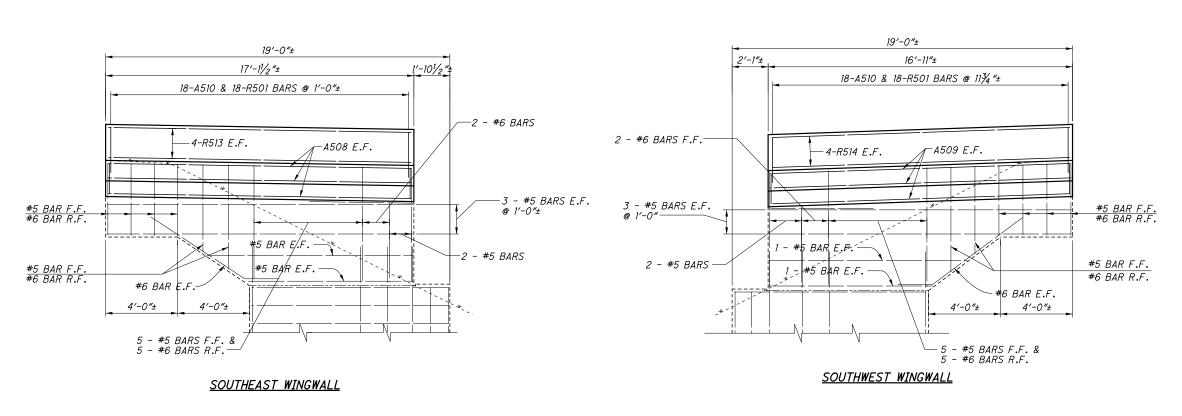
## **NOTES**

<u>REINFORCING STEEL SPLICE LENGTHS</u> SHALL BE 2'-3" FOR #5 BARS AND 3'-4" FOR #6 BARS.

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

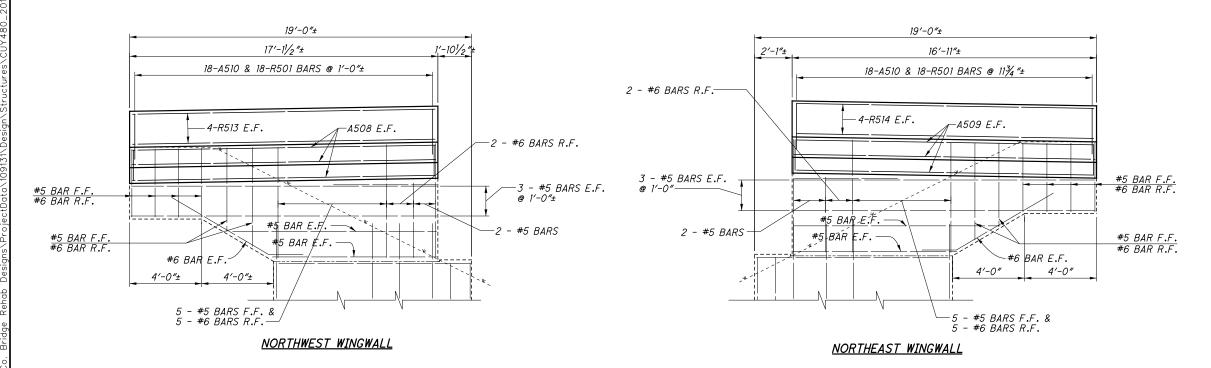
<u>EXPANSION JOINT ARMOR</u> NOT SHOWN FOR CLARITY. SEE EXPANSION JOINT DETAILS.

**WINGWALL DETAILS:** SEE SHEET 13/24



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## REAR ABUTMENT WINGWALLS



## FORWARD ABUTMENT WINGWALLS

## <u>NOTES</u>

**ELEVATIONS** SHOWN ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE FOR INFORMATIONAL PURPOSES ONLY. MATCH EXISTING.

STEEL RAILING & FENCE NOT SHOWN. SEE SHEETS 18/24 AND 19/24 FOR LOCATIONS.

TYPICAL WINGWALL SECTION: SEE SHEET 20/24.

**L** 29 NORTH PARK STREET MANSFIELD, OHIO 44902 RICHLAN

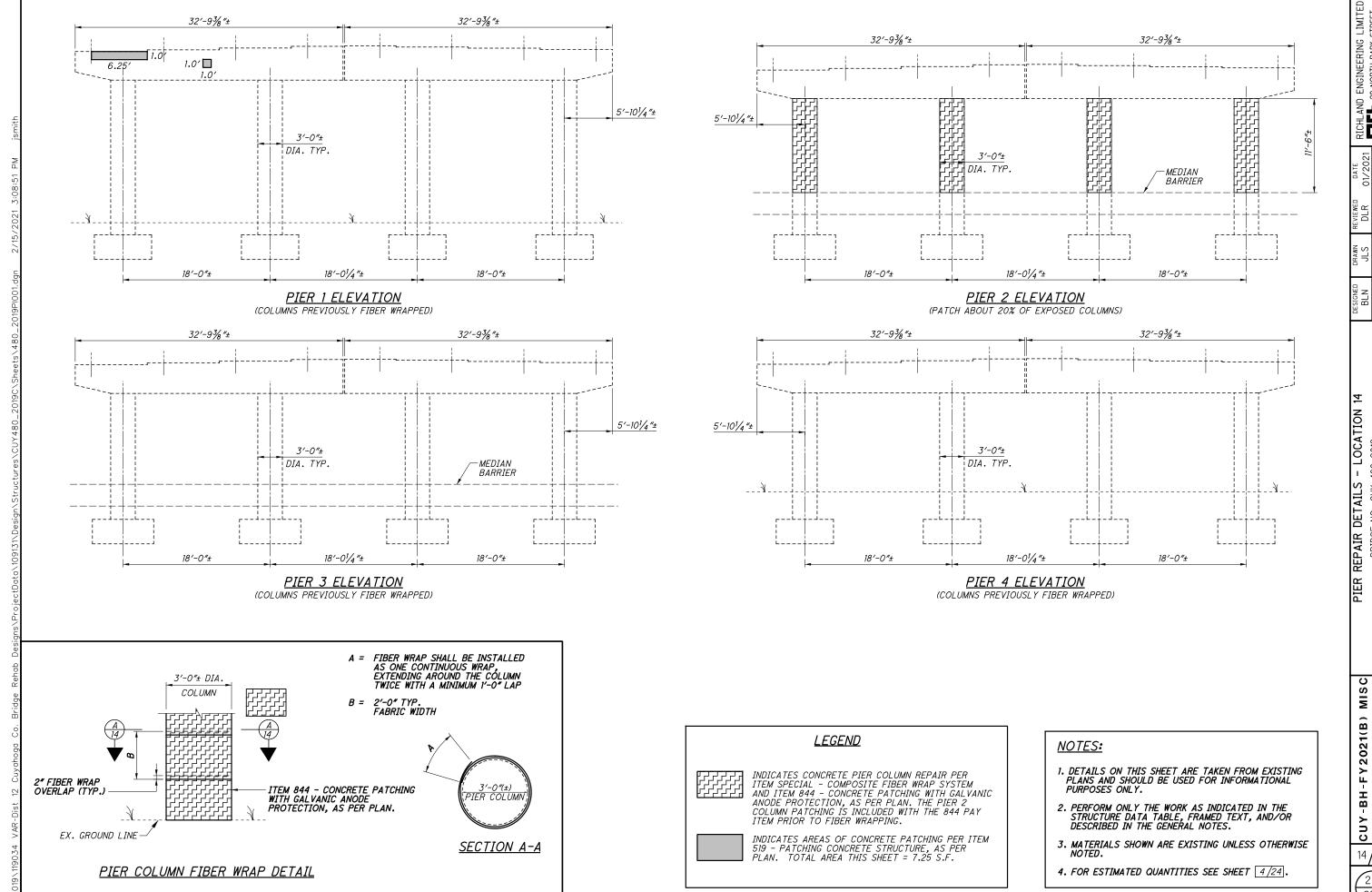
SIGNED

WINGWALL DETAILS - LOCATION BRIDGE NO. CUY-480-2019 TURNEY ROAD OVER IR 480

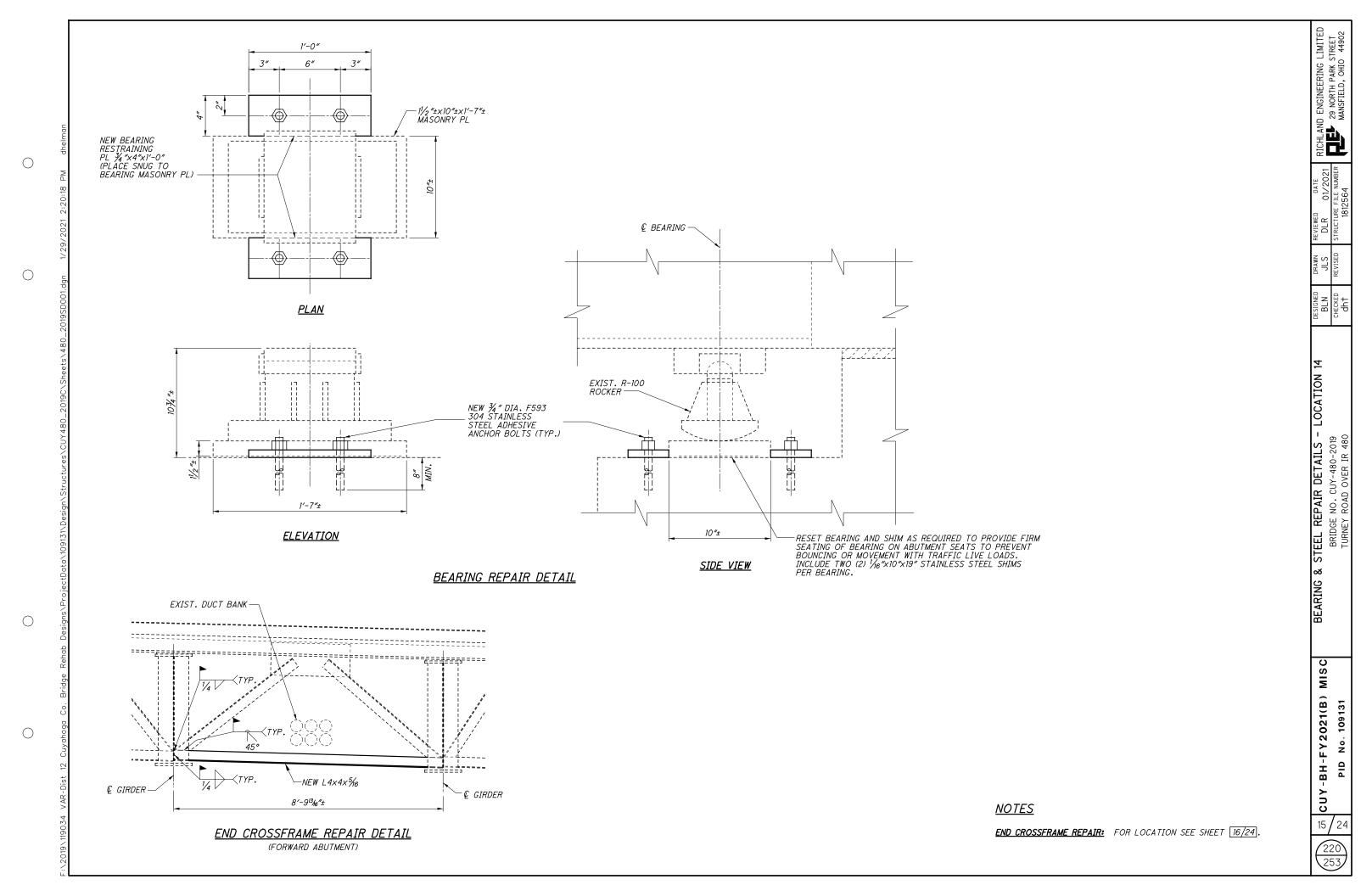
MISC CUY-BH-FY2021(B) No. 109131 PID

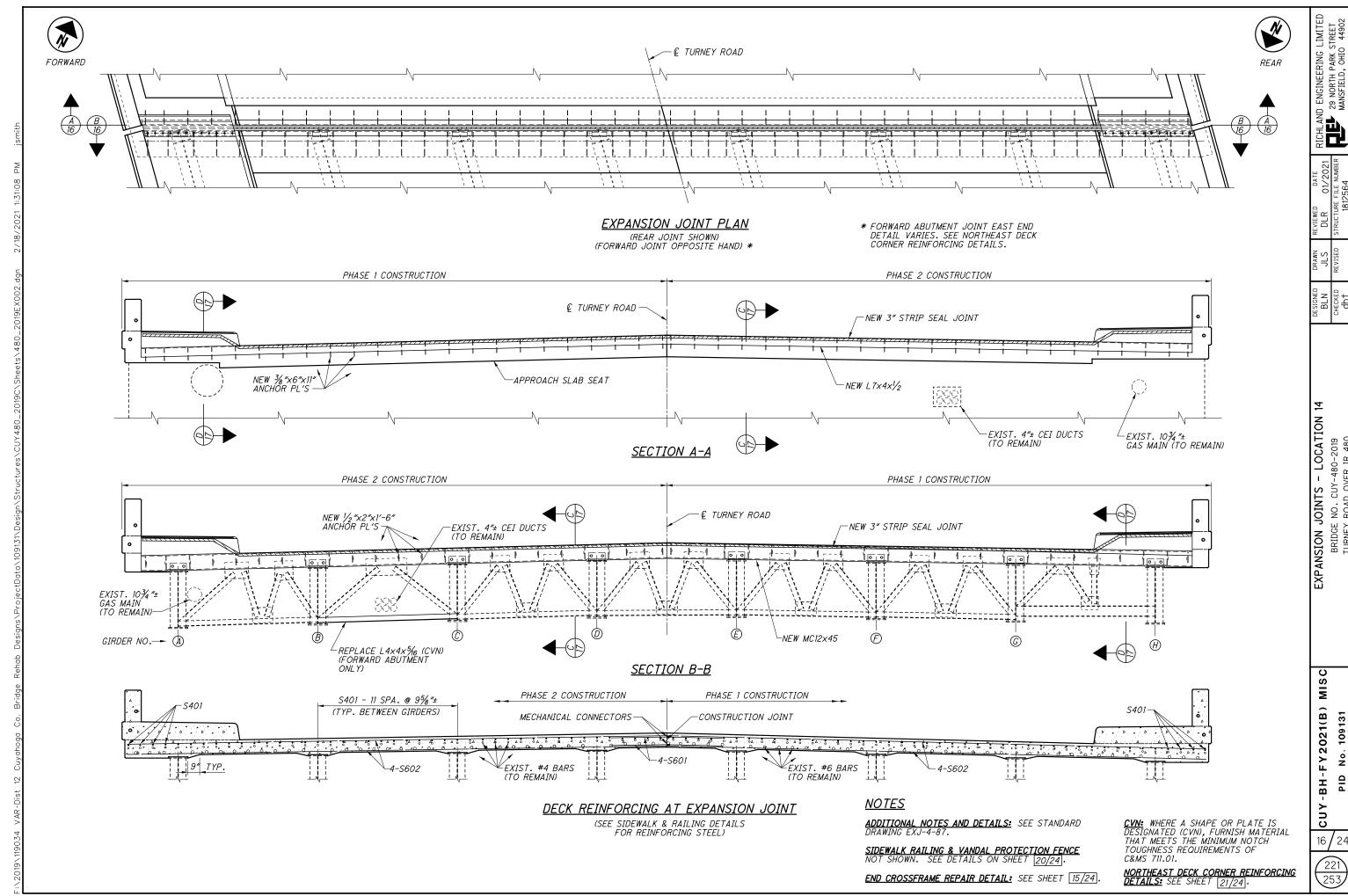
13/24





14/24





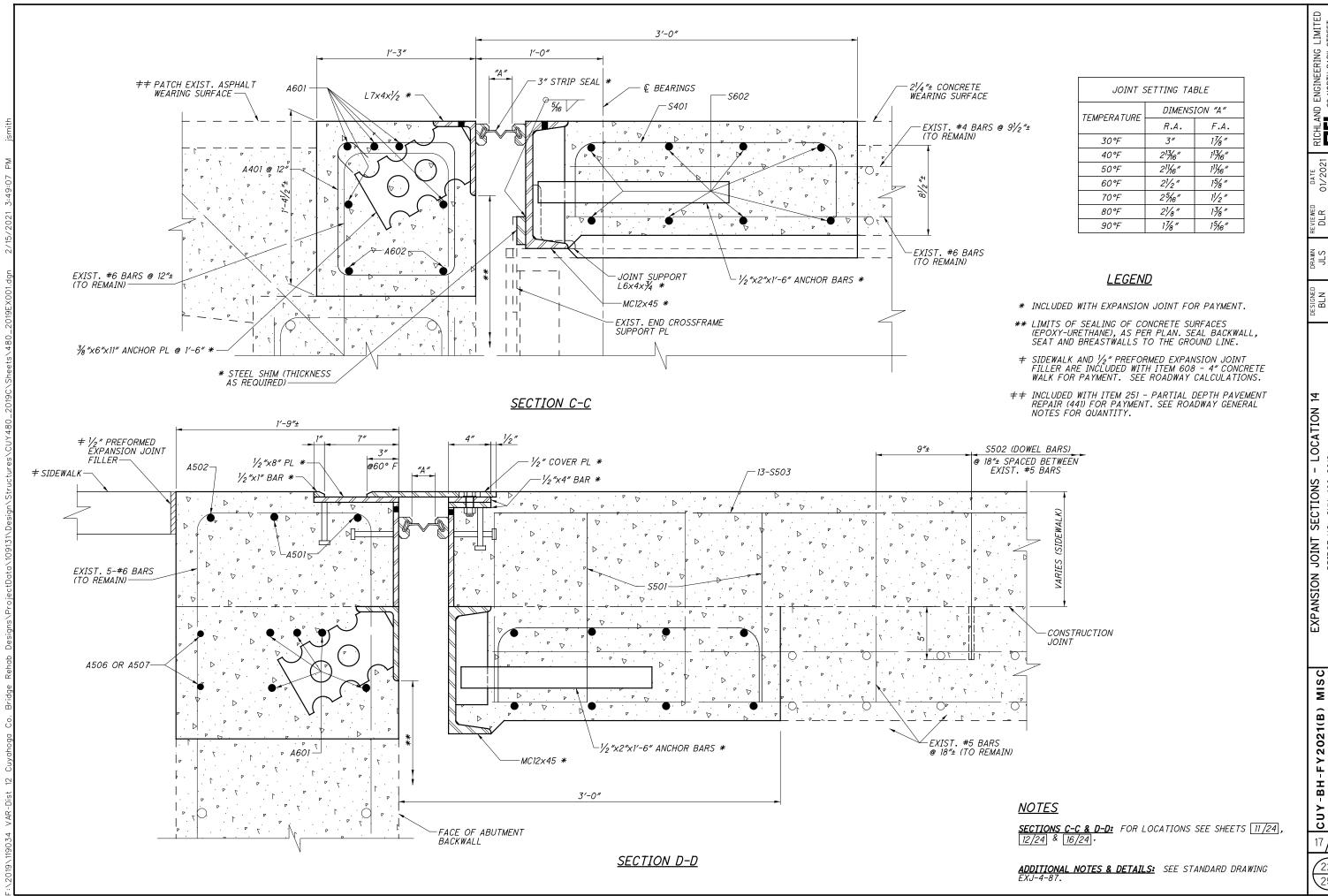
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7 - LOCATION 1 Y-480-2019 WER IR 480

EXPANSION JOINTS -BRIDGE NO. CUY--TURNEY ROAD OVE

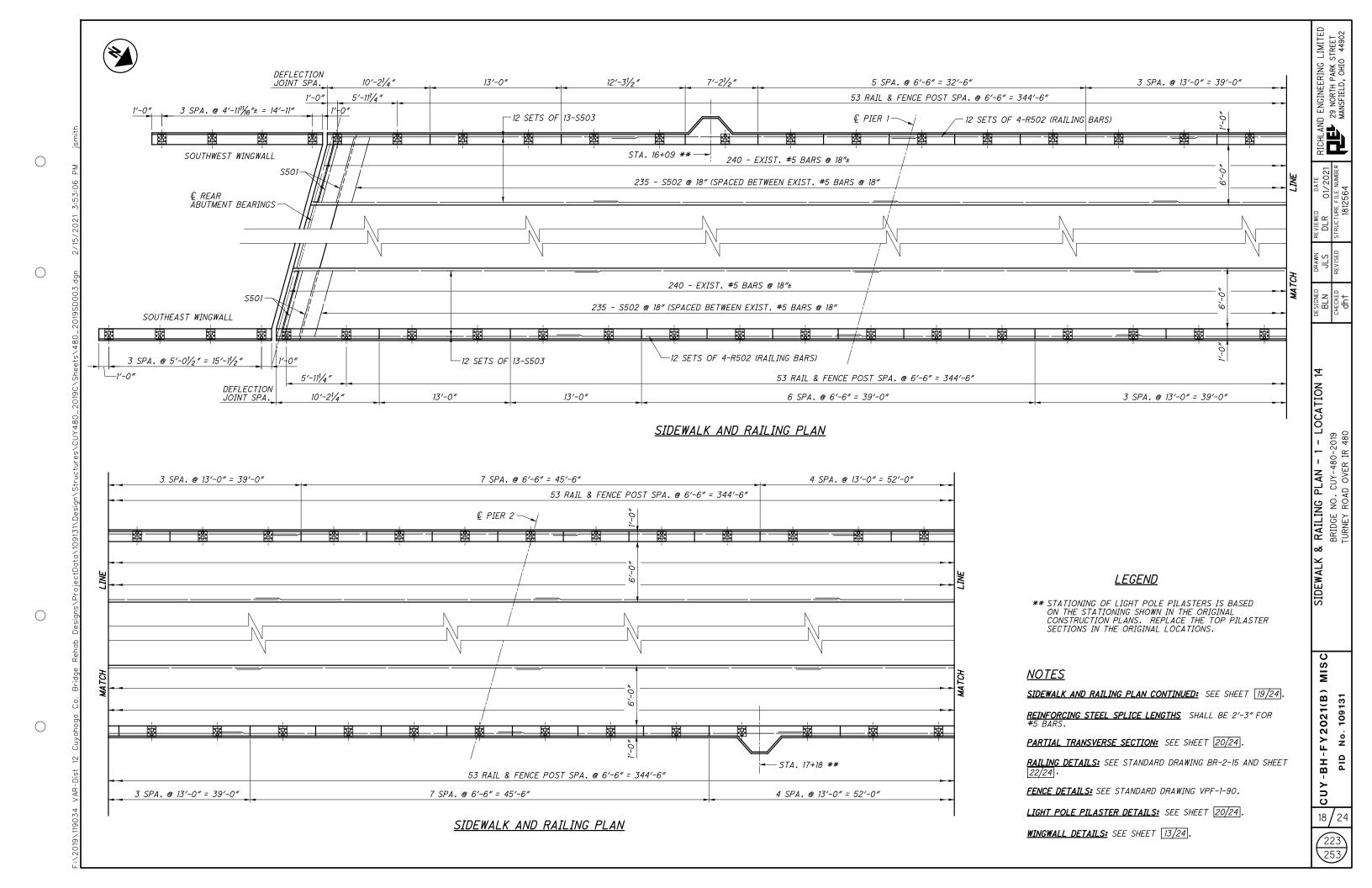
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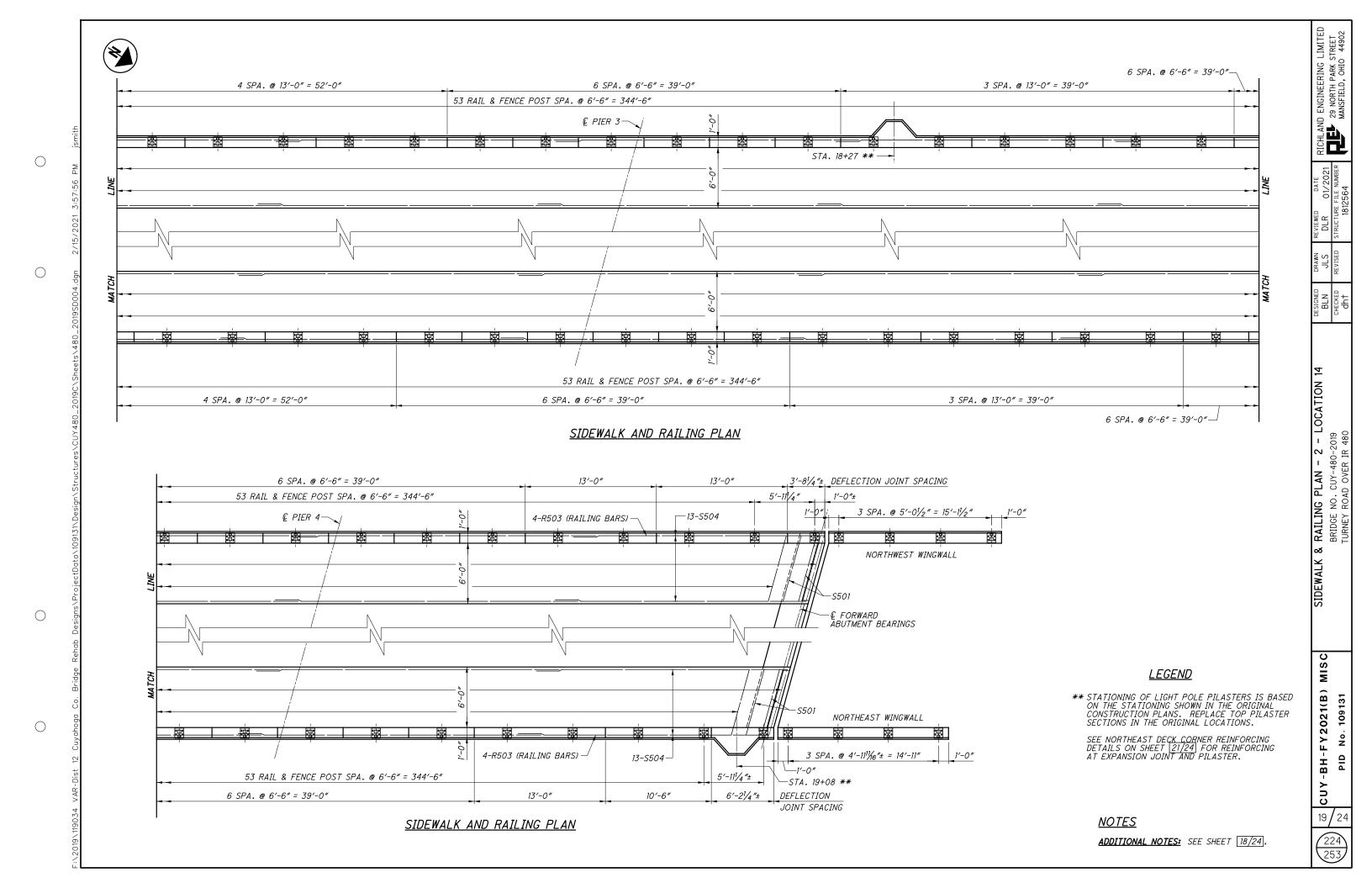
16/24

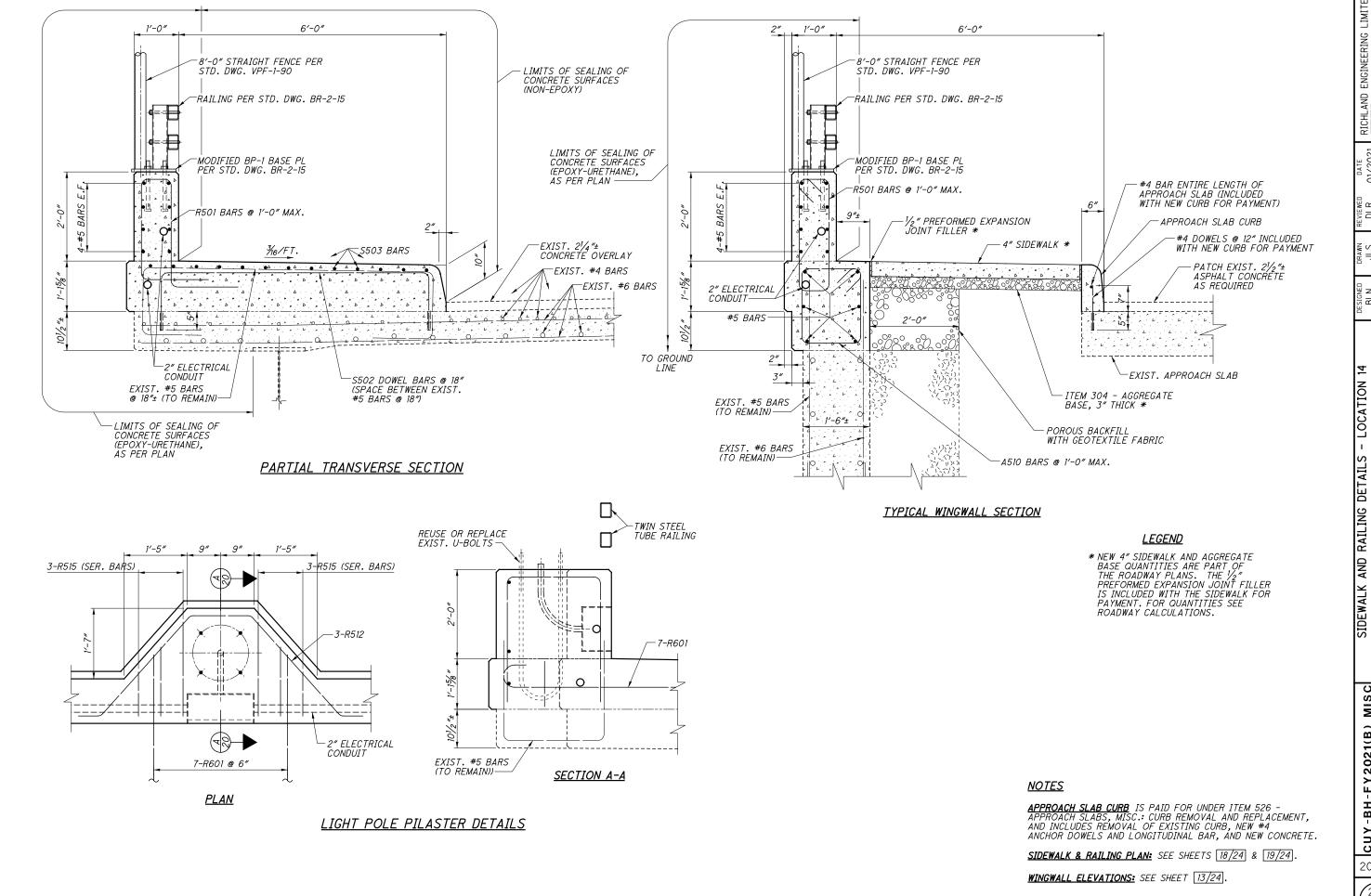


MISC -BH-FY2021(B)

17 / 24







ND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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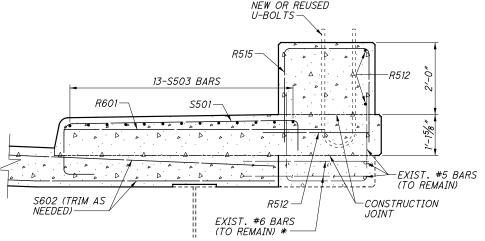
LOCATION

AND RAILING DETAILS BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480

MISC -BH-FY2021(B) Ω Б

CUY 20/24

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## SECTION A-A

## NORTHEAST DECK CORNER REINFORCING DETAILS

## NOTES

EXPANSION JOINT DETAILS: SEE SHEETS 16/24 AND 17/24.

SIDEWALK & RAILING PLAN: SEE SHEET 19/24.

LIGHT POLE PILASTER DETAILS: SEE SHEET 20/24.

PARTIAL TRANSVERSE SECTION: SEE SHEET 20/24.

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CUY-BH-FY2021(B) MISC PID No. 109131

DECK REINFORCING DETAILS - LOCATION 14

BRIDGE NO. CUY-480-2019

TURNEY ROAD OVER IR 480

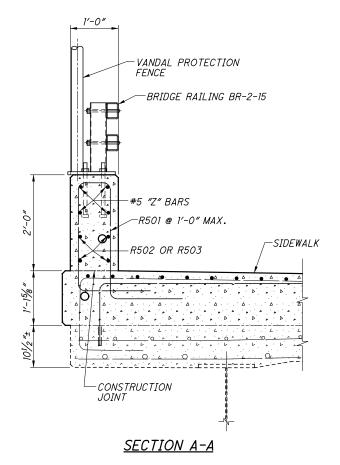
29 NORTH PARK STREET MANSFIELD, OHIO 44902

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21/24



PLAN VIEW
DEFLECTION JOINT DETAIL



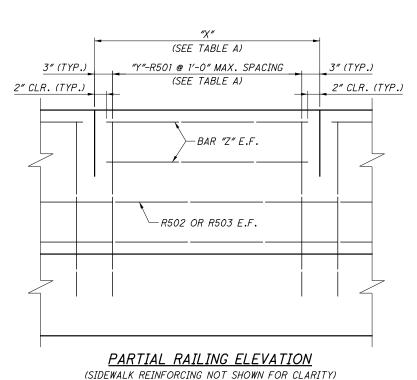
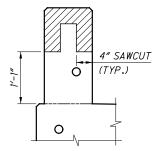


	TABLE A							
NO. OF PANELS	LENGTH "X"	NO. OF BARS IN EA. PANEL	BAR "Z"					
49	6′-6″	7	R504					
26	13′-0″	14	R505					
2	10'-21/4"	11	R506					
1	12'-31/2"	13	R507					
1	7'-21/2"	8	R508					
1	3′-81/4″	5	R509					
1	10′-6″	11	R510					
1	6'-21/4"	7	R511					



SECTION B-B

## **DEFLECTION JOINTS**

SAWCUT 11/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE RAILING WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT AS SHOWN IN SECTION B-B ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THE 1'-0'/2'' FROM THE TOP OF CONCRETE DECK SLAB.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE RAILING. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE RAILING UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

## <u>NOTES</u>

SIDEWALK & PARAPET PLAN: SEE SHEETS 18/24 & 19/24.

PARTIAL TRANSVERSE SECTION: SEE SHEET 20/24

ADDITIONAL NOTES AND DETAILS: SEE STANDARD DRAWING BR-2-15.

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7 PID No. 109131

MISC

ND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

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RAILING DETAILS - LOCATION
BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480



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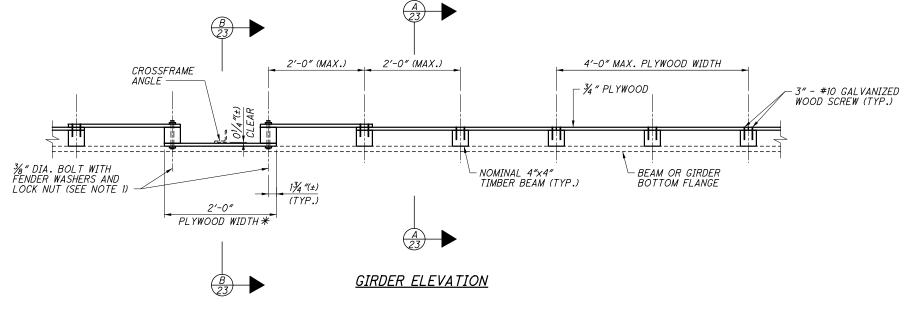
7

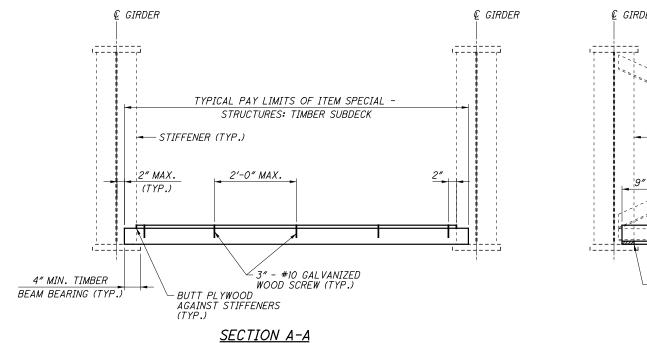
TIMBER SUBDECKING DETAILS - LOCATION
BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480

MISC CUY-BH-FY2021(B)

23/24

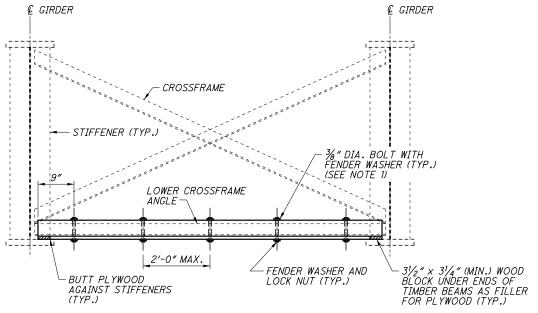
228 253





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SECTION B-B (AT INTERMEDIATE CROSSFRAMES)

## **LEGEND**

\* LOWERED SECTION OF PLYWOOD SHALL BE PLACED UNDER CROSSFRAME

## <u>NOTES</u>

3/ DIA. BOLTS SHALL BE INSTALLED FACE DOWN, WITH HEAD ON THE UPPERSIDE OF THE PLYWOOD. BOLT SHALL NOT EXTEND MORE THAN 1" BELOW PLYWOOD.

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DATE	01/2021	STRUCTURE FILE NUMBER	1812564
REVIEWED	DLR	STRUCTURE	181
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REINFORCING STEEL LISTS - LOCATION
BRIDGE NO. CUY-480-2019
TURNEY ROAD OVER IR 480

MISC

CUY-BH-FY2021(B) ° N PID

24/24

229 253

		NUMBER				Ē			DI	MENSIO	vs		
MARK	REAR	FORWARD	TOTAL	LENGTH	WEIGHT	TYPE							1
	NLAN	ONWAND	TOTAL				A	В	С	D	Ε	R	INC
		1			ABL	TME	NTS	ı			CAL CUL A		DATE <u>10/20</u> DATE <u>12/20</u>
A401	54	54	108	4'-4"	313	3	0'-11"	1'-0 1/2"					
A501	4	4	8	10′-7″	88	2	2'-2"	6'-3"	2'-5"				
A502	2	2	4	10′-3″	43	2	2'-2"	5′-11″	2'-5"				
A503	3	3	6	4′-5″	28	19	2'-3"	0'-7 1/4"					
A504	2	2	4	5'-2"	22	10	2'-2"	0'-7 1/4"	0'-9 3/4"	2'-3"			
A505	1	1	2	4'-3"	9	11	0'-7 1/4"	2'-2"	2'-3"				
A506	2	2	4	7′-1″	30	19	4'-111/2"	0'-7 1/4"	2'-2"				
A507	2	2	4	6′-11″	29	11	0'-7 1/4"	2'-2"	4'-11"				
A508	6	6	12	16′-9″	210	STR							
A509	6	6	12	16'-7"	208	STR							
A510	36	36	72	6'-10"	513	3	1′-5″	1′-8″					
A601	10	10	20	33′-10″	1016	STR							
A602	4	4	8	27'-1"	325	STR							
A603	7	7	14	7′-0″	147 *	37	3'-4"						
				TOTAL	2981								

* DOES NOT INCLUDE THE WEIGHT OF THE MECHANICAL CONNE
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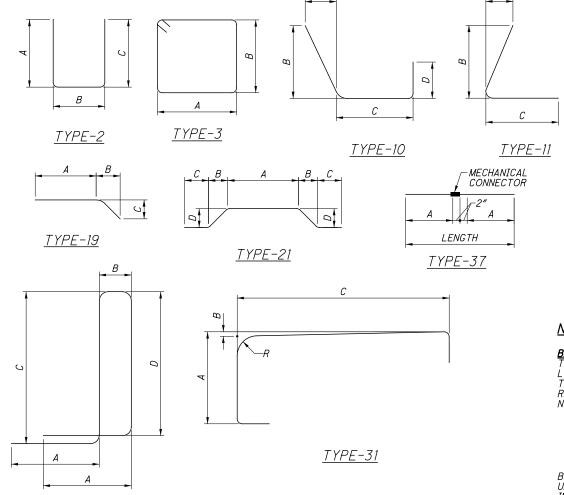
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MADY	NUMBER	I FNCTU	WEIGHT	PE			Di	MENSIO	NS		
MARK	TOTAL	LENGTH	WEIGHT	WEIGHT   3d		В	С	D	Ε	R	INC
SUPERSTRUCTURE										TED <u>JLS</u> KED <u>BLN</u>	DATE <u>10/20</u> DATE <u>12/20</u>
S401	171	2'-11"	333	2	0'-7"	2'-0"	0'-7"				
S501	8	9'-4"	78	31	1′-6″	0'-1 1/4"	6'-6"			0'-3"	
S502	470	8'-9"	4289	2	1′-3″	6'-6"	1'-3"				
S503	312	30'-0"	9762	STR							
S504	26	24'-11"	676	STR							
S601	16	7′-0″	168 *	37	3'-4"						
S602	32	34'-0"	1634	STR							
		I TOTAL	16,940								

	NUMBER			Lu			וח	MENSIO	Nς		
MARK		LENGTH	WEIGHT	TYPE				MENTO	••		
	TOTAL			7	Α	В	С	D	Ε	R	INC
	1				RAIL	ING			CAL CUL A		DATE <u>10/2</u> DATE <u>12/2</u>
R501	845	7′-10″	6904	30	1′-6″	0'-8"	2'-5"	2'-3"			
R502	96	30'-0"	3004	STR							
R503	8	24'-11"	208	STR							
R504	196	6'-2"	1261	STR							
R505	104	12'-8"	1374	STR							
R506	8	9'-10"	82	STR							
R507	4	11′-11″	50	STR							
R508	4	7′-11″	33	STR							
R509	4	3'-4"	14	STR							
R510	4	10'-2"	42	STR							
R511	4	5′-10″	24	STR							
R512	12	8'-1"	101	21	1'-4"	2'-1"	0'-6"	2'-1"			
R513	16	16′-9″	280	STR							
R514	16	16′-7″	277	STR							
	8 SR	6′-5″				1'-0"					
R515	OF	TO	173	2	2'-10"	TO	2'-10"				0'-6 1/2
	3	7′-6″				2'-1"					
R601	28	7′-8″	322	16	7′-0″						
		TOTAL	14,149	**							

\*\* WEIGHT GIVEN FOR INFORMATIONAL PURPOSES ONLY. REINFORCING STEEL INCLUDED WITH RAILING FOR PAYMENT.



<u>TYPE-30</u>

# <u>NOTES</u>

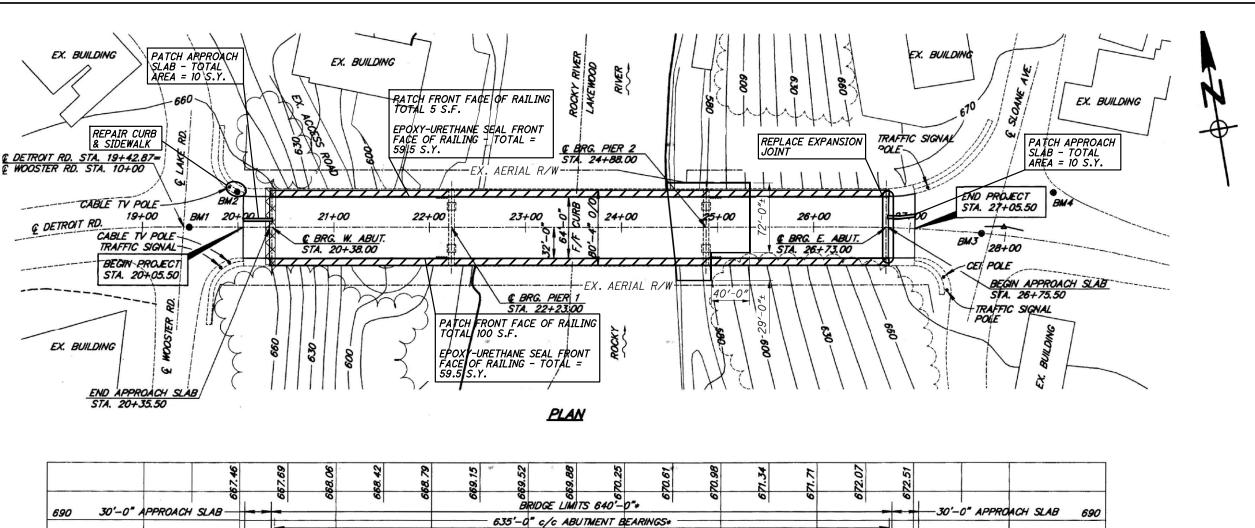
BAR SIZE IS INDICATED IN THE BAR MARK.
THE FIRST LETTER IDENTIFIES BAR
LOCATION, THE NEXT DIGIT INDICATES
THE BAR SIZE DESIGNATION, THE
REMAINING DIGITS STATE THE SEQUENCE

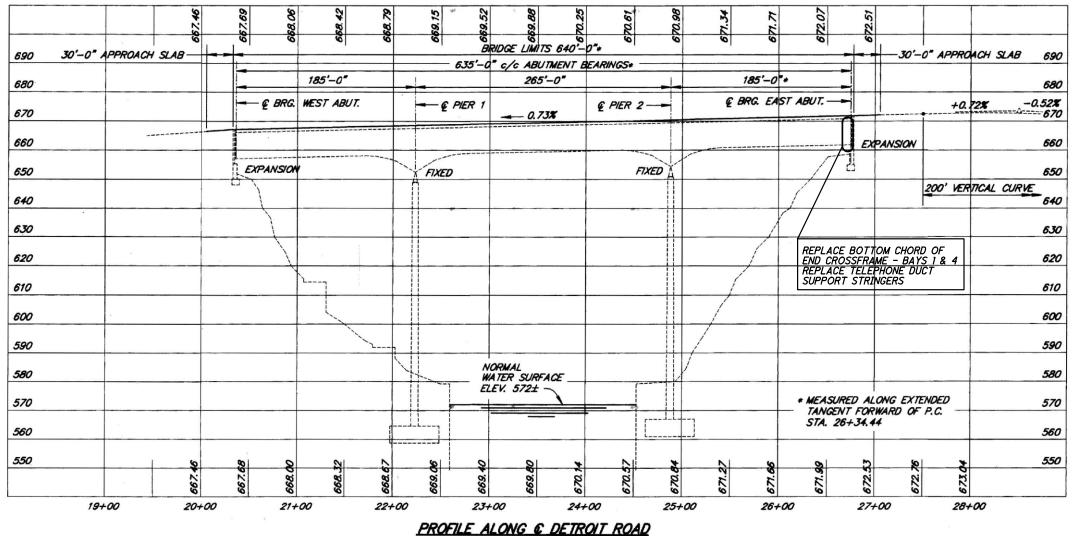
<u>TYPE-16</u>

EXAMPLE: A501 A = LOCATION OF THE BAR IN ABUTMENT 5 = BAR SIZE DESIGNATION 01 = SEQUENCE NUMBER

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

ALL REINFORCING STEEL TO BE EPOXY COATED.





## NOTES:

- 1. DETAILS ON THIS SHEET ARE TAKEN FROM EXISTING PLANS AND SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY.
- 2. PERFORM ONLY THE WORK AS INDICATED IN THE STRUCTURE DATA TABLE, FRAMED TEXT, AND/OR DESCRIBED IN THE GENERAL NOTES
- 3. RAILING PATCHING IS INCLUDED WITH ITEM 519 - PATCHING CONCRETE STRUCTURE. ALL PATCHING IS ON THE FRONT (INSIDE) FACE OF THE RAILING.
- 4. SEALING FRONT FACE OF RAILING IS INCLUDED WITH ITEM 512 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN AND ITEM 512 REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN. ALL SEALING IS ON THE FRONT (INSIDE) FACE OF RAILING.
- 5. APPROACH SLAB PATCHING IS INCLUDED WITH ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE. TOTAL AREA = 20 S.Y.
- 6. FOR ESTIMATED QUANTITIES SEE SHEET 3/7

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MISC

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ND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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5

GENERAL PLAN - LOCATION
BRIDGE NO. CUY-06A-0042
6A (DETROIT ROAD) OVER ROCKY I

#### REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

(DATED 07-17-2015) EXJ-4-87 (REVISED 01-19-2018)

SUPPLEMENTAL SPECIFICATIONS: NONE

#### **DESIGN DATA:**

PROPOSED STRUCTURAL STEEL - ASTM A709 GRADE 50W YIELD STRENGTH 50 KSI

#### DESCRIPTION OF WORK:

COMPLETE THE FOLLOWING AT THE EAST (FORWARD) ABUTMENT:

- 1. REMOVE THE BOTTOM CHORD OF THE NORTH & SOUTH FASCIA BAY END CROSSFRAMES.
- 2. INSTALL NEW END CROSSFRAME BOTTOM CHORD MEMBERS.
- 3. PATCH RAILING
- 4. SEAL RAILING.
- 5. PAINT NEW STEEL.
- 6. REPLACE TELEPHONE DUCT SUPPORT STRINGERS AT FORWARD ABUTMENT.
- 7. REPLACE WATER MAIN SUPPORT AT FORWARD ABUTMENT.

COMPLETE THE FOLLOWING AT THE EAST (FORWARD) ABUTMENT IN PHASES:

- 1. WITHIN THE ROADWAY LIMITS, REMOVE THE JOINT PLATES, JOINT ARMOR, AND CONCRETE IN EXISTING BACKWALLS ABOVE THE APPROACH SLAB SEAT, KEEPING THE EXISTING LONGITUDINAL REINFORCING IN PLACE. WITHIN THE SIDEWALK LIMITS, REMOVE THE JOINT PLATES, JOINT ARMOR, AND CONCRETE IN THE BACKWALL TO THE LIMITS SHOWN ON SHEET 6/7, KEEPING THE EXISTING LONGITUDINAL REINFORCING IN PLACE REINFORCING IN PLACE.
- 2. WITHIN THE ROADWAY LIMITS, REMOVE THE JOINT PLATES, JOINT ARMOR, AND CONCRETE IN EXISTING DECK ENDS, KEEPING THE EXISTING LONGITUDINAL REINFORCING IN PLACE. WITHIN THE SIDEWALK LIMITS, REMOVE THE JOINT PLATES, JOINT ARMOR, AND CONCRETE IN EXISTING SIDEWALK ENDS, KEEPING THE EXISTING LONGITUDINAL REINFORCING IN PLACE.
- 3. PATCH THE ENDS OF THE APPROACH SLABS, AS DIRECTED BY THE ENGINEER, AND PLACE TYPE "A" WATERPROOFING AGAINST THE ENDS OF THE APPROACH SLAB AND INSTALL COMPRESSION SEAL PER DETAIL B ON STD. DWG. AS-1-15.
- 4. PLACE THE EXPANSION JOINT SYSTEM PER THE MANUFACTURER'S SPECIFICATIONS.
- 5. PLACE NEW REINFORCING STEEL FOR THE DECK, SIDEWALK, AND BACKWALL. FORM AND POUR NEW CONCRETE FOR THE DECK, SIDEWALK, AND BACKWALL.
- 6. AFTER ALL PHASES OF CONCRETE POURS ARE COMPLETED, PLACE THE COMPRESSION SEAL PER DETAIL B ON STD. DWG. AS-1-15, SEAL WITH HMWM, AND PLACE THE STRIP SEAL IN THE MODULAR JOINT.

#### **NOTIFICATION:**

THE U.S. ARMY CORPS OF ENGINEERS AND THE NINTH COAST GUARD DISTRICT COMMANDER MUST BE NOTIFIED AT LEAST 30 DAYS IN ADVANCE OF THE START OF WORK ON CUY-06A-0042.

#### LIABILITY INSURANCE:

IN ADDITION TO THE REQUIREMENTS OF ODOT CMS 107.12B, THE CITY OF LAKEWOOD AND CLEVELAND METROPARKS MUST BE NAMED ADDITIONAL INSURED.

#### **EXISTING STRUCTURE VERIFICATION:**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT ARE CONSIDERED TENTATIVE AND APPROXIMATE. REFER TO CMS SECTIONS 102.05 AND 105.02. THE ORIGINAL CONSTRUCTION PLANS AND PREVIOUS REHABILITATION PLANS OF THE EXISTING BRIDGE ARE AVAILABLE UPON REQUEST AT THE DISTRICT 12 OFFICE OF THE OHIO DEPARTMENT OF TRANSPORTATION, GARFIELD HEIGHTS, OHIO.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, BASE ALL PROJECT WORK ON ACTUAL DETAILS AND DIMENSIONS VERIFIED IN THE FIELD.

#### **CONTINGENCY QUANTITIES**

DO 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 WILL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS

#### ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED IN THIS NOTE. THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES; AND ELEMENTS THAT 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 TO BE INCORPORATED INTO THE AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCOMPORATED INTO THE CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS, AND/OR HOE RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF THE HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE, OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05. PERFORM WORK CAREFULLY DURING DECK REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE.

SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT, ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND

THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

REMOVAL METHODS OVER STRUCTURAL MEMBERS SHALL ENSURE ADEQUATE DEPTH CONTROL AND PREVENT NICKING OR GOUGING THE PRIMARY STRUCTURAL MEMBERS. REPLACE OR REPAIR STEEL MEMBERS DAMAGED BY THE DECK SLAB CUTTING OPERATIONS AT NO COST TO THE PROJECT. SUBMIT A DETAILED PROCEDURE OF THE DECK REMOVAL TO THE ENGINEER AT LEAST 7 DAYS BEFORE CONSTRUCTION

DEPARTMENT ACCEPTANCE IS NOT REQUIRED. THE PROCEDURE SHALL INCLUDE ALL DETAILS, EQUIPMENT AND METHODS TO BE USED FOR REMOVAL OF THE CONCRETE OVER THE GIRDER AND CROSSFRAME FLANGES. REPLACE OR REPAIR MAIN STEEL DAMAGED BY THE REMOVAL OPERATIONS AT NO COST TO THE PROJECT.

AT LEAST 7 DAYS BEFORE PERFORMING REPAIR WORK, SUBMIT A PROPOSED REPAIR PLAN, DEVELOPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER, TO THE DIRECTOR. OBTAIN THE DIRECTOR'S APPROVAL BEFORE PERFORMING REPAIR.

REPLACE ALL REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BECAUSE OF CONCRETE REMOVAL OPERATIONS. THE NEW REINFORCING STEEL BARS SHALL BE EPOXY COATED AND OF THE SAME SIZE AS THE REINFORCING STEEL BARS BEING REPLACED. THIS WORK SHALL BE PERFORMED AT NO COST TO THE DEPARTMENT

THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

#### ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE). AS PER PLAN

SEAL THE FRONT FACE OF THE RAILINGS AS SPECIFIED IN THE PLANS. THE COLOR OF THE FINISH COAT SHALL BE AS INDICATED ON THE STRUCTURE DATA TABLE. CONTRACTOR SHALL ENSURE ANY EXISTING LIGHTING, FENCE AND POSTS, AND ALL OTHER BRIDGE COMPONENTS ARE PROTECTED DURING THE SEALING OPERATIONS.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO SEAL ALL OF THE AREAS DETAILED IN THE PLANS SHALL BE PAID UNDER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

# ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER

THIS ITEM IS INCLUDED FOR THE REMOVAL OF EXISTING COATINGS FROM EXISTING CONCRETE SURFACES TO BE SEALED. AREAS OF CONCRETE REQUIRING PATCHES SHALL NOT BE INCLUDED IN THIS ITEM.

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

ALL REQUIRMENTS OF 513 APPLY TO SHOP FABRICATED MEMBERS. PERFORM WORK FOR FIELD FABRICATED MEMBERS ACCORDING TO ITEM 513, EXCEPT AS MODIFIED HEREIN. THE DEPARTMENT WILL NOT REQUIRE THE CONTRACTOR PERFORMING FIELD FABRICATION TO BE PRE-QUALIFIED AS SPECIFIED IN SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE IN ACCORDANCE WITH 501.06 TO THE ENGINEER. PROVIDE THE ENGINEER "AS-BUILT" DRAWINGS ACCORDING TO 513.06. ENGINEER. PROVIDE THE ENGINEER "AS-BUILT" DRAWINGS ACCORDING TO 513.06, EXCEPT 501.04 DOES NOT APPLY. UPON RECIEPT OF THE ENGINEER'S ACCEPTANCE, SUPPLY A COPY OF THE DRAWINGS, ACCORDING TO SUPPLEMENT 1002, TO THE OFFICE OF MATERIAL MANAGEMENT FOR RECORD PURPOSES. IN ADDITION TO THESE REQUIREMENTS, ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO REMOVE THE EXISTING STEEL MEMBERS TO BE REPLACED AND ANY PREPARATION INCLUDING BUT NOT LIMITED TO REAMING AND/OR FIELD DRILLING OF BOLT HOLES AS NECESSARY TO COMPLETE THE WORK, WILL BE INCLUDED FOR PAYMENT IN THE CONTRACT PRICE BID FOR ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN PER PLAN.

#### ITEM SPECIAL - FIELD PAINTING OF STRUCTURAL STEEL CROSSFRAMES

NEW GUSSET PLATES AND CROSSFRAME MEMBERS SHALL BE PAINTED WITH SYSTEM OZEU. THE URETHANE FINISH COAT COLOR SHALL CLOSELY MATCH THE EXISTING PAINT COLOR (FEDERAL STD. NO. 595A-10080).

#### ITEM 526 - APPROACH SLABS, MISC.: PLACE WATERPROOFING AND COMPRESSION SEAL

FOR THE FULL LENGTH OF ALL INTERFACES BETWEEN APPROACH SLABS AND NEW BACKWALLS, PLACE WATERPROOFING AND COMPRESSION SEAL PER DETAIL B ON ODOT SCD AS-1-15, SHEET 2.

ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE ABOVE WORK SHALL BE INCLUDED FOR PAYMENT PER FT. UNDER THIS PAY ITEM.

# ITEM 516 - STRIP SEAL EXPANSION JOINT ANCHORED WITH ELASTOMERIC CONCRETE, AS PER PLAN

AT THE LOCATIONS SHOWN, FURNISH ALL MATERIALS, SERVICES, LABOR, TOOLS EQUIPMENT AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST AND INSTALL STRIP SEAL EXPANSION JOINT ANCHORED WITH ELASTOMERIC CONCRETE IN ACCORDANCE WITH THE PLANS AND THESE NOTES. ALL PROVISIONS OF 516 APPLY. ALL REQUIREMENTS OF 513, UF LEVEL FABRICATION APPLY, UNLESS MODIFIED BY

ALL NEW CONCRETE AND REINFORCEMENT NEEDED FOR THE NEW BACKWALLS, DECK AND SIDEWALK AT/NEAR THE JOINTS IS INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM. ALL REINFORCEMENT IS TO BE EPOXY COATED AND SHALL BE PER CMS 509, WHILE ALL CONCRETE IS TO BE CLASS QC2 CONCRETE, SUPERSTRUCTURE PER CMS 511. ANY DOWELING NEEDED IS TO BE PER CMS 510 USING NONSHRINK NONMETALLIC GROUT.

INCLUDE THE COST OF ALL THE LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO DESIGN, SUPPLY, AND INSTALL THE EXPANSION JOINT ACCORDING TO THE PLANS AND THESE NOTES. INCLUDE ALL CONCRETE, REINFORCING, STRUCTURAL STEEL, DOWEL HOLES, PAINT, HMWM, ETC. NECESSARY WITH THIS ITEM FOR PAYMENT.

ND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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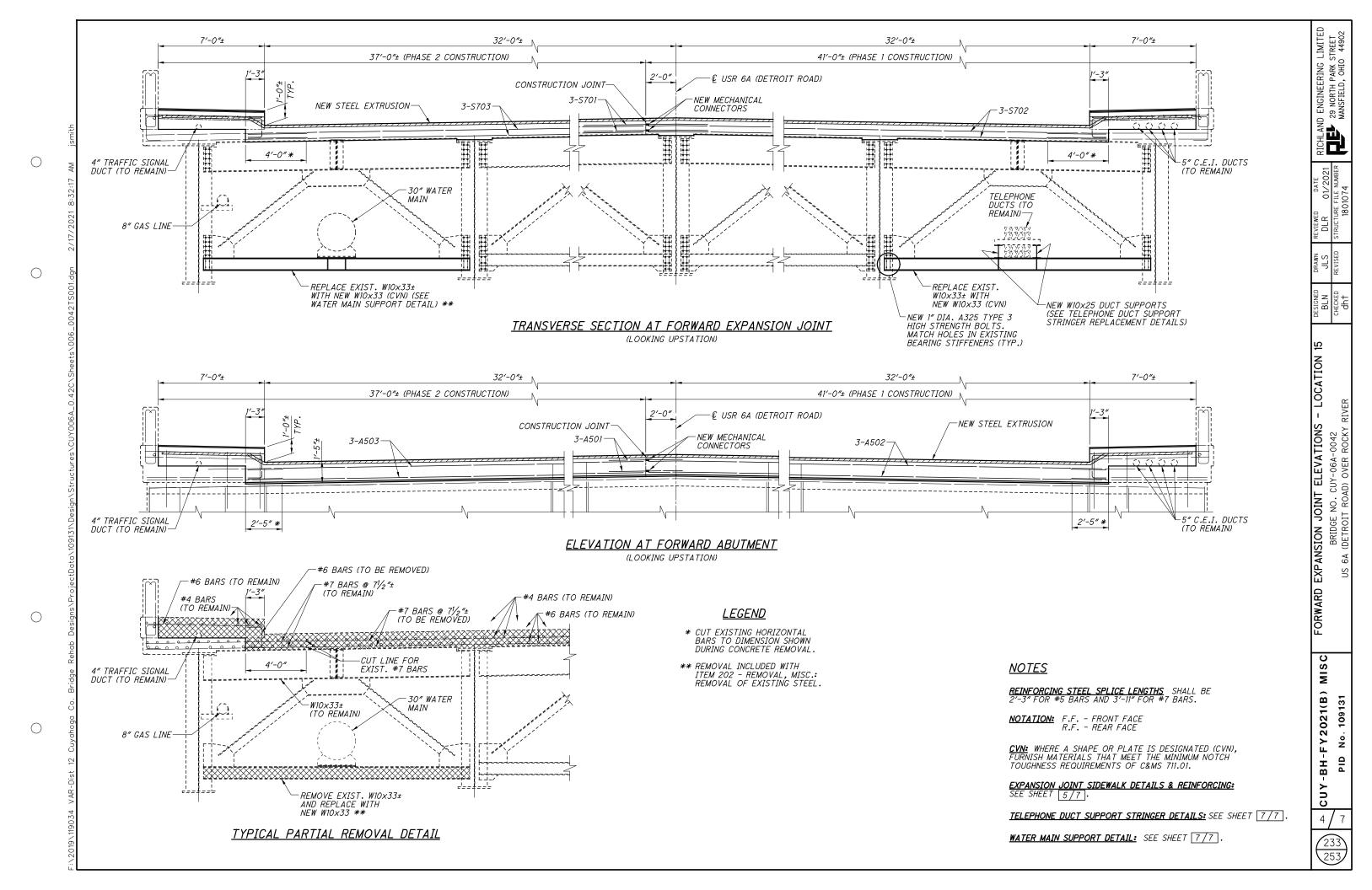
			ESTIMATED QUANTITIES	CALCULATED <u>JLS</u> DATED <u>12/20</u> CHECKED <u>dh†</u> DATED <u>09/20</u>				
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUTS.	GEN'L	SEE SHEET
202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN			LS	2/7
202	98000	LS		REMOVAL, MISC.: REMOVAL OF EXISTING STEEL			LS	4/7
512	10101	119	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	119			2/7
512	74001	108	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	108			2/7
513	10201	2120	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN	2120			2/7
SPECIAL	51480110	LS		FIELD PAINTING OF STRUCTURAL STEEL CROSSFRAMES			LS	2/7
516	12301	78	FT	STRIP SEAL EXPANSION JOINT ANCHORED WITH ELASTOMERIC CONCRETE, AS PER PLAN	78			2/7
519	10000	20	SY	PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE			20	
519	11100	105	SF	PATCHING CONCRETE STRUCTURE	105			
526	98200	78	FT	APPROACH SLABS, MISC.: PLACE WATERPROOFING AND COMPRESSION SEAL			78	2/7

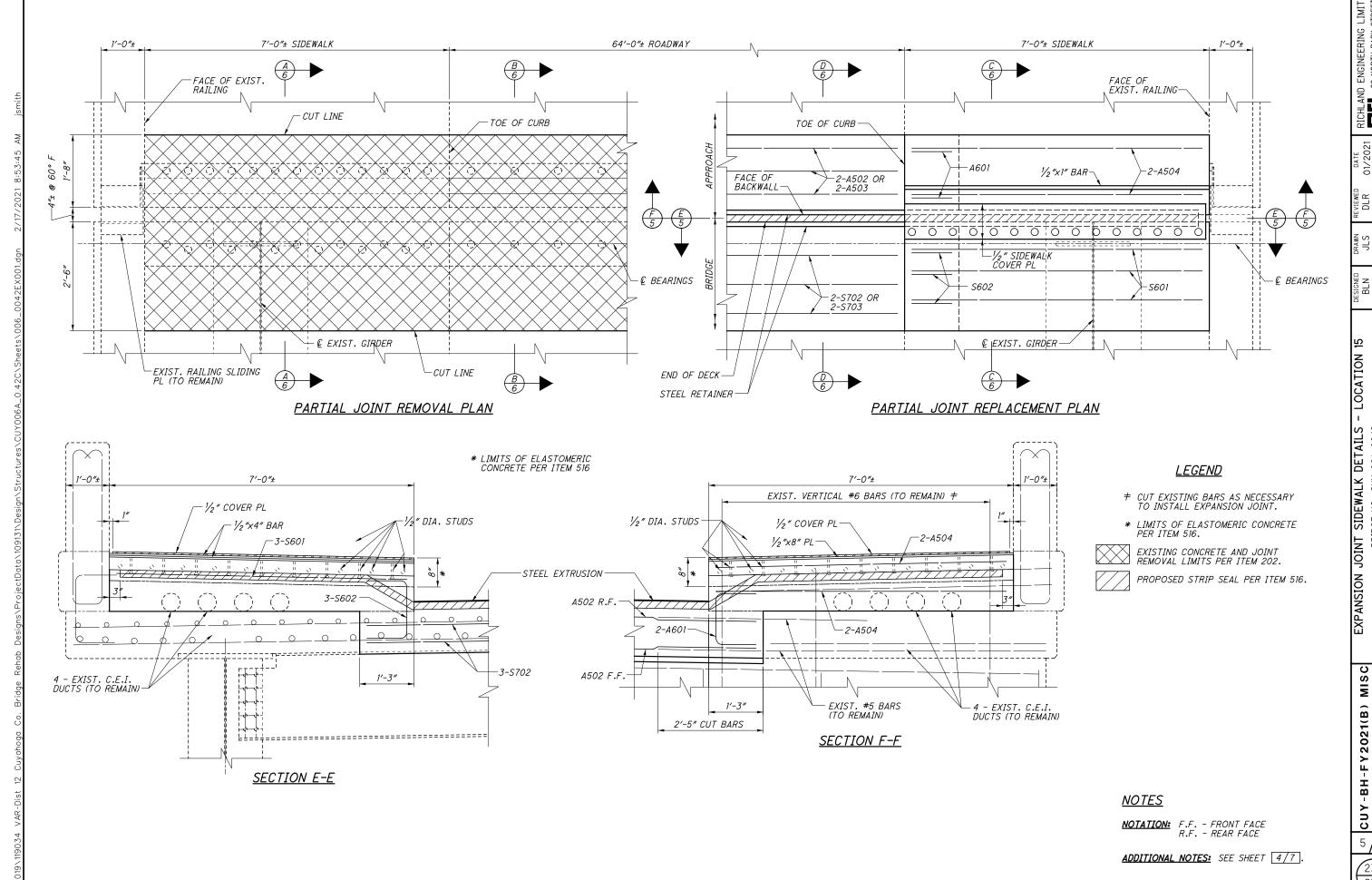
RICHLAND ENGINEERING LIMITED

29 NORTH PARK STREET

MANSFIELD, OHIO 44902 DESIGNED BLN CHECKED dh† ESTIMATED QUANTITIES - LOCATION 15
BRIDGE NO. CUY-06A-0042
US 6A (DETROIT ROAD) OVER ROCKY RIVER







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ND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902 RICHLAN

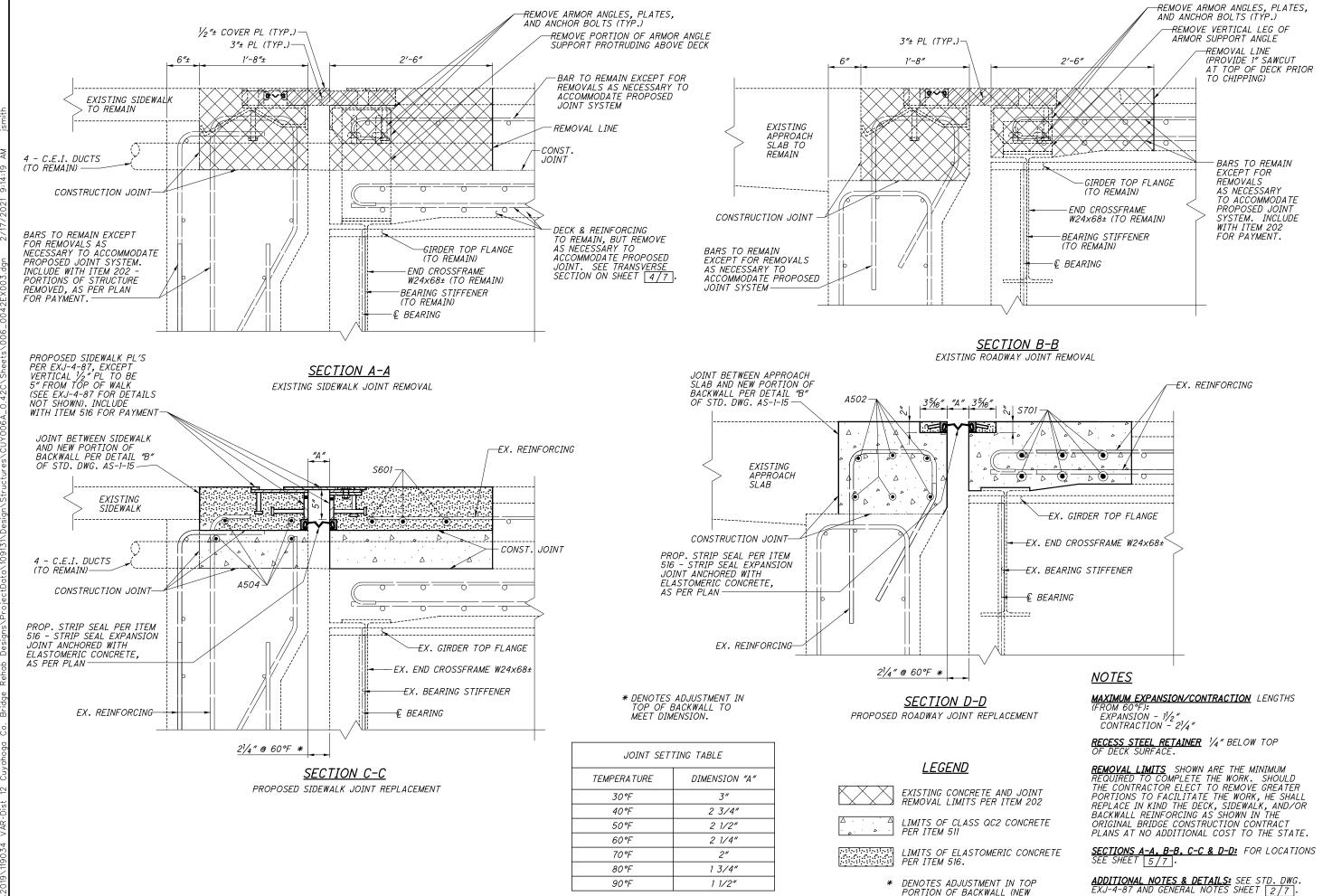
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5 - LOCATION

DINT SIDEWALK DETAILS -BRIDGE NO. CUY-06A-0042 ( DETROIT ROAD) OVER ROCKY

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90°F

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AD ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902 

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**EXPANSION** 

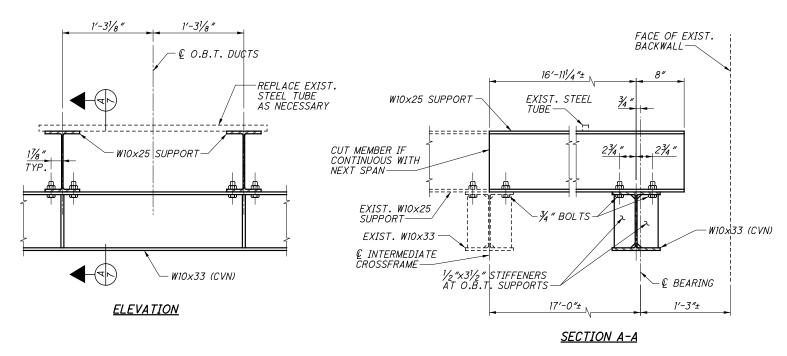
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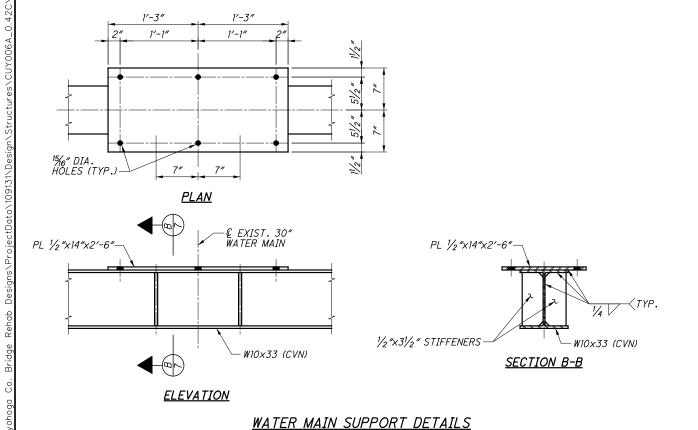
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DENOTES ADJUSTMENT IN TOP PORTION OF BACKWALL (NEW CONCRETE) TO MEET DIMENSION.

236 253



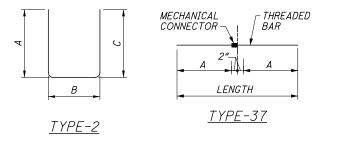
## TELEPHONE DUCT SUPPORT STRINGER REPLACEMENT DETAILS



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	NUMBER			M			Di	MENSIO	NS		
MARK	TOTAL	LENGTH	WEIGHT	TYPE	A	В	С	D	E	R	INC
		RWARD A	L ABUTMEN	IT		CAL CUL A TE	D <u>JLS</u> I	DATE <u>9/2</u> DATE <u>9/2</u>			
A501	6	4'-10"	30	37	2'-3"						
A502	6	34'-11"	219	STR							
A503	6	30'-11"	193	STR							
A504	8	6′-8″	56	STR							
A601	4	2'-10"	17	2	0'-11"	1'-4"	0'-11"				
	ABUTMEN	TOTAL	<i>515</i>								
				S	UPERSTI	RUCTURE	<u> </u>				
S601	6	6'-8"	60	STR							
<i>S602</i>	6	2'-10"	26	2	0'-11"	1'-4"	0'-11"				
5701	6	8'-2"	100	37	3′-11″						
<i>S702</i>	6	34'-11"	428	STR							
<i>S703</i>	6	30′-11″	379	STR							
SUPER	<u>'STRUCTUR</u>	<u>'E TOTAL</u>	993								

NOTE: ALL REINFORCING STEEL IS INCLUDED WITH THE EXPANSION JOINT FOR PAYMENT.



## **NOTES**

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

EXAMPLE: A502 A = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT) 5 = BAR SIZE DESIGNATION 02 = SEQUENCE NUMBER

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

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

<u>CVN:</u> WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS OF C&MS 711.01.

TELEPHONE DUCT SUPPORT STRINGER: FOR LOCATION SEE TRANSVERSE SECTION ON SHEET 4/7.

<u>WATER MAIN SUPPORT:</u> FOR LOCATION SEE TRANSVERSE SECTION ON SHEET 4/7.

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#### REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

BR-1-13 **REVISED** VPF-1-90 07-20-18 REVISED

#### AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

DATED 10-16-20 844 DATED 04-20-18

#### **DESIGN SPECIFICATIONS:**

THE EXISTING STRUCTURE WAS DESIGNED IN CONFORMANCE WITH THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, DATED 1969, INCLUDING THE 1970 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

#### DESIGN LOADING:

HS20-44 CASE I AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE (FWS) OF 0.030 KIPS PER SQUARE FOOT

#### **DESIGN DATA:**

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE) CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615 OR A996, GRADE 60, MINIMUM YIELD STRENGTH 60,000 PSI

STRUCTURAL STEEL - ASTM A572 GRADE 50, YIELD STRENGTH 50 KSI (EXISTING)

#### MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

#### **EXISTING STRUCTURE VERIFICATION:**

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

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER. THE OWNER WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

#### **EXISTING STRUCTURE PLANS:**

PLANS MAY BE EXAMINED BY PROSPECTIVE BIDDERS AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 12, 5500 TRANSPORTATION BLVD., GARFIELD HEIGHTS, OH 44125-5396. TEL 216-581-2100. EXISTING PLANS MAY ALSO BE DOWNLOADED AT THE FOLLOWING LINK: ftp://ftp.dot.state.oh.us/pub/Contracts/Attach

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

DESCRIPTION: THIS WORK CONSISTS OF THE REMOVAL OF PORTIONS OF CONCRETE BRIDGE RAILINGS AT THE LOCATIONS SHOWN IN THE PLANS AS REQUIRED FOR REPAIR AND RECONSTRUCTION. THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED BY THE FOLLOWING NOTES. PERFORM WORK CAREFULLY TO PROTECT PORTIONS OF THE EXISTING BRIDGE RAILINGS AND DECK SLAB TO REMAIN. THE USE OF EXPLOSIVES. HEADACHE BALLS AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITED. SUBMIT CONSTRUCTION PLANS ACCORDING TO C&MS 501.05.

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

HAVE A BRIGHT STEEL FINISH BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

MEASUREMENT & PAYMENT: THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

#### ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN:

REPLACE ALL EXISTING REINFORCING STEEL BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE. REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

## ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL:

DESCRIPTION: THIS WORK CONSISTS OF FURNISHING AND INSTALLING A NEOPRENE SEAL ALONG THE TOP OF THE BRIDGE MEDIAN TO REPLACE MISSING OR DAMAGED PORTIONS OF THE EXISTING MEDIAN BARRIER SEAL AT THE LOCATIONS SHOWN IN THE PLANS.

MATERIALS: THE NEW SEAL SHALL MATCH THE EXISTING AS CLOSELY AS PRACTICABLE IN WIDTH, THICKNESS, AND METHOD OF ATTACHMENT. REFER TO THE STRUCTURE GENERAL NOTES IN THE ORIGINAL CONSTRUCTION PLANS FOR THE ORIGINAL MATERIAL SPECIFICATIONS, SUBMIT PRODUCT DATA TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL MEASURE THIS WORK BY THE NUMBER OF FEET ACCEPTED IN PLACE. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE EXISTING MEDIAN BARRIER SEAL REPAIR. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT UNIT PRICE BID FOR ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC .: MEDIAN BARRIER SEAL.

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

DESCRIPTION: THIS WORK CONSISTS OF REMOVING, STORING, AND REINSTALLING THE EXISTING PARAPET-MOUNTED CHAIN LINK FENCE AT LOCATIONS WHERE THE PARAPET IS TO BE REBUILT AND REPAIRING OR REPLACING DAMAGED AREAS OF THE EXISTING PARAPET-MOUNTED CHAIN LINK FENCE IN ACCORDANCE WITH THE DETAILS SHOWN IN THE PLANS ON SHEETS 15/17 AND 16/17.

MATERIALS: STRUCTURAL STEEL FOR BASE PLATES SHALL BE ASTM A709 GRADE 36 OR 50, GALVANIZED IN ACCORDANCE WITH C&MS 711.02. REPLACEMENT POSTS, LINE RAILS, EXPANSION COUPLINGS, BRACKETS, FENCE FABRIC, AND MISCELLANEOUS HARDWARE SHALL BE CHAIN LINK FENCE INDUSTRY STANDARD. COMPATIBLE IN SIZE. COLOR, AND FIT-UP WITH EXISTING FENCE COMPONENTS TO REMAIN. FURNISH MATERIALS IN CONFORMANCE WITH C&MS 607.

ANTICIPATED REPAIR QUANTITIES: BASED ON A VISUAL INSPECTION PERFORMED IN APRIL 2020. THE DEFECTS IN THE EXISTING FENCE THAT ARE TO BE CORRECTED BY THIS WORK INCLUDE THE FOLLOWING:

BROKEN TOP LINE RAIL COUPLINGS BROKEN BOTTOM LINE RAIL BRACKETS BROKEN LINE RAIL EXPANSION SLEEVES (JOINT 6) BENT/DAMAGED UNSALVAGEABLE FENCE POSTS WITH BASE PLATES DAMAGED OR MISSING (DUE TO PREVIOUS REPAIR) BOTTOM LINE RAILS DAMAGED OR MISSING (DUE TO PREVIOUS REPAIR) TOP LINE RAILS DAMAGED FENCE FABRIC

BASED ON THE APRIL 2020 INSPECTION, PORTIONS OF THE EXISTING CHAIN LINK FENCE WILL REQUIRE REMOVAL AND REPLACEMENT WITH NEW MATERIALS BECAUSE THE DAMAGE TO POSTS AND FENCE FABRIC EXTENDS OVER MULTIPLE SEQUENTIAL PANELS OR A PREVIOUS REPAIR OMITTED THE LINE RAILS. FOR FENCE REPAIR LOCATIONS AND ESTIMATED QUANTITIES. SEE SHEETS 3 TO 12/17.

THE INFORMATION ABOVE SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE AND AN ALLOWANCE INCLUDED IN THE BID FOR ADDITIONAL DETERIORATION OR DAMAGE THAT MAY BE FOUND AT THE TIME OF CONSTRUCTION. AT THE START OF THE WORK, THE CONTRACTOR, TOGETHER WITH THE ENGINEER, SHALL INSPECT THE EXISTING FENCE TO DETERMINE THE EXACT LOCATIONS OF DEFECTIVE, DAMAGED, OR MISSING

FENCE COMPONENTS TO BE REPLACED. ALL EXISTING FENCE ON THE BRIDGE SHALL BE RESTORED TO A SAFE AND SERVICEABLE CONDITION, AS FOLLOWS: POST SPACINGS NOT EXCEEDING TEN (10) FEET CENTER-TO-CENTER; ALL POSTS STRAIGHT, VERTICAL. AND FIRMLY ANCHORED TO THE CONCRETE PARAPET; TOP AND BOTTOM LINE RAILS CONTINUOUS AND FIRMLY ATTACHED TO POSTS; TENSION RODS AND OTHER HARDWARE TIGHT AND SECURE; AND FENCE FABRIC HAVING NO GAPS, BULGES, OR SNAGS. THE PAY LENGTH FOR THIS WORK WILL BE THE FULL LENGTH OF THE EXISTING FENCE REBUILT.

MEASUREMENT AND PAYMENT: THE DEPARTMENT WILL MEASURE THIS WORK BY THE NUMBER OF FEET ACCEPTED IN PLACE. THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT UNIT PRICE BID FOR ITEM 607 - FENCE REBUILT, TYPE CL, AS PER PLAN.

#### ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION. AS PER PLAN:

THIS WORK CONSISTS OF PATCHING EXISTING REINFORCED CONCRETE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844, MODIFIED AS FOLLOWS:

WHERE THE AREA OF THE AREA OF AN INDIVIDUAL REPAIR, AS DETERMINED IN THE FIELD AT THE TIME OF CONSTRUCTION, TOTALS LESS THAN FIVE (5) SQUARE FEET, THE INSTALLATION OF GALVANIC ANODES IS NOT REQUIRED, AND THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH C&MS 519.

THE ANODE SPACING SHALL BE 24" FOR REPAIRS ON EXISTING BRIDGE PARAPETS.

#### INTERIM COMPLETION DATE:

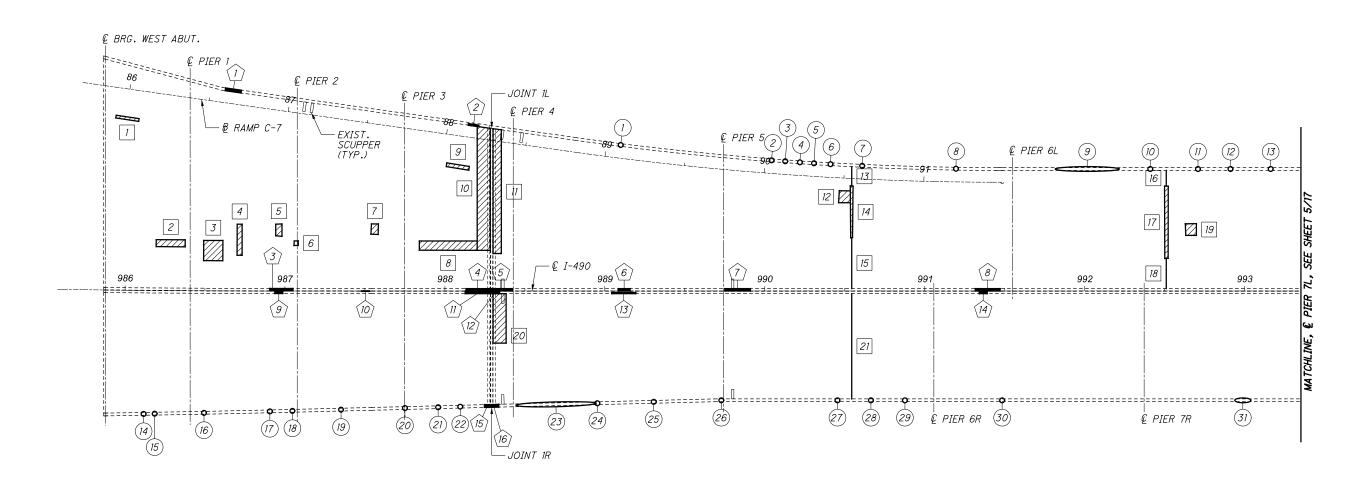
TO ACCOMMODATE THE OPENING OF THE OPPORTUNITY CORRIDOR PROJECT, ALL WORK (DECK REPAIRS, PARAPET REPAIRS AND FENCE REPAIRS) ON BRIDGE NO. CUY-490-0100 (SFN 1811991) SHALL BE COMPLETED BY SEPTEMBER 24, 2021.

FUNDING					ESTIMATED QUANTITIES			CALC. BY: CHKD. BY:	PAT DAT	E: 10/28/20 E: 10/29/20
//	ITEM	ITEM EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPER- STRUCTURE	GENERAL	REF. SHEET NUMBER
	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	1/17
	509 509	10000	797 200	LB LB	EPOXY COATED REINFORCING STEEL  REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN			797 200		1/17
	511	34448	8	CY	CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)			8		
	512	10600	914	FT	CONCRETE REPAIR BY EPOXY INJECTION			914		
	516	14600	28	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL			28		1/17
	519	10000	1,590	SY	PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE *			1,590		
	607	22001	8,160	FT	FENCE REBUILT, TYPE CL, AS PER PLAN			8,160		1/17
	844	10001	994	SF	CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN			994		1/17

<sup>\*</sup> THIS ITEM INCLUDES AN ESTIMATED QUANTITY OF 242 SY (46 CY) OF DECK AREA THAT HAS BEEN NOTED LIKELY TO REQUIRE FULL DEPTH REPAIR. SEE SHEETS 3/17 THRU 12/17 FOR LOCATIONS.

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## DECK PLAN

## **LEGEND**

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AREA OF EXISTING OVERLAY TO BE REMOVED AND REPAIRED PER ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE

AREA OF EXISTING DECK LIKELY TO REQUIRE FULL DEPTH REPAIR

X DECK REPAIR LOCATION NUMBER

 $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER

(X)FENCE REPAIR LOCATION NUMBER 1. FOR REPAIR LOCATION DETAILS AND QUANTITIES, SEE SHEET 4/17.

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	EST	TIMATED WEARING S	URFACE REP	AIR QUANTIT	IES
LOCA	TION	LENGTH X WIDTH (FT)	OVERLAY AREA (SF)	FULL DEPTH AREA (SF)	CRACK LENGTH (FT)
1		15.00 × 2.00	30.00	-	-
2		18.00 x 4.50	81.00	-	-
3		12.00 × 13.00	156.00	-	-
4		3.00 x 20.00	60.00	-	-
5		4.00 × 8.00	32.00	-	-
6		3.00 x 3.00	9.00	-	-
7		4.50 × 6.50	29.25	-	-
8		36.00 x 6.00	216.00	-	-
9		14.50 x 2.50	36.25	-	-
10	)	8.00 x 77.00	616.00	-	-
11		5.00 x 78.00	390.00	-	-
12	?	7.50 × 7.50	56.25	-	-
13	3	-	-	-	12
14	7	2.00 x 32.50	65.00	-	-
15		-	-	-	32
16	6	-	-	-	66
17		2.50 x 45.00	112.50	-	-
18	?	-	-	-	19
19	7	7.00 × 7.50	52.50	-	-
20	)	8.00 × 31.00	248.00	-	-
21	7	-	-	-	66
	TOTA	AL MEASURED	2,189.75	-	195
T	OTAL	ESTIMATED *	2,956.16	-	263
		* SE	E NOTE 5		

ESTIMATED PARAPET REPAIR QUANTITIES									
LOCATION	WIDTH X HEIGHT (FT)	REPAIR AREA (SF)	CRACK LENGTH (FT)	REBUILD TOP (FT)	REBUILD PARAPET (FT)	REPLACE SEAL (FT)			
1	-	-	-	-	10	-			
2	1.00 × 1.00	1.00	-	-	-	-			
3	14.50 x 4.19	60.72	-	-	-	-			
4	14.50 x 4.19	60.72	-	-	-	-			
5	14.50 x 4.19	60.72	-	-	-	_			
6	7.50 × 4.19	31.41	-	-	-	-			
7	16.00 x 4.19	67.00	_	_	_	_			
8	15.50 x 4.19	64.91	-	-	-	-			
9	5.00 x 4.19	20.94	-	-	-	-			
(10)	-	-	-	-	-	5			
11)	15.00 x 4.19	62.81	-	-	-	-			
(12)	6.50 × 4.19	27.22	-	-	-	-			
13)	15.00 × 1.08	16.25	-	-	-	-			
(14)	5.00 × 1.08	5 <b>.</b> 42	_	_	-	_			
15)	-	-	-	3	-	-			
(16)	_	-	-	6	-	-			
TOTA	L MEASURED	479.10	-	9	10	5			
TOTAL	ESTIMATED *	646.79	-	N/A	N/A	N/A			

* SEE /	<i>NOTE 5</i>
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		Ε	STIMATED FE	ENCE REPAIR	QUANTITIES			
LOCATION	FENCE FABRIC (FT)	FENCE POST (EACH)	BOTTOM RAIL (FT)	TOP RAIL (FT)	BOT. RAIL BRACKET (EACH)	TOP RAIL COUPLING (EACH)	FENCE POST CAP (EACH)	BRACE ROD (EACH)
1)	-	-	-	-	1	-	-	-
(2)	-	-	-	-	1	-	-	-
(3)	-	-	-	-	1	-	-	-
(4)	-	-	-	-	1	-	-	-
(5)	-	-	-	-	1	-	-	-
(6)	-	-	-	-	1	-	-	-
(7)	-	-	-	-	1	-		-
(8)	-	-	-	-	1	-	-	-
(9)	40	-	10					-
(10)	-	-	-	-	1	-	-	-
(11)	_	-	-	-	1	-	-	-
(12)	-	-			1	-		-
(13)	5	-	-	-	-	-	-	-
(14)	-	2	2			-		-
(15)	-	-	-	-	-	1	-	-
(16)	-	-	-	-	-	1	-	-
(17)	-	-				1		-
(18)	_	1	-	-	-	-	-	-
(19)	-	_	-			1		-
(20)	-	-	-	-	-	1	-	-
(21)	-	-	-	-	-	1	-	-
(22)	-	-	-	-	-	1	-	-
(23)	_	-	50	-	-	-	-	-
(24)	_	-	-	-	-	1	-	-
(25)	-	-	-	-	-	1	-	-
(26)	-	-	-	-	-	1	-	-
(27)	-	-	-	-	-	1	-	-
(28)	-	-	-	-	-	1	-	-
(29)	_	_	-	-	-	1	-	-
(30)	-	-	-	-	-	1	-	-
(31)	10	-	-	-	-	-	-	-
TOTAL	55	3	62	-	11	14	-	-

# **LEGEND**

- X DECK REPAIR LOCATION NUMBER
- $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER
- (X)FENCE REPAIR LOCATION NUMBER

## PAY ITEM NOTES

- 1. CRACK REPAIR FOR WEARING SURFACE AND PARAPETS WILL BE PAID UNDER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION
- 2. PARAPET CONCRETE SURFACE REPAIR WILL BE PAID UNDER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN
- 3. REBUILDING OF PARAPETS WILL BE PAID UNDER ITEM 509 -EPOXY COATED REINFORCING STEEL AND ITEM 511 CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)
- 4. REPLACEMENT OF MEDIAN BARRIER SEAL WILL BE PAID UNDER ITEM 516 STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL
- 5. FENCE REPAIRS WILL BE PAID UNDER ITEM 607 FENCE REBUILT, TYPE CL, AS PER PLAN

## **NOTES**

- 1. FOR REPAIR LOCATIONS, SEE SHEET 3/17.
- 2. FOR PARAPET REPAIR DETAILS, SEE SHEETS 13 & 14/17.
- 3. FOR FENCE REPAIR DETAILS, SEE SHEETS 15 & 16/17.
- 4. PHYSICAL INVENTORY OF MEASURED QUANTITIES OF DETERIORATION WAS PERFORMED IN APRIL 2020. THE EXACT DIMENSIONS AND LOCATIONS OF WEARING SURFACE, PARAPET, AND FENCE REPAIRS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
- 5. ESTIMATED OVERLAY REPAIR, FULL DEPTH DECK REPAIR, PARAPET REPAIR, AND CRACK REPAIR QUANTITIES HAVE BEEN INCREASED BY 35% OVER MEASURED QUANTITIES TO ALLOW FOR ADDITIONAL DETERIORATION.



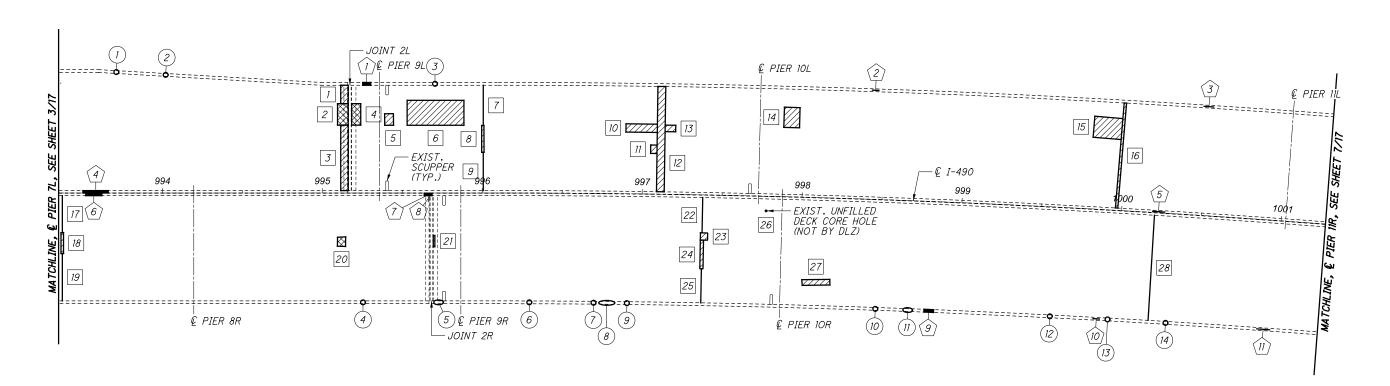
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SUPERSTRUCTURE

MISC CUY-BH-FY2021(B) A PID No. 109131

4 / 17





# DECK PLAN

## **LEGEND**

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AREA OF EXISTING OVERLAY TO BE REMOVED AND REPAIRED PER ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE

AREA OF EXISTING DECK LIKELY TO REQUIRE FULL DEPTH REPAIR

X DECK REPAIR LOCATION NUMBER

 $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER

(X)FENCE REPAIR LOCATION NUMBER 1. FOR REPAIR LOCATION DETAILS AND QUANTITIES, SEE SHEET 6/17.

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ESTIMATED WEARING SURFACE REPAIR QUANTITIES								
LOCATION	LENGTH X WIDTH (FT)	OVERLAY AREA (SF)	FULL DEPTH AREA (SF)	CRACK LENGTH (FT)				
1	4.50 x 11.50	51.75	-	-				
2	7.00 x 13.50	-	94.50	-				
3	4.50 × 41.00	184.50	-	-				
4	6.00 x 13.50	-	81.00	-				
5	5.50 x 7.00	38.50	-	-				
6	35.50 × 15.50	550.25	-	-				
7	-	-	-	25				
8	1.50 x 17.00	25.50	-	-				
9	-	-	-	24				
10	20.00 x 5.00	100.00	-	-				
11	4.00 × 5.00	20.00	-	-				
12	5.00 x 66.00	330.00	-	-				
13	6.50 x 4.00	26.00	-	-				
14	10.00 × 13.00	130.00	-	-				
15	17.50 x 13.00	227.50	-	-				
16	1.50 x 66.00	99.00	-	-				
17	-	-	-	23				
18	1.50 × 13.00	19.50	-	-				
19	-	-	-	30				
20	5.50 x 6.00	-	33.00	-				
21	7.00 × 1.00	7.00	-	-				
22	-	-	-	22				
23	4.50 × 4.50	20.25	-	-				
24	2.00 x 18.00	36.00	-	-				
25	-	-	-	21				
26	0.50 × 0.50	-	0.25	-				
27	18.00 × 4.00	72.00	-	-				
28	-	-	-	66				
TOTA	AL MEASURED	1,978.25	208.75	211				
TOTAL	ESTIMATED *	2,670.64	281.81	285				

*	SEE	NOTE	5	
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ESTIMATED PARAPET REPAIR QUANTITIES								
LOCATION	WIDTH X HEIGHT (FT)	REPAIR AREA (SF)	CRACK LENGTH (FT)	REBUILD TOP (FT)	REBUILD PARAPET (FT)	REPLACE SEAL (FT)		
1	2.00 × 1.00	2.00	5	-	-	-		
(2)	-	-	4	-	_	-		
3	-	-	6	-	-	-		
4	15.50 x 4.19	64.91	-	-	-	-		
5	_	-	7.5	-	-	-		
6	10.00 x 4.19	41.88	-	-	-	-		
7	_	_	_	-	3	-		
8	-	-	-	2	-	-		
9	-	_	-	6	-	-		
(10)	-	-	4	-	-	-		
(1)	-	_	8	_	-	-		
TOTA	L MEASURED	108.78	34.5	8	3	_		
TOTAL	ESTIMATED *	146.85	46.6	N/A	N/A	N/A		

*	SEE	NO	ΤE	5
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	ESTIMATED FENCE REPAIR QUANTITIES									
LOCATION	FENCE FABRIC (FT)	FENCE POST (EACH)	BOTTOM RAIL (FT)	TOP RAIL (FT)	BOT. RAIL BRACKET (EACH)	TOP RAIL COUPLING (EACH)	FENCE POST CAP (EACH)	BRACE ROD (EACH)		
	-	-	-	-	1	-	-	-		
(2)	_	_	_	_	_	1	-	-		
(3)	-	-	-	-	-	1	-	-		
(4)	-	-	-	-	-	1	-	-		
(5)	_	-	-	-	-	-	-	1		
6	-	-	-	-	-	1	-	-		
7	_	_	_	_	_	1	-	-		
8	10	-	-	-	-	-	-	-		
9	_	_	-	-	-	1	-	-		
(10)	-	-	-	-	-	1	-	-		
11)	15	-	-	-	-	-	-	-		
(12)	2	-	-	-	-	-	-	-		
(13)	2	-	-	-	-	-	-	-		
(14)		-	-	-	-	1	-	-		
TOTAL	29	-	-	-	1	8	-	1		

# **LEGEND**

- DECK REPAIR LOCATION NUMBER
- $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER
- (X)FENCE REPAIR LOCATION NUMBER

## PAY ITEM NOTES

- 1. CRACK REPAIR FOR WEARING SURFACE AND PARAPETS WILL BE PAID UNDER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION
- 2. PARAPET CONCRETE SURFACE REPAIR WILL BE PAID UNDER ITEM 844 CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN
- 3. REBUILDING OF PARAPETS WILL BE PAID UNDER ITEM 509 -EPOXY COATED REINFORCING STEEL AND ITEM 511 CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)
- 4. REPLACEMENT OF MEDIAN BARRIER SEAL WILL BE PAID UNDER ITEM 516 STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL
- 5. FENCE REPAIRS WILL BE PAID UNDER ITEM 607 FENCE REBUILT, TYPE CL, AS PER PLAN

## **NOTES**

- 1. FOR REPAIR LOCATIONS, SEE SHEET 5/17.
- 2. FOR PARAPET REPAIR DETAILS, SEE SHEETS 13 & 14/17.
- 3. FOR FENCE REPAIR DETAILS, SEE SHEETS 15 & 16/17.
- 4. PHYSICAL INVENTORY OF MEASURED QUANTITIES OF DETERIORATION WAS PERFORMED IN APRIL 2020. THE EXACT DIMENSIONS AND LOCATIONS OF WEARING SURFACE, PARAPET, AND FENCE REPAIRS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
- 5. ESTIMATED OVERLAY REPAIR, FULL DEPTH DECK REPAIR, PARAPET REPAIR, AND CRACK REPAIR QUANTITIES HAVE BEEN INCREASED BY 35% OVER MEASURED QUANTITIES TO ALLOW FOR ADDITIONAL DETERIORATION.

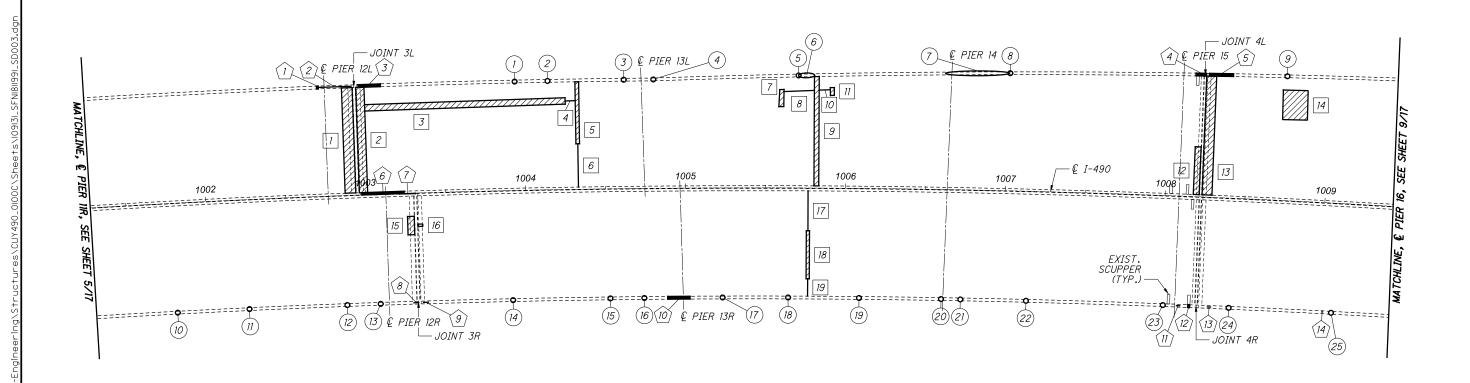


CUY-BH-FY2021(B) MISC PID No. 109131

LOCATION

2A

E REPAIR LOCATIONS - 2A BRIDGE NO. CUY-490-0100 I-490 OVER CUYAHOGA RIVER



# <u>DECK PLAN</u>

## **LEGEND**

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AREA OF EXISTING OVERLAY TO BE REMOVED AND REPAIRED PER ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE

AREA OF EXISTING DECK LIKELY TO REQUIRE FULL DEPTH REPAIR

FENCE REPAIR LOCATION NUMBER

DECK REPAIR LOCATION NUMBER

PARAPET REPAIR LOCATION NUMBER

1. FOR REPAIR LOCATION DETAILS AND QUANTITIES, SEE SHEET 8/17.

<u>NOTES</u>

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ESTIMATED PARAPET REPAIR QUANTITIES									
LOCATION	WIDTH X HEIGHT (FT)	REPAIR AREA (SF)	CRACK LENGTH (FT)	REBUILD TOP (FT)	REBUILD PARAPET (FT)	REPLACE SEAL (FT)			
1	1.00 × 1.00	1.00	-	-	-	-			
(2)	-	-	20.5	-	-	-			
3	-	-	-	14	-	-			
4)	-	-	-	-	6.5	-			
5	-	-	-	-	15	-			
6	26.50 x 4.19	110.97	-	-	-	-			
7	-	-	-	-	-	10			
8	-	-	3	-	-	-			
9	-	-	3	-	-	-			
10)	-	-	-	14	-	-			
11)	1.00 × 1.00	1.00	-	-	-	-			
(12)	-	-	2	-	-	-			
13)	1.00 × 1.00	1.00	-	-	-	-			
(14)	-	_	3	-	_	_			
TOTA	L MEASURED	113.97	31.5	28	21.5	10			
TOTAL	ESTIMATED *	153.86	42.5	N/A	N/A	N/A			

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	ESTIMATED FENCE REPAIR QUANTITIES								
LOCATION	FENCE FABRIC (FT)	FENCE POST (EACH)	BOTTOM RAIL (FT)	TOP RAIL (FT)	BOT. RAIL BRACKET (EACH)	TOP RAIL COUPLING (EACH)	FENCE POST CAP (EACH)	BRACE ROD (EACH)	
(1)	-	-	-	-	1	-	-	-	
2	-	-	-	_	1	-	-	-	
(3)	-	-	-	-	1	-	-	-	
4	-	-	-	_	1	-	-	-	
(5)	-	-	-	-	-	-	1	-	
6	10	-	-	-	-	-	-	-	
7	70	3	-	_	-	-	-	-	
8	-	-	-	-	-	1	-	-	
9	-	-	-	-	-	1	-	-	
(10)	-	-	-	-	-	1	-	-	
	-	-	-	-	-	1	-	-	
12	-	-	-	-	-	1	-	-	
(13)	-	-	-	-	-	1	-	-	
(14)	-	-	-	-	-	1	-	-	
(15)	-	-	-	-	-	1	-	-	
(16)	-	_	-	-	-	1	-	-	
(17)	-	-		-	-	1	-	-	
(18)	-	-	-	-	-	1	-	-	
(19)	-	-	-	-	-	1	-	-	
(20)	2	-	-	-	-	-	-	-	
(21)	-	-	-	-	-	1	-	-	
(22)	-	-	-	-	-	1	-	-	
23)	-	-	-	-	-	1	-	-	
24)	-	-	-	-	-	1	-	-	
(25)	-	-	-	-	-	1	-	-	
TOTAL	82	3	-	-	4	17	1	-	

# **LEGEND**

- X DECK REPAIR LOCATION NUMBER
- $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER
- $(\chi)$ FENCE REPAIR LOCATION NUMBER

## PAY ITEM NOTES

- 1. CRACK REPAIR FOR WEARING SURFACE AND PARAPETS WILL BE PAID UNDER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION
- 2. PARAPET CONCRETE SURFACE REPAIR WILL BE PAID UNDER ITEM 844 - CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN
- 3. REBUILDING OF PARAPETS WILL BE PAID UNDER ITEM 509 -EPOXY COATED REINFORCING STEEL AND ITEM 511 CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)
- 4. REPLACEMENT OF MEDIAN BARRIER SEAL WILL BE PAID UNDER ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL
- 5. FENCE REPAIRS WILL BE PAID UNDER ITEM 607 FENCE REBUILT, TYPE CL, AS PER PLAN

## **NOTES**

- 1. FOR REPAIR LOCATIONS, SEE SHEET 7/17.
- 2. FOR PARAPET REPAIR DETAILS, SEE SHEETS 13 & 14/17.
- 3. FOR FENCE REPAIR DETAILS, SEE SHEETS 15 & 16/17.
- 4. PHYSICAL INVENTORY OF MEASURED QUANTITIES OF DETERIORATION WAS PERFORMED IN APRIL 2020. THE EXACT DIMENSIONS AND LOCATIONS OF WEARING SURFACE, PARAPET, AND FENCE REPAIRS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
- 5. ESTIMATED OVERLAY REPAIR, FULL DEPTH DECK REPAIR, PARAPET REPAIR, AND CRACK REPAIR QUANTITIES HAVE BEEN INCREASED BY 35% OVER MEASURED QUANTITIES TO ALLOW FOR ADDITIONAL DETERIORATION.

9

LOCATION 3A

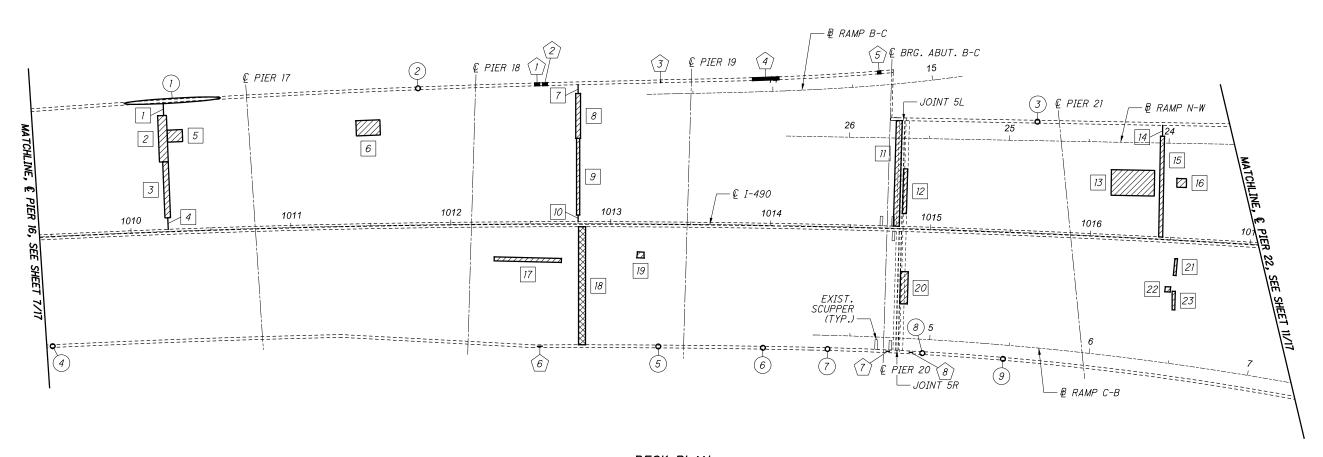
: REPAIR LOCATIONS -BRIDGE NO. CUY-490-010 I-490 OVER CUYAHOGA RIN SUPERSTRUCTURE

> MISC CUY-BH-FY2021(B) Š PID

8 / 17







# DECK PLAN

## **LEGEND**

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AREA OF EXISTING OVERLAY TO BE REMOVED AND REPAIRED PER ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE

AREA OF EXISTING DECK LIKELY TO REQUIRE FULL DEPTH REPAIR

DECK REPAIR LOCATION NUMBER

 $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER

 $(\chi)$ FENCE REPAIR LOCATION NUMBER <u>NOTES</u>

1. FOR REPAIR LOCATION DETAILS AND QUANTITIES, SEE SHEET 10/17.

ESTIMATED WEARING SURFACE REPAIR QUANTITIES								
LOCATION	LENGTH X WIDTH (FT)	OVERLAY AREA (SF)	FULL DEPTH AREA (SF)	CRACK LENGTH (FT)				
1	-	-	-	8				
2	5.50 x 29.00	159.50	-	-				
3	3.50 x 35.00	122.50	-	-				
4	-	-	-	7				
5	9.50 x 7.50	71.25	-	-				
6	15.00 × 9.50	142.50	-	-				
7	-	-	-	6				
8	3.00 x 28.00	84.00	-	-				
9	2.00 x 48.00	96.00	-	-				
10	-	-	-	4				
11	4.00 x 66.00	264.00	-	-				
12	2.50 x 28.00	70.00	-	-				
13	27.00 x 16.00	432.00	-	-				
14	-	-	-	7				
15	2.50 x 63.00	157.50	-	-				
16	6.00 x 5.50	33.00	-	-				
17	42.00 x 2.50	105.00	-	-				
18	4.50 x 74.00	-	333.00	-				
19	4.50 x 4.00	18.00	-	-				
20	5.00 x 20.00	100.00	-	-				
21	2.00 x 11.00	22.00	-					
22	3.50 x 3.50	12.25	-					
23	2.00 x 12.00	24.00	-					
TOTA	L MEASURED	1,913.50	333.00	<i>32</i>				
TOTAL	ESTIMATED *	2,583.23	449.55	43				
	* SE	E NOTE 5						

~	SEE	NOIL	5	

	ESTIMA	TED PARAPE	T REPAIR Q	UANTITIES		
LOCATION	WIDTH X HEIGHT (FT)	REPAIR AREA (SF)	CRACK LENGTH (FT)	REBUILD TOP (FT)	REBUILD PARAPET (FT)	REPLACE SEAL (FT)
1	3.00 x 2.50	7.50	-	-	-	-
2	3.00 x 2.50	7.50	_	-	_	_
(3)	-	-	1.5	-	-	-
4	-	-	16.5	-	-	-
(5)	6.00 x 2.50	15.00	-	-	-	-
6	-	-	3	-	-	-
7	-	_	2	-	_	-
8	-	-	2	-	-	-
TOTA	L MEASURED	30.00	25	_	_	_
TOTAL	ESTIMATED *	40.50	33.8	N/A	N/A	N/A
	•	* SF	F NOTE 5	•	•	

*	SEE	NOIL	5

		E.	STIMATED FE	NCE REPAIR	QUANTITIES	5		
LOCATION	FENCE FABRIC (FT)	FENCE POST (EACH)	BOTTOM RAIL (FT)	TOP RAIL (FT)	BOT. RAIL BRACKET (EACH)	TOP RAIL COUPLING (EACH)	FENCE POST CAP (EACH)	BRACE ROD (EACH)
1	60	5	-	-	-	-	-	-
2	2	_	-	-	_	-	-	-
(3)	-	-	-	-	-	1	-	-
4	-	-	-	-	-	1	-	-
(5)	-	-	-	-	-	1	-	-
6	-	-	-	-	-	1	-	-
7	-	_	-	-	_	1	-	-
8	-	-	-	-	-	1	-	-
9	_	_	_	_	_	1	_	_
TOTAL	62	5	-	-	-	7	-	-

# **LEGEND**

- DECK REPAIR LOCATION NUMBER
- $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER
- (X)FENCE REPAIR LOCATION NUMBER

## PAY ITEM NOTES

- 1. CRACK REPAIR FOR WEARING SURFACE AND PARAPETS WILL BE PAID UNDER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION
- 2. PARAPET CONCRETE SURFACE REPAIR WILL BE PAID UNDER ITEM 844 CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN
- 3. REBUILDING OF PARAPETS WILL BE PAID UNDER ITEM 509 -EPOXY COATED REINFORCING STEEL AND ITEM 511 CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)
- 4. REPLACEMENT OF MEDIAN BARRIER SEAL WILL BE PAID UNDER ITEM 516 STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL
- 5. FENCE REPAIRS WILL BE PAID UNDER ITEM 607 FENCE REBUILT, TYPE CL, AS PER PLAN

## **NOTES**

- 1. FOR REPAIR LOCATIONS, SEE SHEET 9/17.
- 2. FOR PARAPET REPAIR DETAILS, SEE SHEETS 13 & 14/17.
- 3. FOR FENCE REPAIR DETAILS, SEE SHEETS 15 & 16/17.
- 4. PHYSICAL INVENTORY OF MEASURED QUANTITIES OF DETERIORATION WAS PERFORMED IN APRIL 2020. THE EXACT DIMENSIONS AND LOCATIONS OF WEARING SURFACE, PARAPET, AND FENCE REPAIRS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
- 5. ESTIMATED OVERLAY REPAIR, FULL DEPTH DECK REPAIR, PARAPET REPAIR, AND CRACK REPAIR QUANTITIES HAVE BEEN INCREASED BY 35% OVER MEASURED QUANTITIES TO ALLOW FOR ADDITIONAL DETERIORATION.



WN	REVIEWED	DATE
Σ	MJL	10/29/20
SED	STRUCTURE	STRUCTURE FILE NUMBER
	181	1811991

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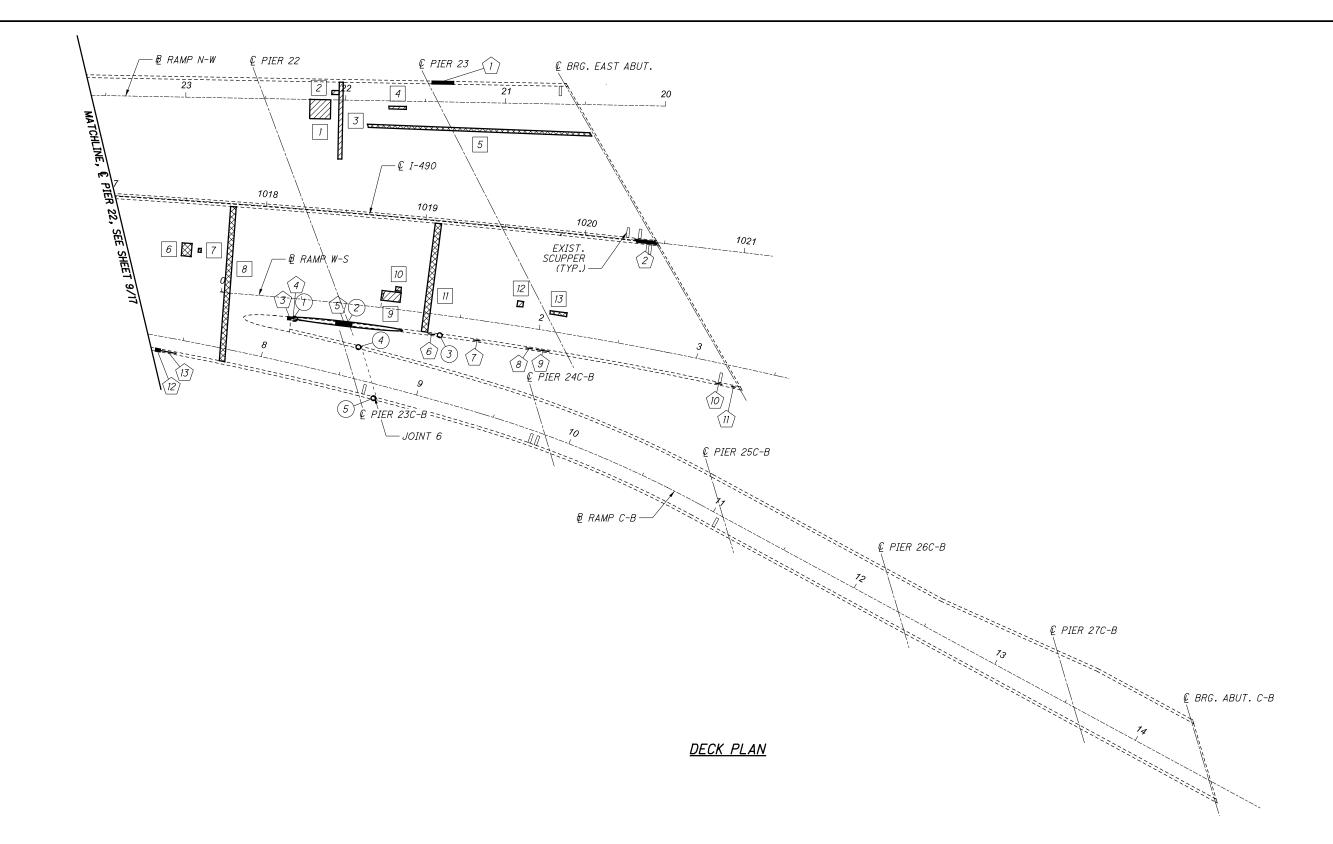
LOCATION 44

E REPAIR LOCATIONS - 4/ BRIDGE NO. CUY-490-0100 I-490 OVER CUYAHOGA RIVER

MISC CUY-BH-FY2021(B) A PID No. 109131

10 / 17





**LEGEND** 

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AREA OF EXISTING OVERLAY TO BE REMOVED AND REPAIRED PER ITEM 519 - PATCHING CONCRETE BRIDGE DECK OVERLAY WITH MICRO-SILICA MODIFIED CONCRETE

AREA OF EXISTING DECK LIKELY TO REQUIRE FULL DEPTH REPAIR

X

 $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER (X)

DECK REPAIR LOCATION NUMBER

FENCE REPAIR LOCATION NUMBER

1. FOR REPAIR LOCATION DETAILS AND QUANTITIES, SEE SHEET 12/17.

		7144 TCD WC407NO C	UDE 4 OF DED	ATO OLIANTIT	TEC
	ES/	IMATED WEARING S	UKFALE REP	AIR QUANIII	IES
LOCATI	ON	LENGTH X WIDTH (FT)	OVERLAY AREA (SF)	FULL DEPTH AREA (SF)	CRACK LENGTH (FT)
1		13.00 x 12.00	156.00	-	-
2		4.50 x 2.50	11.25	-	-
3		2.50 x 48.00	120.00	-	-
4		11.00 x 2.00	22.00	-	-
5		139.00 x 2.00	-	278.00	-
6		6.50 x 8.00	-	52.00	-
7		2.00 x 2.50	-	5.00	-
8		3.50 x 97.00	-	339.50	-
9		12.00 × 6.00	72.00	-	-
10		3.50 x 2.50	8.75	-	-
11		4.00 x 68.50	-	274.00	-
12		3.50 x 3.50	12.25	-	-
13		10.50 × 2.50	_	26.25	-
7	ОТА	L MEASURED	402.25	974.75	
ТО	TAL	ESTIMATED *	543.04	1,315.91	

\* SEE NOTE 5

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26.25	-		TOTAL ESTIMATED *	5.40
974.75	-	]		

	ESTIMA	TED PARAPE	T REPAIR Q	UANTITIES		
LOCATION	WIDTH X HEIGHT (FT)	REPAIR AREA (SF)	CRACK LENGTH (FT)	REBUILD TOP (FT)	REBUILD PARAPET (FT)	REPLACE SEAL (FT)
1	-	-	13.5	13.5	-	-
2	_	-	_	_	-	12.5
3	2.00 x 2.00	4.00	-	-	-	-
4	-	_	2	-	-	-
5	-	_	10	-	-	-
6	-	-	4	-	-	-
7	-	_	4	-	-	-
8	-	-	4	-	-	-
9	-	_	8	-	-	-
(10)	-	-	4	-	-	-
(11)	-	-	2	-	-	-
TOTA	L MEASURED	4.00	51.5	13.5	-	12.5
TOTAL	ESTIMATED *	5.40	69.5	N/A	N/A	N/A

*	SEE	NOTE	5
m	JLL	NOIL	J

		E.	STIMATED FE	ENCE REPAIR	QUANTITIES	5		
LOCATION	FENCE FABRIC (FT)	FENCE POST (EACH)	BOTTOM RAIL (FT)	TOP RAIL (FT)	BOT. RAIL BRACKET (EACH)	TOP RAIL COUPLING (EACH)	FENCE POST CAP (EACH)	BRACE ROD (EACH)
1	4	-	-	-	-	-	-	-
(2)	-	_	70	70	-	_	-	-
(3)	-	1	-	-	-	-	-	-
(4)	-	-	-	-	1	-	-	-
(5)	-	-	-	-	1	-	-	-
TOTAL	4	1	70	70	2	-	-	-

## **LEGEND**

DECK REPAIR LOCATION NUMBER

 $\langle \chi \rangle$ PARAPET REPAIR LOCATION NUMBER

(X)FENCE REPAIR LOCATION NUMBER

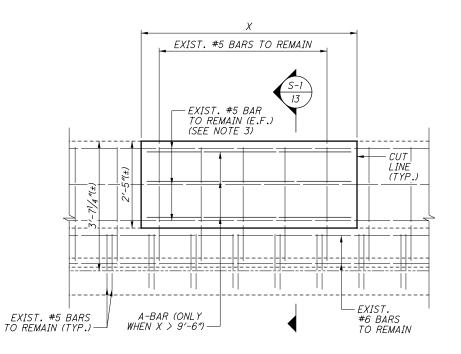
## PAY ITEM NOTES

- 1. CRACK REPAIR FOR WEARING SURFACE AND PARAPETS WILL BE PAID UNDER ITEM 512 CONCRETE REPAIR BY EPOXY INJECTION
- 2. PARAPET CONCRETE SURFACE REPAIR WILL BE PAID UNDER ITEM 844 CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION, AS PER PLAN
- 3. REBUILDING OF PARAPETS WILL BE PAID UNDER ITEM 509 -EPOXY COATED REINFORCING STEEL AND ITEM 511 CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)
- 4. REPLACEMENT OF MEDIAN BARRIER SEAL WILL BE PAID UNDER ITEM 516 STRUCTURAL JOINT OR JOINT SEALER, MISC.: MEDIAN BARRIER SEAL
- 5. FENCE REPAIRS WILL BE PAID UNDER ITEM 607 FENCE REBUILT, TYPE CL, AS PER PLAN

## **NOTES**

- 1. FOR REPAIR LOCATIONS, SEE SHEET 11/17.
- 2. FOR PARAPET REPAIR DETAILS, SEE SHEETS 13 & 14/17.
- 3. FOR FENCE REPAIR DETAILS, SEE SHEETS 15 & 16/17.
- 4. PHYSICAL INVENTORY OF MEASURED QUANTITIES OF DETERIORATION WAS PERFORMED IN APRIL 2020. THE EXACT DIMENSIONS AND LOCATIONS OF WEARING SURFACE, PARAPET, AND FENCE REPAIRS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
- 5. ESTIMATED OVERLAY REPAIR, FULL DEPTH DECK REPAIR, PARAPET REPAIR, AND CRACK REPAIR QUANTITIES HAVE BEEN INCREASED BY 35% OVER MEASURED QUANTITIES TO ALLOW FOR ADDITIONAL DETERIORATION.

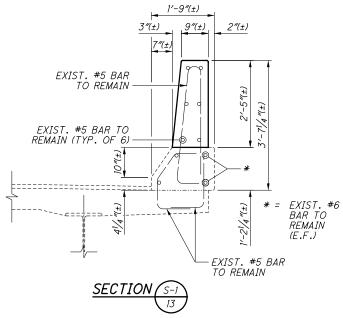
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# TYPICAL REBUILT TOP OF EXTERIOR PARAPET ELEVATION



TYPICAL REBUILT TOP OF EXTERIOR PARAPET DECK REINFORCING NOT SHOWN FOR CLARITY

REBUILT TOP OF E	REBUILT TOP OF EXTERIOR PARAPET REINFORCING									
FROM SHEET NO.	LOCATION	Х	A-BAR							
3/17	15)	3'-0"	-							
3/17	(16)	6'-0"	-							
5/17	9	6'-0"	-							
7/17	(3)	14'-0"	S502							
7/17	(10)	14'-0"	S502							
11/17	1)	13′-6″	S503							

FULL HEIGHT REPLACEMENT OF EXTERIOR PARAPET REINFORCING									
FROM SHEET NO.	LOCATION	Υ	B-BAR	C-BAR	D-BAR				
3/17	1	10'-0"	9-S501	S504	S601				
7/17	4)	6′-6″	6-S501	-	-				
7/17	(5)	15′-0″	13-5501	S505	S602				

# TYPICAL FULL HEIGHT REPLACEMENT OF EXTERIOR PARAPET ELEVATION

D-BAR (ONLY

WHEN Y > 9'-6")

C-BAR (ONLY

WHEN Y > 9'-6")

EXIST. #5 BARS

TO REMAIN (TYP.)

B-BAR TO BE BUNDLED WITH EXIST. #5 BARS FROM DECK

EXIST. #5 BAR

(SEE NOTE 3)

TO REMAIN (E.F.)

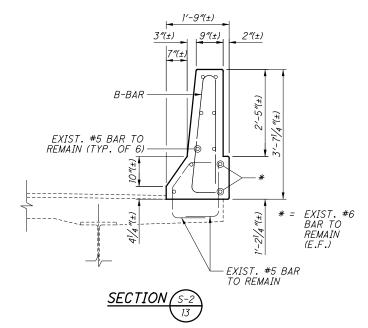
13

(TYP.

-EXIST.

#6 BARS

TO REMAIN



TYPICAL FULL HEIGHT REPLACEMENT OF EXTERIOR PARAPET DECK REINFORCING NOT SHOWN FOR CLARITY

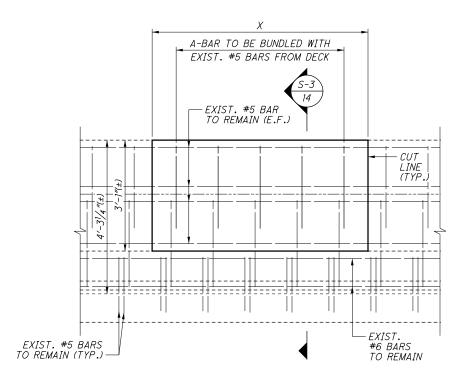
## <u>NOTES</u>

- 1. FOR REBUILT TOP AND FULL HEIGHT REPLACEMENT SUPERSTRUCTURE EXTERIOR PARAPET LOCATIONS, SEE SHEETS 3 TO 12/17.
- 2. WHEN THE REBUILT OR REPLACEMENT PARAPET IS LOCATED NEXT TO AN EXISTING EXPANSION JOINT TO REMAIN, SALVAGE THE EXISTING EXPANSION JOINT ARMOR AND REINSTALL WITH THE NEW CONCRETE.
- 3. WHEN THE REBUILT OR REPLACEMENT EXTERIOR PARAPET SECTION (X OR Y DIMENSION) IS LESS THAN 9'-6", THEN THE ENTIRE EXISTING HORIZONTAL #5 OR #6 BARS IS TO REMAIN.

WHEN THE REBUILT OR REPLACMENT EXTERIOR PARAPET SECTION (X OR Y DIMENSION) IS GREATER THAN 9'-6", THEN CUT THE EXISTING HORIZONTAL #5 OR #6 BARS AT 4'-6" FROM EACH VERTICAL CUT LINE AND LAP NEW HORIZONTAL REINFORCING (A, C, OR D-BARS).

4. FENCE NOT SHOWN ON SUPERSTRUCTURE EXTERIOR PARAPET FOR CLARITY. FOR FENCE DETAILS, SEE SHEETS 15 TO 16/17.

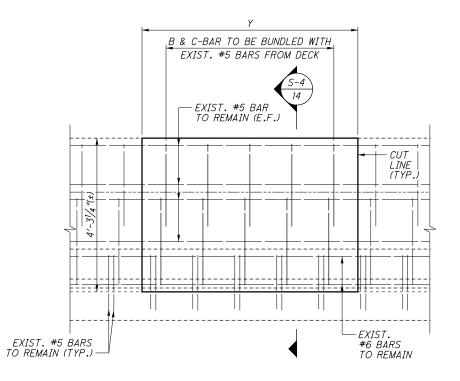
253



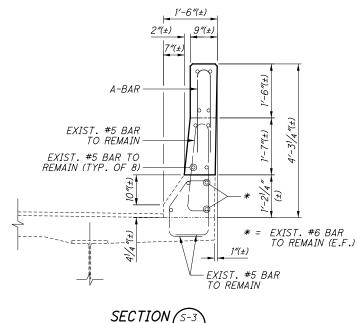
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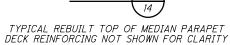
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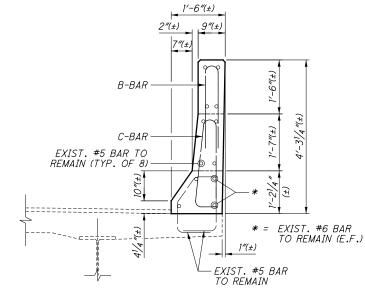
# TYPICAL REBUILT TOP OF MEDIAN PARAPET ELEVATION

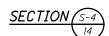


TYPICAL FULL HEIGHT REPLACEMENT OF MEDIAN PARAPET ELEVATION









TYPICAL FULL HEIGHT REPLACEMENT OF MEDIAN PARAPET DECK REINFORCING NOT SHOWN FOR CLARITY

REBUILT TOP	REBUILT TOP OF MEDIAN PARAPET REINFORCING								
FROM SHEET N	O. LOCATION	X	A-BAR						
5/17	8	2'-0"	2-S506						

FULL HEIGHT REPLACEMENT OF MEDIAN PARAPET REINFORCING								
FROM SHEET NO.	LOCATION	Υ	B-BAR	C-BAR				
5/17	7	3'-0"	<i>3-S506</i>	3-S507				

## **NOTES**

- 1. FOR REBUILT TOP AND FULL HEIGHT REPLACEMENT SUPERSTRUCTURE MEDIAN PARAPET LOCATIONS, SEE SHEETS 3 TO 12/17.
- 2. WHEN THE REBUILT OR REPLACEMENT PARAPET IS LOCATED NEXT TO AN EXISTING EXPANSION JOINT TO REMAIN, SALVAGE THE EXISTING EXPANSION JOINT ARMOR AND REINSTALL WITH THE NEW CONCRETE.



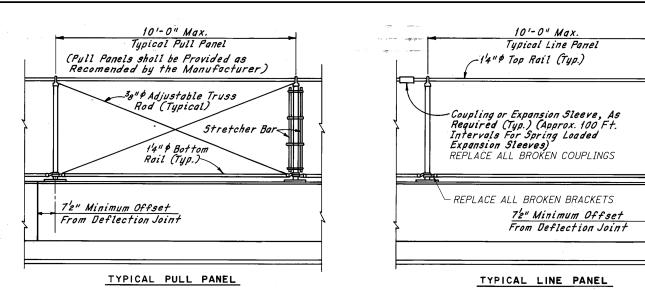
16

- LOCATION OP-0100

: REPAIR DETAILS - .
BRIDGE NO. CUY-49
I-490 OVER CUYAHOO

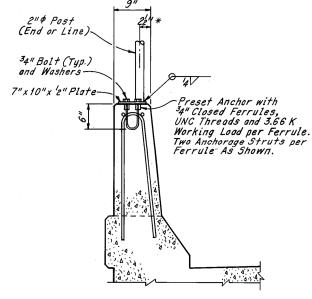
CUY-BH-FY2021(B) MISC 109131 Š PID

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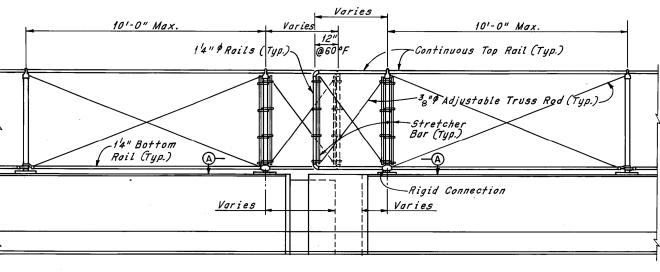


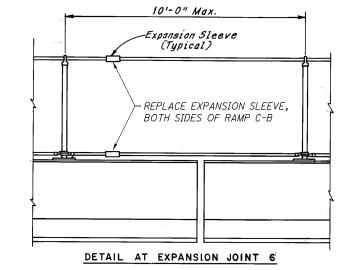
10'-0" Max. Typical End Panel Knuckled Selvages 2" Max. *Varies* 72" Minimum Offset From Deflection Joint

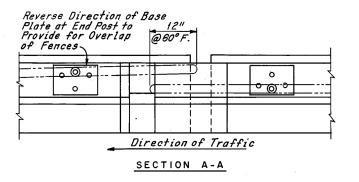
TYPICAL END PANEL



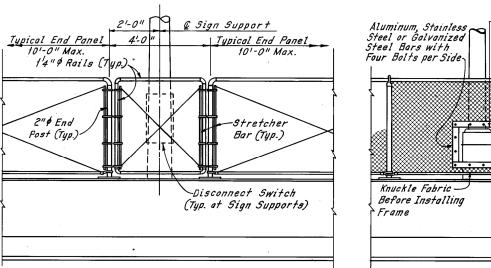
TYPICAL SECTION



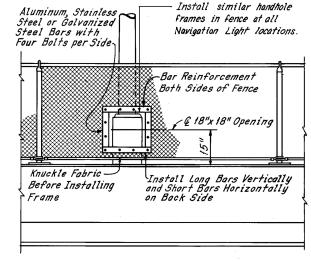








DETAIL AT SIGN SUPPORT



DETAIL AT LIGHT POLE

FRONT FACE OF PARAPET Nominal Inside Diameter 1" Holes for -1" Hole thru 34" P Bolts -Base Plate PLAN VIEW BASE PLATE

**NOTES** 

- 1. THE DETAILS ON THIS SHEET COME FROM SCANS OF THE 1986 RECORD PLANS. ALL FENCE ITEMS ARE EXISTING, UNLESS NOTED OTHERWISE, AND ALL DIMENSIONS ARE (±).
- 2. THE EXISTING FENCE POST, TOP RAIL, AND BOTTOM RAIL SIZES ARE LABELED BY NOMINAL DIAMETER. PROVIDE REPLACEMENT MATERIALS WHERE REQUIRED AS FOLLOWS:

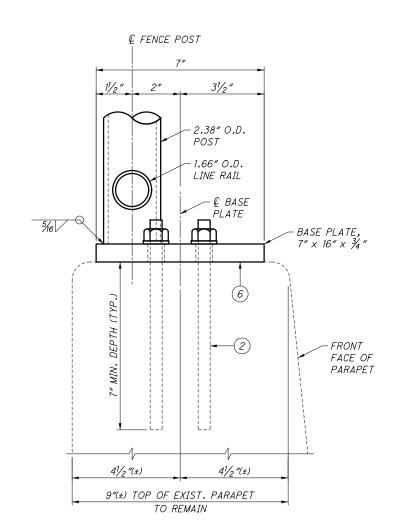
2" NOMINAL DIAMETER = 2.38" OUTSIDE DIAMETER 11/4" NOMIMINAL DIAMETER = 1.66" OUTSIDE DIAMETER

- 3. THE EXISTING "TYPICAL SECTION" AND "PLAN VIEW BASE PLATE" ARE SHOWN FOR INFORMATION ONLY. REPLACEMENT FENCE POSTS WITH BASE PLATE SHALL BE AS PER THE DETAILS ON SHEET 16/17.
- 4. FOR FENCE REPLACEMENT LOCATIONS, SEE SHEETS 3 TO 11/17.
- 5. FOR ADDITIONAL INFORMATION ON REQUIRED FENCE REPAIRS, SEE THE GENERAL NOTES.

**€** ANCHORS **€** FENCE POST **€** ANCHORS PROP. 34" BASE P *1" DIA. HOLE* IN BASE PLATE 61/2"

## PLAN - PROPOSED FENCE POST BASE PLATE

PROPOSED FENCE POST INSTALLED ON EXISTING PARAPET



### END VIEW - PROPOSED FENCE POST BASE PLATE

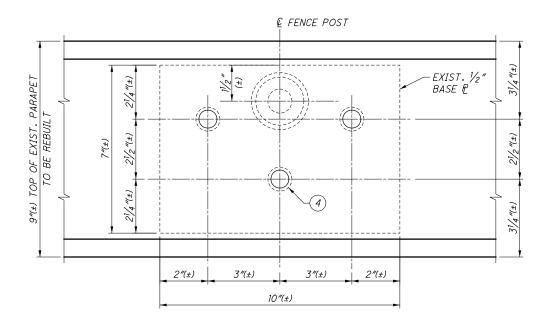
PROPOSED FENCE POST INSTALLED ON EXISTING PARAPET

## <u>LEGEND</u>

- 1%6″ DIA. HOLE FOR ½″ DIA. H.S. THREADED ANCHOR, 9″ LONG (TYP.)
- 1/2" DIA. H.S. THREADED ANCHOR, 9" LONG, WITH NUT AND WASHER (TYP.)
- EXIST. 3/4" DIA. THREADED INSERT TO REMAIN, REMOVE EXIST. BOLT (TYP.)
- 1"(±) DIA. HOLE FOR ¾" DIA. H.S. THREADED ANCHOR, 9" LONG (TYP.)
- 3/4" DIA. H.S. THREADED ANCHOR, 9" LONG, WITH NUT AND WASHER (TYP.)
- CAULKING COMPOUND, SEE NOTE 4

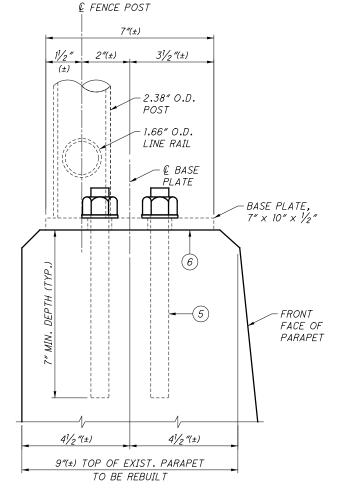
### **NOTES**

- 1. FURNISH REPLACEMENT FENCE POSTS WITH A 3/4" BASE PLATE PER THE DETAILS ON THIS SHEET FOR LOCATIONS WHERE THE EXISTING FENCE POST IS BENT OR OTHERWISE DAMAGED.
- 2. AT LOCATIONS WHERE THE EXISTING PARAPET IS TO REMAIN AND A REPLACEMENT FENCE POST IS REQUIRED: INSTALL THE REPLACEMENT FENCE POST USING USING DRILLED-IN ADHESIVE ANCHORS IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90. FOUR (4) 1/2" DIA. ANCHORS ARE REQUIRED PER LOCATION.
- 3. AT LOCATIONS WHERE THE EXISTING PARAPET IS REBUILT AND THE EXISTING FENCE POST IS TO REMAIN: CAREFULLY REMOVE EXISTING BOLTS AND EMBEDDED ANCHORS FROM THE EXISTING BASE PLATE. FURNISH AND INSTALL THREADED ROD ANCHORS, AS SHOWN, CAST-IN-PLACE WITH THE PARAPET CONCRETE TO REINSTALL THE EXISTING FENCE POST. THREE (3) 3/4 " DIA. ANCHORS ARE REQUIRED PER LOCATION.
- 4. FURNISH AND INSTALL SHIM PLATES (AS REQUIRED TO INSTALL POSTS PLUMB) AND CAULKING COMPOUND FOR ALL PROPOSED REPLACEMENT AND EXISTING REINSTALLED FENCE POSTS IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90.
- 5. THREADED ROD ANCHORS SHALL BE IN ACCORDANCE WITH THE MATERIAL REQUIREMENTS OF STANDARD DRAWING VPF-1-90.
- 6. FOR ADDITIONAL INFORMATION ON REQUIRED FENCE REPAIRS, SEE THE GENERAL NOTES.



# PLAN - EXISTING FENCE POST BASE PLATE

EXISTING FENCE POST REINSTALLED ON REBUILT PARAPET



### END VIEW - EXISTING FENCE POST BASE PLATE

EXISTING FENCE POST REINSTALLED ON REBUILT PARAPET



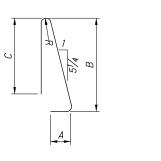
			RE	INFOR	CING ST					
MARK	NO.	LENGTH	WEIGHT	TYPE	A	B I	DIMENSION C	'S D	Ε	SERIES INC.
SUPER	RSTRU	CTURE								
S501	28	7′-0″	204	23	0'-8"	3'-3"	3'-0"			
S502	12	13'-8"	171	STR	0 0	3 3	1 3 0			
S503	6	13'-2"	82	STR						
5503		13 -2								
S504	6	9'-8"	60	STR						
S505	6	14'-8"	92	STR						
S506	5	4'-10"	25	24	0'-4"	2'-2"				
S507	3	5′-4″	17	23	0'-8"	2'-5"	2'-2"			
S601	4	9'-8"	58	STR						
S602	4	14'-8"	88	STR						
		TOTAL	797	LBS						
										-
		+								-
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	REINFORCING STEEL LIST									
MARK	NO.	LENGTH	WEIGHT	TYPE	A		DIMENSION C	S D	Ε	SERIES INC.
					A	<i>D</i>		D		1110.
		-								
		+								
		-								
		-								
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			1	1	I	1	1	1	1	

# BENDING DIAGRAMS



<u>TYPE-23</u>

<u>TYPE-24</u>

# REINFORCING STEEL NOTES

- 1. SERIES BARS EACH BAR VARIES BY TABULATED AMOUNT.
- 2. ALL DIMENSIONS ARE OUT TO OUT.
- 3. TYPE 'STR' INDICATES A STRAIGHT BAR.
- 4. THE BAR SIZE NUMBER IS INDICATED IN THE 'MARK' COLUMN.
  THE FIRST ONE OR TWO DIGITS OF EACH MARK INDICATES
  THE BAR SIZE NUMBER. FOR EXAMPLE, A501 IS A #5 BAR
  SIZE AND P1001 IS A #10 BAR SIZE.
- 5. ALL REINFORCING STEEL SHALL BE EPOXY COATED.



REINFORCING STEEL LIST - LOCATION BRIDGE NO. CUY-490-0100 I-490 OVER CUYAHOGA RIVER

CUY-BH-FY2021(B) MISC PID No. 109131

