CUY - US 6-14.56
190203 PID - 99972
Dist 12 4/4/2019

Contract Proposal Available @
www.contracts.dot.state.oh.us/home

Conformed Set

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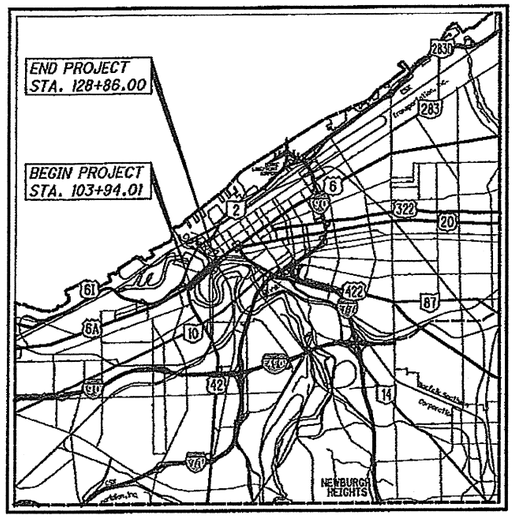


LOCATION MAP

LATITUDE: 41°29'31" N LONGITUDE: 81°42'22" W

SCALE IN MILES 0 1 2 3 4

N

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

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

CUY-6-14.56

DETROIT-SUPERIOR BRIDGE
OVER THE CUYAHOGA RIVER
CITY OF CLEVELAND
CUYAHOGA COUNTY

INDEX OF SHEETS:

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES REPLACEMENT OF THE UPPER DECK WEARING SURFACE, CONCRETE PATCHING OR REPLACEMENT OF LOWER SUPERSTRUCTURE, SUBSTRUCTURE, STATION AND TUNNEL COMPONENTS, INSTALLATION OF FIBER-REINFORCED POLYMER WRAPS OVER PUBLIC AREAS, CONSTRUCTION OF VANDAL-PROTECTION WALLS, MODIFICATIONS TO THE CENTER STREET SWING BRIDGE OPERATOR'S CAR SHELTER, RESTORATION OF NAVIGATION LIGHTING AND DRAINAGE REPAIRS.

EARTH DISTURBED AREAS

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

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2016 SPECIFICATIONS

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

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.

OHIO Utilities Protection SERVICE — Call Before You Dig 1-800-362-2764
(Non-members must be called directly)

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

PLAN PREPARED BY:
PENNONI ASSOCIATES INC.
1655 W. MARKET ST., SUITE 355
AKRON, OHIO 44313

ENGINEERS SEAL:

STATE OF OHIO — WILLIAM JAMES VERMES — PE 63391 — REGISTERED PROFESSIONAL ENGINEER

SIGNED: [signature]
DATE: 12/21/2018

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	7/18/14
CB-1.1	7/20/18
DM-4.4	1/15/16
EXJ-4-87	1/19/18
MT-95.31	7/21/17
MT-95.32	7/21/17
MT-97.10	7/18/14
MT-99.20	7/20/18
MT-105.10	7/19/13
MT-110.10	7/19/13
TC-71.10	1/19/18

SUPPLEMENTAL SPECIFICATIONS

800-2016	1/18/19
821	4/20/12
832	10/19/18
843	1/15/16
844	4/20/18
848	1/20/17

PROPOSAL NOTES

519	7/21/17

SPECIAL PROVISIONS

METROPARKS ACCESS PERMIT 9/21/18

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.

APPROVED [signature]
DATE 01-04-19 DISTRICT DEPUTY DIRECTOR

APPROVED [signature]
DATE 1/04/19 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E161111
PID NO. 99972
CONSTRUCTION PROJECT NO. CUY-6-14.56
RAILROAD INVOLVEMENT NONE

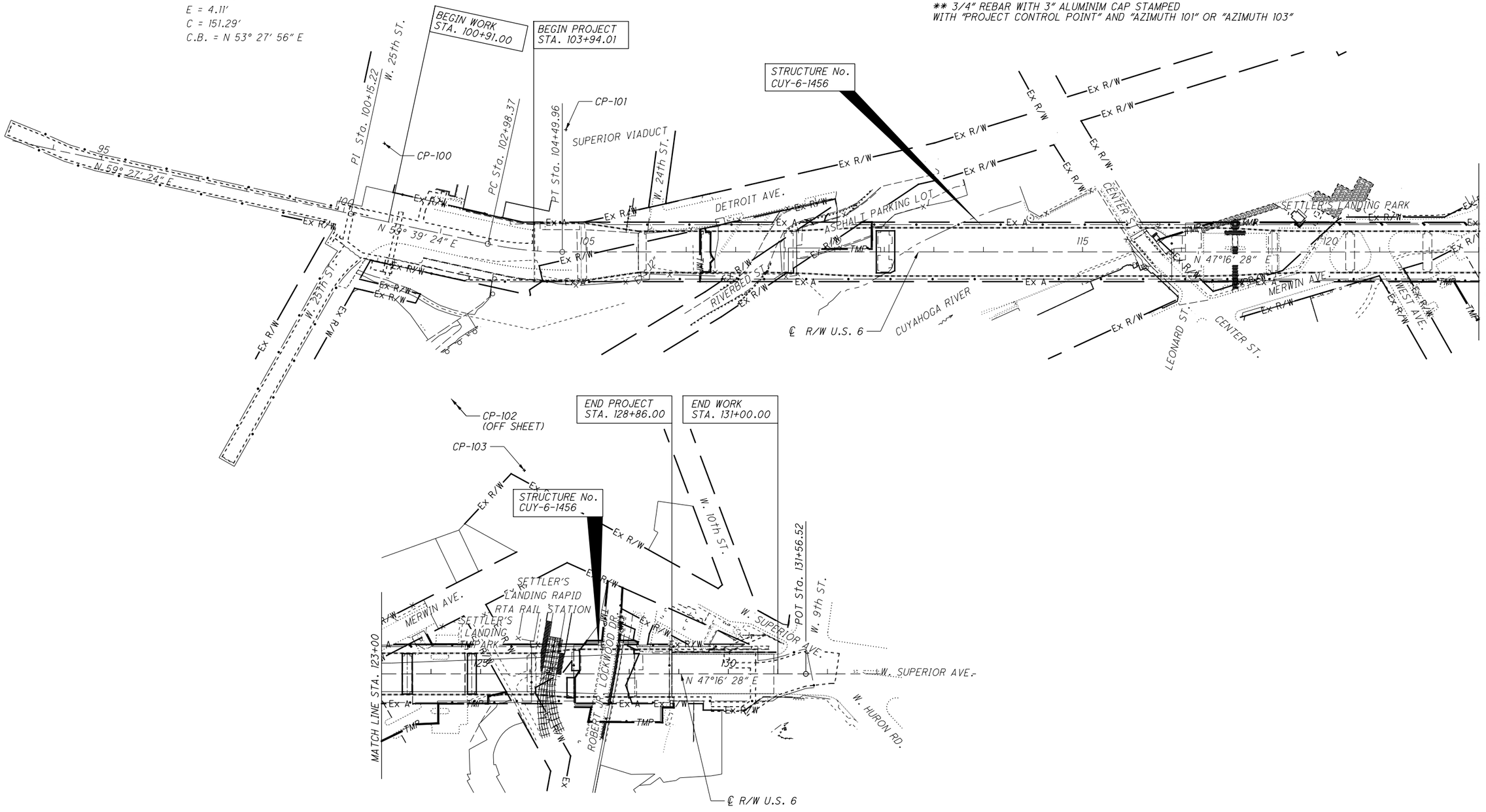
NAD 83 (CONUS) (MOL)
OHIO STATE PLANE
NORTH ZONE,
PROJECT GROUND, P.A.F.=1.0000583234
NAVD88, GEOID12A
ALL COORDINATES ARE PROJECT GROUND

CURVE DATA
P.I.Sta. 103+74.46
Δ = 12° 22′ 56″ (LT)
Dc = 8° 10′ 07″
R = 701.42′
T = 76.09′
L = 151.58′
E = 4.11′
C = 151.29′
C.B. = N 53° 27′ 56″ E

Point	North Ground	East Ground	North Grid	East Grid	℄ STATION, OFFSET	Elevation	Feature
CP-100	665971.271	2185718.799	665932.432	2185591.327	U.S. 6 100+50.96, 153.32′ LT	667.885	* 3/4″ REBAR
CP-101	666240.136	2185969.167	666201.281	2185841.681	U.S. 6 104+57.11, 246.76′ LT	656.310	**3/4″ REBAR
CP-102	668076.431	2187195.770	668037.469	2187068.213	U.S. 6 126+04.09, 763.49′ LT	579.605	* 3/4″ REBAR
CP-103	667806.791	2187423.320	667767.844	2187295.749	U.S. 6 125+88.31, 411.02′ LT	579.621	**3/4″ REBAR

* 3/4″ REBAR WITH 3″ ALUMINIM CAP STAMPED WITH "PROJECT CONTROL POINT" AND "PRIMARY 100" OR "PRIMARY 102"

** 3/4″ REBAR WITH 3″ ALUMINIM CAP STAMPED WITH "PROJECT CONTROL POINT" AND "AZIMUTH 101" OR "AZIMUTH 103"



CALCULATED CJK
CHECKED JMZ

HORIZONTAL SCALE IN FEET
0 50 100 200

SCHEMATIC PLAN

CUY-6-14.56

2
138

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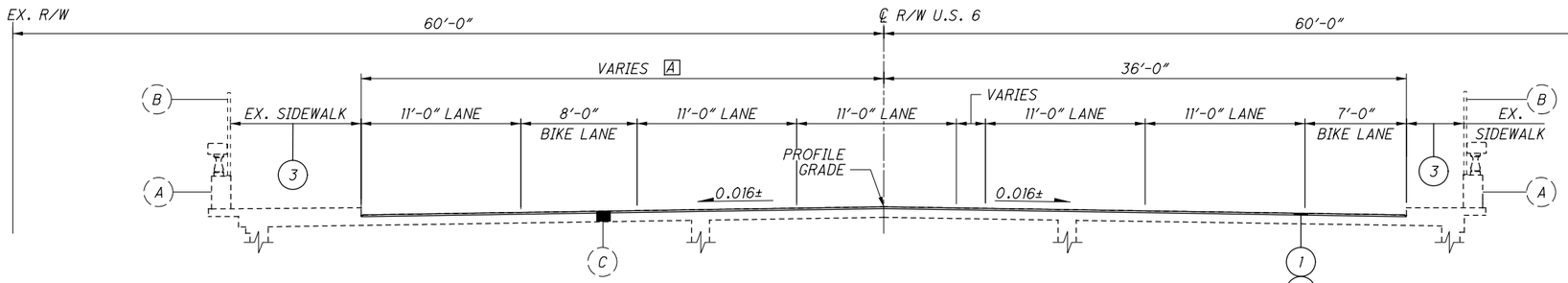


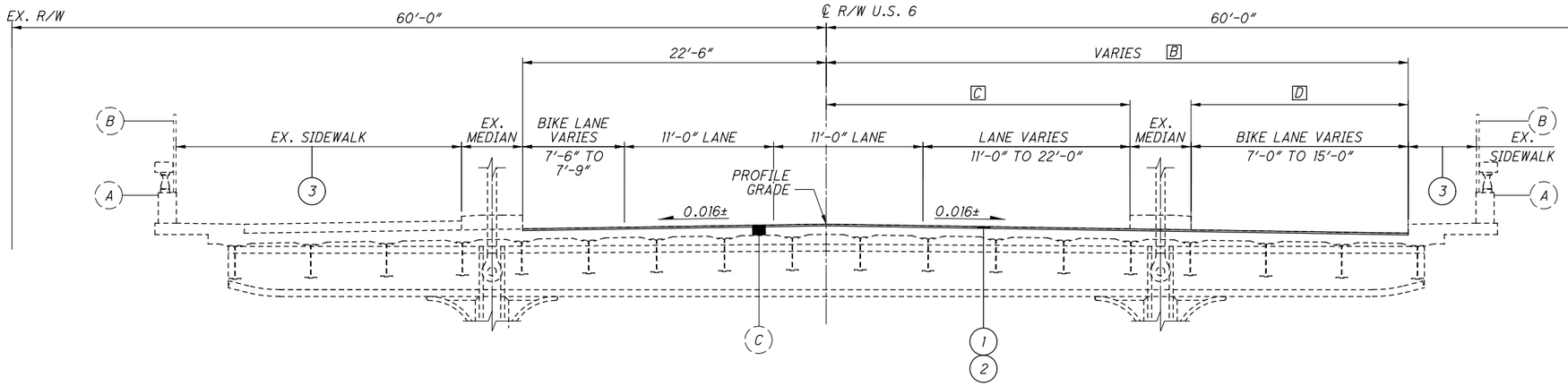
TYPICAL SECTION - U.S. 6

STA. 103+94.01 TO STA. 106+25.00
ALL DIMENSIONS (±)

A
- 40'-0" TO 36'-0" - STA. 103+94.01 TO STA. 104+96.83
- 36'-0" TO 36'-0" - STA. 104+96.83 TO STA. 105+34.00
- 36'-0" TO 22'-6" - STA. 105+34.00 TO STA. 106+25.00

LEGEND

1. ITEM 848 - MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION, 1 1/2" THICK
2. ITEM 848 - SURFACE PREPARATION USING HYDRODEMOLITION (1 1/2" THICK)
3. LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
- (A) EXISTING RAILING
- (B) EXISTING FENCE
- (C) 8 3/4"(±) EXISTING REINFORCED CONCRETE DECK



TYPICAL SECTION - U.S. 6

STA. 106+25.00 TO STA. 123+20.00
ALL DIMENSIONS (±)

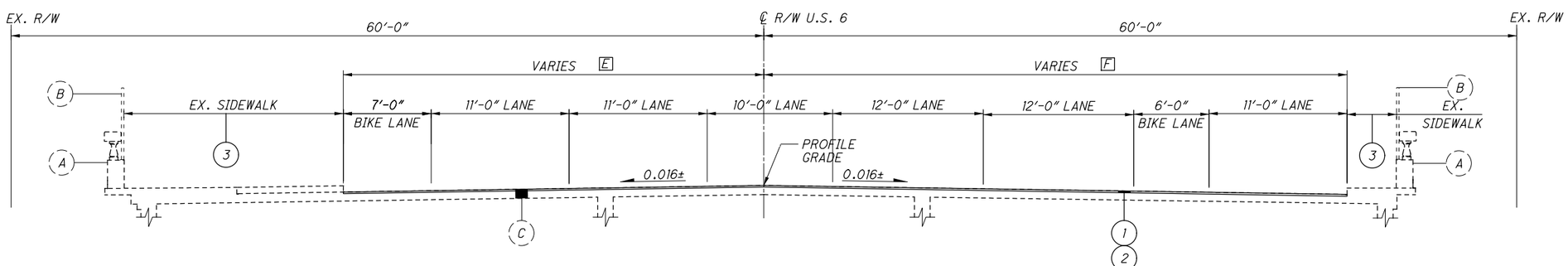
B
- 36'-0" TO 36'-0" - STA. 106+25.00 TO STA. 108+58.86
- 36'-0" TO 42'-9" - STA. 108+58.86 TO STA. 110+88.00
- 42'-9" TO 42'-9" - STA. 110+88.00 TO STA. 117+34.00
- 42'-9" TO 36'-0" - STA. 117+34.00 TO STA. 119+63.09
- 36'-0" TO 36'-0" - STA. 119+63.09 TO STA. 123+20.00

C 22'-3" TO 22'-3" - STA. 111+03.00 TO STA. 117+20.00

D 16'-0" TO 16'-0" - STA. 111+03.00 TO STA. 117+20.00

NOTES

1. FOR BRIDGE DECK WEARING SURFACE REPLACEMENT DETAIL, SEE SHEET 50/138.



TYPICAL SECTION - U.S. 6

STA. 123+20.00 TO STA. 131+00.00
ALL DIMENSIONS (±)

E
- 22'-6" TO 40'-0" - STA. 123+20.00 TO STA. 128+00.00
- 40'-0" TO 40'-0" - STA. 128+00.00 TO STA. 131+00.00

F
- 36'-0" TO 36'-0" - STA. 123+20.00 TO STA. 126+07.69
- 36'-0" TO 40'-0" - STA. 126+07.69 TO STA. 127+57.75
- 40'-0" TO 40'-0" - STA. 127+57.75 TO STA. 131+00.00

TYPICAL SECTIONS

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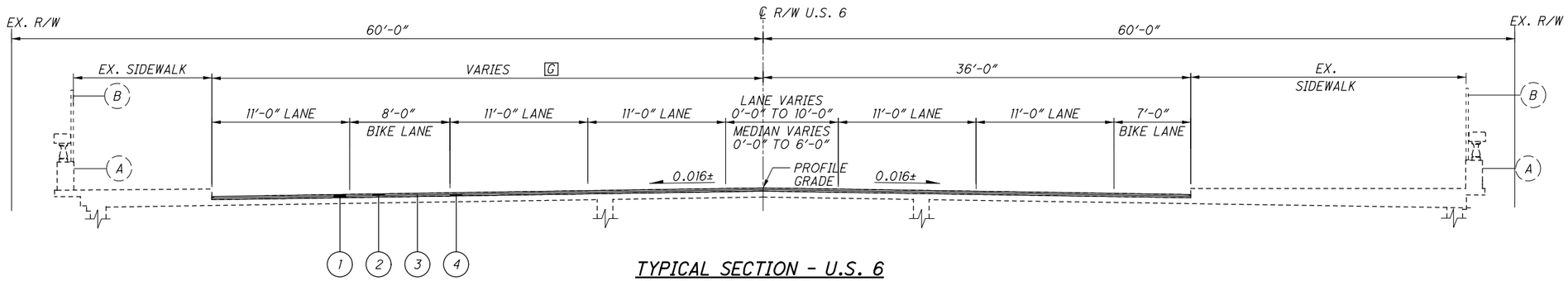

TYPICAL SECTION - U.S. 6
(PAVEMENT RESURFACING)

STA. 100+91.00 TO STA. 103+94.01
ALL DIMENSIONS (±)

G 44'-0" TO 40'-0" - STA. 101+50.00 TO STA. 103+94.01

LEGEND

(1) ITEM 254 - 3" PAVEMENT PLANING, ASPHALT CONCRETE

(2) ITEM 442 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, CY 12.5 MM, TYPE A (448)

(3) ITEM 407 - TACK COAT (0.075 GAL/SY)

(4) ITEM 442 - 1 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5 MM, TYPE A (448)

(A) EXISTING RAILING

(B) EXISTING FENCE

TYPICAL SECTIONS

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UTILITIES

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

CHARTER COMMUNICATIONS
8179 DOW CIRCLE
STRONGSVILLE, OH 44136
ATTN: GARY NAUMANN
PHONE: 216-575-8016, EXT. 5033
EMAIL: gary.naumann1@charter.com

CEI FIRST ENERGY
6896 MILLER ROAD
BRECKSVILLE, OH 44141
ATTN: TED RADER
PHONE: 440-546-8738
EMAIL: radert@firstenergycorp.com

CITY OF CLEVELAND DIVISION OF PUBLIC POWER
1300 LAKESIDE AVENUE
CLEVELAND, OH 44114
ATTN: CHRIS HIRZEL
PHONE: 216-563-7212
EMAIL: chirzel@cpp.org

CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING
601 LAKESIDE AVENUE
CLEVELAND, OH 44114
ATTN: ANDY CROSS
PHONE: 216-664-3197
EMAIL: across@city.cleveland.oh.us

CITY OF CLEVELAND DIVISION OF
WATER POLLUTION CONTROL
12302 KIRBY ROAD
CLEVELAND, OH 44108
ATTN: ELIE RAMY
PHONE: 216-664-2756
EMAIL: eramy@clevelandwpc.com

CITY OF CLEVELAND DIVISION OF WATER
1201 LAKESIDE AVENUE
CLEVELAND, OH 44114
ATTN: FRED ROBERTS
PHONE: 216-644-2444, EXT. 75590
EMAIL: fred_roberts@clevelandwater.com

WESTERN RESERVE COMMUNICATIONS
2801 HAMILTON AVENUE
CLEVELAND, OH 44114
ATTN: LOWELL KATZ
PHONE: 216-621-8121
EMAIL: wrcwireless@sbcglobal.net

ZAYO FIBER SOLUTIONS
4199 KINROSS LAKES PARKWAY, SUITE 10
RICHFIELD, OH 44286
ATTN: DAVE GALUSKA
PHONE: 234-281-0025
EMAIL: dave.galuska@zayo.com

NORTHEAST OHIO REGIONAL SEWER DISTRICT (NEORSD)
3900 EUCLID AVENUE
CLEVELAND, OH 44115-2504
ATTN: MARY MACIEJOWSKI
PHONE: 216-881-6600, EXT. 6466
EMAIL: maciejowskim@neorsd.org

AT&T
13630 LORAIN AVENUE, 2ND FLOOR
CLEVELAND, OH 44111
ATTN: JAMES JANIS
PHONE: 216-476-6013
EMAIL: pj8191@att.com

DOMINION ENERGY OHIO
320 SPRINGSIDE DRIVE, SUITE 320
AKRON, OH 44333
ATTN: KEVIN BIRT
PHONE: 330-664-2541
EMAIL: relocation@dominionenergy.com

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

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEET 2 OF THE PLANS FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

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

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS
MONUMNET TYPE: TYPE B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEOID 12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD 83 (CONUS)(MOL)
ELLIPSOID: GRS 80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE - NORTH ZONE
COMBINED SCALE FACTOR: 1.0000583234 (GRID TO GROUND)
ORIGIN OF COORDINATE SYSTEM: (0,0)

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

UNITS ARE IN U.S. SURVEY FEET.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. 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.

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.

AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPORTS

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPORT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF 31 FT. IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FORM 7460-1 TO THE FAA. NOTIFY THE ODOT OFFICE OF AVIATION WHEN SUBMITTING AN FAA FORM 7460-1.

NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

EXPRESS PROCESSING CENTER
THE FEDERAL AVIATION ADMINISTRATION
SOUTHWEST REGIONAL OFFICE
AIR TRAFFIC AIRSPACE BRANCH ASW-520
2601 MEACHAN BLVD.
FORT WORTH, TX 76137-4298

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF AVIATION
2829 WEST DUBLIN-GRANVILLE ROAD
COLUMBUS, OHIO 43235
614-387-2346

KIRTLAND'S WARBLER

THIS PROJECT IS LOCATED WITHIN THE MIGRATION RANGE OF THE FEDERALLY ENDANGERED KIRTLAND'S WARBLER. NO TREES AND WOODY VEGETATION GREATER THAN 3 FEET IN HEIGHT SHALL BE REMOVED UNDER THIS PROJECT FROM APRIL 22 THROUGH JUNE 1 AND FROM AUGUST 15 THROUGH OCTOBER 15. ALL NECESSARY VEGETATION REMOVAL SHALL OCCUR FROM OCTOBER 16 THROUGH APRIL 21 AND FROM JUNE 2 THROUGH AUGUST 14. THIS REQUIREMENT IS NECESSARY TO AVOID AND MINIMIZE IMPACTS TO THE KIRTLAND'S WARBLER AS REQUIRED BY THE ENDANGERED SPECIES ACT.

THE PROJECT IS LOCATED WITHIN THE KNOWN HABITAT RANGE OF THE KIRTLAND'S WARBLER. IF THE SPECIES IS ENCOUNTERED WITHIN THE CONSTRUCTION LIMITS DURING CONSTRUCTION OPERATIONS, ALL CONSTRUCTION OPERATIONS WILL CEASE IMMEDIATELY, AND THE PROJECT ENGINEER SHALL IMMEDIATELY CONTACT THE ODOT-OES AT 614-466-7100, WHO WILL IMMEDIATELY CONTACT THE USFWS COLUMBUS FIELD OFFICE. CONSTRUCTION ACTIVITIES SHALL NOT CONTINUE UNTIL THIS ADDITIONAL COORDINATION/CONSULTATION WITH USFWS IS CONCLUDED.

LIABILITY INSURANCE

IN ADDITION TO THE REQUIREMENTS OF ODOT CMS 107.12B, THE CITY OF CLEVELAND MUST BE NAMED ADDITIONAL INSURED.

COORDINATION WITH CLEVELAND METROPARKS

ODOT HAS OBTAINED A CONSTRUCTION ACCESS PERMIT FROM CLEVELAND METROPARKS FOR WORK WITHIN HERITAGE PARK 1. IN ADDITION TO THE REQUIREMENTS LISTED BELOW, THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL COMPLIANCE WITH THE CONSTRUCTION ACCESS PERMIT AS PROVIDED IN THE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL NOT STAGE OR STORE ANY CONSTRUCTION EQUIPMENT WITHIN THE DEFINED BOUNDARY OF HERITAGE PARK 1, INCLUDING THE PARKING LOT.

THE CONTRACTOR SHALL NOT DISTURB THE IRISH MEMORIAL STATUE OR THE PARKING LOT PAY STATION KIOSK DURING CONSTRUCTION.

THE CONTRACTOR SHALL RESTORE THE PARKING LOT TO A CONDITION AT LEAST AS GOOD AS EXISTED PRIOR TO THE PROJECT.

THE CONTRACTOR SHALL PROVIDE CLEVELAND METROPARKS WITH AN OPPORTUNITY TO INSPECT THE HERITAGE PARK 1 PROPERTY PRIOR TO COMPLETION OF CONSTRUCTION.

THE CONTRACTOR SHALL COORDINATE THE PROJECT SCHEDULE WITH CLEVELAND METROPARKS.

CLEVELAND METROPARKS
4101 FULTON PARKWAY
CLEVELAND, OH 44144
ATTN: JOHN KILGORE
PHONE: 216-780-1163

WORK RESTRICTIONS

NO WORK SHALL BE PERFORMED, AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC PRIOR TO JULY 10, 2019.

ADDITIONALLY, A PUBLIC EVENT IS SCHEDULED ON SATURDAY, AUGUST 17, 2019. CONTRACTOR SHALL SECURE WORK AREAS TO ALLOW PUBLIC ACCESS TO THE DETROIT-SUPERIOR LOWER DECK AND STATION AREAS. NO WORK SHALL BE PERFORMED DURING THIS SCHEDULED EVENT.

COOPERATION BETWEEN CONTRACTORS

THE CONTRACTOR SHALL COOPERATE AND COORDINATE HER/HIS 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 2016 CONSTRUCTION AND MATERIAL SPECIFICATIONS IS INTENDED. THE TOWPATH TRAIL STAGE 4 PROJECT IS SCHEDULED TO BE UNDER CONSTRUCTION WITHIN THE LIMITS OF THE PROJECT.

CALCULATED CEM
CHECKED BPS

GENERAL NOTES

CUY-6-14.56

ITEM 203 - ROADWAY, MISC.: TEMPORARY CONTRACTOR ACCESS AND SITE RESTORATION

THIS PAY ITEM IS INTENDED FOR ANY REMOVAL, STORAGE, AND RESETTING OF EXISTING ROADWAY COMPONENTS, INSTALLATION AND REMOVAL OF TEMPORARY PAVEMENT, AND SITE RESTORATION AS NECESSARY TO ACCESS TEMPORARY RIGHT-OF-WAY PARCELS 6-T AND 9-T.

THE CAREFUL REMOVAL, STORAGE, AND RESETTING OF EXISTING ROADWAY COMPONENTS SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING: EXISTING GUARDRAIL AND CAST IRON FENCE AT PARCEL 6-T AND EXISTING STEEL BOLLARDS AT PARCEL 9-T.

PRIOR TO BEGINNING WORK, THE CONTRACTOR AND THE ENGINEER WILL REVIEW AND RECORD ALL ITEMS WITHIN THE WORK AREA FOR THE PURPOSE OF ESTABLISHING THE SURFACE CONDITIONS EXISTING IN ALL AREAS AFFECTED BY THE WORK. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL EXISTING PAVEMENT, CURB, SIDEWALK, TRAIL, GUARDRAIL, FENCING, TRAFFIC SIGNS, AND LANDSCAPING FEATURES. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR IS RESPONSIBLE TO RESTORE THE WORK AREA TO EQUAL OR BETTER CONDITIONS AS APPROVED BY THE ENGINEER.

THIS WORK SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS AND TO THE SATISFACTION OF THE ENGINEER.

CALCULATED AJK
CHECKED BPS

GENERAL NOTES

CUY-6-14.56

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ITEM 614, MAINTAINING TRAFFIC

A MINIMUM OF ONE (1) LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES ON U.S. 6 BY USE OF THE EXISTING PAVEMENT. RESURFACING AREAS SHALL BE ACCOMPLISHED ON NIGHTS AND WEEKENDS USING SCD MT-97.12

ONE (1) LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES ON ROBERT LOCKWOOD JR. DRIVE, EXCEPT WHEN WORK NEEDS TO BE PERFORMED UNDER SPAN 12. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY CLOSE ONE (1) LANE USING FLAGGERS IN ACCORDANCE WITH STANDARD DRAWING MT-97.10 ON WEEKDAYS BETWEEN 9:00 AM TO 3:30 PM.

MERWIN AVENUE SHALL BE CLOSED FOR A MAXIMUM OF 90 DAYS.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE RECREATION FEATURES OF HERITAGE PARK 1 AND THE CANAL BASIN PARK CONNECTOR TRAIL AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.

THE CONTRACTOR MUST PROVIDE NOTICE OF PARKING LOT CLOSURE TO CLEVELAND METROPARKS AT LEAST 60 DAYS IN ADVANCE OF THE CLOSURE.

THE CONTRACTOR SHALL INSTALL APPROPRIATE SIGNAGE TO ALERT THE CONTRACTOR MUST INSTALL APPROPRIATE SIGNAGE TO ALERT USERS OF CONSTRUCTION ACTIVITIES IN THE PROXIMITY OF HERITAGE PARK 1.

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.

NOTICE OF CLOSURE SIGNS (W20-H13), SHALL BE ERECTED BY THE CONTRACTOR PRIOR TO THE SCHEDULED ROAD CLOSURE IN ACCORDANCE WITH THE NOTICE OF CLOSURE TIME TABLE BELOW. AT THE APPROVAL OF THE ENGINEER, PORTABLE CHANGABLE MESSAGE SIGNS MAY BE USED IN LIEU OF THE STANDARD FLATSHEET SIGN FOR CLOSURE DURATIONS OF LESS THAN 1 WEEK.

THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT OR NEAR THE POINT OF CLOSURE.

NOTICE OF CLOSURE SIGN TIME TABLE

ITEM	DURATION OF CLOSURE	SIGN DISPLAYED TO PUBLIC
ROAD	> 12 HRS & < 2 WKS	7 CALENDAR DAYS PRIOR TO CLOSURE
CLOSURES	< 12 HRS	2 BUSINESS DAYS PRIOR TO CLOSURE

THE SIGN SHALL DISPLAY THE DATE OF THE CLOSURE IN MMM-DD FORMAT AND THE NUMBER OF DAYS OF THE CLOSURE. THE LAST LINE OF THE W20-H13 SIGN LISTS A PHONE NUMBER WHICH A MOTORIST MAY CALL FOR ADDITIONAL INFORMATION. THIS IS TO BE A SPECIFIC OFFICE WITHIN THE DISTRICT RATHER THAN THE GENERAL SWITCHBOARD NUMBER.

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

MERWIN AVENUE, WEST STREET AND RIVERBED ROAD

INTERIM-COMPLETION DATE

ALL BRIDGE AND PAVEMENT RESURFACING WORK AND SIDEWALK SEALING WORK SHALL BE COMPLETE BY SEPTEMBER 30, 2019. ALL EXISTING LANES AND TRAFFIC PATTERNS ON U.S. 6 SHALL BE RESTORED (WITH PROPOSED PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES) AND OPEN BY OCTOBER 15, 2019. SHOULD THE CONTRACTOR FAIL TO MEET THESE REQUIREMENTS, A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF $4,000 PER CALENDAR DAY.

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 SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

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

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

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

- DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.
- DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

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

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

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

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

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

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

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

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 200 HOURS

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

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

DRUM REQUIREMENTS

IN ADDITION TO THE REQUIREMENTS OF THE PLANS, SPECIFICATION AND PROPOSAL, DRUMS FURNISHED BY THE CONTRACTOR SHALL BE NEW AND UNUSED AT THE TIME OF ARRIVAL ON THE PROJECT. ANY DRUMS BROUGHT ON THE PROJECT, WHICH HAVE PREVIOUSLY BEEN USED ELSEWHERE, WILL NOT BE ACCEPTED.

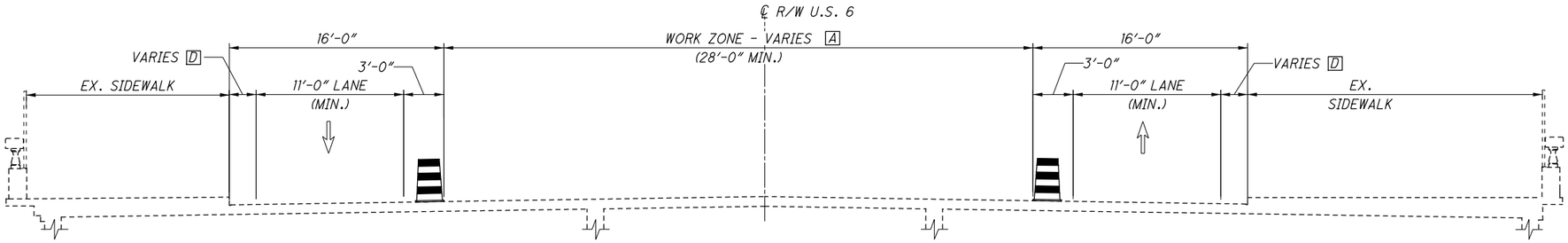
PAYMENT FOR DRUMS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR MAINTAINING TRAFFIC.

CALCULATED CJK CHECKED JMZ

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-6-14.56

6
138

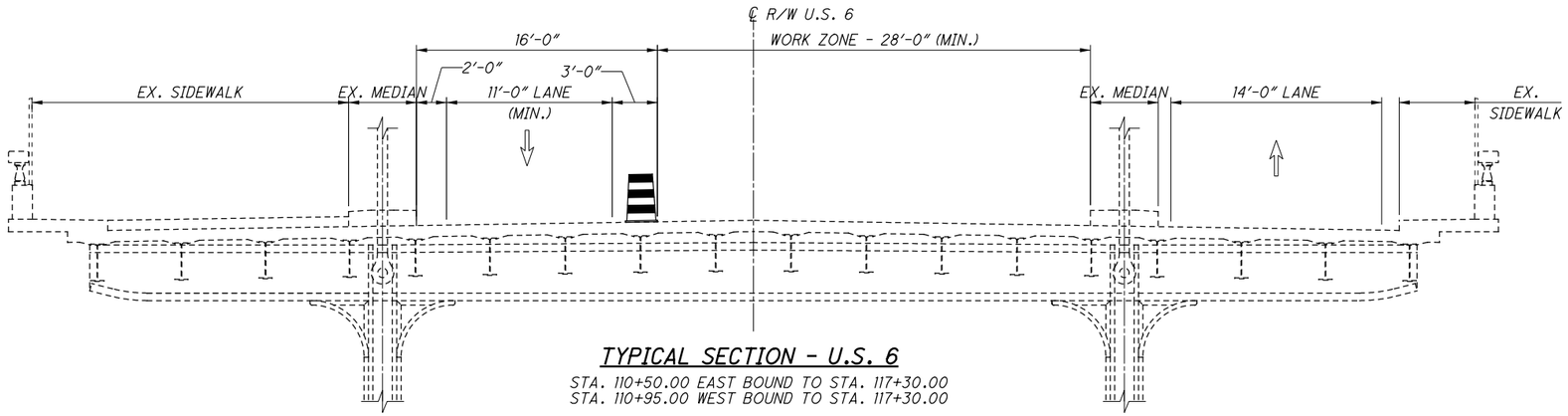


TYPICAL SECTION - U.S. 6

STA. 103+94.00 TO STA. 110+95.00

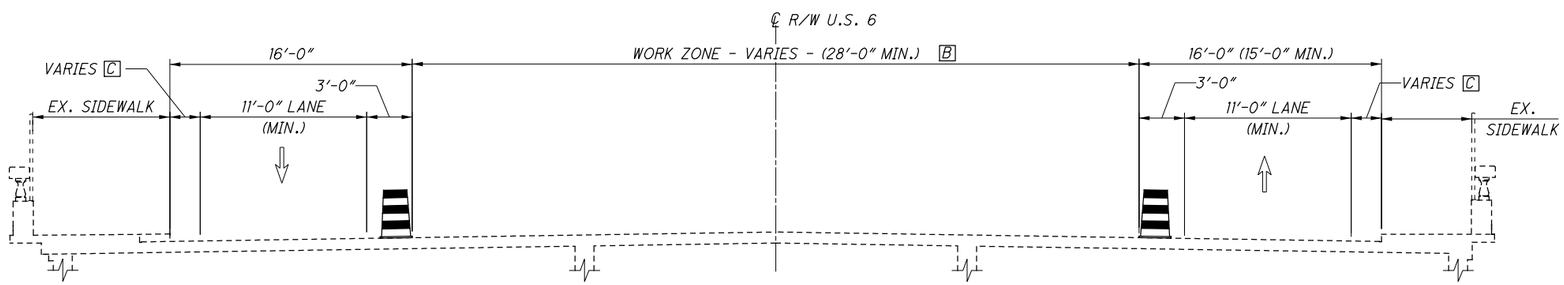
[A] 44'-0" TO 39'-0" - STA. 103+94.00 TO STA. 105+28.00
39'-0" TO 28'-0" - STA. 105+28.00 TO STA. 106+24.00
28'-0" - STA. 106+24.00 TO STA. 110+50.00 EAST BOUND
28'-0" - STA. 106+24.00 TO STA. 110+95.00 WEST BOUND

[D] 2'-0" - STA. 103+94.00 TO STA. 105+92.00
1'-0" - STA. 106+12.00 TO STA. 109+38.00
2'-0" - STA. 109+58.00 TO STA. 110+50.00 EAST BOUND
2'-0" - STA. 109+58.00 TO STA. 110+95.00 WEST BOUND



TYPICAL SECTION - U.S. 6

STA. 110+50.00 EAST BOUND TO STA. 117+30.00
STA. 110+95.00 WEST BOUND TO STA. 117+30.00



TYPICAL SECTION - U.S. 6

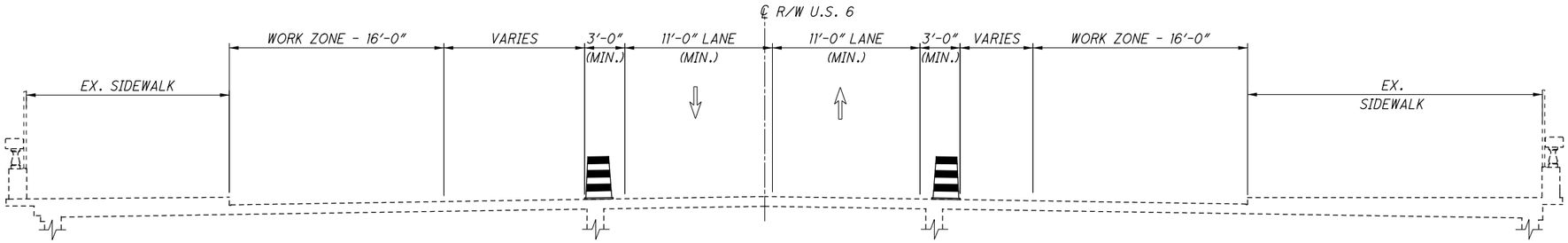
STA. 117+30.00 TO STA. 128+70.00

[B] 28'-0" - STA. 117+30.00 TO STA. 128+70.00
28'-0" TO 48'-0" - STA. 123+20.00 TO STA. 128+70.00

[C] 2'-0" - STA. 117+30.00 TO STA. 118+80.00
1'-0" - STA. 119+00.00 TO STA. 123+75.00
2'-0" STA. 123+95.00 TO STA. 128+70.00

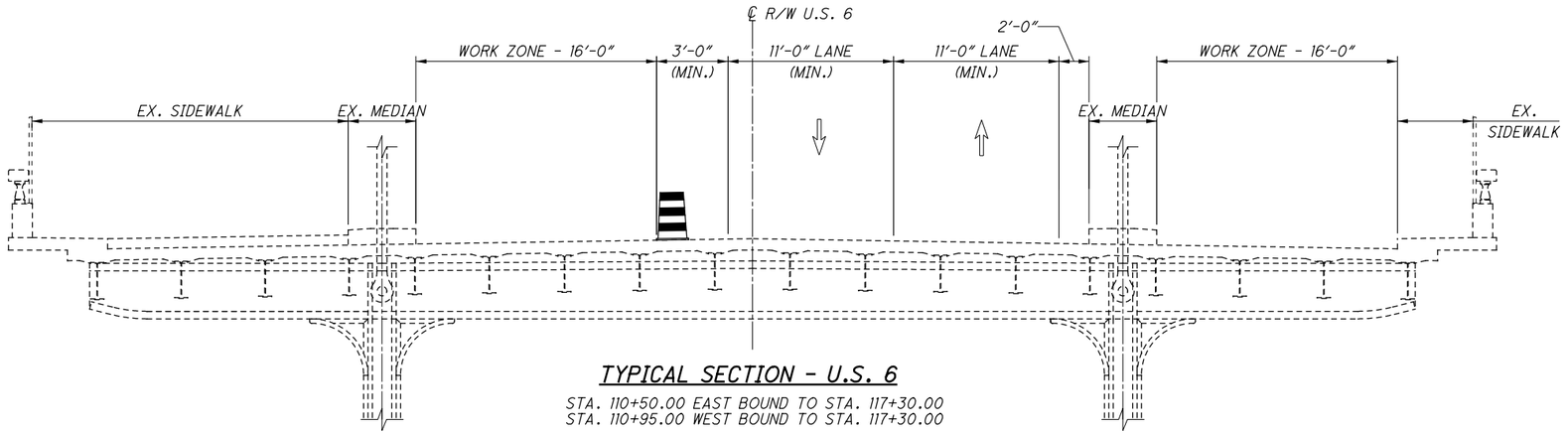
MAINTENANCE OF TRAFFIC - TYPICAL SECTIONS
PHASE 1

CUY-6-14.56



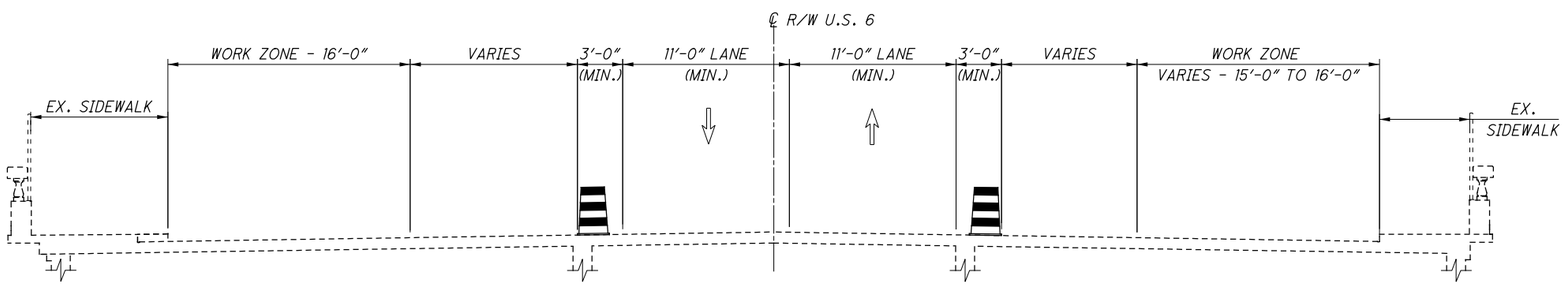
TYPICAL SECTION - U.S. 6

STA. 103+94.00 TO STA. 110+50.00 EAST BOUND
STA. 103+94.00 TO STA. 110+95.00 WEST BOUND



TYPICAL SECTION - U.S. 6

STA. 110+50.00 EAST BOUND TO STA. 117+30.00
STA. 110+95.00 WEST BOUND TO STA. 117+30.00

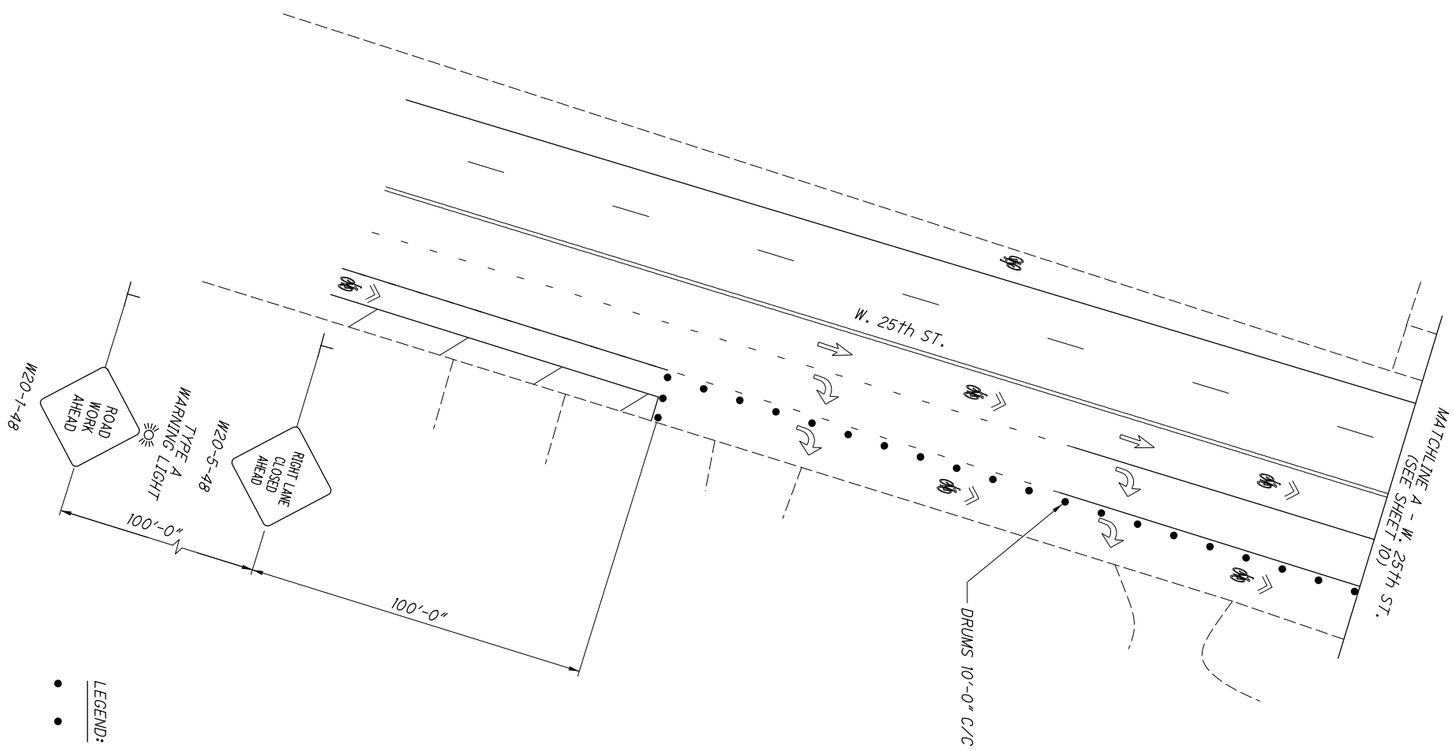


TYPICAL SECTION - U.S. 6

STA. 117+30.00 TO STA. 128+86.00

MAINTENANCE OF TRAFFIC - TYPICAL SECTIONS PHASE 2

CUY-6-14.56



LEGEND:

• • • DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE

9 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN - PHASE 1 MATCHLINE A - W. 25th ST.	CALCULATED CJK CHECKED JMZ	0 10 20 40 HORIZONTAL SCALE IN FEET	N

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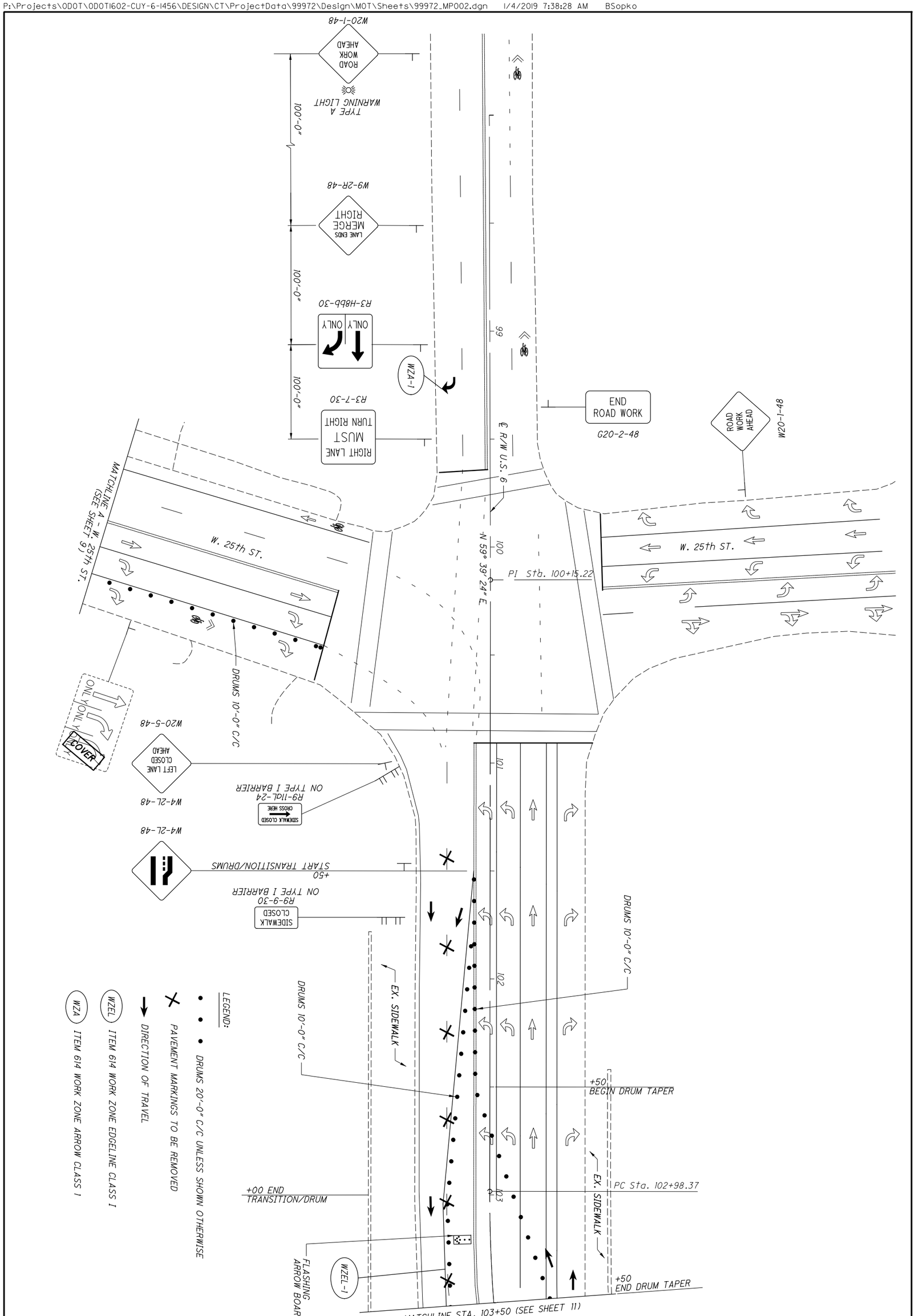

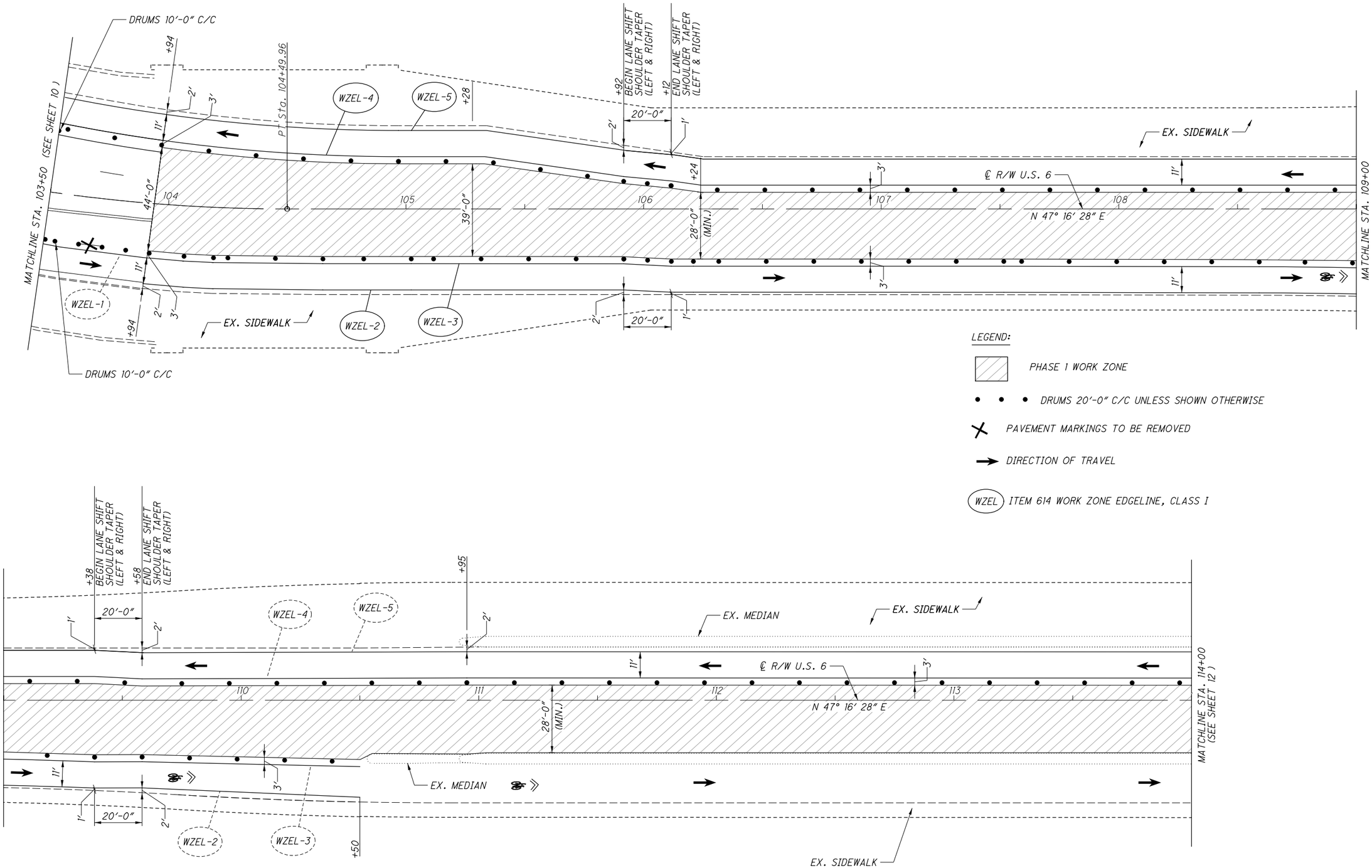

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HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CJK
CHECKED JMZ

MAINTENANCE OF TRAFFIC PLAN- PHASE 1
STA. 103+50 TO STA. 114+50

CUY-6-14.56

11
138

LEGEND:

PHASE 1 WORK ZONE

DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE

DIRECTION OF TRAVEL

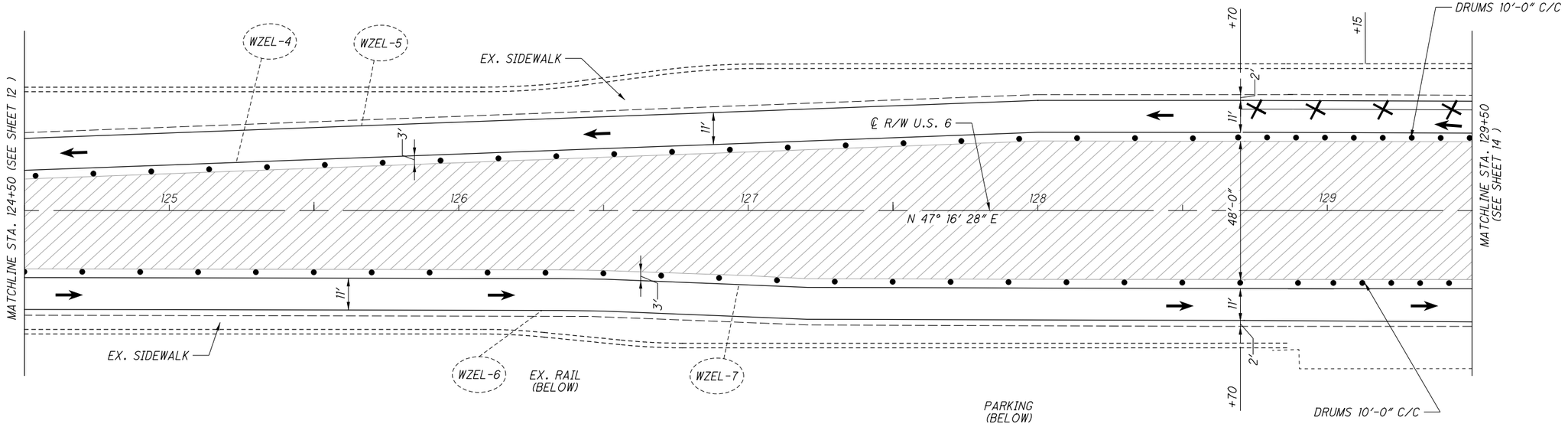
WZEL ITEM 614 WORK ZONE EDGELINE, CLASS I

MAINTENANCE OF TRAFFIC PLAN- PHASE 1
STA. 114+00 TO STA. 124+50

CUY-6-14.56

CALCULATED CJK
CHECKED JMZ

HORIZONTAL SCALE IN FEET
0 10 20 40



LEGEND:

- PHASE 1 WORK ZONE
- • • • DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE
- PAVEMENT MARKINGS TO BE REMOVED
- DIRECTION OF TRAVEL
- (WZEL) ITEM 614 WORK ZONE EDGELINE, CLASS I

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CJK
CHECKED JMZ

MAINTENANCE OF TRAFFIC PLAN- PHASE 1
STA. 124+50 TO STA. 129+50

CUY-6-14.56

13
138

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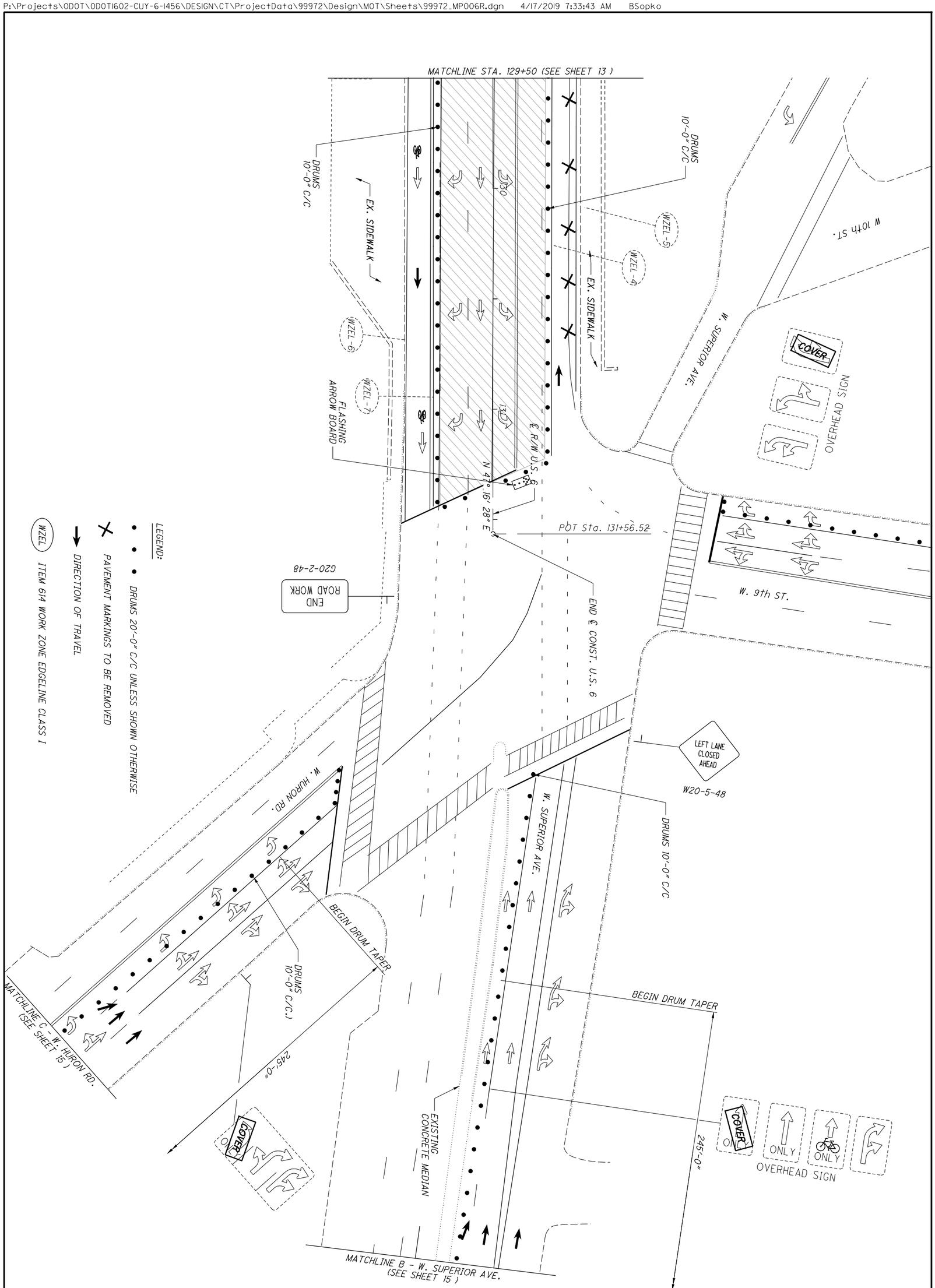

14 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN- PHASE 1 STA. 129+50 TO MATCHLINE B	CALCULATED CJK CHECKED JMZ	0 20 10 40 HORIZONTAL SCALE IN FEET

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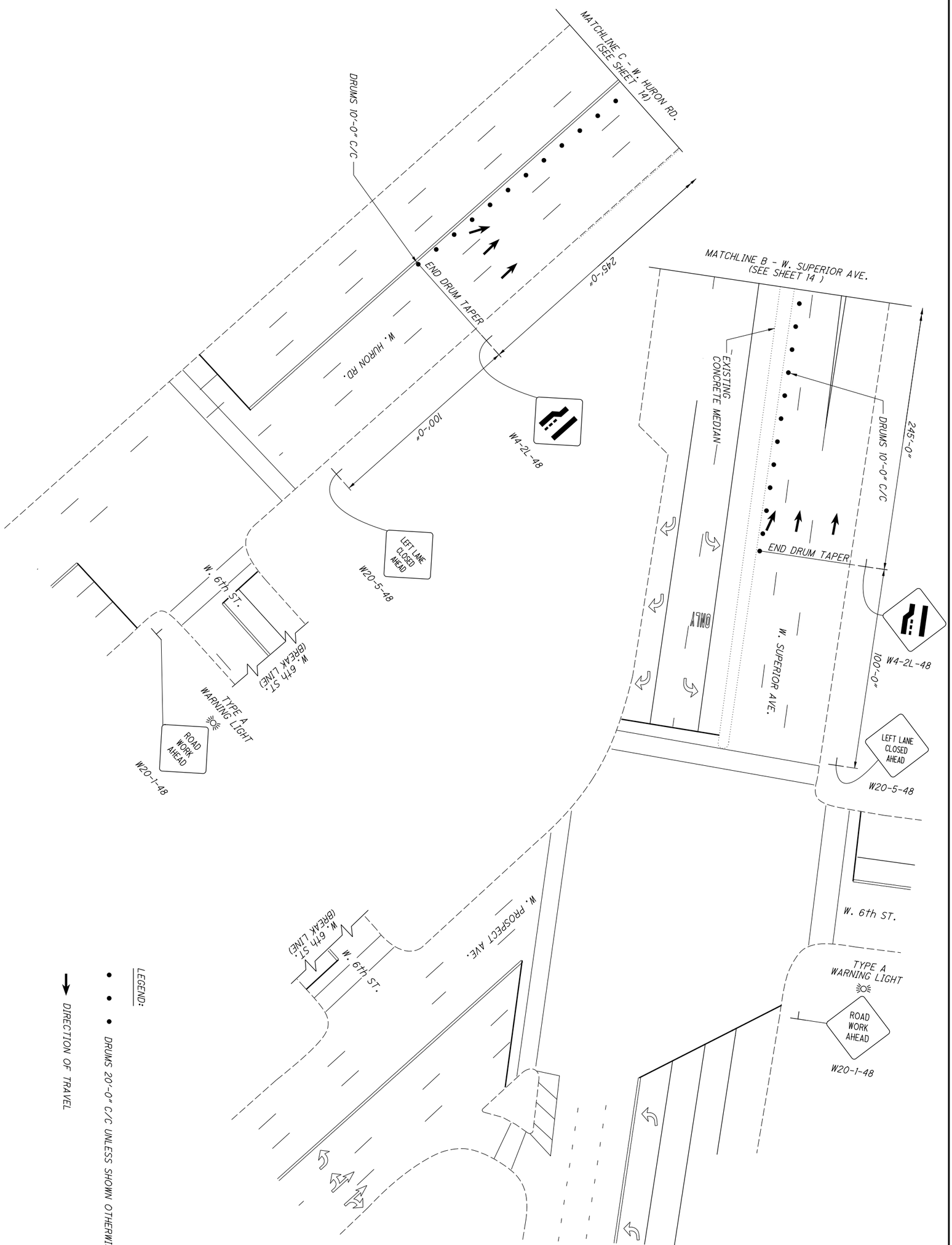
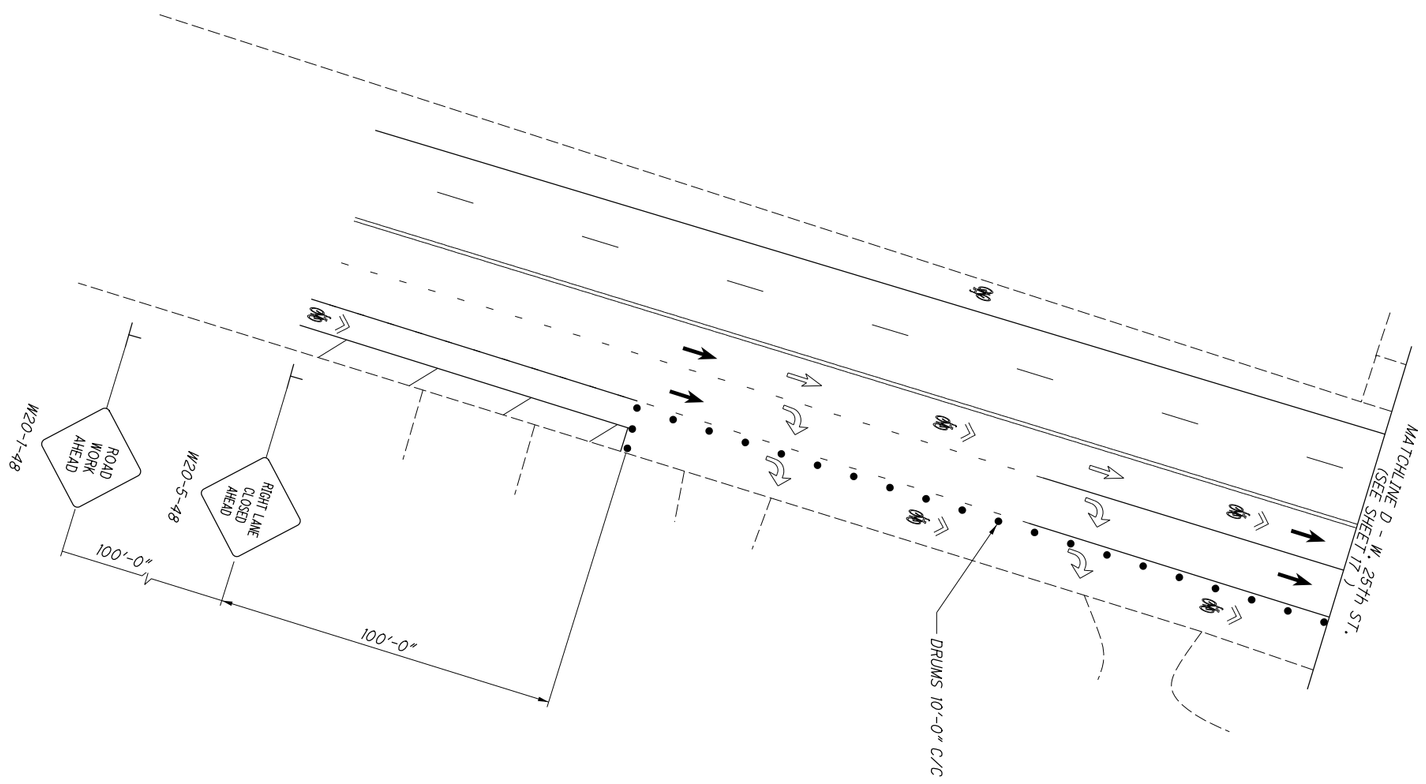


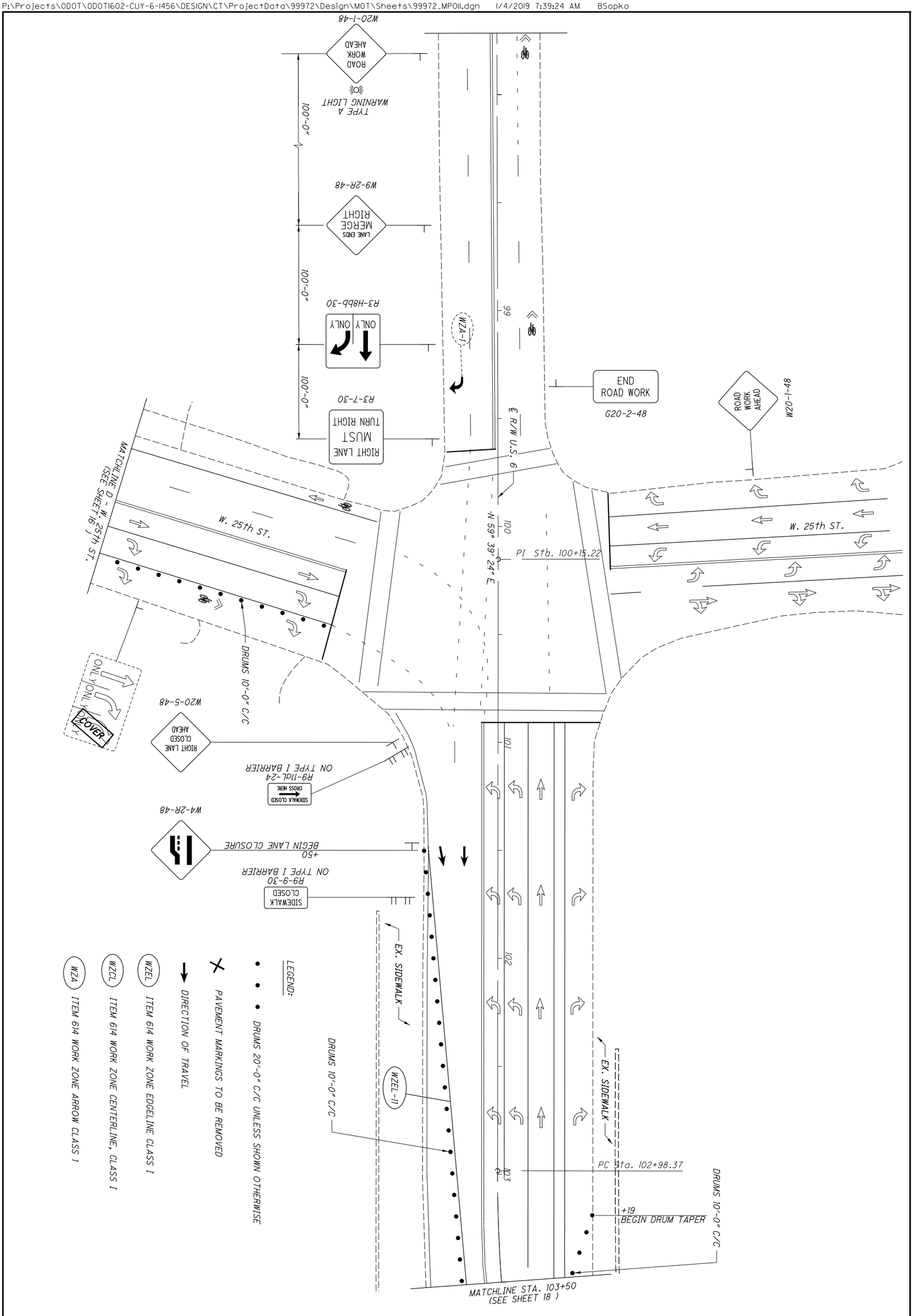
15 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN- PHASE 1 MATCH LINE B	CALCULATED CJK CHECKED JMZ	0 20 10 40 HORIZONTAL SCALE IN FEET

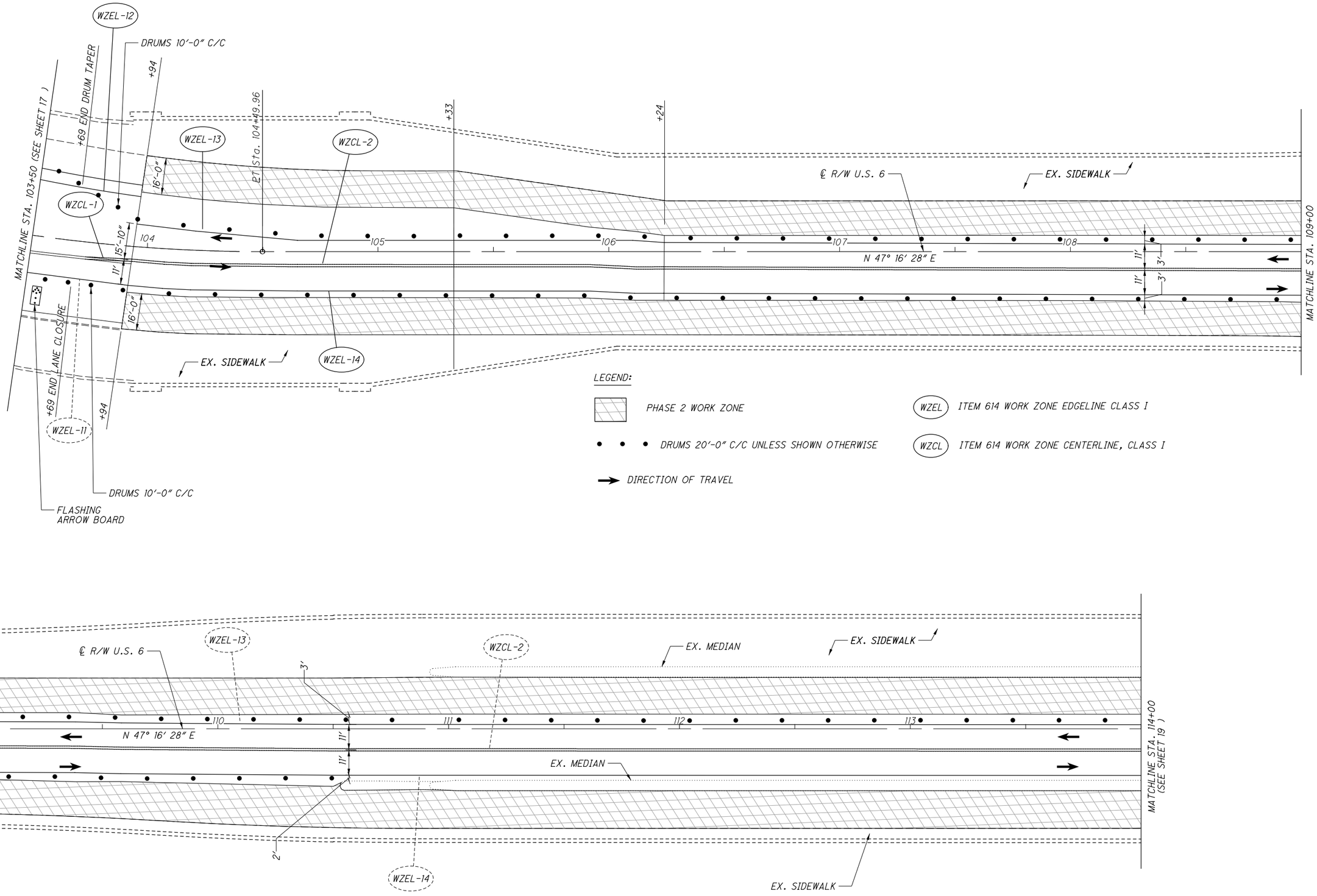


LEGEND:

- DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE
- DIRECTION OF TRAVEL

16 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN - PHASE 2 MATCHLINE D - W. 25th ST	CALCULATED CJK CHECKED JMZ	0 10 20 40 HORIZONTAL SCALE IN FEET


W20-1-48
ROAD WORK AHEAD
TYPE A WARNING LIGHT
100'-0"
W9-2R-48
LANE ENDS MERGE RIGHT
100'-0"
R3-H8b-30
ONLY
ONLY
WZA-1
100'-0"
R3-7-30
RIGHT LANE MUST TURN RIGHT
99
℄ R/W U.S. 9
END ROAD WORK
G20-2-48
ROAD WORK AHEAD
W20-1-48
MATCHLINE D - W. 25th ST. (SEE SHEET 16)
W. 25th ST.
100
N 59° 39' 24" E
PI Sta. 100+15.22
W. 25th ST.
DRUMS 10'-0" C/C
ONLY
ONLY
COVER
W20-5-48
RIGHT LANE CLOSED AHEAD
101
R9-11aL-24
ON TYPE I BARRIER
SIDEWALK CLOSED CROSS HERE
W4-2R-48
+50
BEGIN LANE CLOSURE
R9-9-30
ON TYPE I BARRIER
SIDEWALK CLOSED
EX. SIDEWALK
102
DRUMS 10'-0" C/C
WZEL-11
EX. SIDEWALK
PC Sta. 102+98.37
103
+19
BEGIN DRUM TAPER
DRUMS 10'-0" C/C
MATCHLINE STA. 103+50 (SEE SHEET 18)
LEGEND:
DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE
PAVEMENT MARKINGS TO BE REMOVED
DIRECTION OF TRAVEL
WZEL ITEM 614 WORK ZONE EDGELINE CLASS I
WZCL ITEM 614 WORK ZONE CENTERLINE, CLASS I
WZA ITEM 614 WORK ZONE ARROW CLASS I



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CJK
CHECKED JMZ

MAINTENANCE OF TRAFFIC PLAN - PHASE 2
STA. 103+50 TO STA. 114+00

CUY-6-14.56

18
138

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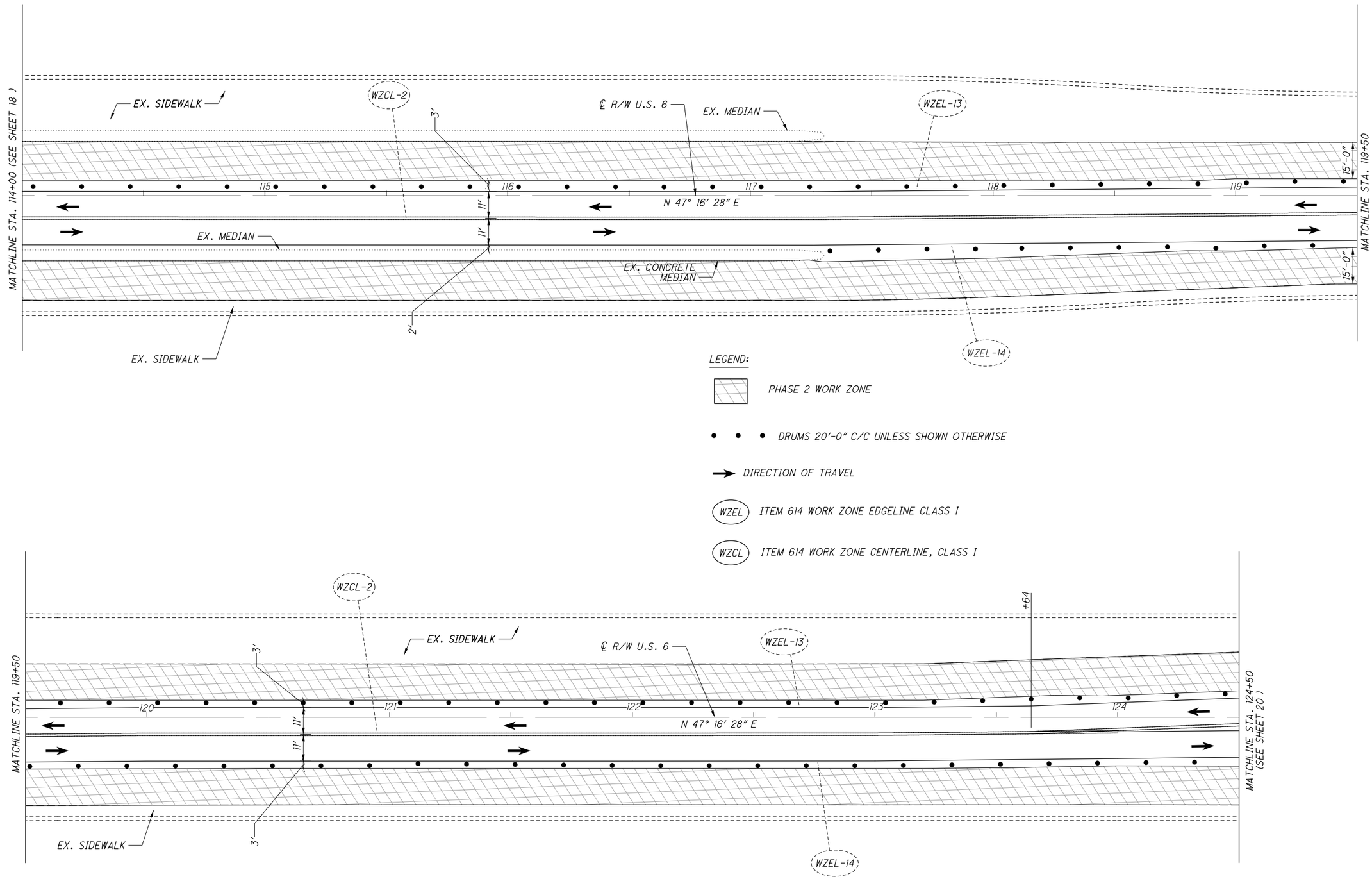
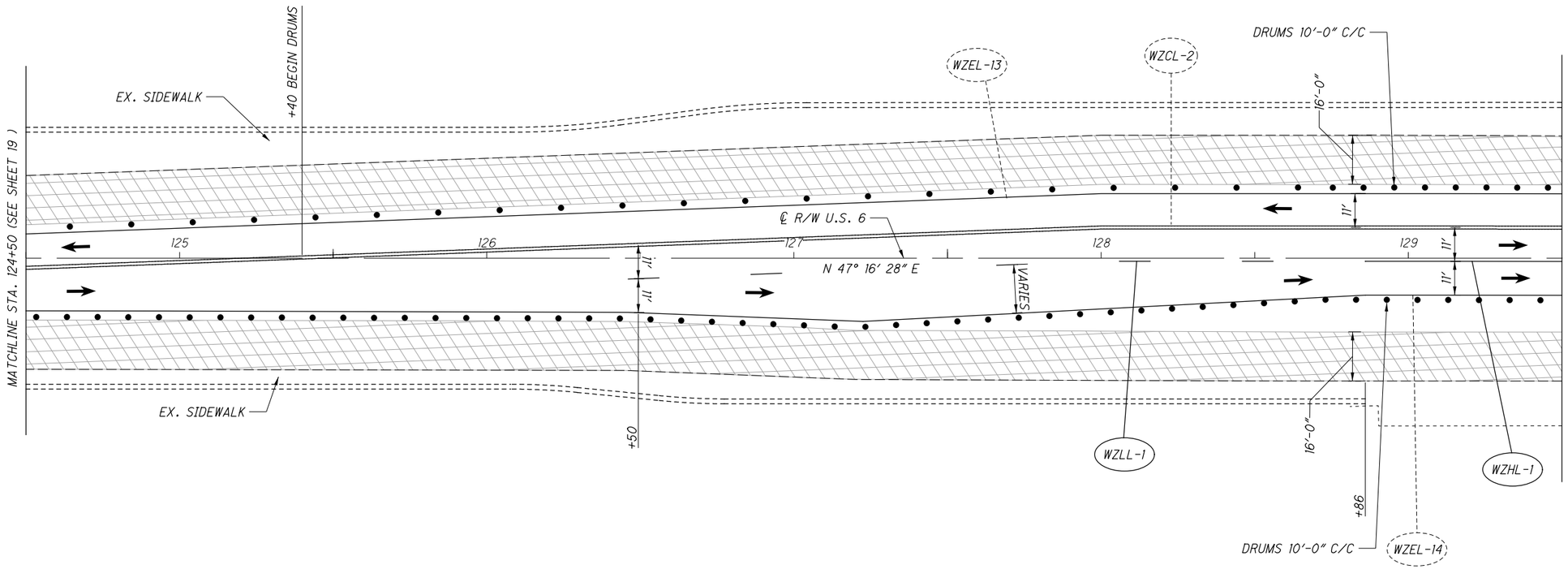


MAINTENANCE OF TRAFFIC PLAN - PHASE 2
STA. 114+00 TO STA. 124+50

CALCULATED CJK
CHECKED JMZ

HORIZONTAL SCALE IN FEET
0 10 20 40

CUY-6-14.56



LEGEND:

PHASE 2 WORK ZONE

• • • DRUMS 20'-0" C/C UNLESS SHOWN OTHERWISE

→ DIRECTION OF TRAVEL

(WZEL) ITEM 614 WORK ZONE EDGELINE CLASS I

(WZCL) ITEM 614 WORK ZONE CENTERLINE, CLASS I

(WZLL) ITEM 614 WORK ZONE LANE LINE, CLASS I

(WZHL) ITEM 614 WORK ZONE CHANNELIZING LINE, CLASS I

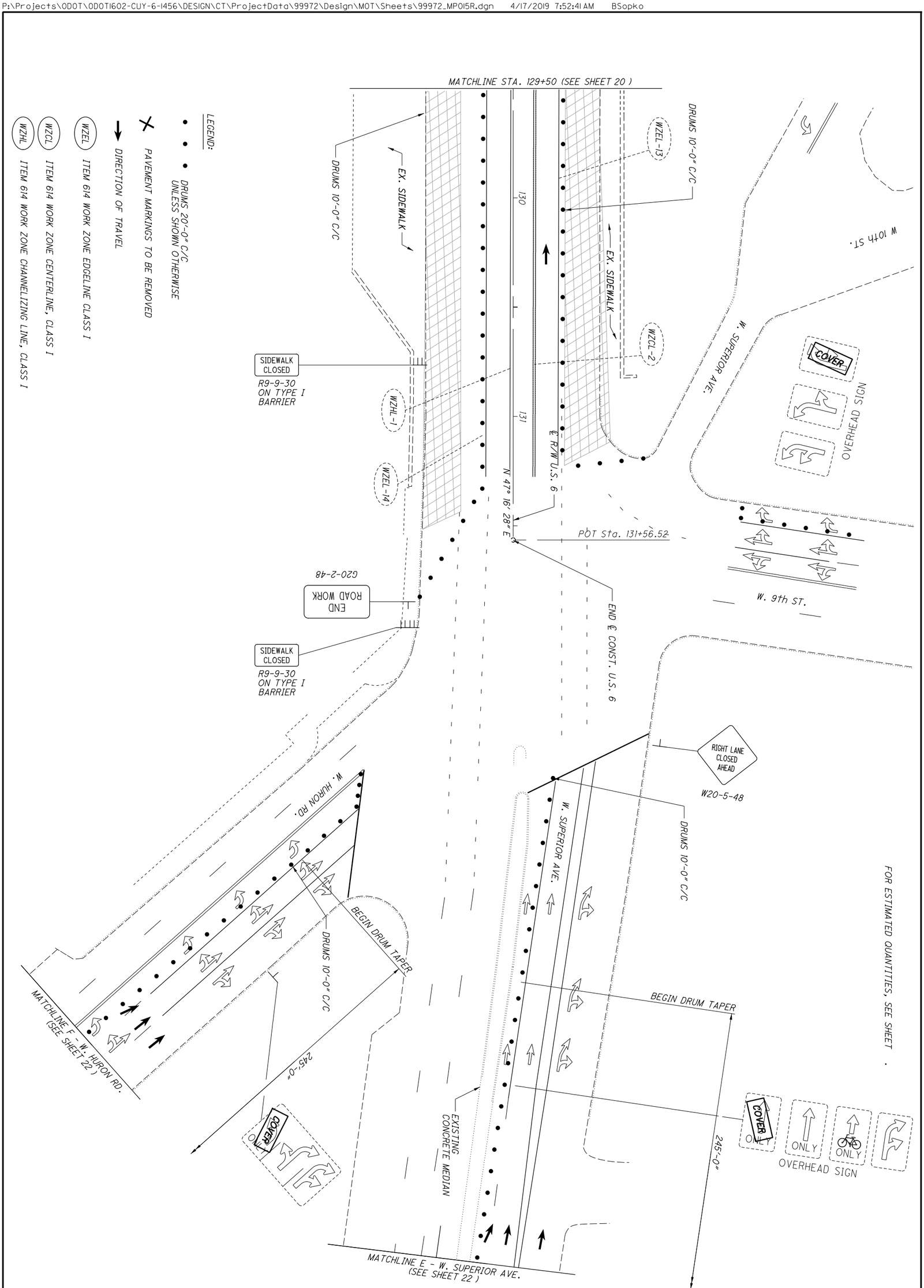
HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CJK
CHECKED JMZ

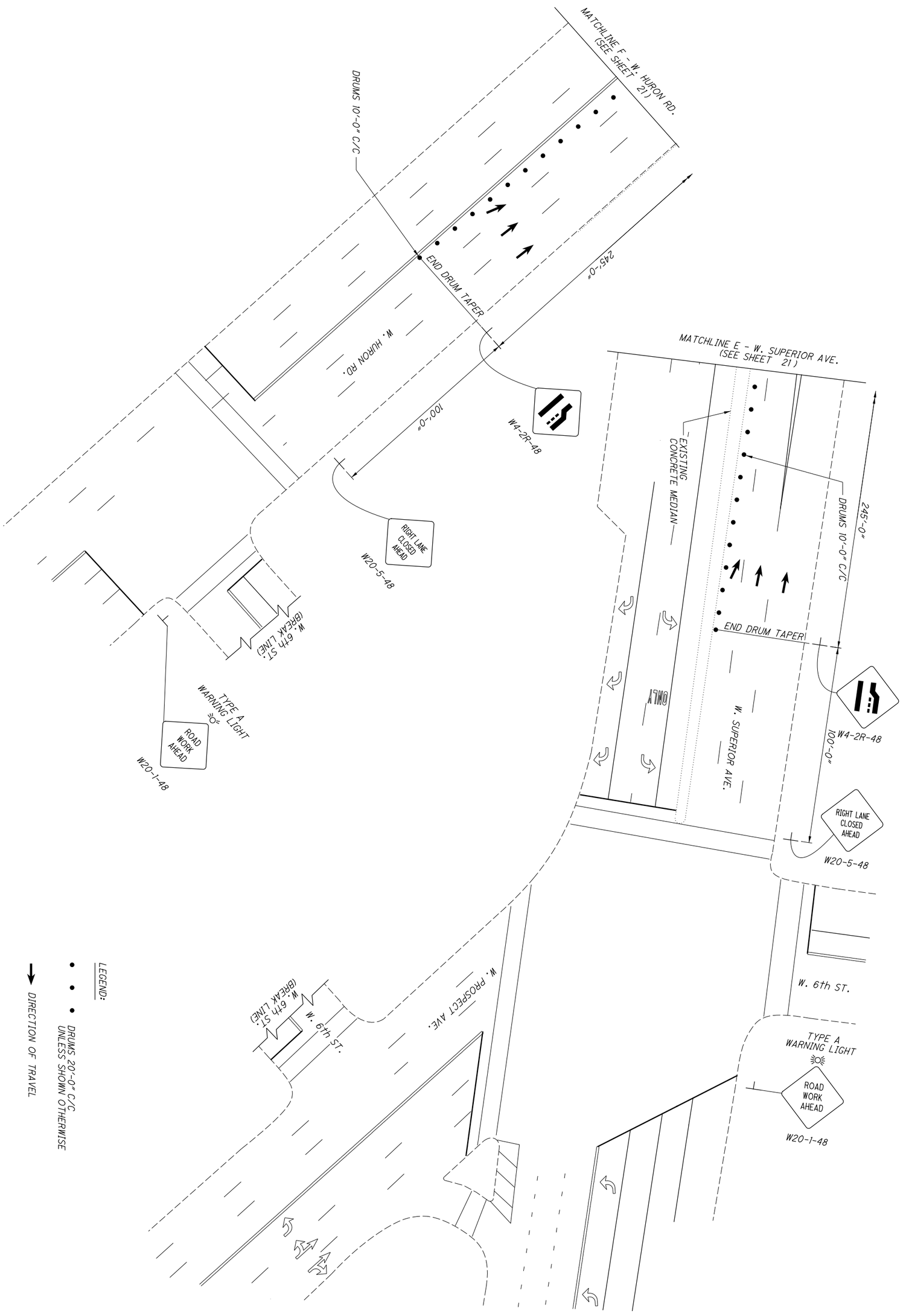
MAINTENANCE OF TRAFFIC PLAN - PHASE 2
STA. 124+50 TO STA. 129+50

CUY-6-14.56

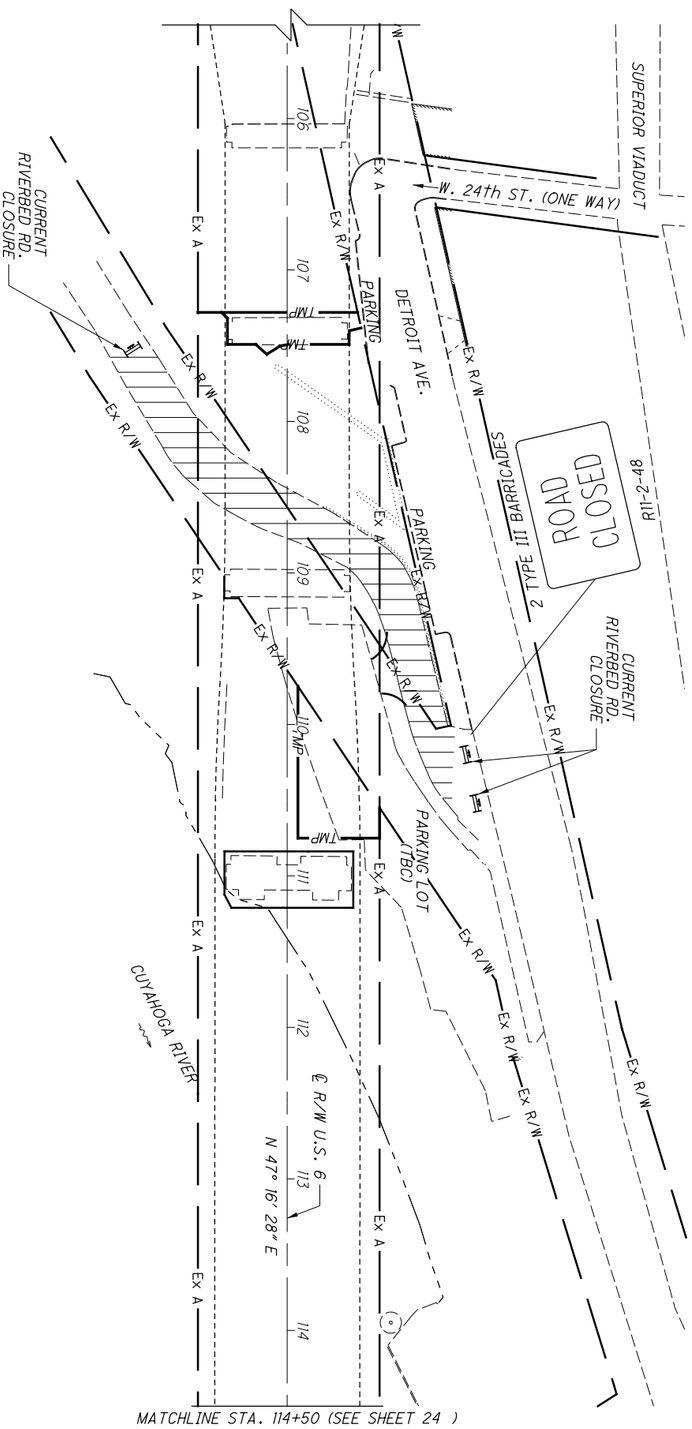
20
138



21 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN - PHASE 2 STA. 129+50 TO STA. 131+56.62	CALCULATED CJK CHECKED JMZ	0 20 10 40 HORIZONTAL SCALE IN FEET



22 / 138	CUY-6-14.56	MAINTENANCE OF TRAFFIC PLAN MATCH LINE E	CALCULATED CJK CHECKED JMZ	0 20 10 40 HORIZONTAL SCALE IN FEET



LEGEND:

(TBC) TO BE CLOSED WHEN REQUIRED

ROAD CLOSED

SIGNS LEGEND:

1

2 TYPE III BARRICADES

ROAD CLOSED

R11-2-48

2

ROAD CLOSED

R11-2-48

LEGEND:

(TBC) TO BE CLOSED WHEN REQUIRED

ROAD CLOSED

MATCHLINE STA. 114+50 (SEE SHEET 23)

CUYAHOGA RIVER

CENTER ST. (TRUSS BRIDGE)

℄ R/W U.S. 6

N 47° 16' 28" E

SETTLER'S LANDING PARK

SETTLER'S LANDING STATION

MERWIN AVE.

CENTER ST.

LEONARD ST.

FALL ST.

RAILROAD BRIDGE

WEST ST.

385'-0"

ROBERT J. LOCKWOOD DR.

CANAL RD.

CARTER RD.

COLUMBUS RD.

PARKING (TBC)

LOT 1

LOT 2

LOT 3

LOT 4

Ex R/W

Ex A

TMP

PARKING LOT CLOSURE NOTE:
CLOSURE OF PARKING LOT 1 AND LOT 2 SHALL BE LIMITED TO A MAXIMUM OF 60 DAYS.
CLOSURE OF PARKING LOT 3 AND LOT 4 SHALL BE LIMITED TO CLOSING ONLY THOSE PARKING STALLS THAT FALL WITHIN THE TEMPORARY RIGHT-OF-WAY A MAXIMUM OF 90 DAYS.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED CJK
CHECKED JMZ

MAINTENANCE OF TRAFFIC UNDER U.S. 6

CUY-6-14.56

24
138

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SHEET NUM.											PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
	5	5A	6	26	27	30	31	31A	38										
																		ROADWAY	
	LUMP													201	11000	LS		CLEARING AND GRUBBING	5
		LUMP												203	98500	LS		ROADWAY, MISC.: TEMPORARY CONTRACTOR ACCESS AND SITE RESTORATION	5A
																		EROSION CONTROL	
														832	30000	1,000	EACH	EROSION CONTROL	
																		DRAINAGE	
							LUMP							611	99920	LS		DRAINAGE STRUCTURE, MISC.: DRAINAGE REPAIRS	31
																		PAVEMENT	
				2,503										254	01000	2,503	SY	PAVEMENT PLANING, ASPHALT CONCRETE 3"	
				188										407	10000	188	GAL	TACK COAT	
				105										442	20000	105	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (448)	
				105										442	20100	105	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5 MM, TYPE A (448)	
																		LIGHTING	
									6					625	98000	6	EACH	LIGHTING, MISC.: BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING, LED, AS PER PLAN	38
																		TRAFFIC CONTROL	
						32								620	00500	32	EACH	DELINEATOR, POST GROUND MOUNTED	
						32								620	31200	32	EACH	REMOVAL OF DELINEATOR	
						9								630	80100	9	SF	SIGN, FLAT SHEET	
						0.82								644	00104	0.82	MILE	EDGE LINE, 6"	
						0.5								644	00204	0.5	MILE	LANE LINE, 6"	
						0.71								644	00300	0.71	MILE	CENTER LINE	
						5,539								644	00400	5,539	FT	CHANNELIZING LINE, 8"	
						101								644	00500	101	FT	STOP LINE	
						716								644	00700	716	FT	TRANSVERSE/DIAGONAL LINE	
						68								644	01300	68	EACH	LANE ARROW	
						605								644	01510	605	FT	DOTTED LINE, 6"	
						29								644	01630	29	EACH	BIKE LANE SYMBOL MARKING	
								9,450						644	50200	9,450	SF	PAVEMENT MARKING, MISC.: GREEN PAINT	31A
						140								644	50300	140	FT	PAVEMENT MARKING, MISC.: QWICK KURB	31B
																		STRUCTURE REPAIR (CUY-6-1456)	
																		FOR STRUCTURE (CUY-6-1456) ESTIMATED QUANTITIES SEE SHEET 49	
																		MAINTENANCE OF TRAFFIC	
			200											614	11110	200	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
					0.05									614	20210	0.05	MILE	WORK ZONE LANE LINE, CLASS I, 6", 740.06, TYPE I	
					0.52									614	21200	0.52	MILE	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	
					0.01									614	21300	0.01	MILE	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE II	
					2.98									614	22210	2.98	MILE	WORK ZONE EDGE LINE, CLASS I, 6", 740.06, TYPE I	
					239									614	23410	239	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 740.06, TYPE I	
					1									614	30000	1	EACH	WORK ZONE ARROW, CLASS I	
																		INCIDENTALS	
														614	11000	LS		MAINTAINING TRAFFIC	
														619	16020	18	MNTH	FIELD OFFICE, TYPE C	
														624	10000	LS		MOBILIZATION	

CALCULATED CJK
CHECKED JMZ

GENERAL SUMMARY

CUY-6-14.56

STATION FROM	STATION TO	LIN. FT.	CADD AREA	254 PAVEMENT PLANING, ASPHALT CONCRETE, 3"	407 TACK COAT	442 1-1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (448)	442 1-1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5 MM, TYPE A (448)			
			SF	SY	GAL	CY	CY			
100+91.00	103+94.00	244	22589	2503	188	105	105			
GRAND TOTALS CARRIED TO GENERAL SUMMARY				2503	188	105	105			

STATION FROM	STATION TO	LIN. FT.								
GRAND TOTALS CARRIED TO GENERAL SUMMARY										

CALCULATED CJK
CHECKED JMZ

PAVEMENT CALCULATIONS / SUBSUMMARY

CUY-6-14.56

SHEET NO.	REF. NO.	PHASE	STATION FROM	STATION TO	SIDE		614 WORK ZONE LANE LINE CLASS 1, 6", 740.06, TYPE I		614 WORK ZONE CENTER LINE CLASS 1, 740.06, TYPE I		614 WORK ZONE CENTER LINE, CLASS 1, 740.06, TYPE II		614 WORK ZONE EDGE LINE CLASS 1, 740.06, TYPE I		614 WORK ZONE CHANNELIZING LINE, CLASS 1, 12", 740.06, TYPE I		614 WORK ZONE ARROW, CLASS I						
							MI		MI		MI		MI		FT		EACH						
10	WZA-1	1,2	99+24		RT												1						
10	WZEL-1	1	101+50	103+94	RT								0.047										
11	WZEL-2	1	103+94	110+50	RT								0.124										
11	WZEL-3	1	103+94	110+50	RT								0.125										
11	WZEL-4	1	103+50	131+21	LT								0.525										
11	WZEL-5	1	103+50	130+92	LT								0.519										
12	WZEL-6	1	117+30	131+90	RT								0.277										
12	WZEL-7	1	117+30	131+85	RT								0.276										
17	WZEL-11	2	101+50	103+94	RT								0.047										
18	WZEL-12	2	103+50	103+94	LT								0.009										
18	WZEL-13	2	103+94	131+25	LT								0.517										
18	WZEL-14	2	103+94	131+25	RT								0.517										
18	WZCL-1	2	103+50	103+94	RT						0.009												
18	WZCL-2	2	103+94	131+25	RT/LT				0.517														
20	WZLL-1	2	126+50	128+86	RT		0.045																
20	WZHL-1	2	128+86	131+25	RT										239								
TOTALS CARRIED TO GENERAL SUMMARY							0.05		0.52		0.01		2.98		239		1						

CALCULATED TEC
CHECKED JMZ

SUMMARY OF TRAFFIC SUBSUMMARY

MAINTENANCE OF

CUY-6-14.56

SHEET NO.	REFERENCE NO.	LOCATION	STATION FROM	STATION TO	SIDE	644 EDGE LINE, 6" (WHITE)	644 LANE LINE, 6"	644 CENTER LINE	644 CHANNELIZING LINE, 8"	644 STOP LINE	644 TRANSVERSE/ DIAGONAL LINE	644 LANE ARROW	644 DOTTED LINE, 6"	644 BIKE LANE SYMBOL MARKING	644 PAVEMENT MARKING, MISC.: QWICK KURB		630 SIGN, FLAT SHEET		620 DELINEATOR, POST GROUND MOUNTED	620 REMOVAL OF DELINEATOR		
						MILE	MILE	MILE	FT	FT	FT	EACH	FT	EACH	FT		SF		EACH	EACH		
32	EW-1	U.S. 6	101+30	107+50	RT.	0.12																
32	LL-1	U.S. 6	101+30	105+00	RT.		0.07															
32	CL-1	U.S. 6	101+15	131+20	LT./RT.			0.57														
32	CL-2	U.S. 6	103+00	105+80	LT./RT.			0.05														
32	CH-1	U.S. 6	101+15	105+00	LT.				378													
32	CH-2	U.S. 6	101+15	105+00	LT.				380													
32	CH-3	U.S. 6	101+15	105+00	LT.				382													
32	CH-4	U.S. 6	101+15	103+00	LT.				185													
32	SL-1	U.S. 6	101+15		LT./RT.					52												
32	LA-1	U.S. 6	101+30		LT.							1										
32	LA-2	U.S. 6	101+30		LT.							1										
32	LA-3	U.S. 6	101+30		LT.							1										
32	LA-4	U.S. 6	101+30		LT.							1										
32	LA-5	U.S. 6	101+30		LT./RT.							1										
32	LA-6	U.S. 6	101+55		RT.							1										
32	LA-7	U.S. 6	102+00		LT.							1										
32	LA-8	U.S. 6	102+00		LT.							1										
32	LA-9	U.S. 6	102+00		LT.							1										
32	LA-10	U.S. 6	102+00		LT./RT.							1										
32	LA-11	U.S. 6	102+70		LT.							1										
32	LA-12	U.S. 6	102+70		LT.							1										
32	LA-13	U.S. 6	102+70		LT.							1										
32	LA-14	U.S. 6	102+70		LT.							1										
32	LA-15	U.S. 6	102+70		LT./RT.							1										
32	LA-16	U.S. 6	103+00		RT.							1										
32	LA-17	U.S. 6	103+40		LT.							1										
32	LA-18	U.S. 6	103+40		LT.							1										
32	LA-19	U.S. 6	103+40		LT.							1										
32	LA-20	U.S. 6	104+10		LT.							1										
32	LA-21	U.S. 6	104+10		LT.							1										
32	LA-22	U.S. 6	104+10		LT.							1										
32	LA-23	U.S. 6	104+10		LT.							1										
32	LA-24	U.S. 6	104+50		RT.							1										
32	LA-25	U.S. 6	104+80		LT.							1										
32	LA-26	U.S. 6	104+80		LT.							1										
32	LA-27	U.S. 6	104+80		LT.							1										
32	LA-28	U.S. 6	104+80		LT.							1										
32	DL-1	U.S. 6	105+00	106+25	LT.								125									
32	DL-2	U.S. 6	105+00	106+25	LT.								125									
32	DL-3	U.S. 6	105+00	108+55	LT.								355									
32	BM-1	U.S. 6	101+43		LT.									1								
32	BM-2	U.S. 6	101+42		RT.									1								
32	BM-3	U.S. 6	102+83		LT.									1								
32	BM-4	U.S. 6	102+84		RT.									1								
32	BM-5	U.S. 6	104+24		LT.									1								
32	BM-6	U.S. 6	104+36		RT.									1								
32	BM-7	U.S. 6	104+94		LT.									1								
SUBTOTALS CARRIED TO SHEET 30						0.12	0.07	0.62	1325	52	0	28	605	7	0		0		0	0		

CALCULATED CJK
CHECKED JMZ

PAVEMENT MARKING SUBSUMMARY

CUY-6-14.56

SHEET NO.	REFERENCE NO.	LOCATION	STATION FROM	STATION TO	SIDE	644 EDGE LINE, 6" (WHITE) MILE	644 LANE LINE, 6" MILE	644 CENTER LINE MILE	644 CHANNELIZING LINE, 8" FT	644 STOP LINE FT	644 TRANSVERSE/ DIAGONAL LINE FT	644 LANE ARROW EACH	644 DOTTED LINE, 6" FT	644 BIKE LANE SYMBOL MARKING EACH	644 PAVEMENT MARKING, MISC.: QWICK KURB FT		630 SIGN, FLAT SHEET SF		620 DELINEATOR, POST GROUND MOUNTED EACH	620 REMOVAL OF DELINEATOR EACH		
33	EW-2	U.S. 6	106+25	131+14	LT.	0.47																
33	LL-2	U.S. 6	108+55	131+14	LT.		0.43															
33	CH-5	U.S. 6	107+50	111+00	RT.				352													
33	CH-6	U.S. 6	107+50	111+00	RT.				352													
33	TL-1	U.S. 6	107+70	110+50	RT.						293											
33	LA-29	U.S. 6	106+00		RT.							1										
33	LA-30	U.S. 6	107+00		LT.							1										
33	LA-31	U.S. 6	107+50		RT.							1										
33	LA-32	U.S. 6	109+00		RT.							1										
33	LA-33	U.S. 6	110+00		LT.							1										
33	LA-34	U.S. 6	110+50		RT.							1										
33	BM-8	U.S. 6	105+86		RT.									1								
33	BM-9	U.S. 6	107+13		LT.									1								
33	BM-10	U.S. 6	107+37		RT.									1								
33	BM-11	U.S. 6	108+85		RT.									1								
33	BM-12	U.S. 6	110+13		LT.									1								
33	BM-13	U.S. 6	110+37		RT.									1								
33	S-1	U.S. 6	106+25		RT.												9					
33	QK-1	U.S. 6	109+10	110+50	RT.										140							
34	EW-3	U.S. 6	111+00	117+20		0.12																
34	EW-4	U.S. 6	111+00	117+20		0.12																
34	LA-35	U.S. 6	113+00		LT.							1										
34	LA-36	U.S. 6	113+50		RT.							1										
34	BM-14	U.S. 6	113+26		LT.									1								
34	BM-15	U.S. 6	113+33		RT.									1								
35	CH-7	U.S. 6	117+20	131+30	RT.				1410													
35	CH-8	U.S. 6	117+20	131+30	RT.				1410													
35	TL-2	U.S. 6	117+60	119+10	RT.						113											
35	TL-3	U.S. 6	119+45	126+95	RT.						196											
35	LA-37	U.S. 6	116+00		LT.							1										
35	LA-38	U.S. 6	116+50		RT.							1										
35	LA-39	U.S. 6	118+75		RT.							1										
35	LA-40	U.S. 6	119+00		LT.							1										
35	BM-16	U.S. 6	116+13		LT.									1								
35	BM-17	U.S. 6	116+36		RT.									1								
35	BM-18	U.S. 6	118+60		LT.									1								
35	BM-19	U.S. 6	119+15		LT.									1								
35	D-1	U.S. 6	117+60	131+30	RT.															32	32	
36	CL-3	U.S. 6	123+50	128+00	RT.			0.09														
36	LA-41	U.S. 6	122+00		LT.							1										
36	LA-42	U.S. 6	122+50		RT.							1										
36	LA-43	U.S. 6	125+00		LT.							1										
36	LA-44	U.S. 6	125+75		RT.							1										
36	BM-20	U.S. 6	122+13		LT.									1								
36	BM-21	U.S. 6	122+36		LT.									1								
36	BM-22	U.S. 6	125+13		LT.									1								
36	BM-23	U.S. 6	125+61		RT.									1								
SUBTOTALS CARRIED TO SHEET 30						0.70	0.43	0.09	3524	0	602	16	0	16	140		9		32	32		

CALCULATED CJK
CHECKED JMZ

PAVEMENT MARKING SUBSUMMARY

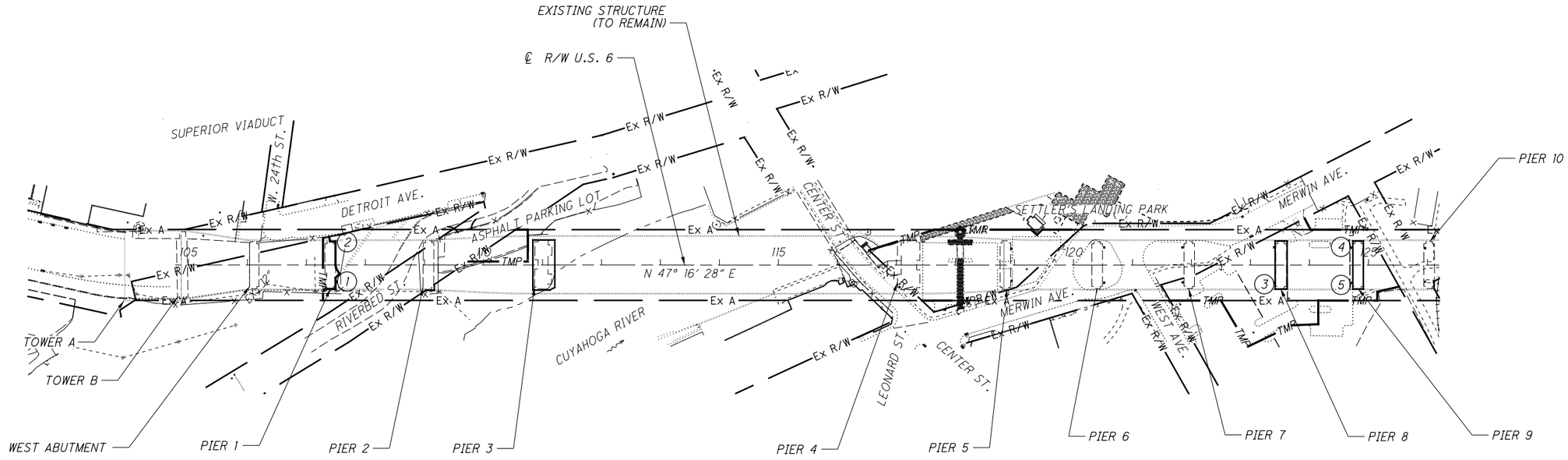
CUY-6-14.56

SHEET NO.	REFERENCE NO.	LOCATION	STATION FROM	STATION TO	SIDE	644 EDGE LINE, 6" (WHITE) MILE	644 LANE LINE, 6" MILE	644 CENTER LINE MILE	644 CHANNELIZING LINE, 8" FT	644 STOP LINE FT	644 TRANSVERSE/ DIAGONAL LINE FT	644 LANE ARROW EACH	644 DOTTED LINE, 6" FT	644 BIKE LANE SYMBOL MARKING EACH	644 PAVEMENT MARKING, MISC.: QWICK KURB FT		630 SIGN, FLAT SHEET SF		620 DELINEATOR, POST GROUND MOUNTED EACH	620 REMOVAL OF DELINEATOR EACH		
37	CH-9	U.S. 6	127+50	131+20	RT.				370													
37	CH-10	U.S. 6	128+00	131+20	LT.				320													
37	SL-2	U.S. 6	131+20		LT./RT.					32												
37	SL-3	U.S. 6	131+30		RT.					17												
37	TL-4	U.S. 6	127+50	131+30	RT.						114											
37	LA-45	U.S. 6	127+00		LT.							1										
37	LA-46	U.S. 6	128+20		LT.							1										
37	LA-47	U.S. 6	128+20		RT.							1										
37	LA-48	U.S. 6	128+20		RT.							1										
37	LA-49	U.S. 6	128+80		LT.							1										
37	LA-50	U.S. 6	128+80		RT.							1										
37	LA-51	U.S. 6	128+80		RT.							1										
37	LA-52	U.S. 6	128+80		RT.							1										
37	LA-53	U.S. 6	129+00		LT.							1										
37	LA-54	U.S. 6	129+40		LT.							1										
37	LA-55	U.S. 6	129+40		RT.							1										
37	LA-56	U.S. 6	129+40		RT.							1										
37	LA-57	U.S. 6	130+00		LT.							1										
37	LA-58	U.S. 6	130+00		RT.							1										
37	LA-59	U.S. 6	130+00		RT.							1										
37	LA-60	U.S. 6	130+00		RT.							1										
37	LA-61	U.S. 6	130+60		LT.							1										
37	LA-62	U.S. 6	130+60		RT.							1										
37	LA-63	U.S. 6	130+60		RT.							1										
37	LA-64	U.S. 6	130+60		LT.							1										
37	LA-65	U.S. 6	131+10		LT.							1										
37	LA-66	U.S. 6	131+10		RT.							1										
37	LA-67	U.S. 6	131+10		RT.							1										
37	LA-68	U.S. 6	131+20		RT.							1										
37	BM-24	U.S. 6	127+13		LT.									1								
37	BM-25	U.S. 6	128+67		RT.									1								
37	BM-26	U.S. 6	129+13		LT.									1								
37	BM-27	U.S. 6	129+87		RT.									1								
37	BM-28	U.S. 6	130+73		LT.									1								
37	BM-29	U.S. 6	131+07		RT.									1								
SUBTOTALS THIS SHEET						0.00	0.00	0.00	690	49	114	24	0	6	0		0		0	0		
SUBTOTALS CARRIED FROM SHEET 28						0.12	0.07	0.62	1325	52	0	28	605	7	0		0		32	32		
SUBTOTALS CARRIED FROM SHEET 29						0.70	0.43	0.09	3524	0	602	16	0	16	140		9		0	0		
TOTALS CARRIED TO GENERAL SUMMARY						0.82	0.50	0.71	5539	101	716	68	605	29	140		9		32	32		

CALCULATED CJK
CHECKED JMZ

PAVEMENT MARKING SUBSUMMARY

CUY-6-14.56



NOTES

1. ITEM 611 - DRAINAGE STRUCTURE, MISC.: DRAINAGE REPAIRS
   THIS ITEM SHALL INCLUDE MISCELLANEOUS REPAIRS LISTED BELOW.

   (1) REPAIR CONDUIT, CATCH BASIN BURIED: ADJUST TO GRADE.
   STA. 107+51, 28' RT

   (2) REPLACE CATCH BASIN GRATE.
   STA. 107+50, 25' LT

   (3) CLEAN CATCH BASIN OF DEBRIS.
   STA. 124+40, 29' RT

   (4) CLEAN CATCH BASIN OF DEBRIS.
   STA. 124+71, 29' LT

   (5) CLEAN CATCH BASIN OF DEBRIS, ADJUST CATCH BASIN GRATE FRAME.
   STA. 124+72, 30' RT

   ALL WORK SHALL BE IN ACCORDANCE WITH C&MS ITEM 611 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 611 - DRAINAGE STRUCTURE, MISC.: DRAINAGE REPAIRS.

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED CJK
CHECKED JMZ

DRAINAGE PLAN

CUY-6-14.56

ITEM 644 - PAVEMENT MARKING, MISC.: GREEN PAINT

1. SCOPE

1.1. THIS SPECIFICATION IS FOR A TWO-PART EPOXY AND COLORED GLASS AREA MARKING (2PECGAM) FOR ASPHALT AND CONCRETE PAVEMENTS. THE 2PECGAM IS COMPRISED OF A MINIMUM OF A SINGLE LAYER USING AN EPOXY RESIN SYSTEM AND SURFACE-APPLIED COLORED GLASS.

1.2. THIS STANDARD MAY INVOLVE HAZARDOUS MATERIALS, OPERATIONS AND EQUIPMENT. THIS STANDARD DOES NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH ITS USE. IT IS THE RESPONSIBILITY OF THE USER OF THIS STANDARD TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES AND DETERMINE THE APPLICABILITY OF REGULATORY LIMITATIONS PRIOR TO USE.

2. MATERIALS

2.1. EPOXY RESIN SYSTEMS:

2.1.1. EPOXY RESIN SYSTEM - BINDER RESIN SYSTEMS SHALL BE RECOMMENDED BY THE MANUFACTURER AS SUITABLE FOR USE ON THE INTENDED PAVEMENT SURFACE AND FOR THE POTENTIAL RANGE OF ATMOSPHERIC EXPOSURE. BOTH SURFACE AND AMBIENT TEMPERATURES MUST BE 40°F AND RISING.

2.1.2. PRIME COAT - A PRIMER SHALL BE USED BEFORE APPLICATION OF THE BINDER RESIN SYSTEM WHEN RECOMMENDED BY THE MANUFACTURER.

2.1.3. THE PROPERLY PROPORTIONED AND MIXED BINDER SHALL CONFORM TO THE REQUIREMENTS OF TABLE 1. SEE SECTION 7 FOR SAMPLE PREPARATION AND TESTING PROCEDURES.

TABLE 1 - PHYSICAL REQUIREMENTS OF THE EPOXY RESIN SYSTEM

PROPERTY	TEST METHOD	EPOXY RESIN
VISCOSITY	ASTM D 2556	30-70 POISES
GEL TIME	AASHTO M 235M/M 235	10 MINUTES MIN.
ULTIMATE TENSILE STRENGTH	AASHTO M 235M/M 235	2350 - 4000 PSI
ELONGATION AT BREAK POINT	AASHTO M 235M/M 235	< 10%
DUROMETER HARDNESS (SHORE D)	ASTM D 2240	60 - 80
COMPRESSIVE STRENGTH @ 3 HOURS @ 7 DAYS	ASTM C 579	 1000 PSI MIN. 3000 PSI MIN.
CURE RATE (DRY-THROUGH TIME)	ASTM D 1640	3 HOURS MAX.
WATER ABSORPTION	AASHTO M 235M/M 235	1% MAX.
ADHESIVE STRENGTH @ 24 HOURS	ASTM D 4541	250 PSI MIN. OR 100% SUBSTRATE FAILURE

2.1.4. INDEPENDENT LABORATORY REPORTS PER FORMULATION SHALL BE PROVIDED, DOCUMENTING THAT THE RESIN BINDER MEETS THE REQUIREMENTS OF THIS SECTION.

2.1.5. A SAMPLE OF THE RESIN BINDER OR COMPONENTS LOT/BATCH SHALL BE SUPPLIED UPON REQUEST.

2.1.5.1. FAILURE TO COMPLY WITH THE SPECIFIED MATERIAL PROPERTIES SHALL RESULT IN REJECTION OF THE MATERIAL LOT/BATCH PROVIDED.

2.2. COLORED GLASS - RUBY LAKES GLASS 342-5 BIKE LANE GREEN FOR BIKE LANE APPLICATION. CONSULT RUBY LAKE COLOR CHART FOR OTHER COLORS.

3. METHOD OF TESTING

3.1. THE BINDER RESIN SYSTEMS TESTS SHALL BE COMPLETED IN ACCORDANCE WITH THE FOLLOWING:

3.1.1. VISCOSITY - ASTM D 2556.

3.1.1.1. PREPARE A 1-PT SAMPLE PER MANUFACTURER'S RECOMMENDATION AND MIX FOR 2 TO 3 MIN BEFORE TESTING.

3.1.1.2. USE ASTM D 2556 APPENDIX X1.1 FOR SPINDLE SELECTION.

3.1.1.3. PERFORM TESTING AT A TEMPERATURE OF 73 ± 2°F.

3.1.2. GEL TIME - AASHTO M 235M/M 235.

3.1.2.1. PREPARE A 60-G SAMPLE PER MANUFACTURER'S RECOMMENDATION.

3.1.2.2. PERFORM TESTING AT A TEMPERATURE OF 73 ± 2°F.

3.1.3. ULTIMATE TENSILE STRENGTH - AASHTO M 235M/M 235.

3.1.3.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.3.2. PREPARE TYPE I SPECIMENS IN ACCORDANCE WITH ASTM D 638.

3.1.3.3. CURE SPECIMENS FOR 7 DAYS AT 73 ± 2°F AND 50 ± 2°F.

3.1.3.4. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.4. ELONGATION AT BREAK POINT - AASHTO M 235M/M 235.

3.1.4.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.4.2. PREPARE TYPE I SPECIMENS IN ACCORDANCE WITH ASTM D 638.

3.1.4.3. CURE SPECIMENS FOR 7 DAYS AT 73 ± 2°F AND 50 ± 2°F.

3.1.4.4. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.5. DUROMETER HARDNESS - ASTM D 2240.

3.1.5.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.5.2. USE THE TYPE 1 PRECISION\X97 TYPE D DUROMETER METHOD.

3.1.5.3. CURE SPECIMENS FOR 7 DAYS AT 73 ± 2°F AND 50 ± 2°F.

3.1.5.4. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.6. COMPRESSIVE STRENGTH @ 3 H - ASTM C 579.

3.1.6.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.6.2. PREPARE SPECIMEN ACCORDING TO METHOD B, 2 x 2-IN. CUBE, USING 2.75 PARTS OF SAND TO ONE PART OF MIXED POLYMER RESIN BINDER BY VOLUME.

3.1.6.3. SAND SHALL MEET ASTM C 778 FOR 20 - SAND.

3.1.6.4. CURE SPECIMENS FOR 3 H AT 73 ± 2°F AND 50 ± 2°F.

3.1.6.5. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.7. COMPRESSIVE STRENGTH @ 7 DAYS - ASTM C 579.

3.1.7.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.7.2. PREPARE SPECIMEN ACCORDING TO METHOD B, 2 X 2-IN. CUBE, USING 2.75 PARTS OF SAND TO ONE PART OF MIXED POLYMER RESIN BINDER BY VOLUME.

3.1.7.3. SAND SHALL MEET THE REQUIREMENTS OF ASTM C 778 FOR 20-30 SAND.

3.1.7.4. CURE SPECIMENS FOR 7 DAYS AT 73 ± 2°F AND 50 ± 2°F.

3.1.7.5. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.8. CURE RATE (DRY-THROUGH TIME)\X97 ASTM D 1640.

3.1.8.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.8.2. PREPARE A SPECIMEN OF 50-55 WET MIL THICKNESS.

3.1.8.3. CURE SPECIMENS FOR 3 H MAX AT 73 ± 2°F AND 50 ± 2°F.

3.1.8.4. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

3.1.9. WATER ABSORPTION - AASHTO M 235M/M 235.

3.1.9.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.9.2. CURE SPECIMENS FOR 7 DAYS AT 73 ± 2°F AND 50 ± 2°F.

3.1.9.3. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY AFTER IMMERSION.

3.1.10. ADHESIVE STRENGTH @ 24 H - ASTM D 4541.

3.1.10.1. PREPARE SAMPLE AS PER MANUFACTURER'S RECOMMENDATION.

3.1.10.2. USE METHOD D, E, OR F WITH A 2-IN. LOADING FIXTURE.

3.1.10.3. CURE SPECIMENS FOR 24 H AT 73 ± 2°F AND 50 ± 2°F.

3.1.10.4. TEST SPECIMENS AT 73 ± 2°F WITHOUT DELAY.

4. PACKAGING

4.1. BINDER RESIN SYSTEM PACKAGING:

4.1.1. BINDER RESIN SYSTEM COMPONENTS SHALL BE PACKAGED IN SUITABLE, WELL-SEALED CONTAINERS CLEARLY LABELED AS TO THE TYPE MATERIAL AND THE RATIO OF THE COMPONENTS TO BE MIXED BY VOLUME. ANY SPECIAL INSTRUCTIONS REGARDING MIXING SHALL BE INCLUDED.

4.1.1.1. THE LABEL SHALL SHOW RESIN OR HARDENER COMPONENTS, BRAND NAME, NAME OF MANUFACTURER, LOT OR BATCH NUMBER, TEMPERATURE RANGE FOR STORAGE, EXPIRATION DATE AND THE QUANTITY CONTAINED THEREIN.

4.1.1.2. CAUTION WARNINGS REGARDING CONTACT OF THE BINDER WITH SKIN AND EYES SHALL BE INCLUDED ON THE LABELS.

5. MATERIALS CERTIFICATION

5.1. AT THE REQUEST OF THE PURCHASER, THE MANUFACTURER OF THE BINDER RESIN SYSTEM SHALL CERTIFY THAT THE BINDER RESIN SYSTEM MEETS THE REQUIREMENTS OF THIS SPECIFICATION. SUCH CERTIFICATION SHALL CONSIST OF EITHER A COPY OF THE MANUFACTURER'S TEST REPORT OR A STATEMENT BY THE MANUFACTURER, ACCOMPANIED BY A COPY OF THE CURRENT TEST RESULTS, THAT THE BINDER RESIN SYSTEM HAS BEEN SAMPLED AND TESTED. SUCH CERTIFICATION SHALL INDICATE THE DATE OF TESTING AND SHALL BE SIGNED BY THE MANUFACTURER.

6. APPLICATION

6.1. APPLICATION TEMPERATURE SHOULD BE 40°F FOR BOTH AMBIENT AND SURFACE CONDITIONS.

6.2. PRETREAT CRACKS GREATER THAN 1/4 IN. IN WIDTH AND DEPTH WITH THE MIXED BINDER RESIN SYSTEM SPECIFIED HEREIN. ONCE THE BINDER RESIN IN THE PRETREATED AREAS HAS GELLED, THE INSTALLATION MAY PROCEED.

6.3. MIXING AND APPLICATION OF PRIME COAT - IF A PRIME COAT IS REQUIRED, CONSULT MANUFACTURER FOR THE RECOMMENDED APPLICATION PROCEDURES.

6.4. MIXING AND APPLICATION OF BINDER RESIN SYSTEM AND COLORED GLASS - APPLY THE BINDER RESIN AND GLASS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. BASIS OF PAYMENT

7.1 THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL THE GREEN PAINT USING A TWO-PART EPOXY AND COLORED GLASS AREA MARKING IN ACCORDANCE WITH THESE SPECIFICATIONS. FOR LOCATIONS OF GREEN PAINT AREAS, SEE SIGN AND PAVEMENT MARKING SHEETS 32/138 TO 37/138.

ESTIMATED PAY QUANTITY IS SHOWN BELOW:

ITEM 644 - PAVEMENT MARKING, MISC.: GREEN PAINT 9450 SF

CALCULATED AJK CHECKED BPS

SIGN AND PAVEMENT MARKING GENERAL NOTES

CUY-6-14.56

ITEM 644 - PAVEMENT MARKING, MISC.: QWICK KURB

THIS ITEM SHALL CONSIST OF REMOVING, STORING, AND RE-INSTALLING THE EXISTING QWICK KURB LONGITUDINAL CHANNELIZER AT THE LOCATIONS SHOWN IN THE PLANS ON SHEETS 32/138 TO 37/138.

REMOVAL: PRIOR TO REMOVAL, THE CHANNELIZER SYSTEM COMPONENTS SHALL BE INSPECTED BY THE ENGINEER FOR WORN OR DAMAGED PARTS. THOSE PARTS THAT ARE WORN OR DAMAGED SHALL BE DISPOSED OF BY THE CONTRACTOR AND REPLACED WITH NEW COMPONENTS DURING THE RE-INSTALLATION PROCESS. ALL EXISTING L104 MEGA MARKER'S WITH S65 SECURING ARCS SHALL BE REMOVED AND RETURNED TO THE MAINTAINING AGENCY.

THE CONTRACTOR SHALL EXERCISE CARE IN REMOVING THE EXISTING COMPONENTS IN SUCH A MANNER AS NOT TO CAUSE DAMAGE TO COMPONENTS. ANY PARTS THAT BECOME DAMAGED AS A RESULT OF REMOVAL OPERATIONS SHALL BE DISPOSED OF AND REPLACED BY THE CONTRACTOR AT NO COST TO THE DEPARTMENT.

ALL ANCHORING HARDWARE SHALL BE REMOVED AND DISPOSED OF.

STORAGE: THE CONTRACTOR SHALL PROVIDE AN ADEQUATE STORAGE AREA TO STORE AND PROTECT THE SALVAGED QWICK KURB COMPONENTS DURING THE DURATION OF THE PROJECT.

RE-INSTALLATION: PRIOR TO RE-INSTALLATION, THE QWICK KURB L60 SEPARATOR, L61 MALE END, L62 FEMALE END AND L65 REFLECTIVE ARCS COMPONENTS SHALL BE PRESSURE WASHED PER THE MANUFACTURER'S RECOMMENDATIONS. AS PART OF THE RE-INSTALLATION PROCESS, NEW MOUNTING HARDWARE SHALL BE PROVIDED PER THE MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION ON LIMITED DEPTH BRIDGE DECKS. ALL NEW L104 MEGA MARKERS AND S65 SECURING ARC SETS SHALL BE PROCURED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL INSTALL THE QWICK KURB COMPONENTS PER THE MANUFACTURER'S MOST CURRENT LONG-TERM INSTALLATION PROCEDURE.

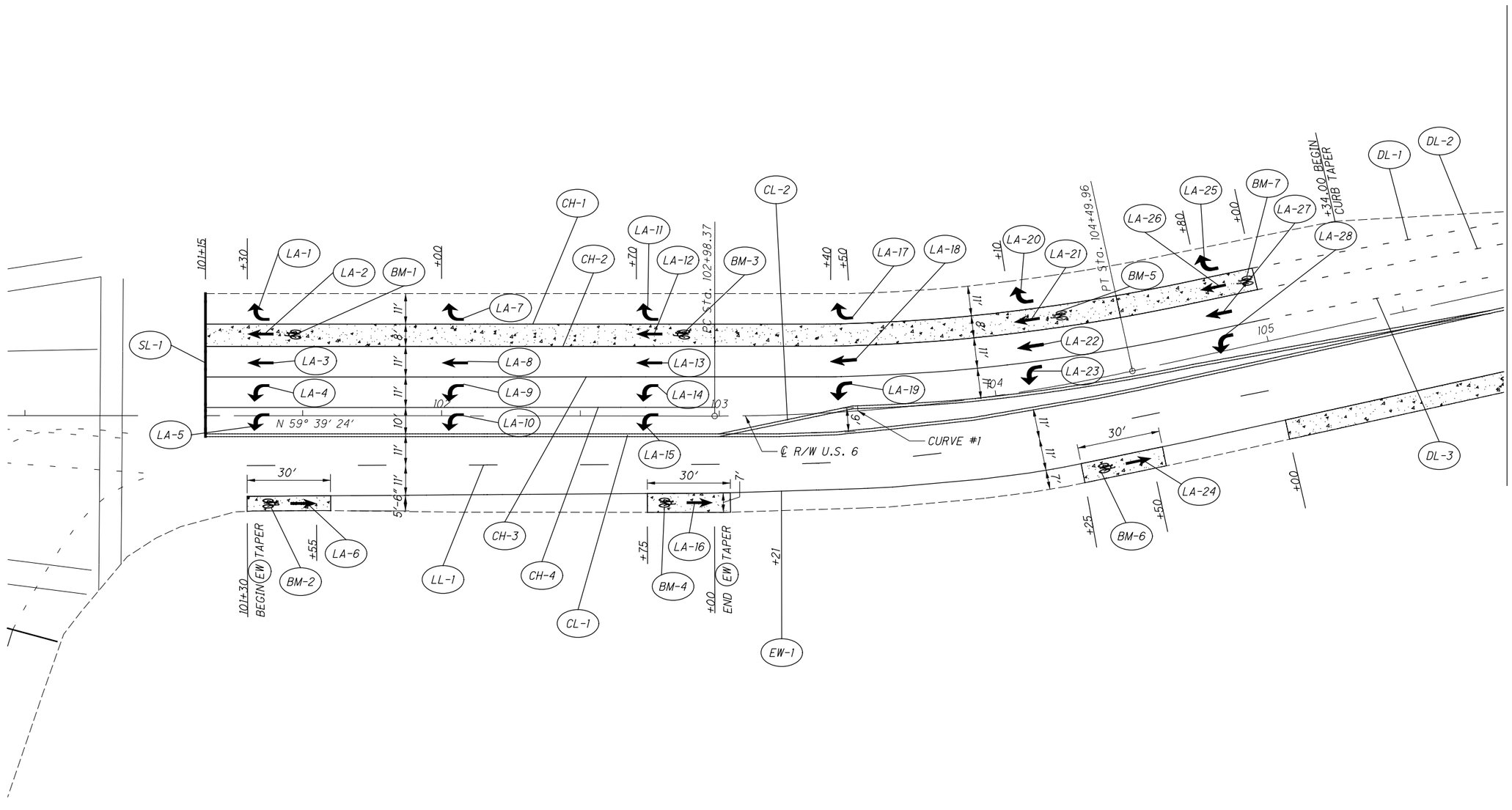
BASIS OF PAYMENT: ACCEPTED QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR FOOT COMPLETE IN PLACE. THIS PRICE SHALL INCLUDE FULL COMPENSATION FOR REMOVING, STORING, AND RE-INSTALLING THE QWICK KURB SYSTEM, INCLUDING REPLACING EXISTING WORN OR DAMAGED PARTS, NEW MOUNTING HARDWARE, NEW MEGA MARKERS AND SECURING ARC SETS, AND OTHER INCIDENTAL MATERIALS, LABOR AND EQUIPMENT. PAYMENT WILL BE MADE UNDER ITEM 644 - PAVEMENT MARKING, MISC.: QWICK KURB.

ITEM 620 - DELINEATOR, POST GROUND MOUNTED

PRIOR TO REMOVAL OF THE EXISTING DELINEATORS, THE ENGINEER AND THE CONTRACTOR SHALL MAKE RECORD OF THE EXISTING DELINEATOR LOCATIONS. THE CONTRACTOR SHALL INSTALL THE PROPOSED DELINEATORS AT THE SAME LOCATION AS EXISTING. THE COST OF THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ITEM 620 - REMOVAL OF DELINEATORS

ALL EXISTING PEXCO FG 336 DELINEATORS WITH FG 300 BASES SHALL BE REMOVED AND RETURNED TO THE MAINTAINING AGENCY.



LEGEND:

BM - BIKE MARKING
CH - CHANNELIZING LINE
CL - CENTER LINE
D - DELINEATOR
DL - DOTTED LINE
EW - EDGE LINE, 6" (WHITE)
LA - LANE ARROW
LL - LANE LINE, 6"
QK - QWICK-KURB
SL - STOP LINE
TL - TRANSVERSE LINE
[ ] - GREEN PAINT (SEE NOTE 4)

NOTES:

1. REMOVE ALL EXISTING PAVEMENT MARKINGS.
2. VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.
3. ALL PAVEMENT MARKINGS ARE TO BE ITEM 644 - THERMOPLASTIC PAVEMENT MARKINGS.
4. FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 31A/138.

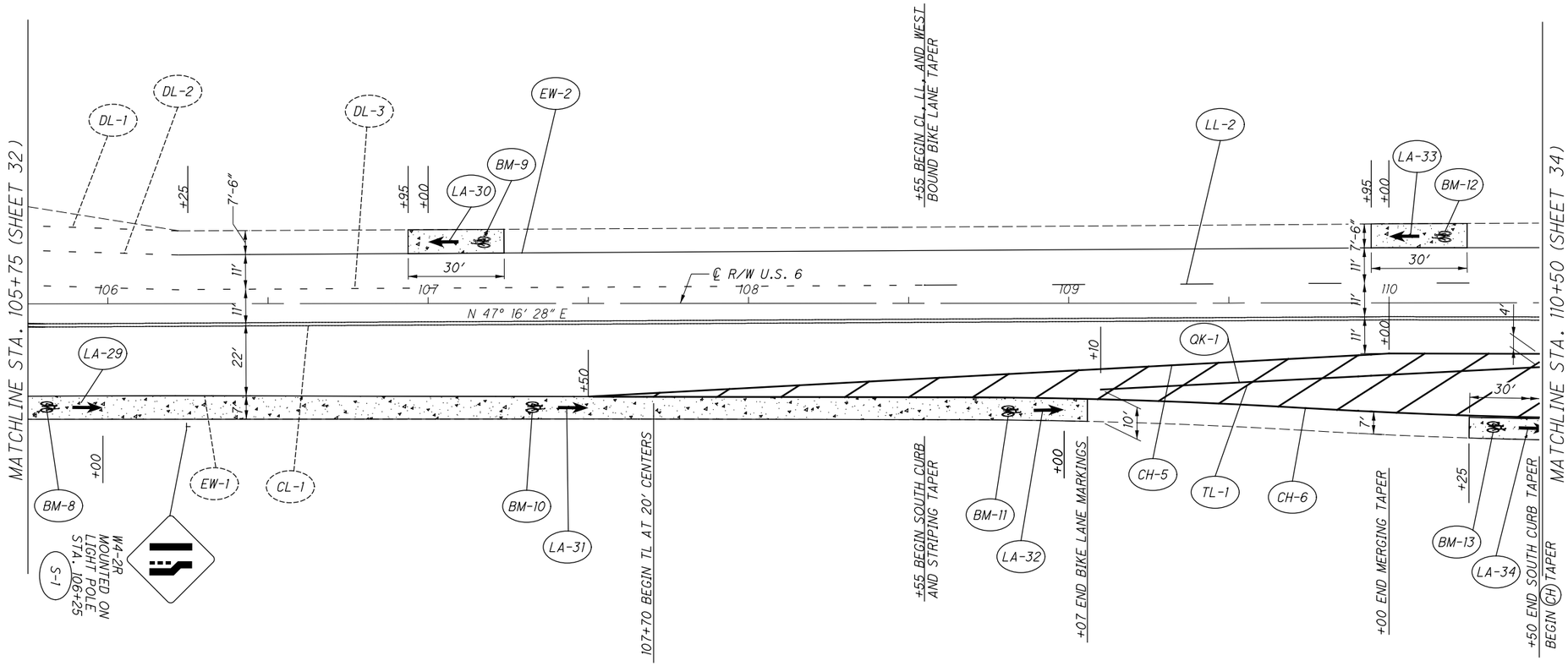
HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CEM
CHECKED JMZ

SIGN AND PAVEMENT MARKING PLAN

CUY-6-14.56

32
138



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NOTES:

1. REMOVE ALL EXISTING PAVEMENT MARKINGS.
2. VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.
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4. FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 31A/138.
5. FOR QWICK-KURB SPECIFICATIONS, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 31B/138.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CEM
CHECKED JMZ

SIGN AND PAVEMENT MARKING PLAN

CUY-6-14.56

33
138

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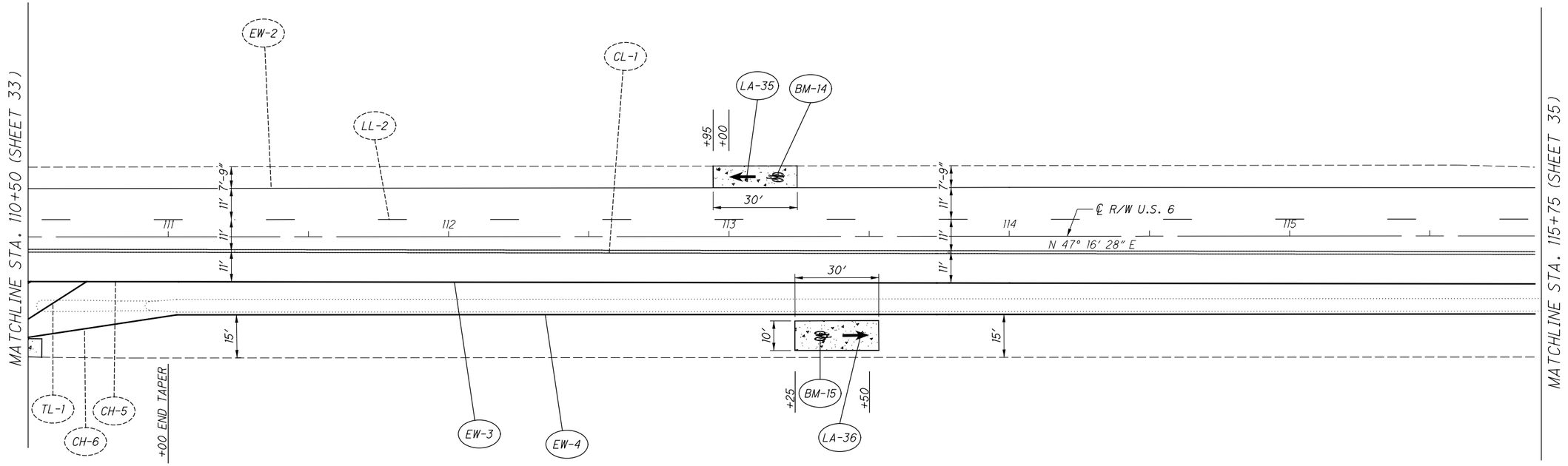

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[•] - GREEN PAINT (SEE NOTE 4)

NOTES:

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2. VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.
3. ALL PAVEMENT MARKINGS ARE TO BE ITEM 644 - THERMOPLASTIC PAVEMENT MARKINGS.
4. FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 314/138.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CEM
CHECKED JMZ

SIGN AND PAVEMENT MARKING PLAN

CUY-6-14.56

34
138

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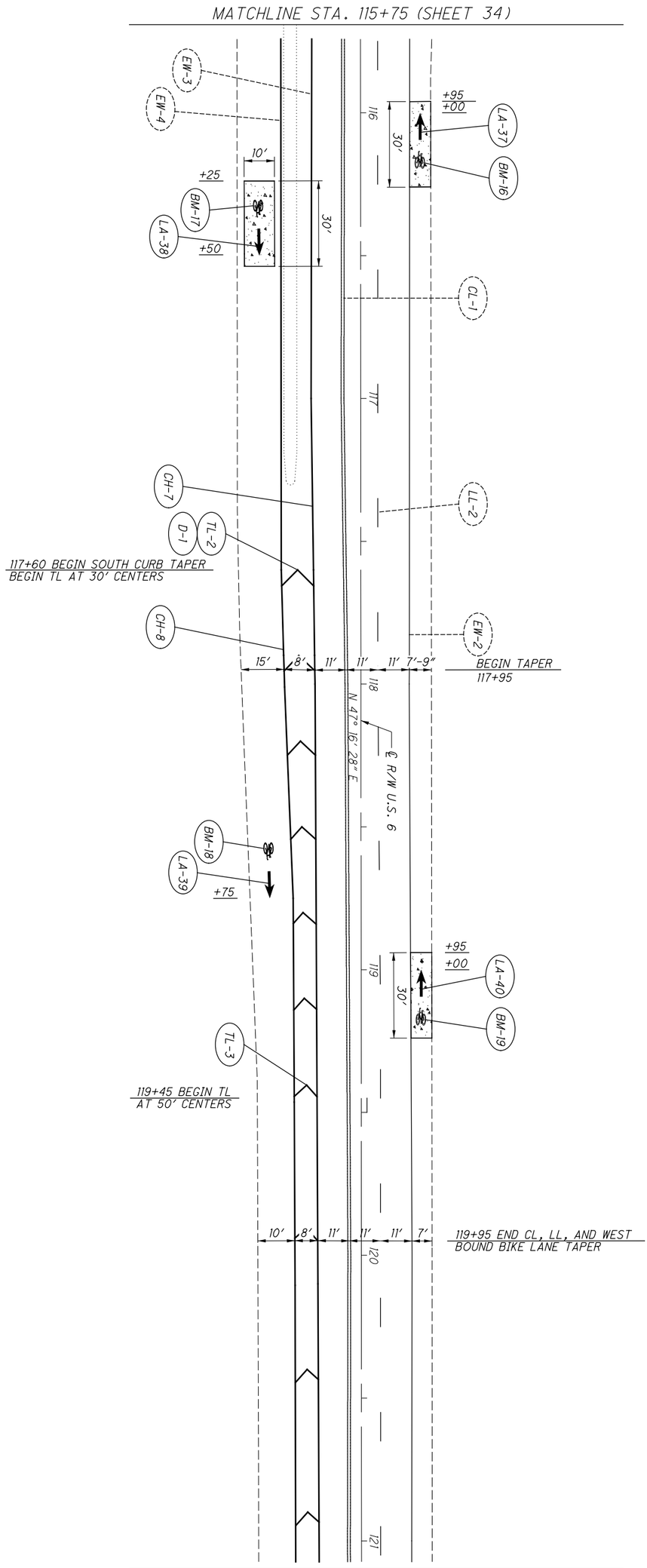

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NOTES:

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2. VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.
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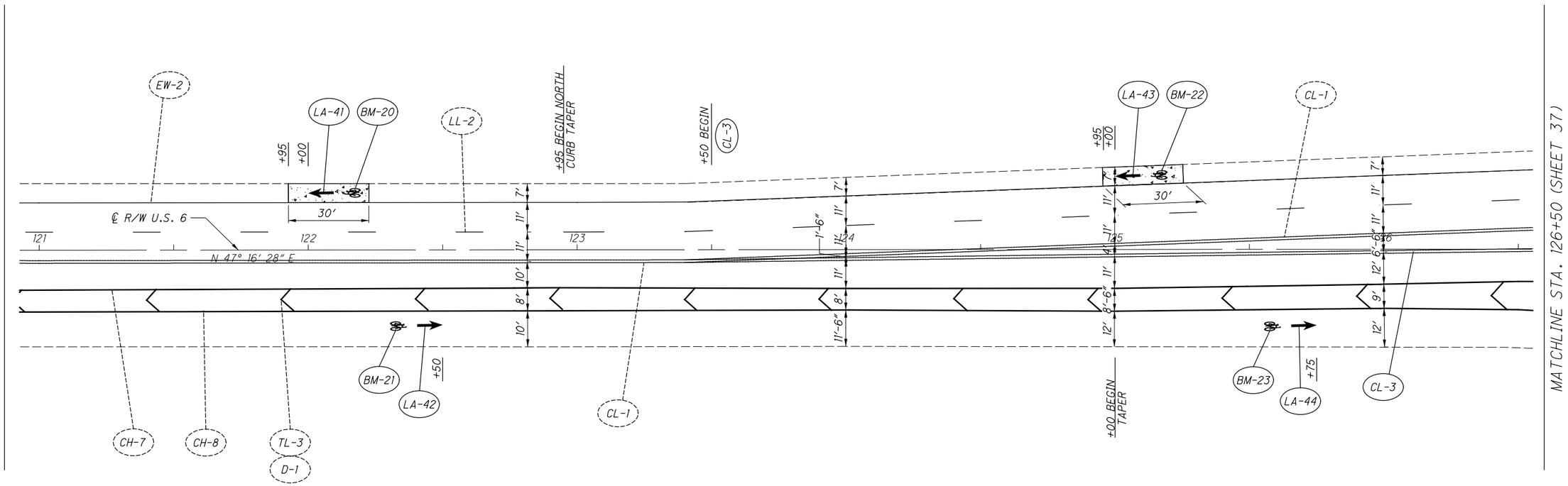
4. FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 514138.



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NOTES:

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2. *VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.*
3. *ALL PAVEMENT MARKINGS ARE TO BE ITEM 644 - THERMOPLASTIC PAVEMENT MARKINGS.*
4. *FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE SIGN AND PAVEMENT MARKING GENERAL NOTES, SHEET 31A/138.*

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CEM
CHECKED JMZ

SIGN AND PAVEMENT MARKING PLAN

CUY-6-14.56

36
138

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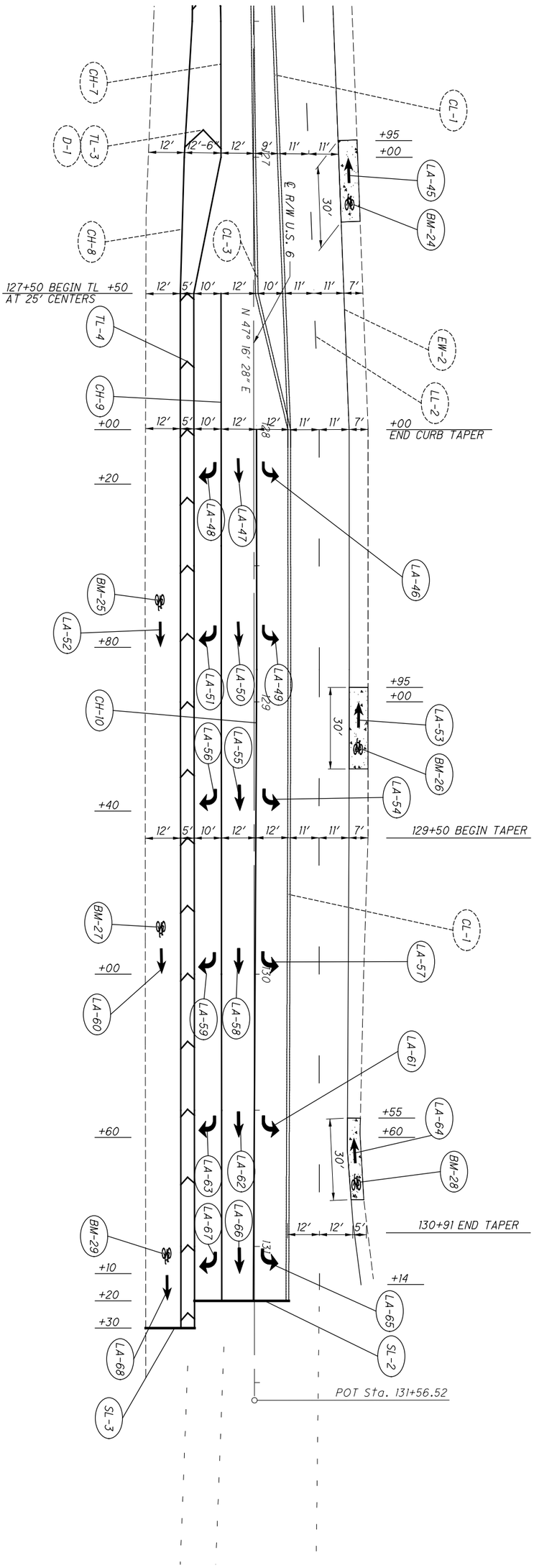
MATCHLINE STA. 126+50 (SHEET 36)



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2. VERIFY PROPOSED MARKINGS WITH THE CITY OF CLEVELAND PRIOR TO PLACING PROPOSED MARKINGS.
3. ALL PAVEMENT MARKINGS ARE TO BE ITEM 644 - THERMOPLASTIC PAVEMENT MARKINGS.
4. FOR GREEN PAINT SPECIFICATIONS AND QUANTITIES, SEE STGN_AND PAVEMENT MARKING GENERAL NOTES, SHEET STM38.

625 LIGHTING, MISC.: BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING, LED, AS PER PLAN

THIS ITEM CONSISTS OF RETROFITTING THE EXISTING TIDELAND, ML-155 NAVIGATION LIGHTING TO LED. CONTRACTOR TO EVALUATE EXISTING POWER SYSTEM INCLUDING WIRING, CONDUIT, CONTROL CENTER AND ALL EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS LISTED BELOW. EXISTING SYSTEM MAY BE REUSED IF REQUIREMENTS ARE MET OR THE SYSTEM MUST BE REPLACED.

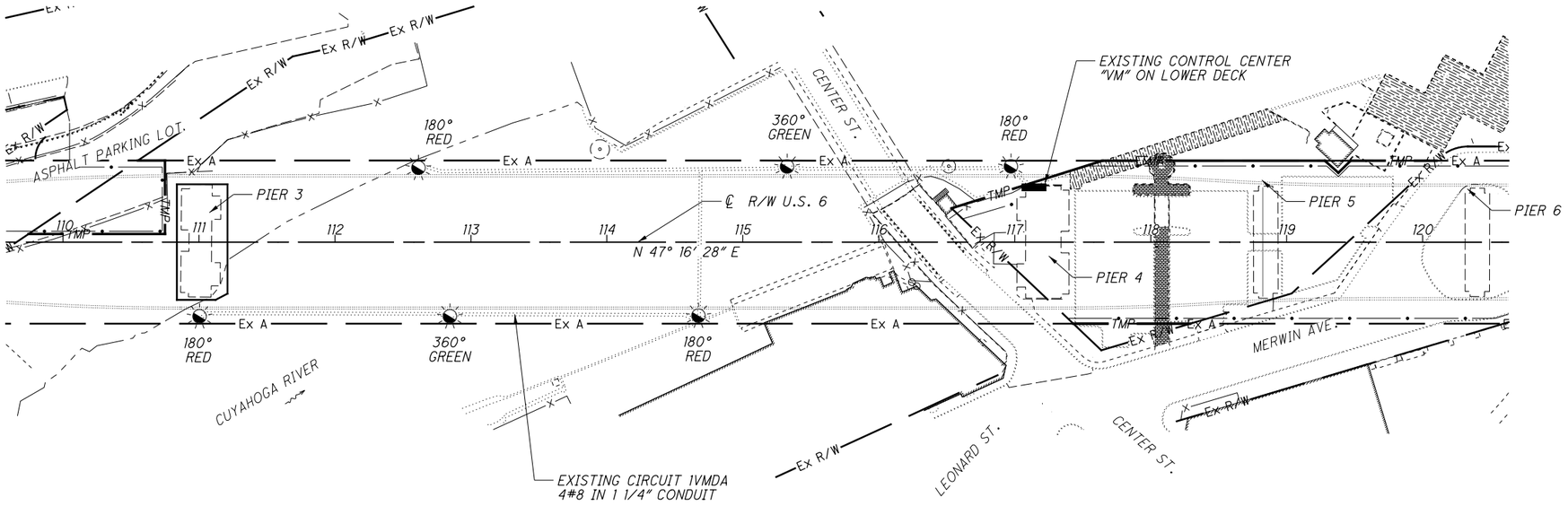
EACH MARINE NAVIGATION LAMP SHALL UTILIZE LIGHT EMITTING DIODES (LEDS). THE MARINE NAVIGATION LAMP SHALL HAVE A WRITTEN MINIMUM 5-YEAR MANUFACTURER WARRANTY. THE LAMP SHALL MEET THE COLOR, BRIGHTNESS (RANGE), SECTORING, AND DIVERGENCE REQUIREMENTS AS APPROVED BY THE APPLICABLE COAST GUARD DISTRICT. THE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

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

EACH MARINE NAVIGATION LAMP SHALL HAVE ITS OWN CONTROLLER/POWER SUPPLY, HOUSED IN ITS OWN METAL ENCLOSURE ACCESSIBLE BY MAINTENANCE PERSONNEL, AS SHOWN ON THE BRIDGE PLANS. THE CONTROLLER SHALL OPERATE AT 120VAC, 60HZ AND HAVE ITS OWN DEDICATED CIRCUIT BREAKER IN A NEARBY PANELBOARD AS DETAILED IN THE BRIDGE PLANS. THE MARINE NAVIGATION LAMP SHALL OPERATE CONTINUOUSLY TWENTY-FOUR (24) HOURS PER DAY, WITH NO INTERVENING PHOTOCELL CONTROL. THE CONTROLLER SHALL PROVIDE ALARM STATUS OUTPUT IN THE FORM OF A BLUE LED CONFIRMATION LIGHT VISIBLE TO ODOT MAINTENANCE PERSONNEL FROM DECK LEVEL TO INDICATE DEFECTIVE OR INOPERATIVE MARINE NAVIGATION LAMP CONDITIONS.

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

THE DEPARTMENT SHALL MEASURE BRIDGE-MOUNTED MARINE NAVIGATION LIGHTING BY EACH INDIVIDUAL MARINE NAVIGATION LIGHT, COMPLETE AND INSTALLED INCLUDING ANY CONTROL DEVICES AND ALL WIRING AND CONDUITS.



NOTES:

EXISTING NAVIGATIONAL LIGHTING: PIVOT TYPE CHANNEL MARKER LIGHT, TIDELAND ML-155 LATERN c/w 180°RED OR 360°GREEN LENS, TIDLEAND TF-3AC FLASHER/LAMPCHANRGER WITH SS-10-AC PHOTOELECTRIC SWITCH

LEGEND:

EXISTING NAVIGATIONAL LIGHTING

EXISTING CONTROL CENTER

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED CJK
CHECKED JMZ

LIGHTING PLAN

CUY-6-14.56

39
138

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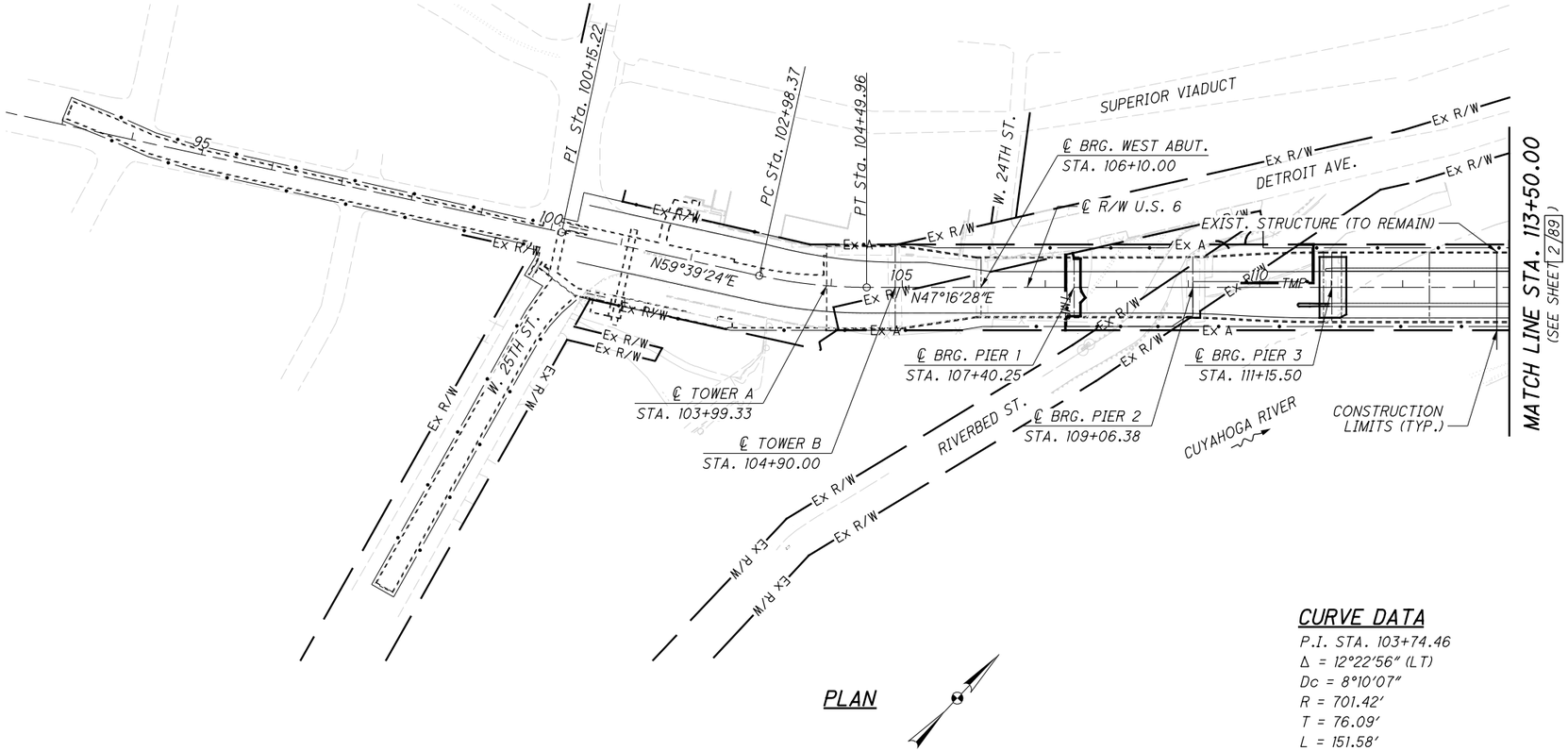
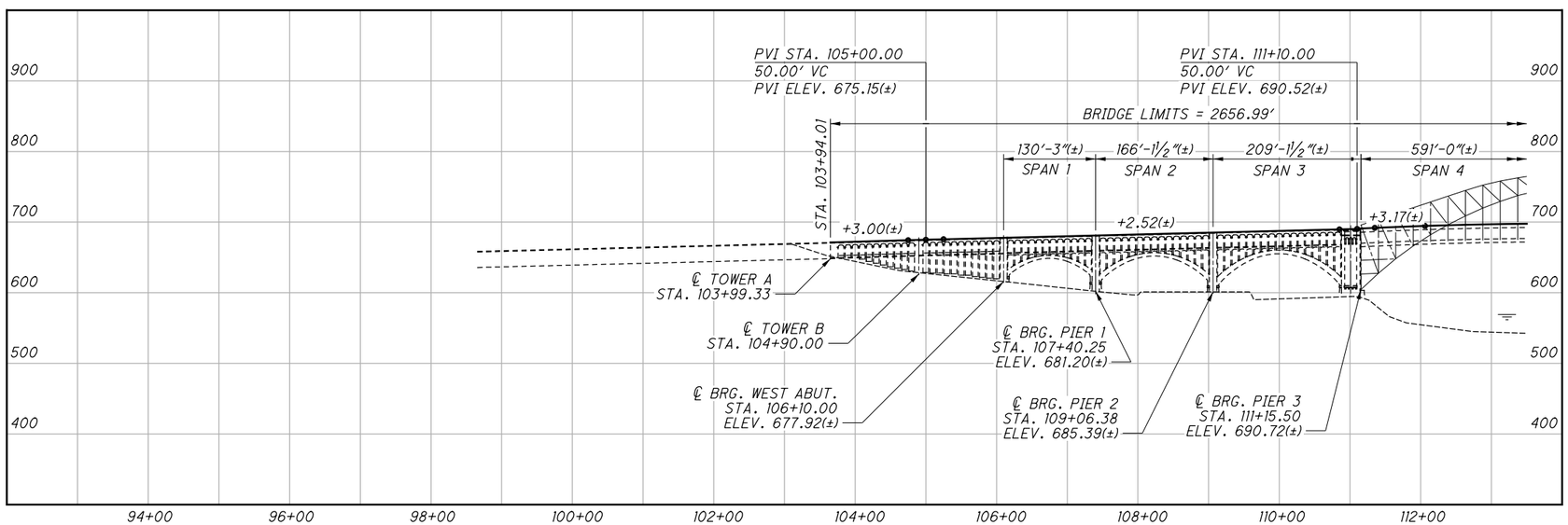


PLAN

CURVE DATA

P.I. STA. 103+74.46
Δ = 12°22'56" (LT)
Dc = 8°10'07"
R = 701.42'
T = 76.09'
L = 151.58'
E = 4.11'
C = 151.29'
C.B. = N 53°27'56" E



PROFILE ALONG ℄ R/W U.S. 6

BENCHMARK DATA

CP-100 STA.100+50.96,	ELEV. 667.88,	OFFSET 153.32' LT
CP-101 STA. 104+57.11,	ELEV. 656.31,	OFFSET 246.76' LT
CP-102 STA.126+04.09,	ELEV. 579.60,	OFFSET 763.49' LT
CP-103 STA.125+88.31,	ELEV. 579.62,	OFFSET 411.02' LT

FOR ADDITIONAL BENCHMARK INFORMATION. SEE SCHEMATIC PLAN, SHEET 2/138

NOTES

1. UTILITIES NOT SHOWN FOR CLARITY. ALL EXISTING UTILITIES ARE TO REMAIN UNLESS NOTED OTHERWISE.

EXISTING STRUCTURE

SUPERSTRUCTURE TYPE:
- APPROACH SPANS:
  - CONCRETE ARCH SPANS SUPPORTING A DOUBLE DECK ROADWAY CONSISTING OF REINFORCED CONCRETE COLUMNS, FLOORBEAMS AND DECKS.
- MAIN SPAN:
  - THREE HINGED STEEL ARCH SUPPORTING A DOUBLE DECK ROADWAY CONSISTING OF STEEL COLUMNS, FLOORBEAMS, STRINGERS AND A REINFORCED CONCRETE UPPER DECK.

SUBSTRUCTURE TYPE:
- PIERS:
  - REINFORCED CONCRETE PIERS WITH ARCH RIBS, WALLS AND COLUMNS.
- ABUTMENTS:
  - REINFORCED DEEP CONCRETE ABUTMENTS WITH ARCH RIBS, WALLS AND COLUMNS.

SPANS: WEST APPROACH: 130'-3"(±), 166'-1½"(±), 209'-1½"(±)
MAIN SPAN: 591'-0"(±)
EAST APPROACH: 178'-0"(±), 3 @ 155'-9"(±), 130'-6"(±), 120'-4½"(±), 80'-3"(±), 123'-0"(±) 80'-1½"(±)

ROADWAY:
- APPROACH SPANS:
  - VARIES, 58'-0"(±) MIN. TO 80'-0"(±) MAX. F/F CURB
- MAIN SPANS:
  - 44'-9"(±) F/F CURB WITH ONE ADJACENT ROADWAY WITH 16'-0" F/F CURB

LOADING: HS20-44, CASE II AND THE ALTERNATE MILITARY LOADING, FWS = 30 PSF

SKEW: NONE

APPROACH SLABS: NONE

ALIGNMENT: TANGENT

CROWN: 0.0156(±) FT/FT

STRUCTURAL FILE NUMBER: 1800930

DATE BUILT: 1917 (REHABILITATED 1967, 1994, 2015)

DISPOSITION: TO BE REHABILITATED

PROPOSED WORK

1. BRIDGE DECK OVERLAY USING HYDRODEMOLITION AND MICRO SILICA MODIFIED CONCRETE OVERLAY.
2. CONCRETE PATCHING WITH GALVANIC ANODE PROTECTION.
3. FIBER WRAP LOCATIONS OVER PUBLIC ACCESS AREAS.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
DEA	DEA	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

CUYAHOGA COUNTY
STA. 103+94.01
STA. 130+51.00

SITE PLAN - 1
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

1 / 89

40 / 138

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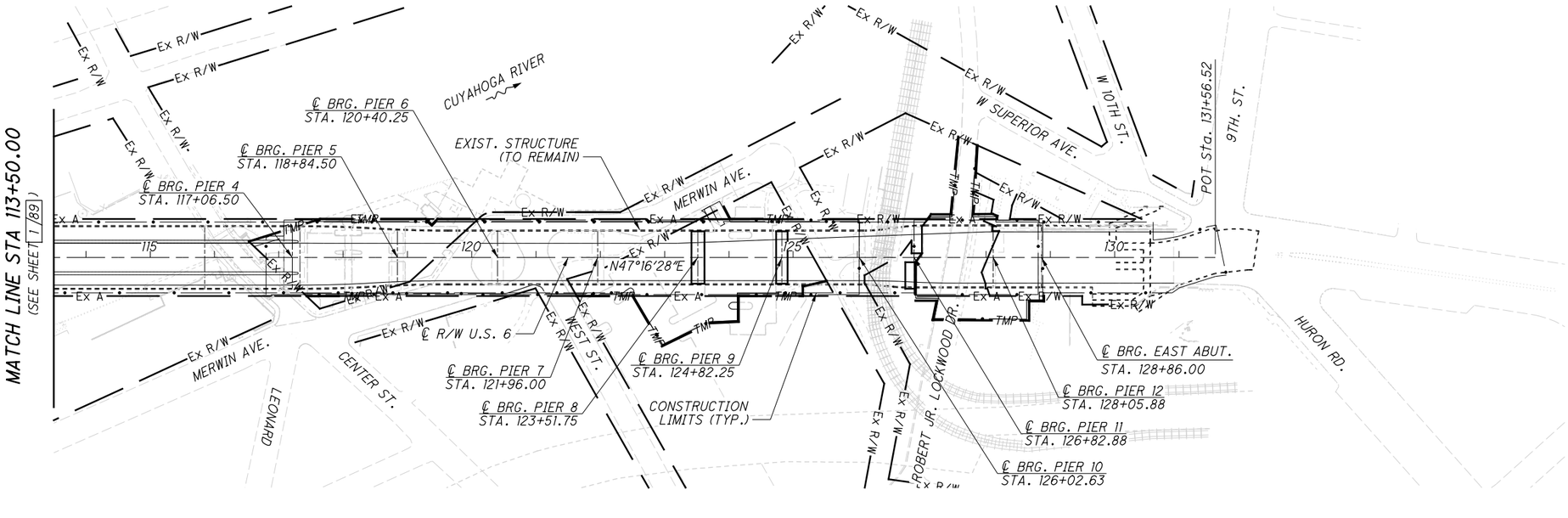

PLAN

NOTES

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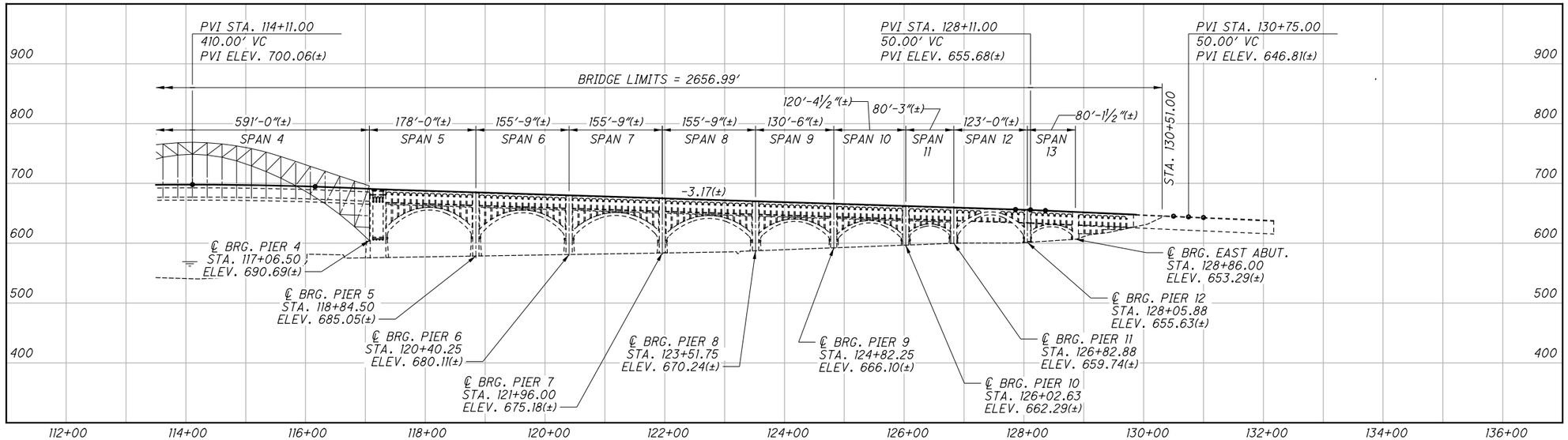


PROFILE ALONG ℄ R/W U.S. 6

DESIGN AGENCY: Pennoni

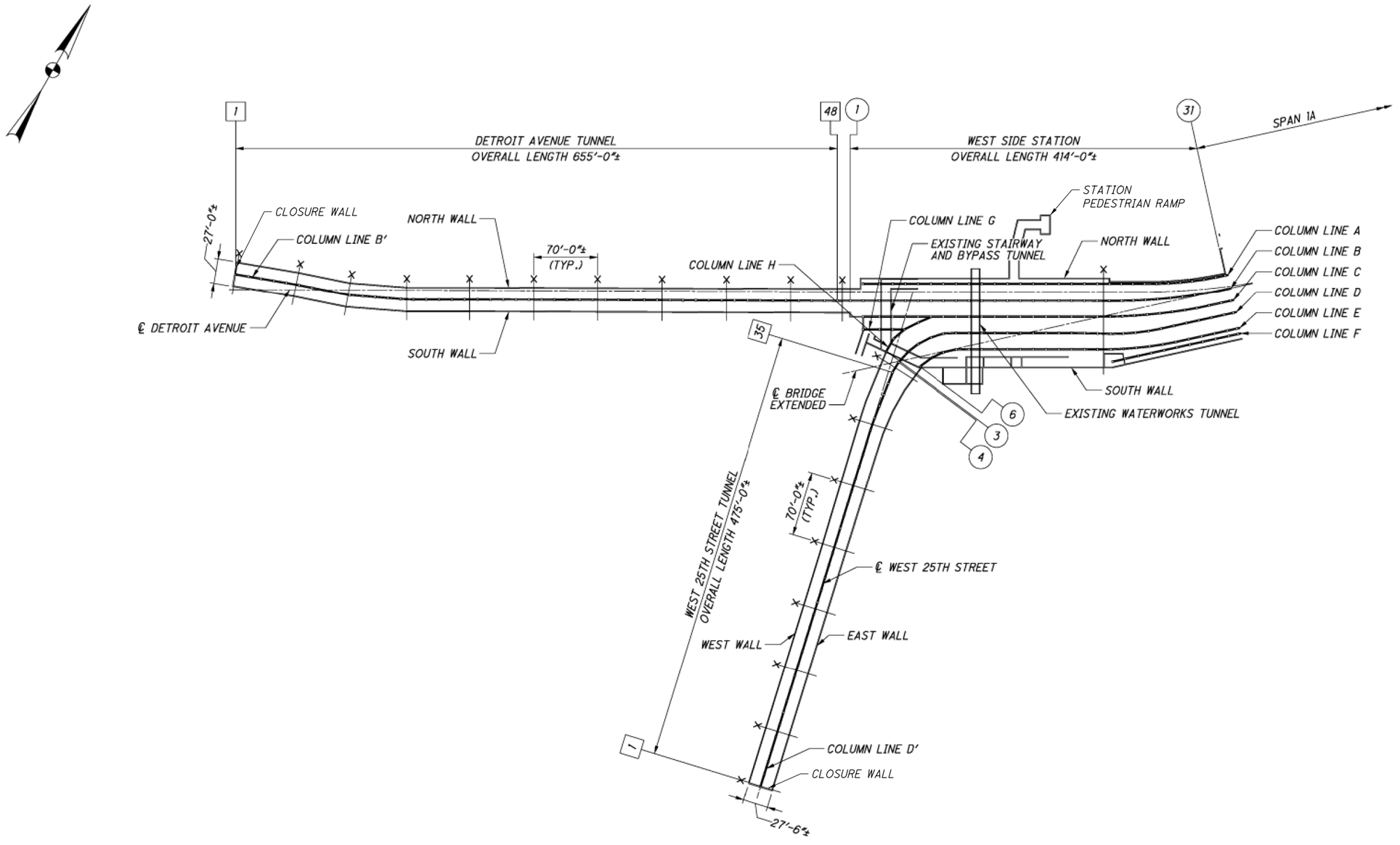
DESIGNED	DRAWN	REVIEWED	DATE
DEA	DEA	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

CUYAHOGA COUNTY
STA. 103+94.01
STA. 130+51.00

SITE PLAN - 2

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



PLAN

LEGEND:

- [#] TUNNEL COLUMN NUMBER
- (#) WEST STATION COLUMN NUMBER
- CONSTRUCTION JOINT

NOTES:

1. NO PROPOSED WORK SHOWN ON THIS SHEET.
2. FOR STRUCTURE GENERAL NOTES, SEE SHEETS [5/89] TO [9/89]
3. ALL DIMENSIONS ARE HORIZONTAL.

DESIGN AGENCY: Pennoni

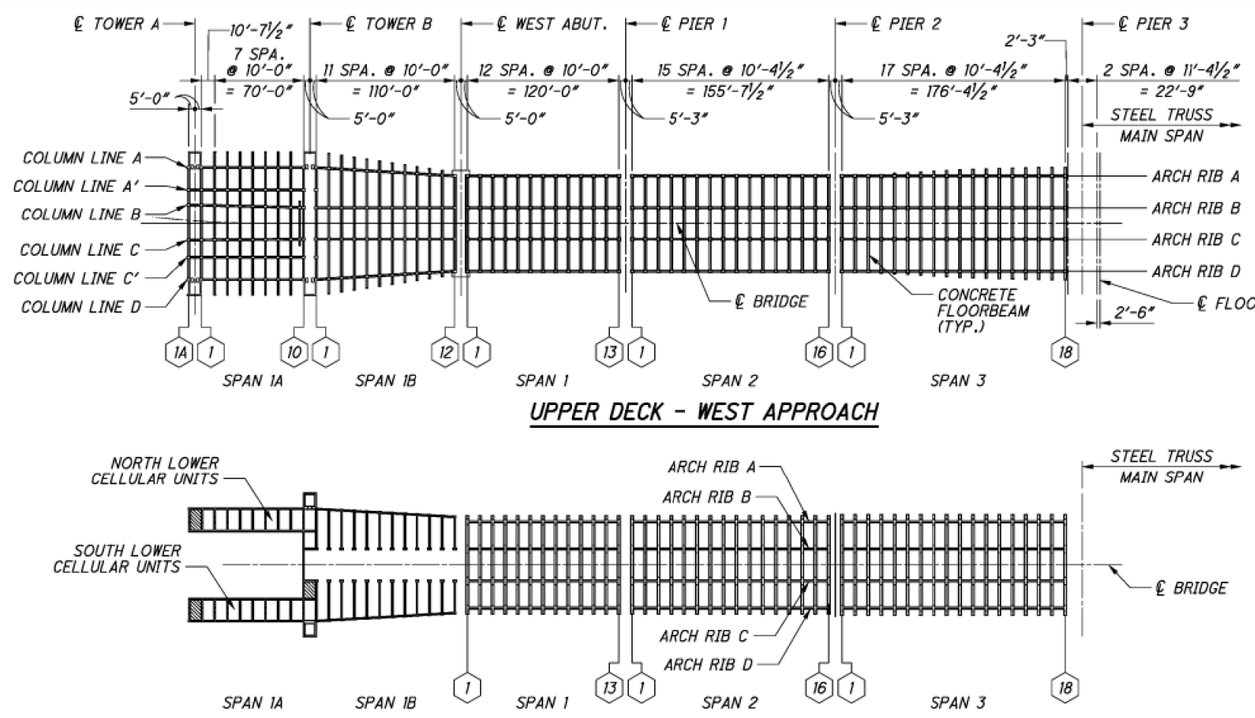
DESIGNED	DRAWN	REVIEWED	DATE
BPS	BPS	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

MEMBER IDENTIFICATION PLAN (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

3 / 89

42
138



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DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	BPS	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

MEMBER IDENTIFICATION PLAN (2 OF 2)

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56

PID No. 99972

REFER TO THE FOLLOWING STANDARD DRAWINGS:

EXJ-4-87	DATED (REVISED)	01-19-2018

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

800	DATED	01-18-2019
843	DATED	01-15-2016
844	DATED	04-20-2018
848	DATED	01-20-2017

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICALS (AASHTO), 17TH EDITION, INCLUDING THE 2002 INTERIM SPECIFICATIONS, AND THE 2004 ODOT BRIDGE DESIGN MANUAL (BDM).

DESIGN LOADING:

UPPER DECK:

HS20-44, CASE II AND THE ALTERNATE MILITARY LOADING
FWS = 30 PSF

LOWER DECK:

ONE 8-TON VEHICLE WITH 10% IMPACT, 100 PSF, OR A 6-TON MANLIFT WITH 136.5% INCREASE IN ALLOWABLE STRESS, WHICHEVER IS GREATER

DESIGN DATA (NEW MATERIAL):

SELF-CONSOLIDATING CONCRETE - COMPRESSIVE STRENGTH 4500 PSI (JACK ARCHES, COLUMNS, CORBELS, AND PIERS)

REINFORCING STEEL - ASTM A615 OR A996 GRADE 60, MINIMUM YIELD STRENGTH 60,000 PSI (EPOXY COATED)

DECK PROTECTION METHOD:

MICRO-SILICA MODIFIED CONCRETE OVERLAY

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 DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

EXISTING STRUCTURE PLANS:

ORIGINAL PLANS	DATED	1912
ORIGINAL SHOP DRAWINGS	DATED	1914-1917
REHABILITATION PLANS	DATED	1966
REHABILITATION PLANS	DATED	1994
SIDEWALK ADDITION PLANS	DATED	2003

DIGITAL COPIES OF THE PLANS MAY BE OBTAINED BY PROSPECTIVE BIDDERS AT THE RECORDS ROOM OF THE CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS, 2079 E 9TH STREET, CLEVELAND, OHIO 44115

THE EXISTING PLANS ARE ALSO AVAILABLE ONLINE THROUGH THE FOLLOWING ODOT WEBSITE:

HTTP://WWW.DOT.STATE.OH.US/DIVISIONS/CONTRACTADMIN/CONTRACTS/PAGES/DESIGNFILES.ASPX

IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH ALL PERTINENT EXISTING DRAWINGS AND DETAILS RELEVANT TO THIS PROJECT.

MAINTENANCE OF TRAFFIC:

MAINTENANCE OF TRAFFIC FOR THE STRUCTURE WORK SHALL BE COORDINATED WITH THE OVERALL PROJECT. REFER TO THE MAINTENANCE OF TRAFFIC NOTES AND DETAILS ELSEWHERE IN THE PLANS.

NOTIFICATION:

THE CONTRACTOR SHALL NOTIFY IN WRITING THE FOLLOWING AGENCIES AT LEAST 14 DAYS PRIOR TO THE START OF CONSTRUCTION, AND AT LEAST 72 HOURS BEFORE IMPLEMENTING ANY SUBSTANTIAL CHANGE IN TRAFFIC PATTERN OR TEMPORARY LANE CLOSURES:

- THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12
  PUBLIC INFORMATION OFFICE
  5500 TRANSPORTATION BLVD.
  GARFIELD HEIGHTS, OH 44125
  ATTN: AMANDA MCFARLAND
  PHONE: 216-584-2005

- THE CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS
  PUBLIC INFORMATION OFFICE
  2079 E. 9TH ST.
  CLEVELAND, OH 44115
  PHONE: 216-348-3824

- THE CITY OF CLEVELAND DEPARTMENT OF PUBLIC SAFETY
  601 LAKESIDE AVE., ROOM 230
  CLEVELAND, OH 44114
  ATTN: MICHAEL MCGRATH
  PHONE: 216-664-2200

- THE CITY OF CLEVELAND DIVISION OF POLICE
  1300 ONTARIO ST.
  CLEVELAND, OH 44113
  ATTN: CALVIN D. WILLIAMS
  PHONE: 216-623-5000

- THE CITY OF CLEVELAND DIVISION OF FIRE
  1645 SUPERIOR AVE.
  CLEVELAND, OH 44114
  ATTN: ANGELO CALVILLO
  PHONE: 216-664-6800

- THE CITY OF CLEVELAND DIVISION OF EMERGENCY MEDICAL SERVICES
  1701 LAKESIDE AVE.
  CLEVELAND, OH 44114
  ATTN: NICOLE CARLTON
  PHONE: 216-664-2555

- THE CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING
  601 LAKESIDE AVE.
  CLEVELAND, OH 44114
  ATTN: ANDREW CROSS
  PHONE: 216-664-3197

- THE CITY OF CLEVELAND DIVISION OF AIR QUALITY
  75 ERIEVIEW PLAZA, 2ND FLOOR
  CLEVELAND, OH 44114
  ATTN: DAVID G. HEARNE
  PHONE: 216-664-2178

- THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
  1240 W. 6TH ST.
  CLEVELAND, OH 44113
  ATTN: MARK RODRIGUEZ
  PHONE: 216-356-3015

- THE CLEVELAND BOARD OF EDUCATION
  1111 SUPERIOR AVE., SUITE 1800
  CLEVELAND, OH 44114
  ATTN: DR. ROSEANN CANFORA
  PHONE: 216-838-0086

- THE CUYAHOGA COUNTY BOARD OF DEVELOPMENTAL DISABILITIES
  1275 LAKESIDE AVE.
  CLEVELAND, OH 44114
  ATTN: MARIE BARNI
  PHONE: 216-736-2691

- THE UNITED STATES POSTAL SERVICE
  2400 ORANGE AVE., ROOM 46
  CLEVELAND, OH 44101
  ATTN: TERESA PENNINGTON
  PHONE: 216-443-4132

- THE CITY OF CLEVELAND, BUREAU OF BRIDGES AND DOCKS
  601 LAKESIDE AVENUE, ROOM 518
  CLEVELAND, OHIO 44114
  ATTN.: ROMAS PLIODZINSKAS
  PHONE: 216-432-6040

- NORTHEAST OHIO REGIONAL SEWER DISTRICT
  3900 EUCLID AVE.
  CLEVELAND, OH 44115
  ATTN: ROBERT STOERKEL
  PHONE: 216-881-6600 x6802

- THE CLEVELAND/CUYAHOGA PORT AUTHORITY
  1100 W. 9TH ST., SUITE 300
  CLEVELAND, OH 44113
  ATTN: JARED MAGYAR
  PHONE: 216-377-1366

- THE ARMY CORPS OF ENGINEERS
  1776 NIAGARA ST.
  BUFFALO, NY 14207
  ATTN: MARK SCALABRINO
  PHONE: 716-789-4327

- LAKE CARRIERS' ASSOCIATION
  20325 CENTER RIDGE RD.
  ROCKY RIVER, OH 44116-3572
  ATTN.: GLEN NEKVASIL, VICE PRESIDENT
  PHONE: 440-333-9996

- HISTORIC WAREHOUSE DISTRICT DEVELOPMENT CORPORATION
  1010 EUCLID AVE.
  CLEVELAND, OHIO 44115
  ATTN: THOMAS STARINSKY, ASSOCIATE DIRECTOR
  PHONE: 216-409-7054 (CELL)

- FLATS FORWARD
  1010 EUCLID AVE.
  CLEVELAND, OH 44115
  ATTN: MELINDA GIGANTE, PROJECT MANAGER
  PHONE: 216-325-0990 (CELL)

THE CITY OF CLEVELAND HAS JURISDICTION OVER LOCAL ROADS BENEATH THE DETROIT-SUPERIOR BRIDGE.

RIGHT-OF-WAY:

ALL NECESSARY CONSTRUCTION WORK FOR THIS PROJECT IS TO BE PERFORMED WITHIN THE EXISTING RIGHT OF WAY OR EASEMENTS, WITHIN TEMPORARY RIGHT OF WAY, OR WITHIN STATE PROPERTY.

WORK PERFORMED IN TUNNELS AND ON BRIDGE LOWER DECK:

THE CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS CURRENTLY STORES MANY ITEMS, INCLUDING SNOW FENCE, BENCHES, FOWLER JOB BOXES, LADDERS AND MISCELLANEOUS OTHER ITEMS ON THE LOWER DECK LEVEL OF THE BRIDGE. DURING CONSTRUCTION, THE CONTRACTOR MAY CAREFULLY MOVE THESE ITEMS AS NEEDED IN ORDER TO GAIN ACCESS TO LOCATIONS OF PROPOSED WORK. THE CONTRACTOR SHALL RETURN ALL OF THESE ITEMS TO THEIR ORIGINAL LOCATION AFTER THE COMPLETION OF NECESSARY WORK. THE COST OF THIS WORK SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 624 - MOBILIZATION.

WORK PERFORMED ON ADJACENT MEMBERS:

THE SCOPE OF REPAIR WORK INVOLVES A LARGE AMOUNT OF REMOVAL OF CONCRETE FROM STRUCTURAL MEMBERS. IN ORDER TO PRESERVE THE STRUCTURAL INTEGRITY OF THE BRIDGE, THE CONTRACTOR MUST COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. THE CONTRACTOR IS PROHIBITED FROM PERFORMING WORK ON COLUMNS AND CONNECTING JACK ARCHES AT THE SAME TIME.
2. THE CONTRACTOR IS PROHIBITED FROM PERFORMING WORK ON ADJACENT JACK ARCHES WHICH CONNECT TO THE SAME COLUMN AT THE SAME TIME.
3. THE CONTRACTOR IS PROHIBITED FROM PERFORMING WORK ON ADJACENT COLUMNS WHICH CONNECT TO THE SAME JACK ARCH AT THE SAME TIME.
4. THE CONTRACTOR IS PROHIBITED FROM PERFORMING WORK ON ADJACENT FLOOR BEAMS WHICH CONNECT TO THE SAME COLUMN AT THE SAME TIME.
5. THE CONTRACTOR IS PROHIBITED FROM PERFORMING WORK ON ADJACENT FLOOR BEAMS LOCATED IN THE SAME BAY AT THE SAME TIME.

WORK DESCRIBED ABOVE INCLUDES CONCRETE PATCHING, JACK ARCH REPLACEMENT, AND COLUMN REPLACEMENT. SEQUENCING OF WORK IS SUBJECT TO THE APPROVAL OF THE ENGINEER.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	TEC	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

GENERAL NOTES (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

UTILITY PROTECTION REQUIREMENTS:

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE PERFORMING WORK ACTIVITIES AROUND EXPOSED UTILITIES ON THE LOWER DECK AND IN THE TUNNELS AND STATIONS. EXPOSED UTILITIES INCLUDE EXISTING CLEVELAND PUBLIC POWER (CPP) ELECTRIC LINES MOUNTED TO THE LOWER DECK, THE UPPER FRAMING SYSTEM, AND IN THE TUNNELS AND EXISTING O.B.T. DUCTS MOUNTED TO THE UPPER FRAMING SYSTEM, AS SHOWN ON THE CONCRETE REPAIR DETAILS WITHIN THE PLANS. THE CONTRACTOR MUST ENSURE THAT THESE UTILITIES ARE NOT DAMAGED AS A RESULT OF WORK ACTIVITIES OR THE OPERATION OF EQUIPMENT, AND THE CONTRACTOR MAY BE REQUIRED TO PROVIDE TEMPORARY PROTECTIVE OR SUPPORT SYSTEMS IN ORDER TO PREVENT DAMAGE TO UTILITY LINES AND THEIR SUPPORTS DURING STRUCTURE REPAIR OPERATIONS.

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE PERFORMING WORK ACTIVITIES AROUND THE AERIAL UTILITIES LOCATED ON THE GROUND BELOW SPANS 2, 6, 7, AND 8. AERIAL UTILITIES INCLUDE CLEVELAND PUBLIC POWER (CPP) POWER CONDUCTORS IN SPAN 2 AND FIRST ENERGY (CEI) POWER CONDUCTORS IN SPANS 6, 7, AND 8. THE CONTRACTOR MUST ENSURE THAT THESE UTILITIES ARE PROTECTED DURING WORK ACTIVITIES. IF THE UTILITY OWNER(S) ARE REQUIRED TO PERFORM ANY WORK TO ENSURE PROTECTION OF THEIR UTILITY(IES), THE CONTRACTOR AND UTILITY OWNER(S) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM. ALL CONTRACTORS/OWNERS MUST KNOW AND COMPLY WITH OCCUPATIONAL SAFETY HEALTH ADMINISTRATION (OSHA) SAFE-WORKING CLEARANCES BETWEEN PERSONS OR ANY CONDUCTIVE OBJECT AND ENERGIZED BARE WIRES. DO NOT ALLOW ANY CONSTRUCTION DEBRIS TO FALL ONTO THE UTILITY LINES.

COORDINATION WITH CLEVELAND PUBLIC POWER (CPP): AERIAL CPP FACILITIES PASS NEAR AND UNDER THE BRIDGE. DO NOT ALLOW CONSTRUCTION DEBRIS TO FALL ON CONDUCTORS. MAINTAIN OSHA CLEARANCES. CPP WILL FURNISH AND INSTALL SLEEVES TO PROTECT THE CONDUCTORS UNDERNEATH SPAN 2. THE CONTRACTOR SHALL CONTACT CHRISTOPHER HIRZEL (216-563-7212) TO SCHEDULE SLEEVE INSTALLATION AT LEAST 45 DAYS PRIOR TO WORKING UNDERNEATH SPAN 2. THE CONTRACTOR SHALL PAY CPP THE TOTAL PREDETERMINED FIXED AMOUNT UPON COMPLETION OF WORK UNDER PAY ITEM SPECIAL - STRUCTURES, CPP SLEEVE PROTECTION, WORK PERFORMED BY CPP. THIS ITEM OF WORK IS A PREDETERMINED FIXED AMOUNT TO PAY FOR THE CPP PROVIDED MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS. THE DEPARTMENT WILL PAY A FIXED UNIT COST OF $1 PER EACH. ANY ADMINISTRATIVE OR OTHER INCIDENTAL COSTS INCURRED BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE PERTINENT STRUCTURE PAY ITEMS FOR WHICH THE SLEEVES ARE REQUIRED. THE DEPARTMENT WILL MAKE PAYMENT UPON SUBMISSION OF THE RECEIPTED INVOICE FROM THE CPP CONTRACTOR. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES TABLE TO COMPLETE THIS ITEM OF WORK: **ITEM SPECIAL - STRUCTURES, CPP SLEEVE PROTECTION, WORK PERFORMED BY CPP: 5400 EACH**

COORDINATION WITH FIRST ENERGY (CEI): AERIAL CEI FACILITIES PASS NEAR AND UNDER THE BRIDGE. DO NOT ALLOW CONSTRUCTION DEBRIS TO FALL ON CONDUCTORS. MAINTAIN OSHA CLEARANCES. CONDUCTORS ALONG WEST STREET UNDER THE BRIDGE MAY BE DEENERGIZED AND DROPPED TO FACILITATE WORK. HOWEVER, THIS WILL ONLY BE PERMITTED DURING COOLER WEATHER (9-23-19 THROUGH 5-15-20) FOR A MAXIMUM OF TWO WEEKS DURATION, PREFERABLY LESS. PROVIDE WRITTEN NOTICE FOR WORK TO PROCEED. CURRENT LINE SHOP LEAD TIME IS 12 WEEKS + ENGINEERING.

THE LOCATIONS OF ALL UTILITIES ARE APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORK. THE AGENCIES HAVING INSTALLATIONS IN THE AREA SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY STRUCTURE REPAIR IN AREAS CONTAINING THEIR INSTALLATION. IF ANY UTILITIES ARE DAMAGED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND THE APPROPRIATE UTILITY OWNER(S).

SUMMARY OF PROPOSED REHABILITATION WORK:

THE FOLLOWNG LIST CONTAINS MAJOR ITEMS OF WORK INCLUDED IN THESE PLANS FOR THE REHABILITATION OF THIS STRUCTURE:

1. REMOVAL OF THE EXISTING CONCRETE WEARING SURFACE BY HYDRO-DEMOLITION AND PLACING A NEW MICRO-SILICA MODIFIED CONCRETE OVERLAY.
2. PATCHING AND INSTALLING GALVANIC ANODES IN THE EXISTING SUBSTRUCTURE AND SUPERSTRUCTURE. LOCATIONS TO BE REPAIRED INCLUDE THE TUNNELS, STATIONS, APPROACH SPANS, SPANS 1-3, SPANS 5-13, AND THE PIERS.
3. REPLACE CONCRETE COLUMNS AND CAPITALS, CONCRETE JACK ARCHES, AND CONCRETE CORBELS AS SHOWN IN THE PLANS.
4. INSTALL COMPOSITE FIBER WRAP ON LOWER DECK FLOOR BEAMS AND ARCH RIBS OVER PUBLIC ACCESS AREAS.
5. INSTALL A MASONRY BLOCK WALL TO PREVENT VANDALS FROM ACCESSING THE BRIDGE.
6. REPAIR THE BRIDGE OPERATOR'S CAR SHELTER ADJACENT TO PIER 4.

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

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

SUBSTRUCTURE CONCRETE REMOVAL: REMOVE CONCRETE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED.

OUTSIDE THE 18 INCH LIMIT, THE CONTRACTOR MAY USE HAMMERS NOT EXCEEDING 90 POUNDS UPON APPROVAL OF THE ENGINEER. DO NOT PLACE PNEUMATIC HAMMERS IN DIRECT CONTACT WITH REINFORCING STEEL THATIS TO BE RETAINED IN THE REBUILT STRUCTURE.

PROTECTION OF VEHICULAR, PEDESTRIAN AND RIVER TRAFFIC: THE CONTRACTOR IS TO PROVIDE ADEQUATE PROTECTION FOR THE TRAVELING PUBLIC BELOW ALL LOCATIONS OF REMOVAL. SAFE PASSAGE FOR VEHICULAR, PEDESTRIAN AND RIVER TRAFFIC MUST BE MAINTAINED AT ALL TIMES DURING DEMOLITION. DEMOLISHED MATERIAL IS ONLY PERMITTED TO DROP TO THE GROUND PROVIDED THAT THE GROUND IS PROTECTED BY A MINIMUM OF 3/4" PLYWOOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING BOTH THE GROUND SURFACE AND THE REBOUND AREA. AFTER COMPLETION, THE CONTRACTOR SHALL RESTORE THE AREA TO EQUAL OR BETTER CONDITIONS IN ACCORDANCE WITH CMS 107.10.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
202	LUMP	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN:

DESCRIPTION: 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. A QUANTITY OF **2500 POUNDS** HAS BEEN ADDED TO THE ESTIMATED QUANTITIES FOR ADDITIONAL REPAIRS TO BE PERFORMED AS DIRECTED BY THE ENGINEER.

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 511 - CONCRETE, MISC.: PIER 6 LOWER DECK SHAFT REPAIR:

DESCRIPTION: THIS ITEM SHALL CONSIST OF REPAIRING THE PIER 6 LOWER DECK SHAFT IN ACCORDANCE WITH DETAILS IN THE STRUCTURE PLANS ON SHEET 75 89.

REMOVE THE EXISTING CONCRETE TO THE LIMITS SHOWN IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

THE PIER 6 LOWER DECK SHAFT REPAIR SHALL BE PERFORMED WITH SELF-CONSOLIDATING CONCRETE (SCC) IN ACCORDANCE WITH CMS 705.12. THE CONTRACTOR SHALL FURNISH MATERIALS ACCORDING TO ODOT'S QUALIFIED PRODUCTS LIST (QPL) AND WHICH MEET THE ACCEPTANCE REQUIREMENTS DETAILED IN THE GENERAL NOTES ON SHEET 7 89. USE FORMS TO ENSURE ADHERENCE OF REPAIR AND TO MATCH ORIGINAL SURFACE PROFILE AS SHOWN IN THE PLANS.

ALL NEW REINFORCEMENT SHALL BE EPOXY COATED AND FURNISHED PER CMS 509, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL DOWEL HOLES SHALL BE DRILLED AND GROUTED WITH NON-SHRINK, NONMETALLIC GROUT IN ACCORDANCE WITH CMS 510, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL GALVANIC ANODES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
511	EACH	CONCRETE, MISC.: PIER 6 LOWER DECK SHAFT REPAIR

ITEM 511 - CONCRETE, MISC.: JACK ARCH REPLACEMENT:

DESCRIPTION: THIS ITEM SHALL CONSIST OF CONSTRUCTING PORTIONS OF JACK ARCHES DESIGNATED TO BE REPLACED TO THE LIMITS SHOWN IN THE PLANS OR TO THE LIMITS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE DETAILS IN THE STRUCTURE PLANS. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS DETAILED IN THE WORK PERFORMED TO ADJACENT MEMBERS GENERAL NOTE ON SHEET 5 89.

PRIOR TO REMOVING THE EXISTING JACK ARCH DESIGNATED TO BE REPLACED, THE CONTRACTOR SHALL DESIGN AND FURNISH TEMPORARY SHORING TO SUPPORT THE EXISTING SUPERSTRUCTURE, INCLUDING LIVE LOAD AS APPLICABLE, DURING REPAIR OPERATIONS IN ACCORDANCE WITH ITEM SPECIAL - STRUCTURE, MISC.: TEMPORARY SHORING, BRACING AND PROTECTIVE STRUCTURES.

AFTER INSTALLING TEMPORARY SHORING, REMOVE THE EXISTING JACK ARCH DESIGNATED TO BE REPLACED IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

JACK ARCH REPLACEMENTS SHALL BE PERFORMED WITH SELF-CONSOLIDATING CONCRETE (SCC) IN ACCORDANCE WITH CMS 705.12. THE CONTRACTOR SHALL FURNISH MATERIALS ACCORDING TO ODOT'S QUALIFIED PRODUCTS LIST (QPL) AND WHICH MEET THE ACCEPTANCE REQUIREMENTS DETAILED IN THE GENERAL NOTES ON SHEET 7 89. USE FORMS TO ENSURE ADHERENCE OF REPAIR AND TO MATCH ORIGINAL SURFACE PROFILE AS SHOWN IN THE PLANS.

ALL NEW REINFORCEMENT SHALL BE EPOXY COATED AND FURNISHED PER CMS 509, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL DOWEL HOLES SHALL BE DRILLED AND GROUTED WITH NON-SHRINK, NONMETALLIC GROUT IN ACCORDANCE WITH CMS 510, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL GALVANIC ANODES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

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DESIGN AGENCY Pennoni
DESIGNED WJV | DRAWN TEC | REVIEWED DWJ | DATE 04/18/18
CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

GENERAL NOTES (2 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

ITEM 511 - CONCRETE, MISC.: JACK ARCH REPLACEMENT (CONT.):

THE INTERFACE OF NEW JACK ARCHES AND THE BOTTOM OF THE EXISTING DECK SLAB SHALL BE SEALED BY EPOXY INJECTION IN ACCORDANCE WITH THE REQUIREMENTS OF CMS 512.07, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
511	EACH	CONCRETE, MISC.: JACK ARCH REPLACEMENT

ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT:

DESCRIPTION: THIS ITEM SHALL CONSIST OF CONSTRUCTING COLUMNS DESIGNATED TO BE REPLACED IN THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE DETAILS IN THE STRUCTURE PLANS. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS DETAILED IN THE WORK PERFORMED TO ADJACENT MEMBERS GENERAL NOTE ON SHEET 5 89.

PRIOR TO REMOVING THE EXISTING COLUMNS DESIGNATED TO BE REPLACED, THE CONTRACTOR SHALL DESIGN AND FURNISH TEMPORARY SHORING TO SUPPORT THE EXISTING SUPERSTRUCTURE, INCLUDING LIVE LOAD AS APPLICABLE, DURING REPAIR OPERATIONS IN ACCORDANCE WITH ITEM SPECIAL - STRUCTURE, MISC.: TEMPORARY SHORING, BRACING AND PROTECTIVE STRUCTURES.

AFTER INSTALLING TEMPORARY SHORING, REMOVE THE EXISTING COLUMN DESIGNATED TO BE REPLACED IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

COLUMN REPLACEMENTS SHALL BE PERFORMED WITH SELF-CONSOLIDATING CONCRETE (SCC) IN ACCORDANCE WITH CMS 705.12. THE CONTRACTOR SHALL FURNISH MATERIALS ACCORDING TO ODOT'S QUALIFIED PRODUCTS LIST (QPL) AND WHICH MEET THE ACCEPTANCE REQUIREMENTS DETAILED IN THE GENERAL NOTES ON SHEET 7 89. USE FORMS TO ENSURE ADHERENCE OF REPAIR AND TO MATCH ORIGINAL SURFACE PROFILE AS SHOWN IN THE PLANS.

ALL NEW REINFORCEMENT SHALL BE EPOXY COATED AND FURNISHED PER CMS 509, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL GALVANIC ANODES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

THE INTERFACE OF NEW COLUMNS AND THE BOTTOM OF THE EXISTING JACK ARCHES SHALL BE SEALED BY EPOXY INJECTION IN ACCORDANCE WITH THE REQUIREMENTS OF CMS 512.07, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
511	EACH	CONCRETE, MISC.: COLUMN REPLACEMENT

ITEM 511 - CONCRETE, MISC.: LOWER DECK CORBEL REPLACEMENT:

DESCRIPTION: THIS ITEM SHALL CONSIST OF CONSTRUCTING LOWER DECK CORBELS DESIGNATED TO BE REPLACED IN THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE DETAILS IN THE STRUCTURE PLANS.

PRIOR TO REMOVING THE EXISTING LOWER DECK CORBELS DESIGNATED TO BE REPLACED, THE CONTRACTOR SHALL DESIGN AND FURNISH TEMPORARY SHORING TO SUPPORT THE EXISTING SUPERSTRUCTURE, INCLUDING LIVE LOAD AS APPLICABLE, DURING REPAIR OPERATIONS IN ACCORDANCE WITH ITEM SPECIAL - STRUCTURE, MISC.: TEMPORARY SHORING, BRACING AND PROTECTIVE STRUCTURES.

REMOVE THE EXISTING LOWER DECK CORBEL DESIGNATED TO BE REPLACED IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

LOWER DECK CORBEL REPLACEMENTS SHALL BE PERFORMED WITH SELF-CONSOLIDATING CONCRETE (SCC) IN ACCORDANCE WITH CMS 705.12. THE CONTRACTOR SHALL FURNISH MATERIALS ACCORDING TO ODOT'S QUALIFIED PRODUCTS LIST (QPL) AND WHICH MEET THE ACCEPTANCE REQUIREMENTS DETAILED IN THE GENERAL NOTES ON SHEET 7 89. USE FORMS TO ENSURE ADHERENCE OF REPAIR AND TO MATCH ORIGINAL SURFACE PROFILE AS SHOWN IN THE PLANS. THE ORIGINAL LOWER DECK CORBEL FORMS ARE AVAILABLE FROM THE CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS.

ALL NEW REINFORCEMENT SHALL BE EPOXY COATED AND FURNISHED PER CMS 509, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL DOWEL HOLES SHALL BE DRILLED AND GROUTED WITH NON-SHRINK, NONMETALLIC GROUT IN ACCORDANCE WITH CMS 510, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

ALL GALVANIC ANODES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

THE INTERFACE OF NEW LOWER DECK CORBELS AND THE EXISTING SUPERSTRUCTURE SHALL BE SEALED BY EPOXY INJECTION IN ACCORDANCE WITH THE REQUIREMENTS OF CMS 512.07, BUT CONSIDERED INCIDENTAL TO THIS PAY ITEM.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
511	EACH	CONCRETE, MISC.: LOWER DECK CORBEL REPLACEMENT

ACCEPTANCE REQUIREMENTS FOR SELF-CONSOLIDATING CONCRETE (SCC):

THE CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH CMS 499 & 705.12. THE COARSE AGGREGATE SHALL BE WELL-GRADED WITH A MAXIMUM SIZE OF 3/8". THE MINIMUM 28-DAY COMPRESSIVE STRENGTH SHALL BE 4500 PSI.

THE CONCRETE TESTING WILL BE PERFORMED BY A CERTIFIED ACI LEVEL 1 FIELD TESTING TECHNICIAN AT A MINIMUM, PROVIDED BY ODOT. THE SLUMP FLOW AND J-RING TESTS SHALL BE PERFORMED EACH DAY BY TESTING THE FIRST BATCH OF SCC, AND THEN TESTING CONSECUTIVE BATCHES UNTIL TWO CONSECUTIVELY PRODUCED BATCHES ARE WITHIN THESE REQUIREMENTS.

THE SLUMP FLOW TESTING SHALL BE PERFORMED IN ACCORDANCE WITH AASHTO T347-13 (2017). THE TARGET SLUMP FLOW SHALL BE 24 INCHES WITH A LOWER LIMIT OF 22 INCHES AND AN UPPER LIMIT OF 26 INCHES.

THE J-RING TESTING SHALL BE PERFORMED IN ACCORDANCE WITH AASHTO T 345-12 (2016). THE J-RING TEST SHALL BE PERFORMED TO VERIFY THE PASSING ABILITY OF THE SCC MIX. THE AVERAGE J-RING SLUMP FLOW MINUS THE AVERAGE SLUMP FLOW WITHOUT J-RING SHALL BE NO GREATER THAN 1 INCH TO BE ACCEPTABLE. THE J-RING HEIGHT VALUE, J, SHALL BE 0.6 INCHES OR LESS TO BE ACCEPTABLE.

THE FINISHED CONCRETE SHALL BE SMOOTH AND FREE OF ANY HONEYCOMBS.

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

DESCRIPTION: THIS ITEM SHALL CONSIST OF APPLYING AN EPOXY-URETHANE SEALER TO THE AREAS SURROUNDING FRP WRAP AS SHOWN IN THE DETAILS ON PLAN SHEET 85 89, AND TO CONCRETE AREAS REPAIRED UNDER ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR IN ACCORDANCE WITH CMS 512 WITH THE FOLLOWING MODIFICATIONS:

ONLY APPLY EPOXY-URETHANE SEALER TO REPAIRED LOCATIONS ON THE PIERS AND THE UPPER AND LOWER DECK FLOOR BEAMS, ARCH RIBS, JACK ARCHES, AND COLUMNS LOCATED BETWEEN SPANS 2 - 13 AND NOT COVERED BY COMPOSITE FIBER WRAP. DO NOT APPLY EPOXY-URETHANE SEALER TO REPAIRED LOCATIONS IN THE TUNNELS, STATIONS, OR SPANS 1A - 1B.

THE COLOR OF THE EPOXY-URETHANE SEALER SHALL MATCH THE EXISTING FEDERAL COLOR NUMBER 37722 (WHITE). THE CONTRACTOR SHALL PROVIDE SAMPLES TO THE ENGINEER FOR APPROVAL PRIOR TO APPLICATION.

SURFACE PREPARATION FOR SEALING ALONG THE OUTSIDE PERIMETER OF THE REPAIRED CONCRETE AREAS AS SHOWN ON SHEET 85 89 SHALL BE AS PER CMS 512.03.F.

THE CONTRACTOR SHALL REMOVE THE EXISTING EPOXY SEALER FROM THE AREAS TO BE SEALED TO THE SATISFACTION OF THE ENGINEER. CONTRACTOR WILL ONLY RECEIVE PAYMENT FOR SURFACE PREPARATION AS SPECIFIED IN CMS 512.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
512	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

ITEM 516 - ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS, AS PER PLAN:

THIS ITEM SHALL BE AS PER THE DETAILS IN THE PLANS WITH THE APPLICABLE PORTIONS OF STANDARD DRAWING EXJ-4-87.

REPLACE THE STRIP SEAL GLAND LOCATED AT PIER 8 AS SHOWN IN THE PLANS ON SHEET 12 89 WITH A 3" STRIP SEAL GLAND. MAINTENANCE OF TRAFFIC SHALL BE COORDINATED WITH THE OVERALL PROJECT TO PERFORM WORK. NO BUTT JOINTS SHALL BE ALLOWED IN THE STRIP SEAL GLANDS. EXCEPT FOR MITERED JOINTS AT THE CURBS, THE GLANDS SHALL BE CONTINUOUS. FURNISH JOINTS IN GLANDS PER MANUFACTURER'S RECOMMENDATIONS AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT BID PRICE PER LINEAR FOOT FOR ITEM 516 - ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS, AS PER PLAN WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

ITEM SPECIAL - URETHANE TOP COAT SEALER:

DESCRIPTION: THIS ITEM SHALL CONSIST OF APPLYING A URETHANE TOP COAT SEALER IN ACCORDANCE WITH CMS 512. THE COLOR OF THE URETHANE TOP COAT SEALER SHALL MATCH THE EXISTING FEDERAL COLOR NUMBER 37722 (WHITE). THE CONTRACTOR SHALL PROVIDE SAMPLES TO THE ENGINEER FOR APPROVAL PRIOR TO APPLICATION.

THE URETHANE TOP COAT SEALER SHALL BE APPLIED OVER THE FIBER WRAP EPOXY COATING PER THE NOTE FOR:

ITEM SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	SY	URETHANE TOP COAT SEALER

ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM:

DESCRIPTION: THIS ITEM SHALL CONSIST OF PROVIDING AND INSTALLING A NON-STRUCTURAL FIBER-REINFORCED POLYMER (FRP) WRAP SYSTEM INCLUDING SURFACE PREPARATION AND ALL INCIDENTALS NECESSARY TO COMPLETE. THIS ITEM SHALL BE COMPLETED IN ACCORDANCE WITH THE DETAILS IN THE STRUCTURE PLANS ON SHEET 85 89 AND IN ACCORDANCE WITH PROPOSAL NOTE 519 WITH THE FOLLOWING MODIFICATIONS:

MATERIALS: SUPPLIERS SHALL HAVE A MINIMUM OF TEN (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. THE FIBER SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.039 INCHES. THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 17.0 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 CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI MIN. IN PRIMARY FIBER DIRECTION	56,000 PSI	D3039, AVERAGE OF 7, 1" BY 10" NORMALIZED TO 0.80" THICK 0.01" PER MINUTE TESTING SPEED

REQUIREMENTS CONTINUED ON SHEET 8 89 .

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	TEC	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

GENERAL NOTES (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM (CONT.):

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO 100% HUMIDITY	56,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO OZONE	56,000 PSI	D1149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO ALKALI	56,000 PSI	D3083 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE TO SALT WATER	56,000 PSI	C581 AND D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST) 1000 HOURS EXPOSURE @ 140 DEGREES F	56,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST) ULTRAVIOLET (UV) EXPOSURE	56,000 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. PERCENT, MAX.	1.4% 5.0%	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL DEFECTS	ACCEPTANCE LEVEL III	D2563
COEFFICIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

SUBMITTALS: STRUCTURAL CALCULATIONS AND THE GOVERNING SPECIFICATION ARE NOT REQUIRED.

PLAN, ELEVATION, AND CROSS-SECTIONAL VIEWS OF THE CONCRETE MEMBERS ARE ONLY REQUIRED IF MODIFYING THE DETAILS ON PLAN SHEET 85|89.

INSTALLATION: WHEN REMOVING OBSTRUCTIONS, THE CONTRACTOR MUST MAINTAIN THE SAME SERVICE PROVIDED WHILE DISCONNECTING THE OBSTRUCTION FROM THAT LOCATION ONLY. RECONNECT THE OBSTRUCTION AFTER APPLICATION OF THE URETHANE TOP COAT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM.

IMPERFECTIONS MAY EXCEED 1/32 INCH, BUT THE SURFACE TO RECEIVE THE COMPOSITE FIBER 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. 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. THIS MAY BE ACHIEVED BY GRINDING OR BY THE USE OF TROWELABLE MORTAR AT THE APPROVAL OF THE ENGINEER. THIS WORK IS INCLUDED FOR PAYMENT WITH THIS ITEM.

QUALITY CONTROL AND REPAIR OF DEFECTS SHALL BE IN ACCORDANCE WITH PROPOSAL NOTE 519.

COATING SYSTEM APPLICATION: A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO PROVIDE THE 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 FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

THE URETHANE FINISH COAT WILL BE PAID FOR UNDER ITEM SPECIAL - URETHANE TOP COAT SEALER.

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE FRP WRAP BY THE NUMBER OF SQUARE FEET OF CONCRETE SURFACE WRAPPED. OVERLAPPED AREAS WILL NOT BE MEASURED TWICE.

PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	SF	COMPOSITE FIBER WRAP SYSTEM

ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR:
ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 2 REPAIR:

DESCRIPTION: THIS ITEM SHALL CONSIST OF PATCHING THE CONCRETE STRUCTURE AND INSTALLING GALVANIC ANODES IN ACCORDANCE WITH ODOT CMS 519, SUPPLEMENTAL SPECIFICATION 844, AND THE DETAILS IN THE STRUCTURE PLANS. TYPE 1 REPAIRS CONSIST OF PATCHING CONCRETE AND INSTALLING GALVANIC ANODES TO ALL VERTICAL SIDE SURFACES AND HORIZONTAL TOP SURFACES. TYPE 2 REPAIRS CONSIST OF PATCHING CONCRETE AND INSTALLING GALVANIC ANODES TO ALL OVERHEAD AND SLOPING UNDERSIDE SURFACES. AREAS TO BE PATCHED HAVE BEEN DESIGNATED TYPE 1 OR TYPE 2 IN THE PLANS AND ADDITIONAL AREAS REQUIRING PATCHING WILL BE DESIGNATED TYPE 1 OR TYPE 2 BY THE ENGINEER. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS DETAILED IN THE WORK PERFORMED TO ADJACENT MEMBERS GENERAL NOTE ON SHEET 5|89.

THE ITEMS OF WORK SHALL BE IN ACCORDANCE WITH CMS 519 WITH THE FOLLOWING MODIFICATIONS:

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.

THE ITEMS OF WORK SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844 WITH THE FOLLOWING MODIFICATIONS:

REPAIR LOCATIONS THAT REQUIRE GALVANIC ANODES ARE DETAILED THROUGHOUT THE PLANS. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84|89. GALVANIC ANODES SHALL BE INSTALLED IN ALL REPAIR LOCATIONS, AS REQUIRED BY THE PLANS, INCLUDING ALL REPAIR LOCATIONS OVER PUBLIC ACCESS AREAS REGARDLESS OF THE SIZE OF THE PATCHING AREA.

ADDITIONAL REQUIREMENTS: SUBMIT FORM WORK AND PUMPING PROCEDURE FOR CONCRETE PATCHING FOR APPROVAL PRIOR TO STARTING WORK. THIS SUBMISSION SHALL INCLUDE STEPS FOR INSTALLATION OF FORMS, PUMPING PATCHING MATERIAL, REMOVAL OF FORM WORK AND METHOD OF PREVENTING VOIDS WITHIN THE PATCHING AREAS. SUBMIT ANY CHANGES IN CONCRETE MIX DESIGN WITH SMALL AGGREGATE FOR PUMPING PROCEDURE FOR APPROVAL PRIOR TO STARTING WORK. FINISHED PATCHING MUST BE INSPECTED AND APPROVED BY THE ENGINEER FOR SURFACE PROFILE, QUALITY OF PATCH, AND TO ENSURE THERE ARE NO VOIDS IN THE CONCRETE PATCHES.

THE CONTRACTOR IS REQUIRED TO PROTECT THE MURAL LOCATED ON THE EAST FACE OF PIER 4 FROM ALL CONCRETE REMOVAL, PATCHING, AND SEALING WORK. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THIS PAY ITEM.

MEASUREMENT AND PAYMENT: MEASUREMENT SHALL BE IN ACCORDANCE WITH CMS 519.07. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	SF	PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
SPECIAL	SF	PATCHING CONCRETE STRUCTURE, TYPE 2 REPAIR

ITEM SPECIAL - STRUCTURES, TEMPORARY SHORING, BRACING, AND PROTECTIVE STRUCTURES:

DESCRIPTION: THIS ITEM SHALL CONSIST OF FURNISHING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO CONSTRUCT, MAINTAIN, AND REMOVE THE FOLLOWING WORK ITEMS:

1. TEMPORARY STRUCTURES OR TEMPORARY SHORING REQUIRED TO COMPLETE THE PERMANENT WORK, EXCLUSIVE OF FORMWORK.
2. TEMPORARY SHORING FOR CONCRETE MEMBER REPLACEMENTS AS REQUIRED IN THE PLANS WHICH ARE NOT SPECIFICALLY INCLUDED ELSEWHERE.
3. TEMPORARY PROTECTION TO PROTECT PUBLIC ACCESS AREAS BELOW AND EXISTING FACILITIES SCHEDULED TO REMAIN, ESPECIALLY WHEN DEMOLISHED MATERIAL DROPS TO THE GROUND.
4. TEMPORARY PROTECTION OF EXISTING DECORATIVE LIGHTING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND OPERATION OF ALL TEMPORARY SHORING AND TEMPORARY PROTECTIVE STRUCTURES. THE CONTRACTOR SHALL SUBMIT CALCULATIONS SIGNED, SEALED, AND DATED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER. THE CONTRACTOR SHALL SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05.

WHEN NO LONGER NEEDED TO SAFELY PERFORM REPAIR WORK, THE CONTRACTOR SHALL REMOVE THE TEMPORARY SHORING AND/OR TEMPORARY PROTECTIVE STRUCTURES AT THE DIRECTION OF THE ENGINEER. ALL MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	LUMP	STRUCTURES, TEMPORARY SHORING, BRACING, AND PROTECTIVE STRUCTURES

ITEM 602 - BLOCK MASONRY:

FURNISH AND INSTALL HOLLOW CONCRETE MASONRY UNITS (CMU) WITH MORTAR JOINTS IN ACCORDANCE WITH CMS 602 AND THE DETAILS IN THE STRUCTURE PLANS AS SHOWN ON SHEETS 86|89 AND 87|89.

PLACE CMU BLOCKS SIDE BY SIDE FOR THE FULL LENGTH OF EACH COURSE OF THE WALL WITH MORTAR IN-BETWEEN EACH BLOCK. BEFORE PLACING MORTAR, CLEAN ALL SURFACES TO WHICH THE MORTAR IS TO BOND AND ALL LAITANCE AND CONTAMINANTS DETRIMENTAL TO THE ACHIEVEMENT OF AN ADEQUATE BOND. WHEN PLACING CONSECUTIVE LAYERS, ENSURE THAT THE VERTICAL JOINTS DO NOT LINE UP. CHECK WALL PLUMBNESS A MINIMUM OF EVERY THREE (3) LAYERS AND CORRECT DEVIATIONS GREATER THAN 1/4 INCH. CORRECT MISALIGNED, IMPROPERLY SEATED, OR OUT OF LEVEL CMU BLOCKS.

ITEM SPECIAL - STRUCTURES, BRIDGE OPERATOR'S CAR SHELTER:

DESCRIPTION: THIS ITEM SHALL CONSIST OF CONSTRUCTING A BRIDGE OPERATOR'S CAR SHELTER IN ACCORDANCE WITH AASHTO M 181, THE DETAILS IN THE STRUCTURE PLANS ON SHEET 88|89, AND THE MANUFACTURER'S RECOMMENDATIONS.

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	LUMP	STRUCTURES, BRIDGE OPERATOR'S CAR SHELTER

ITEM SPECIAL - AS-BUILT CONSTRUCTION PLANS:

DESCRIPTION: THE CONTRACTOR SHALL MAINTAIN AND PROVIDE THE ENGINEER WITH RECORD DRAWINGS AS SPECIFIED HEREIN. RECORD DRAWINGS SHALL INCLUDE COMPLETE DOCUMENTATION OF FIELD REVISIONS TO THE CONTRACT DOCUMENTS.

THIS CONTRACT ITEM SHALL APPLY TO ALL WORK SHOWN IN THE PLANS EXCEPT CONCRETE REPAIRS PERFORMED UNDER THE FOLLOWING CONTRACT ITEMS:

- ITEM 512 - CONCRETE REPAIR BY EPOXY INJECTION
- ITEM SPECIAL - PATCHING CONCRETE STRUCTURES, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV DRAWN TEC CHECKED BPS REVIEWED DWJ DATE 04/18/18 REVISED STRUCTURE FILE NUMBER 1800930
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ITEM SPECIAL - AS-BUILT CONSTRUCTION PLANS (CONT.):

FILING:

A. THE CONTRACTOR SHALL MAINTAIN IN THE FIELD OFFICE AND IN CLEAN, DRY, LEGIBLE CONDITION THE FOLLOWING: CONTRACT DRAWINGS, SPECIFICATIONS, ADDENDA, CONFORMING SHOP DRAWINGS, CHANGE ORDERS, OTHER MODIFICATIONS OF CONTRACT, TEST RECORDS, SURVEY DATA AND ALL OTHER DOCUMENTS PERTINENT TO THE CONTRACTOR'S WORK.

B. THE CONTRACTOR SHALL PROVIDE FILES AND RACKS FOR PROPER STORAGE AND EASY ACCESS. FILING SHALL BE ESTABLISHED IN A FORMAT ACCEPTABLE TO THE ENGINEER.

C. THE CONTRACTOR SHALL MAKE DOCUMENTS AVAILABLE AT ALL TIMES FOR INSPECTION BY THE ENGINEER.

D. RECORD DRAWINGS SHALL NOT BE USED FOR ANY OTHER PURPOSE AND SHALL NOT BE REMOVED FROM THEIR FILED LOCATION WITHOUT THE ENGINEER'S APPROVAL.

RECORDING:

A. THE CONTRACTOR SHALL KEEP ALL RECORD DRAWINGS CURRENT.

B. THE CONTRACTOR SHALL NOT PERMANENTLY CONCEAL ANY WORK UNTIL REQUIRED INFORMATION HAS BEEN RECORDED.

C. CONTRACT DRAWINGS SHALL BE LEGIBLY MARKED TO RECORD ACTUAL CONSTRUCTION INCLUDING:

1. DEPTHS OF VARIOUS ELEMENTS OF FOUNDATION IN RELATION TO DATUM.

2. HORIZONTAL AND VERTICAL LOCATIONS OF UNDERGROUND UTILITIES AND APPURTENANCES REFERENCED TO PERMANENT SURFACE IMPROVEMENTS.

3. FIELD CHANGES OF DIMENSION AND DETAIL.

4. CHANGES MADE BY CHANGE ORDER OR FIELD ORDER.

5. DETAILS NOT ON ORIGINAL CONTRACT DRAWINGS.

D. SPECIFICATIONS AND ADDENDA: LEGIBLY MARK EACH SECTION TO RECORD:

1. MANUFACTURER, TRADE NAME, CATALOG NUMBER AND SUPPLIER OF EACH PRODUCT AND ITEM OF EQUIPMENT ACTUALLY INSTALLED.

2. CHANGES MADE BY CHANGE ORDER OR FIELD ORDER.

3. OTHER MATTERS NOT ORIGINALLY SPECIFIED.

SUBMITTALS:

A. THE CONTRACTOR SHALL ANNOTATE ALL RECORD DRAWING REVISIONS ONTO ELECTRONIC COPIES OF PLAN DRAWINGS PROVIDED BY THE ENGINEER USING MICROSTATION V8i, OR LATER SOFTWARE, AS APPROVED BY THE ENGINEER. AT THE COMPLETION OF THE PROJECT, DELIVER ONE (1) PAPER COPY AND ONE (1) ELECTRONIC COPY IN MICROSTATION OF RECORD DRAWING ORIGINAL DOCUMENTS TO THE ENGINEER. HIGHLIGHT CHANGES WITH CLOUDS AND SHOW CHANGES ON A SEPARATE MICROSTATION LAYER.

B. PROVIDE TRANSMITTAL LETTER CONTAINING THE FOLLOWING INFORMATION:

1. DATE

2. PROJECT TITLE AND PROJECT NUMBER

3. CONTRACTOR'S NAME AND ADDRESS

4. TITLE AND NUMBER OF EACH DRAWING

5. CERTIFICATION THAT EACH DOCUMENT IS COMPLETE AND ACCURATE AS SUBMITTED

6. SIGNATURE OF CONTRACTOR OR HIS AUTHORIZED REPRESENTATIVE

MEASUREMENT AND PAYMENT: PAYMENT SHALL BE FULL COMPENSATION UPON THE PROPER EXECUTION OF ALL THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, AS DETERMINED BY THE ENGINEER. THE ACCEPTED QUANTITIES FOR THE COMPLETED WORK AS DESCRIBED WILL BE PAID FOR USING THE FOLLOWING CONTRACT ITEM (PAY ITEM):

ITEM	UNIT	DESCRIPTION
SPECIAL	LUMP	AS-BUILT CONSTRUCTION PLANS

ITEM 843 - PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR:

THIS ITEM SHALL CONSIST OF PATCHING AREAS USING TROWELABLE MORTAR IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 843. TROWELABLE MORTAR IS ONLY PERMITTED TO BE USED IN THE LOCATIONS SHOWN ON SHEETS 15|89, 62|89, AND 67|89. TROWELABLE MORTAR SHALL NOT BE USED FOR TYPE 1 OR TYPE 2 REPAIRS.

SUGGESTED CONSTRUCTION PROCEDURE:

1. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES TO THE WEST APPROACH TUNNELS.

2. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES, JACK ARCH REPLACEMENTS AND COLUMN REPLACEMENTS TO THE WEST STATION.

3. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES, JACK ARCH REPLACEMENTS AND COLUMN REPLACEMENTS TO THE EAST STATION.

4. IMPLEMENT MAINTENANCE OF TRAFFIC PATTERNS AND REMOVE THE EXISTING CONCRETE WEARING SURFACE BY HYDRO-DEMOLITION AND PLACE NEW MICRO-SILICA MODIFIED CONCRETE OVERLAY.

5. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES, CONCRETE CORBEL REPLACEMENTS, CRACK SEALING, AND CONCRETE SEALING WORK IN SPANS 2 - 3 AND SPANS 5 - 13

6. INSTALL FRP WRAP TO ARCH RIBS AND LOWER DECK FLOOR BEAMS IN SPANS 2 - 3 AND SPANS 5 - 13.

7. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES AND CONCRETE SEALING WORK TO PIERS.

8. PERFORM CONCRETE PATCHING REPAIRS INCLUDING GALVANIC ANODES TO SPANS 1A AND 1B.

9. INSTALL MASONRY BLOCK WALL AT THE SOUTHWEST AND NORTHEAST END SPANS.

10. REPAIR THE BRIDGE OPERATOR'S CAR SHELTER.

THE ABOVE IS A SUGGESTED CONSTRUCTION PROCEDURE. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED CONSTRUCTION PROCEDURE AND SCHEDULE TO THE ENGINEER FOR APPROVAL BEFORE BEGINNING CONSTRUCTION. NO CONSTRUCTION OPERATIONS WILL BE PERMITTED WITHOUT PRIOR APPROVAL.

PLAN ABBREVIATIONS:

ABUT.	=	ABUTMENT
AVE.	=	AVENUE
BRG.	=	BEARING
c/c	=	CENTER TO CENTER
C.J.	=	CONSTRUCTION JOINT
CLR.	=	CLEAR, CLEAR COVER
CONC.	=	CONCRETE
C.P.P.	=	CLEVELAND PUBLIC POWER
DIA.	=	DIAMETER
DIM.	=	DIMENSION
EL.	=	ELEVATION
EXIST.	=	EXISTING
EXP.	=	EXPANSION
FRP	=	FIBER REINFORCED POLYMER
F.A.	=	FORWARD ABUTMENT
FWD.	=	FORWARD
FWS	=	FUTURE WEARING SURFACE
MAX.	=	MAXIMUM
MIN.	=	MINIMUM
N.A.	=	NOT APPLICABLE
PC	=	POINT OF CURVATURE
PEJF	=	PREFORMED EXPANSION JOINT FILLER
PROP.	=	PROPOSED
R.A.	=	REAR ABUTMENT
REINF.	=	REINFORCEMENT
SPA.	=	SPACES
ST.	=	STREET
STA.	=	STATION
TYP.	=	TYPICAL
U.N.O.	=	UNLESS NOTED OTHERWISE
CMS	=	ODOT 2016 CONSTRUCTION AND MATERIALS SPECIFICATIONS

INDEX OF SHEETS:

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	TEC	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

GENERAL NOTES (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

ESTIMATED QUANTITIES

CALC. BY: AJK DATE: 4/10/2018
CHKD BY: BPS DATE: 4/12/2018

01/BRO/BR	ITEM	ITEM EXTENSION	TOTAL	UNIT	DESCRIPTION	TUNNELS	STATIONS	PIERS	SUPER-STRUCTURE	GENERAL	REF. SHEET NUMBER
LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN						6
50	202	11305	50*	SY	PORTIONS OF STRUCTURE REMOVED, AS PER PLAN	50					15, 16
2500	509	20001	2500	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN					2500	6
351	511	71200	351	SF	CONCRETE, MISC.: PIER 6 LOWER DECK SHAFT REPAIR			351			6
37	511	81300	37	EACH	CONCRETE, MISC.: JACK ARCH REPLACEMENT	1	36				6, 7
11	511	81300	11	EACH	CONCRETE, MISC.: COLUMN REPLACEMENT	2	9				7
16	511	81300	16	EACH	CONCRETE, MISC.: LOWER DECK CORBEL REPLACEMENT				16		7
7799	512	10050	7799	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)				7799		
2419	512	10101	2419	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN			208	2211		7
600	512	10600	600	FT	CONCRETE REPAIR BY EPOXY INJECTION				100	500	
9963	SPECIAL	51271500	9963	SY	URETHANE TOP COAT SEALER				9963		7
86	516	01301	86	FT	ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS, AS PER PLAN				86		7
89,660	SPECIAL	51900100	89,660	SF	COMPOSITE FIBER WRAP SYSTEM				89,660		7, 8
24,581	SPECIAL	51911600	24,581	SF	PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR	9515	2718	1867	10,481		8
3278	SPECIAL	51911600	3278	SF	PATCHING CONCRETE STRUCTURE, TYPE 2 REPAIR	68	194		3016		8
LS	SPECIAL	53000200	LS		STRUCTURES, TEMPORARY SHORING, BRACING, AND PROTECTIVE STRUCTURES						8
LS	SPECIAL	53000200	LS		STRUCTURES, BRIDGE OPERATOR'S CAR SHELTER						8
5400	SPECIAL	53000400	5400	EACH	STRUCTURES, CPP SLEEVE PROTECTION, WORK PERFORMED BY CPP					5400	6
25	602	15000	25	CY	BLOCK MASONRY		4		21		8
LS	SPECIAL	69091000	LS		AS-BUILT CONSTRUCTION PLANS						8, 9
28	843	50000	28	SF	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR	2			26		9
19,695	848	10000	19,695	SY	MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION, 1 1/2" THICK				19,695		
19,695	848	20000	19,695	SY	SURFACE PREPARATION USING HYDRODEMOLITION				19,695		
493	848	30000	493	CY	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY				493		
591	848	50000	591	SY	HAND CHIPPING				591		
LS	848	50100	LS		TEST SLAB						
24	848	50200	24	CY	FULL-DEPTH REPAIR				24		

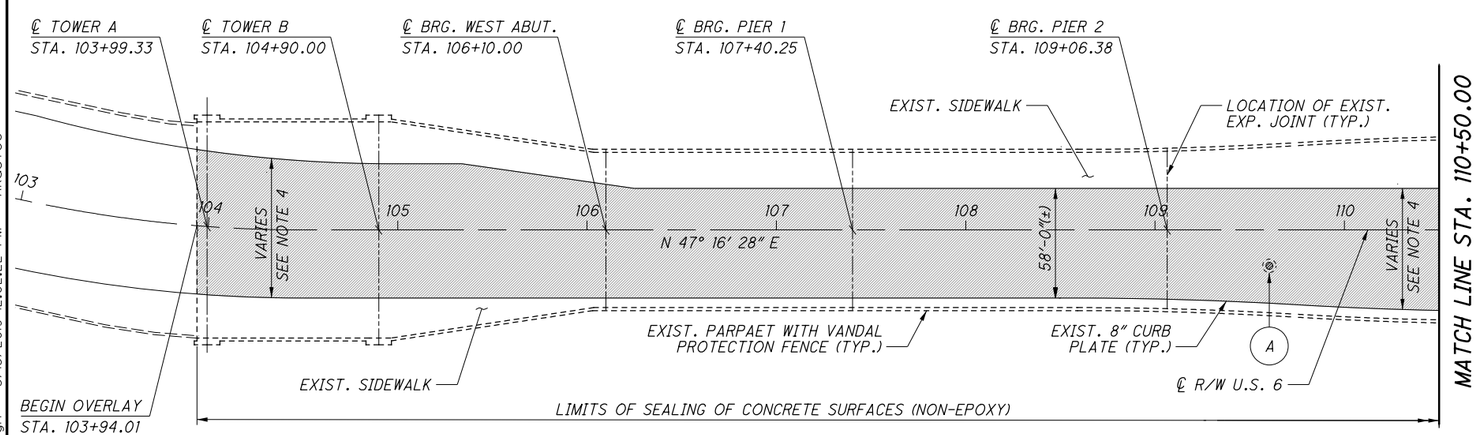
* DENOTES ITEM TO BE USED "AS DIRECTED BY ENGINEER"

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

ESTIMATED QUANTITIES
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



PLAN

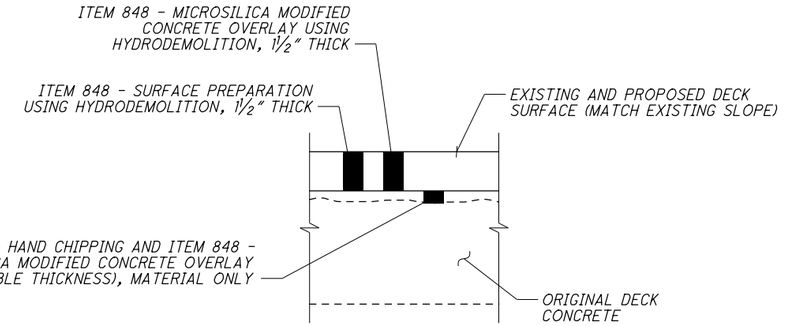
NOTES

1. FINISHED TOP OF DECK ELEVATIONS SHALL MATCH EXISTING TOP OF DECK ELEVATIONS.
2. FOR ADDITIONAL DETAILS NOT SHOWN, SEE ODOT SUPPLEMENTAL SPECIFICATION 848.
3. FOR VARYING ROADWAY WIDTHS AND STATIONING, AND TRANSVERSE SEALING LIMITS, SEE TYPICAL SECTIONS ON SHEET 3 / 138 .
4. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHILE PERFORMING WORK ACTIVITIES AROUND THE AT&T MANHOLE FRAMES AND COVERS TO PRESERVE THEIR FACILITIES.

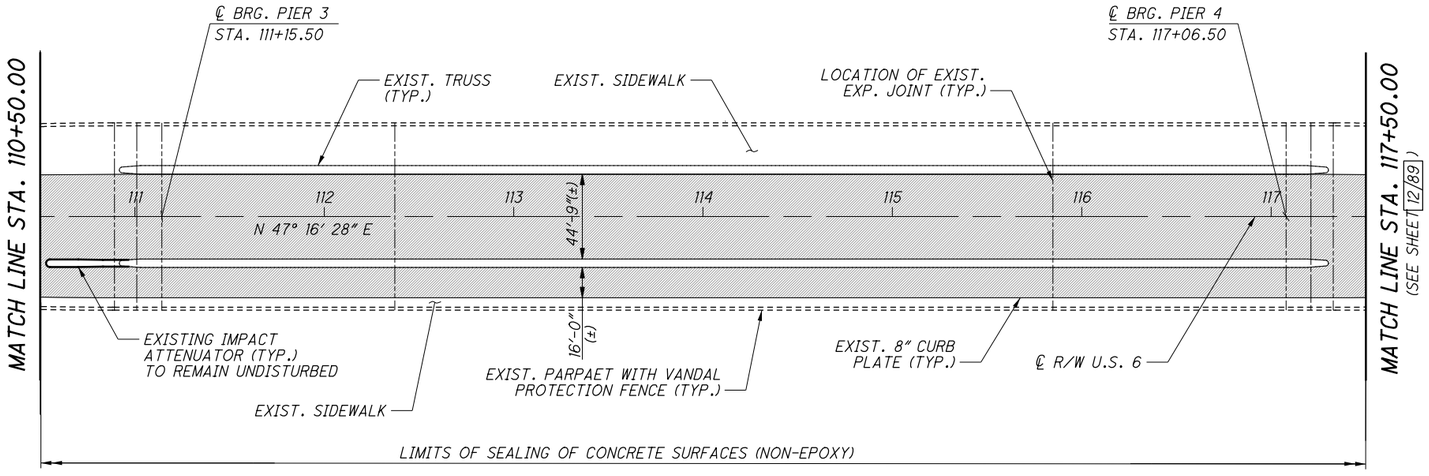
LEGEND

AREAS OF THE DECK TO HAVE EXISTING OVERLAY REMOVED AND REPLACED. FOR OVERLAY REMOVAL SEE NOTE 2. FOR MICRO SILICA MODIFIED CONCRETE OVERLAY SEE NOTE 3.

(A) AT&T MANHOLE (SEE NOTE 4)



BRIDGE DECK WEARING SURFACE REPLACEMENT DETAIL



PLAN

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
DEA	DEA	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

UPPER DECK PLAN - 1

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

11 / 89

50 / 138

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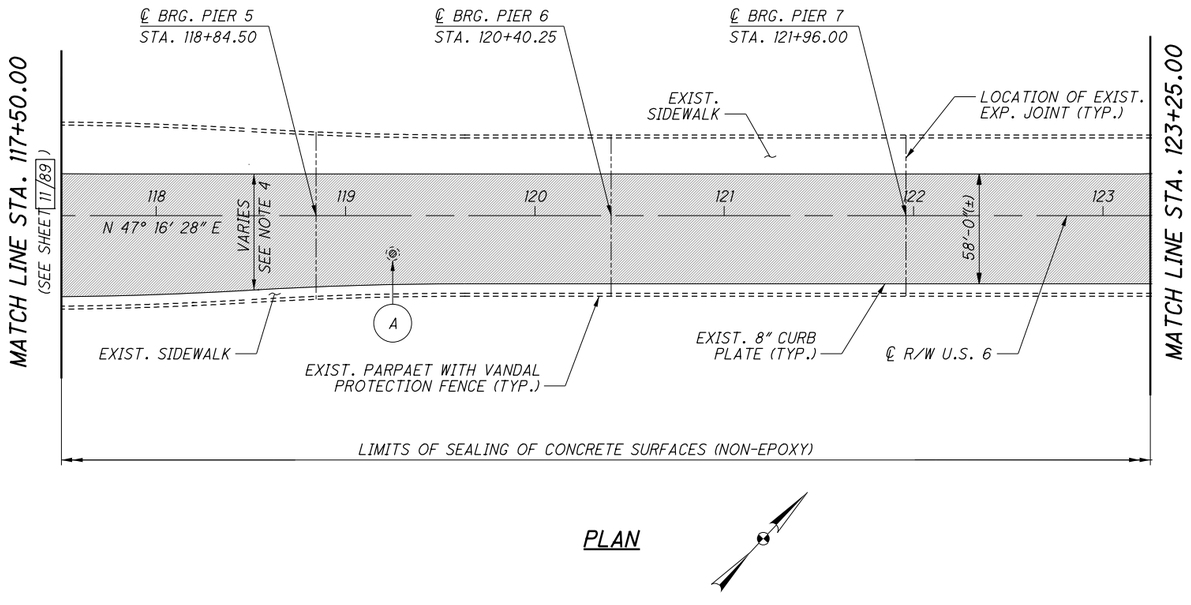


PLAN

NOTES

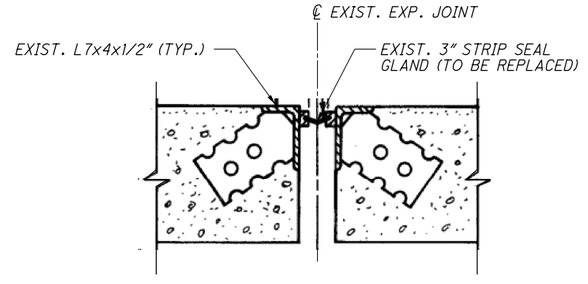
1. FINISHED TOP OF DECK ELEVATIONS SHALL MATCH EXISTING TOP OF DECK ELEVATIONS.
2. FOR ADDITIONAL DETAILS NOT SHOWN, SEE ODOT SUPPLEMENTAL SPECIFICATION 848.
3. FOR VARYING ROADWAY WIDTHS AND STATIONING, AND TRANSVERSE SEALING LIMITS, SEE TYPICAL SECTIONS ON SHEET 3/138 .
4. FOR BRIDGE DECK WEARING SURFACE REPLACEMENT DETAIL, SEE SHEET 11/89 .
5. FOR ADDITIONAL STRIP SEAL EXPANSION JOINT DETAILS, SEE STANDARD DRAWING EXJ-4-87.
6. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHILE PERFORMING WORK ACTIVITIES AROUND THE AT&T MANHOLE FRAMES AND COVERS TO PRESERVE THEIR FACILITIES.

LEGEND

AREAS OF THE DECK TO HAVE EXISTING OVERLAY REMOVED AND REPLACED. FOR OVERLAY REMOVAL SEE NOTE 2. FOR MICRO SILICA MODIFIED CONCRETE OVERLAY SEE NOTE 3.

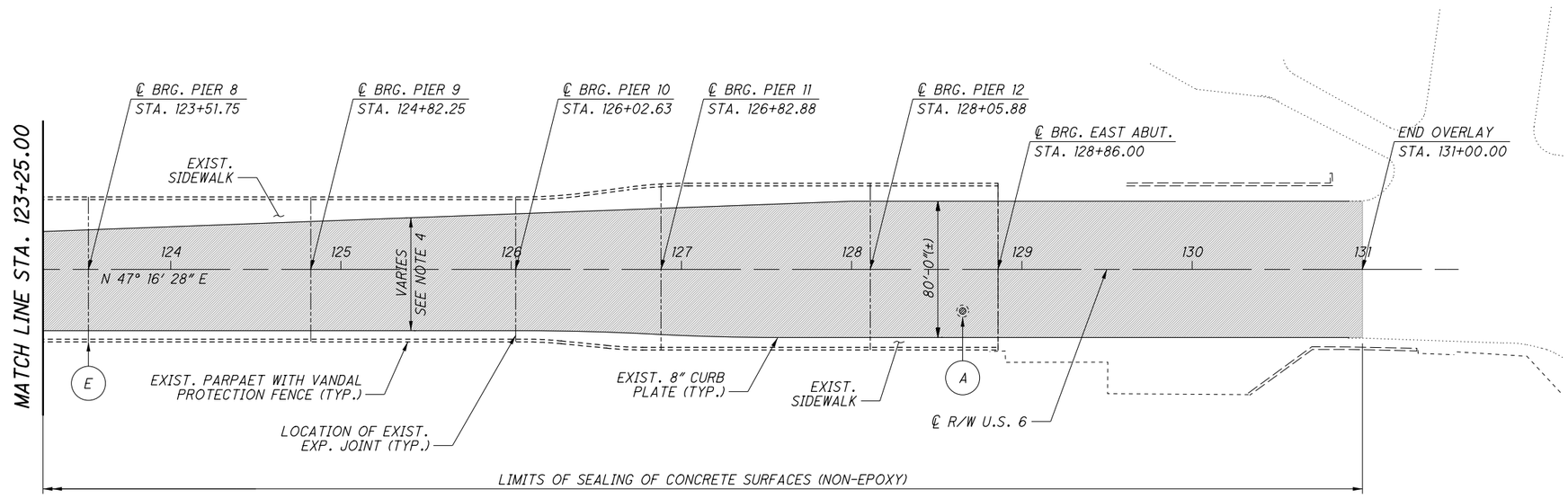
(A) AT&T MANHOLE (SEE NOTE 6)

(E) REPLACE STRIP SEAL GLAND IN EXPANSION JOINT, SEE DETAIL ON THIS SHEET



EXPANSION JOINT DETAIL

SEE NOTE 5
(NOT TO SCALE)



PLAN

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
DEA	DEA	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

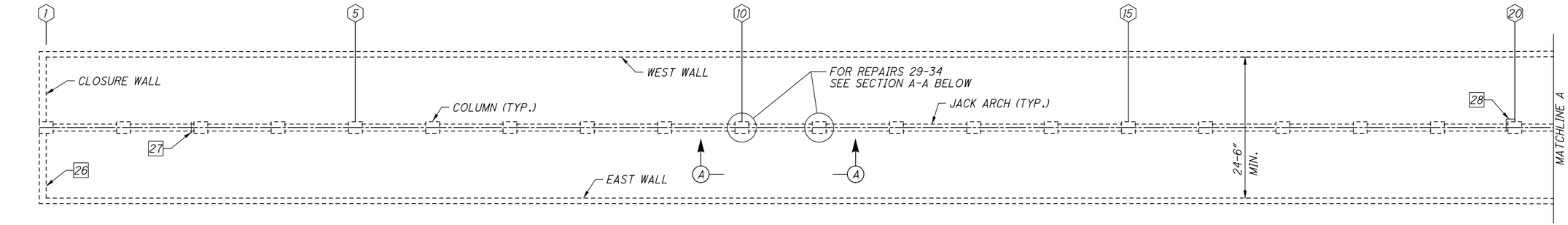
UPPER DECK PLAN - 2

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

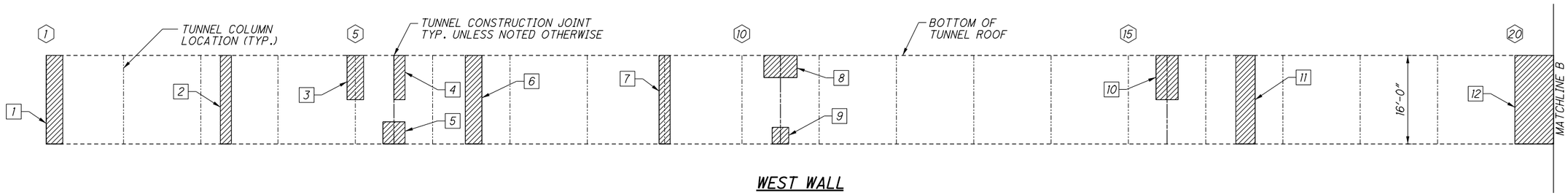
CUY-6-14.56
PID No. 99972

12 / 89

51 / 138

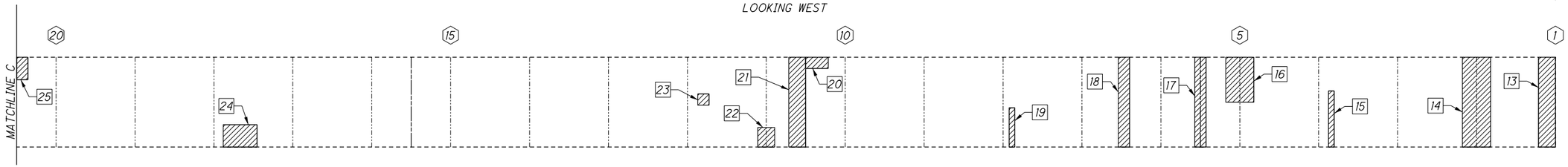


WEST 25TH STREET TUNNEL - PLAN



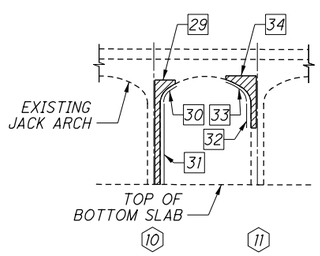
WEST WALL

LOOKING WEST



EAST WALL

LOOKING EAST



SECTION A-A

LOOKING WEST

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	48	24
2	TYPE 1	32	12
3	TYPE 1	24	12
4	TYPE 1	16	6
5	TYPE 1	16	8
6	TYPE 1	48	24
7	TYPE 1	32	12
8	TYPE 1	24	10
9	TYPE 1	9	4
10	TYPE 1	32	14
11	TYPE 1	56	24
12	TYPE 1	144	34
13	TYPE 1	48	24
14	TYPE 1	80	28
15	TYPE 1	10	7
16	TYPE 1	40	16
17	TYPE 1	32	12
18	TYPE 1	32	12
19	TYPE 1	7	5
20	TYPE 1	8	3
21	TYPE 1	48	24
22	TYPE 1	11	4

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
23	TYPE 1	4	-
24	TYPE 1	24	10
25	TYPE 1	16	8
26	TYPE 1	100	24
27	TYPE 1	4	4
28	TYPE 1	6	6
29	TYPE 1	13	12
30	TYPE 2	5	3
31	TYPE 1	21	18
32	TYPE 1	6	6
33	TYPE 2	7	4
34	TYPE 1	10	8
MEASURED QUANTITY*		1013	-
PLAN QUANTITY*		1520	422

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	1502
TYPE 2 REPAIR	SF	18

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. DETERIORATED CONCRETE SURFACES WITHIN THREE FEET OF THE TUNNEL FLOOR SHALL NOT BE REPAIRED UNLESS ASSOCIATED WITH A REPAIR ABOVE THIS HEIGHT OR AS NOTED ON THIS SHEET.

LEGEND:

- (#) TUNNEL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY: Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18

CHECKED: WJV
REVISED
STRUCTURE FILE NUMBER 1800930

WEST 25TH STREET TUNNEL CONCRETE REPAIR DETAILS (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

13 / 89

52 / 138

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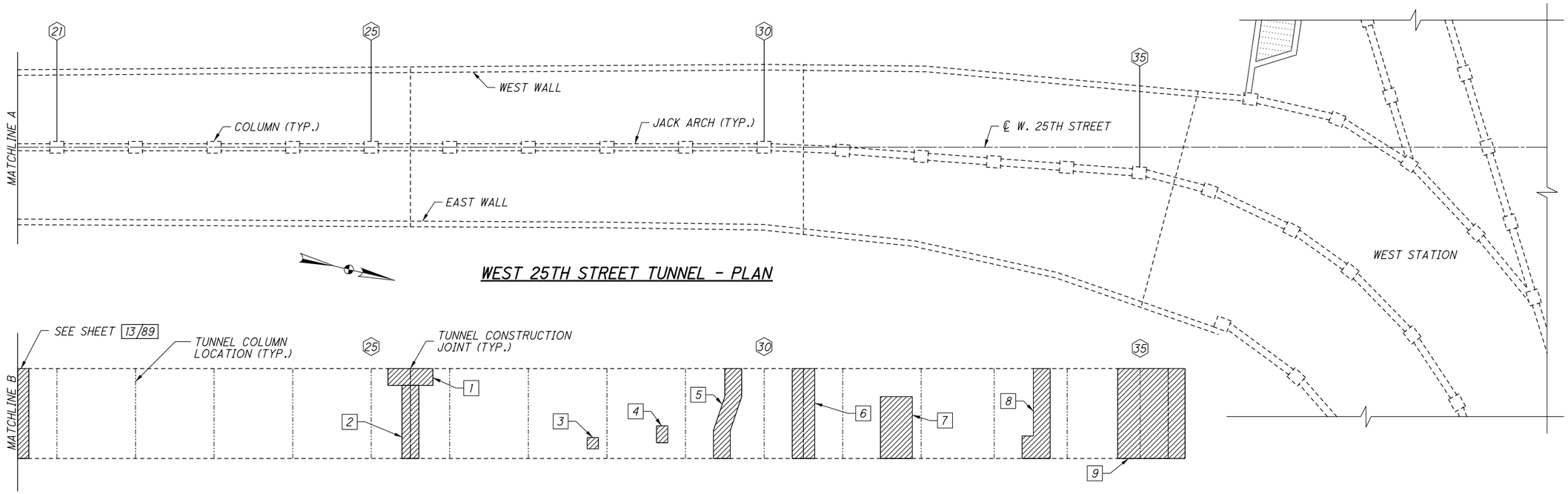
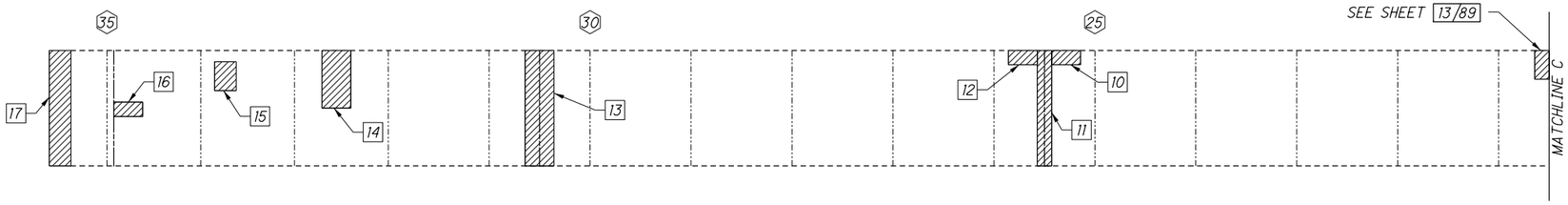


WEST 25TH STREET TUNNEL - PLAN

WEST WALL

LOOKING WEST



EAST WALL

LOOKING EAST

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	25	12
2	TYPE 1	40	20
3	TYPE 1	4	-
4	TYPE 1	6	2
5	TYPE 1	48	24
6	TYPE 1	64	26
7	TYPE 1	63	20
8	TYPE 1	80	28
9	TYPE 1	272	44
10	TYPE 1	8	3
11	TYPE 1	32	12
12	TYPE 1	8	3
13	TYPE 1	64	26
14	TYPE 1	32	14
15	TYPE 1	12	6

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
16	TYPE 1	8	3
17	TYPE 1	48	24
MEASURED QUANTITY*		814	-
PLAN QUANTITY*		1221	267

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	1221
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. DETERIORATED CONCRETE SURFACES WITHIN THREE FEET OF THE TUNNEL FLOOR SHALL NOT BE REPAIRED UNLESS ASSOCIATED WITH A REPAIR ABOVE THIS HEIGHT OR AS NOTED ON THIS SHEET.

LEGEND:

(#) TUNNEL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni

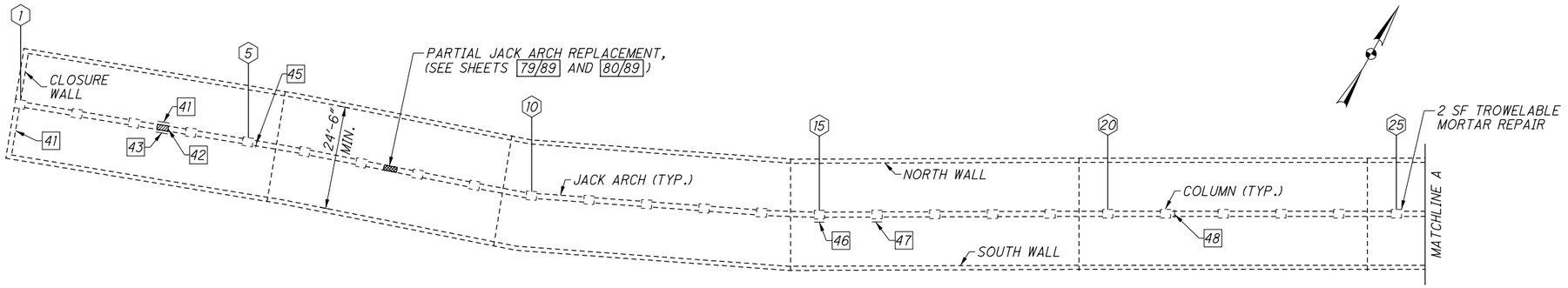
DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

WEST 25TH STREET TUNNEL CONCRETE REPAIR DETAILS (2 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

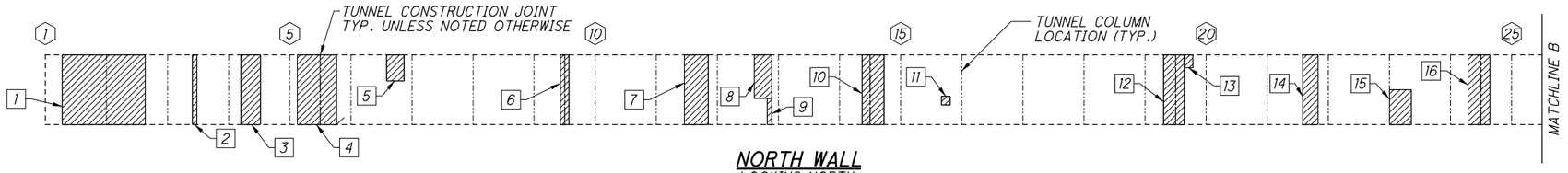
CUY-6-14.56
PID No. 99972

14 / 89

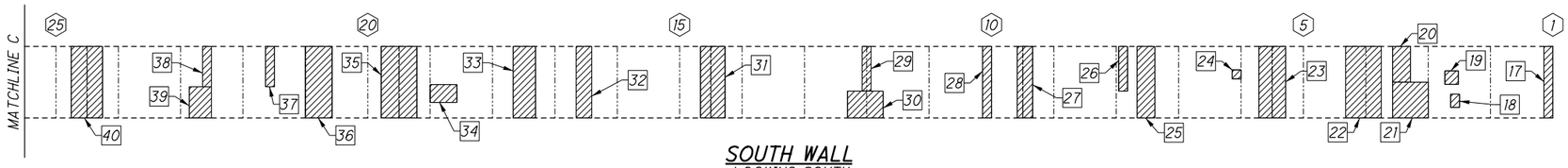
53 / 138



DETROIT AVENUE TUNNEL - PLAN



NORTH WALL
LOOKING NORTH



SOUTH WALL
LOOKING SOUTH

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	304	48
2	TYPE 1	16	12
3	TYPE 1	72	26
4	TYPE 1	144	34
5	TYPE 1	24	10
6	TYPE 1	32	12
7	TYPE 1	88	28
8	TYPE 1	45	18
9	TYPE 1	6	4
10	TYPE 1	80	28
11	TYPE 1	4	-
12	TYPE 1	76	26
13	TYPE 1	12	2
14	TYPE 1	56	24
15	TYPE 1	40	16
16	TYPE 1	84	28
17	TYPE 1	32	12
18	TYPE 1	6	2
19	TYPE 1	9	4

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
20	TYPE 1	32	14
21	TYPE 1	64	20
22	TYPE 1	128	32
23	TYPE 1	96	28
24	TYPE 1	4	-
25	TYPE 1	64	26
26	TYPE 1	21	7
27	TYPE 1	56	24
28	TYPE 1	32	12
29	TYPE 1	20	7
30	TYPE 1	48	16
31	TYPE 1	88	28
32	TYPE 1	56	24
33	TYPE 1	80	28
34	TYPE 1	24	10
35	TYPE 1	128	32
36	TYPE 1	96	28
37	TYPE 1	18	7
38	TYPE 1	18	7

ESTIMATED PATCHING QUANTITIES			
REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
39	TYPE 1	35	14
40	TYPE 1	112	30
41	TYPE 1	36	12
42	TYPE 1	7	6
43	TYPE 2	7	6
44	TYPE 1	7	6
45	TYPE 1	13	12
46	TYPE 1	4	4
47	TYPE 1	6	6
48	TYPE 1	5	4
MEASURED QUANTITY*		2435	-
PLAN QUANTITY*		3653	788

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	3642
TYPE 2 REPAIR	SF	11

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. DETERIORATED CONCRETE SURFACES WITHIN THREE FEET OF THE TUNNEL FLOOR SHALL NOT BE REPAIRED UNLESS ASSOCIATED WITH A REPAIR ABOVE THIS HEIGHT OR AS NOTED ON THIS SHEET.
7. A NEW TUNNEL ROOF WAS PREVIOUSLY CONSTRUCTED ON TOP OF THE ORIGINAL DETROIT AVENUE TUNNEL ROOF. THE CONTRACTOR SHALL REMOVE ANY LOOSE ORIGINAL ROOF CONCRETE FROM THE BOTTOM OF THE ORIGINAL DETROIT AVENUE ROOF AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE MADE UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN. A QUANTITY OF 50 SY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES FOR USE AS DIRECTED BY THE ENGINEER.

LEGEND:

- (#) TUNNEL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED BPS | DRAWN JEB | REVIEWED DWJ | DATE 04/18/18
CHECKED WJV | REVISED | STRUCTURE FILE NUMBER 1800930

DETROIT AVENUE TUNNEL CONCRETE REPAIR DETAILS (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

15 / 89
54 / 138

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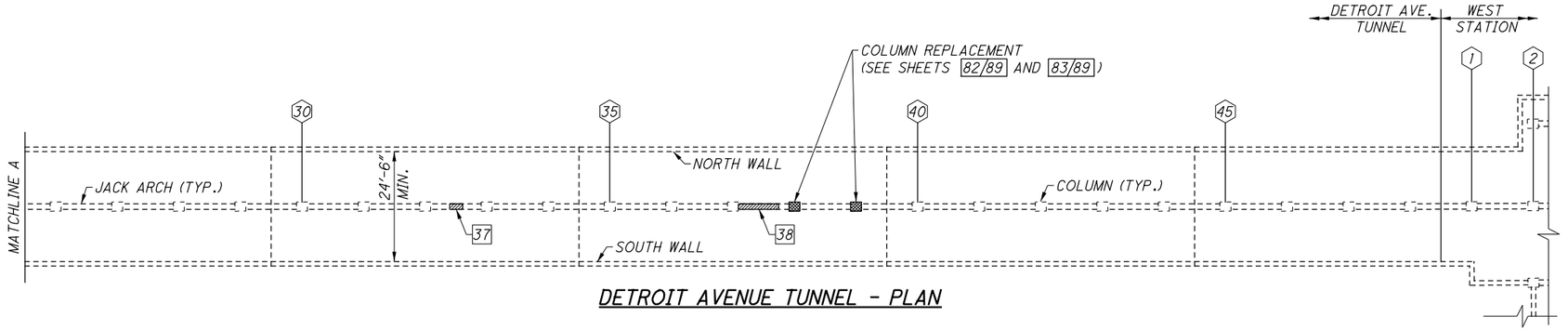
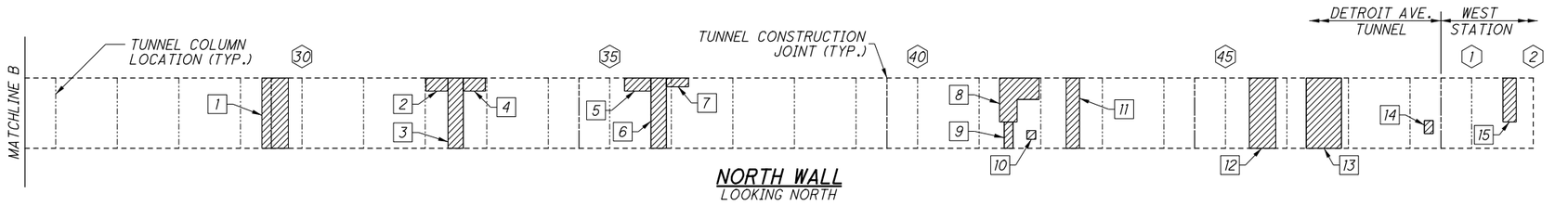
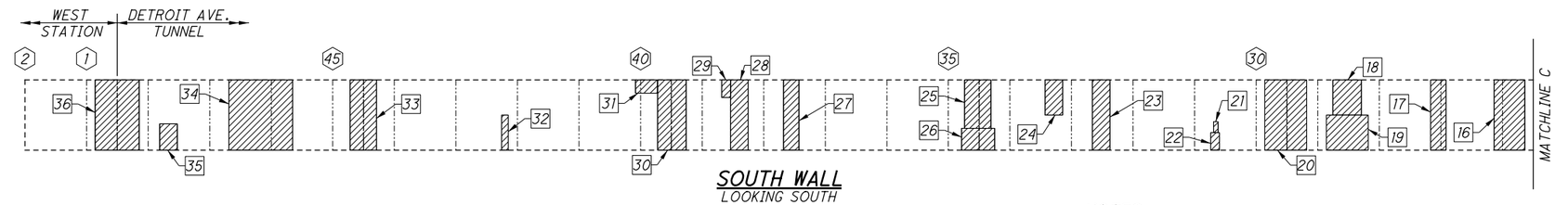


DETROIT AVENUE TUNNEL - PLAN



NORTH WALL
LOOKING NORTH



SOUTH WALL
LOOKING SOUTH

ESTIMATED PATCHING QUANTITIES

REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	100	28
2	TYPE 1	15	8
3	TYPE 1	56	24
4	TYPE 1	15	8
5	TYPE 1	18	8
6	TYPE 1	56	24
7	TYPE 1	10	4
8	TYPE 1	70	16
9	TYPE 1	12	4
10	TYPE 1	4	-
11	TYPE 1	48	24
12	TYPE 1	116	30
13	TYPE 1	128	32
14	TYPE 1	6	2
15	TYPE 1	30	14

ESTIMATED PATCHING QUANTITIES

REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
16	TYPE 1	112	30
17	TYPE 1	56	24
18	TYPE 1	52	18
19	TYPE 1	76	22
20	TYPE 1	152	34
21	TYPE 1	3	-
22	TYPE 1	8	3
23	TYPE 1	64	26
24	TYPE 1	32	14
25	TYPE 1	66	20
26	TYPE 1	38	14
27	TYPE 1	56	24
28	TYPE 1	64	26
29	TYPE 1	8	3
30	TYPE 1	104	30

ESTIMATED PATCHING QUANTITIES

REPAIR No.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
31	TYPE 1	15	8
32	TYPE 1	12	6
33	TYPE 1	112	30
34	TYPE 1	232	42
35	TYPE 1	24	10
36	TYPE 1	160	34
37	TYPE 2	6	6
38	TYPE 2	20	18
MEASURED QUANTITY*		2126	-
PLAN QUANTITY*		3189	668

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	3150
TYPE 2 REPAIR	SF	39

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. DETERIORATED CONCRETE SURFACES WITHIN THREE FEET OF THE TUNNEL FLOOR SHALL NOT BE REPAIRED UNLESS ASSOCIATED WITH A REPAIR ABOVE THIS HEIGHT OR AS NOTED ON THIS SHEET.
7. A NEW TUNNEL ROOF WAS PREVIOUSLY CONSTRUCTED ON TOP OF THE ORIGINAL DETROIT AVENUE TUNNEL ROOF. THE CONTRACTOR SHALL REMOVE ANY LOOSE ORIGINAL ROOF CONCRETE FROM THE BOTTOM OF THE ORIGINAL DETROIT AVENUE ROOF AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE MADE UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN. A QUANTITY OF 50 SY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES FOR USE AS DIRECTED BY THE ENGINEER.

LEGEND:

- (#) TUNNEL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY: Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

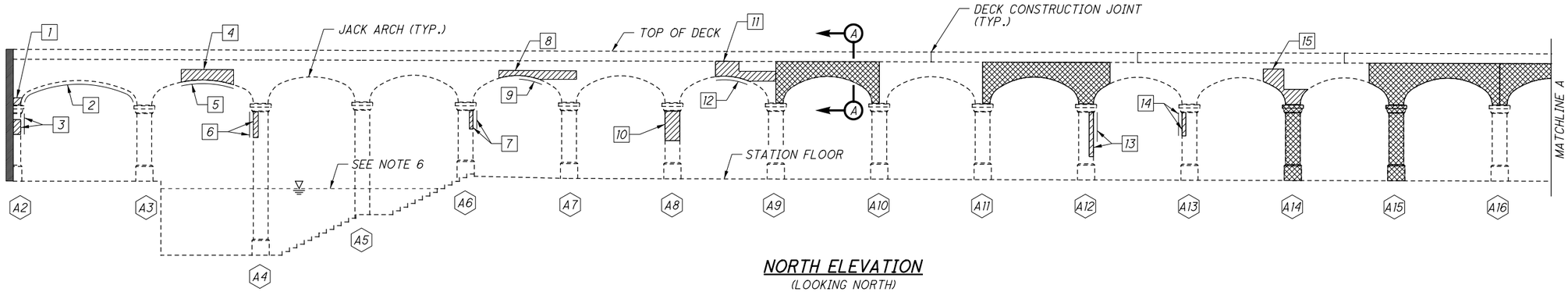
DETROIT AVENUE TUNNEL CONCRETE REPAIR DETAILS (2 OF 2)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

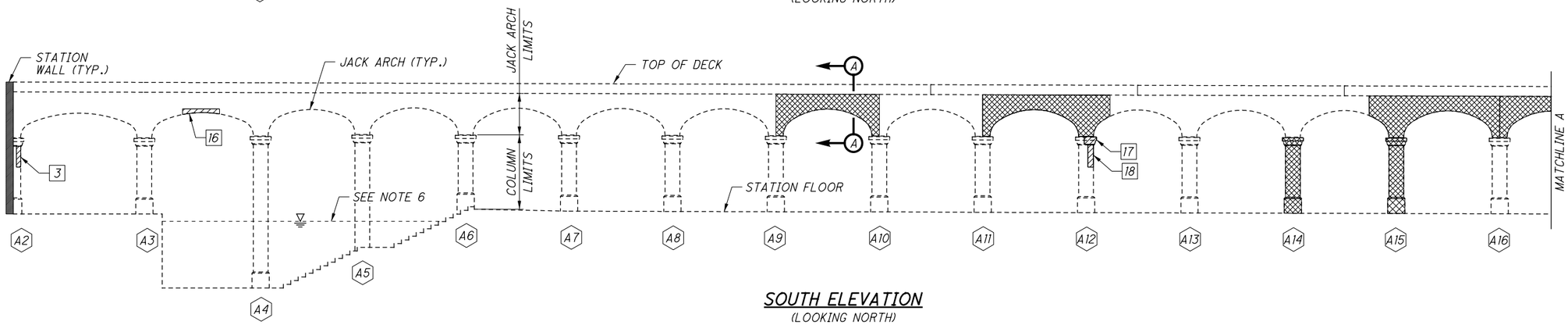
CUY-6-14.56
PID No. 99972

16 / 89

55 / 138



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

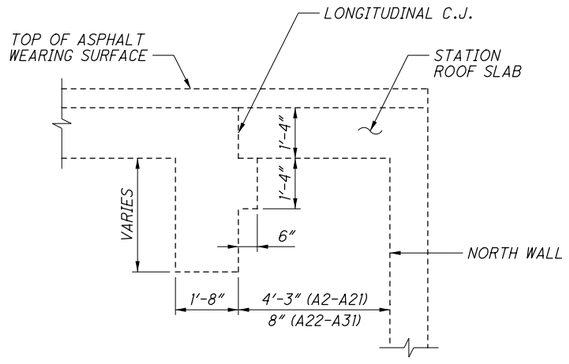
ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	-
2	TYPE 2	9	15
3	TYPE 1	10	4
4	TYPE 1	11	6
5	TYPE 2	4	-
6	TYPE 1	6	2
7	TYPE 1	3	-
8	TYPE 1	14	9
9	TYPE 2	2	-
10	TYPE 1	8	3
11	TYPE 1	14	7
12	TYPE 2	4	-
13	TYPE 1	12	8
14	TYPE 1	4	-
15	TYPE 1	12	8
16	TYPE 1	4	-
17	TYPE 1	2	-
18	TYPE 1	3	-
MEASURED QUANTITY*		124	-
PLAN QUANTITY*		186	62

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	158
TYPE 2 REPAIR	SF	28



SECTION A-A

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. THE PEDESTRIAN TUNNEL AND STAIRWAY ARE CURRENTLY FLOODED.

LEGEND:

- (#) STATION COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

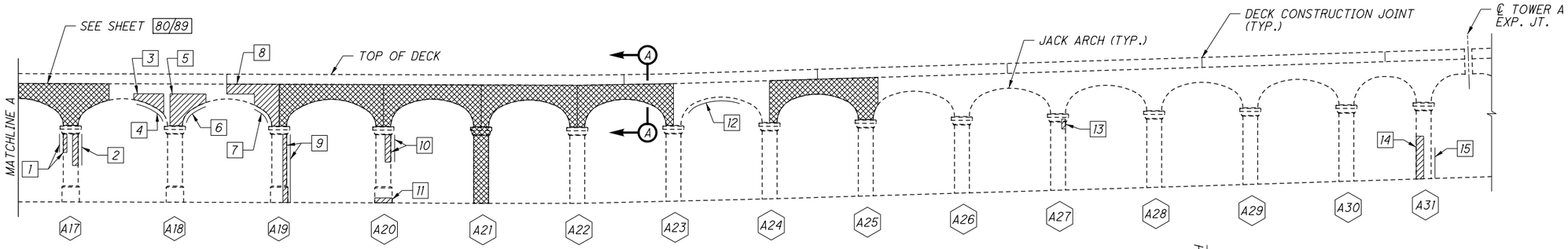
DESIGN AGENCY: Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

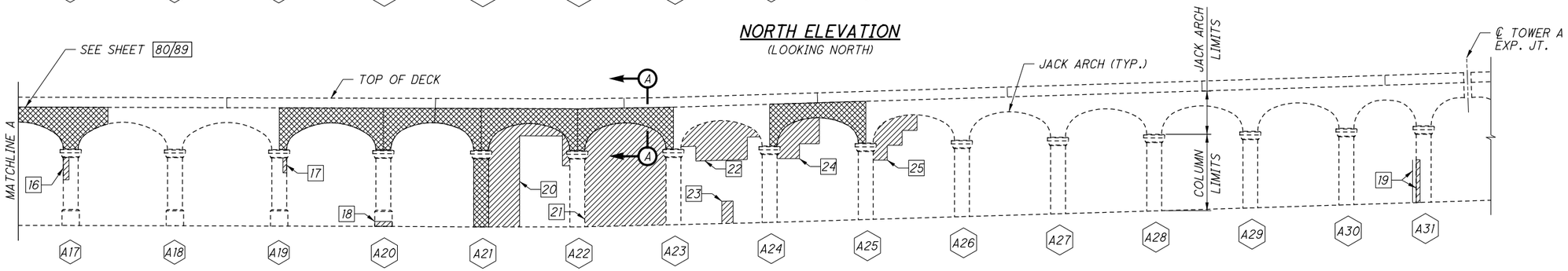
WEST STATION CONCRETE REPAIR DETAILS (1 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	-
2	TYPE 1	7	3
3	TYPE 1	6	3
4	TYPE 2	3	-
5	TYPE 1	14	6
6	TYPE 2	5	2
7	TYPE 2	3	-
8	TYPE 1	18	10
9	TYPE 1	10	7
10	TYPE 1	6	2
11	TYPE 1	2	-
12	TYPE 2	12	5
13	TYPE 1	1	-
14	TYPE 1	6	4
15	TYPE 1	4	-
16	TYPE 1	3	-
17	TYPE 1	1	-
18	TYPE 1	2	-
19	TYPE 1	13	8
20	TYPE 1	65	20

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 1	143	30
22	TYPE 1	41	14
23	TYPE 1	5	2
24	TYPE 1	22	12
25	TYPE 1	20	10
MEASURED QUANTITY*		416	-
PLAN QUANTITY*		624	138

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	590
TYPE 2 REPAIR	SF	34

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.
6. FOR SECTION A-A, SEE SHEET 17/89 .

LEGEND:

- (#) STATION COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

DESIGN AGENCY Pennoni

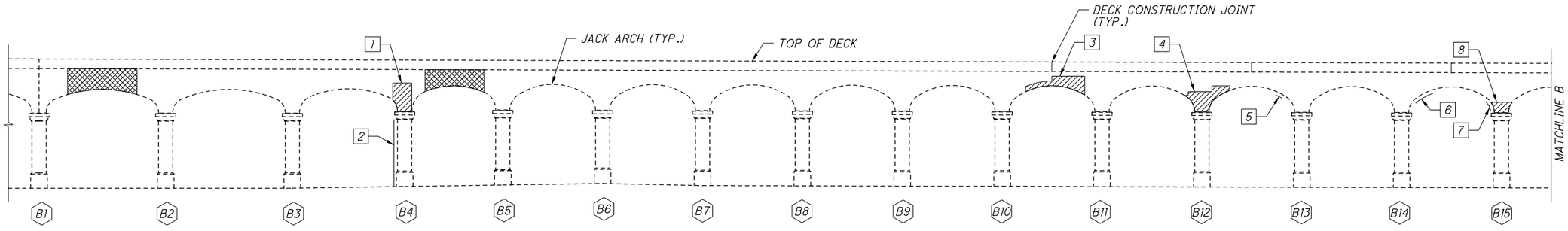
DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

WEST STATION CONCRETE REPAIR DETAILS (2 OF 8)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

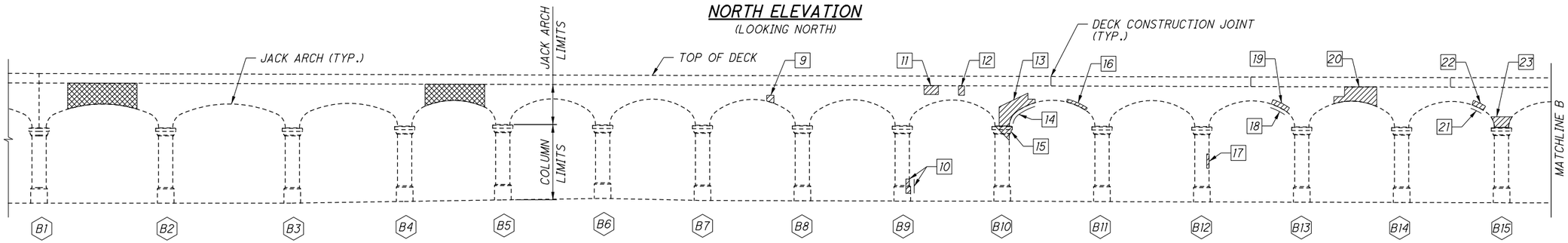
CUY-6-14.56
PID No. 99972

18 / 89

57
138



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	6
2	TYPE 1	18	7
3	TYPE 1	11	7
4	TYPE 1	12	8
5	TYPE 2	1	-
6	TYPE 2	5	3
7	TYPE 2	3	-
8	TYPE 1	4	-
9	TYPE 1	1	-
10	TYPE 1	4	-
11	TYPE 1	3	-
12	TYPE 1	2	-
13	TYPE 1	10	8
14	TYPE 2	3	-
15	TYPE 1	3	-
16	TYPE 1	2	-
17	TYPE 1	1	-
18	TYPE 2	3	-
19	TYPE 1	2	-
20	TYPE 1	12	10

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 2	1	-
22	TYPE 1	2	-
23	TYPE 1	4	-
MEASURED QUANTITY*		117	-
PLAN QUANTITY*		176	49

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	152
TYPE 2 REPAIR	SF	24

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

(#) STATION COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

WEST STATION CONCRETE REPAIR DETAILS (3 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

19 / 89

58
138

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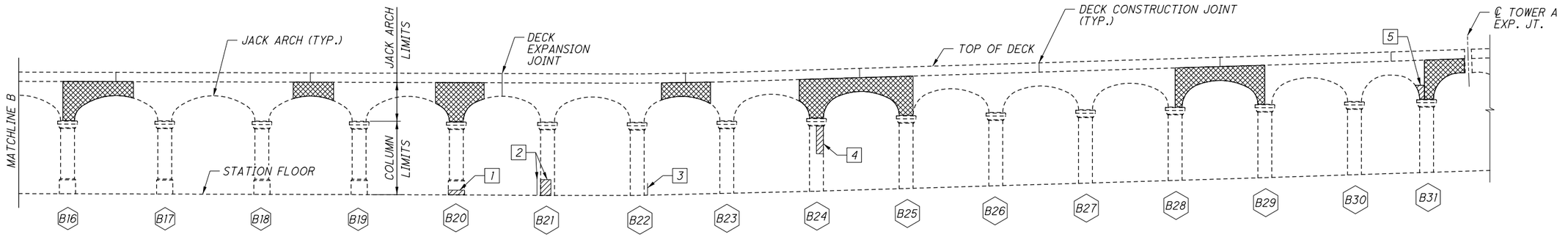
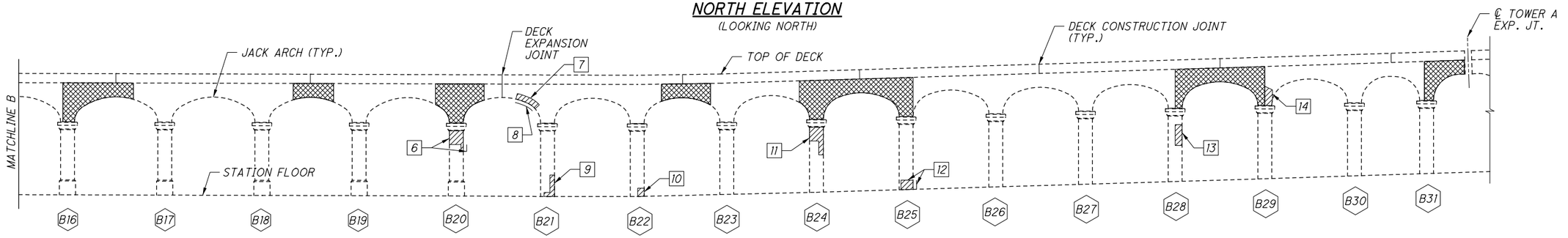


NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	-
2	TYPE 1	6	4
3	TYPE 1	3	-
4	TYPE 1	4	-
5	TYPE 1	3	-
6	TYPE 1	6	4
7	TYPE 1	3	-
8	TYPE 2	3	-
9	TYPE 1	2	-
10	TYPE 1	2	-
11	TYPE 1	6	3
12	TYPE 1	4	-
13	TYPE 1	3	-
14	TYPE 1	3	-
MEASURED QUANTITY*		50	-
PLAN QUANTITY*		75	11

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	70
TYPE 2 REPAIR	SF	5

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

(#) STATION COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

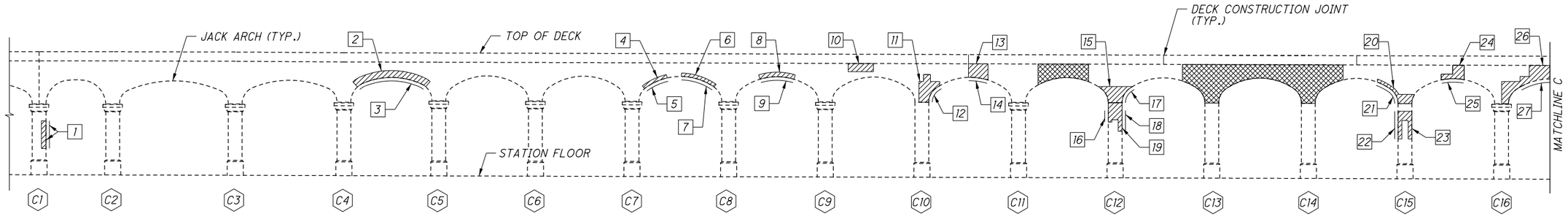
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

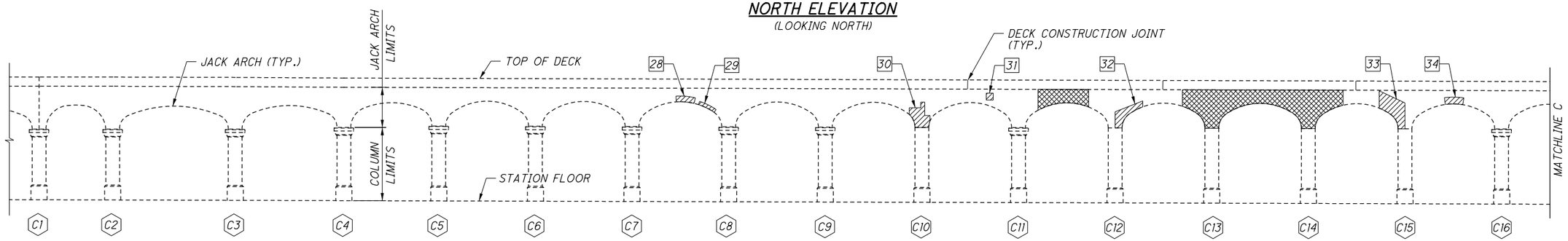
WEST STATION CONCRETE REPAIR DETAILS (4 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	6
2	TYPE 1	11	10
3	TYPE 2	6	10
4	TYPE 1	2	-
5	TYPE 2	2	-
6	TYPE 1	3	-
7	TYPE 2	3	-
8	TYPE 1	4	-
9	TYPE 2	3	-
10	TYPE 1	5	-
11	TYPE 1	8	6
12	TYPE 2	4	-
13	TYPE 1	6	4
14	TYPE 2	2	-
15	TYPE 1	8	4
16	TYPE 1	1	-
17	TYPE 2	4	-
18	TYPE 1	3	-
19	TYPE 1	6	2
20	TYPE 1	5	-
21	TYPE 2	7	3
22	TYPE 1	7	3
23	TYPE 1	6	2

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
24	TYPE 1	5	-
25	TYPE 2	2	-
26	TYPE 1	12	6
27	TYPE 2	10	8
28	TYPE 1	3	-
29	TYPE 1	2	-
30	TYPE 1	8	6
31	TYPE 1	1	-
32	TYPE 1	6	3
33	TYPE 1	12	8
34	TYPE 1	3	-
MEASURED QUANTITY*		180	-
PLAN QUANTITY*		270	81

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	206
TYPE 2 REPAIR	SF	64

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

- (#) STATION COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

DESIGN AGENCY: Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

WEST STATION CONCRETE REPAIR DETAILS (5 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

21/89

60/138

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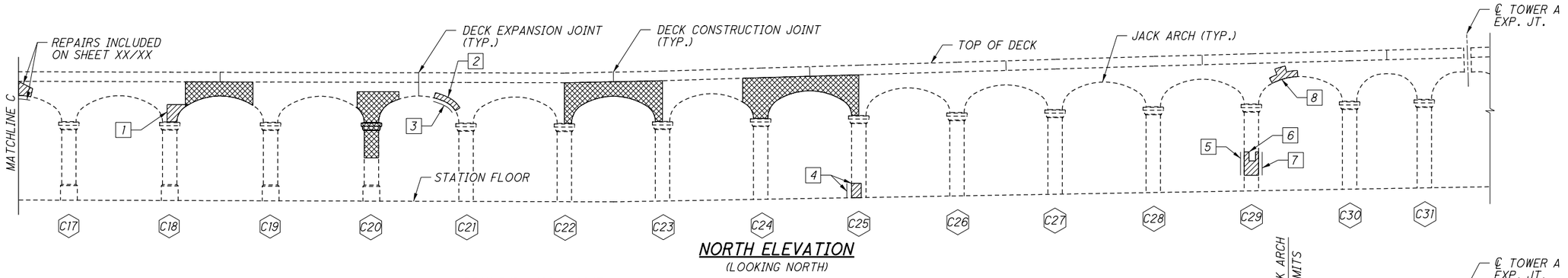
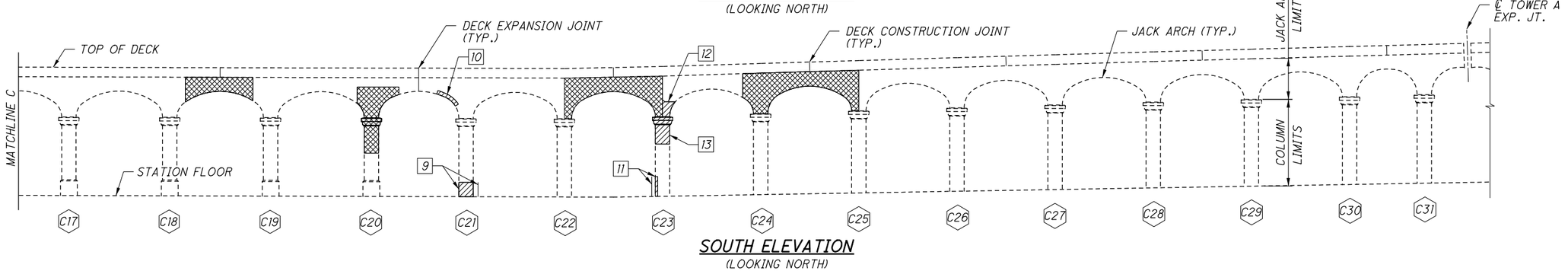


NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	-
2	TYPE 1	3	-
3	TYPE 2	7	4
4	TYPE 1	7	2
5	TYPE 1	2	-
6	TYPE 1	7	2
7	TYPE 1	2	-
8	TYPE 1	6	3
9	TYPE 1	8	3
10	TYPE 1	2	-
11	TYPE 1	6	2
12	TYPE 1	3	-
13	TYPE 1	6	2
MEASURED QUANTITY*		64	-
PLAN QUANTITY*		96	18

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	86
TYPE 2 REPAIR	SF	10

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

(#) STATION COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

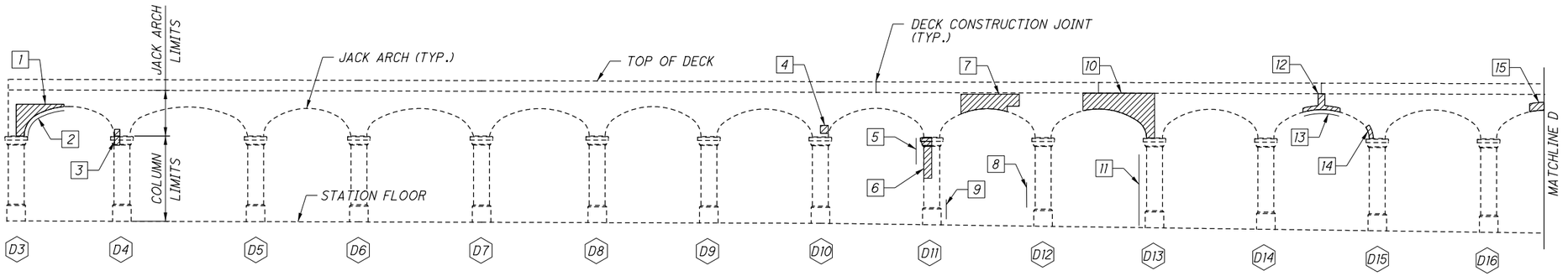
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

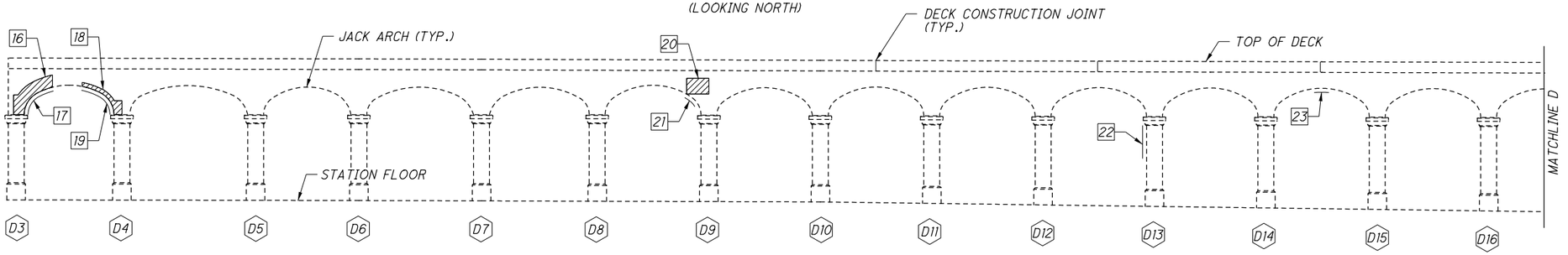
WEST STATION CONCRETE REPAIR DETAILS (6 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	5
2	TYPE 2	4	-
3	TYPE 1	2	-
4	TYPE 1	1	-
5	TYPE 1	4	-
6	TYPE 1	6	4
7	TYPE 1	14	6
8	TYPE 1	7	2
9	TYPE 1	5	-
10	TYPE 1	27	18
11	TYPE 1	9	7
12	TYPE 1	4	-
13	TYPE 2	3	-
14	TYPE 1	1	-
15	TYPE 1	3	-
16	TYPE 1	10	8
17	TYPE 2	3	-
18	TYPE 1	5	-
19	TYPE 2	3	-
20	TYPE 1	7	4

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 2	2	-
22	TYPE 1	4	-
23	TYPE 2	2	-
MEASURED QUANTITY*		136	-
PLAN QUANTITY*		204	54

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	178
TYPE 2 REPAIR	SF	26

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

- (#) STATION COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

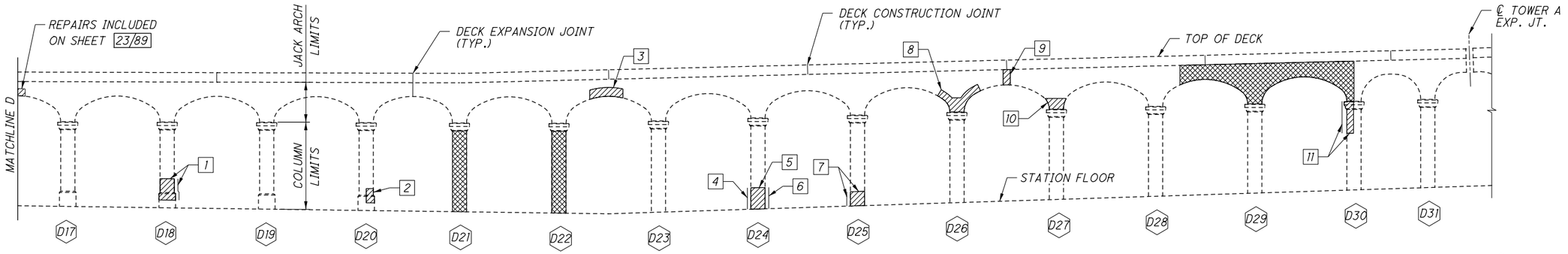
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

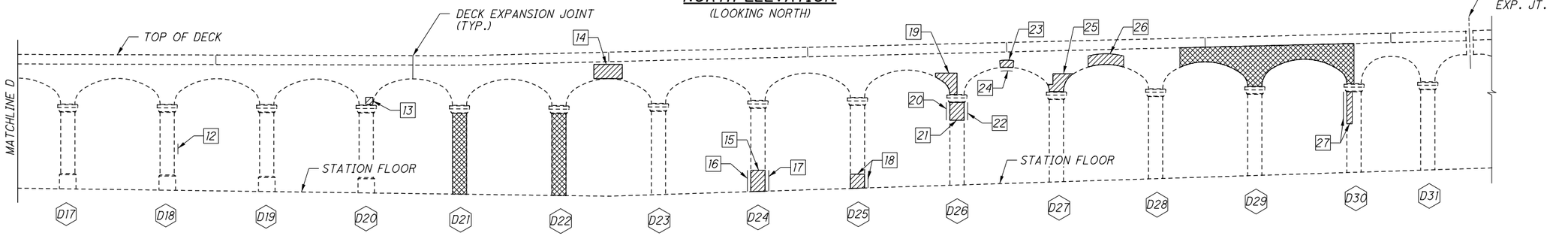
WEST STATION CONCRETE REPAIR DETAILS (7 OF 8)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



NORTH ELEVATION
(LOOKING NORTH)



SOUTH ELEVATION
(LOOKING NORTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	12	6
2	TYPE 1	2	-
3	TYPE 1	6	4
4	TYPE 1	6	2
5	TYPE 1	6	2
6	TYPE 1	6	2
7	TYPE 1	8	3
8	TYPE 1	9	5
9	TYPE 1	2	-
10	TYPE 1	4	-
11	TYPE 1	9	3
12	TYPE 1	3	-
13	TYPE 1	1	-
14	TYPE 1	8	6
15	TYPE 1	6	2
16	TYPE 1	6	2
17	TYPE 1	6	2
18	TYPE 1	8	3
19	TYPE 1	5	-
20	TYPE 1	2	-

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 1	5	-
22	TYPE 1	2	-
23	TYPE 1	2	-
24	TYPE 2	2	-
25	TYPE 1	7	6
26	TYPE 1	8	4
27	TYPE 1	13	6
MEASURED QUANTITY*		154	-
PLAN QUANTITY*		231	58

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	228
TYPE 2 REPAIR	SF	3

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

- (#) STATION COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPINDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED. FOR REPLACEMENT DETAILS, SEE SHEETS 79/89 THRU 83/89

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

WEST STATION CONCRETE REPAIR DETAILS (8 OF 8)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

24/89
63/138

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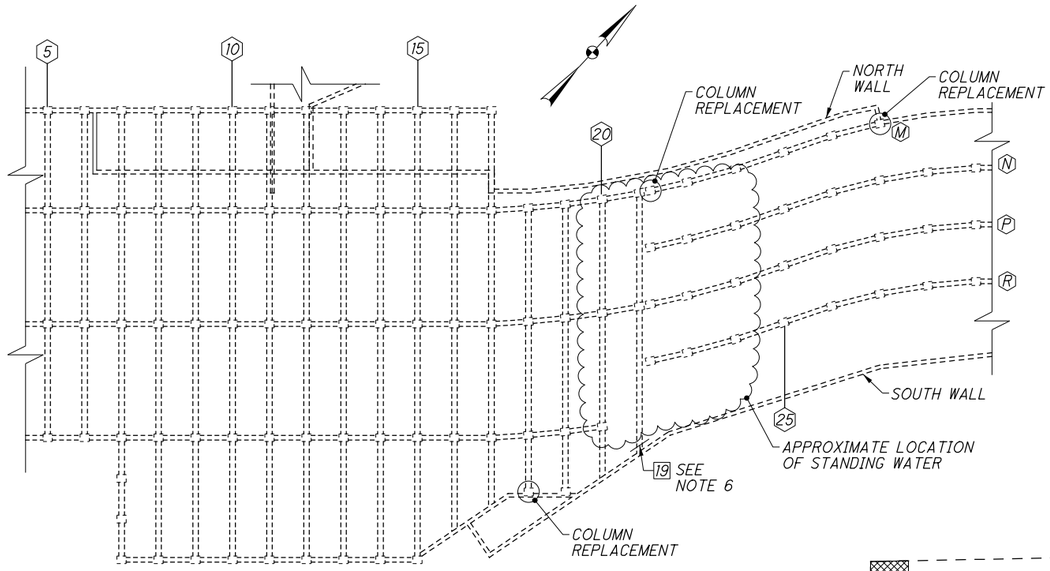
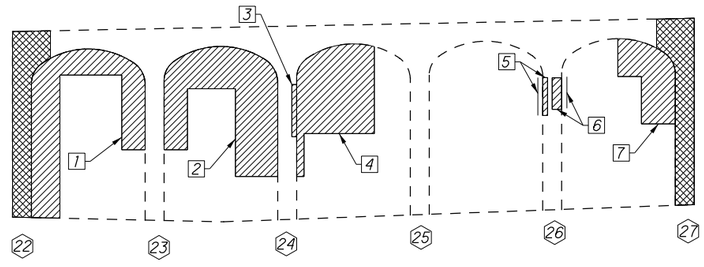
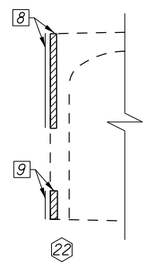


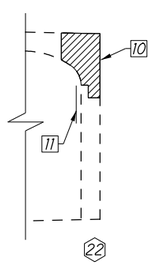
EAST STATION & SUBWAY - PLAN



COLUMN LINE M & SUBWAY NORTH WALL - SOUTH FACE

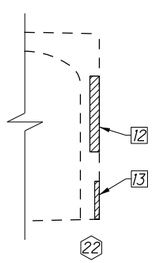


SOUTH FACE



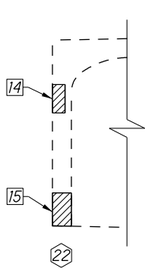
NORTH FACE

COLUMN N22

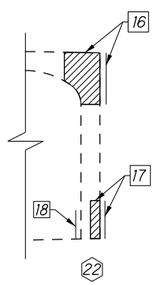


NORTH FACE

COLUMN P22



SOUTH FACE



NORTH FACE

COLUMN R22

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1 ‡	TYPE 1	183	42
2	TYPE 1	120	28
3	TYPE 1	3	-
4	TYPE 1	80	20
5	TYPE 1	4	-
6	TYPE 1	11	-
7 ‡	TYPE 1	111	30
8	TYPE 1	27	27
9	TYPE 1	6	-
10	TYPE 1	21	12
11	TYPE 1	4	-
12	TYPE 1	10	6
13	TYPE 1	2	-
14	TYPE 1	4	-
15	TYPE 1	7	2
16	TYPE 1	18	14
17	TYPE 1	13	6
18	TYPE 1	6	2
19	TYPE 1	70	34
MEASURED QUANTITY*		700	-
PLAN QUANTITY*		1050	223

* SEE NOTES 1 & 2 ‡ SEE NOTE 8
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	1050
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES IN THE EAST STATION AND EAST SUBWAY.
6. THE CONTRACTOR SHALL REMOVE DEBRIS THAT OBSTRUCTS THE PATCHING OF THE SOUTH WALL. PAYMENT SHALL BE INCLUDED AS PART OF ITEM 202 - PORTIONS OF STRUCTURE REMOVED OVER 20 FOOT SPAN, AS PER PLAN.
7. FOR DETAILS OF COLUMNS AND JACK ARCH REPLACEMENT, SEE SHEETS 79/89 THRU 83/89.
8. WALL REPAIR EXTENDS BEHIND COLUMN TO BE REPLACED.

LEGEND:

(#) STATION COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURES, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL PATCHING CONCRETE STRUCTURES, TYPE 1 REPAIR

LOCATION OF DEFICIENT COLUMN OR JACK ARCH TO BE REPLACED.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

EAST STATION & SUBWAY CONCRETE REPAIR DETAILS
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

25 / 89

64 / 138

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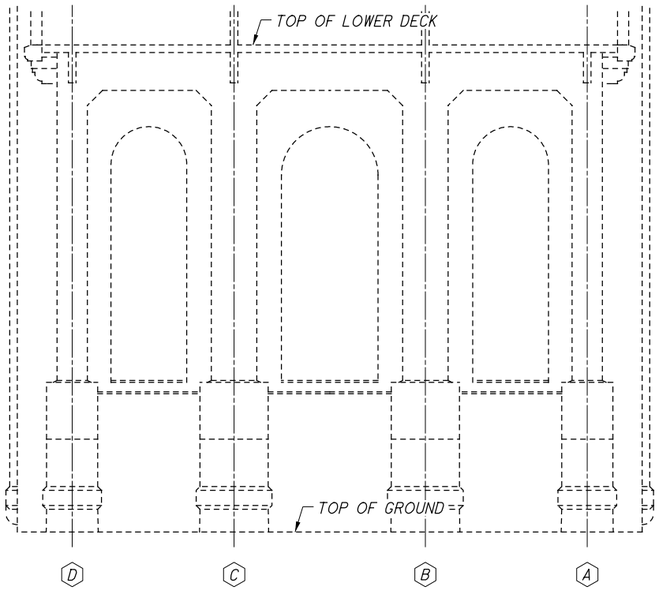
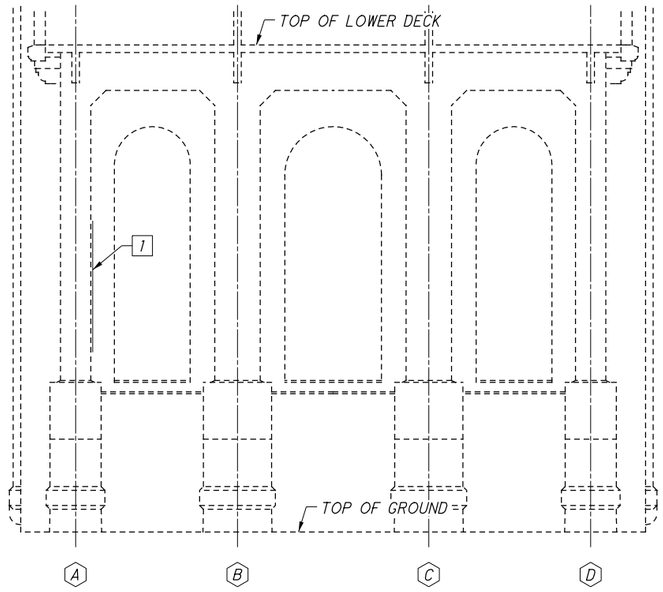
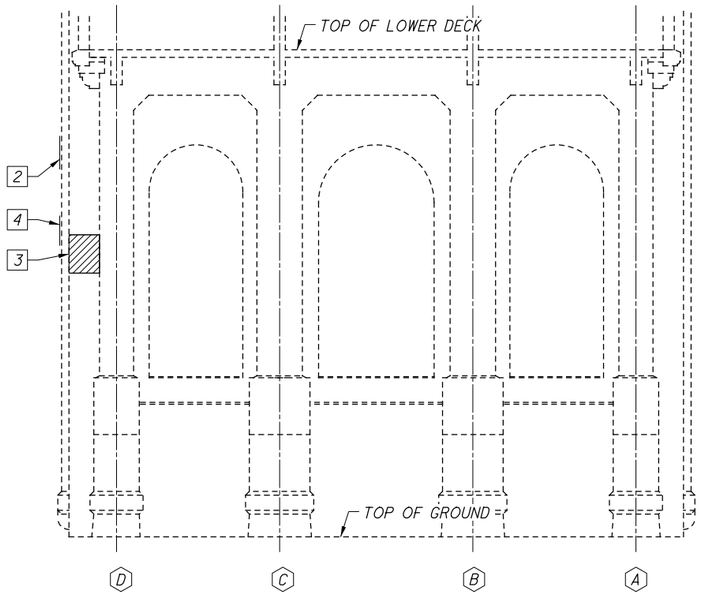


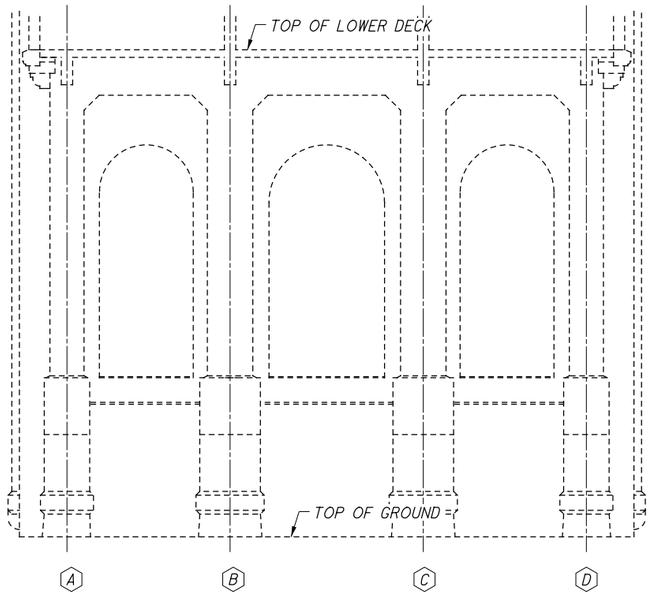
PIER 3 - EAST ELEVATION



PIER 3 - WEST ELEVATION



PIER 4 - EAST ELEVATION



PIER 4 - WEST ELEVATION

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	14	6
2	TYPE 1	6	2
3	TYPE 1	36	12
4	TYPE 1	2	1
MEASURED QUANTITY*		58	-
PLAN QUANTITY*		87	21

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	87
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.

LEGEND:

- (X) ARCH RIB LINE
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV | CHECKED EAT
DRAWN JEB | REVISED
REVIEWED DWJ | DATE 04/18/18
STRUCTURE FILE NUMBER 1800930

PIER CONCRETE REPAIR DETAILS (1 OF 4)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

26/89
65/138

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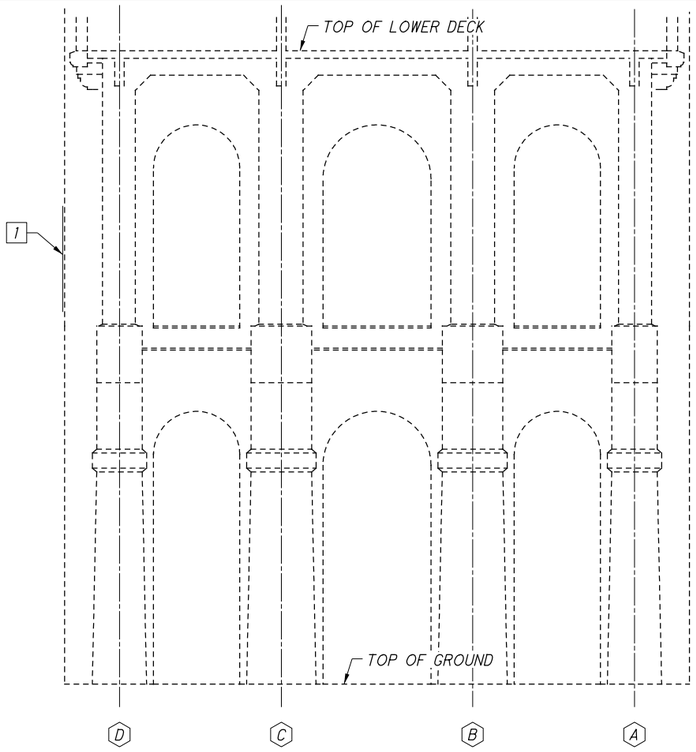
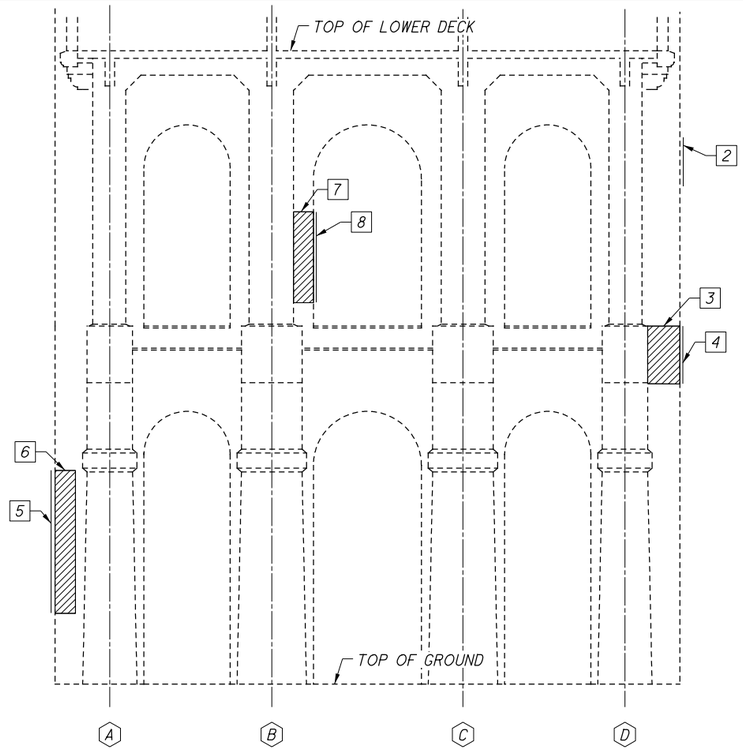
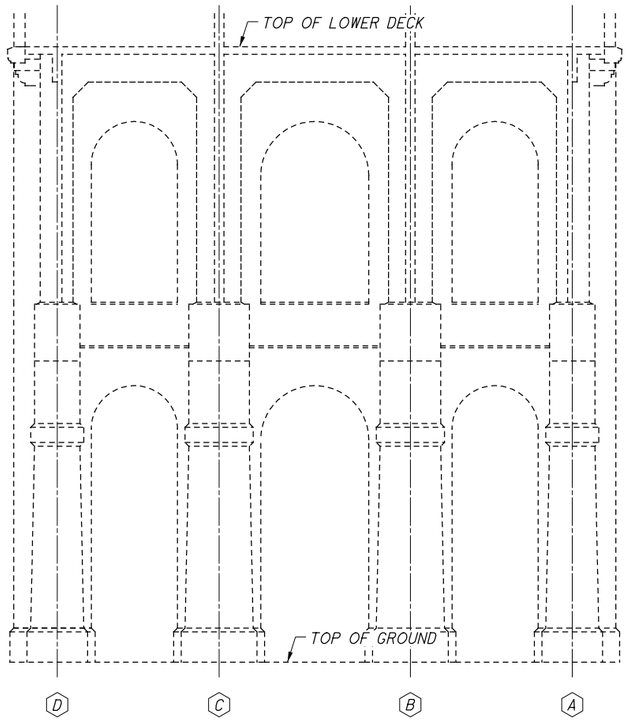


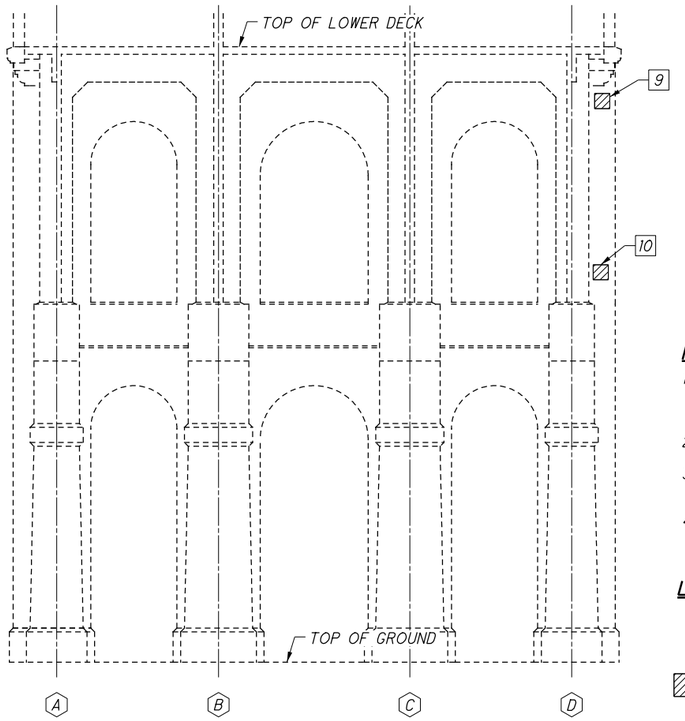
PIER 5 - EAST ELEVATION



PIER 5 - WEST ELEVATION



PIER 6 - EAST ELEVATION



PIER 6 - WEST ELEVATION

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	28	9
2	TYPE 1	4	1
3	TYPE 1	16	5
4	TYPE 1	5	2
5	TYPE 1	12	7
6	TYPE 1	24	7
7	TYPE 1	3	3
8	TYPE 1	3	3
9	TYPE 1	1	1
10	TYPE 1	4	1
MEASURED QUANTITY*		100	-
PLAN QUANTITY*		150	39

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	150
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.

LEGEND:

- (X) ARCH RIB LINE
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV | CHECKED EAT
DRAWN JEB | REVISED
REVIEWED DWJ | DATE 04/18/18
STRUCTURE FILE NUMBER 1800930

PIER CONCRETE REPAIR DETAILS (2 OF 4)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

27 / 89

66 / 138

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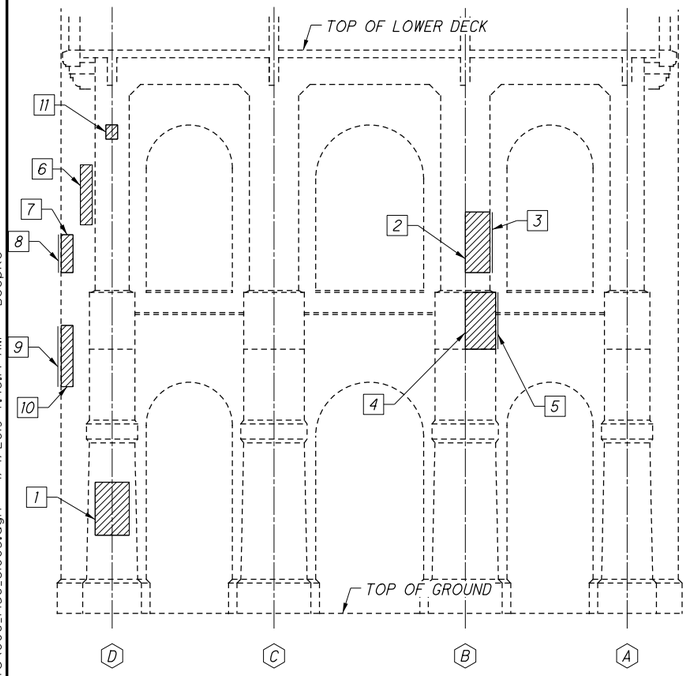
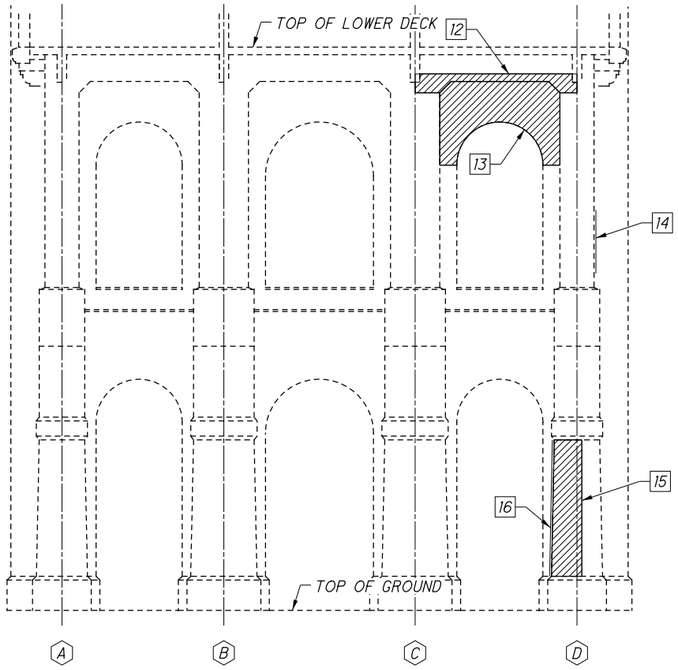
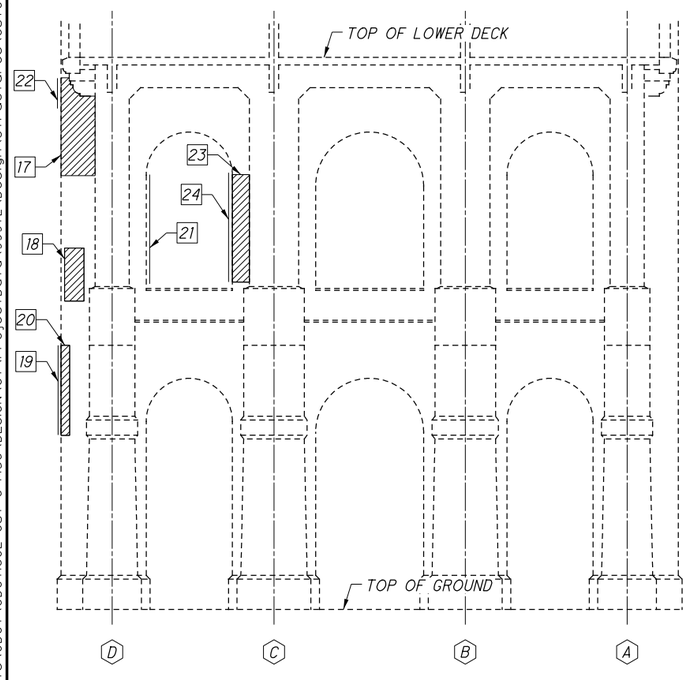


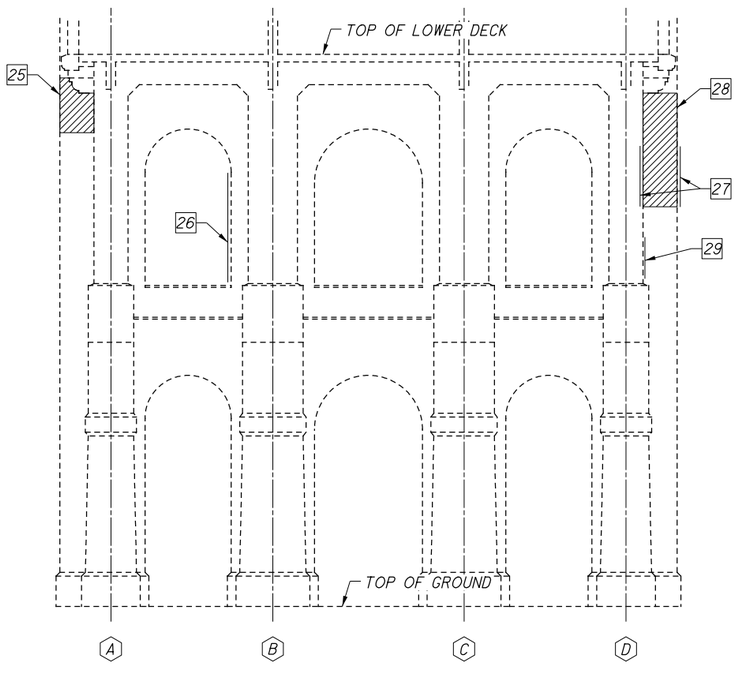
PIER 7 - EAST ELEVATION



PIER 7 - WEST ELEVATION



PIER 8 - EAST ELEVATION



PIER 8 - WEST ELEVATION

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	9	4
2	TYPE 1	12	3
3	TYPE 1	3	3
4	TYPE 1	8	5
5	TYPE 1	6	5
6	TYPE 1	7	3
7	TYPE 1	6	7
8	TYPE 1	6	7
9	TYPE 1	4	1
10	TYPE 1	4	1
11	TYPE 1	1	1
12	TYPE 1	152	30
13	TYPE 1	71	26
14	TYPE 1	18	5
15	TYPE 1	67	20
16	TYPE 1	34	10
17	TYPE 1	83	24
18	TYPE 1	21	8
19	TYPE 1	5	2
20	TYPE 1	15	9
21	TYPE 1	15	9
22	TYPE 1	8	5
23	TYPE 1	45	18
24	TYPE 1	15	9
25	TYPE 1	32	10
26	TYPE 1	150	26
27	TYPE 1	9	4
28	TYPE 1	68	20
29	TYPE 1	17	6
MEASURED QUANTITY*		891	-
PLAN QUANTITY*		1337	281

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	1337
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.

LEGEND:

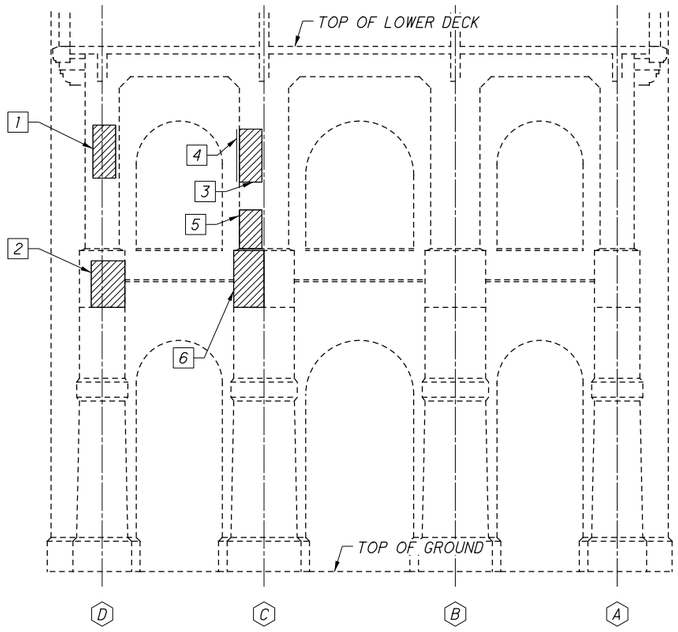
- (X) ARCH RIB LINE
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV | DRAWN JEB | REVIEWED DWJ | DATE 04/18/18
CHECKED EAT | REVISED | STRUCTURE FILE NUMBER 1800930

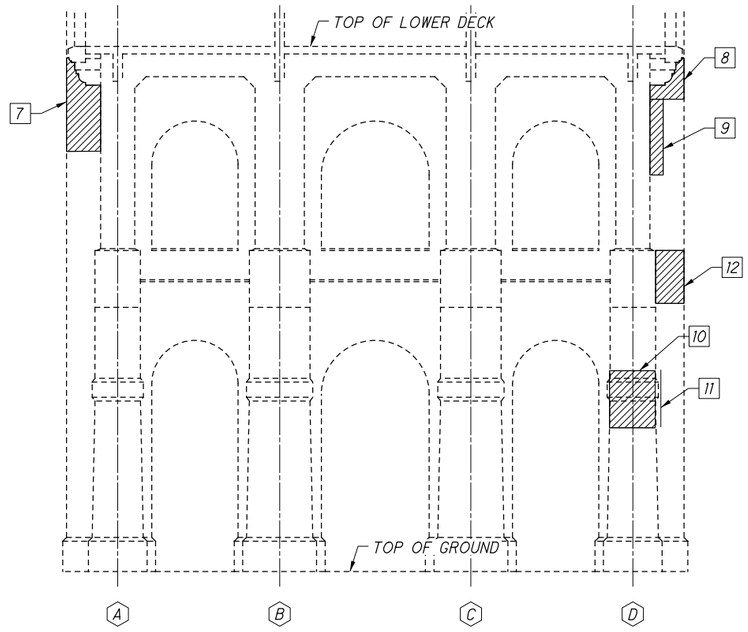
PIER CONCRETE REPAIR DETAILS (3 OF 4)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



PIER 9 - EAST ELEVATION



PIER 9 - WEST ELEVATION

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	21	8
2	TYPE 1	11	5
3	TYPE 1	16	4
4	TYPE 1	4	4
5	TYPE 1	27	10
6	TYPE 1	4	4
7	TYPE 1	34	12
8	TYPE 1	20	6
9	TYPE 1	18	6
10	TYPE 1	9	4
11	TYPE 1	6	2
12	TYPE 1	25	8
MEASURED QUANTITY*		195	-
PLAN QUANTITY*		293	75

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	293
TYPE 2 REPAIR	SF	-

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN SEPTEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.

LEGEND:

- (X) ARCH RIB LINE
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
EAT		1800930	

PIER CONCRETE REPAIR DETAILS (4 OF 4)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

29/89

68/138

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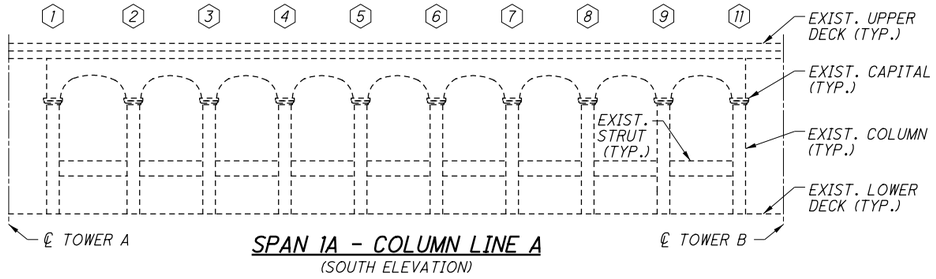
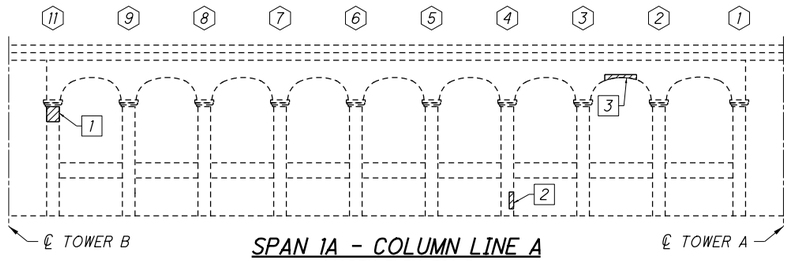
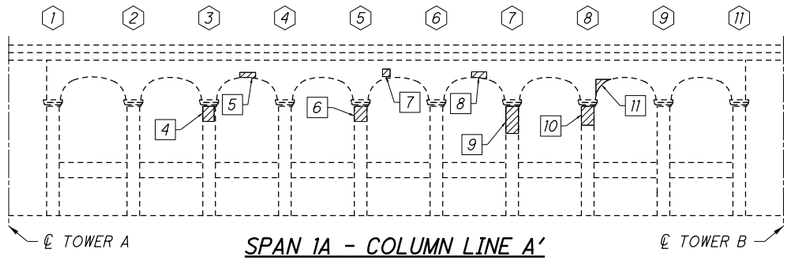


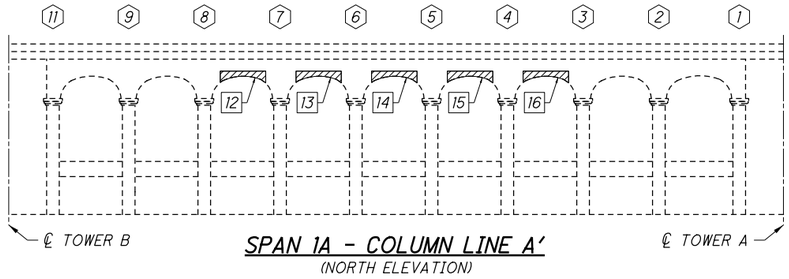
SPAN 1A - COLUMN LINE A
(SOUTH ELEVATION)



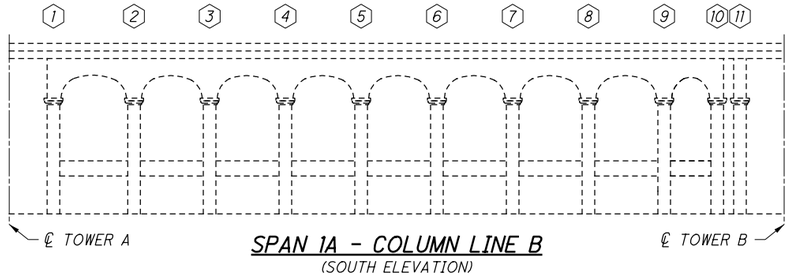
SPAN 1A - COLUMN LINE A
(NORTH ELEVATION)



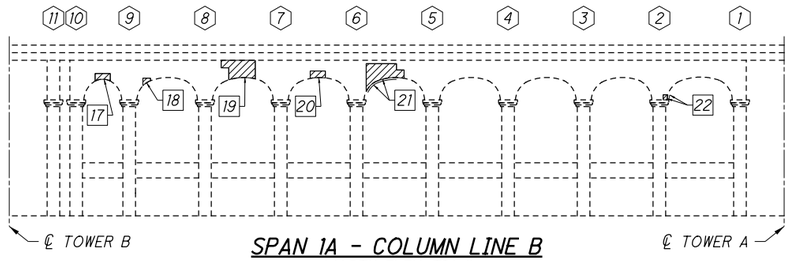
SPAN 1A - COLUMN LINE A'
(SOUTH ELEVATION)



SPAN 1A - COLUMN LINE A'
(NORTH ELEVATION)



SPAN 1A - COLUMN LINE B
(SOUTH ELEVATION)



SPAN 1A - COLUMN LINE B
(NORTH ELEVATION)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	-
2	TYPE 1	1	-
3	TYPE 1	1	-
4	TYPE 1	3	-
5	TYPE 1	2	-
6	TYPE 1	3	-
7	TYPE 1	1	-
8	TYPE 1	4	-
9	TYPE 1	6	3
10	TYPE 1	5	2
11	TYPE 1	4	-
12	TYPE 1	6	5
13	TYPE 1	6	5
14	TYPE 1	6	5
15	TYPE 1	6	5
16	TYPE 1	6	5
17	TYPE 1	2	-
18	TYPE 1	1	-
19	TYPE 1	8	6
20	TYPE 1	1	-

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 2	21	12
22	TYPE 1	2	-
MEASURED QUANTITY*		97	-
PLAN QUANTITY*		146	48

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	114
TYPE 2 REPAIR	SF	32

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
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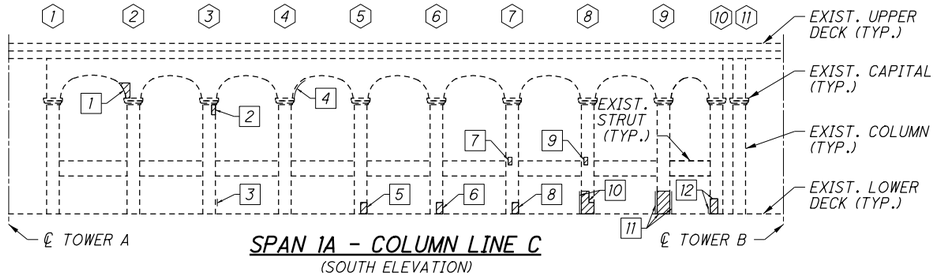
DESIGN AGENCY Pennoni

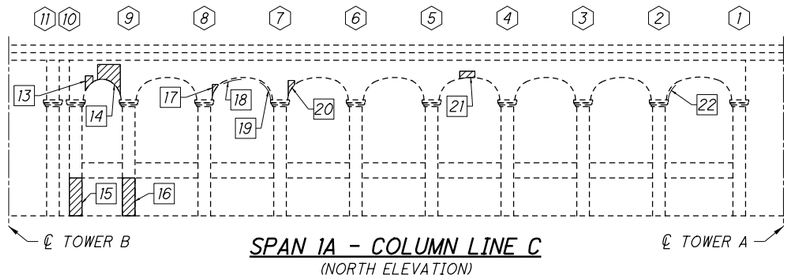
DESIGNED	DRAWN	REVIEWED	DATE
WJV	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
EAT		1800930	

SPAN 1A CONCRETE REPAIR DETAILS (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

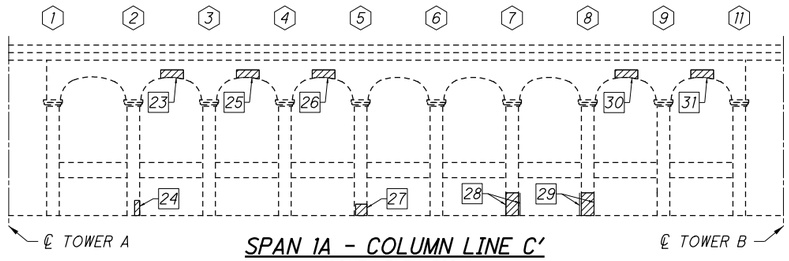
CUY-6-14.56
PID No. 99972



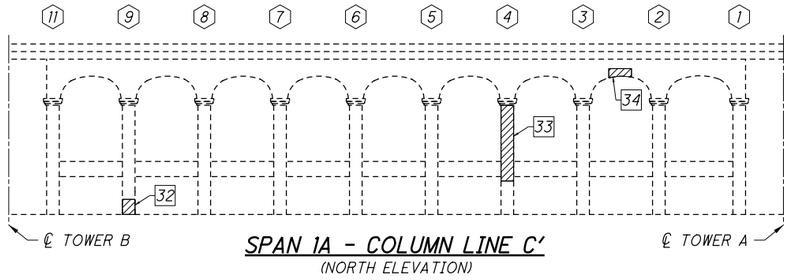
SPAN 1A - COLUMN LINE C
(SOUTH ELEVATION)



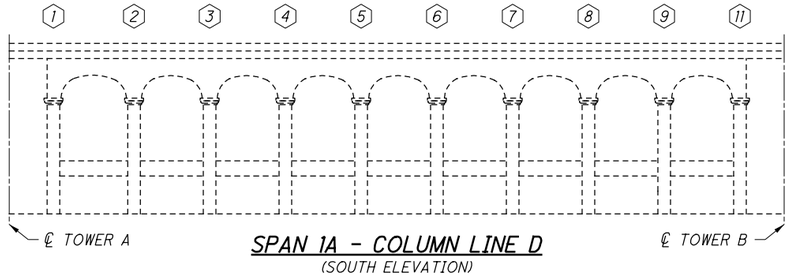
SPAN 1A - COLUMN LINE C
(NORTH ELEVATION)



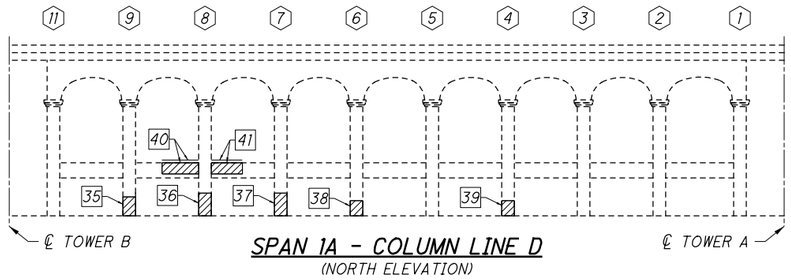
SPAN 1A - COLUMN LINE C'
(SOUTH ELEVATION)



SPAN 1A - COLUMN LINE C'
(NORTH ELEVATION)



SPAN 1A - COLUMN LINE D
(SOUTH ELEVATION)



SPAN 1A - COLUMN LINE D
(NORTH ELEVATION)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	-
2	TYPE 1	1	-
3	TYPE 1	1	-
4	TYPE 2	3	-
5	TYPE 1	2	-
6	TYPE 1	2	-
7	TYPE 1	1	-
8	TYPE 1	2	-
9	TYPE 1	1	-
10	TYPE 1	8	4
11	TYPE 1	15	8
12	TYPE 1	4	-
13	TYPE 1	2	2
14	TYPE 1	12	8
15	TYPE 1	5	2
16	TYPE 1	5	2
17	TYPE 1	2	-
18	TYPE 2	3	-
19	TYPE 2	4	-
20	TYPE 1	2	-
21	TYPE 1	3	-
22	TYPE 2	5	4

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
23	TYPE 1	3	-
24	TYPE 1	2	-
25	TYPE 1	3	-
26	TYPE 1	3	-
27	TYPE 1	3	-
28	TYPE 1	9	4
29	TYPE 1	8	6
30	TYPE 1	3	-
31	TYPE 1	3	-
32	TYPE 1	4	-
33	TYPE 1	17	7
34	TYPE 1	3	-
35	TYPE 1	7	3
36	TYPE 1	6	2
37	TYPE 1	6	2
38	TYPE 1	4	-
39	TYPE 1	4	-
40	TYPE 1	6	1
41	TYPE 1	2	-
MEASURED QUANTITY*		181	-
PLAN QUANTITY*		272	55

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	249
TYPE 2 REPAIR	SF	23

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89 .
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

(#) SPANDREL COLUMN NUMBER
[#] REPAIR NUMBER
LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV | DRAWN JEB | REVIEWED DWJ | DATE 04/18/18
CHECKED EAT | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 1A CONCRETE REPAIR DETAILS (2 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

31 / 89
70 / 138

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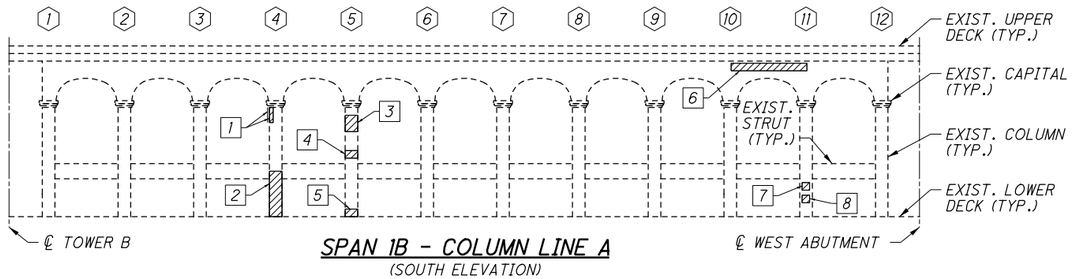
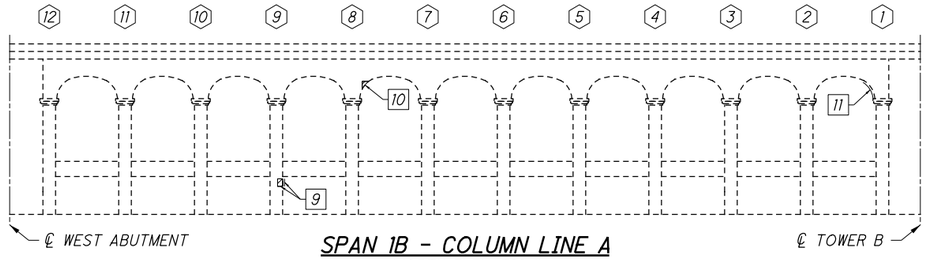
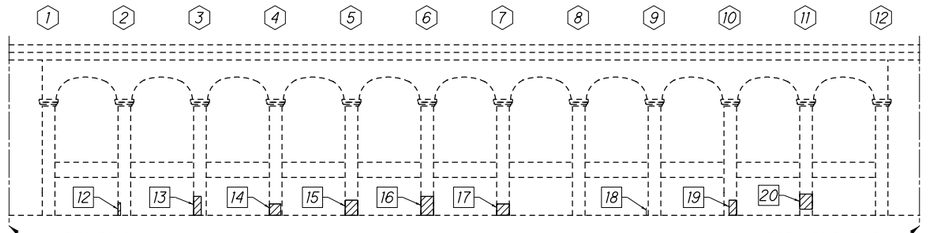


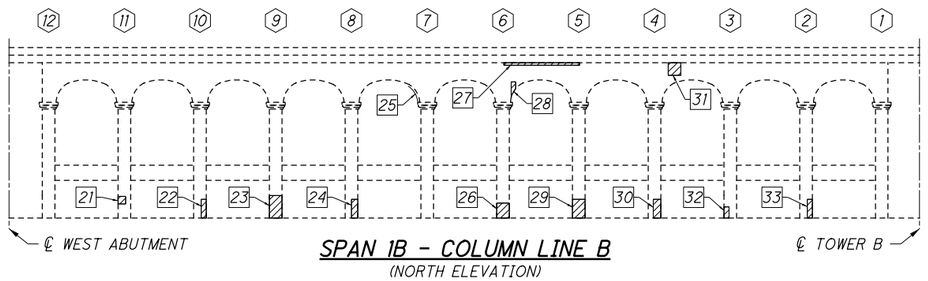
SPAN 1B - COLUMN LINE A
(SOUTH ELEVATION)



SPAN 1B - COLUMN LINE A
(NORTH ELEVATION)



SPAN 1B - COLUMN LINE B
(SOUTH ELEVATION)



SPAN 1B - COLUMN LINE B
(NORTH ELEVATION)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	-
2	TYPE 1	7	3
3	TYPE 1	4	-
4	TYPE 1	2	-
5	TYPE 1	2	-
6	TYPE 1	10	9
7	TYPE 1	1	-
8	TYPE 1	1	-
9	TYPE 1	2	-
10	TYPE 1	1	-
11	TYPE 2	6	6
12	TYPE 1	1	-
13	TYPE 1	3	-
14	TYPE 1	3	-
15	TYPE 1	4	-
16	TYPE 1	5	2
17	TYPE 1	3	-
18	TYPE 1	1	-
19	TYPE 1	2	-
20	TYPE 1	4	-
21	TYPE 1	1	-
22	TYPE 1	2	-

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
23	TYPE 1	5	1
24	TYPE 1	3	-
25	TYPE 2	3	-
26	TYPE 1	4	-
27	TYPE 1	4	-
28	TYPE 1	2	-
29	TYPE 1	5	7
30	TYPE 1	3	-
31	TYPE 1	3	-
32	TYPE 1	1	-
33	TYPE 1	2	-
MEASURED QUANTITY*		102	-
PLAN QUANTITY*		153	28

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	139
TYPE 2 REPAIR	SF	14

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

(#) SPANDREL COLUMN NUMBER
[#] REPAIR NUMBER
LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni
DESIGNED WJV | DRAWN JEB | REVIEWED DWJ | DATE 04/18/18
CHECKED EAT | REVISED | STRUCTURE FILE NUMBER 1800930

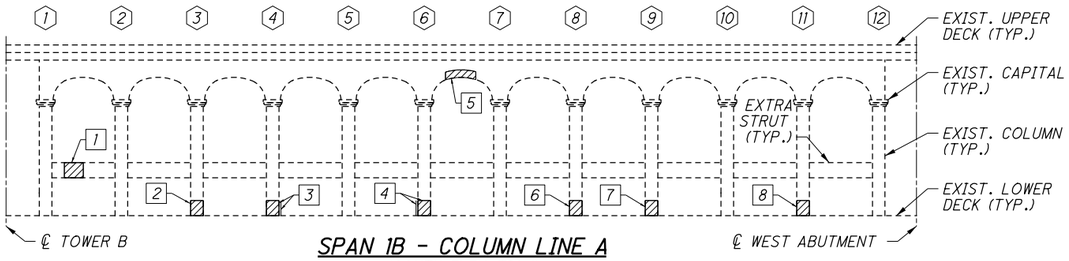
SPAN 1B CONCRETE REPAIR DETAILS (1 OF 2)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

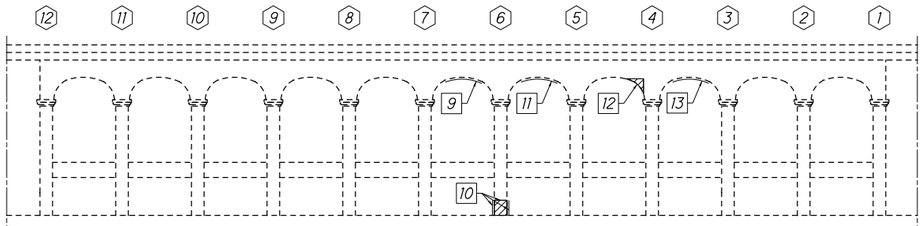
CUY-6-14.56
PID No. 99972

32 / 89

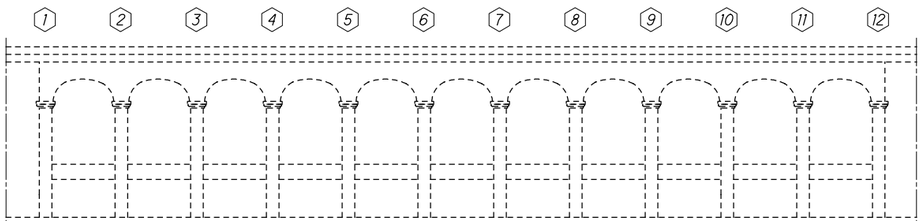
71 / 138



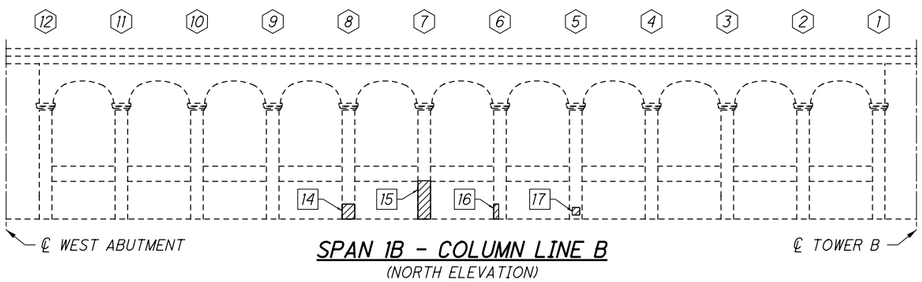
SPAN 1B - COLUMN LINE A
(SOUTH ELEVATION)



SPAN 1B - COLUMN LINE A
(NORTH ELEVATION)



SPAN 1B - COLUMN LINE B
(SOUTH ELEVATION)



SPAN 1B - COLUMN LINE B
(NORTH ELEVATION)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	4
2	TYPE 1	4	-
3	TYPE 1	8	4
4	TYPE 1	8	4
5	TYPE 1	4	-
6	TYPE 1	4	-
7	TYPE 1	4	-
8	TYPE 1	4	-
9	TYPE 2	6	4
10	TYPE 1	12	8
11	TYPE 2	5	4
12	TYPE 1	2	-
13	TYPE 2	4	-
14	TYPE 1	4	-
15	TYPE 1	10	4
16	TYPE 1	2	-
17	TYPE 1	1	-
MEASURED QUANTITY*		87	-
PLAN QUANTITY*		131	32

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	108
TYPE 2 REPAIR	SF	23

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR THE EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
EAT		1800930	

SPAN 1B CONCRETE REPAIR DETAILS (2 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

33/89

72/138

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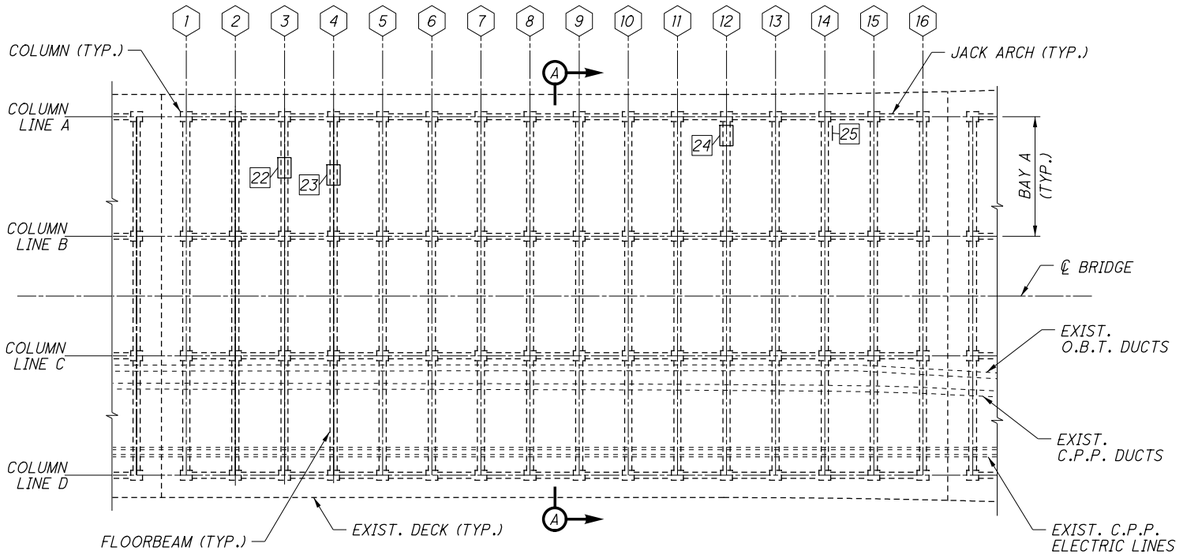
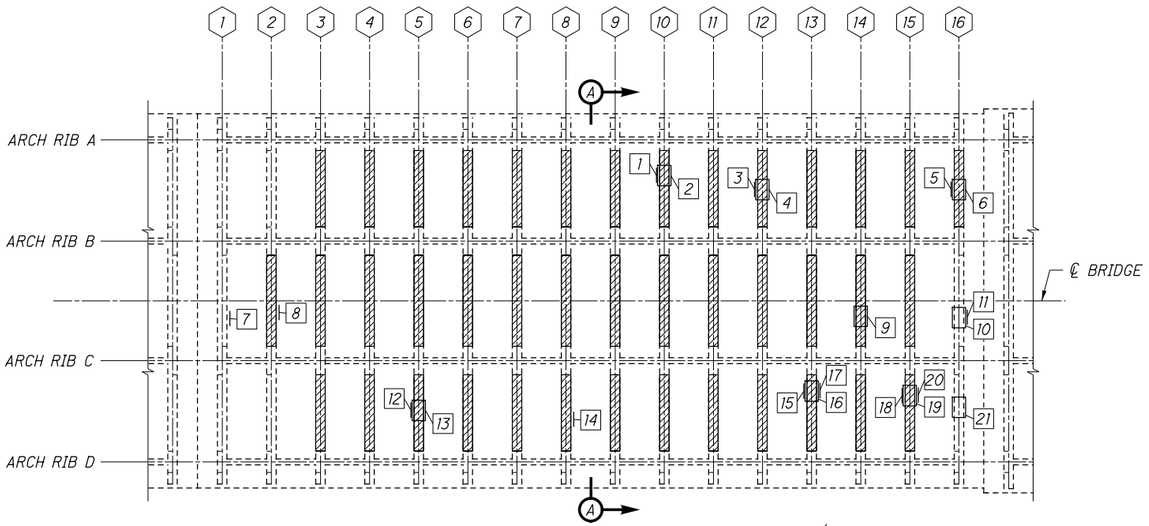


SPAN 2 - UPPER DECK PLAN



SPAN 2 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	3
2	TYPE 2	10	4
3	TYPE 1	10	5
4	TYPE 2	10	8
5	TYPE 1	5	3
6	TYPE 2	10	4
7	TYPE 1	4	1
8	TYPE 1	3	2
9	TYPE 2	10	8
10	TYPE 2	12	10
11	TYPE 1	20	5
12	TYPE 1	10	3
13	TYPE 2	10	8
14	TYPE 1	8	2
15	TYPE 1	10	3
16	TYPE 2	10	4
17	TYPE 1	5	3

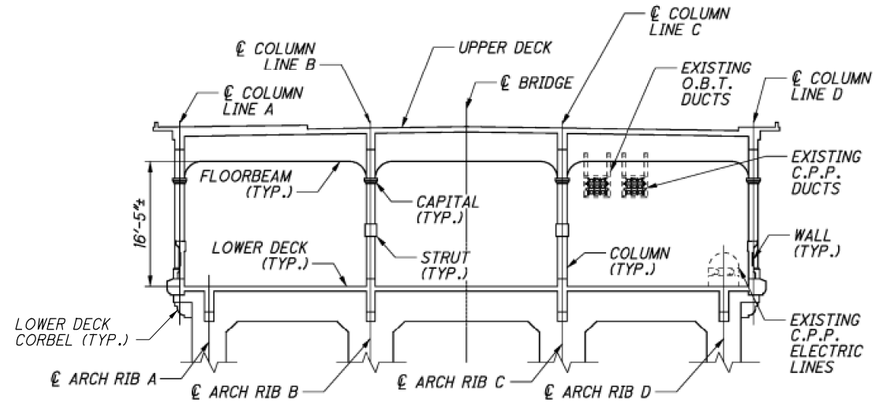
ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
18	TYPE 1	10	5
19	TYPE 2	10	4
20	TYPE 1	20	5
21	TYPE 2	33	13
22	TYPE 2	2	1
23	TYPE 2	3	2
24	TYPE 2	1	1
25	TYPE 1	12	3
MEASURED QUANTITY*		243	-
PLAN QUANTITY*		365	110

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	183
TYPE 2 REPAIR	SF	182
FRP WRAP	SF	3524



SECTION A-A

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN OCTOBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18

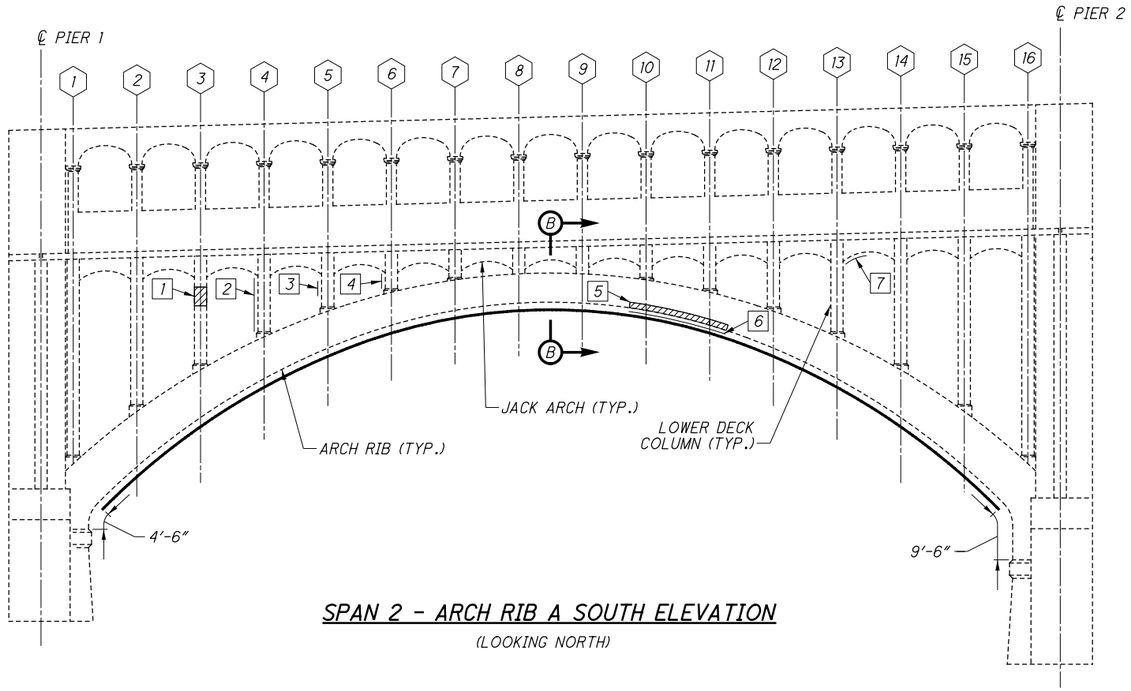
CHECKED	REVISED	STRUCTURE FILE NUMBER
DEA		1800930

SPAN 2 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

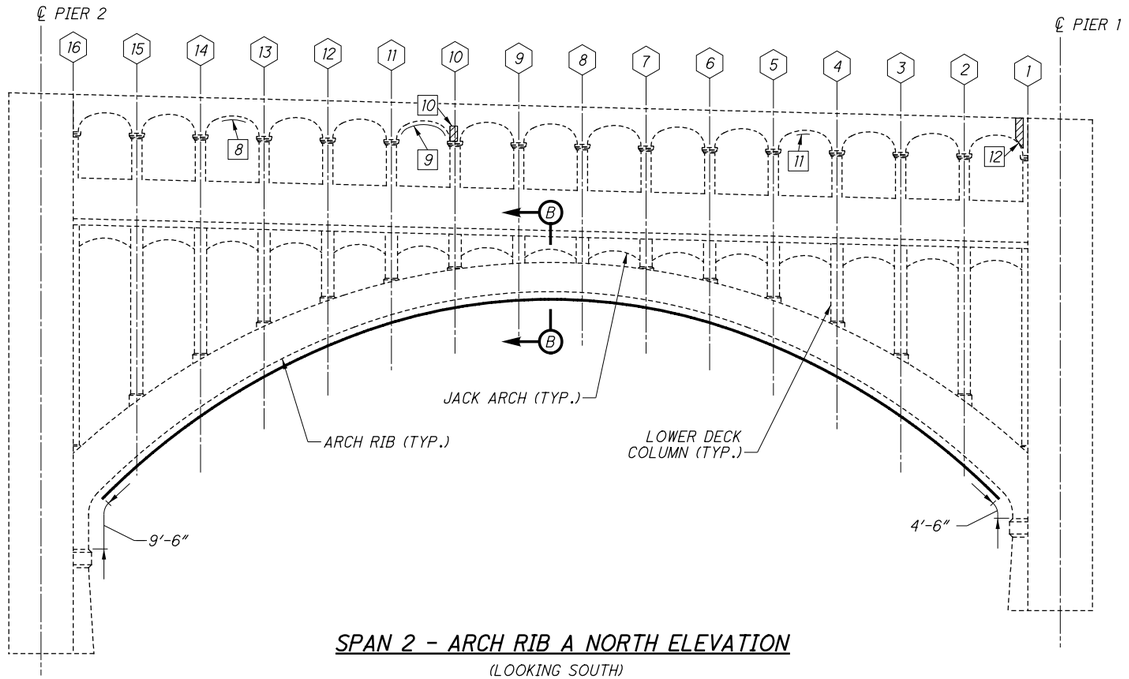
34/89

73/138



SPAN 2 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 2 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	6	2
2	TYPE 1	14	4
3	TYPE 1	2	1
4	TYPE 1	6	2
5	TYPE 1	14	-
6	TYPE 2	14	10
7	TYPE 2	3	2
8	TYPE 2	5	2
9	TYPE 2	8	6
10	TYPE 1	2	1
11	TYPE 2	2	1
12	TYPE 1	4	2
MEASURED QUANTITY*		80	-
PLAN QUANTITY*		120	33

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	72
TYPE 2 REPAIR	SF	48
FRP WRAP	SF	1949

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

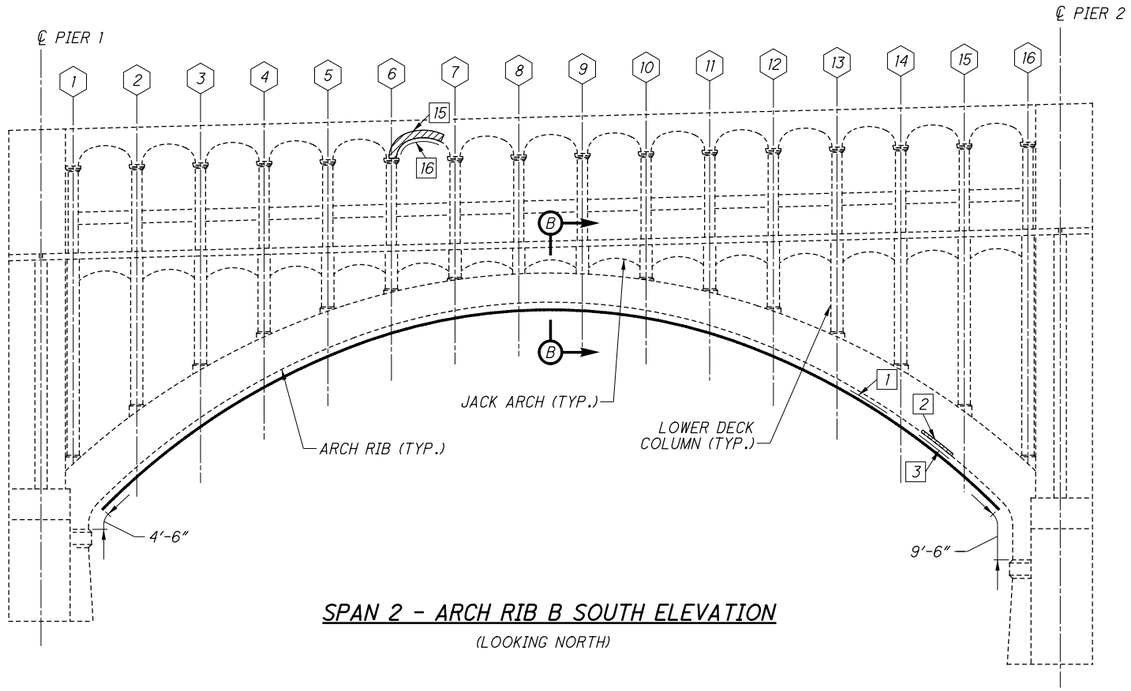
AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

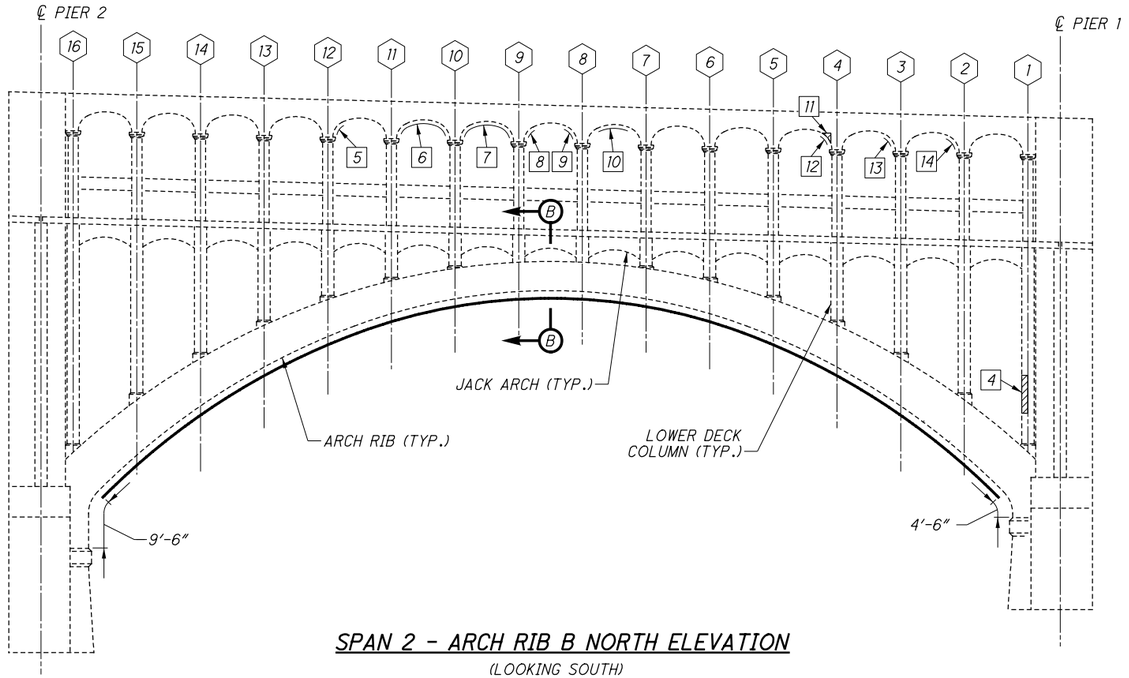
SPAN 2 CONCRETE REPAIR DETAILS (2 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 2 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 2 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	6	4
2	TYPE 1	1	-
3	TYPE 2	5	4
4	TYPE 1	6	3
5	TYPE 2	2	1
6	TYPE 2	18	8
7	TYPE 2	18	8
8	TYPE 2	6	2
9	TYPE 2	6	2
10	TYPE 2	9	4
11	TYPE 1	1	1
12	TYPE 2	1	1
13	TYPE 2	2	1
14	TYPE 2	4	2
15	TYPE 1	10	5
16	TYPE 2	12	6
MEASURED QUANTITY*		107	-
PLAN QUANTITY*		161	52

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	27
TYPE 2 REPAIR	SF	134
FRP WRAP	SF	2322

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 2 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

36 / 89

75 / 138

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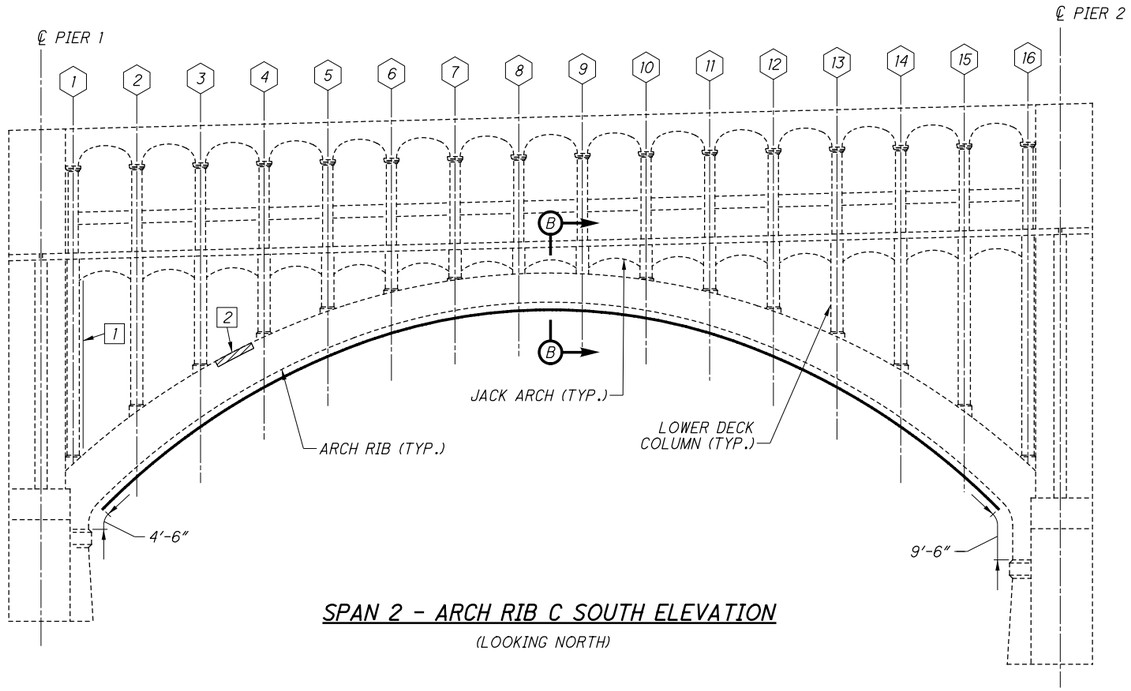
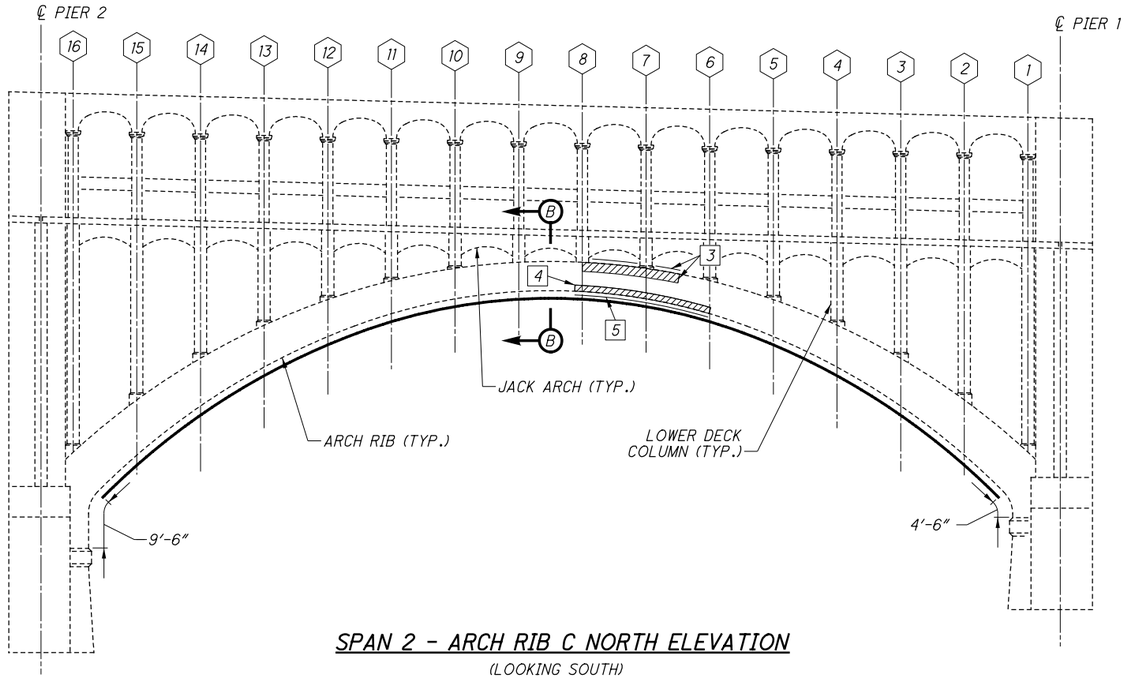


SPAN 2 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 2 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	56	14
2	TYPE 1	6	-
3	TYPE 1	40	12
4	TYPE 1	23	-
5	TYPE 2	23	17
MEASURED QUANTITY*		148	-
PLAN QUANTITY*		222	43

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	188
TYPE 2 REPAIR	SF	34
FRP WRAP	SF	2322

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED AJK | DRAWN AJK | REVIEWED DWJ | DATE 04/18/18 | CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 2 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

37/89

76/138

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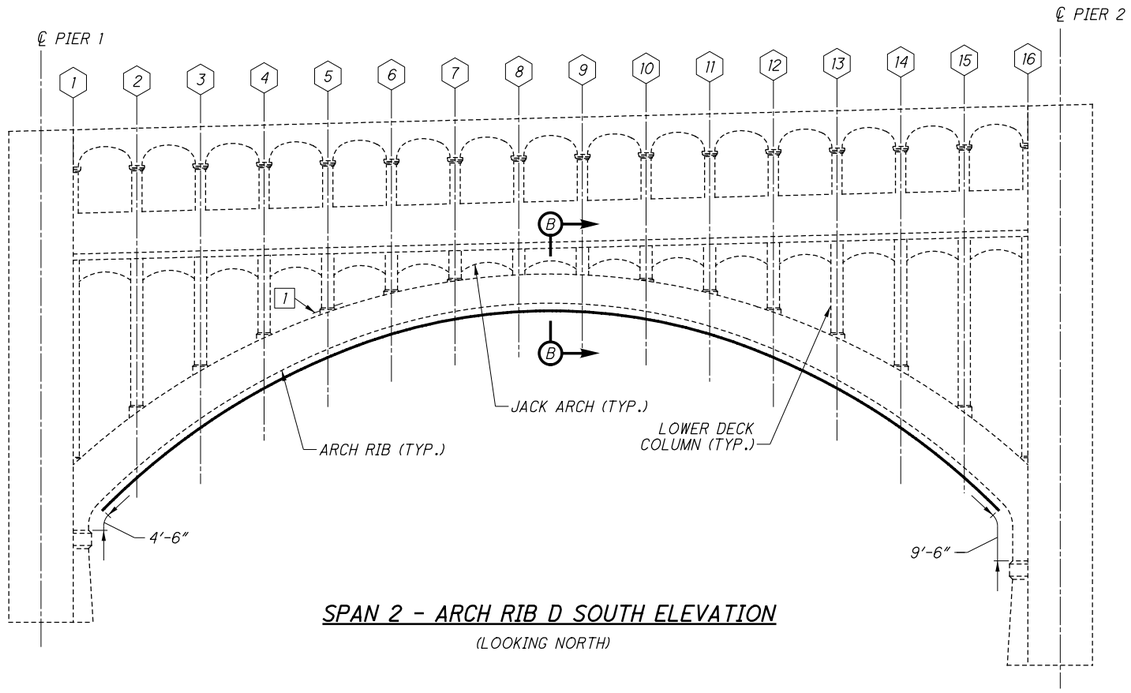
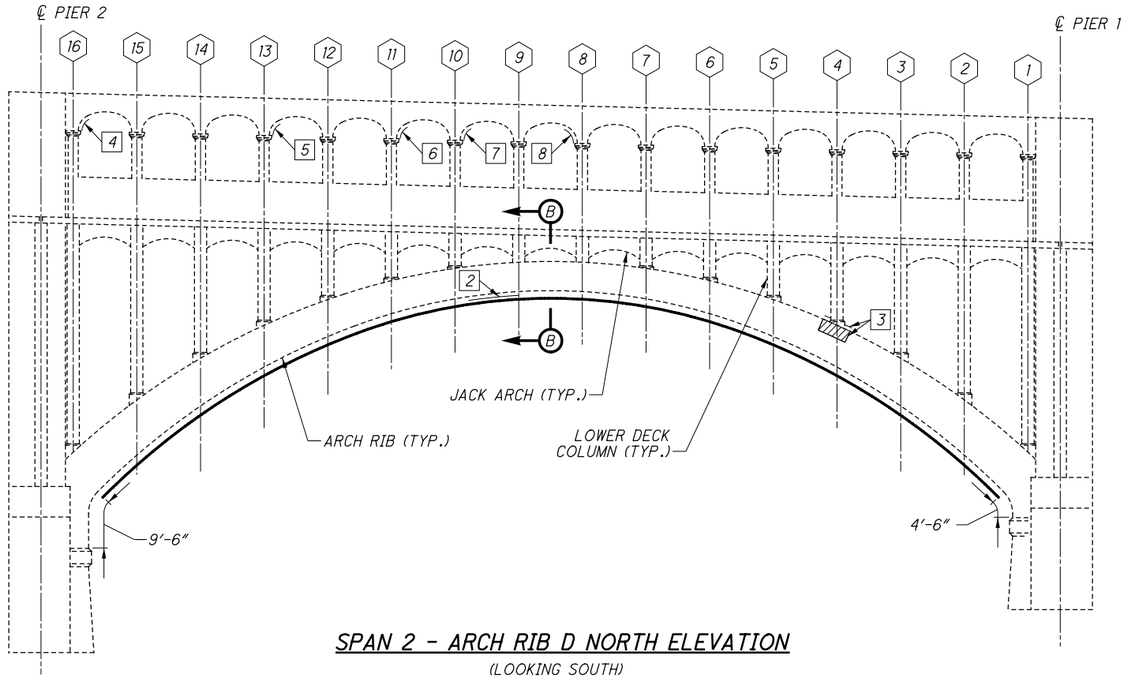


SPAN 2 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 2 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	4
2	TYPE 2	24	12
3	TYPE 1	12	3
4	TYPE 2	3	1
5	TYPE 2	3	1
6	TYPE 2	4	2
7	TYPE 2	8	3
8	TYPE 2	8	3
MEASURED QUANTITY*		67	-
PLAN QUANTITY*		101	29

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	26
TYPE 2 REPAIR	SF	75
FRP WRAP	SF	1949

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

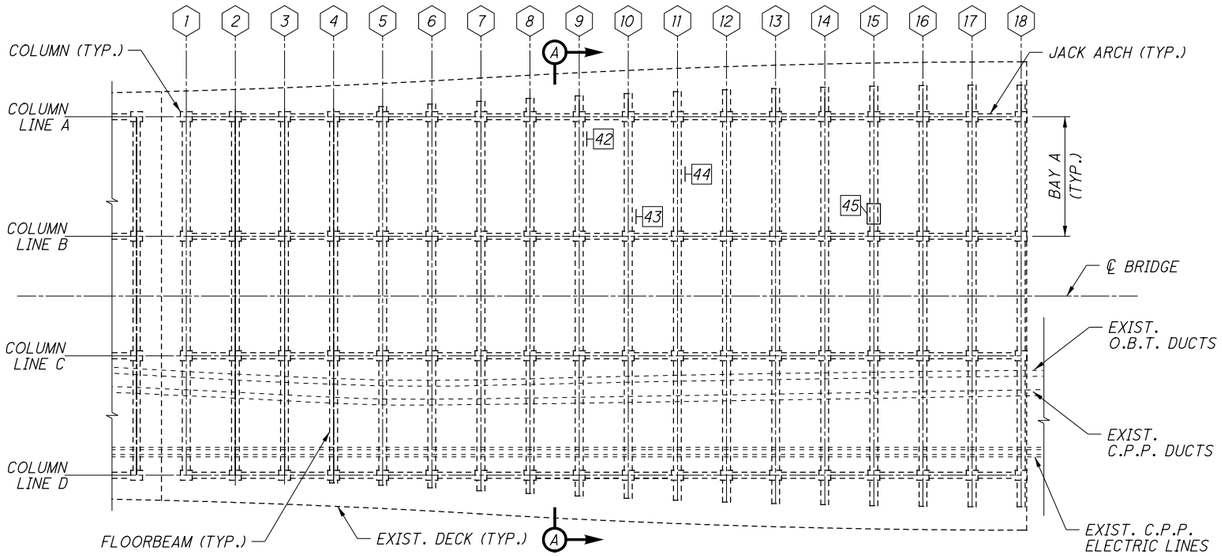
AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

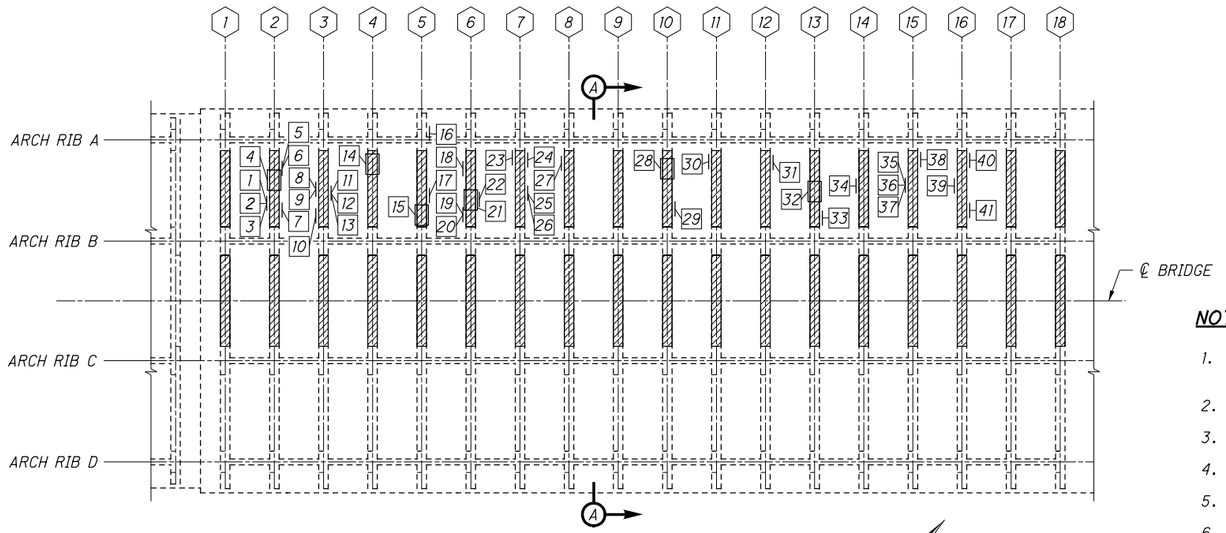
DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 2 CONCRETE REPAIR DETAILS (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 3 - UPPER DECK PLAN



SPAN 3 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	7	2
2	TYPE 1	2	1
3	TYPE 1	5	2
4	TYPE 2	13	5
5	TYPE 1	2	1
6	TYPE 1	2	1
7	TYPE 1	2	1
8	TYPE 1	3	1
9	TYPE 1	3	1
10	TYPE 1	3	1
11	TYPE 1	2	1
12	TYPE 1	2	1
13	TYPE 1	3	1
14	TYPE 2	7	3
15	TYPE 2	4	2
16	TYPE 1	10	2
17	TYPE 1	1	1
18	TYPE 1	3	1
19	TYPE 1	2	1
20	TYPE 1	2	1

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 2	9	7
22	TYPE 1	5	4
23	TYPE 1	2	1
24	TYPE 1	3	2
25	TYPE 1	2	1
26	TYPE 1	3	1
27	TYPE 1	1	1
28	TYPE 2	4	1
29	TYPE 1	2	1
30	TYPE 1	3	1
31	TYPE 1	3	1
32	TYPE 2	7	3
33	TYPE 1	2	1
34	TYPE 1	6	2
35	TYPE 1	5	2
36	TYPE 1	3	1
37	TYPE 1	2	1
38	TYPE 1	1	1
39	TYPE 1	6	1
40	TYPE 1	2	1
41	TYPE 1	8	2
42	TYPE 1	4	2
43	TYPE 1	9	2
44	TYPE 1	5	3
45	TYPE 2	1	1
MEASURED QUANTITY*		176	-
PLAN QUANTITY*		264	74

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	197
TYPE 2 REPAIR	SF	67
FRP WRAP	SF	3090

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18

CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 3 CONCRETE REPAIR DETAILS (1 OF 3)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

39/89

78/138

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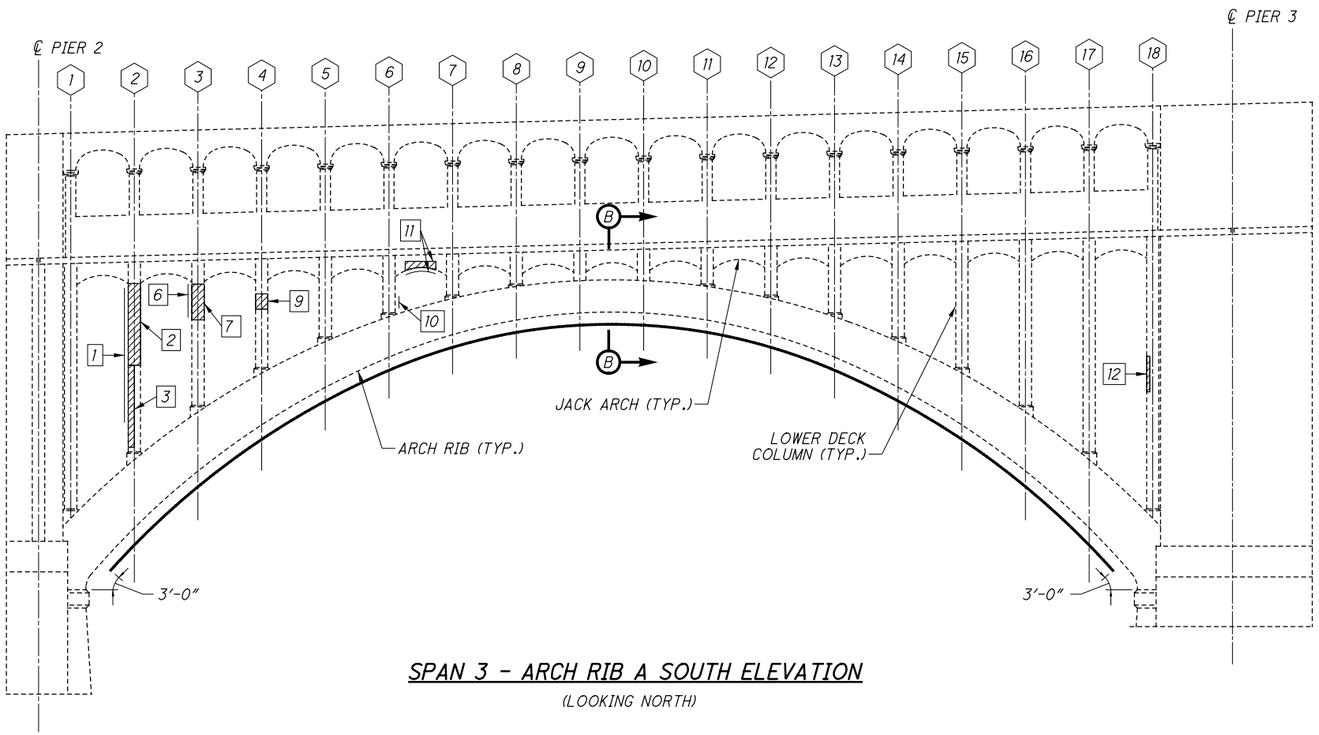
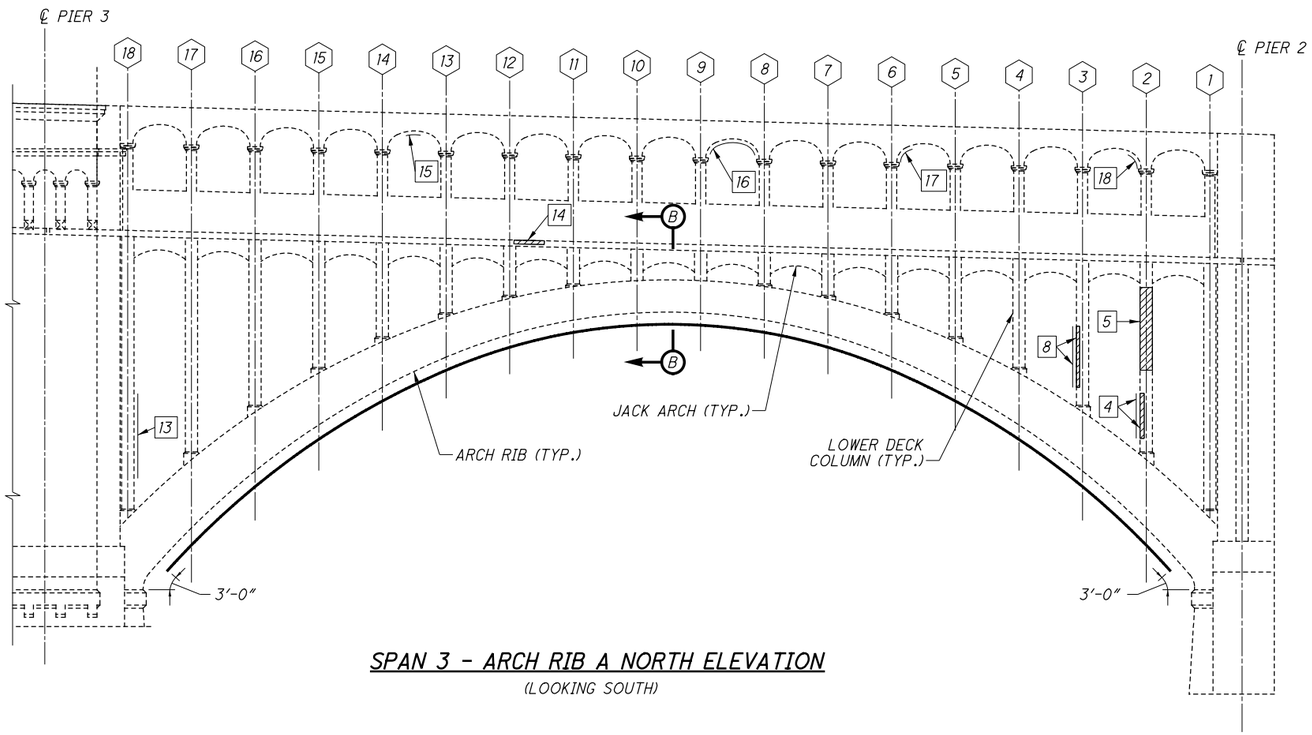


SPAN 3 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 3 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	96	22
2	TYPE 1	27	7
3	TYPE 1	14	7
4	TYPE 1	10	4
5	TYPE 1	27	7
6	TYPE 1	19	6
7	TYPE 1	12	3
8	TYPE 1	10	5
9	TYPE 1	5	1
10	TYPE 1	2	1
11	TYPE 1	8	4
12	TYPE 1	5	2
13	TYPE 1	7	3
14	TYPE 1	2	3
15	TYPE 2	2	1
16	TYPE 2	13	7
17	TYPE 2	4	2
18	TYPE 2	1	1
MEASURED QUANTITY*		264	-
PLAN QUANTITY*		396	86

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	366
TYPE 2 REPAIR	SF	30
FRP WRAP	SF	2300

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 3 REPAIR DETAILS, SEE SHEET 26/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

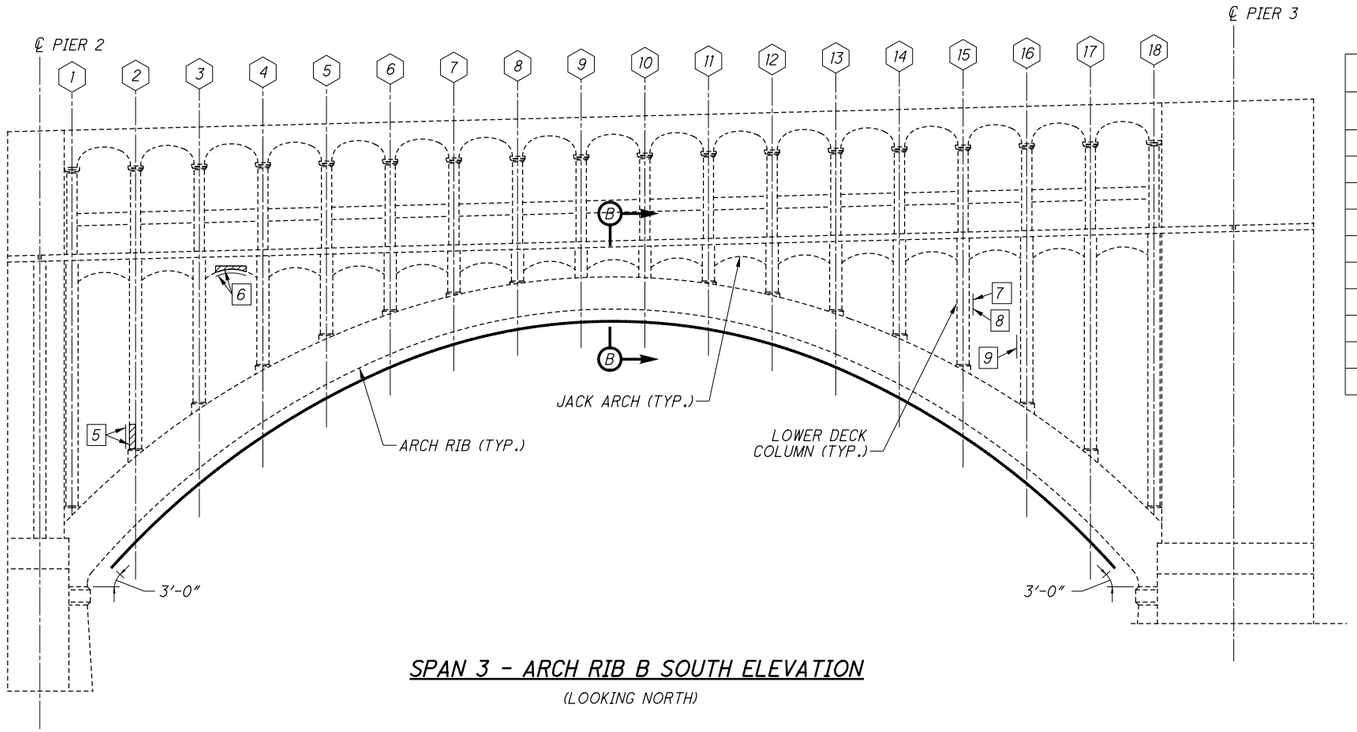
- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR.
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
TEC	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

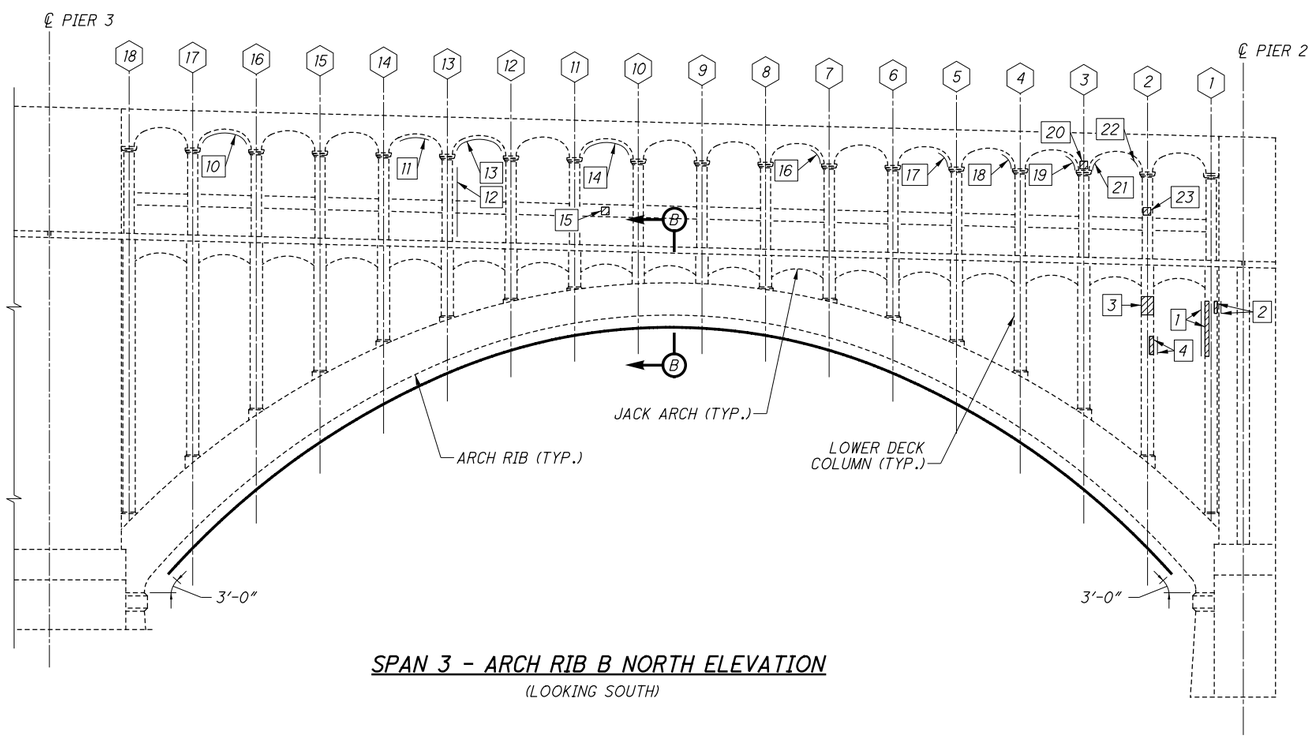
SPAN 3 CONCRETE REPAIR DETAILS (2 OF 3)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 3 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 3 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	13	5
2	TYPE 1	4	2
3	TYPE 1	2	1
4	TYPE 1	4	2
5	TYPE 1	8	2
6	TYPE 2	15	10
7	TYPE 1	2	1
8	TYPE 1	2	1
9	TYPE 1	3	1
10	TYPE 2	13	7

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
11	TYPE 2	9	5
12	TYPE 1	14	7
13	TYPE 2	13	7
14	TYPE 2	13	7
15	TYPE 1	1	1
16	TYPE 2	1	1
17	TYPE 2	1	1
18	TYPE 2	1	1
19	TYPE 2	6	4
20	TYPE 1	1	1
21	TYPE 2	6	4
22	TYPE 2	1	1
23	TYPE 1	1	1
MEASURED QUANTITY*		134	-
PLAN QUANTITY*		201	73

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	82
TYPE 2 REPAIR	SF	119
FRP WRAP	SF	2741

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 3 REPAIR DETAILS, SEE SHEET 26/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR.
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
TEC	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 3 CONCRETE REPAIR DETAILS (3 OF 3)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

41/89

80/138

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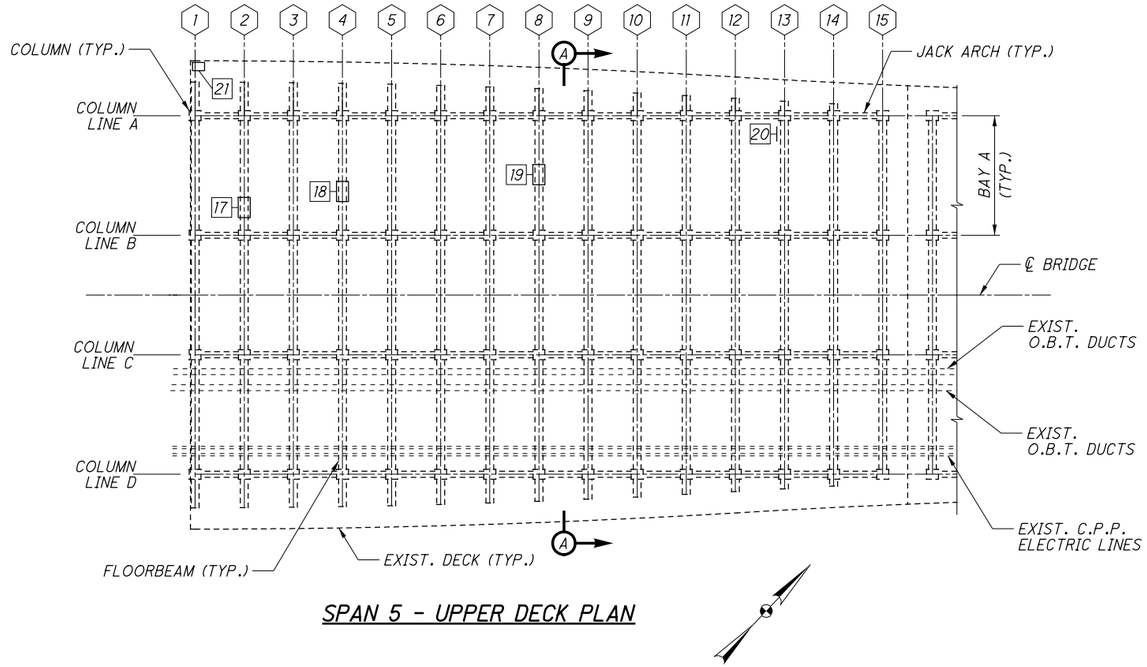
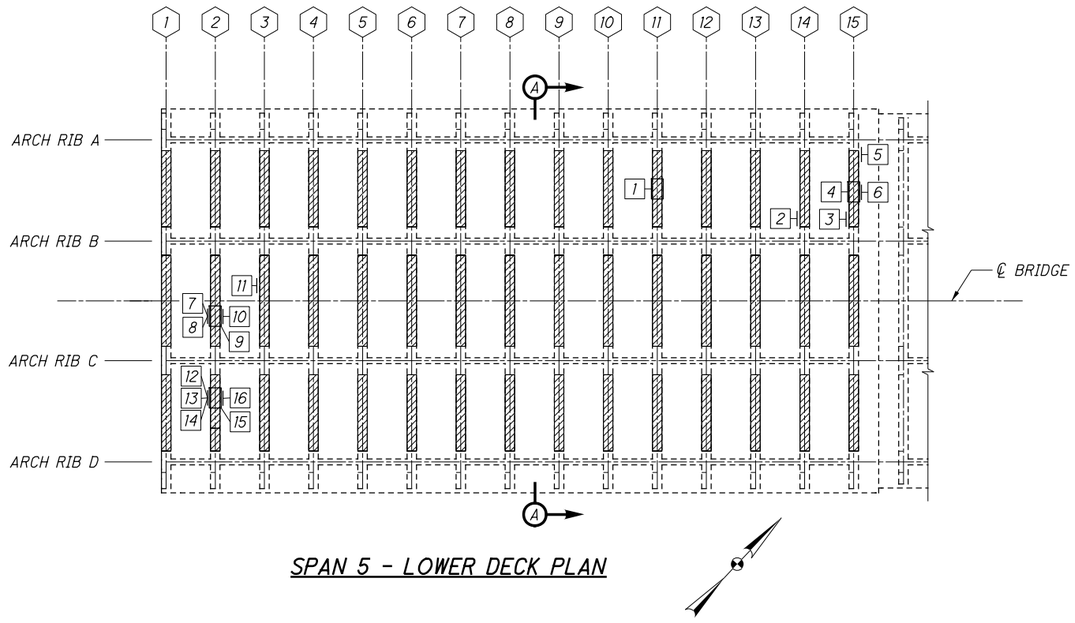


SPAN 5 - UPPER DECK PLAN



SPAN 5 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	11	4
2	TYPE 1	2	1
3	TYPE 1	5	1
4	TYPE 2	4	3
5	TYPE 1	2	1
6	TYPE 1	15	4
7	TYPE 1	17	8
8	TYPE 1	10	3
9	TYPE 2	33	13
10	TYPE 1	41	8
11	TYPE 1	12	2
12	TYPE 1	4	1
13	TYPE 1	11	2
14	TYPE 1	4	1
15	TYPE 2	14	6
16	TYPE 1	8	2
17	TYPE 2	3	2
18	TYPE 2	2	2
19	TYPE 2	1	1
20	TYPE 1	9	4
21	TYPE 2	1	1
MEASURED QUANTITY*		209	-
PLAN QUANTITY*		314	70

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	210
TYPE 2 REPAIR	SF	104
FRP WRAP	SF	3863

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18

CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 5 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

42 / 89

81 / 138

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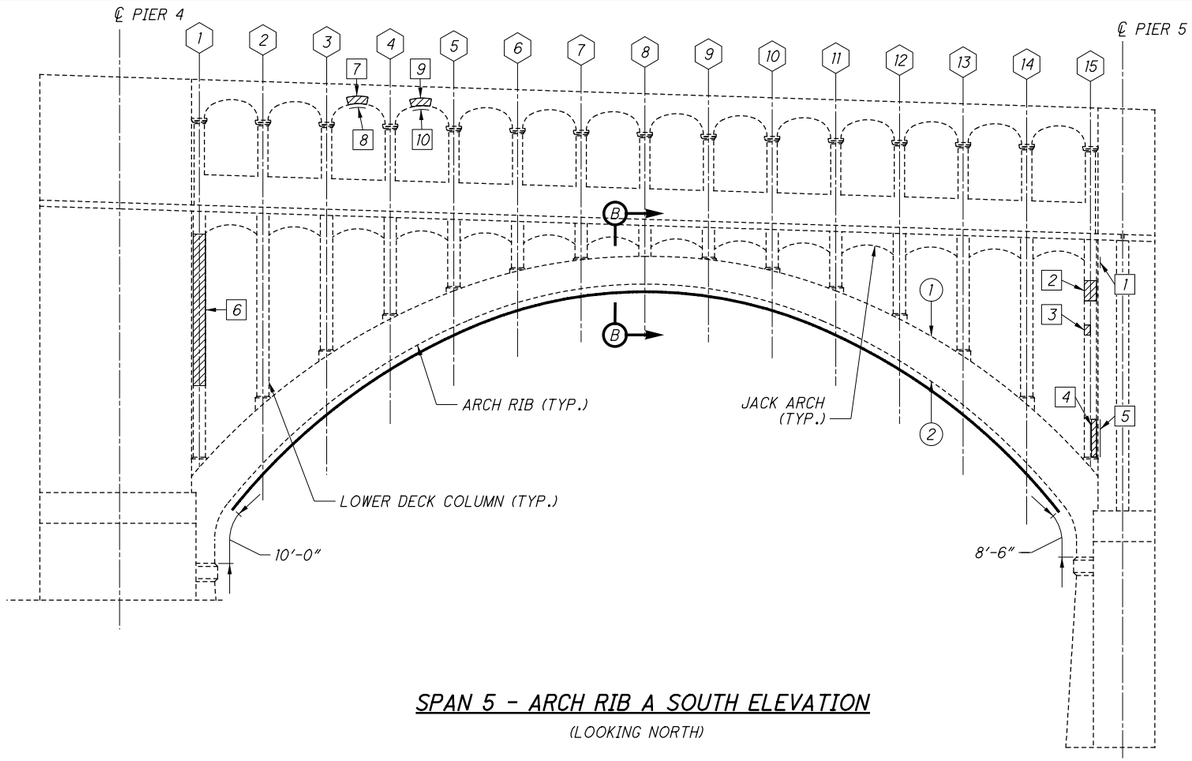
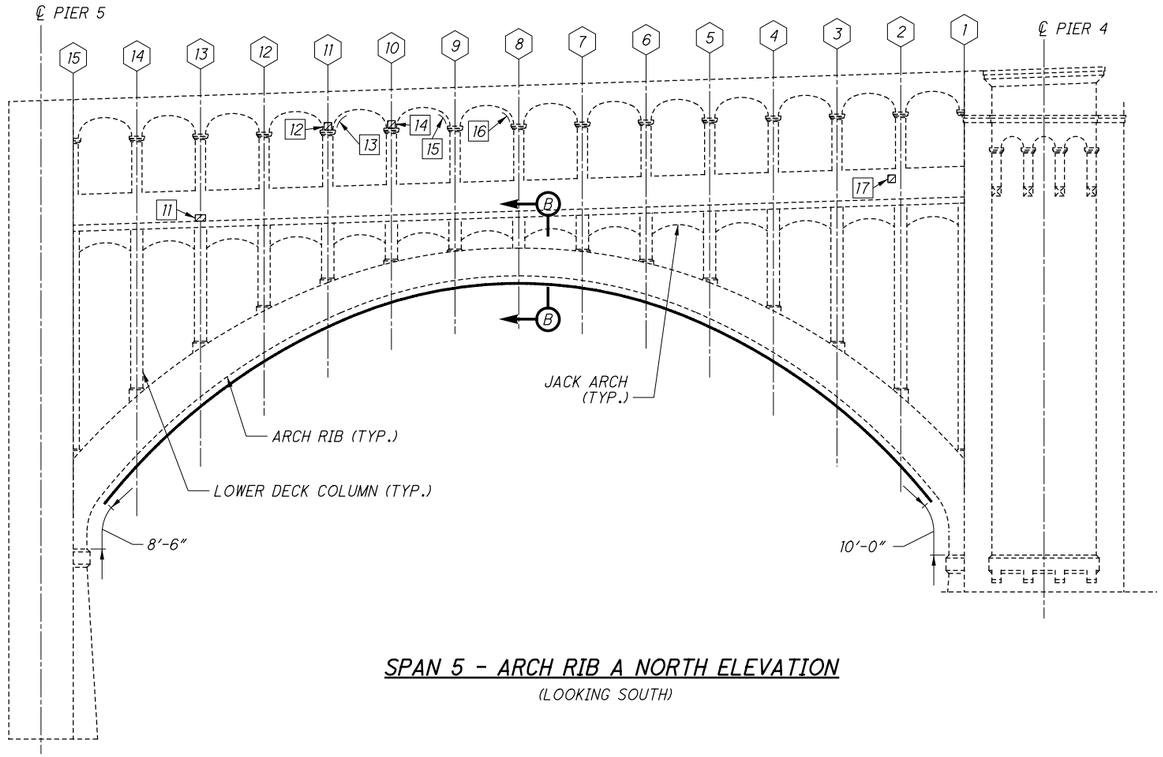


SPAN 5 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 5 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	3	1
2	TYPE 1	6	1
3	TYPE 1	2	1
4	TYPE 1	4	3
5	TYPE 1	4	2
6	TYPE 1	40	10
7	TYPE 1	3	1
8	TYPE 2	3	2
9	TYPE 1	4	1
10	TYPE 2	3	1
11	TYPE 1	2	1
12	TYPE 1	1	1
13	TYPE 2	3	2
14	TYPE 1	1	1
15	TYPE 2	4	2
16	TYPE 2	3	2
17	TYPE 1	1	1
MEASURED QUANTITY*		87	-
PLAN QUANTITY*		131	33

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

CRACK REPAIRS

REPAIR NO.	LENGTH (FT)
1	50
2	50
TOTAL	100

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	107
TYPE 2 REPAIR	SF	24
EPOXY INJECTION	FT	100
FRP WRAP	SF	1755

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 4 REPAIR DETAILS, SEE SHEET 26/89. FOR PIER 5 REPAIR DETAILS, SEE SHEET 27/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM
- (#) LOCATION OF CRACK TO BE REPAIRED IN ACCORDANCE WITH ITEM 512 - CONCRETE REPAIR BY EPOXY INJECTION

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED		STRUCTURE FILE NUMBER
BPS			1800930

SPAN 5 CONCRETE REPAIR DETAILS
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

43/89

82/138

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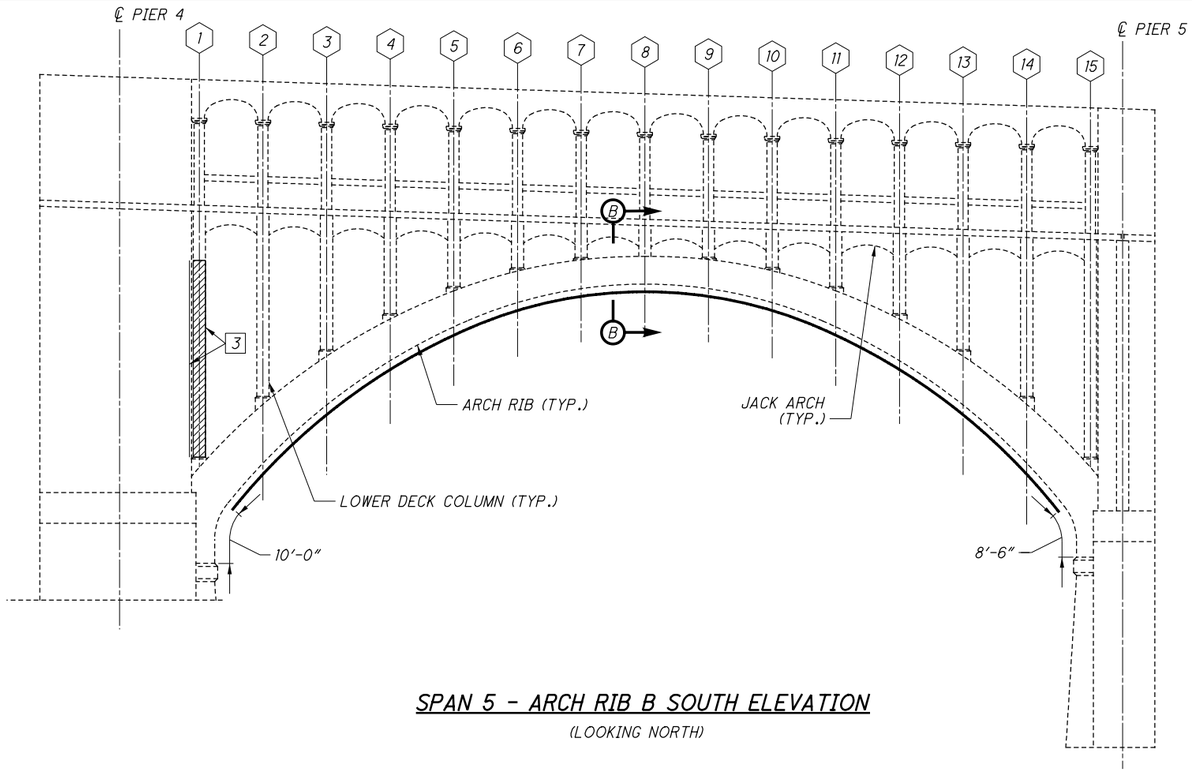
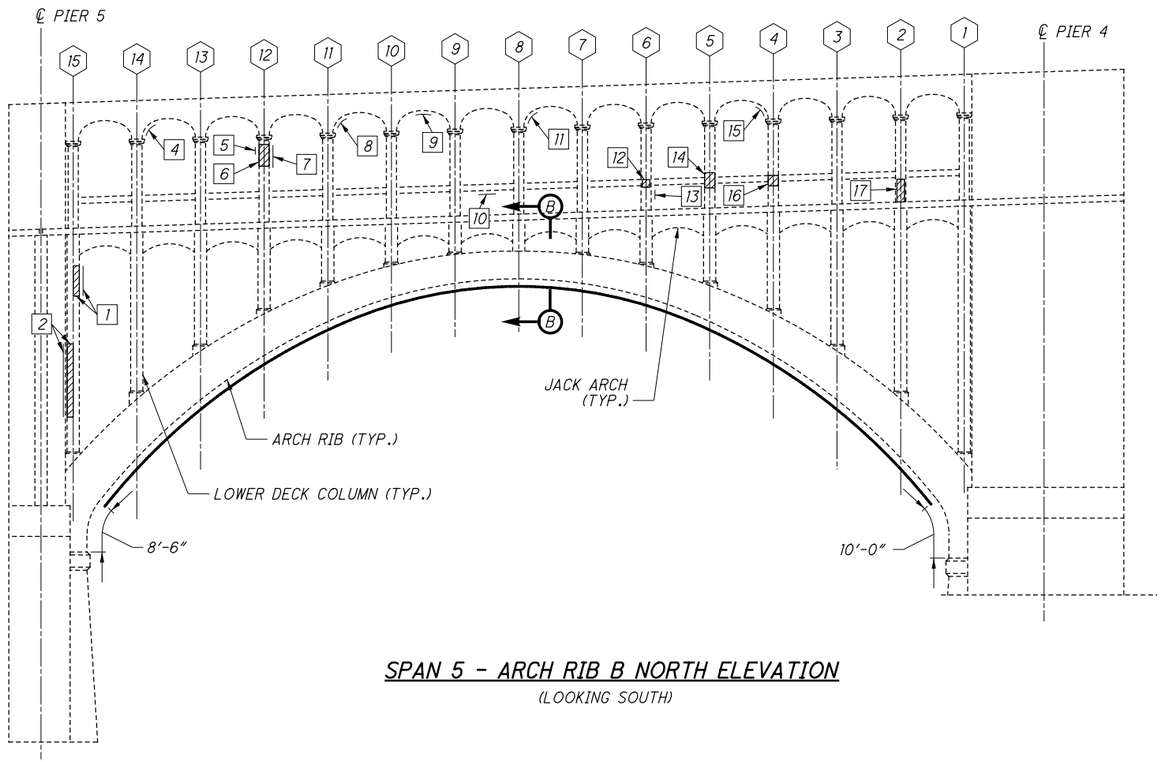


SPAN 5 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 5 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	7	2
2	TYPE 1	26	5
3	TYPE 1	96	24
4	TYPE 2	3	2
5	TYPE 1	1	1
6	TYPE 1	4	2
7	TYPE 1	3	2
8	TYPE 2	2	1
9	TYPE 2	2	1
10	TYPE 2	4	3
11	TYPE 2	3	2
12	TYPE 1	1	1
13	TYPE 1	1	1
14	TYPE 1	3	1
15	TYPE 2	3	2
16	TYPE 1	2	1
17	TYPE 1	3	2
MEASURED QUANTITY*		164	-
PLAN QUANTITY*		246	53

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	220
TYPE 2 REPAIR	SF	26
FRP WRAP	SF	2074

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 4 REPAIR DETAILS, SEE SHEET 26/89. FOR PIER 5 REPAIR DETAILS, SEE SHEET 27/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

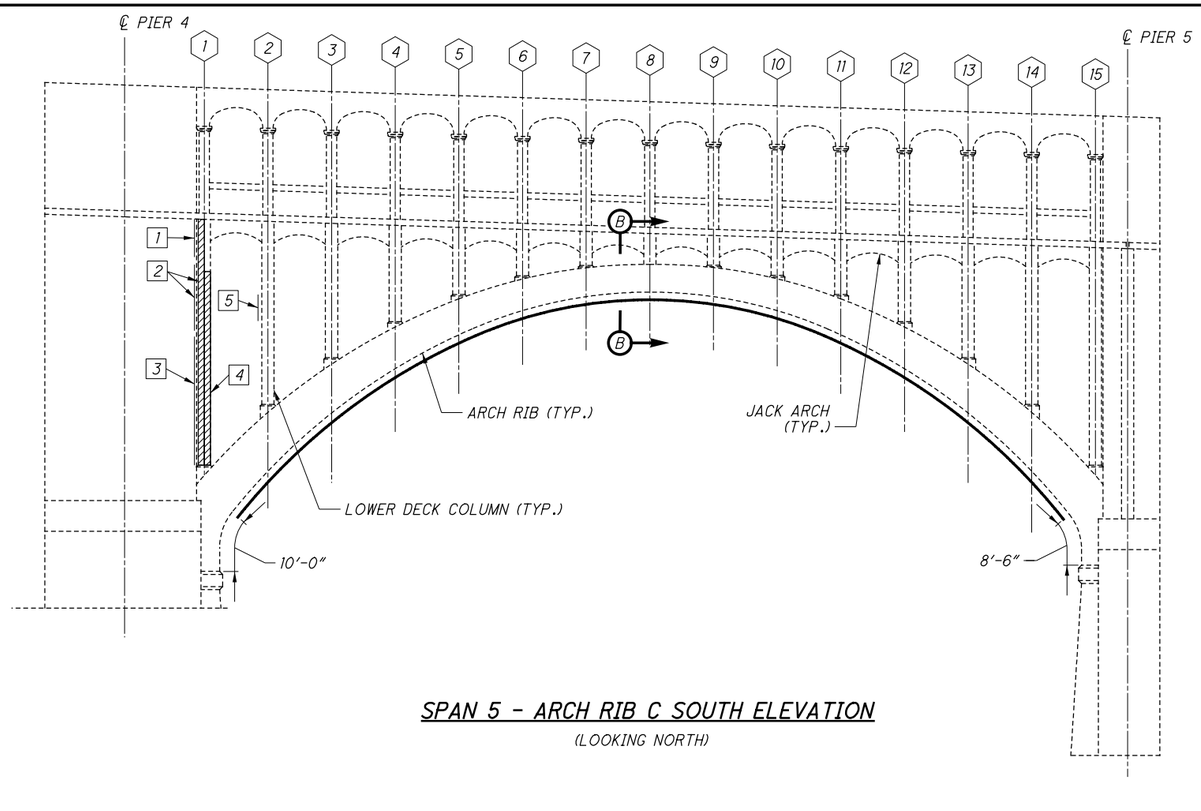
AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

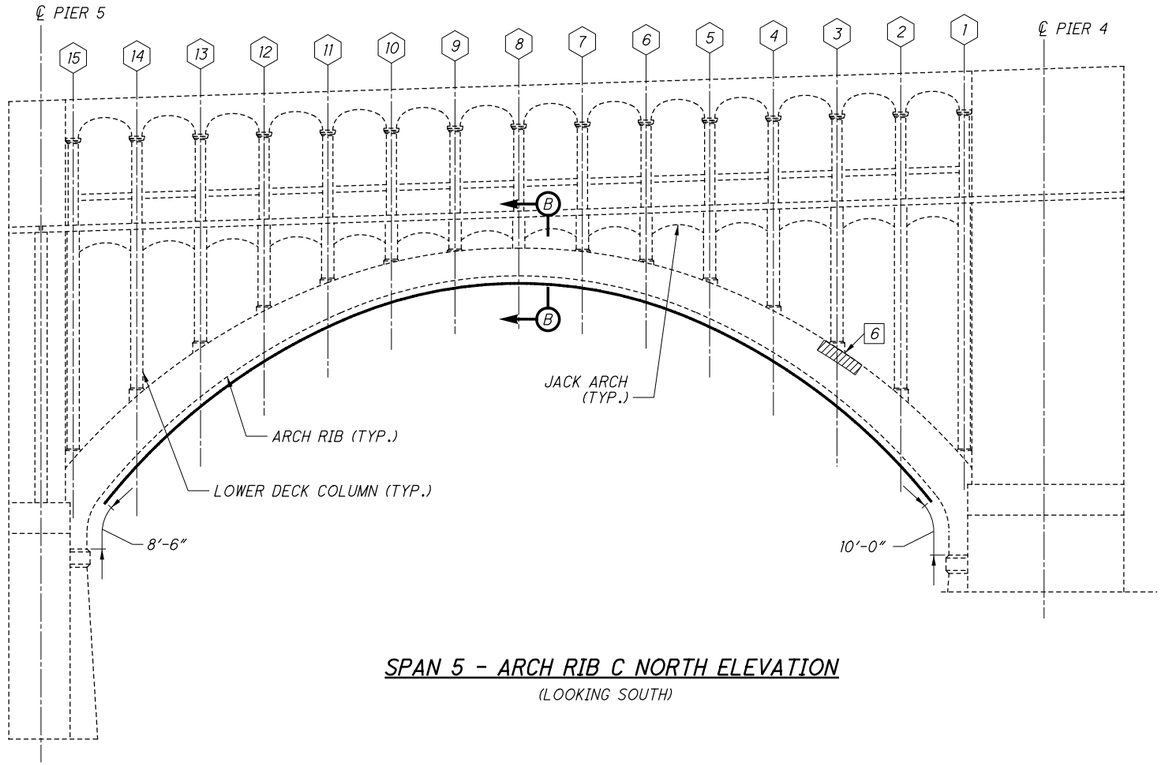
SPAN 5 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 5 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 5 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	23	6
2	TYPE 1	70	14
3	TYPE 1	60	16
4	TYPE 1	44	11
5	TYPE 1	7	2
6	TYPE 1	10	-
MEASURED QUANTITY*		214	-
PLAN QUANTITY*		321	49

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	321
TYPE 2 REPAIR	SF	-
FRP WRAP	SF	2074

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 4 REPAIR DETAILS, SEE SHEET 26/89. FOR PIER 5 REPAIR DETAILS, SEE SHEET 27/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 5 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

45/89

84/138

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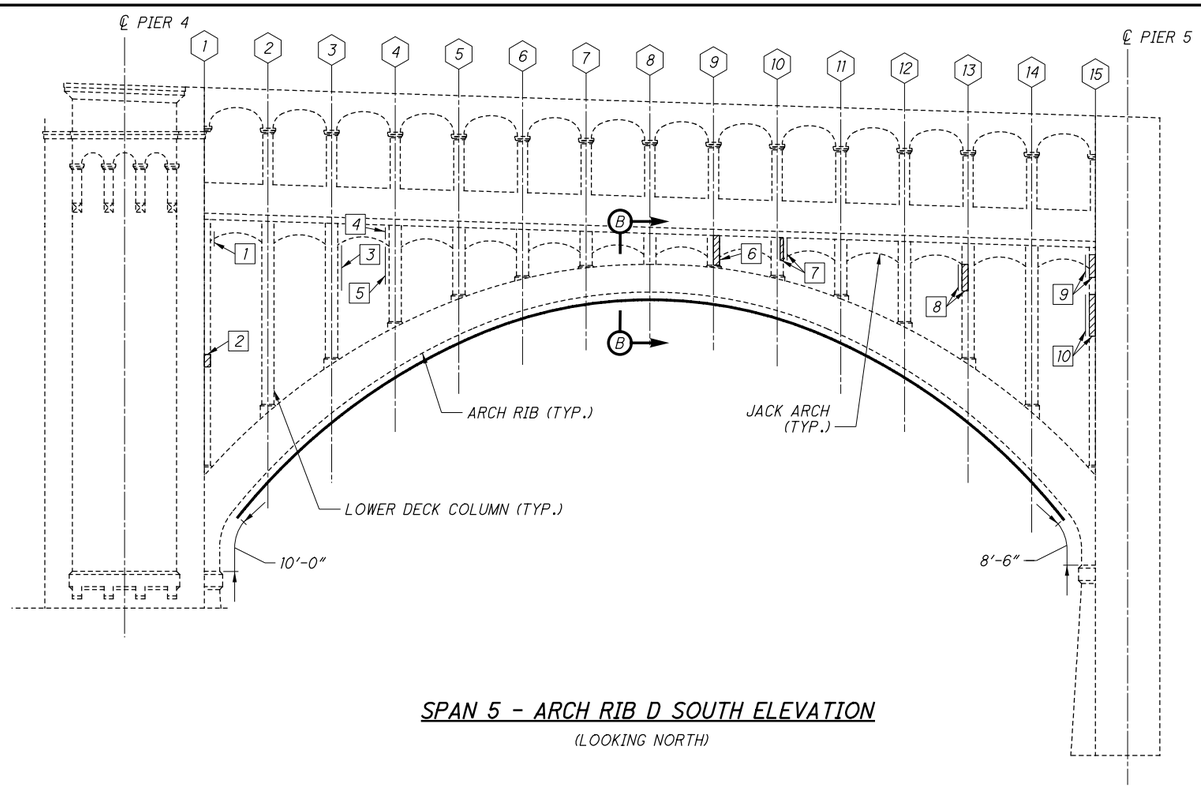
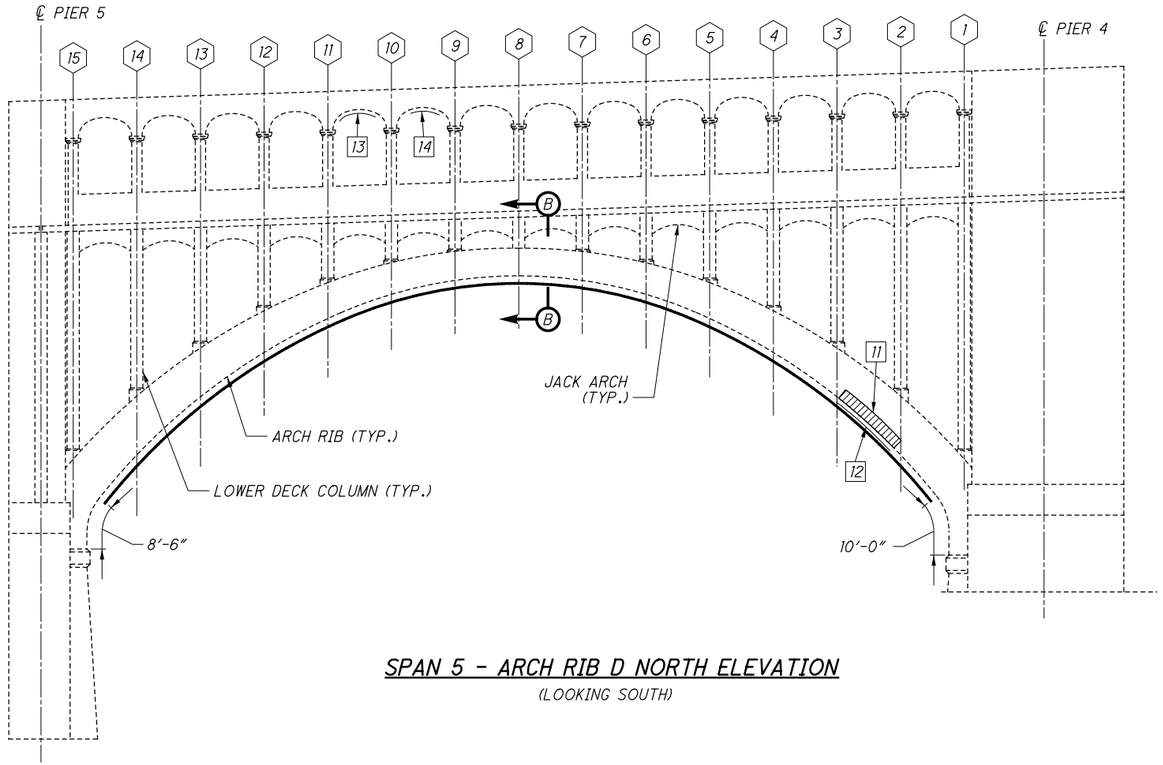


SPAN 5 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 5 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	1
2	TYPE 1	4	1
3	TYPE 1	12	3
4	TYPE 1	4	1
5	TYPE 1	15	6
6	TYPE 1	4	2
7	TYPE 1	3	2
8	TYPE 1	7	2
9	TYPE 1	9	2
10	TYPE 1	16	3
11	TYPE 1	15	-
12	TYPE 1	15	7
13	TYPE 2	6	4
14	TYPE 2	5	4
MEASURED QUANTITY*		120	-
PLAN QUANTITY*		180	38

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	164
TYPE 2 REPAIR	SF	16
FRP WRAP	SF	1755

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET [84/89].
6. FOR PIER 4 REPAIR DETAILS, SEE SHEET [26/89]. FOR PIER 5 REPAIR DETAILS, SEE SHEET [27/89].
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET [85/89].

LEGEND:

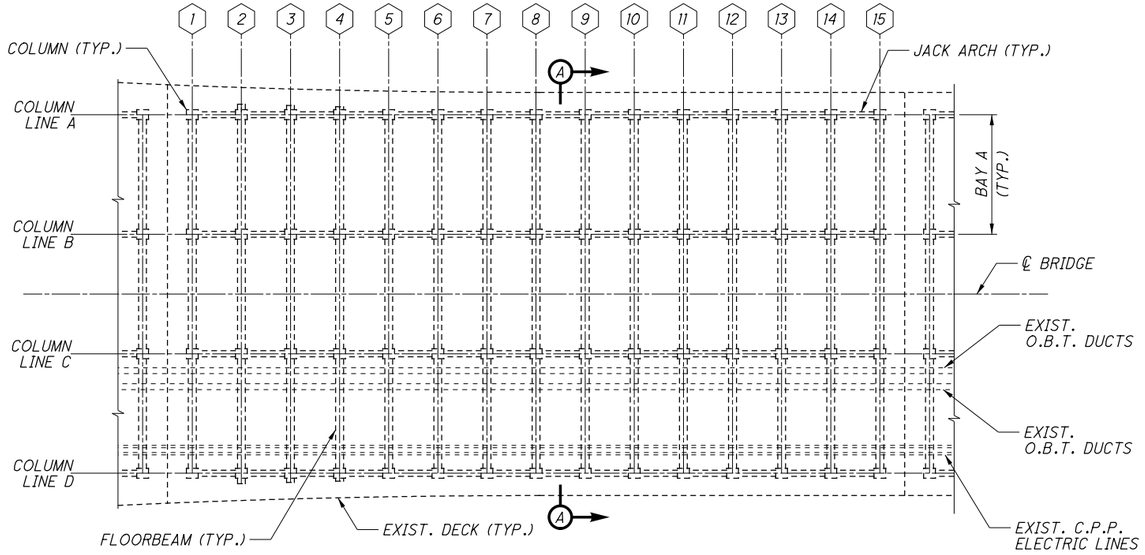
- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

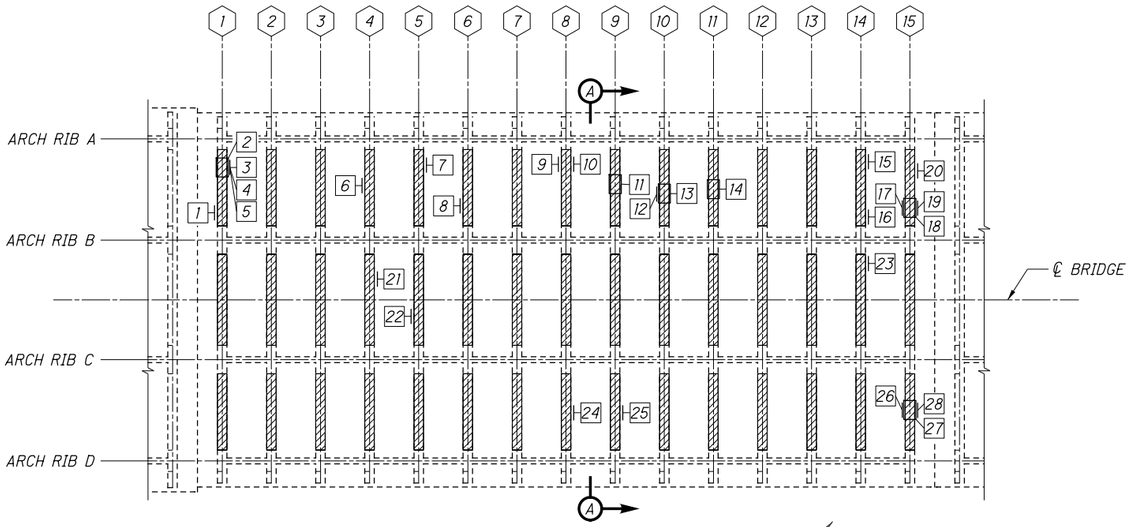
DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 5 CONCRETE REPAIR DETAILS (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 6 - UPPER DECK PLAN



SPAN 6 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	3
2	TYPE 2	11	4
3	TYPE 1	6	1
4	TYPE 1	3	1
5	TYPE 1	3	1
6	TYPE 1	7	2
7	TYPE 1	2	1
8	TYPE 1	1	1
9	TYPE 1	2	1
10	TYPE 1	8	2
11	TYPE 2	7	3
12	TYPE 1	6	2
13	TYPE 2	51	20
14	TYPE 2	7	4
15	TYPE 1	4	1
16	TYPE 1	6	5
17	TYPE 1	21	5
18	TYPE 2	6	8
19	TYPE 1	13	4
20	TYPE 1	12	4
21	TYPE 1	6	3
22	TYPE 1	5	1
23	TYPE 1	6	1
24	TYPE 1	6	1
25	TYPE 1	51	12
26	TYPE 1	26	12
27	TYPE 2	51	20
28	TYPE 1	26	12
MEASURED QUANTITY*		363	-
PLAN QUANTITY*		545	135

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	345
TYPE 2 REPAIR	SF	200
FRP WRAP	SF	3863

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18

CHECKED	REVISED	STRUCTURE FILE NUMBER
DEA		1800930

SPAN 6 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

47/89

86/138

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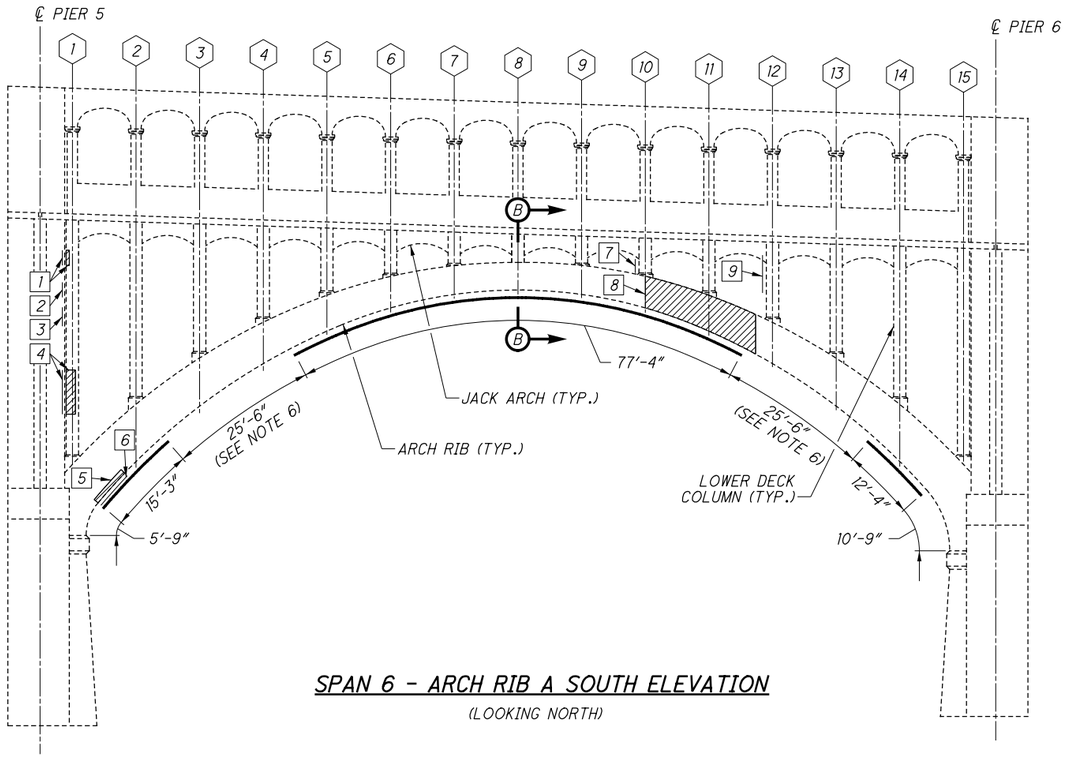
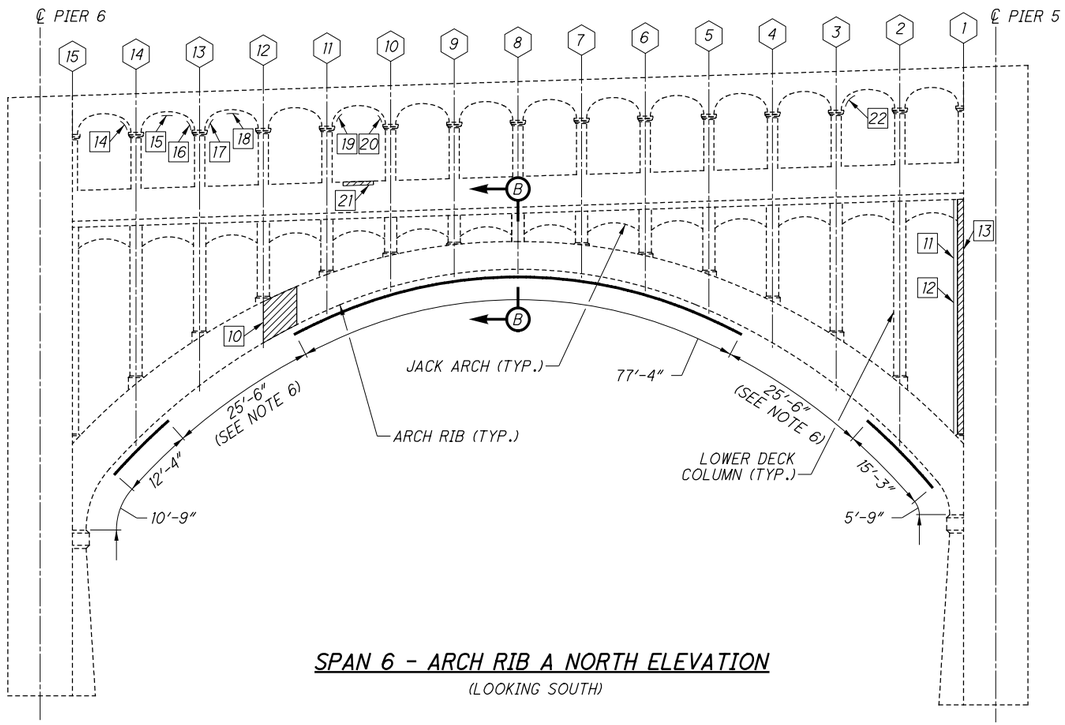


SPAN 6 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 6 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	1
2	TYPE 1	2	1
3	TYPE 1	4	1
4	TYPE 1	13	3
5	TYPE 1	4	-
6	TYPE 2	4	3
7	TYPE 1	4	1
8	TYPE 1	68	-
9	TYPE 1	15	6
10	TYPE 1	20	-
11	TYPE 1	104	30
12	TYPE 1	8	2
13	TYPE 1	26	15

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
14	TYPE 2	2	1
15	TYPE 2	1	1
16	TYPE 2	1	1
17	TYPE 2	1	1
18	TYPE 2	1	1
19	TYPE 2	1	1
20	TYPE 2	1	1
21	TYPE 1	2	3
22	TYPE 2	2	1
MEASURED QUANTITY*		286	-
PLAN QUANTITY*		429	74

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	408
TYPE 2 REPAIR	SF	21
FRP WRAP	SF	1154

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FRP WRAP WILL NOT BE USED FOR WRAPPING THE UNREINFORCED SECTIONS OF THE CONCRETE ARCH RIBS.
7. FOR PIER 5 AND PIER 6 REPAIR DETAILS, SEE SHEET 27/89.
8. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED AJK | DRAWN AJK | REVIEWED DWJ | DATE 04/18/18 | CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 6 CONCRETE REPAIR DETAILS (2 OF 5)

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56

PID No. 99972

48/89

87/138

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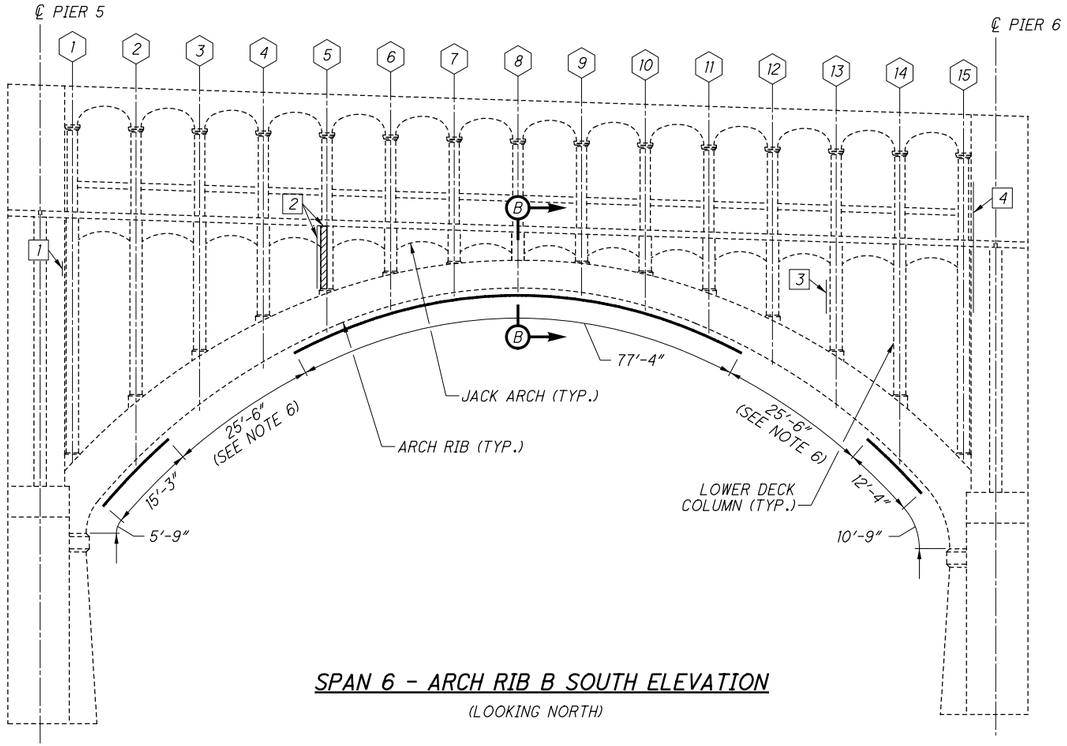
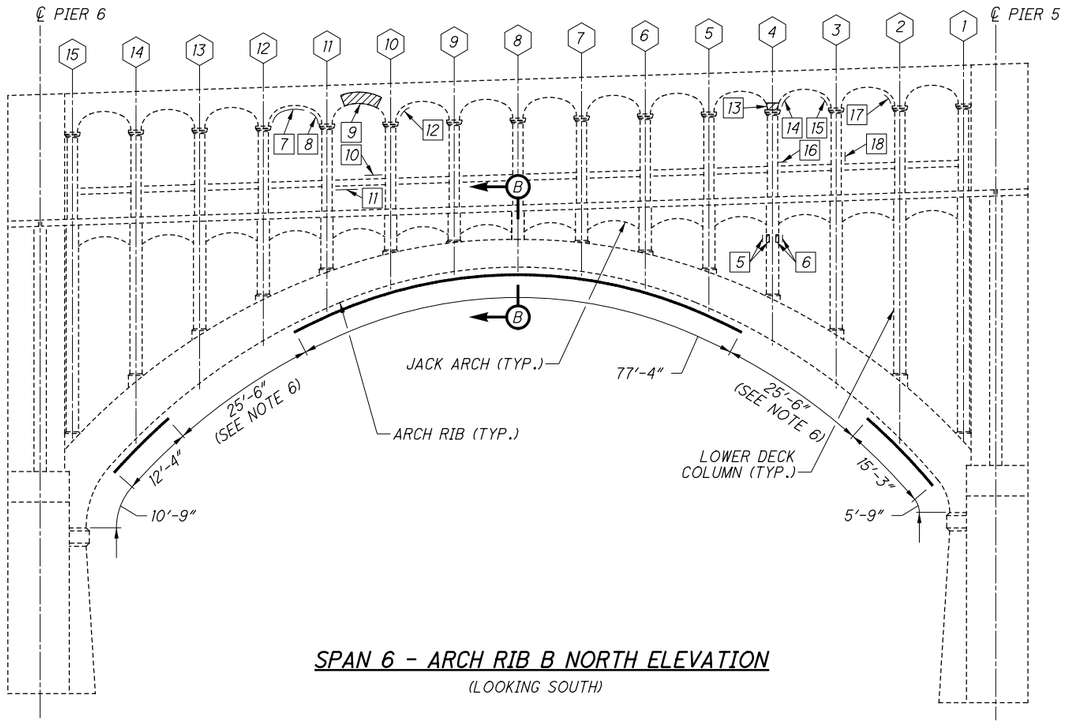


SPAN 6 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 6 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	1
2	TYPE 1	17	5
3	TYPE 1	16	4
4	TYPE 1	35	9
5	TYPE 1	1	1
6	TYPE 1	1	1
7	TYPE 2	16	6
8	TYPE 2	8	3
9	TYPE 1	6	2
10	TYPE 1	3	2

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
11	TYPE 2	3	2
12	TYPE 2	1	1
13	TYPE 1	2	1
14	TYPE 2	3	2
15	TYPE 2	2	1
16	TYPE 1	1	1
17	TYPE 2	3	2
18	TYPE 1	1	1
MEASURED QUANTITY*		121	-
PLAN QUANTITY*		182	45

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	128
TYPE 2 REPAIR	SF	54
FRP WRAP	SF	1364

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FRP WRAP WILL NOT BE USED FOR WRAPPING THE UNREINFORCED SECTIONS OF THE CONCRETE ARCH RIBS.
7. FOR PIER 5 AND PIER 6 REPAIR DETAILS, SEE SHEET 27/89.
8. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

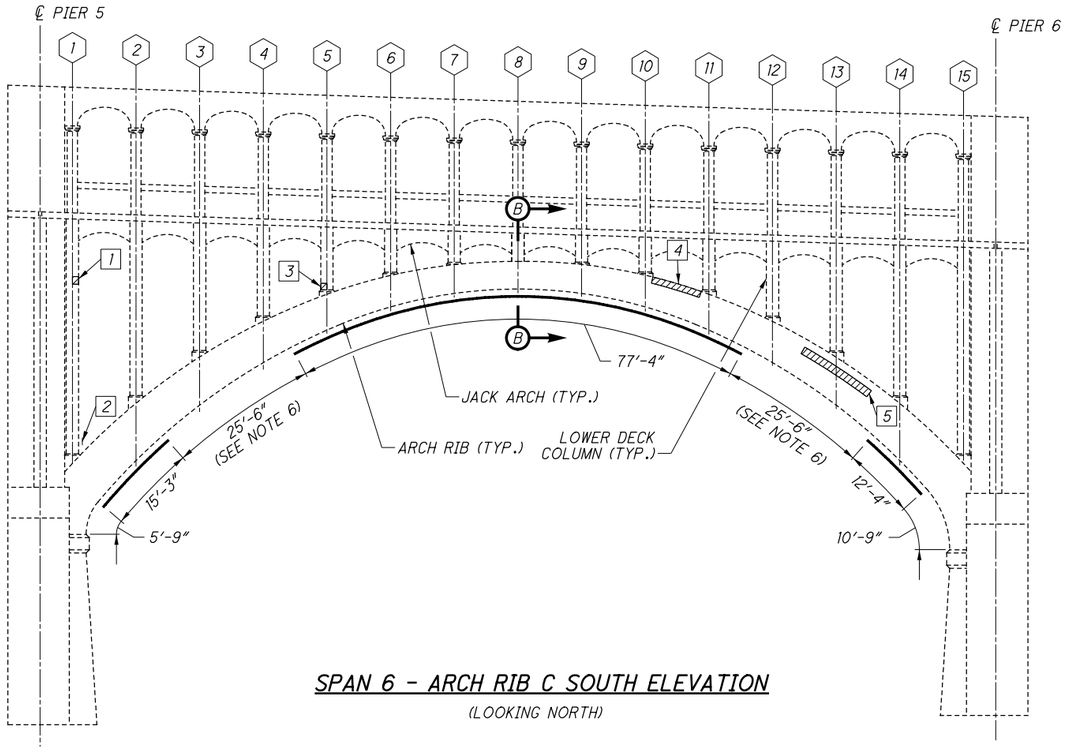
AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

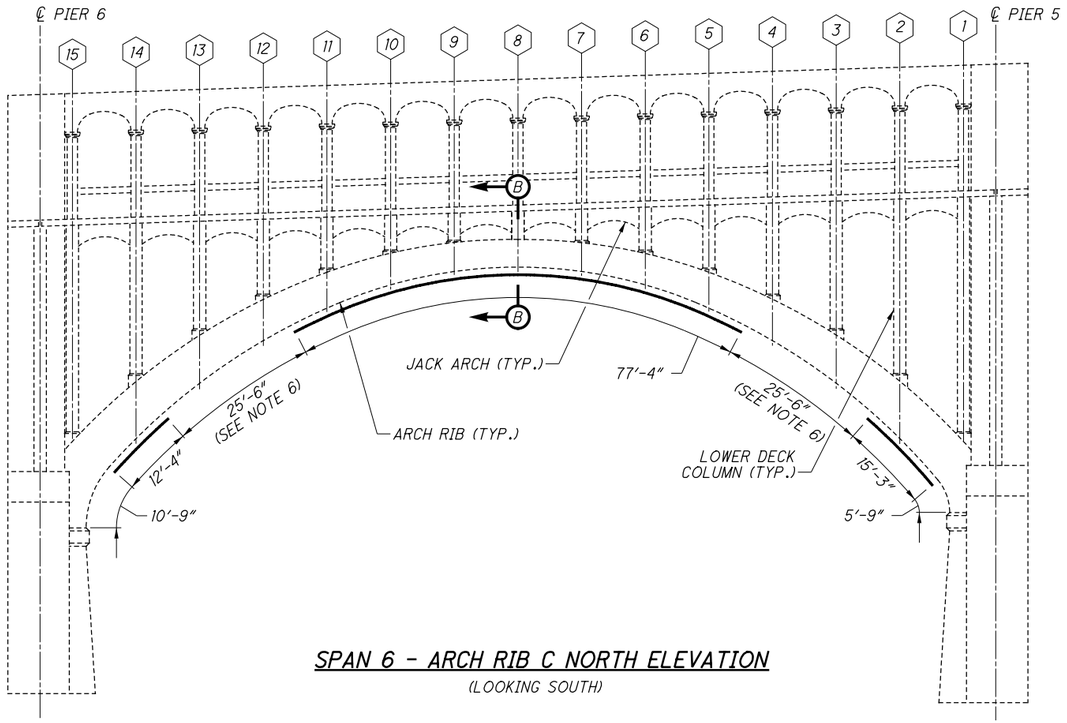
SPAN 6 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 6 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 6 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	1	1
2	TYPE 1	1	1
3	TYPE 1	1	1
4	TYPE 1	5	-
5	TYPE 1	10	-
MEASURED QUANTITY*		18	-
PLAN QUANTITY*		27	3

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	27
TYPE 2 REPAIR	SF	-
FRP WRAP	SF	1364

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FRP WRAP WILL NOT BE USED FOR WRAPPING THE UNREINFORCED SECTIONS OF THE CONCRETE ARCH RIBS.
7. FOR PIER 5 AND PIER 6 REPAIR DETAILS, SEE SHEET 27/89.
8. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 6 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

50/89

89/138

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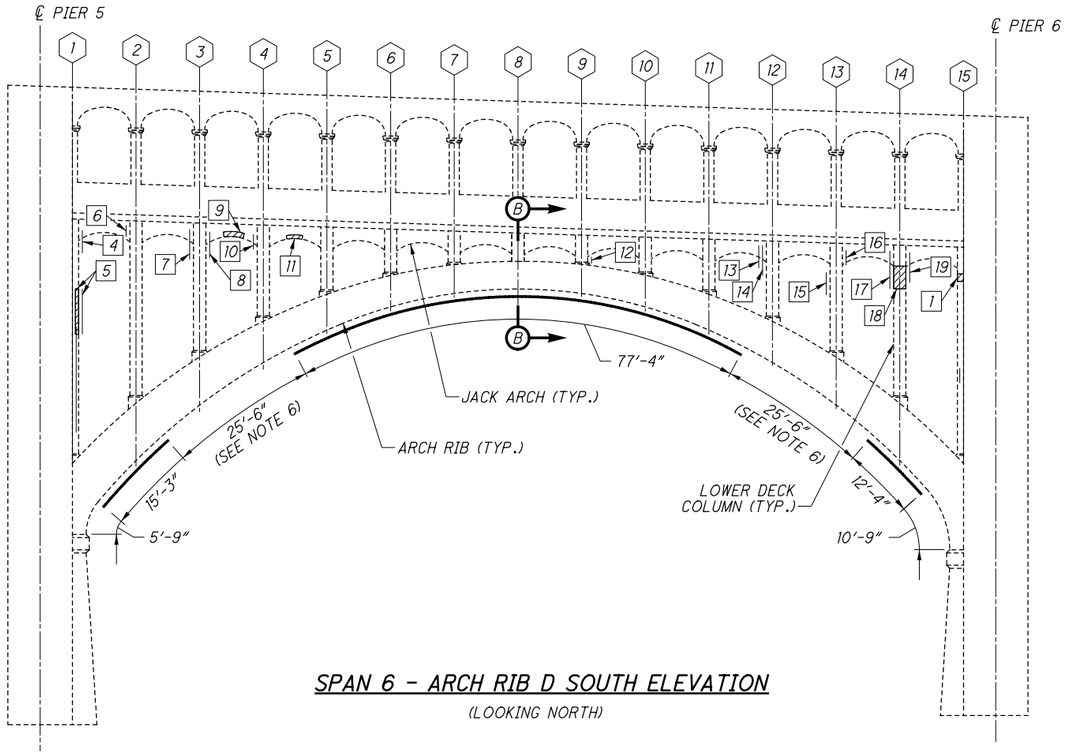
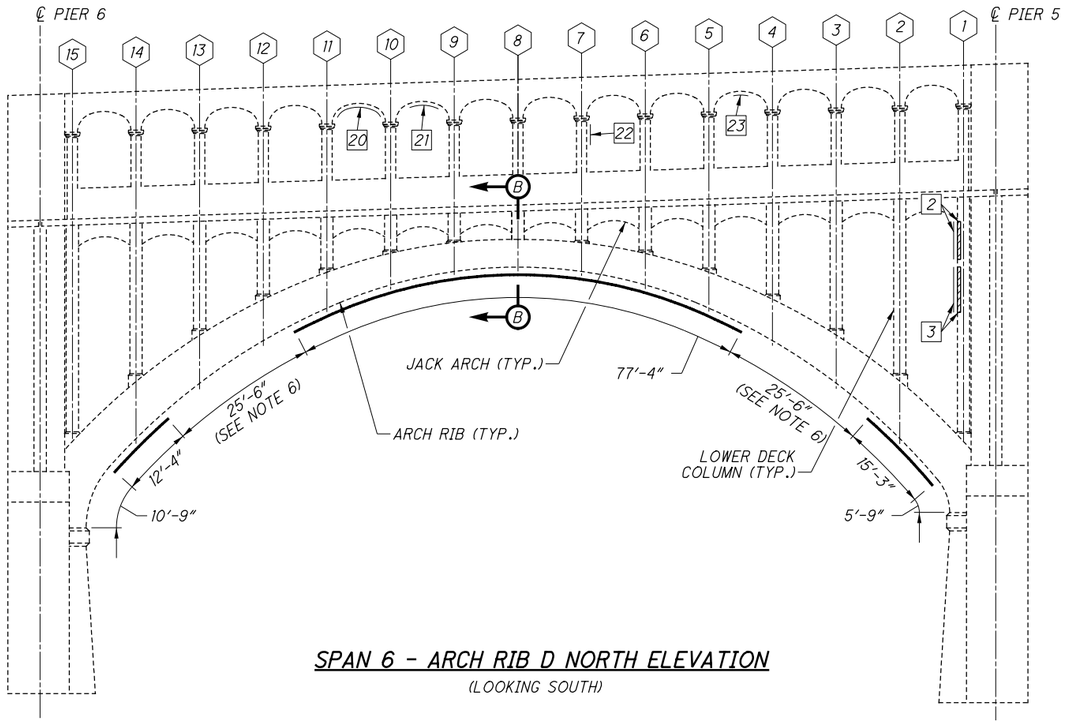


SPAN 6 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 6 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	1	2
2	TYPE 1	6	3
3	TYPE 1	6	1
4	TYPE 1	3	4
5	TYPE 1	14	4
6	TYPE 1	14	2
7	TYPE 1	2	1
8	TYPE 1	4	2
9	TYPE 1	1	1
10	TYPE 1	1	4
11	TYPE 1	9	2
12	TYPE 1	8	2

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
13	TYPE 1	4	1
14	TYPE 1	10	3
15	TYPE 1	6	2
16	TYPE 1	8	2
17	TYPE 1	1	1
18	TYPE 1	5	3
19	TYPE 1	6	3
20	TYPE 2	10	7
21	TYPE 2	4	3
22	TYPE 1	5	4
23	TYPE 2	2	1
MEASURED QUANTITY*		132	-
PLAN QUANTITY*		198	58

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	174
TYPE 2 REPAIR	SF	24
FRP WRAP	SF	1154

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FRP WRAP WILL NOT BE USED FOR WRAPPING THE UNREINFORCED SECTIONS OF THE CONCRETE ARCH RIBS.
7. FOR PIER 5 AND PIER 6 REPAIR DETAILS, SEE SHEET 27/89.
8. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

SPAN 6 CONCRETE REPAIR DETAILS (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

51/89

90/138

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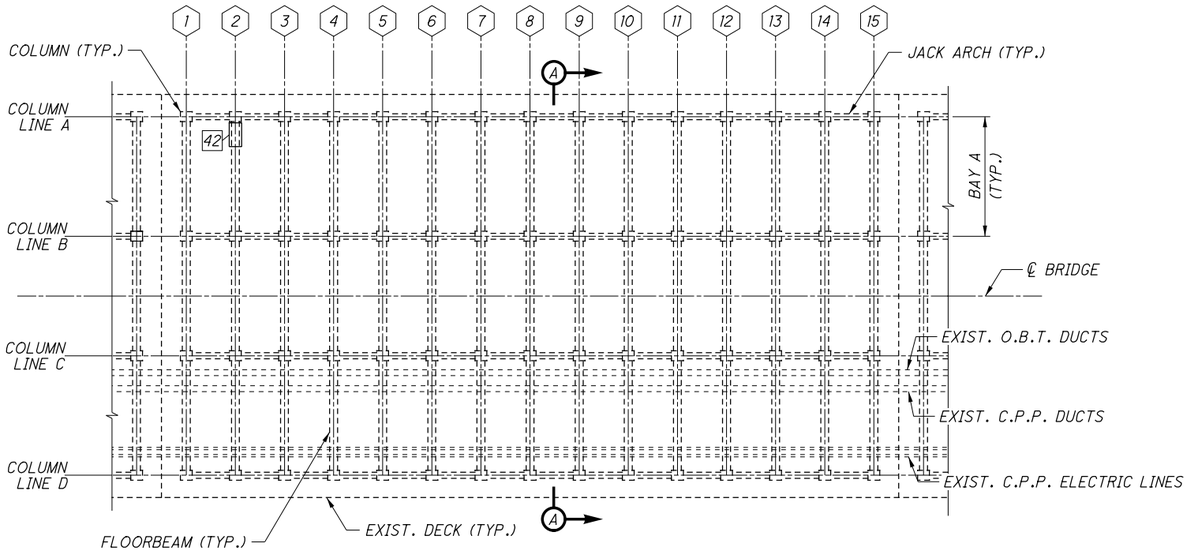
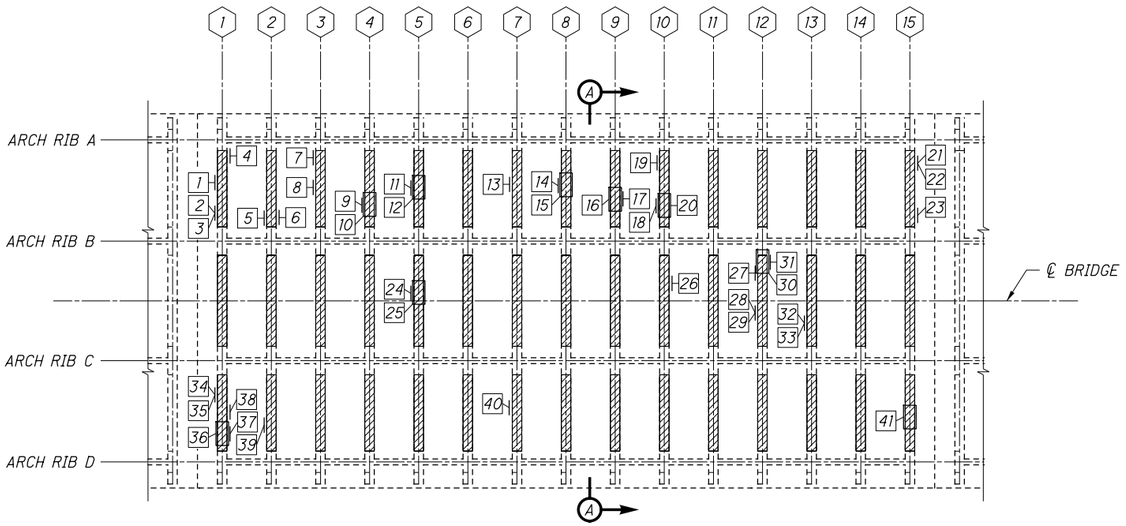


SPAN 7 - UPPER DECK PLAN



SPAN 7 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	8	2
2	TYPE 1	20	4
3	TYPE 1	5	1
4	TYPE 1	4	1
5	TYPE 1	2	1
6	TYPE 1	2	1
7	TYPE 1	8	2
8	TYPE 1	21	6
9	TYPE 1	25	4
10	TYPE 2	22	9
11	TYPE 1	6	3
12	TYPE 2	1	1
13	TYPE 1	16	4
14	TYPE 1	6	3
15	TYPE 2	30	12
16	TYPE 2	5	2
17	TYPE 1	4	1
18	TYPE 1	6	2
19	TYPE 1	3	2
20	TYPE 2	3	3
21	TYPE 1	20	6

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
22	TYPE 1	5	1
23	TYPE 1	19	6
24	TYPE 1	12	4
25	TYPE 2	4	3
26	TYPE 1	6	2
27	TYPE 1	4	1
28	TYPE 1	17	3
29	TYPE 1	13	2
30	TYPE 2	2	2
31	TYPE 1	3	1
32	TYPE 1	2	1
33	TYPE 1	2	1
34	TYPE 1	16	6
35	TYPE 1	6	2
36	TYPE 2	3	3
37	TYPE 1	3	2
38	TYPE 1	10	2
39	TYPE 1	33	12
40	TYPE 1	21	4
41	TYPE 2	13	8
42	TYPE 2	1	1
MEASURED QUANTITY*		412	-
PLAN QUANTITY*		618	137

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	492
TYPE 2 REPAIR	SF	126
FRP WRAP	SF	3863

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

SPAN 7 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

52/89
91/138

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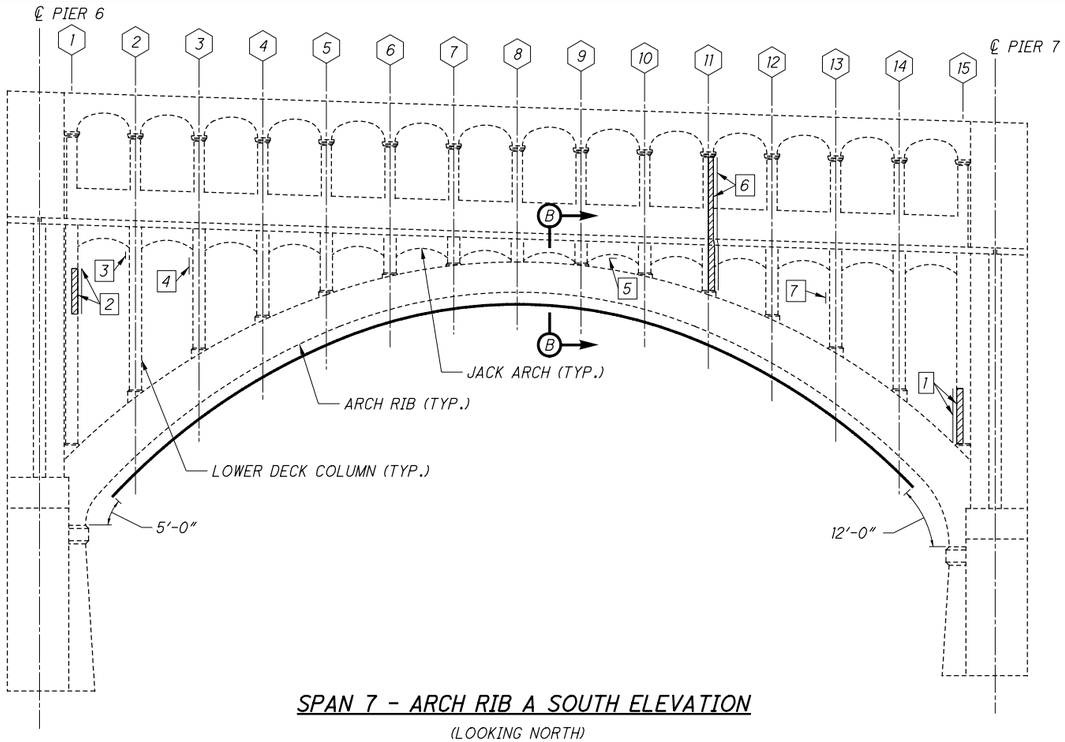
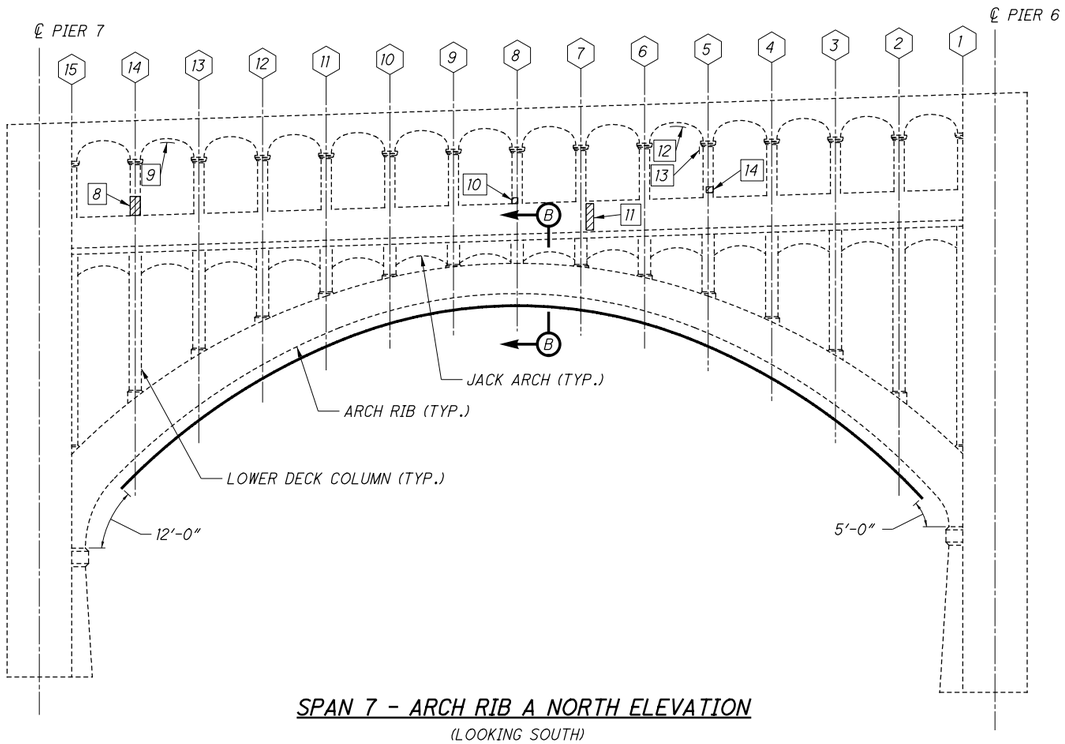


SPAN 7 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 7 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	21	5
2	TYPE 1	20	6
3	TYPE 1	1	1
4	TYPE 1	7	2
5	TYPE 2	2	2
6	TYPE 1	32	12
7	TYPE 1	3	1
8	TYPE 1	5	2
9	TYPE 2	4	1
10	TYPE 1	1	1
11	TYPE 1	4	2
12	TYPE 2	2	1
13	TYPE 1	1	1
14	TYPE 1	1	1
MEASURED QUANTITY*		104	-
PLAN QUANTITY*		156	38

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	144
TYPE 2 REPAIR	SF	12
FRP WRAP	SF	1681

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET [84/89].
6. FOR PIER 6 REPAIR DETAILS, SEE SHEET [27/89]. FOR PIER 7 REPAIR DETAILS, SEE SHEET [28/89].
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET [85/89].

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED JEB | DRAWN JEB | CHECKED DEA | REVISED

REVIEWED DWJ | DATE 04/18/18 | STRUCTURE FILE NUMBER 1800930

SPAN 7 CONCRETE REPAIR DETAILS (2 OF 5)

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56

PID No. 99972

53 / 89

92 / 138

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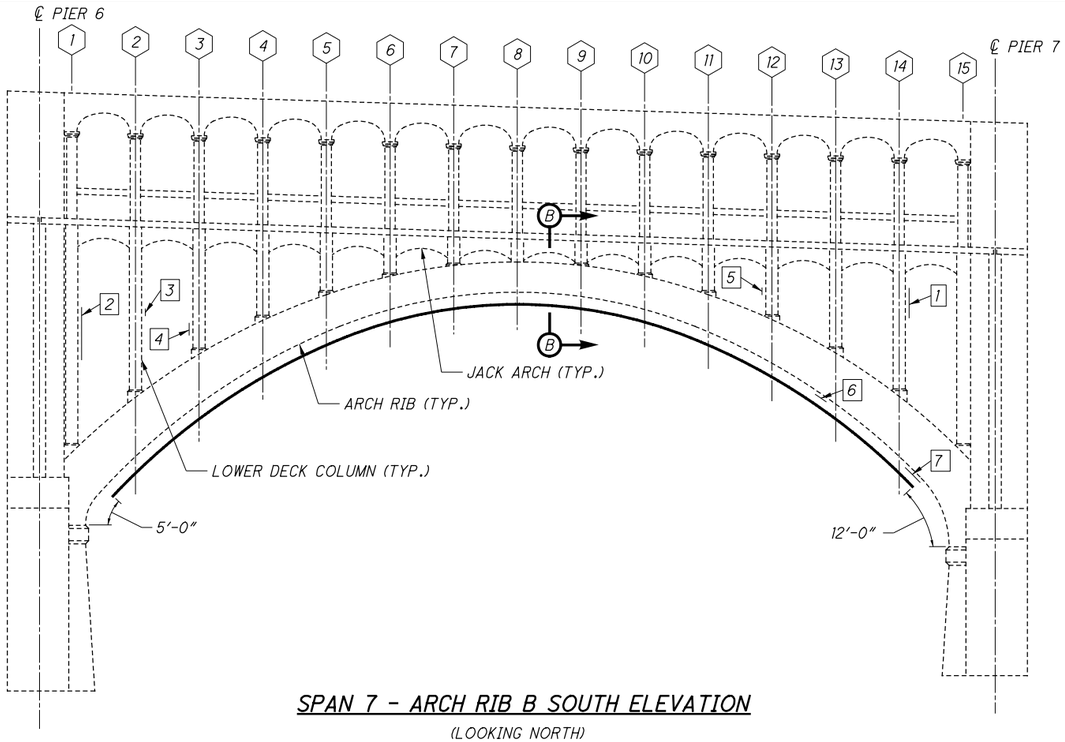
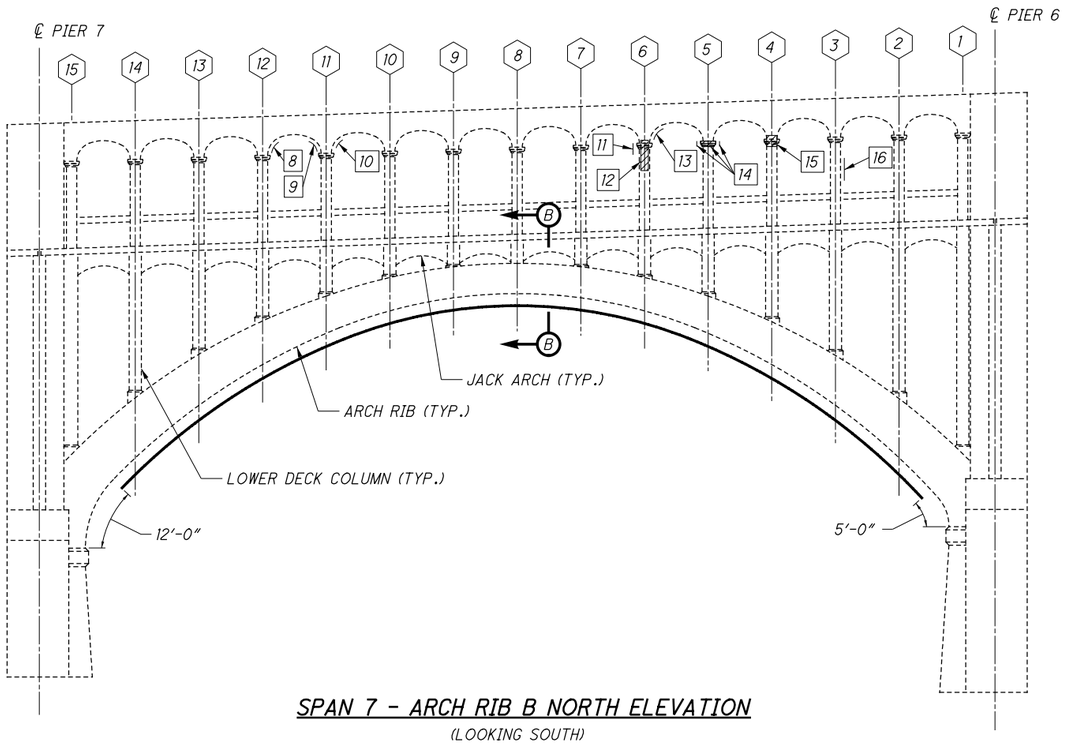


SPAN 7 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 7 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	2
2	TYPE 1	28	8
3	TYPE 1	2	1
4	TYPE 1	5	1
5	TYPE 1	1	1
6	TYPE 2	3	1
7	TYPE 2	21	8
8	TYPE 2	3	2
9	TYPE 2	3	2
10	TYPE 2	1	1
11	TYPE 1	4	1
12	TYPE 1	5	4
13	TYPE 2	4	3
14	TYPE 1	5	4
15	TYPE 1	4	1
16	TYPE 1	5	4
MEASURED QUANTITY*		104	-
PLAN QUANTITY*		156	44

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	103
TYPE 2 REPAIR	SF	53
FRP WRAP	SF	1987

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 6 REPAIR DETAILS, SEE SHEET 27/89. FOR PIER 7 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
JEB	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

SPAN 7 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

54/89

93/138

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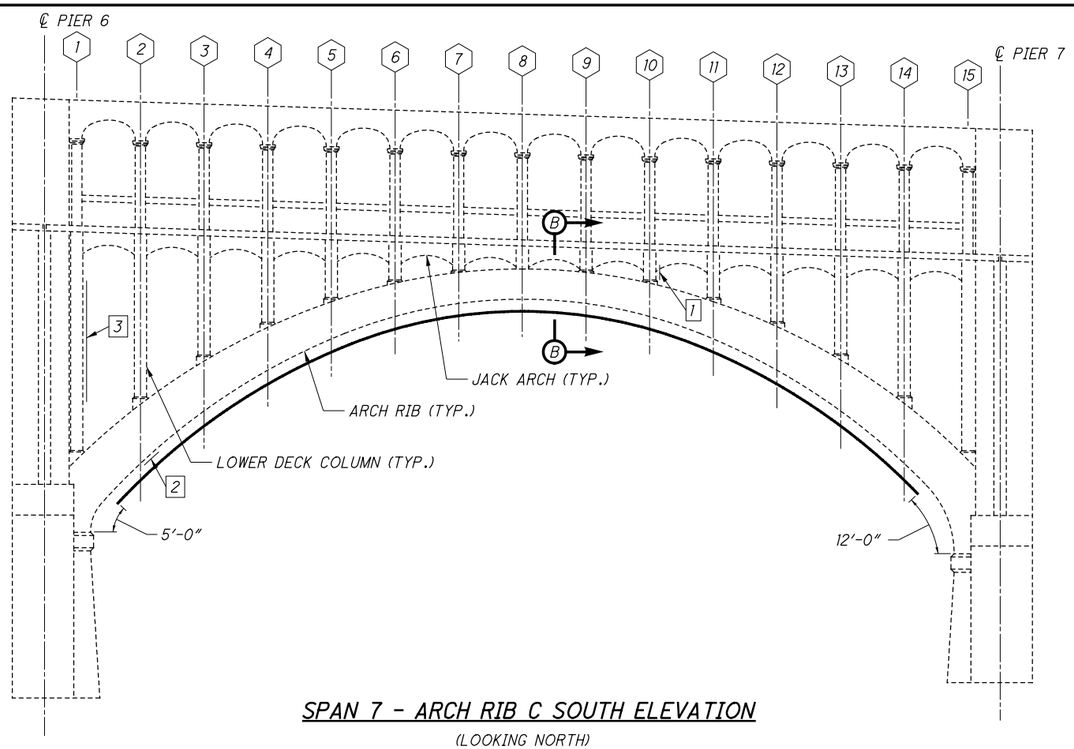
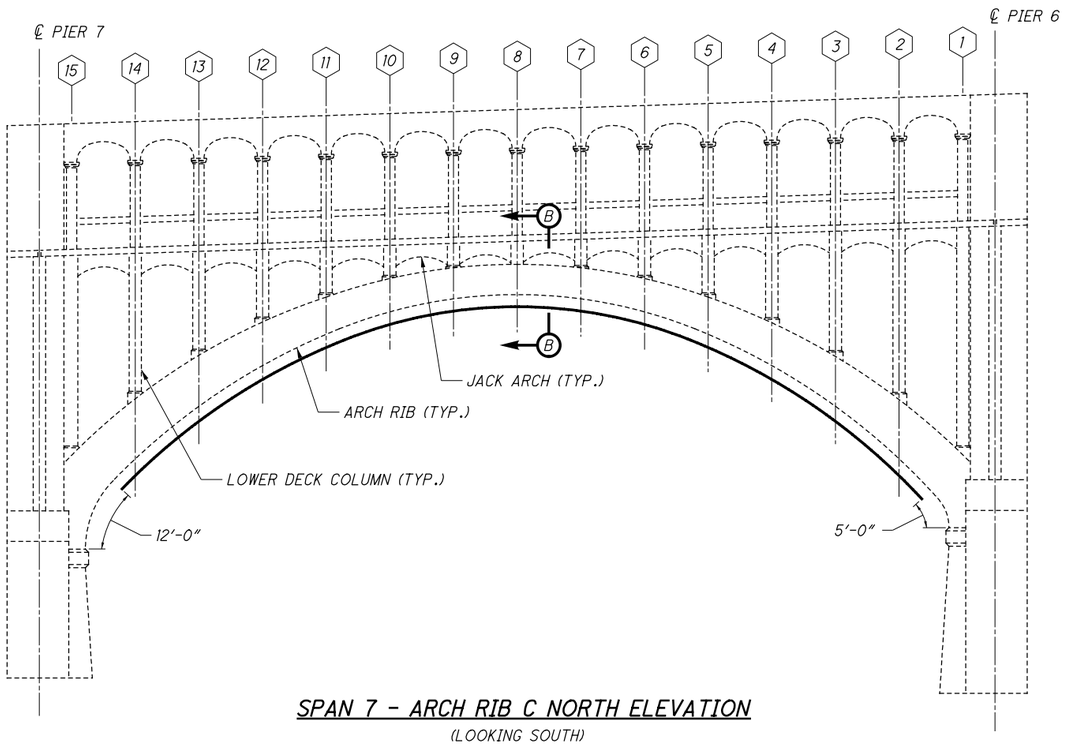


SPAN 7 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 7 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	2	1
2	TYPE 2	15	5
3	TYPE 1	32	8
MEASURED QUANTITY*		49	-
PLAN QUANTITY*		74	14

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	51
TYPE 2 REPAIR	SF	23
FRP WRAP	SF	1987

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 6 REPAIR DETAILS, SEE SHEET 27/89. FOR PIER 7 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
JEB	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

SPAN 7 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

55/89

94/138

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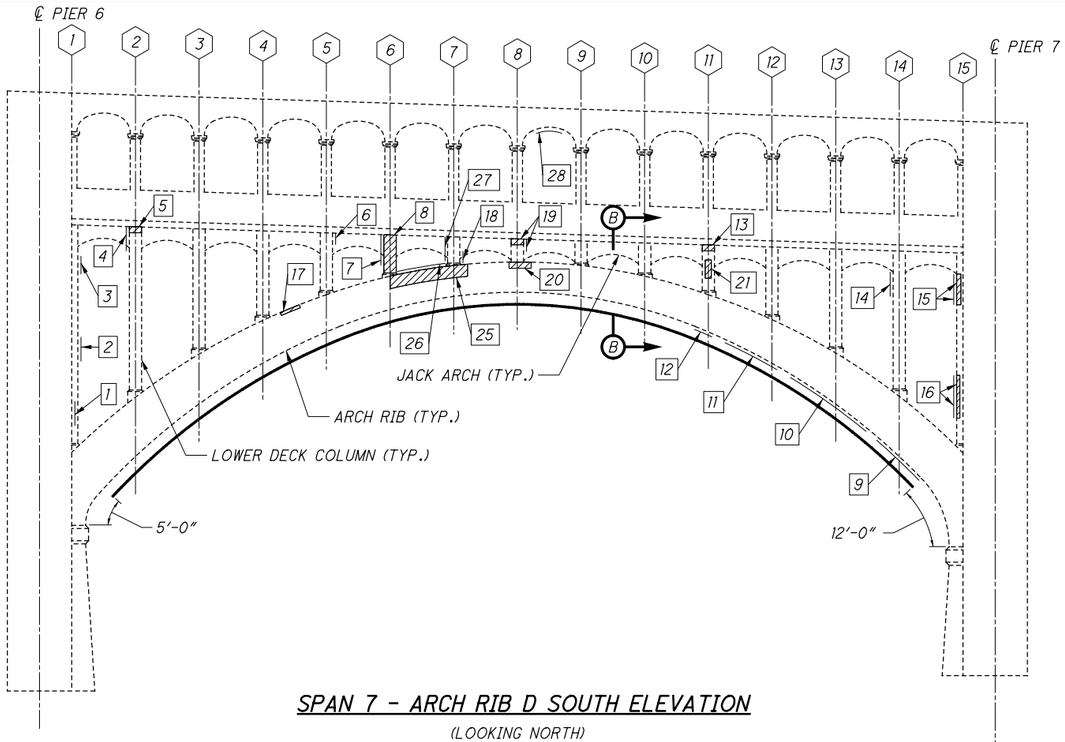
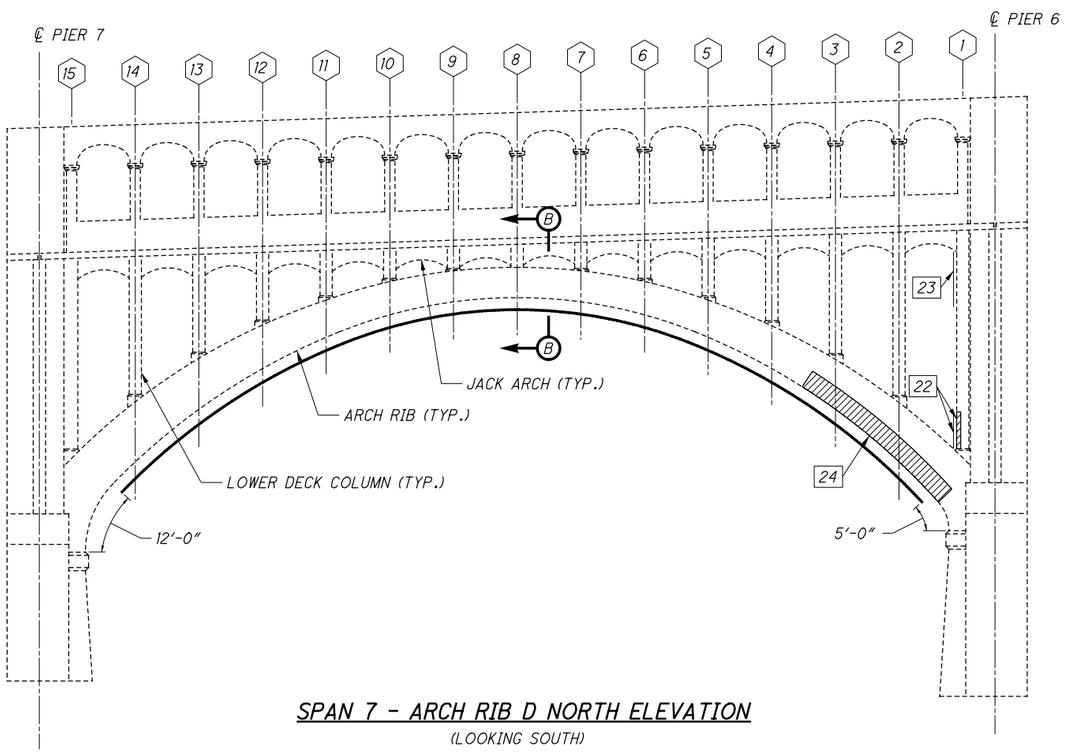


SPAN 7 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 7 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	2
2	TYPE 1	4	2
3	TYPE 1	3	2
4	TYPE 1	8	2
5	TYPE 1	2	1
6	TYPE 1	3	2
7	TYPE 1	20	6
8	TYPE 1	12	3
9	TYPE 2	16	6
10	TYPE 2	25	12
11	TYPE 2	18	10
12	TYPE 2	5	2
13	TYPE 1	2	1
14	TYPE 1	6	2
15	TYPE 1	18	6

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
16	TYPE 1	10	4
17	TYPE 1	17	10
18	TYPE 1	4	1
19	TYPE 1	6	2
20	TYPE 1	3	-
21	TYPE 1	3	2
22	TYPE 1	8	3
23	TYPE 1	12	5
24	TYPE 1	90	-
25	TYPE 1	24	-
26	TYPE 1	72	22
27	TYPE 1	8	2
28	TYPE 2	4	3
MEASURED QUANTITY*		407	-
PLAN QUANTITY*		611	113

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	509
TYPE 2 REPAIR	SF	102
FRP WRAP	SF	1681

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 6 REPAIR DETAILS, SEE SHEET 27/89. FOR PIER 7 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED JEB | DRAWN JEB | CHECKED DEA | REVIEWED DWJ | DATE 04/18/18 | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 7 CONCRETE REPAIR DETAILS (5 OF 5)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

56/89

95/138

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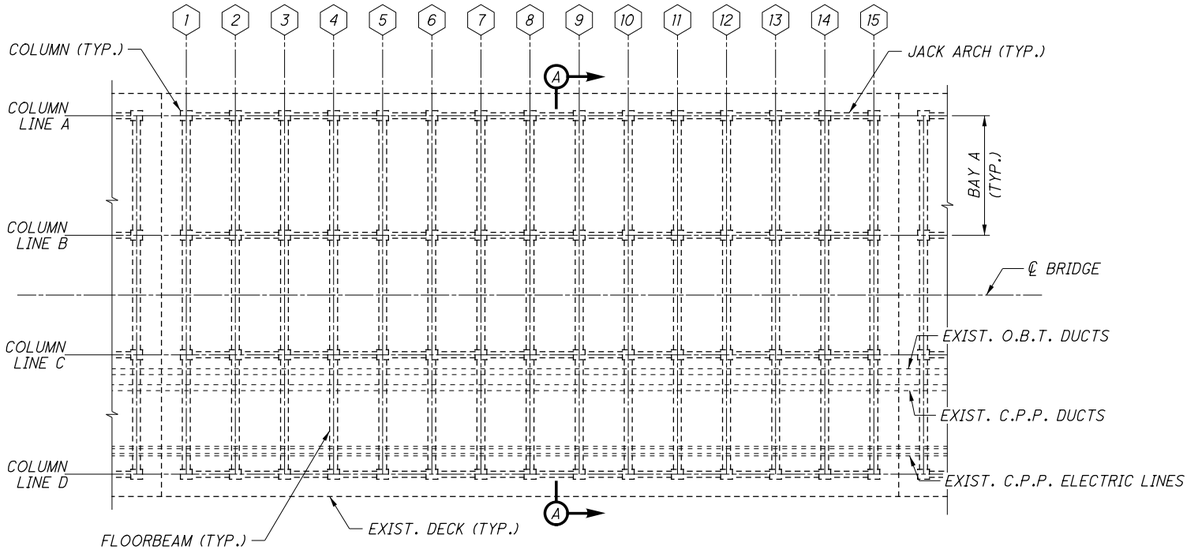
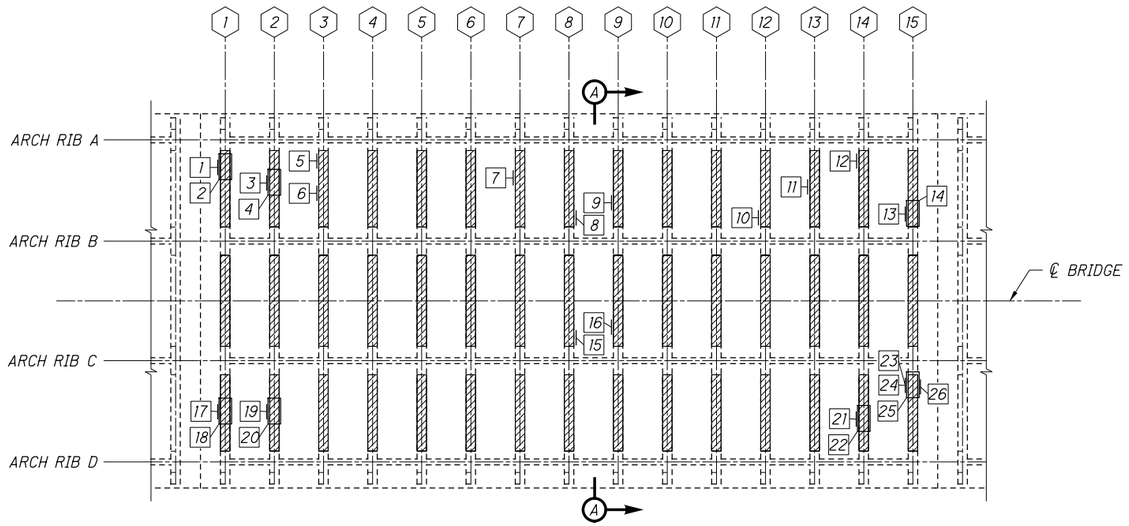


SPAN 8 - UPPER DECK PLAN



SPAN 8 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	4
2	TYPE 2	4	6
3	TYPE 1	3	2
4	TYPE 2	6	3
5	TYPE 1	4	2
6	TYPE 1	14	4
7	TYPE 1	3	1
8	TYPE 1	8	2
9	TYPE 1	39	10
10	TYPE 1	1	1
11	TYPE 1	8	2
12	TYPE 1	10	4
13	TYPE 1	1	1
14	TYPE 2	2	2
15	TYPE 1	2	1
16	TYPE 1	8	2
17	TYPE 1	4	4
18	TYPE 2	7	6
19	TYPE 1	20	6
20	TYPE 2	5	4
21	TYPE 1	17	4
22	TYPE 2	3	2
23	TYPE 1	23	6
24	TYPE 1	5	1
25	TYPE 2	5	2
26	TYPE 1	8	2
MEASURED QUANTITY*		214	
PLAN QUANTITY*		321	84

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	273
TYPE 2 REPAIR	SF	48
FRP WRAP	SF	3863

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		1800930	

SPAN 8 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

57 / 89

96 / 138

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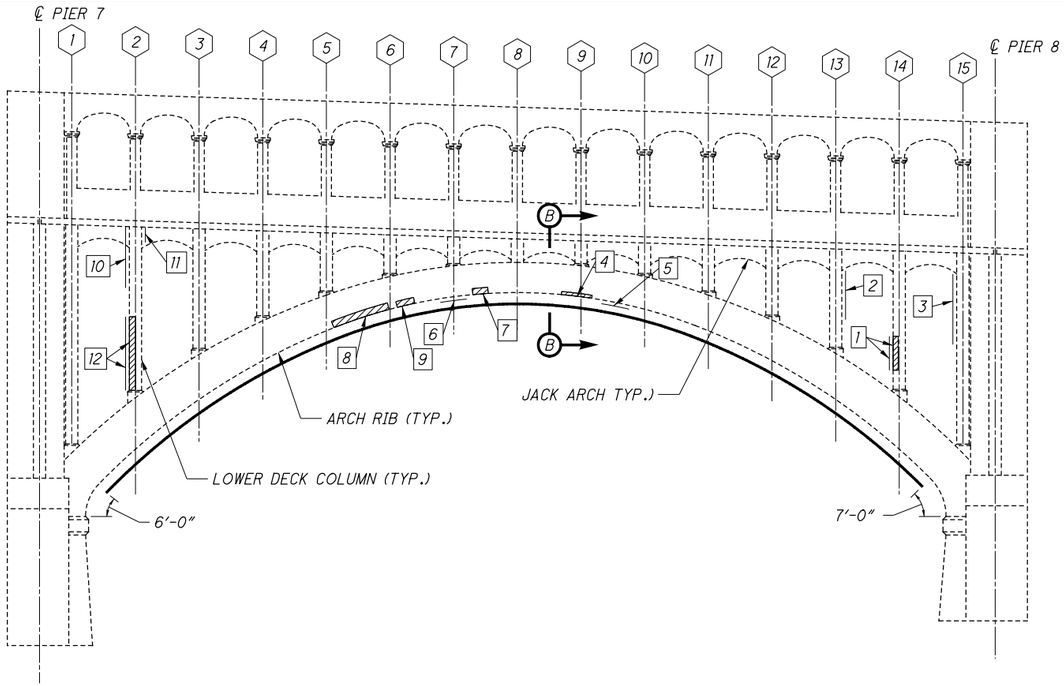
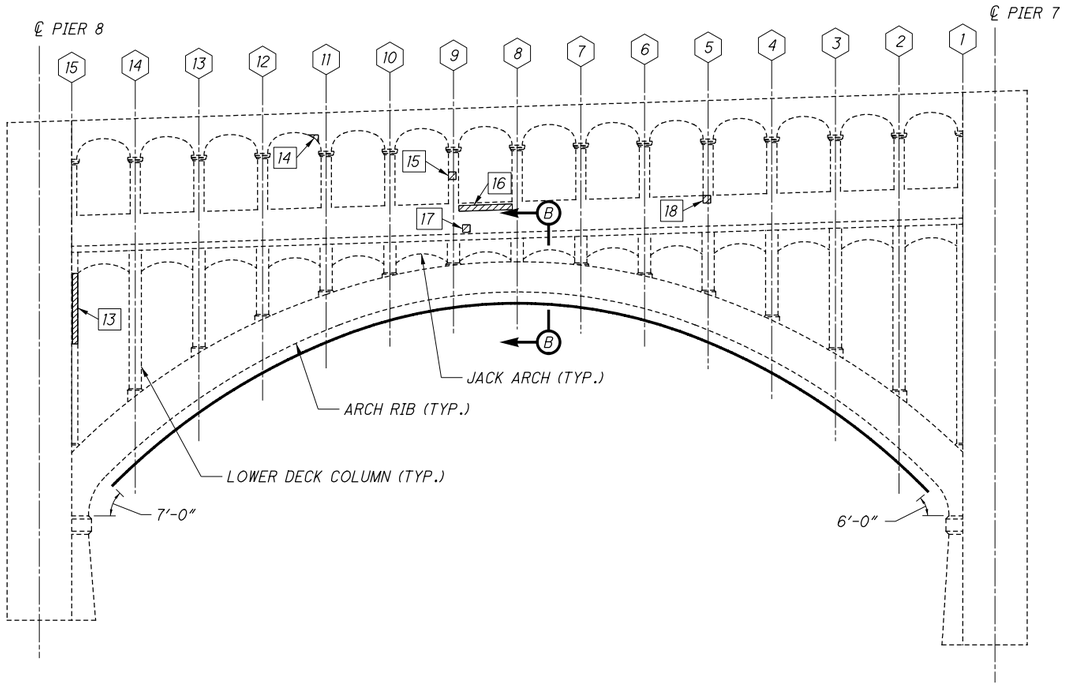


SPAN 8 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 8 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	15	3
2	TYPE 1	26	8
3	TYPE 1	18	6
4	TYPE 1	3	-
5	TYPE 2	11	6
6	TYPE 2	7	4
7	TYPE 1	2	-
8	TYPE 1	12	-
9	TYPE 1	2	-
10	TYPE 1	12	5
11	TYPE 1	32	6
12	TYPE 1	1	1
13	TYPE 1	6	4
14	TYPE 1	1	1
15	TYPE 1	1	1
16	TYPE 1	9	5
17	TYPE 1	1	1
18	TYPE 1	1	1
MEASURED QUANTITY*		160	-
PLAN QUANTITY*		240	52

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	213
TYPE 2 REPAIR	SF	27
FRP WRAP	SF	1680

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 7 AND PIER 8 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni
DESIGNED JEB | CHECKED DEA
DRAWN JEB | REVISED
REVIEWED DWJ | DATE 04/18/18
STRUCTURE FILE NUMBER 1800930

SPAN 8 CONCRETE REPAIR DETAILS (2 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

58/89
97/138

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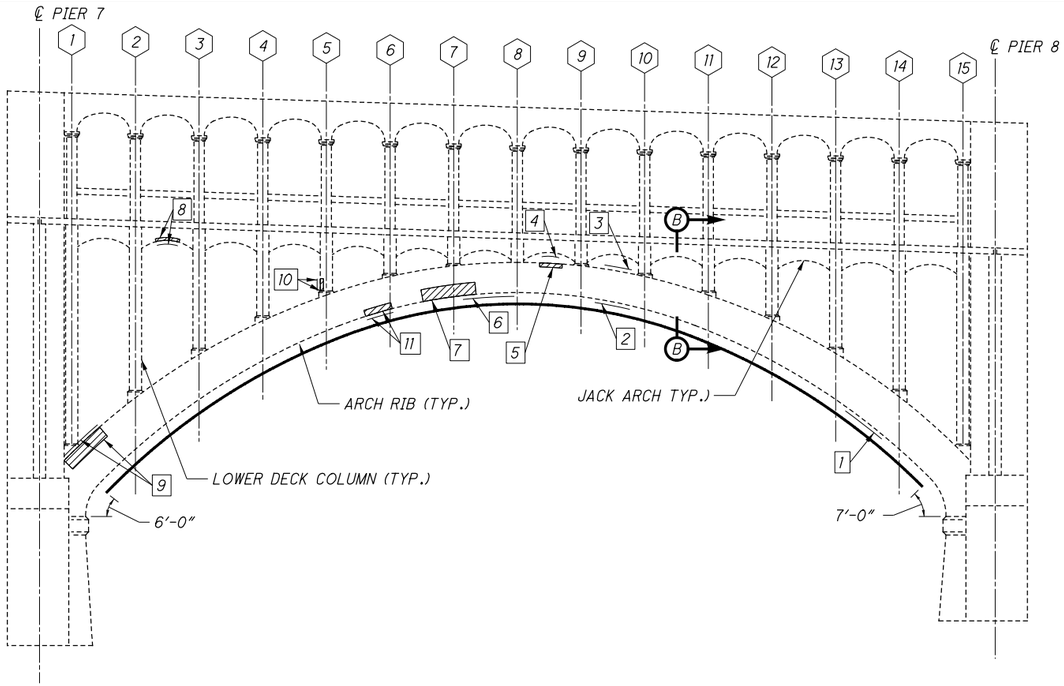
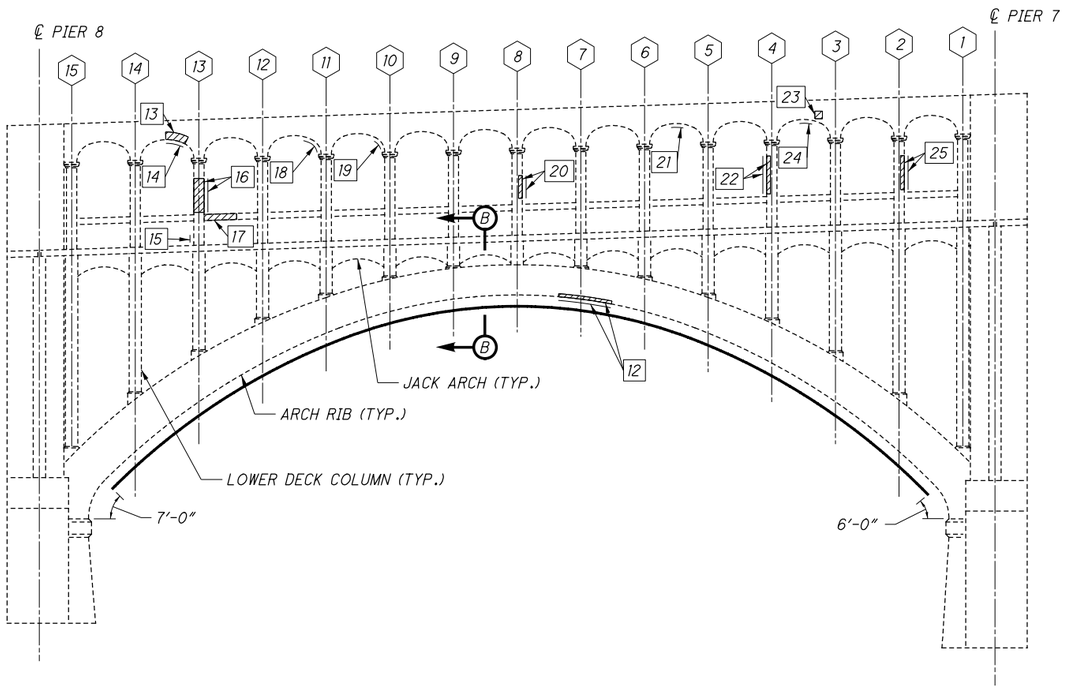


SPAN 8 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 8 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	9	5
2	TYPE 2	32	12
3	TYPE 1	5	3
4	TYPE 2	3	3
5	TYPE 1	4	-
6	TYPE 2	11	4
7	TYPE 1	23	-
8	TYPE 2	2	2
9	TYPE 1	11	-
10	TYPE 1	2	1
11	TYPE 2	6	2
12	TYPE 2	13	8
13	TYPE 1	2	1
14	TYPE 2	2	1
15	TYPE 1	1	1

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
16	TYPE 1	12	6
17	TYPE 1	5	3
18	TYPE 2	6	3
19	TYPE 2	1	1
20	TYPE 1	3	2
21	TYPE 2	1	1
22	TYPE 1	5	4
23	TYPE 1	1	1
24	TYPE 2	1	1
25	TYPE 1	5	3
MEASURED QUANTITY*		166	-
PLAN QUANTITY*		249	68

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	119
TYPE 2 REPAIR	SF	130
FRP WRAP	SF	1985

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 7 AND PIER 8 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
JEB	JEB	DWJ	04/18/18

CHECKED DEA | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 8 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

59/89
98/138

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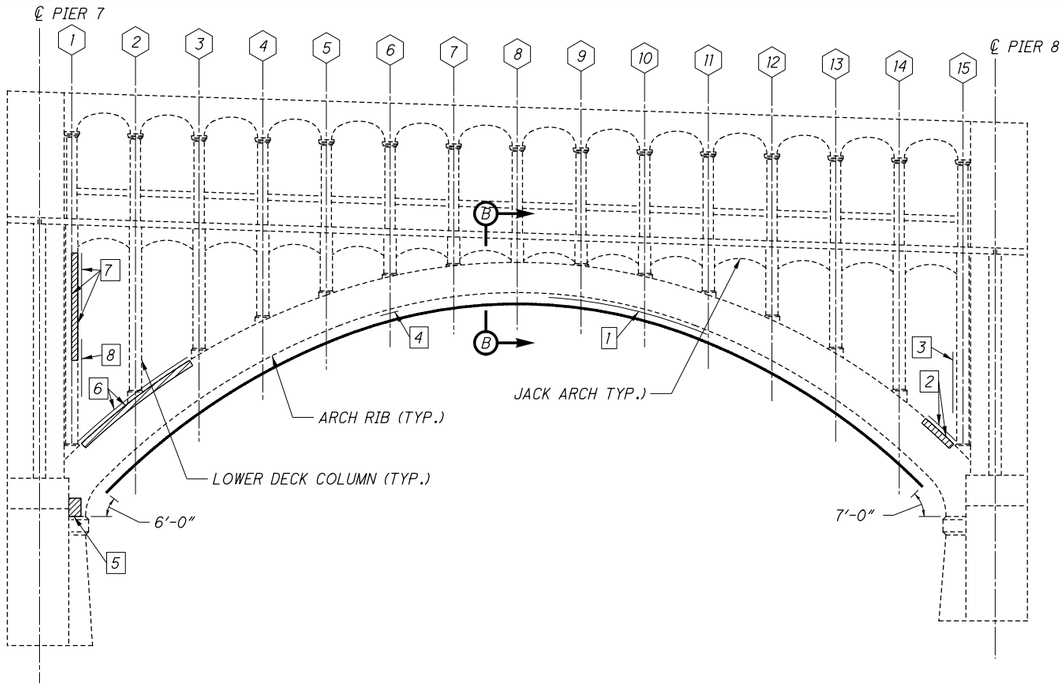
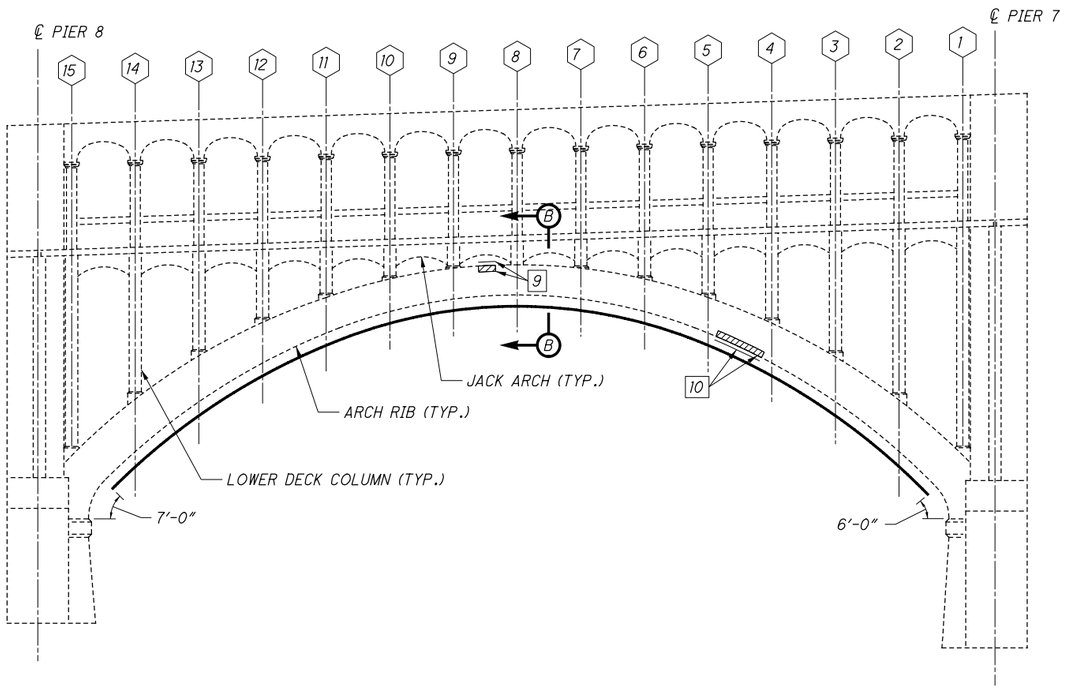


SPAN 8 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 8 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	192	44
2	TYPE 1	26	12
3	TYPE 1	35	10
4	TYPE 2	4	1
5	TYPE 1	6	2
6	TYPE 1	40	15
7	TYPE 1	175	36
8	TYPE 1	10	5
9	TYPE 1	3	2
10	TYPE 2	21	10
MEASURED QUANTITY*		512	-
PLAN QUANTITY*		768	137

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	442
TYPE 2 REPAIR	SF	326
FRP WRAP	SF	1985

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET [84/89].
6. FOR PIER 7 AND PIER 8 REPAIR DETAILS, SEE SHEET [28/89].
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET [85/89].

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED JEB | DRAWN JEB | CHECKED DEA | REVIEWED DWJ | DATE 04/18/18

STRUCTURE FILE NUMBER 1800930

REVISED

SPAN 8 CONCRETE REPAIR DETAILS (4 OF 5)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

60/89

99/138

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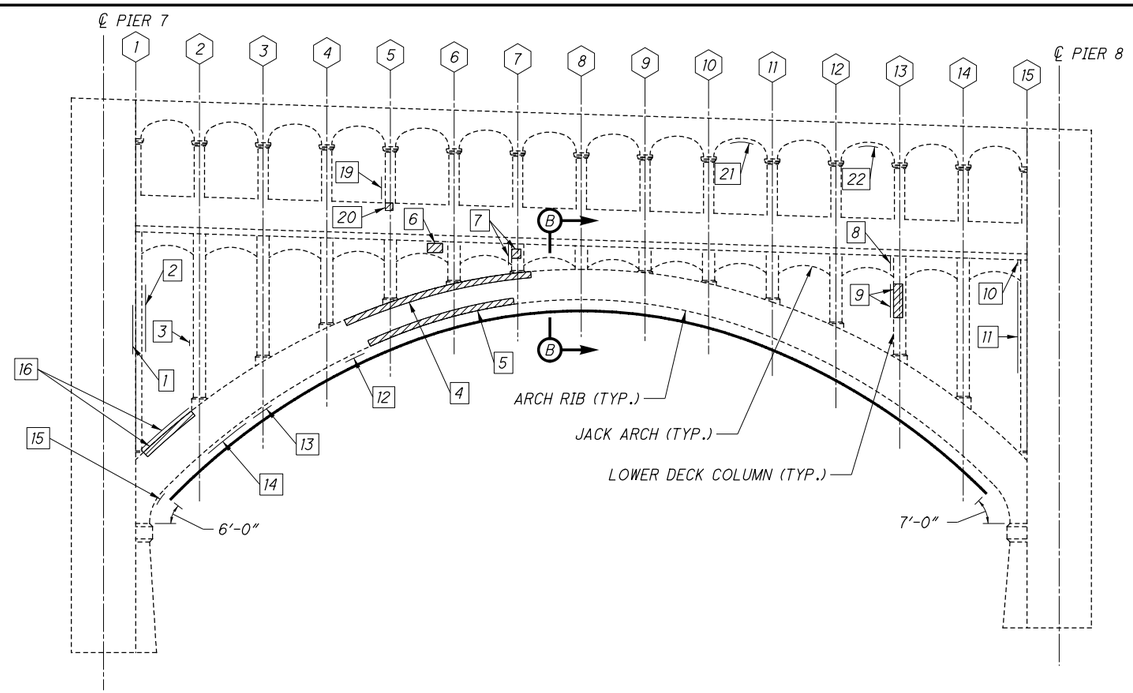
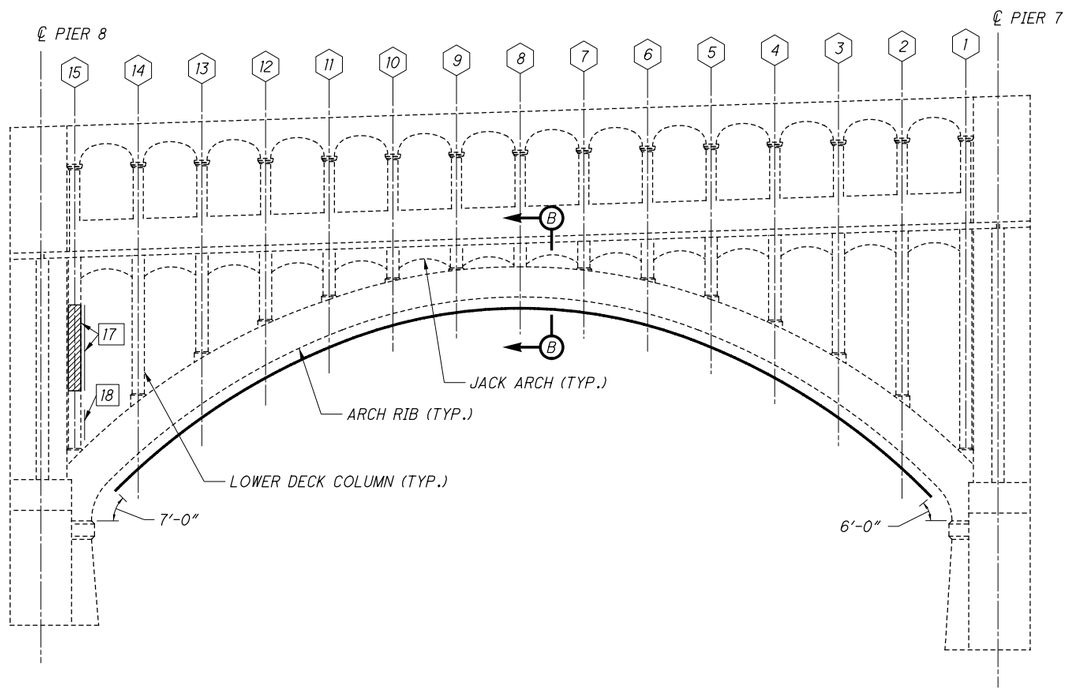


SPAN 8 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 8 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	12	4
2	TYPE 1	11	5
3	TYPE 1	1	1
4	TYPE 1	65	-
5	TYPE 1	30	-
6	TYPE 1	4	2
7	TYPE 1	12	8
8	TYPE 1	5	1
9	TYPE 1	16	3
10	TYPE 1	1	1
11	TYPE 1	23	7
12	TYPE 2	8	3
13	TYPE 2	4	2
14	TYPE 2	15	6
15	TYPE 2	5	2

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
16	TYPE 1	27	12
17	TYPE 1	56	22
18	TYPE 1	5	4
19	TYPE 1	5	2
20	TYPE 1	1	1
21	TYPE 2	4	3
22	TYPE 2	3	2
MEASURED QUANTITY*		313	-
PLAN QUANTITY*		470	91

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	411
TYPE 2 REPAIR	SF	59
FRP WRAP	SF	1680

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 7 AND PIER 8 REPAIR DETAILS, SEE SHEET 28/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

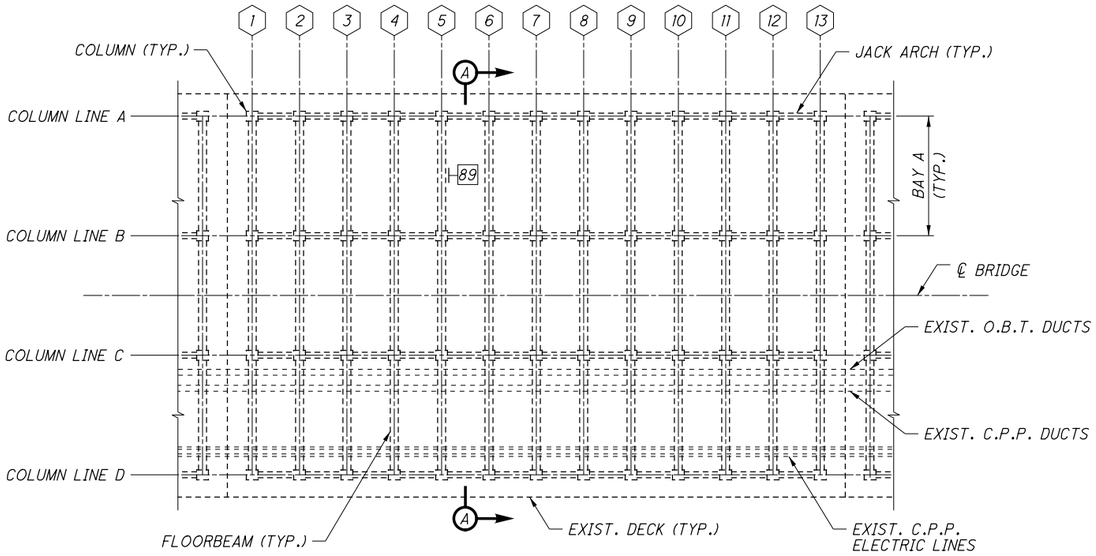
DESIGNED	DRAWN	REVIEWED	DATE
JEB	JEB	DWJ	04/18/18

CHECKED DEA | REVISED | STRUCTURE FILE NUMBER 1800930

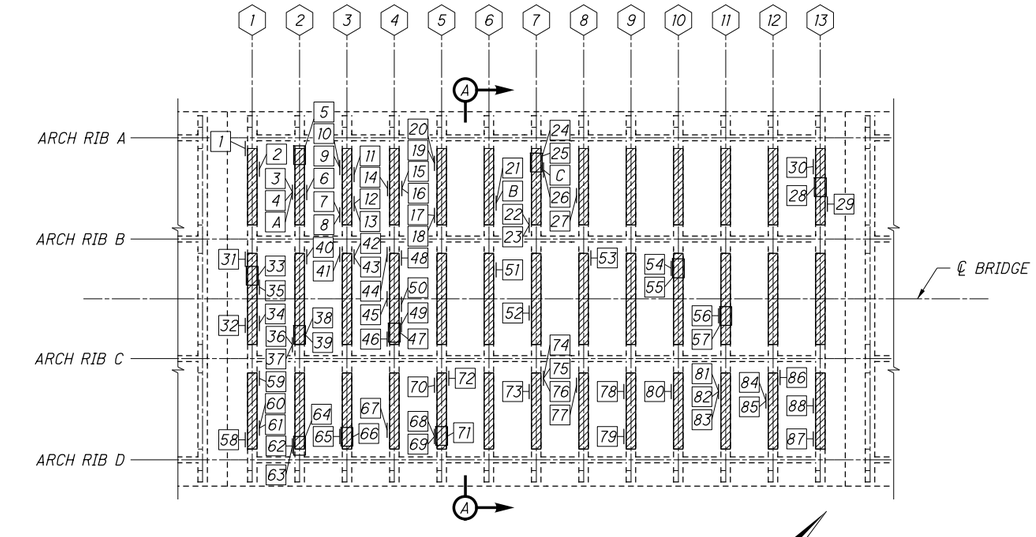
SPAN 8 CONCRETE REPAIR DETAILS (5 OF 5)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 9 - UPPER DECK PLAN



SPAN 9 - LOWER DECK PLAN

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

[A] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 843

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	1
2	TYPE 1	5	1
3	TYPE 1	1	1
4	TYPE 1	3	1
5	TYPE 2	9	5
6	TYPE 1	1	1
7	TYPE 1	3	1
8	TYPE 1	4	1
9	TYPE 1	4	1
10	TYPE 1	2	1
11	TYPE 1	4	1
12	TYPE 1	4	1
13	TYPE 1	2	1
14	TYPE 1	24	6
15	TYPE 1	3	1
16	TYPE 1	2	1
17	TYPE 1	3	1
18	TYPE 1	2	1
19	TYPE 1	6	2
20	TYPE 1	3	1
21	TYPE 1	2	1
22	TYPE 1	2	1
23	TYPE 1	1	1
24	TYPE 2	7	6
25	TYPE 2	1	1
26	TYPE 1	3	1
27	TYPE 1	21	6
28	TYPE 2	28	11
29	TYPE 1	18	6
30	TYPE 1	46	12
31	TYPE 1	29	8
32	TYPE 1	19	6
33	TYPE 2	6	5
34	TYPE 1	8	2
35	TYPE 1	3	3
36	TYPE 1	1	1
37	TYPE 1	1	1
38	TYPE 2	2	1
39	TYPE 2	1	1
40	TYPE 1	2	1
41	TYPE 1	2	1
42	TYPE 1	4	1
43	TYPE 1	1	1
44	TYPE 1	2	1
45	TYPE 1	23	6
46	TYPE 1	3	1

* SEE NOTES 1 & 2
** SEE NOTE 3

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
47	TYPE 2	3	4
48	TYPE 1	2	1
49	TYPE 1	3	3
50	TYPE 1	3	1
51	TYPE 1	2	1
52	TYPE 1	2	1
53	TYPE 1	2	1
54	TYPE 1	5	5
55	TYPE 2	7	7
56	TYPE 1	4	4
57	TYPE 2	7	6
58	TYPE 1	19	6
59	TYPE 1	5	1
60	TYPE 1	18	4
61	TYPE 1	3	1
62	TYPE 1	6	1
63	TYPE 1	2	1
64	TYPE 2	2	1
65	TYPE 1	2	2
66	TYPE 2	3	3
67	TYPE 1	5	2
68	TYPE 1	4	3
69	TYPE 1	4	1
70	TYPE 1	2	1
71	TYPE 2	4	5
72	TYPE 1	2	1
73	TYPE 1	1	1
74	TYPE 1	1	1
75	TYPE 1	2	1
76	TYPE 1	3	2
77	TYPE 1	4	1
78	TYPE 1	2	1
79	TYPE 1	2	1
80	TYPE 1	2	1
81	TYPE 1	6	2
82	TYPE 1	4	2
83	TYPE 1	3	1
84	TYPE 1	7	2
85	TYPE 1	4	1
86	TYPE 1	2	1
87	TYPE 1	24	6
88	TYPE 1	14	4
89	TYPE 1	1	1
MEASURED QUANTITY*		528	-
PLAN QUANTITY*		792	212

A	SS843	15	-
B	SS843	2	-
C	SS843	1	-
MEASURED QUANTITY*		18	-

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	672
TYPE 2 REPAIR	SF	120
FRP WRAP	SF	3348

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 9 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

62 / 89

101 / 138

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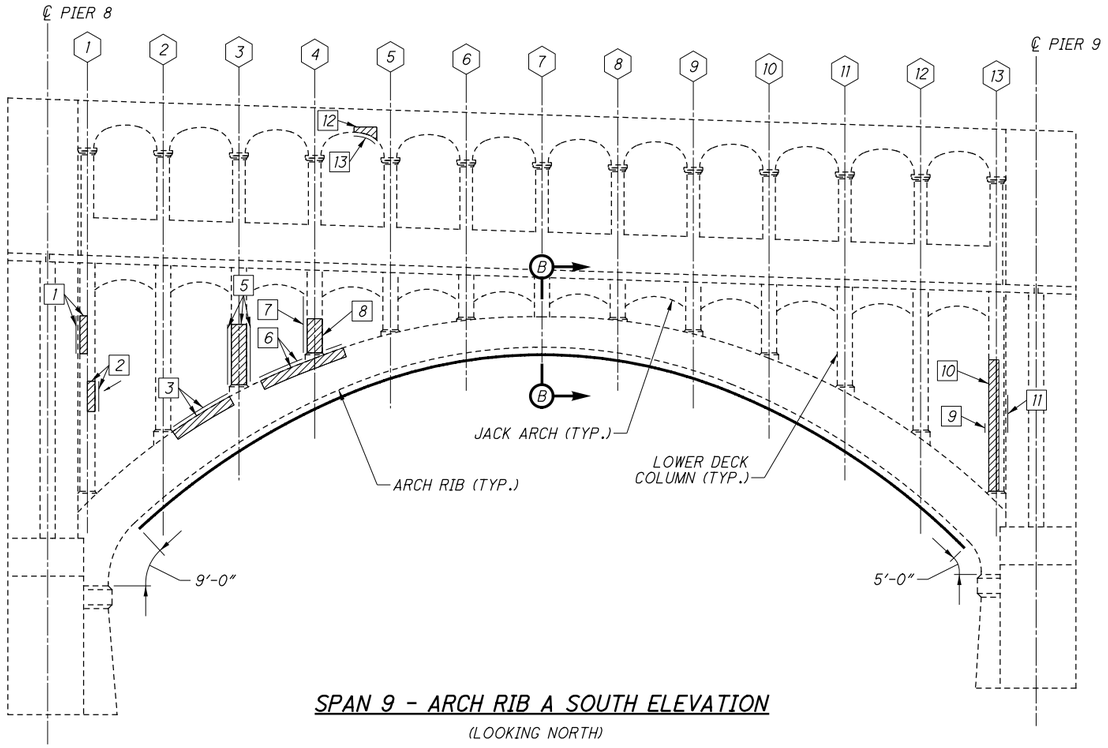
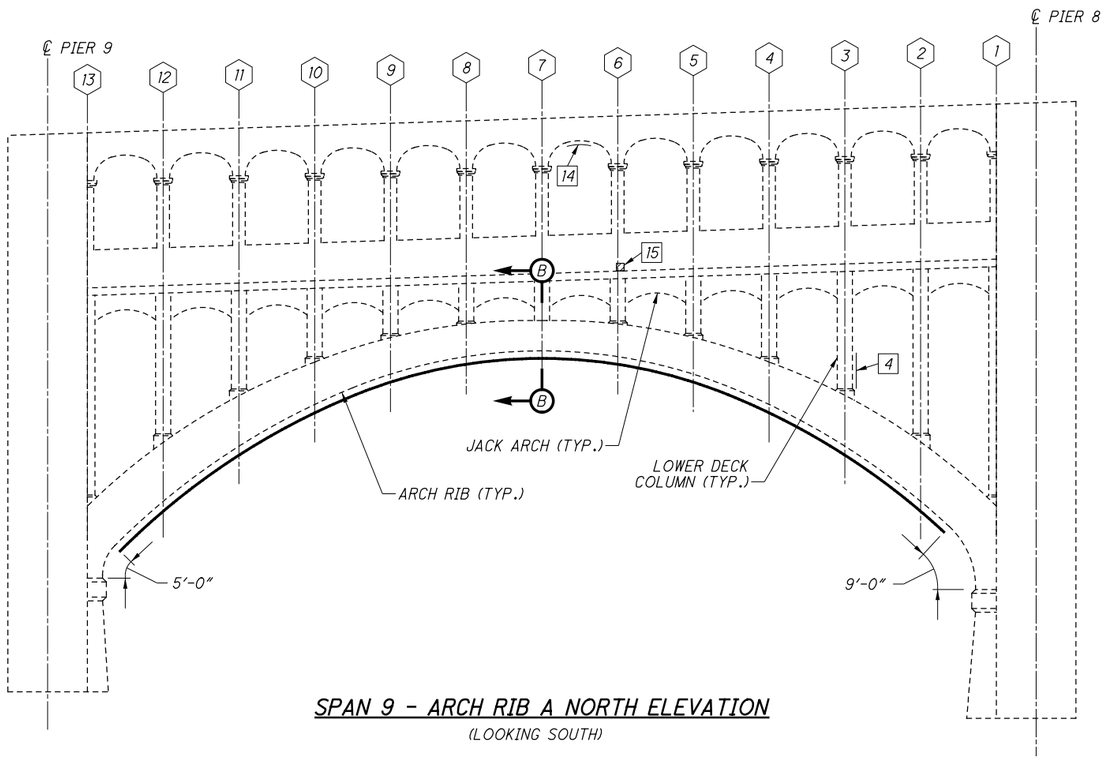


SPAN 9 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 9 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	10	3
2	TYPE 1	7	2
3	TYPE 1	25	6
4	TYPE 1	18	4
5	TYPE 1	30	8
6	TYPE 1	26	7
7	TYPE 1	32	8
8	TYPE 1	9	2
9	TYPE 1	2	1
10	TYPE 1	24	9
11	TYPE 1	5	3
12	TYPE 1	6	2
13	TYPE 2	3	2
14	TYPE 2	4	3
15	TYPE 1	1	1
MEASURED QUANTITY*		202	-
PLAN QUANTITY*		303	61

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	292
TYPE 2 REPAIR	SF	11
FRP WRAP	SF	1358

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE VERTICAL SIDES OF THE UNREINFORCED CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 8 REPAIR DETAILS, SEE SHEET 28/89. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 9 CONCRETE REPAIR DETAILS (2 OF 5)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

63/89

102/138

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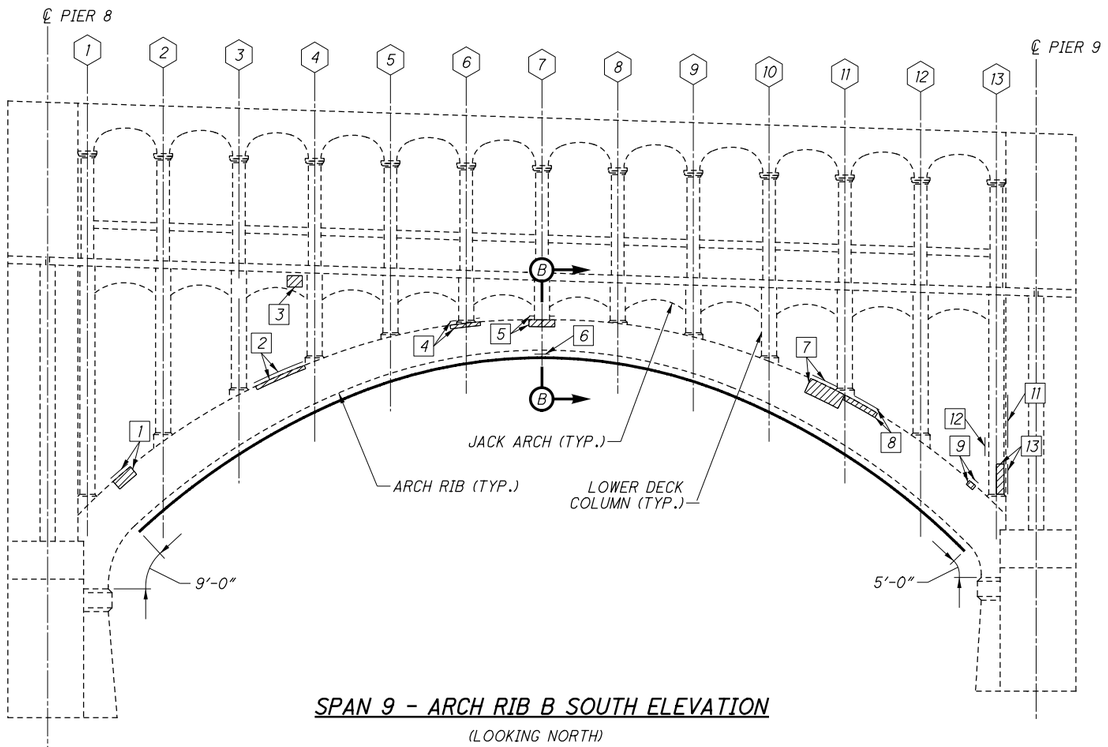
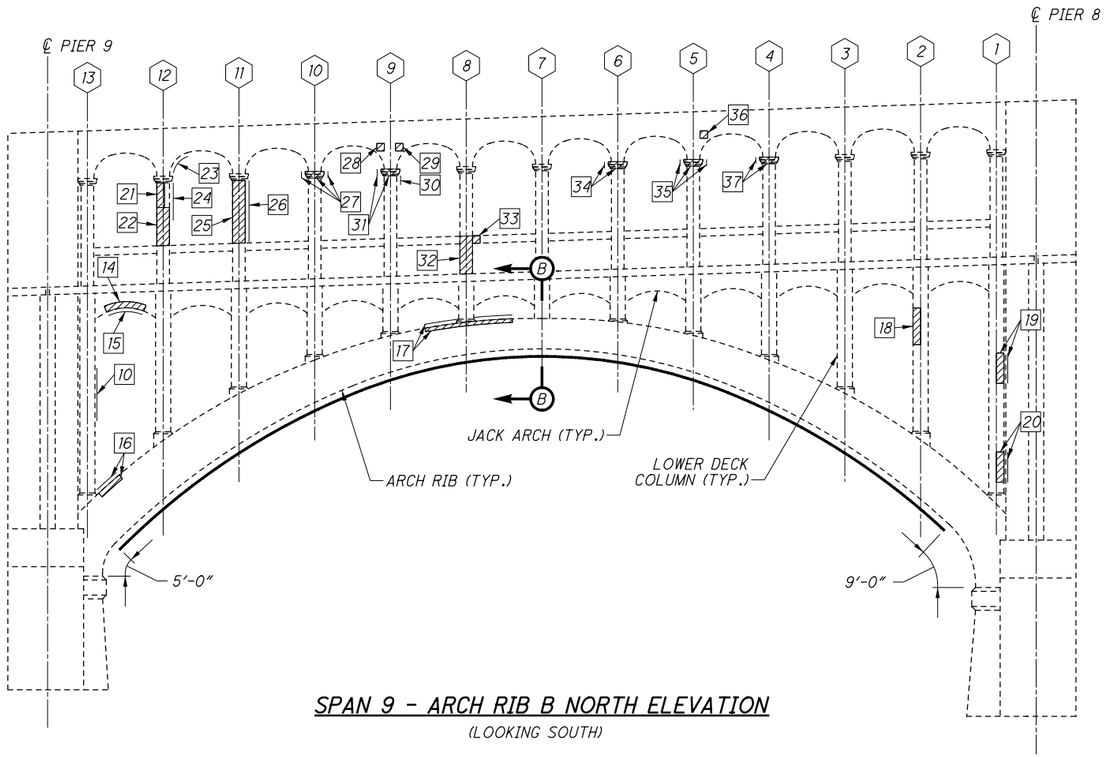


SPAN 9 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 9 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	7	2
2	TYPE 1	9	5
3	TYPE 1	3	2
4	TYPE 1	5	3
5	TYPE 1	6	2
6	TYPE 2	2	1
7	TYPE 1	14	4
8	TYPE 1	10	3
9	TYPE 1	2	1
10	TYPE 1	18	6
11	TYPE 1	11	4
12	TYPE 1	4	1
13	TYPE 1	10	2
14	TYPE 1	5	5
15	TYPE 2	5	5
16	TYPE 1	5	2
17	TYPE 1	19	9
18	TYPE 1	5	2
19	TYPE 1	6	2
20	TYPE 1	12	2

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
21	TYPE 1	3	2
22	TYPE 1	9	4
23	TYPE 2	3	2
24	TYPE 1	5	4
25	TYPE 1	14	6
26	TYPE 1	4	6
27	TYPE 1	4	3
28	TYPE 1	1	1
29	TYPE 1	1	1
30	TYPE 1	2	1
31	TYPE 1	3	2
32	TYPE 1	9	4
33	TYPE 1	1	1
34	TYPE 1	4	3
35	TYPE 1	4	3
36	TYPE 1	1	1
37	TYPE 1	3	2
MEASURED QUANTITY*		229	-
PLAN QUANTITY*		344	109

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	329
TYPE 2 REPAIR	SF	15
FRP WRAP	SF	1605

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE VERTICAL SIDES OF THE UNREINFORCED CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 8 REPAIR DETAILS, SEE SHEET 28/89. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED AJK | DRAWN AJK | REVIEWED DWJ | DATE 04/18/18 | CHECKED BPS | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 9 CONCRETE REPAIR DETAILS (3 OF 5)

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

64/89

103/138

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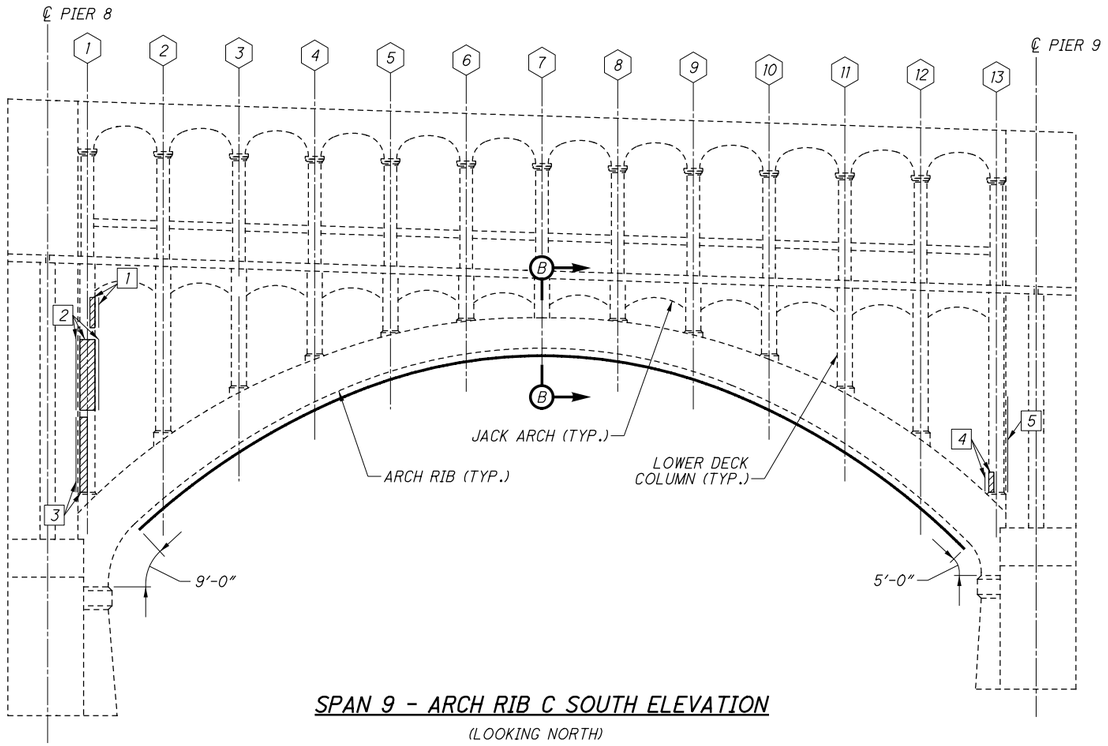
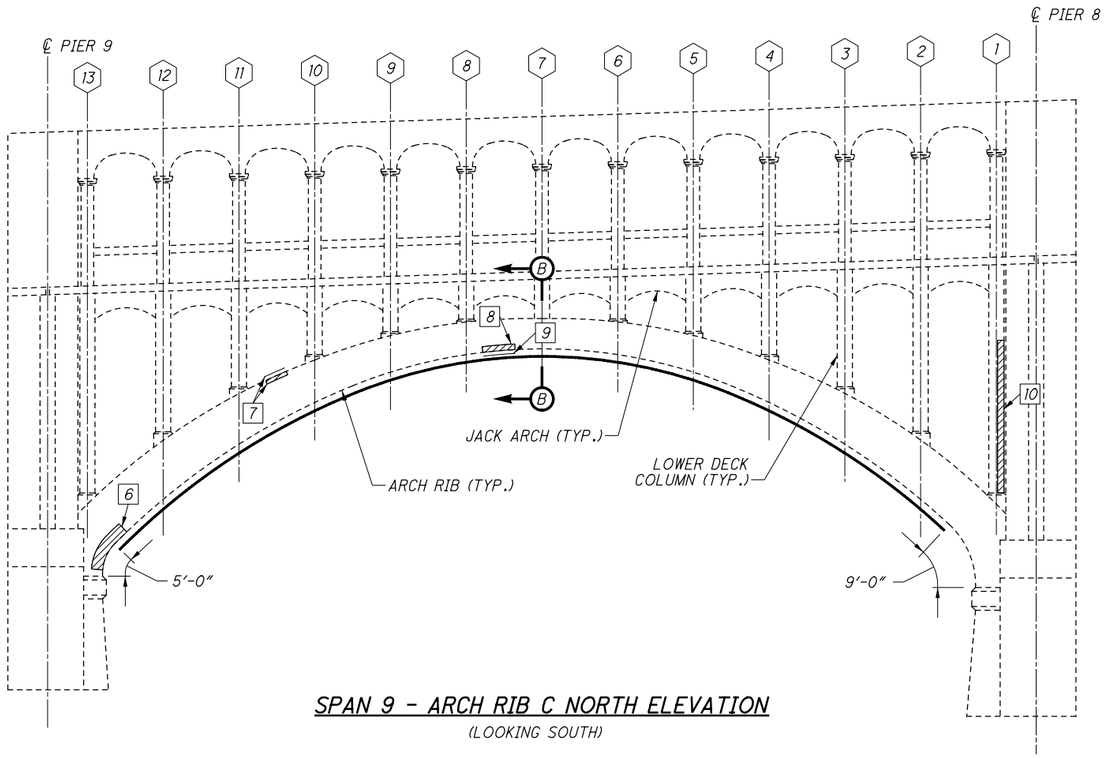


SPAN 9 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 9 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	5	2
2	TYPE 1	54	12
3	TYPE 1	43	12
4	TYPE 1	4	1
5	TYPE 1	26	6
6	TYPE 1	10	-
7	TYPE 1	9	4
8	TYPE 1	4	-
9	TYPE 2	9	3
10	TYPE 1	17	10
MEASURED QUANTITY*		181	-
PLAN QUANTITY*		272	50

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	259
TYPE 2 REPAIR	SF	13
FRP WRAP	SF	1605

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE VERTICAL SIDES OF THE UNREINFORCED CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 8 REPAIR DETAILS, SEE SHEET 28/89. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 9 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

65/89

104/138

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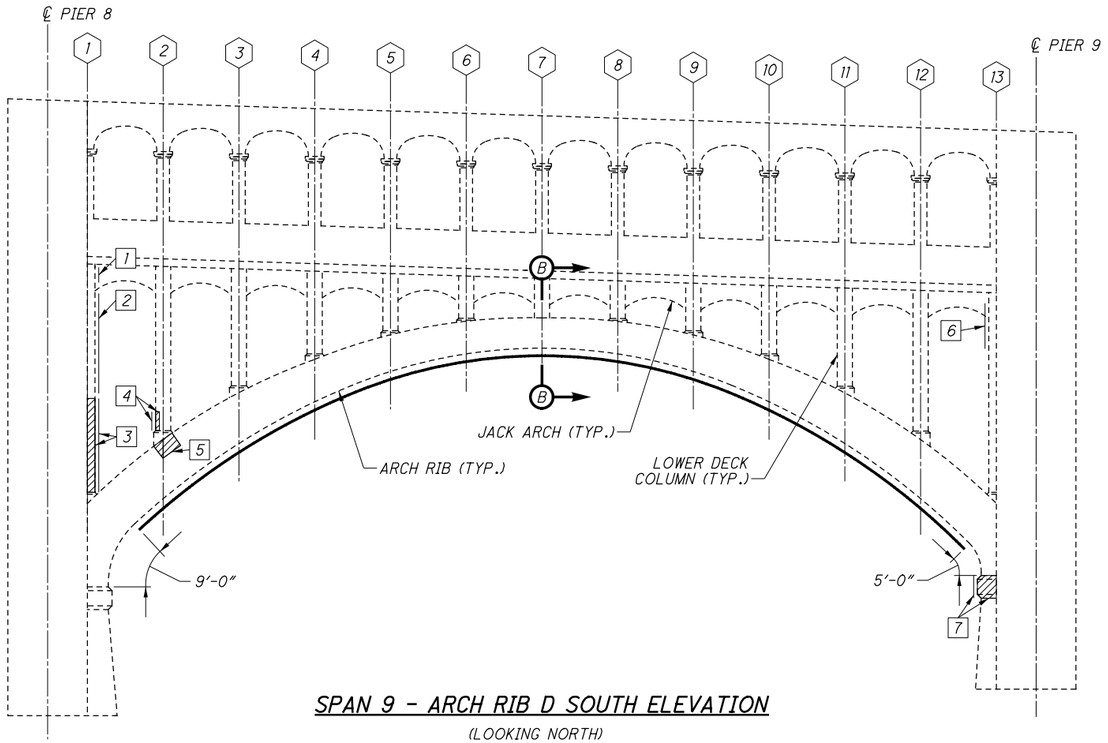
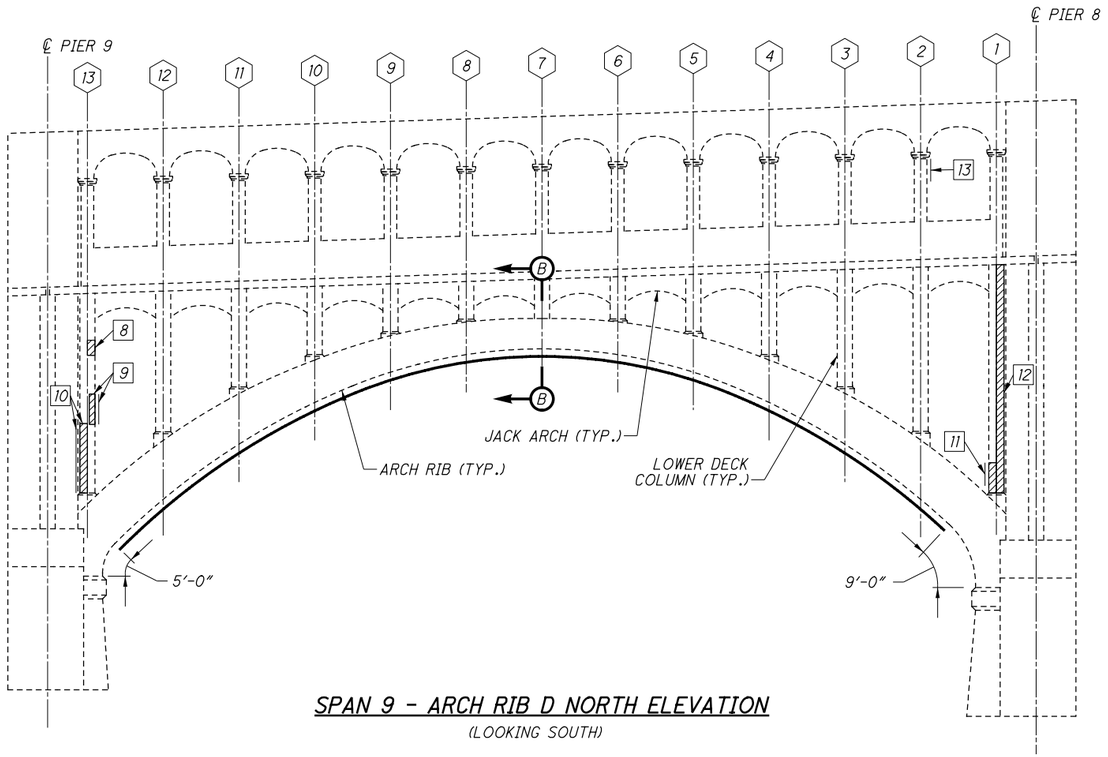


SPAN 9 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 9 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	1
2	TYPE 1	62	18
3	TYPE 1	28	6
4	TYPE 1	3	1
5	TYPE 1	6	-
6	TYPE 1	18	6
7	TYPE 1	15	8
8	TYPE 1	2	1
9	TYPE 1	6	2
10	TYPE 1	23	5
11	TYPE 1	4	2
12	TYPE 1	34	17
13	TYPE 1	3	2
MEASURED QUANTITY*		208	-
PLAN QUANTITY*		312	69

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	312
TYPE 2 REPAIR	SF	-
FRP WRAP	SF	1358

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE VERTICAL SIDES OF THE UNREINFORCED CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 8 REPAIR DETAILS, SEE SHEET 28/89. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		18O0930	

SPAN 9 CONCRETE REPAIR DETAILS (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

66/89

105/138

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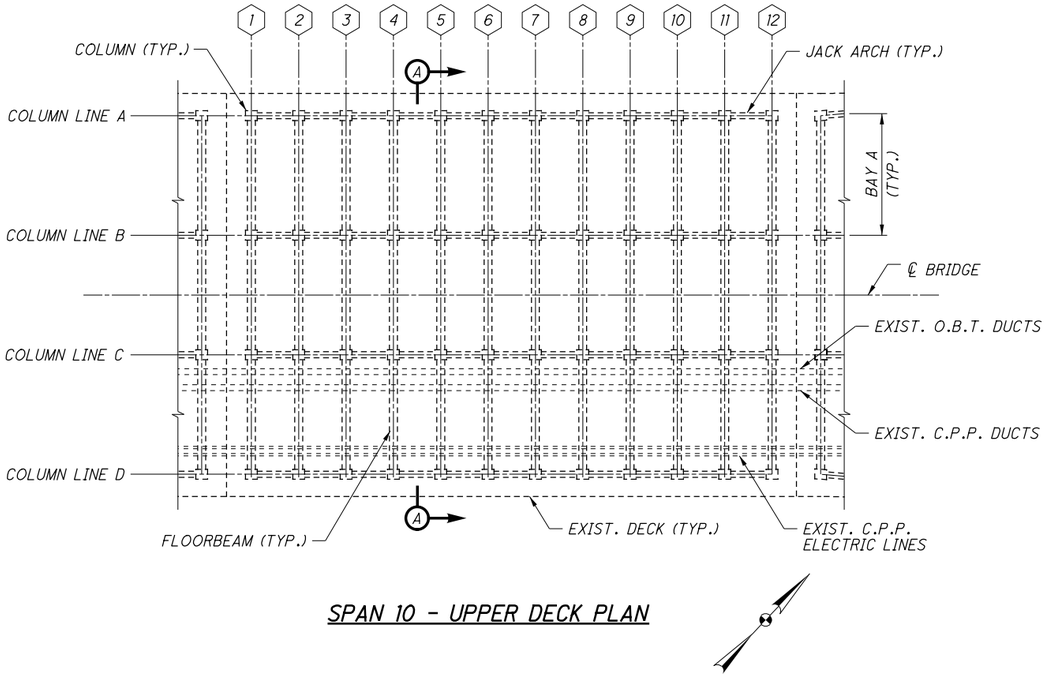
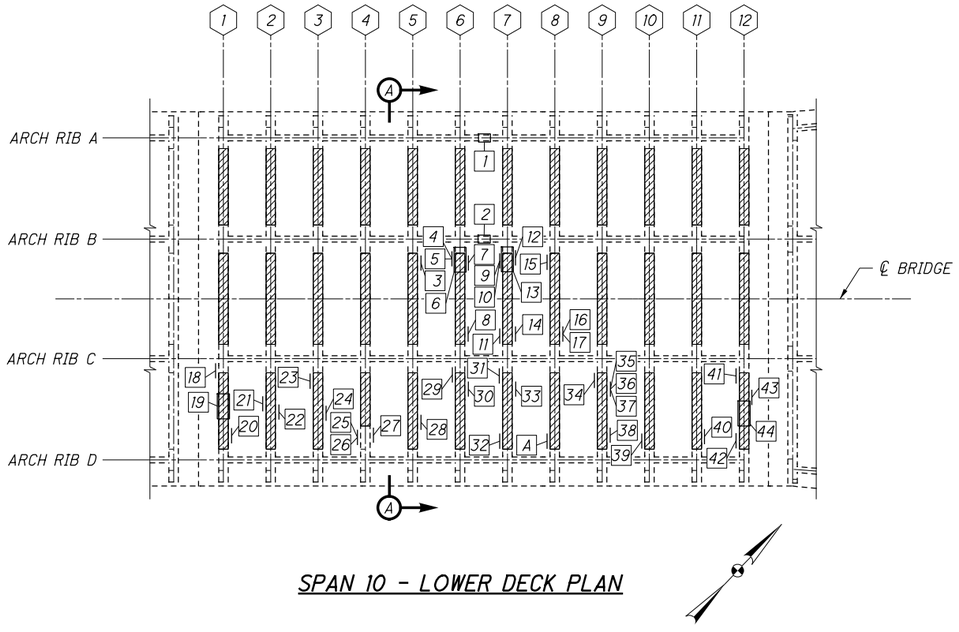


SPAN 10 - UPPER DECK PLAN



SPAN 10 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	1	1
2	TYPE 2	1	1
3	TYPE 1	4	1
4	TYPE 1	5	1
5	TYPE 1	4	2
6	TYPE 2	9	3
7	TYPE 1	13	2
8	TYPE 1	2	1
9	TYPE 1	4	2
10	TYPE 1	4	1
11	TYPE 1	15	6
12	TYPE 1	26	8
13	TYPE 2	14	5
14	TYPE 1	8	1
15	TYPE 1	4	1
16	TYPE 1	4	1
17	TYPE 1	4	1
18	TYPE 1	9	4
19	TYPE 2	17	7
20	TYPE 1	21	6
21	TYPE 1	3	1
22	TYPE 1	5	2
23	TYPE 1	2	1
24	TYPE 1	2	1

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
25	TYPE 1	16	4
26	TYPE 2	4	3
27	TYPE 1	2	1
28	TYPE 1	6	2
29	TYPE 1	10	2
30	TYPE 1	19	6
31	TYPE 1	37	10
32	TYPE 1	10	2
33	TYPE 1	12	4
34	TYPE 1	30	8
35	TYPE 1	2	1
36	TYPE 1	4	1
37	TYPE 1	16	4
38	TYPE 1	27	8
39	TYPE 1	34	8
40	TYPE 1	3	1
41	TYPE 1	21	8
42	TYPE 1	11	4
43	TYPE 1	2	1
44	TYPE 2	9	3
MEASURED QUANTITY*		456	-
PLAN QUANTITY*		684	141

A	SS843	8	-
MEASURED QUANTITY*		8	-

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	602
TYPE 2 REPAIR	SF	82
FRP WRAP	SF	3090

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

[A] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 843.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 10 CONCRETE REPAIR DETAILS (1 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

67 / 89

106 / 138

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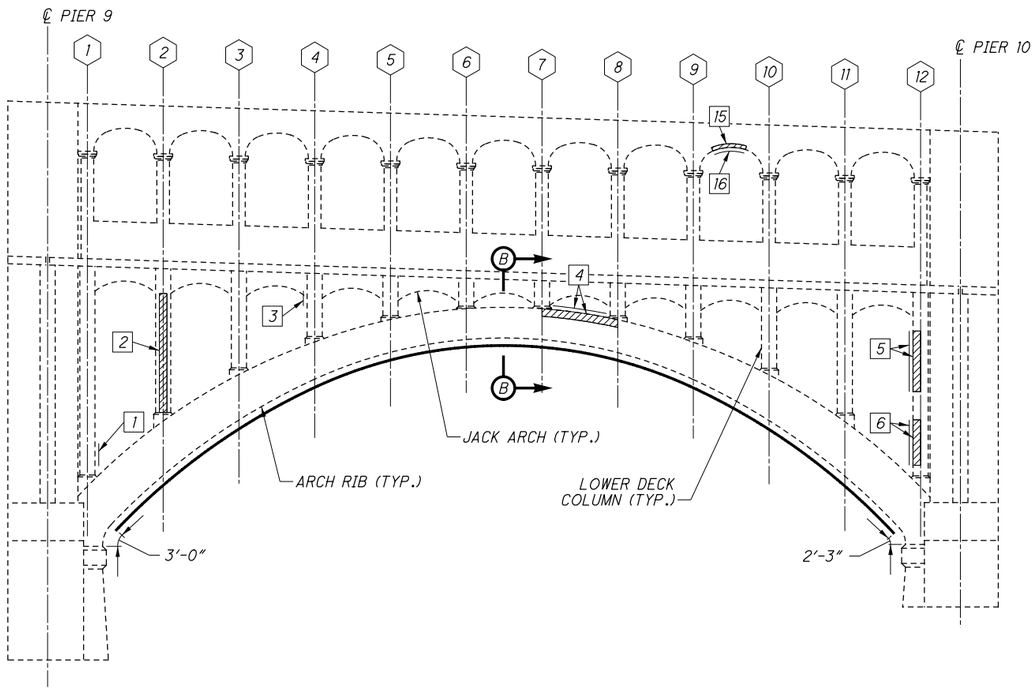
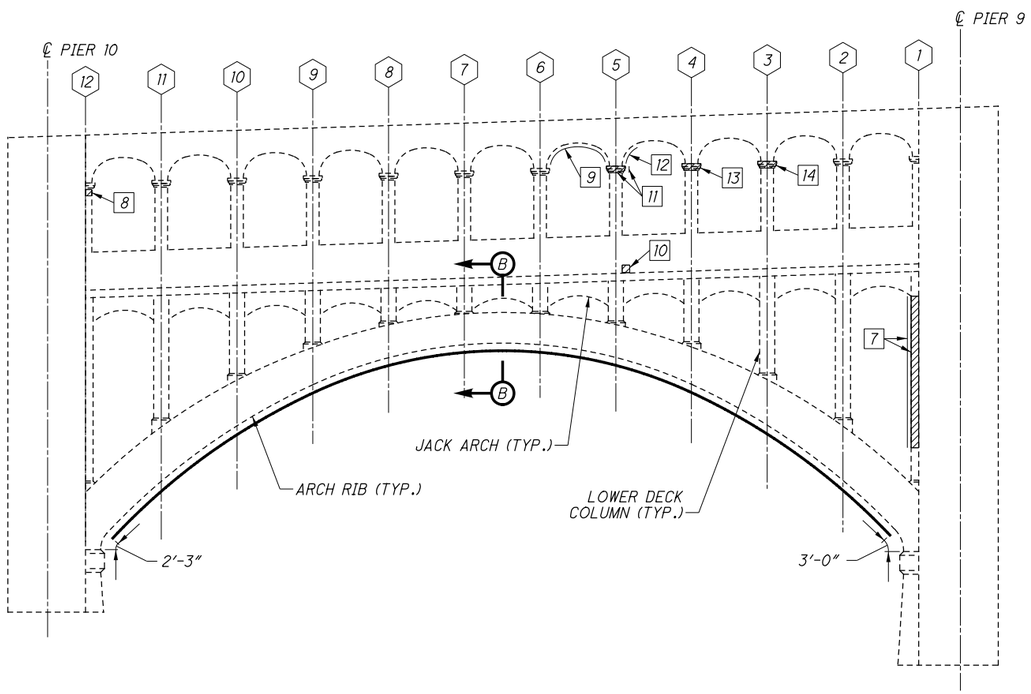


SPAN 10 - ARCH RIB A SOUTH ELEVATION

(LOOKING NORTH)



SPAN 10 - ARCH RIB A NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	3	2
2	TYPE 1	16	8
3	TYPE 1	2	1
4	TYPE 1	20	7
5	TYPE 1	16	4
6	TYPE 1	12	3
7	TYPE 1	40	10
8	TYPE 1	1	1
9	TYPE 2	10	7
10	TYPE 1	1	1
11	TYPE 1	3	2
12	TYPE 2	2	1
13	TYPE 1	2	1
14	TYPE 1	2	1
15	TYPE 1	2	2
16	TYPE 2	2	3
MEASURED QUANTITY*		134	-
PLAN QUANTITY*		201	54

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	180
TYPE 2 REPAIR	SF	21
FRP WRAP	SF	1304

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

- (#) SPANDREL COLUMN NUMBER
- [#] REPAIR NUMBER
- LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR
- LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR
- AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

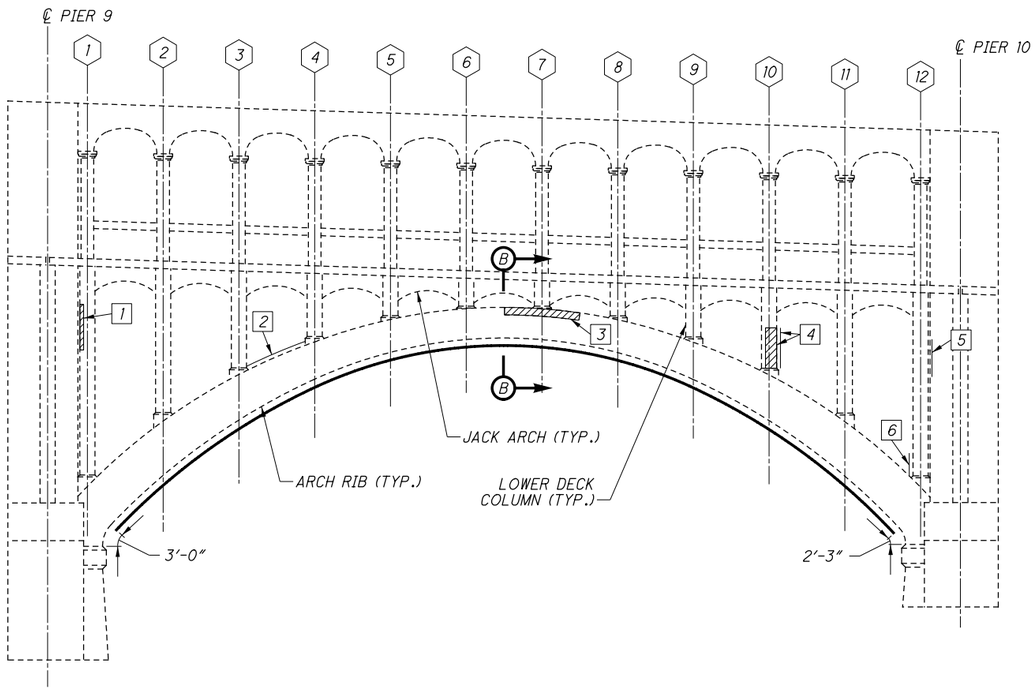
DESIGN AGENCY: Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 10 CONCRETE REPAIR DETAILS (2 OF 5)

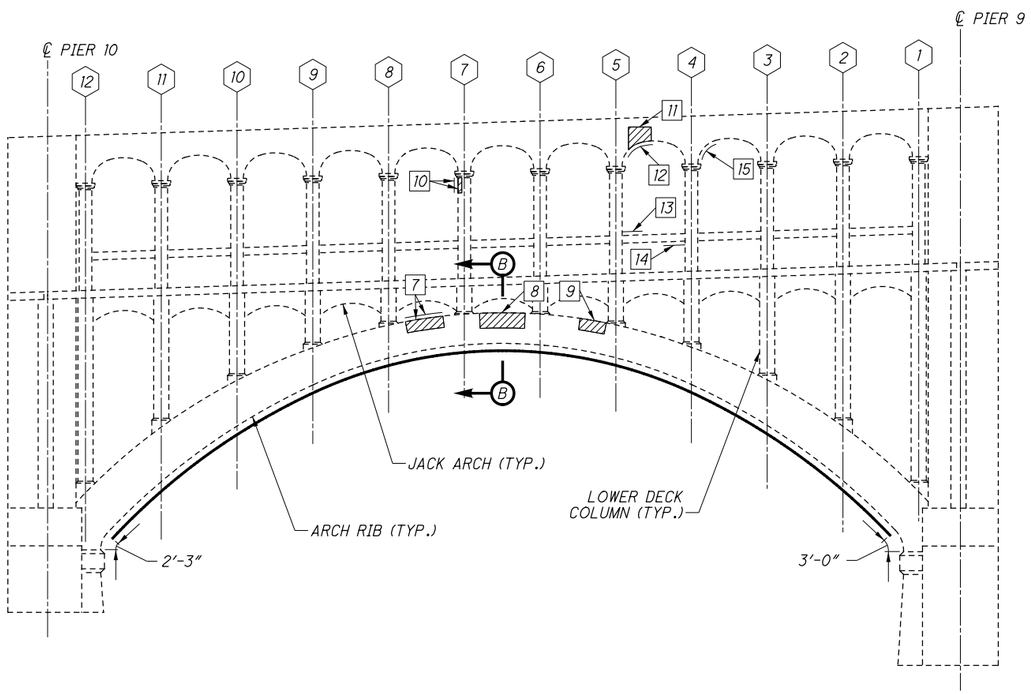
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 10 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



SPAN 10 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	3	3
2	TYPE 1	80	22
3	TYPE 1	10	-
4	TYPE 1	16	6
5	TYPE 1	5	3
6	TYPE 1	6	2
7	TYPE 1	48	16
8	TYPE 1	12	-
9	TYPE 1	5	-
10	TYPE 1	1	1
11	TYPE 1	6	2
12	TYPE 2	3	2
13	TYPE 1	3	2
14	TYPE 2	3	2
15	TYPE 2	3	2
MEASURED QUANTITY*		204	-
PLAN QUANTITY*		306	63

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	293
TYPE 2 REPAIR	SF	13
FRP WRAP	SF	1541

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED AJK | DRAWN AJK | CHECKED BPS | REVIEWED DWJ | DATE 04/18/18 | REVISED | STRUCTURE FILE NUMBER 1800930

SPAN 10 CONCRETE REPAIR DETAILS (3 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

69 / 89

108 / 138

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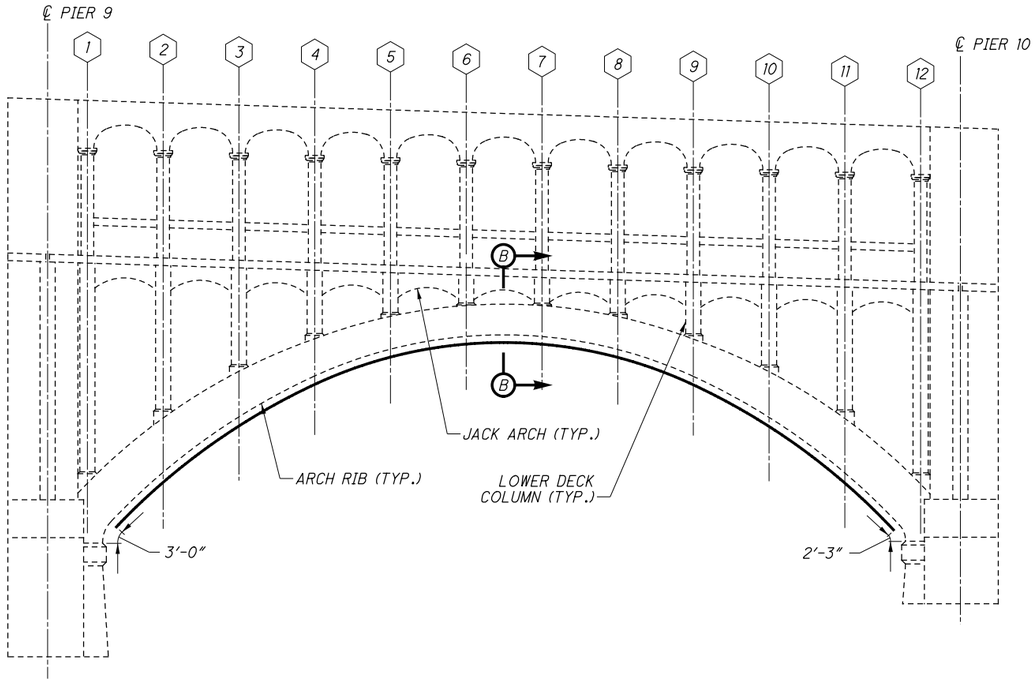
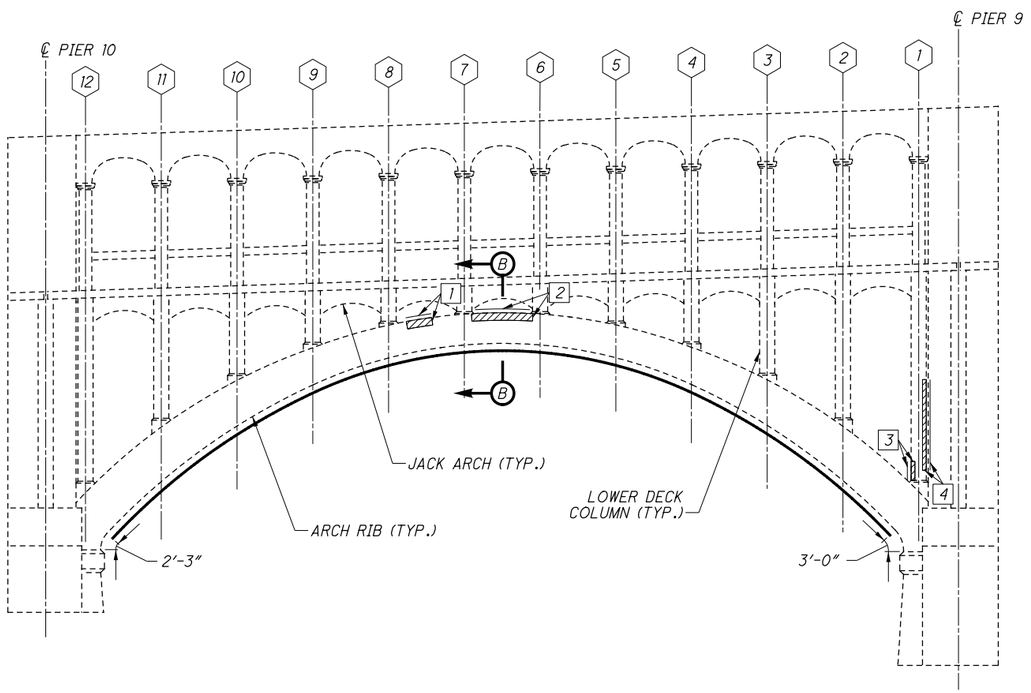


SPAN 10 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



SPAN 10 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	7	2
2	TYPE 1	32	12
3	TYPE 1	3	1
4	TYPE 1	34	6
MEASURED QUANTITY*		76	-
PLAN QUANTITY*		114	21

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	114
TYPE 2 REPAIR	SF	-
FRP WRAP	SF	1541

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR PIER 9 REPAIR DETAILS, SEE SHEET 29/89.
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 10 CONCRETE REPAIR DETAILS (4 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

70/89

109/138

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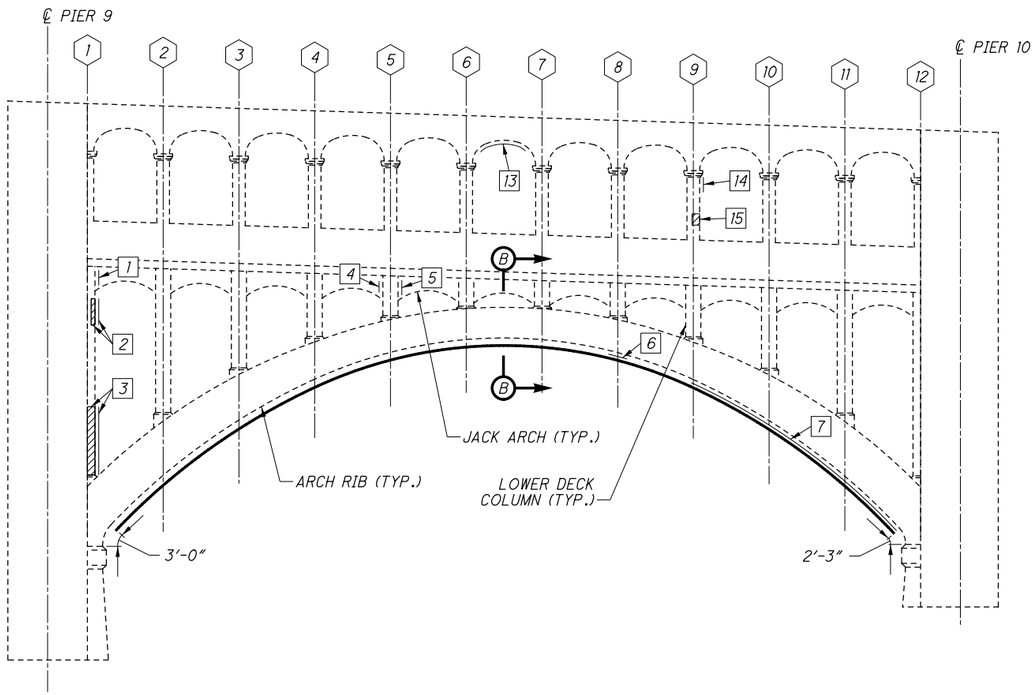
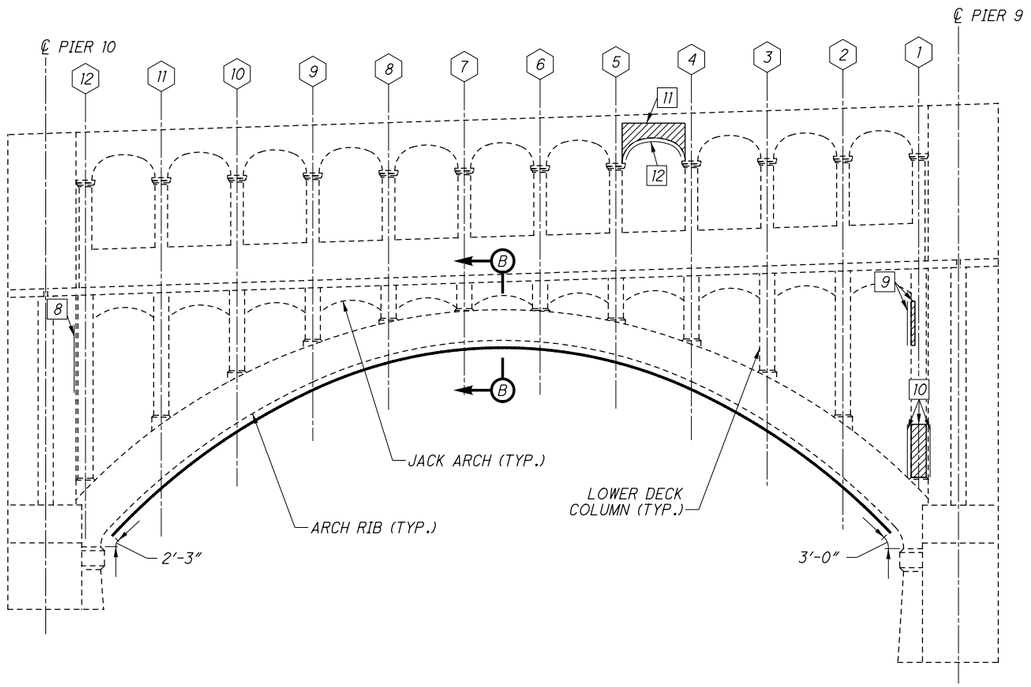


SPAN 10 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 10 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	4	1
2	TYPE 1	8	3
3	TYPE 1	21	5
4	TYPE 1	1	1
5	TYPE 1	2	1
6	TYPE 2	4	1
7	TYPE 2	138	52
8	TYPE 1	18	5
9	TYPE 1	6	2
10	TYPE 1	24	8
11	TYPE 1	24	8
12	TYPE 2	18	9
13	TYPE 2	7	5
14	TYPE 1	2	1
15	TYPE 1	2	1
MEASURED QUANTITY*		279	-
PLAN QUANTITY*		419	103

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	168
TYPE 2 REPAIR	SF	251
FRP WRAP	SF	1304

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN DECEMBER 2016. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET [84/89].
6. FOR PIER 9 REPAIR DETAILS, SEE SHEET [29/89].
7. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET [85/89].

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 10 CONCRETE REPAIR DETAILS (5 OF 5)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

71 / 89

110 / 138

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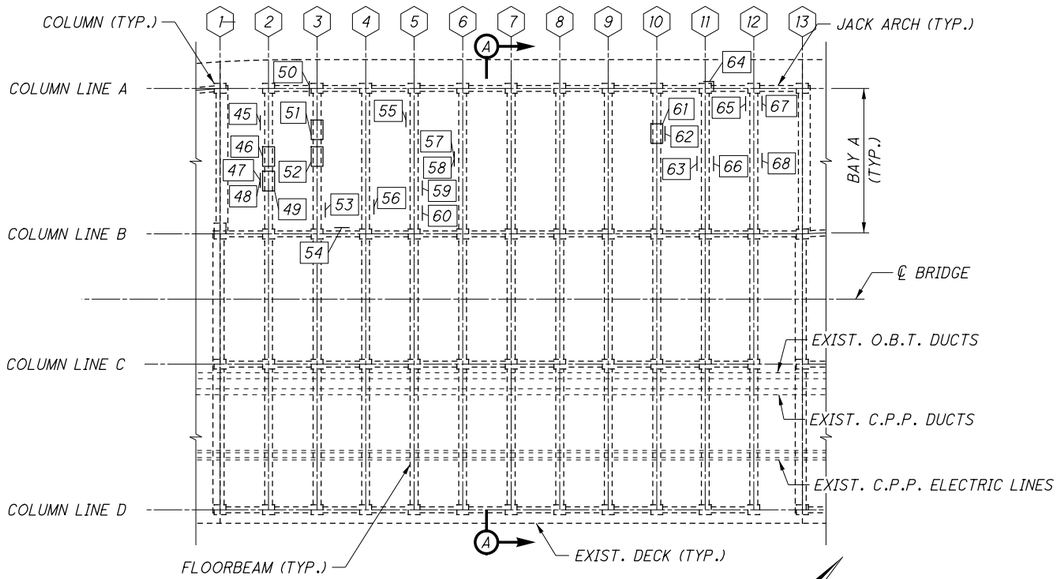
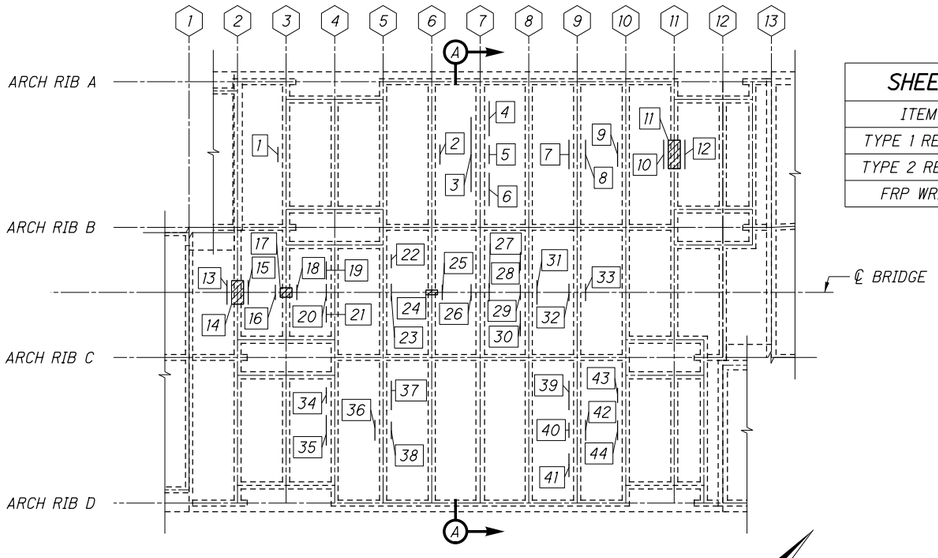


SPAN 12 - UPPER DECK PLAN



SPAN 12 - LOWER DECK PLAN

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	531
TYPE 2 REPAIR	SF	44
FRP WRAP	SF	65

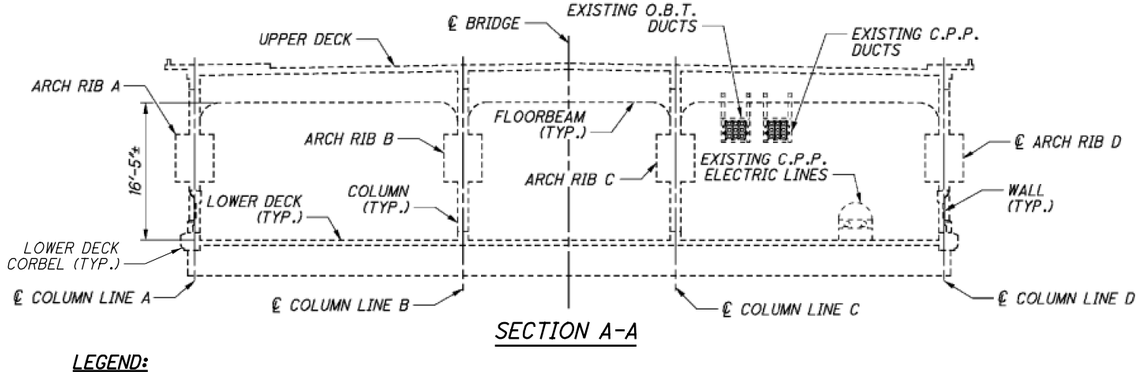
ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 1	1	1
2	TYPE 1	6	1
3	TYPE 1	16	8
4	TYPE 1	19	4
5	TYPE 1	5	1
6	TYPE 1	15	3
7	TYPE 1	4	1
8	TYPE 1	4	1
9	TYPE 1	1	1
10	TYPE 1	20	6
11	TYPE 2	6	4
12	TYPE 1	20	6
13	TYPE 1	17	6
14	TYPE 2	5	4
15	TYPE 1	17	6
16	TYPE 1	4	2
17	TYPE 2	2	2
18	TYPE 1	4	2
19	TYPE 1	5	1
20	TYPE 1	2	1
21	TYPE 1	3	1
22	TYPE 1	2	1
23	TYPE 1	3	1
24	TYPE 2	1	2
25	TYPE 1	2	1
26	TYPE 1	2	1
27	TYPE 1	5	1
28	TYPE 1	5	1
29	TYPE 1	2	1
30	TYPE 1	11	4
31	TYPE 1	10	4
32	TYPE 1	3	1
33	TYPE 1	3	1
34	TYPE 1	3	1
35	TYPE 1	14	3
36	TYPE 1	6	2
37	TYPE 1	5	3

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
38	TYPE 1	4	1
39	TYPE 1	3	2
40	TYPE 1	1	1
41	TYPE 1	10	2
42	TYPE 1	8	2
43	TYPE 1	1	1
44	TYPE 1	2	1
45	TYPE 1	3	2
46	TYPE 2	4	3
47	TYPE 1	1	1
48	TYPE 1	1	1
49	TYPE 2	1	1
50	TYPE 1	2	1
51	TYPE 2	4	4
52	TYPE 2	3	3
53	TYPE 1	2	1
54	TYPE 1	3	2
55	TYPE 1	3	2
56	TYPE 1	1	1
57	TYPE 1	4	2
58	TYPE 1	23	5
59	TYPE 1	6	2
60	TYPE 1	6	2
61	TYPE 2	3	3
62	TYPE 1	10	3
63	TYPE 1	6	2
64	TYPE 1	3	2
65	TYPE 1	1	1
66	TYPE 1	1	1
67	TYPE 1	6	2
68	TYPE 1	4	1
MEASURED QUANTITY*		383	-
PLAN QUANTITY*		575	148

* SEE NOTES 1 & 2
** SEE NOTE 3



SECTION A-A

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE INSPECTION PERFORMED IN JANUARY 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. THE LOWER DECK FLOORBEAMS ARE CONCRETE ENCASED STEEL GIRDERS AND CONTAIN MINIMAL TEMPERATURE/SHRINKAGE STEEL REINFORCEMENT. PATCH THE VERTICAL SIDES OF THESE MEMBERS IN ACCORDANCE WITH THE STANDARD TYPE 1 REPAIR DETAILS. PATCH THE HORIZONTAL BOTTOM SURFACES IN ACCORDANCE WITH THE DETAILS SHOWN ON SHEET 84/89. CONNECTION OF THE EMBEDDED GALVANIC ANODES SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

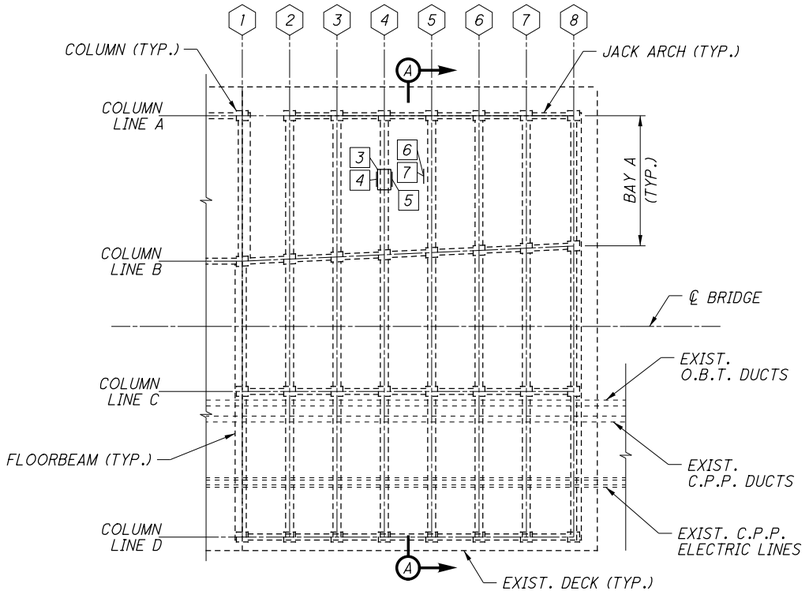
DESIGN AGENCY Pennoni

DESIGNED EAT | DRAWN EAT | CHECKED WJV | REVIEWED DWJ | DATE 04/18/18 | REVISED | STRUCTURE FILE NUMBER 1800930

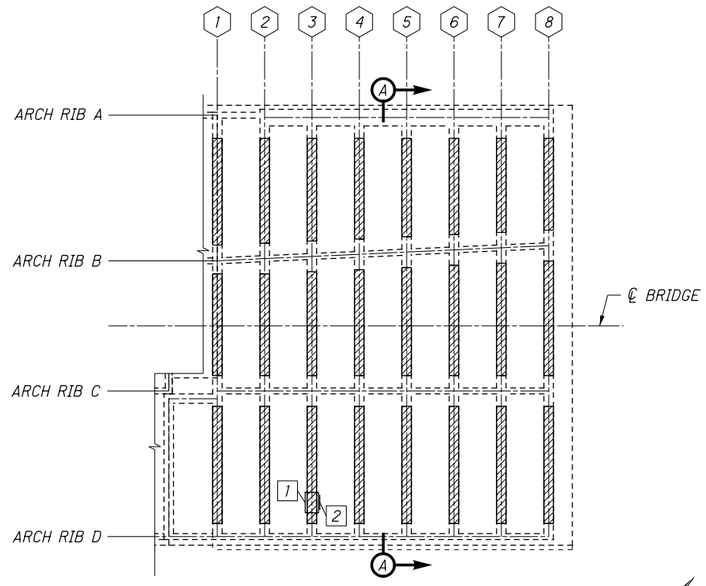
SPAN 12 CONCRETE REPAIR DETAILS

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



SPAN 13 - UPPER DECK PLAN



SPAN 13 - LOWER DECK PLAN

ESTIMATED PATCHING QUANTITIES			
REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	10	6
2	TYPE 1	6	3
3	TYPE 2	4	4
4	TYPE 1	4	1
5	TYPE 1	2	1
6	TYPE 1	4	1
7	TYPE 1	10	3
MEASURED QUANTITY*		40	-
PLAN QUANTITY*		60	19

* SEE NOTES 1 & 2
** SEE NOTE 3

SHEET QUANTITY SUMMARY		
ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	39
TYPE 2 REPAIR	SF	21
FRP WRAP	SF	2738

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
5. FOR SECTION A-A, SEE SHEET 34/89.
6. FOR FRP WRAP DETAILS, SEE SHEET 85/89.

LEGEND:

(#) FLOORBEAM LINE NUMBER

[#] REPAIR NO. OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

SPAN 13 CONCRETE REPAIR DETAILS (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

73 / 89

112 / 138

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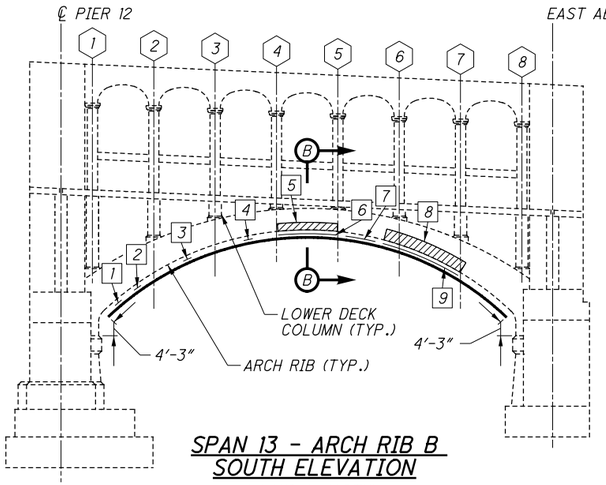
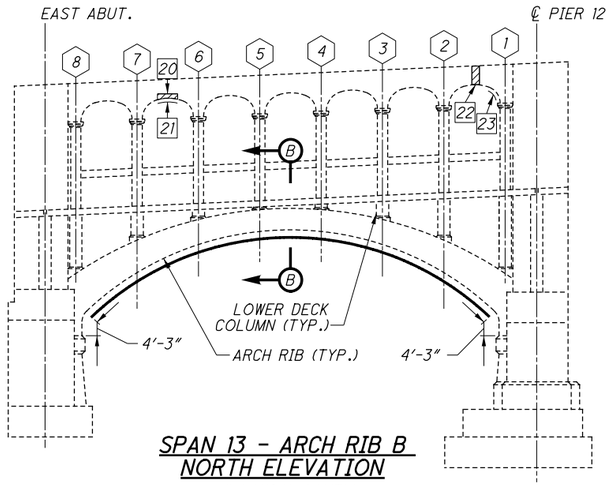


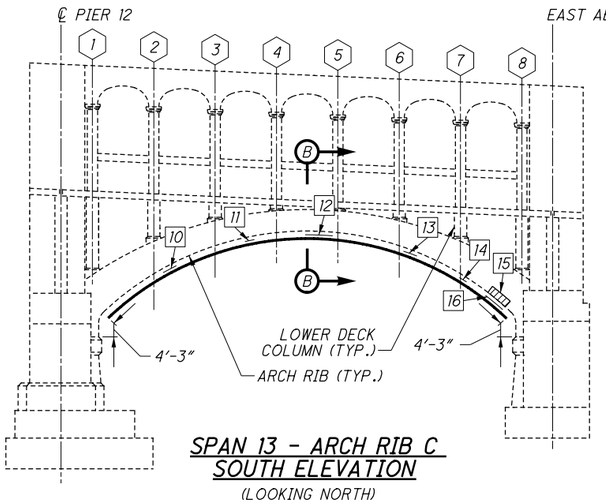
SPAN 13 - ARCH RIB B SOUTH ELEVATION

(LOOKING NORTH)



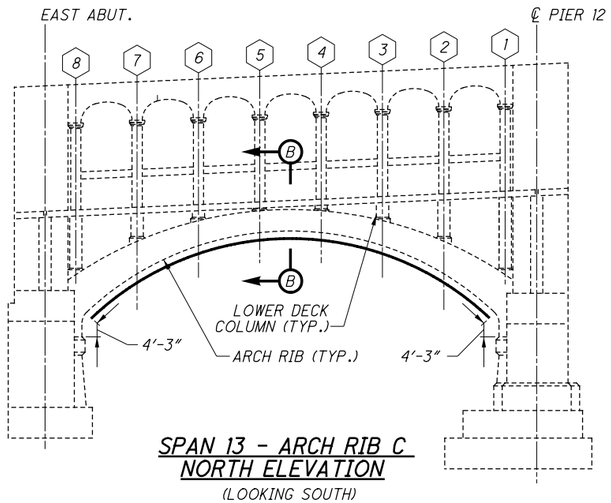
SPAN 13 - ARCH RIB B NORTH ELEVATION

(LOOKING SOUTH)



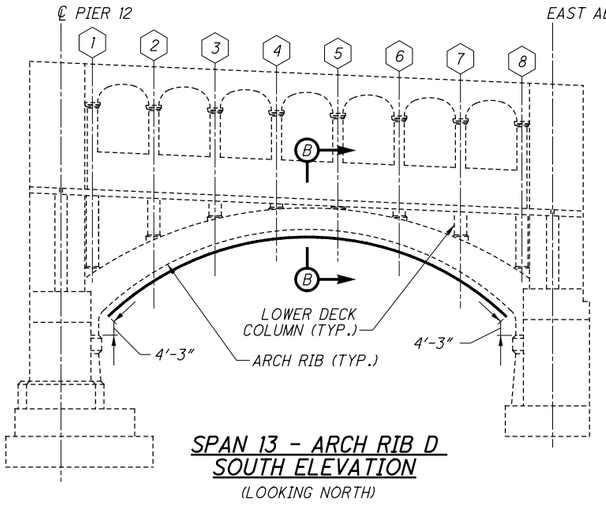
SPAN 13 - ARCH RIB C SOUTH ELEVATION

(LOOKING NORTH)



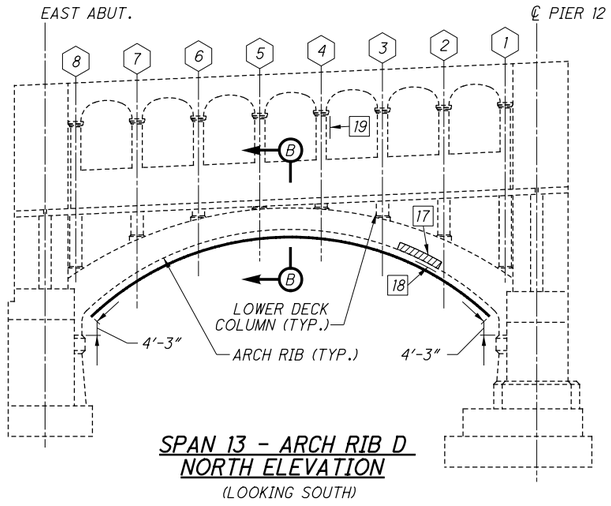
SPAN 13 - ARCH RIB C NORTH ELEVATION

(LOOKING SOUTH)



SPAN 13 - ARCH RIB D SOUTH ELEVATION

(LOOKING NORTH)



SPAN 13 - ARCH RIB D NORTH ELEVATION

(LOOKING SOUTH)

ESTIMATED PATCHING QUANTITIES

REPAIR NO.	REPAIR TYPE	AREA (SF)	ANODE QUANTITY**
1	TYPE 2	1	1
2	TYPE 2	1	1
3	TYPE 2	1	1
4	TYPE 2	1	1
5	TYPE 1	10	-
6	TYPE 2	40	16
7	TYPE 2	15	8
8	TYPE 1	23	-
9	TYPE 2	75	26
10	TYPE 2	4	1
11	TYPE 2	1	1
12	TYPE 2	24	10
13	TYPE 2	2	1
14	TYPE 2	1	1
15	TYPE 1	3	-
16	TYPE 2	3	2
17	TYPE 1	6	-
18	TYPE 2	5	2
19	TYPE 1	3	2
20	TYPE 1	3	2
21	TYPE 2	4	3
22	TYPE 1	4	2
23	TYPE 2	1	1
MEASURED QUANTITY*		231	-
PLAN QUANTITY*		347	82

* SEE NOTES 1 & 2
** SEE NOTES 3 & 4

SHEET QUANTITY SUMMARY

ITEM	UNIT	QUANTITY
TYPE 1 REPAIR	SF	78
TYPE 2 REPAIR	SF	269
FRP WRAP	SF	2491

NOTES:

1. MEASURED QUANTITIES ARE BASED ON THE VISUAL INSPECTION PERFORMED IN NOVEMBER 2017. THE EXACT DIMENSIONS AND LOCATIONS OF PATCHES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD FOR FINAL PAY QUANTITY.
2. PLAN QUANTITIES INCLUDE 50% CONTINGENCY ADDED TO MEASURED QUANTITIES.
3. ANODES ARE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.
4. GALVANIC ANODES WILL NOT BE USED FOR PATCHING THE UNREINFORCED VERTICAL SIDES OF THE CONCRETE ARCH RIBS.
5. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.
6. FOR FRP WRAP DETAILS AND SECTION B-B, SEE SHEET 85/89.

LEGEND:

(#) SPANDREL COLUMN NUMBER

[#] REPAIR NUMBER

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 REPAIR

LOCATION OF DEFICIENT CONCRETE ON PERPENDICULAR FACE (NOT VISIBLE IN ELEVATION VIEW) TO BE REPAIRED IN ACCORDANCE WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18

CHECKED	REVISED	STRUCTURE FILE NUMBER
BPS		1800930

SPAN 13 CONCRETE REPAIR DETAILS (2 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

74/89

113/138

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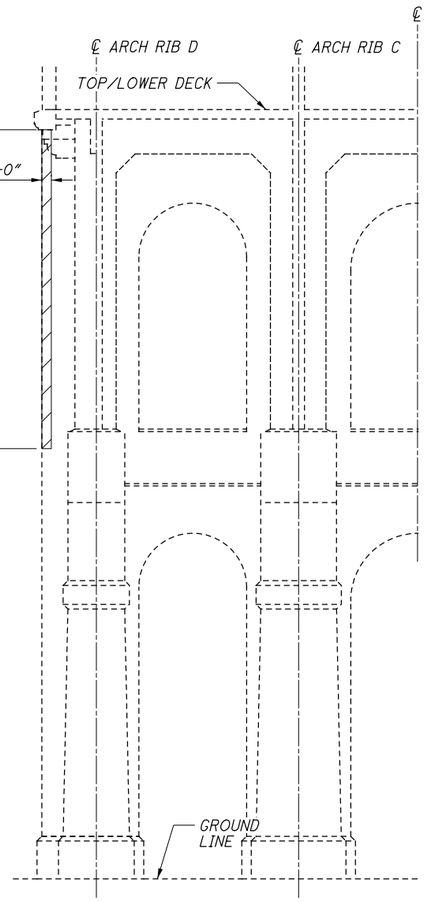
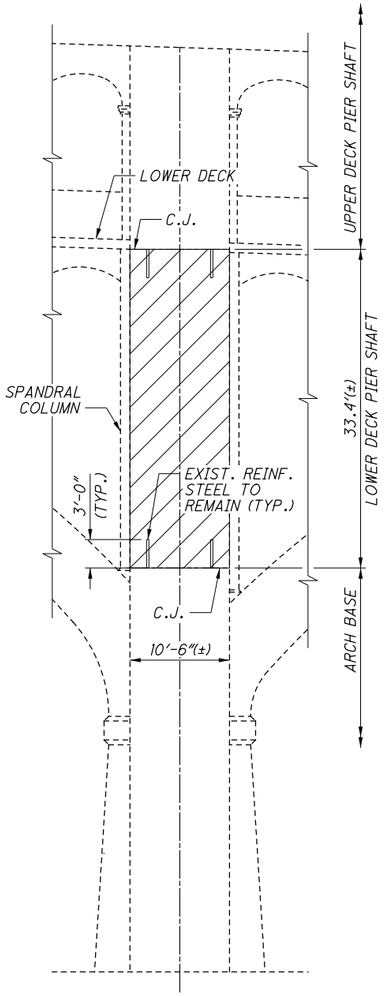


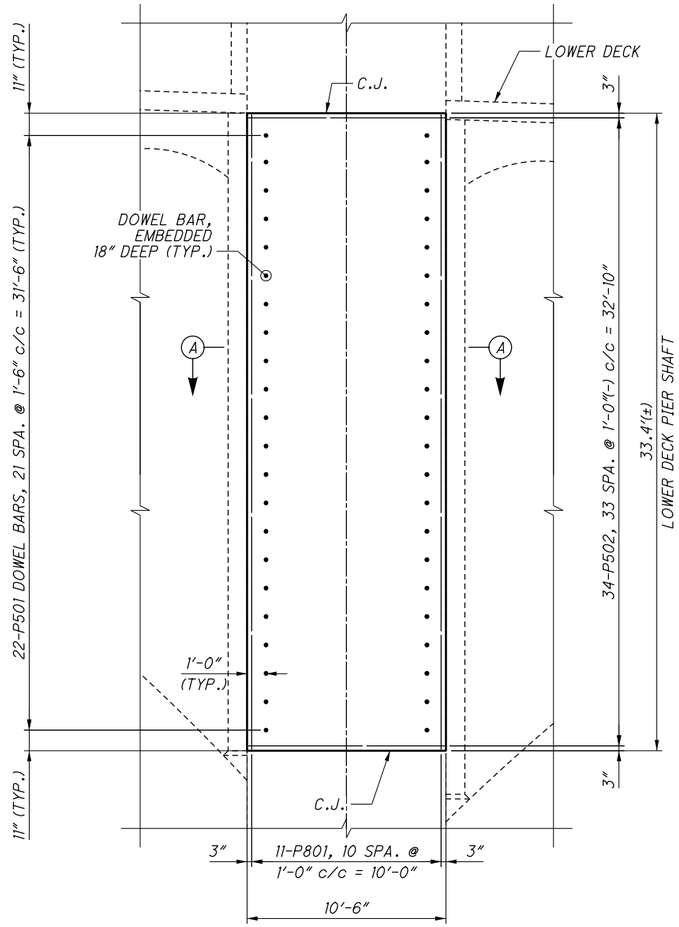
PIER 6 - EAST ELEVATION

SHOWING LIMITS OF REMOVAL



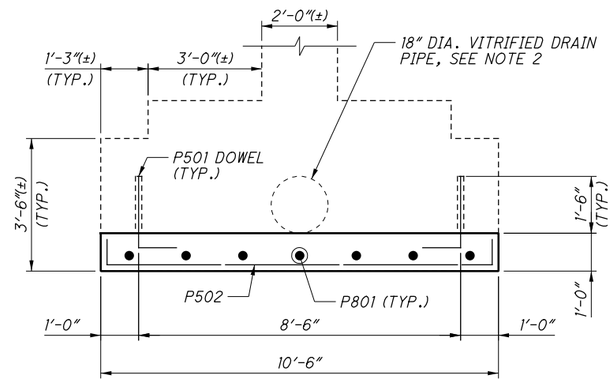
PIER 6 - SOUTH ELEVATION

SHOWING LIMITS OF REMOVAL



PARTIAL REPLACEMENT

LOWER DECK SHAFT ELEVATION



SECTION A-A

LEGEND:

LOCATION OF DEFICIENT CONCRETE TO BE REPAIRED IN ACCORDANCE WITH ITEM 511 - CONCRETE, MISC.: PIER 6 LOWER DECK SHAFT REPAIR

NOTES:

1. THE DEPTH OF CONCRETE REMOVAL SHALL NOT BE GREATER THAN 12 INCHES.
2. THE ASSUMED POSITION OF THE ORIGINAL ENCASED 18" DIAMETER DRAIN PIPE IS SHOWN. IF THE DRAIN PIPE IS EXPOSED DURING REMOVAL OF DETERIORATED CONCRETE, THE EXISTING PIPE SHALL BE REMOVED. ANY DETERIORATED CONCRETE SURROUNDING THE PIPE BEYOND THE 12" REMOVAL SHALL REMAIN IN PLACE.
3. EMBEDDED GALVANIC ANODES ARE NOT SHOWN FOR CLARITY. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

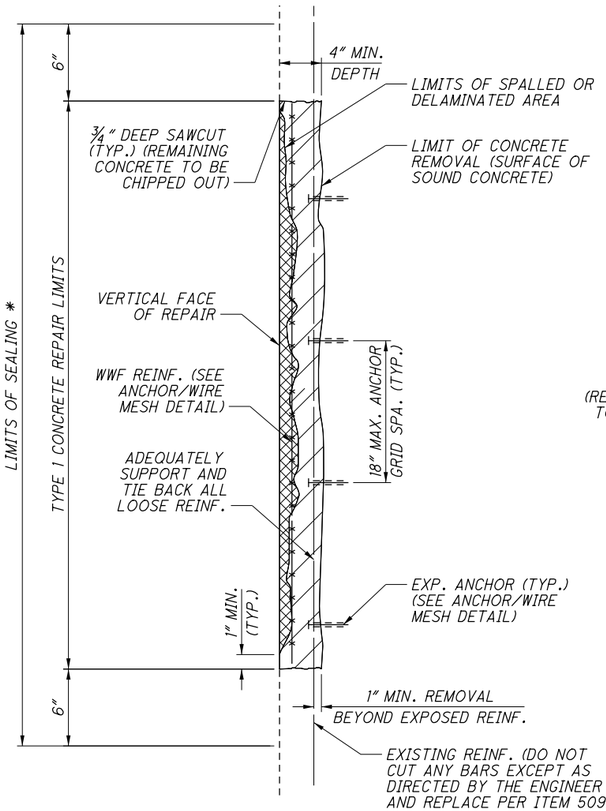
PIER 6 LOWER DECK SHAFT REPAIRS

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

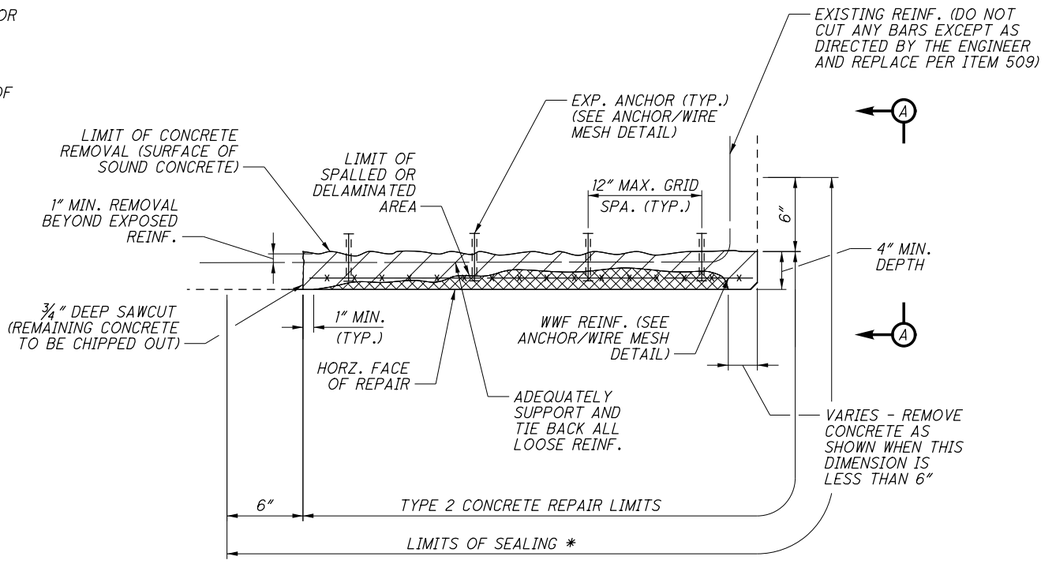
CUY-6-14.56

PID No. 99972



TYPE 1 CONCRETE REPAIR

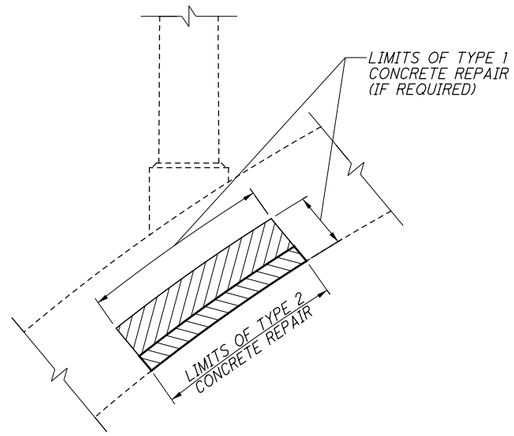
(NOT TO SCALE)



TYPE 2 CONCRETE REPAIR

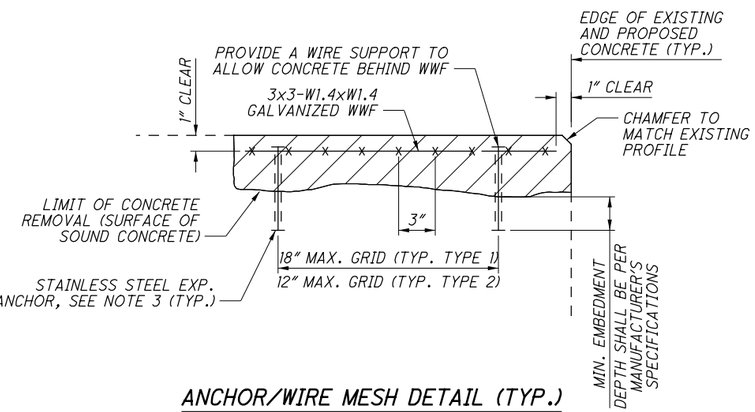
(NOT TO SCALE)

* EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO PATCHED OR REPLACED CONCRETE SURFACES IN THE FOLLOWING LOCATIONS: WEST STATION, EAST STATION, W. 25TH TUNNEL, DETROIT TUNNEL, AND SPANS 1A & 1B.



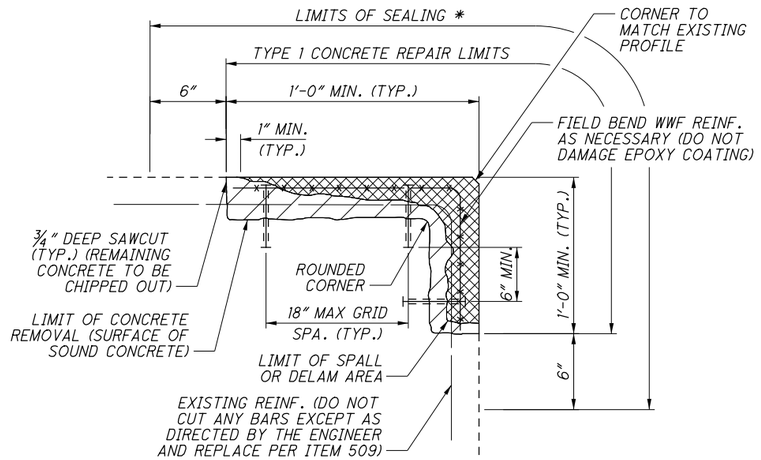
VIEW A-A

(ARCH RIB APPLICATION SHOWN, FLOORBEAM TYPE 2 CONCRETE REPAIR APPLICATIONS SIMILAR - NOT TO SCALE)



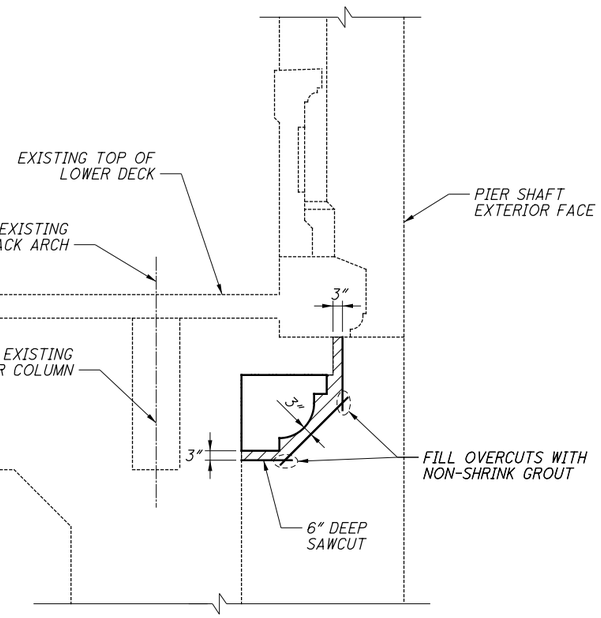
ANCHOR/WIRE MESH DETAIL (TYP.)

(EXISTING REINFORCEMENT NOT SHOWN FOR CLARITY)
(NOT TO SCALE)



TYPE 1 REPAIR AT VERTICAL CORNER

(FOR INFORMATION NOT SHOWN SEE TYPE 1 CONCRETE REPAIR)
(NOT TO SCALE)



LOWER DECK CORBEL RETROFIT DETAIL

NOTES:

1. ALTHOUGH EMBEDDED GALVANIC ANODES ARE REQUIRED AS NOTED THROUGHOUT THE PLANS, THEY ARE NOT SHOWN FOR CLARITY.
2. FOR DETAILS ON REPAIRING THE UNREINFORCED VERTICAL SIDES OF THE ARCH RIBS, SEE CONCRETE REPAIR DETAILS ON SHEET 77/89 .
3. STAINLESS STEEL EXPANSION ANCHORS SHALL BE TYPE 304 STAINLESS STEEL AND 1/2 INCH DIAMETER, SUCH AS CONFAST DOMESTIC WEDGE ANCHORS, POWERS POWER-STUD ANCHORS, OR MARKSMEN THUNDERSTUD WEDGE ANCHORS. STAINLESS STEEL EXPANSION ANCHORS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. IF THE CONTRACTOR CANNOT SUPPLY AN APPROVED STAINLESS STEEL EXPANSION ANCHOR, INSTALL #4 DOWELS WITH A MINIMUM 6" EMBEDMENT DEPTH IN ACCORDANCE WITH CMS 519.05 AT NO ADDITIONAL COST TO THE STATE. STAINLESS STEEL EXPANSION ANCHORS AND/OR DOWELS SHALL BE INCLUDED FOR PAYMENT WITH ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR TYPE 2 REPAIR.

LEGEND:

INDICATES EXISTING CONCRETE SPALL AND/OR DELAMINATION TO BE PATCHED AS PER ITEM SPECIAL - PATCHING CONCRETE STRUCTURES MISC.: TYPE 1 OR TYPE 2 REPAIR

TYPE 1 LIMITS OF CONCRETE REMOVAL INTO SOUND CONCRETE FOR CONCRETE REPAIR

TYPE 2 LIMITS OF CONCRETE REMOVAL INTO SOUND CONCRETE FOR CONCRETE REPAIR

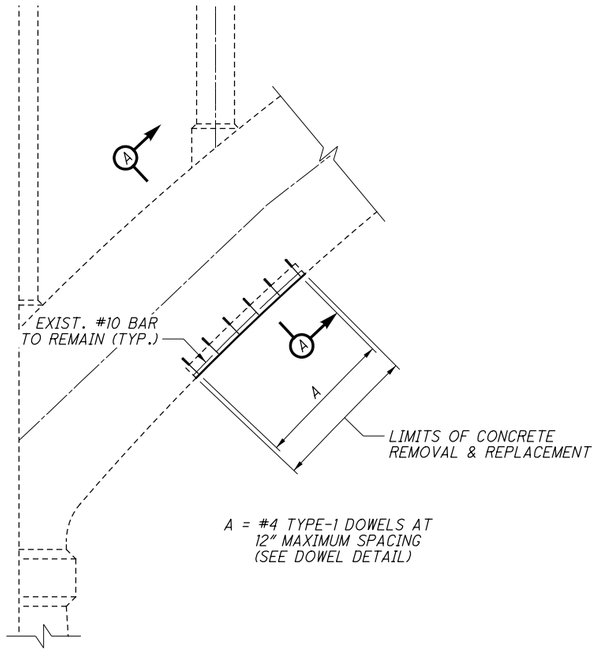
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
AJK	AJK	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

CONCRETE REPAIR DETAILS - 1

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

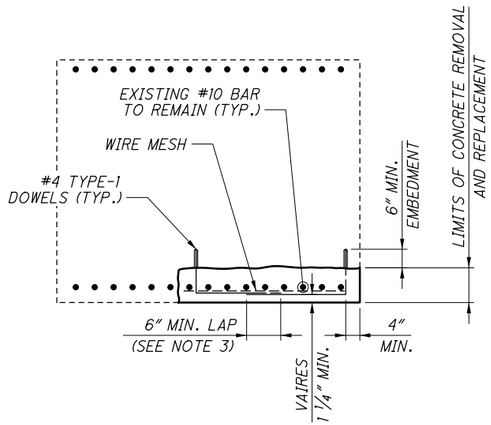
CUY-6-14.56
PID No. 99972



A = #4 TYPE-1 DOWELS AT
12" MAXIMUM SPACING
(SEE DOWEL DETAIL)

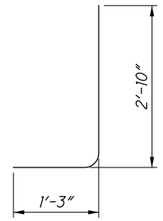
TYPICAL ARCH RIB ELEVATION

SHOWING HORIZONTAL BOTTOM SURFACE REPAIR
(NOT TO SCALE)



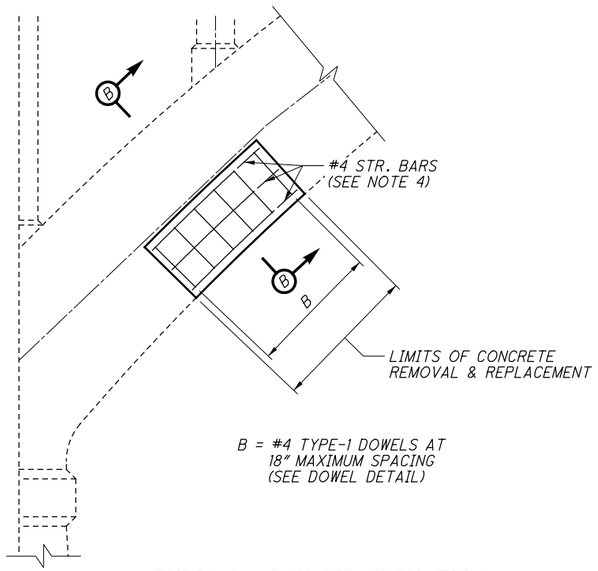
SECTION A-A

(NOT TO SCALE)



DOWEL DETAIL

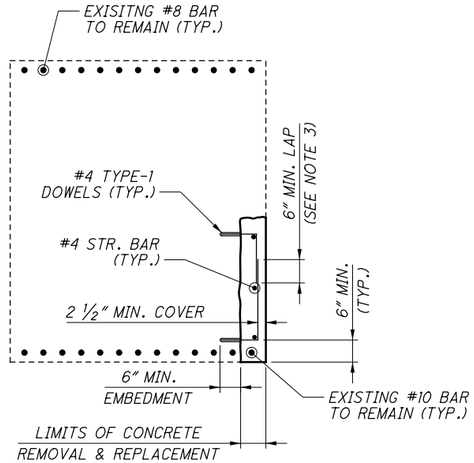
(SEE NOTE 2)



B = #4 TYPE-1 DOWELS AT
18" MAXIMUM SPACING
(SEE DOWEL DETAIL)

TYPICAL ARCH RIB ELEVATION

SHOWING VERTICAL SIDE FACE REPAIR
(NOT TO SCALE)



SECTION B-B

(NOT TO SCALE)

NOTES:

1. CLEAN AND RETAIN ALL EXISTING REINFORCEMENT EXTENDING FROM EXISTING STRUCTURE INTO PORTIONS OF REBUILT STRUCTURE. IF RETAINING EXISTING REINFORCEMENT IS NOT POSSIBLE, NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
2. DOWEL BARS SHALL BE TRIMMED AS NEEDED AND AS DIRECTED BY THE ENGINEER IN ORDER TO MAINTAIN REQUIRED MINIMUM CONCRETE COVER AND LAP LENGTHS.
3. EACH PAIR OF L-SHAPED DOWEL BARS MUST OVERLAP A MINIMUM OF 6".
4. STRAIGHT LONGITUDINAL REINFORCING BARS SHALL BE BENT AND PLACED IN THE FIELD TO MATCH THE CURVATURE OF THE EXISTING ARCH.
5. ALL NEW DOWELS SHALL BE INSTALLED WITH NONSHRINK, NONMETALLIC GROUT PER CMS 510.
6. ALL LIMITS OF CONCRETE REMOVAL SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO COMMENCING WORK AND ORDERING MATERIAL. IF ANY DISCREPANCIES ARE FOUND IN THE DIMENSIONS, THE ENGINEER SHALL DIRECT THE CONTRACTOR TO ADJUST THE LENGTH AND QUANTITY OF REINFORCING ACCORDINGLY.
7. IF POSITION OF EXISTING LONGITUDINAL REINFORCEMENT DOES NOT ALLOW FOR MINIMUM 1¼" COVER OF NEW L-SHAPED DOWELS, PLACE NEW L-SHAPED DOWELS ABOVE LONGITUDINAL REINFORCEMENT. WIRE MESH SHALL STILL BE PLACED BELOW EXISTING LONGITUDINAL REINFORCEMENT PRIOR TO POURING NEW CONCRETE.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
EAT	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

CONCRETE REPAIR DETAILS - 2

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

77 / 89

116
138

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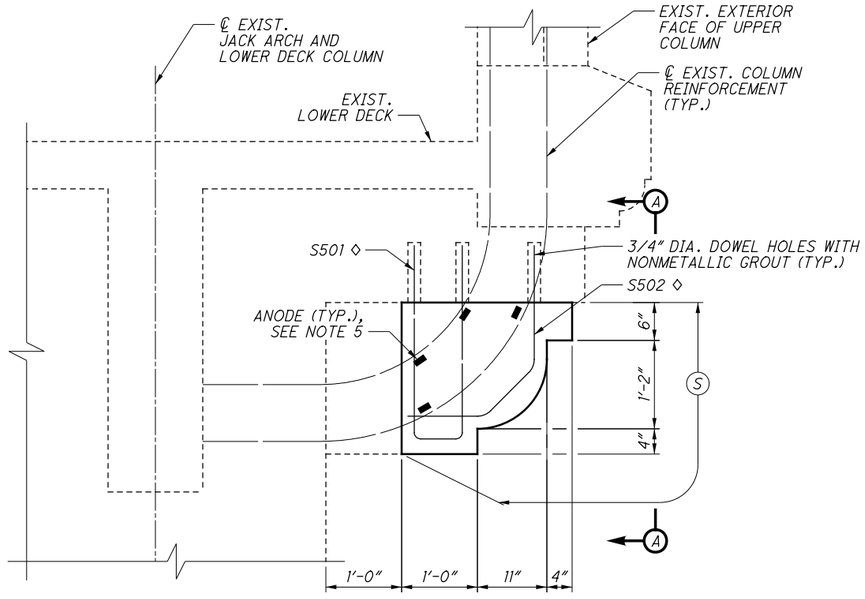
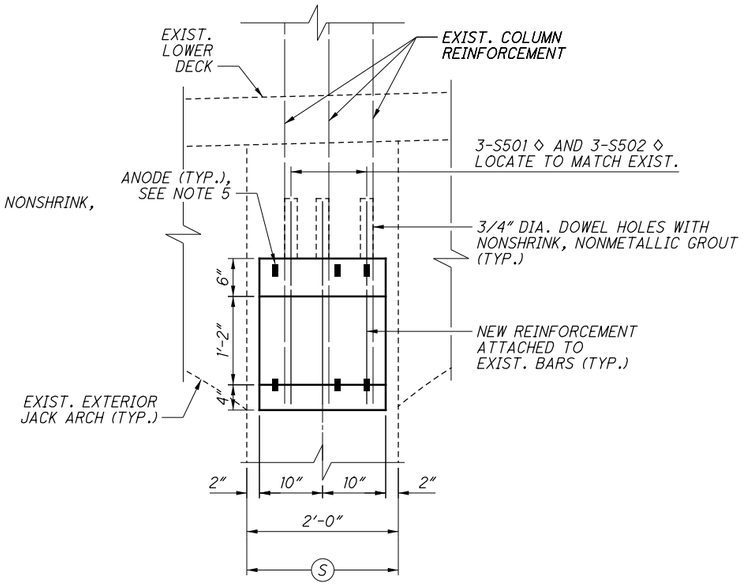


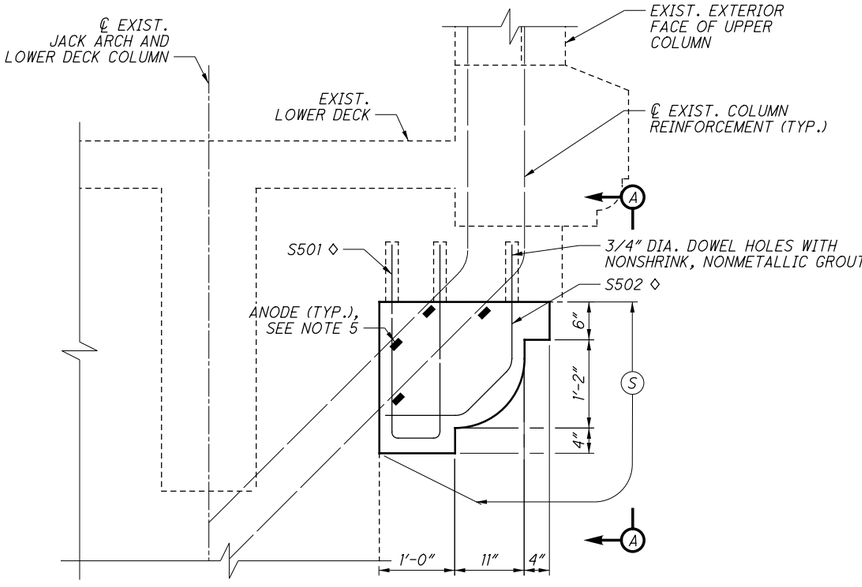
CORBEL ELEVATION - SPANS 3 AND 5



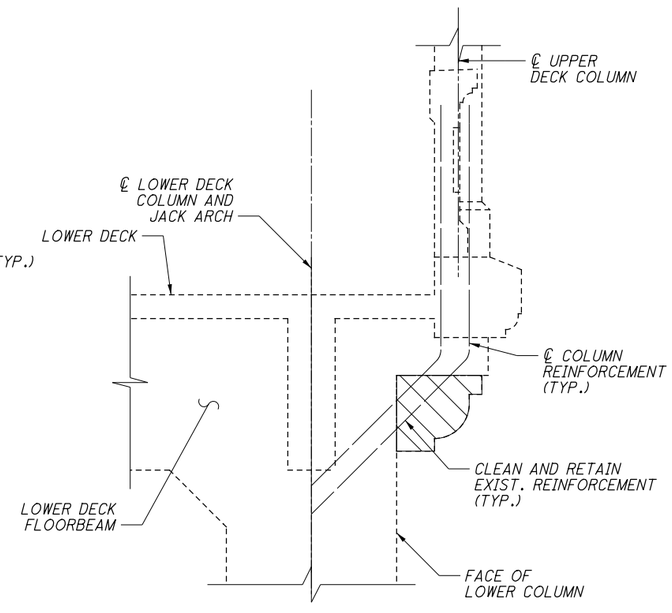
VIEW A-A

CORBEL REPLACEMENTS				
REPAIR NO.	SPAN	FLOORBEAM	END	ANODE QUANTITY *
1	3	8	NORTH	12
2	3	9	NORTH	12
3	5	12	SOUTH	12
4	6	1	SOUTH	12
5	6	12	SOUTH	12
6	6	15	NORTH	12
7	7	1	SOUTH	12
8	7	2	SOUTH	12
9	7	10	NORTH	12
10	7	15	SOUTH	12
11	8	1	NORTH	12
12	8	12	NORTH	12
13	8	14	NORTH	12
14	8	15	SOUTH	12
15	9	1	SOUTH	12
16	10	1	SOUTH	12

* SEE NOTE 6



CORBEL ELEVATION - SPANS 2 AND 6-10



CORBEL REMOVAL DETAIL

LEGEND:

- PORTION OF CORBEL TO BE REMOVED
- (S) LIMITS OF SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN
- ◊ DOWEL BAR TO BE DRILLED AND GROUTED A MIN. 9" INTO EXISTING CONCRETE

NOTES:

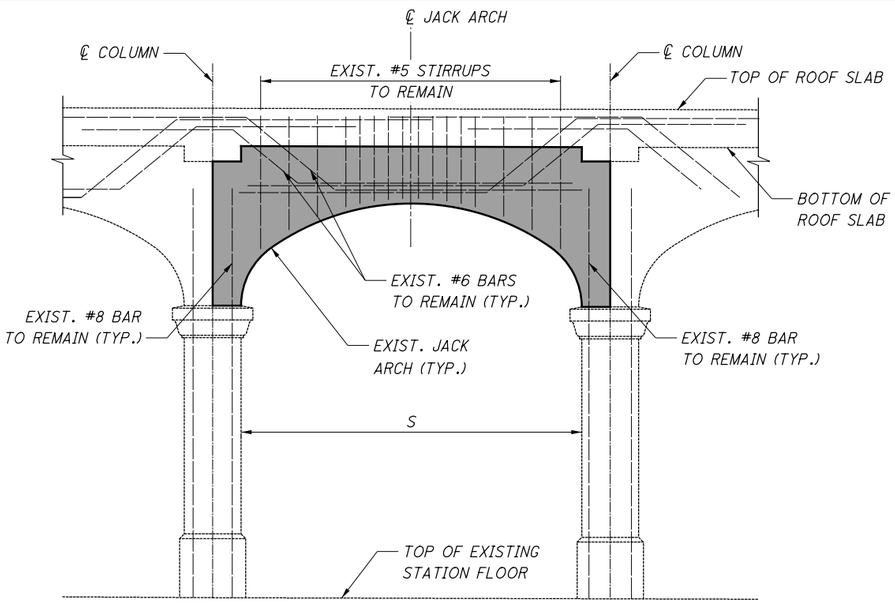
1. SOME EXISTING REINFORCEMENT IS NOT SHOWN FOR CLARITY.
2. ALL NEW REINFORCEMENT TO MAINTAIN 2 INCHES MINIMUM CLEARANCE TO FACE. THE REINFORCEMENT SHALL BE SECURELY TIED TO THE EXISTING REINFORCEMENT WHERE POSSIBLE TO HOLD IN PLACE.
3. ALL NEW CONCRETE CORBELS SHALL BE SEALED WITH EPOXY URETHANE. THE SEALING SHALL COVER THE NEW CONCRETE AS WELL AS A STRIP SURROUNDING THE NEW CONCRETE WHERE FEASABLE.
4. THE INTERFACE BETWEEN ALL NEW CORBELS AND EXISTING FLOORBEAMS SHALL BE SEALED BY EPOXY INJECTION.
5. ATTACH ANODES TO THE EXISTING REINFORCING STEEL NEAR THE INTERFACE BETWEEN THE EXISTING AND PROPOSED CONCRETE.
6. THE METAL CORBEL FORMWORK USED DURING THE 1995 - 1997 REHABILITATION WAS SALVAGED AND HAS BEEN IN STORAGE WITH THE CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS. THIS FORMWORK IS AVAILABLE TO THE CONTRACTOR FOR USE ON THIS PROJECT.
7. ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR CORBEL REPLACEMENT INCLUDING ANODES SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CONCRETE, MISC.: LOWER DECK CORBEL REPLACEMENT. EPOXY INJECTION SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM.

DESIGN AGENCY Pennoni

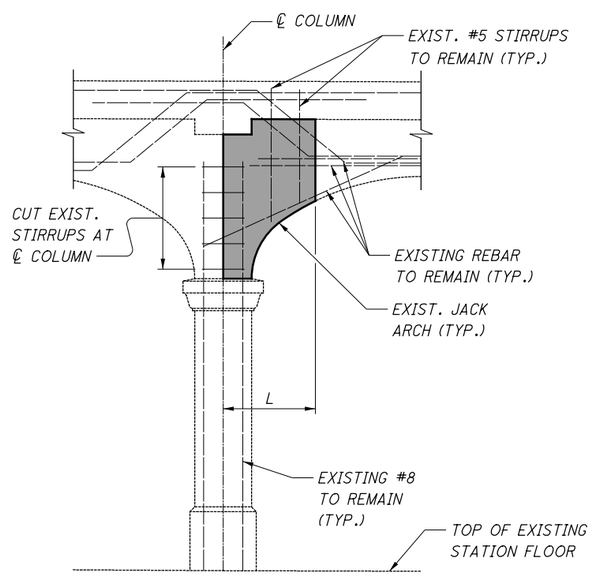
DESIGNED	DRAWN	REVIEWED	DATE
WJV	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

CONCRETE CORBEL REPLACEMENT DETAIL
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

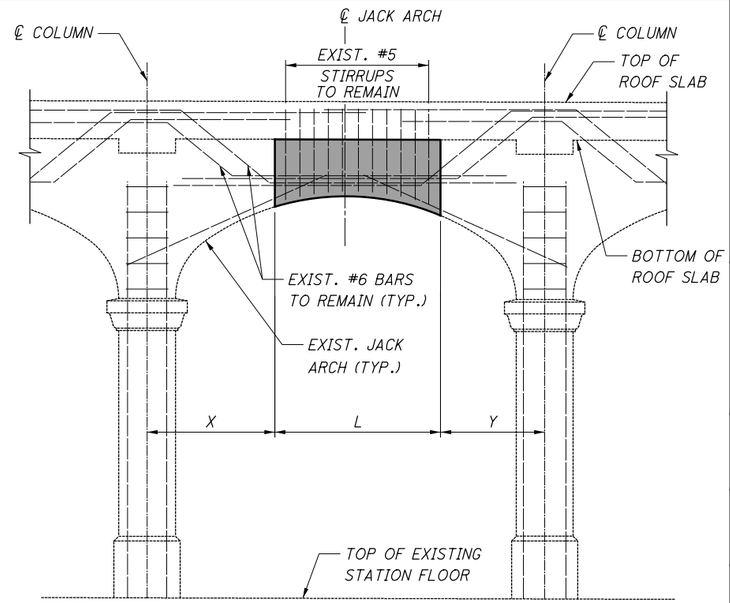


FULL JACK ARCH REMOVAL



TYPE 1 PARTIAL JACK ARCH REMOVAL

LOOKING NORTH



TYPE 2 PARTIAL JACK ARCH REMOVAL

LOOKING NORTH

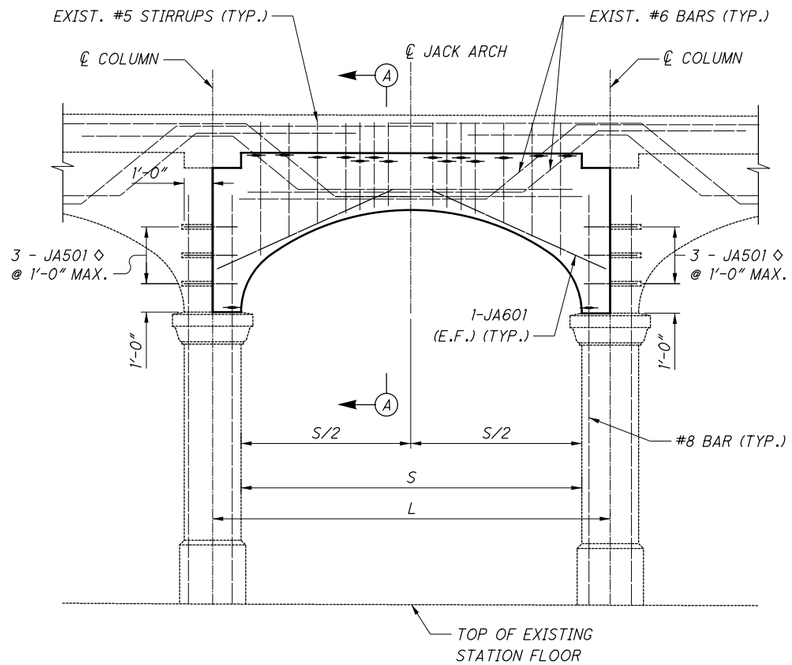
LEGEND:

LIMITS OF JACK ARCH REMOVAL, SEE NOTE 4 ON SHEET 78/89

EMBEDDED GALVANIC ANODE

NOTES:

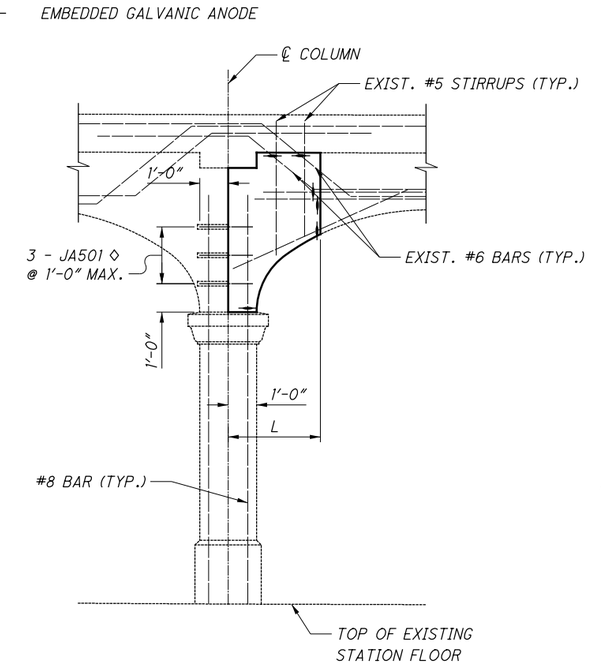
1. SEE SHEET 80/89 FOR SECTIONS & NOTES.
2. FOR DETAILS OF EMBEDDED GALVANIC ANODE CONNECTION IN JACK ARCH REPLACEMENT ARRANGEMENTS, SEE SHEET 84/89.



FULL JACK ARCH REPLACEMENT

SHOWN WITH EXISTING COLUMNS ROTATED
(JACK ARCH REPLACEMENT WITH COLUMN REPLACEMENT SIMILAR)

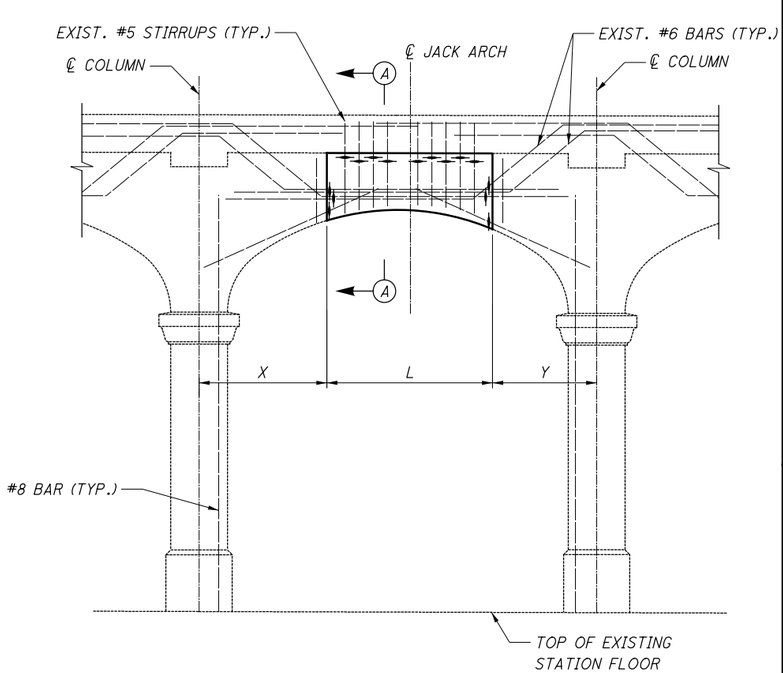
◊ DOWEL BAR TO BE DRILLED AND GROUTED 1'-0" INTO CONCRETE



TYPE 1 PARTIAL JACK ARCH REPLACEMENT

LOOKING NORTH

◊ DOWEL BAR TO BE DRILLED AND GROUTED 1'-0" INTO CONCRETE



TYPE 2 PARTIAL JACK ARCH REPLACEMENT

LOOKING NORTH

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
CTL	CTL	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

CONCRETE JACK ARCH REPLACEMENT DETAILS

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

79/89

118/138

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JACK ARCH REPAIR SCHEDULE

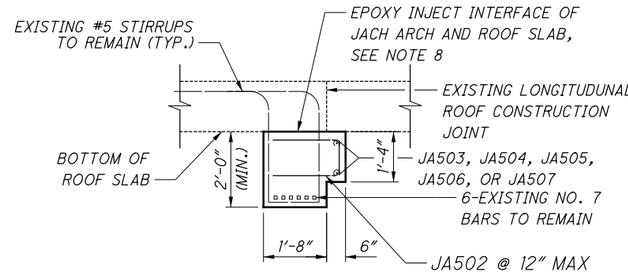
	JACK ARCH	REPAIR	L	EST. CONC. VOLUME (CU.FT.)	X	Y	S	D	D_1	R	R1	R2	M	N	NO. OF GALVANIZED ANODES	BAR MARK	BAR #
WEST STATION	A9-A10	FULL	--	83	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	16	JA503	2
	A11-A12	FULL	--	83	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	16	JA503	2
	A12-A13	TYPE 1	3'-3"	25	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	6	JA504	2
	A14-A15	TYPE 1	2'-8"	27	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	6	JA505	2
	A15-A16	FULL	--	83	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	16	JA503	2
	A16-A17	FULL	--	83	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	16	JA503	2
	A17-A18	TYPE 1	5'-2"	35	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	8	JA506	2
	A19-A20	FULL	--	83	--	--	12'-0"	2'-0"	9/16"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	16	JA503	2
	A20-A21	FULL	--	77	--	--	11'-1 5/8"	1'-11 1/4"	9/16"	8'-9 1/16"	3'-1 3/8"	3'-2 1/8"	4'-11"	4'-11"	16	JA507	2
	A21-A22	FULL	--	76	--	--	10'-11"	2'-0"	1/2"	8'-7"	3'-0 5/8"	3'-1 3/8"	4'-9"	4'-9"	16	JA507	2
	A22-A23	FULL	--	76	--	--	10'-11"	2'-0"	2 9/16"	8'-7"	3'-3"	2'-11"	4'-9"	4'-9"	16	JA507	2
	A24-A25*	FULL	--	91	--	--	10'-11"	2'-0 1/4"	4 3/4"	8'-7"	3'-4 3/4"	2'-9 1/8"	4'-9"	4'-9"	16	JA507	2
	B1-B2	TYPE 2	9'-9"	51	4'-0"	4'-0"	15'-9"	2'-11"	0"	16'-9 1/2"	2'-0 5/8"	2'-0 5/8"	6'-8"	6'-8"	14		
	B4-B5	TYPE 2	8'-5"	36	2'-10"	2'-6"	11'-9"	2'-3 3/16"	2 1/2"	10'-6"	3'-0 1/4"	2'-7 1/2"	4'-11"	4'-11"	17		
	B16-B17 I	TYPE 1	9'-6"	52	--	--	12'-0"	2'-0"	1/2"	8'-7"	2'-5 1/8"	2'-7"	4'-11"	4'-11"	15		
	B18-B19	TYPE 2	5'-10"	21	4'-6"	3'-8"	12'-0"	2'-0"	1/2"	8'-7"	2'-5 1/8"	2'-7"	4'-11"	4'-11"	15		
	B19-B20	TYPE 1	3'-0"	22	--	--	12'-0"	2'-0"	9/16"	8'-7"	2'-5 7/8"	2'-6 7/8"	4'-11"	4'-11"	6		
	B20-B21	TYPE 1	4'-0"	25	--	--	11'-1 5/8"	1'-11 1/4"	9/16"	8'-9 1/16"	3'-1 3/8"	3'-2 1/8"	4'-11"	4'-11"	7		
	B22-B23	TYPE 2	7'-1"	27	3'-6"	2'-4"	10'-11"	2'-0 1/4"	2 9/16"	8'-7"	3'-3"	2'-11"	4'-9"	4'-9"	17		
	B23-B24	TYPE 1	2'-6"	19	--	--	10'-11"	2'-0"	4 3/4"	8'-7"	3'-4 3/4"	2'-9 1/8"	4'-9"	4'-9"	6		
	B24-B25	FULL	--	68	--	--	10'-11"	2'-0"	4 3/4"	8'-7"	3'-4 3/4"	2'-9 1/8"	4'-9"	4'-9"	16		
	B25-B26	TYPE 1	1'-0"	10	--	--	10'-11"	2'-0"	4 3/4"	8'-7"	3'-4 3/4"	2'-9 1/8"	4'-9"	4'-9"	3		
	B28-B29	FULL	--	69	--	--	10'-11"	2'-0"	4 3/4"	8'-7"	3'-4 3/4"	2'-9 1/8"	4'-9"	4'-9"	16		
	B31-EXP. JT. Δ	TYPE 1	5'-6"	32	--	--	5'-1 5/8"	2'-0 5/16"	--	3'-9 3/8"	3'-9 3/8"	--	4'-9"	--	9		
	C11-C12	TYPE 2	7'-4"	28	2'-10"	3'-10"	12'-0"	1'-11 7/16"	1/2"	8'-7"	2'-5 1/8"	2'-7"	4'-11"	4'-11"	15		
	C12-C13	TYPE 1	4'-3"	27	--	--	12'-0"	1'-11 7/16"	1/2"	8'-7"	2'-5 7/8"	2'-7"	4'-11"	4'-11"	7		
	C13-C14	FULL	--	74	--	--	12'-0"	1'-11 7/16"	1/2"	8'-7"	2'-5 7/8"	2'-7"	4'-11"	4'-11"	16		
	C14-C15	TYPE 1	5'-1"	30	--	--	12'-0"	1'-11 7/16"	1/2"	8'-7"	2'-5 7/8"	2'-7"	4'-11"	4'-11"	8		
	C18-C19	TYPE 2	9'-5"	38	2'-2"	2'-5"	12'-0"	1'-11 7/16"	1/2"	8'-7"	2'-5 7/8"	2'-7"	4'-11"	4'-11"	18		
	C19-C20	TYPE 1	2'-0"	12	--	--	12'-0"	1'-11 1/2"	3/8"	8'-7"	2'-5 7/8"	2'-7"	4'-11"	4'-11"	5		
	C20-C21	TYPE 1	3'-10"	16	--	--	11'-1 5/8"	1'-10 11/16"	1 1/8"	8'-9 1/16"	3'-1 3/8"	3'-2"	4'-11"	4'-11"	7		
	C22-C23	FULL	--	73	--	--	11'-7 1/2"	2'-0 1/4"	3 3/8"	8'-7"	3'-0 1/4"	2'-6"	4'-11"	4'-11"	16		
	C23-C24	TYPE 1	2'-6"	19	--	--	11'-7 1/2"	2'-0 1/4"	5 1/16"	8'-7"	3'-0 5/8"	2'-4 1/2"	4'-11"	4'-11"	6		
	C24-C25	FULL	--	73	--	--	11'-7 1/2"	2'-0 1/4"	4 13/16"	8'-7"	3'-0 5/8"	2'-4 1/2"	4'-11"	4'-11"	16		
	D28-D29	TYPE 1	10'-7"	52	--	--	11'-11 1/2"	2'-0 3/4"	4 13/16"	8'-7"	2'-10"	2'-2 1/4"	4'-11"	4'-11"	16		
	D29-D30	FULL	--	76	--	--	11'-11 1/2"	2'-0 1/2"	4 5/16"	8'-7"	2'-10"	2'-2 1/4"	4'-11"	4'-11"	16		
DETROIT AVENUE TUNNEL																	
	JA7-8	TYPE 2	5'-10"	21	5'-0"	3'-8"	12'-0"	2'-0"	1/2"	8'-7"	2'-5 7/8"	2'-7 1/16"	4'-11"	4'-11"	14		

TOTAL ESTIMATED CONCRETE VOLUME 1793 CU. FT. = 66.4 CY

* - INCLUDES ESTIMATED 1'-8" LENGTH OF JACK ARCH A25-A26

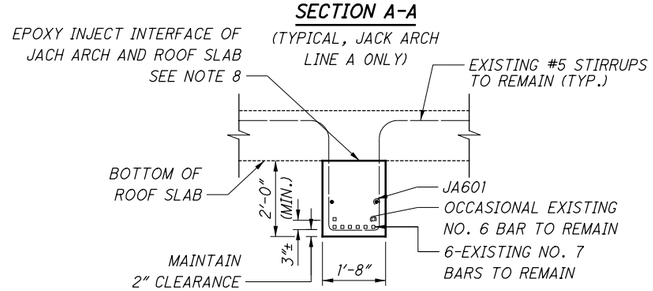
I - INCLUDES ESTIMATED 0'-8" LENGTH OF JACK ARCH B15-B16

Δ - INCLUDES ESTIMATED 0'-4" LENGTH OF JACK ARCH B30-B31



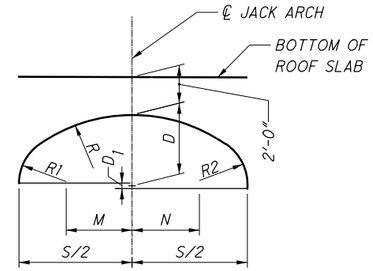
SECTION A-A

(TYPICAL, JACK ARCH LINE A ONLY)



SECTION A-A

(TYPICAL, JACK ARCH LINES B, C, & D)



JACK ARCH GEOMETRY

NOTES:

1. FOR LOCATIONS OF FULL AND PARTIAL JACK ARCH REPLACEMENTS, SEE SHEETS 15/89 TO 24/89.
2. CARE SHALL BE TAKEN IN REMOVING THE EXISTING CONCRETE TO PRESERVE REINFORCING STEEL THAT IS TO BE INCORPORATED IN THE FINAL DESIGN.
3. EXISTING REINFORCING BEING REUSED SHALL BE CLEANED PRIOR TO PLACEMENT OF NEW CONCRETE.
4. ALL EXISTING REINFORCEMENT NOT SHOWN WITHIN THE LIMITS OF JACK ARCH REMOVAL, SHALL BE CUT AND REMOVED.
5. GALVANIC ANODES SHALL BE ATTACHED TO ALL EXISTING REINFORCEMENT RETAINED AND ALONG THE PERIPHERY OF THE JACK ARCH REPLACEMENT. SEE SHEET 84/89 FOR DETAILS OF EMBEDDED GALVANIC ANODE CONNECTIONS.
6. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO NEW CONCRETE SURFACES.
7. THE CONTRACTOR SHALL DESIGN AND FURNISH TEMPORARY SHORING TO SUPPORT DECK SLAB DURING JACK ARCH REMOVAL AND REPLACEMENT. TEMPORARY SHORING SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - STRUCTURE, MISC.: TEMPORARY SHORING, BRACING AND PROTECTIVE STRUCTURES.
8. THE INTERFACE BETWEEN NEW JACK ARCHES AND EXISTING DECK SLAB SHALL BE SEALED BY EPOXY INJECTION. THIS WORK WHALL BE CONSIDERED INCIDENTAL TO ITEM 511 - CONCRETE, MISC.: JACK ARCH REPLACEMENT.
9. ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS ASSOCIATED WITH JACK ARCH REPLACEMENTS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CONCRETE, MISC.: JACK ARCH REPLACEMENT.
10. FOR LOCATION OF SECTION A-A AND B-B, SEE SHEET 79/89.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
CTL	CTL	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

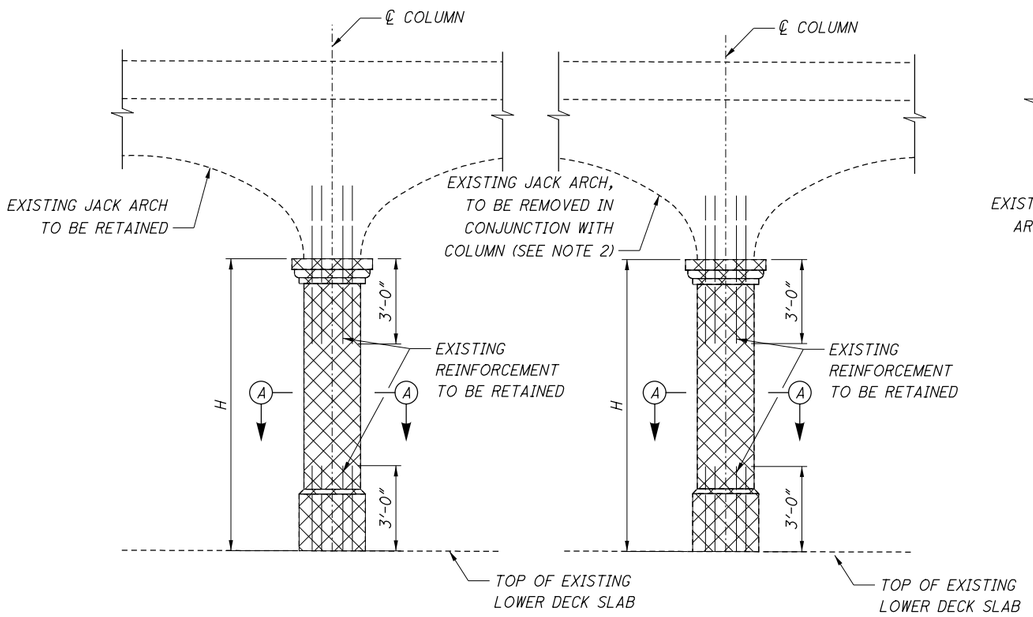
CONCRETE JACK ARCH REPLACEMENT DETAILS

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

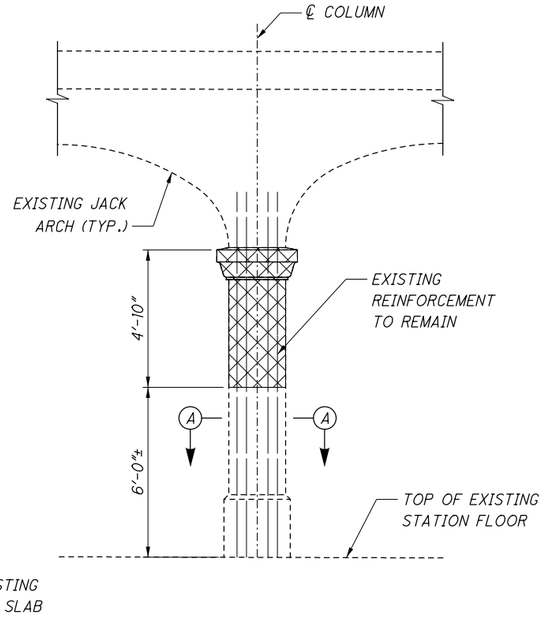
CUY-6-14.56

PID No. 99972

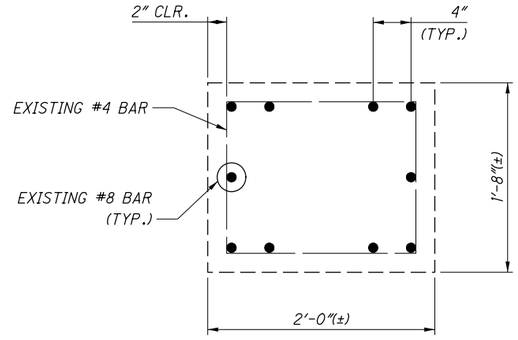


TYPE 1 COLUMN REPLACEMENT

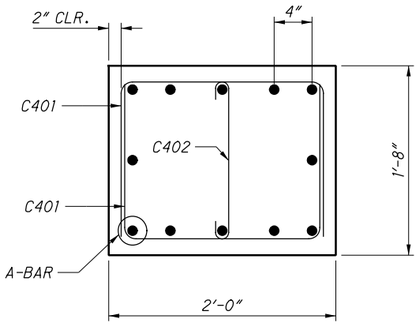
TYPE 2 COLUMN REPLACEMENT



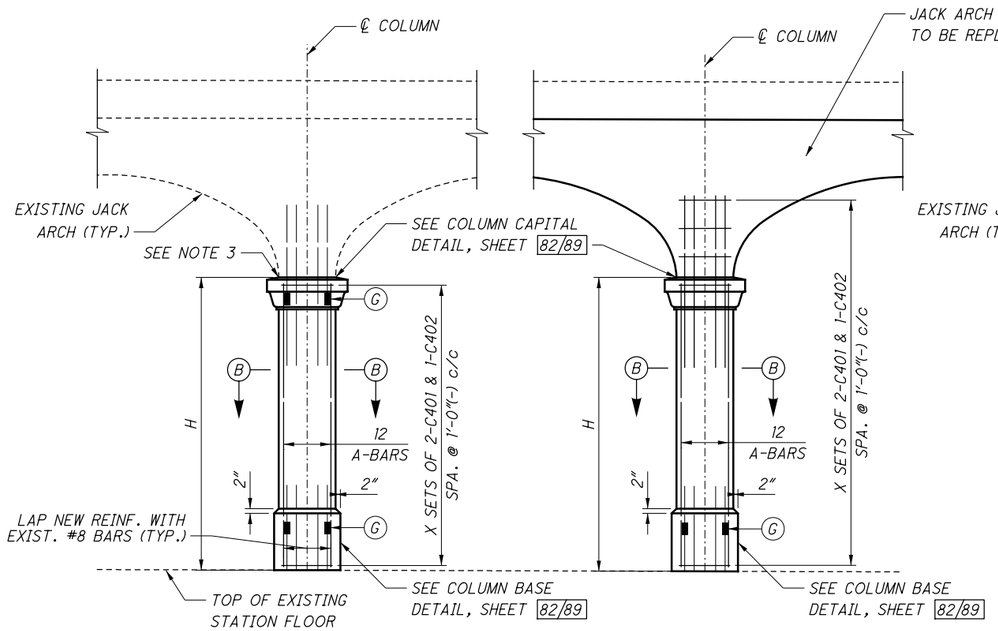
TYPE 3 COLUMN REPLACEMENT



SECTION A-A

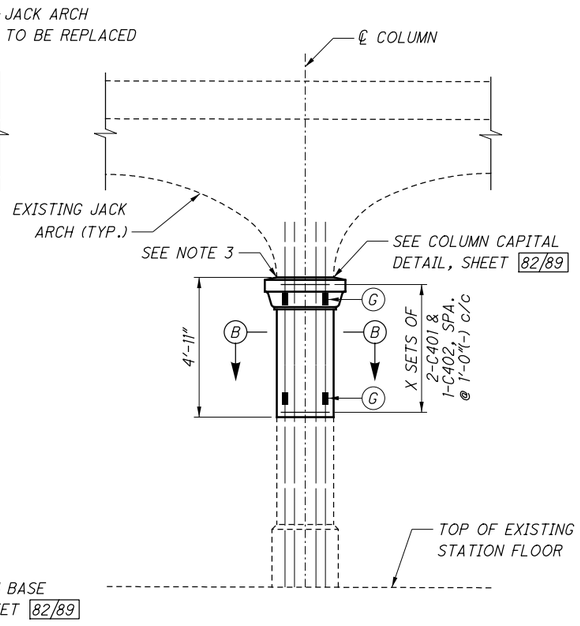


SECTION B-B



TYPE 1 COLUMN REPLACEMENT

TYPE 2 COLUMN REPLACEMENT



TYPE 3 COLUMN REPLACEMENT

COLUMN REPLACEMENT SCHEDULE

	COLUMN	REPLACEMENT TYPE	H	EST. CONC. VOLUME (CU.FT.)	A-BARS	X-SETS	CAPITAL
DETROIT TUNNEL	38	1	10'-8"	23	C801	12	YES
	39	1	10'-8"	23	C801	12	YES
WEST STATION	A14	1	10'-3⅜"	35	C802	11	YES
	A15	2	10'-3⅜"	35	C803	14	YES
	A21	2	10'-3⅝"	35	C803	14	YES
	C20	3	4'-11"	17	-	6	YES
	D21	1	12'-5¾"	42	C804	14	YES
	D22	1	12'-7½"	43	C804	14	YES
EAST STATION	M22	2	13'-5⅝"	45	C805	*	NO
	M27	2	12'-9¼"	43	C806	*	NO
	X18	1	12'-0"	40	C807	*	YES

* FOR DETAILS OF EAST STATION REINFORCING STEEL, SEE SHEET 83/89

LEGEND:

PORTIONS OF EXISTING COLUMN TO BE REMOVED

(G) ATTACH ANODES TO THE EXISTING REINFORCING STEEL NEAR THE INTERFACE BETWEEN THE EXISTING AND PROPOSED CONCRETE

NOTES:

1. SEE SHEET 82/89 FOR ADDITIONAL NOTES AND DETAILS.
2. THE CONTRACTOR IS PROHIBITED FROM REMOVING OR PERFORMING ANY WORK ON ADJACENT EXISTING JACK ARCHES WHILE COMPLETING WORK FOR TYPE 2 COLUMN REPLACEMENTS. CONTRACTOR IS ONLY PERMITTED TO REMOVE WHAT IS NECESSARY ABOVE THE COLUMNS TO INSTALL THE PROPOSED COLUMN REINFORCEMENT.
3. THE INTERFACE BETWEEN NEW COLUMNS AND EXISTING JACK ARCHES SHALL BE SEALED BY EPOXY INJECTION. THIS WORK WHALL BE CONSIDERED INCIDENTAL TO ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
CTL	CTL	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

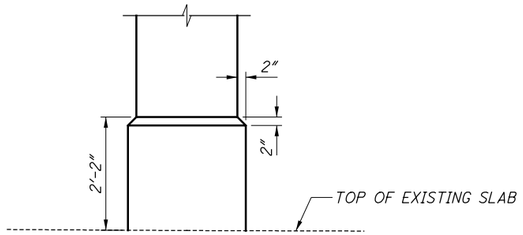
CONCRETE COLUMN REPLACEMENT DETAILS

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

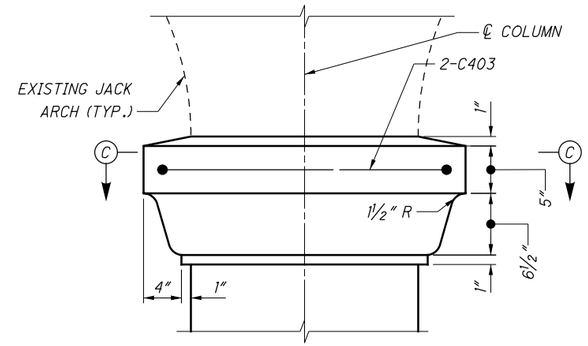
CUY-6-14.56

PID No. 99972



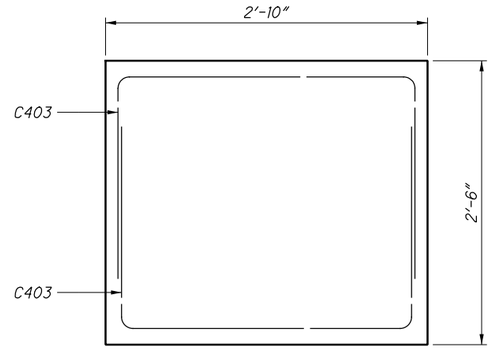
COLUMN BASE DETAIL

(DIMENSIONS ARE TYPICAL
ON FOUR FACES OF COLUMN)



COLUMN CAPITAL DETAIL

SHOWING CAPITAL DETAILS FOR
DETROIT TUNNEL, WEST STATION, AND EAST STATION



SECTION C-C

NOTES:

1. FOR LOCATIONS OF COLUMN REPLACEMENTS, SEE SHEETS 16/89 TO 25/89 .
2. CLEAN AND RETAIN ALL EXISTING REINFORCING EXTENDING FROM EXISTING STRUCTURE INTO PORTIONS OF REBUILT STRUCTURE AS SHOWN.
3. SOME EXISTING REINFORCEMENT IS NOT SHOWN FOR CLARITY.
4. FOR DETAILS AND MAXIMUM GRID SPACING FOR EMBEDDED GALVANIC ANODES, SEE SHEET 84/89
5. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO REPLACED CONCRETE SURFACES LOCATED IN THE TUNNELS OR STATIONS.
6. FOR TEMPORARY SUPPORT DETAILS FOR COLUMN REPLACEMENTS, SEE SHEET 83/89 .
7. THE INTERFACE BETWEEN NEW COLUMNS AND EXISTING JACK ARCHES SHALL BE SEALED BY EPOXY INJECTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT.
8. ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS ASSOCIATED WITH COLUMN REPLACEMENTS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
CTL	CTL	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

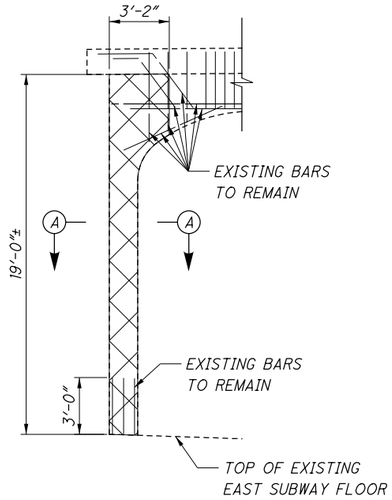
CONCRETE COLUMN REPLACEMENT DETAILS

BRIDGE NO. CUY-6-1456

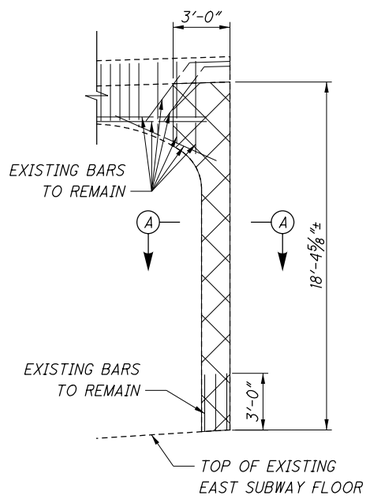
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56

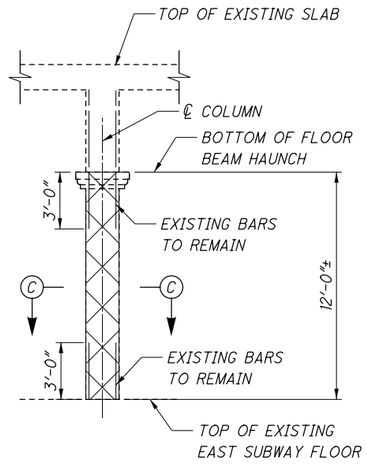
PID No. 99972



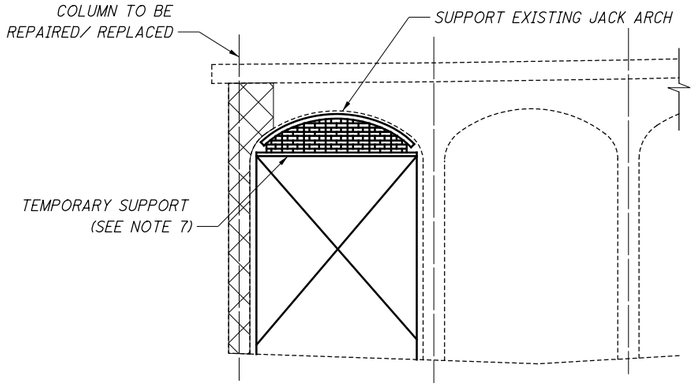
COLUMN M22



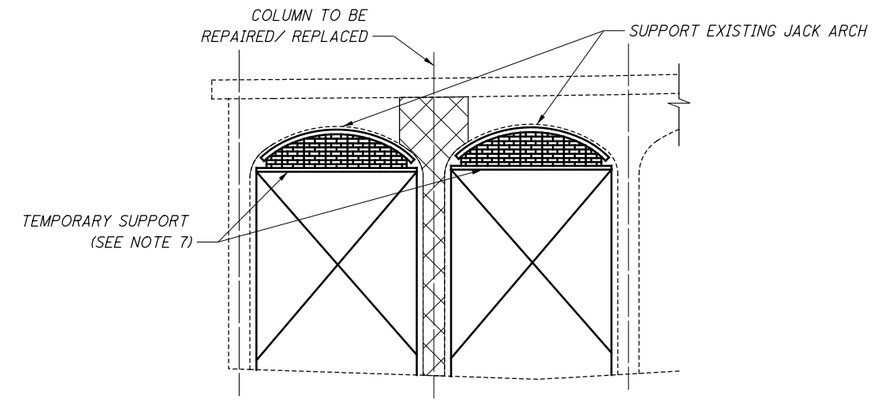
COLUMN M27



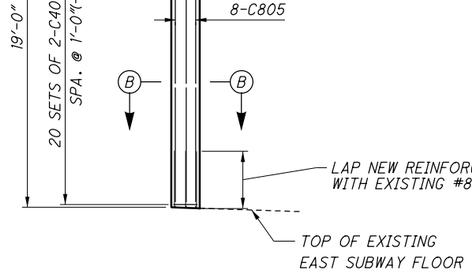
COLUMN L18



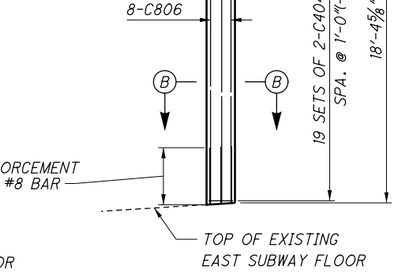
TYPICAL TEMPORARY SUPPORT ELEVATION



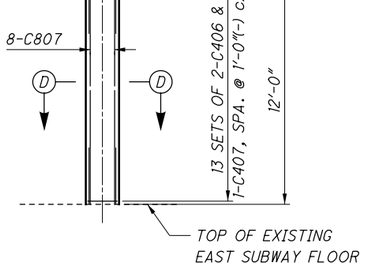
TYPICAL TEMPORARY SUPPORT ELEVATION



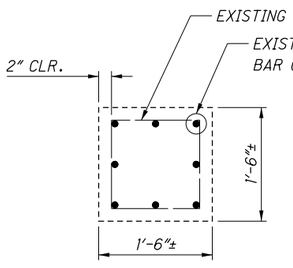
COLUMN M22
LOOKING NORTH



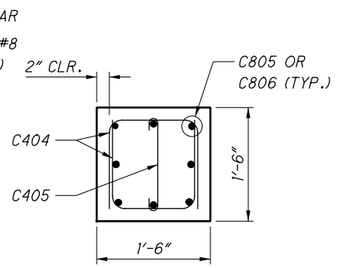
COLUMN M27
LOOKING NORTH



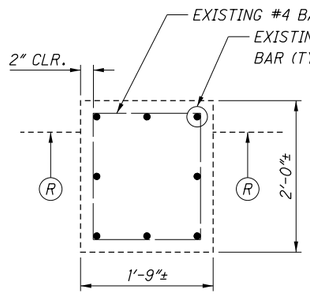
COLUMN L18
LOOKING EAST



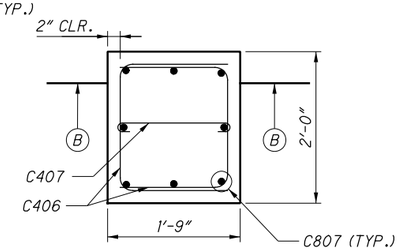
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

LEGEND:

PORTIONS OF EXISTING COLUMN TO BE REMOVED

(R) REMOVE 6' WIDE X 12' HIGH PORTION OF EXISTING MASONRY BLOCK WALL IN ACCORDANCE WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

(B) CONSTRUCT 6' WIDE X 12' HIGH PORTION OF MASONRY BLOCK WALL IN ACCORDANCE WITH ITEM 602 - BLOCK MASONRY

NOTES:

1. FOR LOCATIONS OF COLUMN REPLACEMENTS, SEE SHEET 25/89.
2. FOR COLUMN CAPITAL DIMENSIONS, SEE SHEET 82/89.
3. EXISTING REINFORCING BEING REUSED SHALL BE CLEANED PRIOR TO POURING NEW CONCRETE.
4. EXISTING REINFORCEMENT NOT TO BE RETAINED IS NOT SHOWN FOR CLARITY.
5. GALVANIC ANODES SHALL BE ATTACHED TO ALL EXISTING REINFORCEMENT RETAINED AND ALONG THE PERIPHERY OF THE JACK ARCH REPLACEMENT. FOR DETAILS OF EMBEDDED GALVANIC ANODE CONNECTIONS, SEE SHEET 84/89.
6. EPOXY-URETHANE SEALER SHALL NOT BE APPLIED TO REPLACED CONCRETE SURFACES.
7. THE CONTRACTOR SHALL DESIGN AND FURNISH TEMPORARY SHORING TO SUPPORT ADJACENT JACK ARCHES DURING COLUMN REMOVAL AND REPLACEMENT AND TO SUPPORT JACK ARCHES BEING REPAIRED/REPLACED. JACK ARCHES SHALL BE FULLY SUPPORTED ALONG THEIR ENTIRE UNDERSIDE. THE CALCULATED UNFACTORED LOADS TO BE SUPPORTED AT EACH COLUMN ARE 168 KIPS DEAD LOAD AND 72 KIPS LIVE LOAD. TEMPORARY SHORING SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - STRUCTURES, TEMPORARY SHORING, BRACING AND PROTECTIVE STRUCTURES.
8. ALL MATERIALS AND LABOR ASSOCIATED WITH COLUMN REPLACEMENTS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT.
9. THE INTERFACE BETWEEN NEW COLUMNS AND EXISTING JACK ARCHES SHALL BE SEALED BY EPOXY INJECTION. THIS WORK WHALL BE CONSIDERED INCIDENTAL TO ITEM 511 - CONCRETE, MISC.: COLUMN REPLACEMENT.

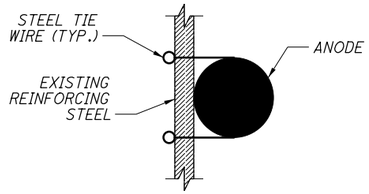
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
CTL	CTL	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

CONCRETE COLUMN REPLACEMENT DETAILS - EAST STATION

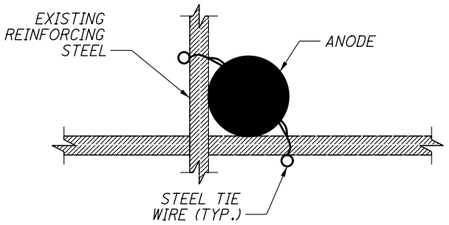
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



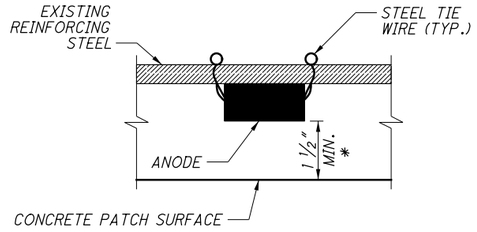
DETAIL 1 - ANODE BESIDE EXISTING REINFORCING

NOT TO SCALE



DETAIL 2 - ANODE AT REINFORCING BAR INTERSECTION

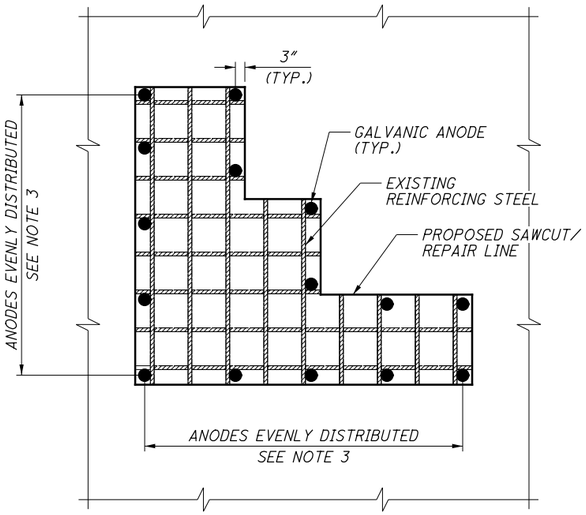
NOT TO SCALE



DETAIL 3 - ANODE PLACED BELOW/ABOVE REINFORCING BAR

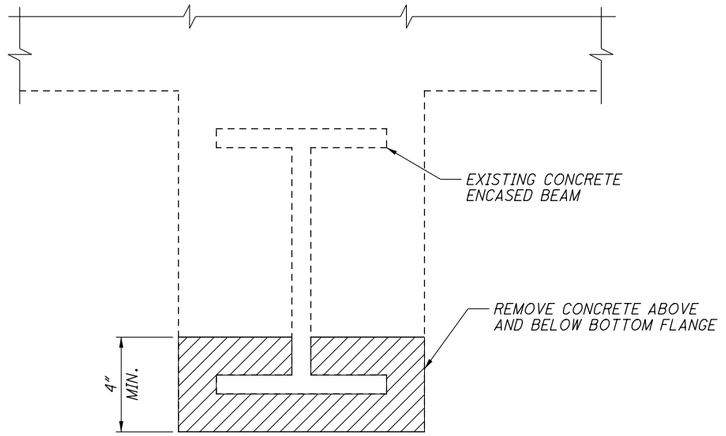
NOT TO SCALE

* IF COVER IS INSUFFICIENT TO PROVIDE 1 ½" MINIMUM CLEAR COVER, LOCATE ANODE ABOVE REINFORCING BAR



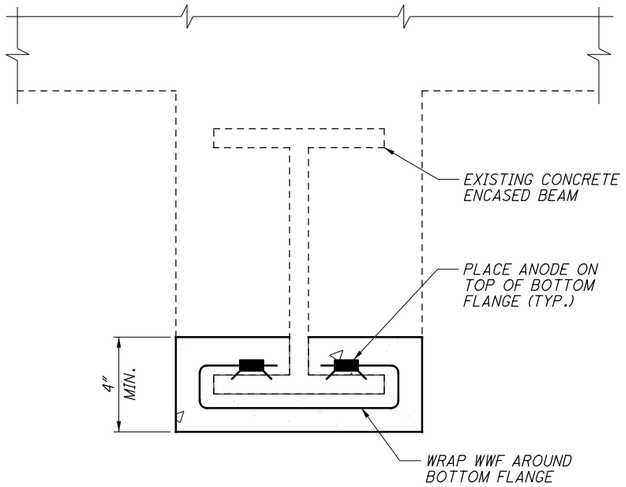
TYPICAL SURFACE REPAIR

(WWF NOT SHOWN)



SPAN 12 LOWER DECK FLOORBEAM CONCRETE REMOVAL

NOT TO SCALE



SPAN 12 LOWER DECK FLOORBEAM ANODE PLACEMENT

NOT TO SCALE

MAXIMUM GRID SPACING TABLE

LOCATION			MAX SPA.
SPAN 2 THROUGH SPAN 13	ARCH RIBS	TOP	20"
		BOTTOM	20"
		SIDE	-
	UPPER DECK	FLOORBEAMS - BOTTOM	16"
		FLOORBEAMS - SIDE	30"
		JACK ARCHES - BOTTOM	20"
		JACK ARCHES - SIDE	30"
		COLUMNS	20"
	LOWER DECK	FLOORBEAMS - BOTTOM	18"
		FLOORBEAMS - SIDE	30"
		JACK ARCHES	16"
		COLUMNS	30"
SPAN 1A & 1B / WEST STATION / EAST STATION		JACK ARCHES	16"
		COLUMNS/WALLS	20"
TUNNELS		COLUMNS/JACK ARCHES	16"
		WALLS	20"
PIERS		ALL SURFACES	24"

NOTES

1. FOR ADDITIONAL ANODE DETAILS AND REQUIREMENTS SEE SUPPLEMENTAL SPECIFICATION 844.01 TO 844.07.
2. ANODES ARE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL - PATCHING CONCRETE STRUCTURE, TYPE 1 OR 2 REPAIR.
3. ANODES TO BE PLACED AROUND PERIMETER OF PATCH. FOR MINIMUM SPACING REQUIREMENTS, SEE MAXIMUM GRID SPACING TABLE, THIS SHEET.
4. FOR TUNNEL REPAIRS, SEE SHEETS 13/89 TO 16/89 .
5. FOR WEST AND EAST STATION REPAIRS, SEE SHEETS 17/89 TO 25/89 .
6. FOR PIER REPAIRS, SEE SHEETS 26/89 TO 29/89 .
7. FOR LOWER DECK AND ARCH RIB REPAIRS, SEE SHEETS 30/89 TO 74/89 .
8. FOR COLUMN AND JACK ARCH REPLACEMENT DETAILS, SEE SHEETS 79/89 TO 83/89 .

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

CATHODIC PROTECTION DETAILS

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

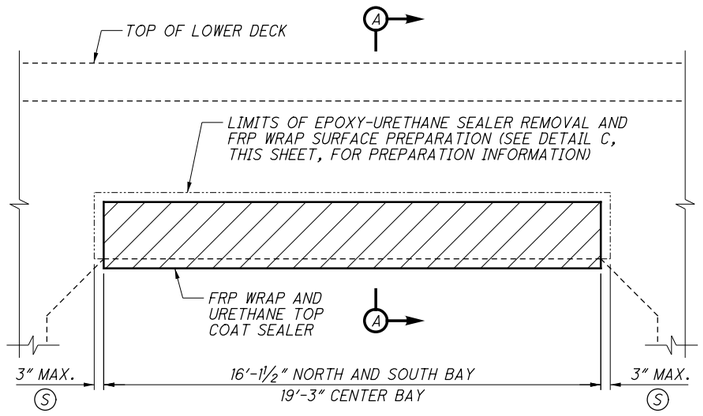
CUY-6-14.56

PID No. 99972

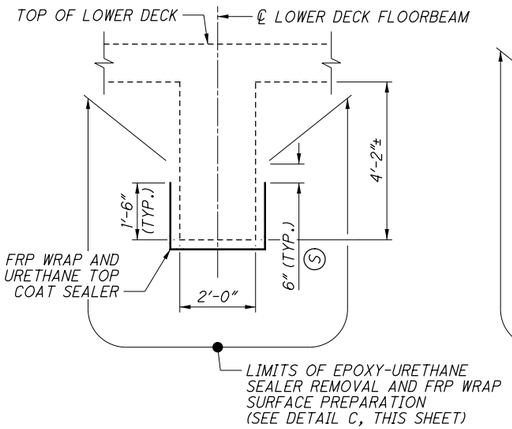
84/89

123/138

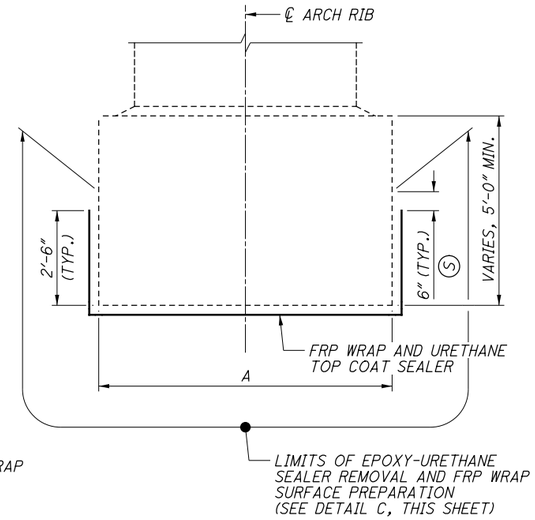
P:\Projects\ODOT\ODOT1602-CUY-6-1456\DESIGN\CT\ProjectData\99972\Design\Structures\CUY006_1456C\Sheets\006_1456_SS010.dgn 1/4/2019 7:54:02 AM BSopko



LOWER DECK FLOORBEAM - PARTIAL ELEVATION

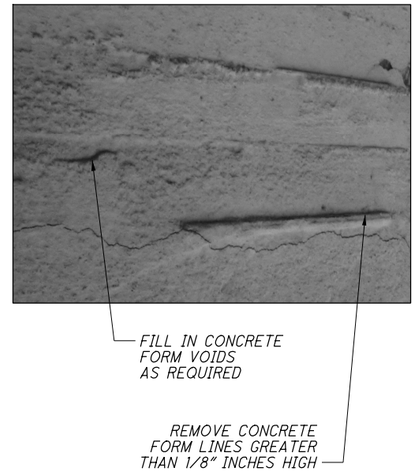


SECTION A-A



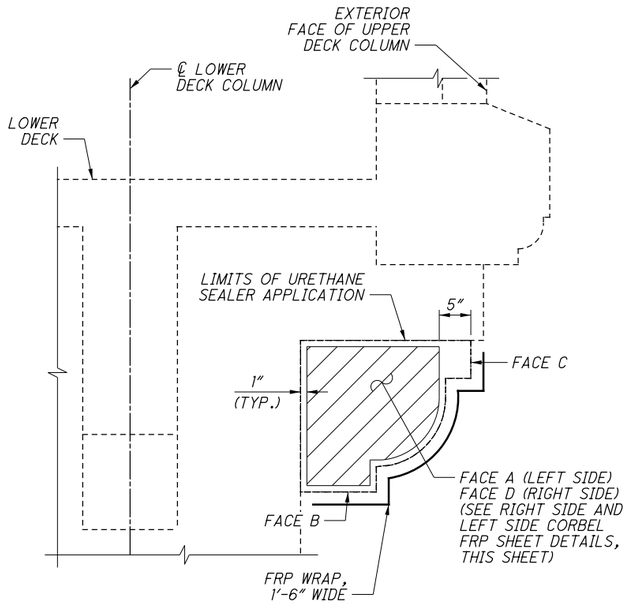
SECTION B-B

(SEE NOTE 4)



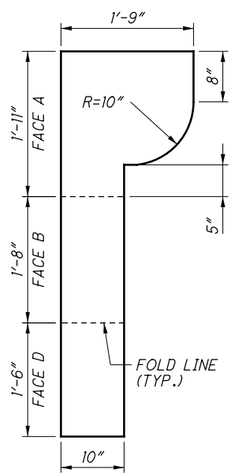
DETAIL C

ARCH RIB WIDTH		
SPAN	A	
	ARCH RIBS A AND D	ARCH RIBS B AND C
2 & 3	6'-9"	9'-0"
5-10	6'-0"	8'-0"
13	5'-6"	6'-9"

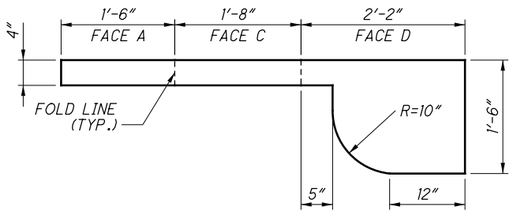


CORBEL FRP REPAIR DETAIL

LEFT SIDE, RIGHT SIDE OPPOSITE HAND
(TYP. SPANS 2 AND 6-10, SPANS 3 AND 5 SIMILAR)



LEFT SIDE CORBEL FRP SHEET DETAIL



RIGHT SIDE CORBEL FRP SHEET DETAIL

NOTES:

1. FOR FRP WRAP NOTES SEE SHEET 7/89.
2. FRP WRAP SURFACE PREPARATION, INCLUDING EXISTING CONCRETE COATING REMOVAL AND APPLICATION OF TROWELABLE MORTAR, IS INCLUDED FOR PAYMENT WITH ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM.
3. CORBEL FRP REPAIR DETAILS SHALL APPLY TO ALL LOWER DECK CORBELS LOCATED ON THE SOUTH SIDE OF SPAN 2, AND ALL LOWER DECK CORBELS LOCATED IN SPAN 3, SPAN 5, AND SPANS 6-10.
4. FOR THE LOCATION OF SECTION B-B, SEE SHEETS 35/89 THRU 74/89 .

LEGEND:

AREA TO BE TREATED WITH FRP WRAP PER ITEM SPECIAL - COMPOSITE FIBER WRAP SYSTEM AND URETHANE TOP COAT SEALER

(S) LIMITS OF SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

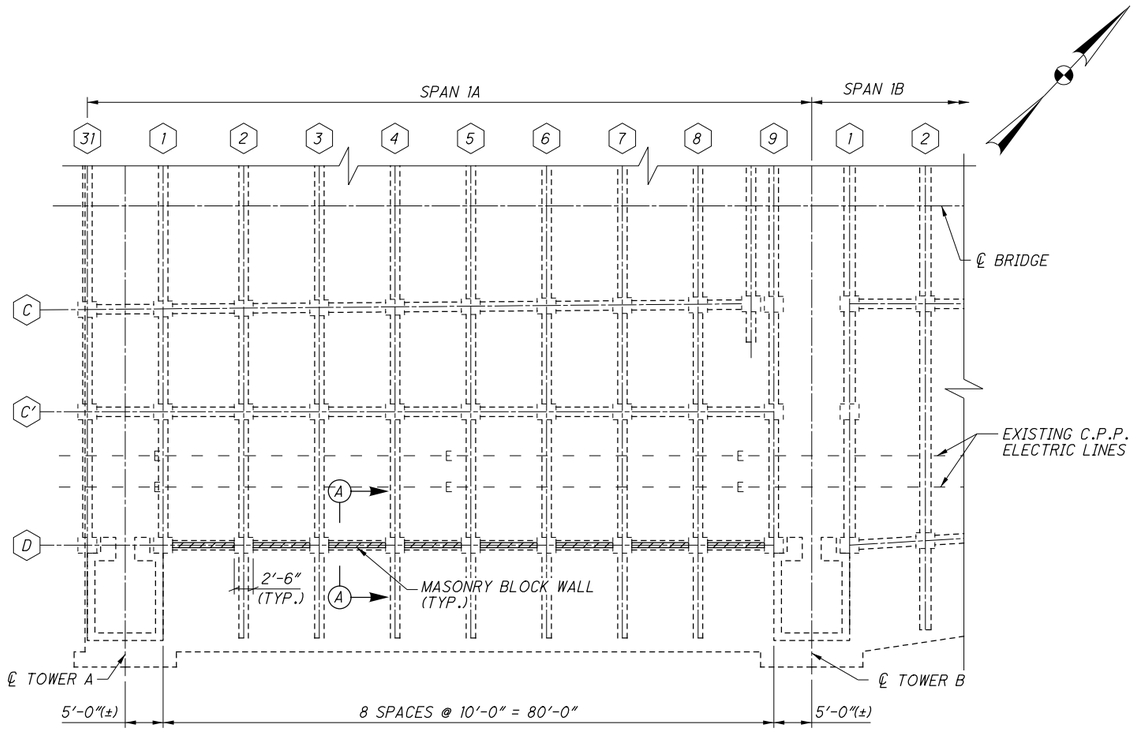
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
WJV	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

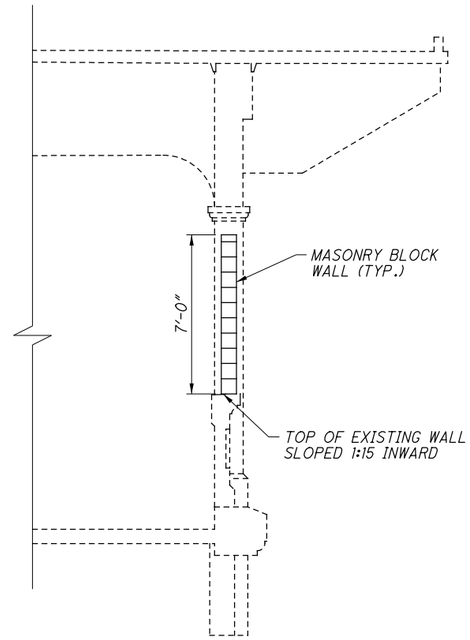
FRP WRAP DETAILS

BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

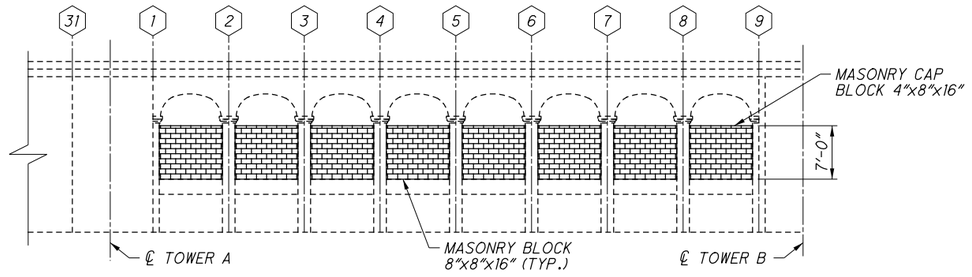
CUY-6-14.56
PID No. 99972



SPAN 1A LOWER DECK MASONRY WALL - PLAN



SECTION A-A
(LOOKING EAST)



SPAN 1A MASONRY BLOCK WALL ELEVATION
(LOOKING NORTH)

NOTE:

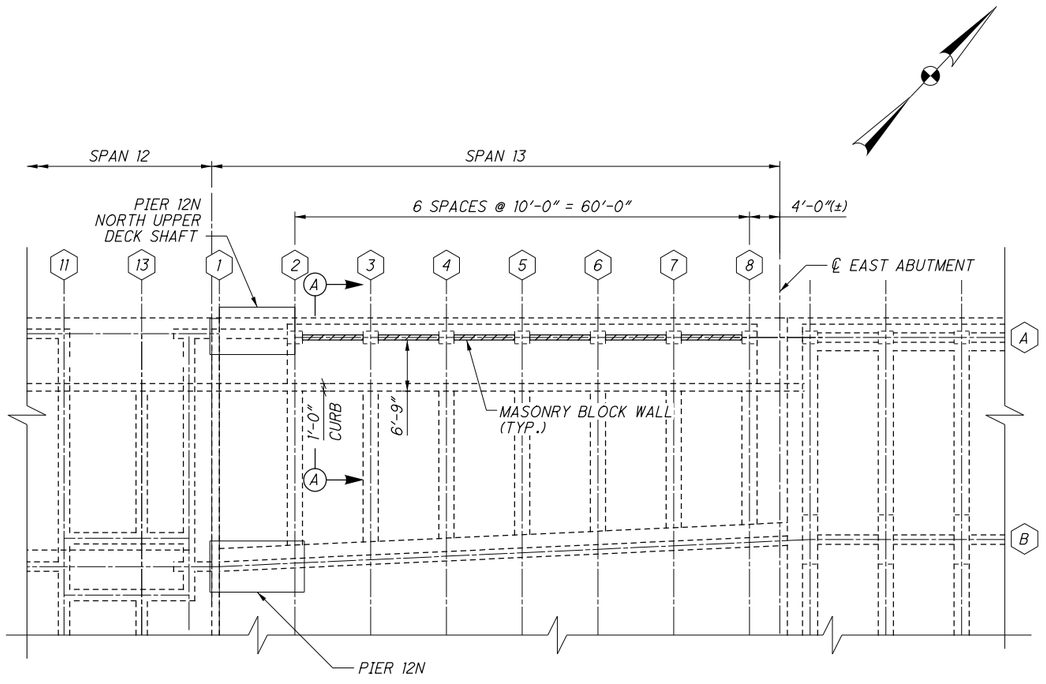
1. THE CONTRACTOR SHALL REMOVE THE EXISTING CHAIN LINK FENCING ON TOP OF THE EXTERIOR RAIL AND THE PERFORATED STEEL PLATE FRAME ON THE SOUTH EXTERIOR FACE OF THE BRIDGE, AND ALL RELATED HARDWARE. PAYMENT SHALL BE INCLUDED AS PART OF ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

DESIGN AGENCY Pennoni

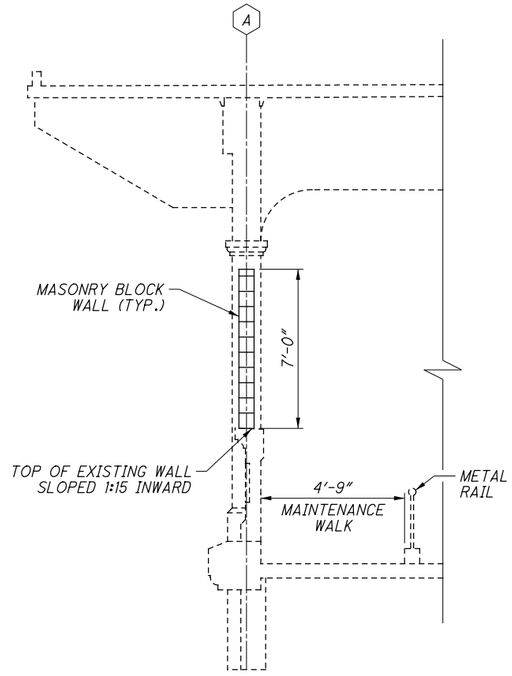
DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

MASONRY BLOCK WALL DETAILS (1 OF 2)
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972

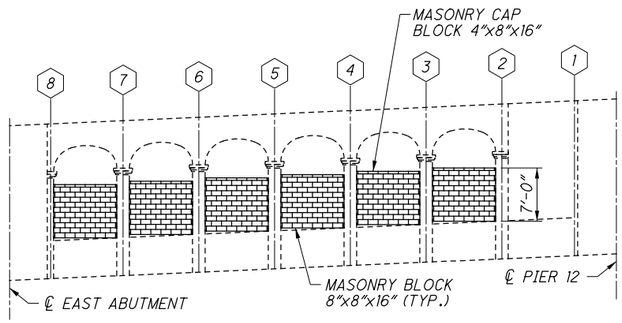


SPAN 13 LOWER DECK MASONRY WALL - PLAN



SECTION A-A

(LOOKING EAST)



SPAN 13 MASONRY BLOCK WALL ELEVATION

(LOOKING SOUTH)

NOTES:

1. THE CONTRACTOR SHALL REMOVE THE EXISTING CHAIN LINK FENCING ON TOP OF THE EXTERIOR RAIL AND ALL RELATED HARDWARE. PAYMENT SHALL BE INCLUDED AS PART OF ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

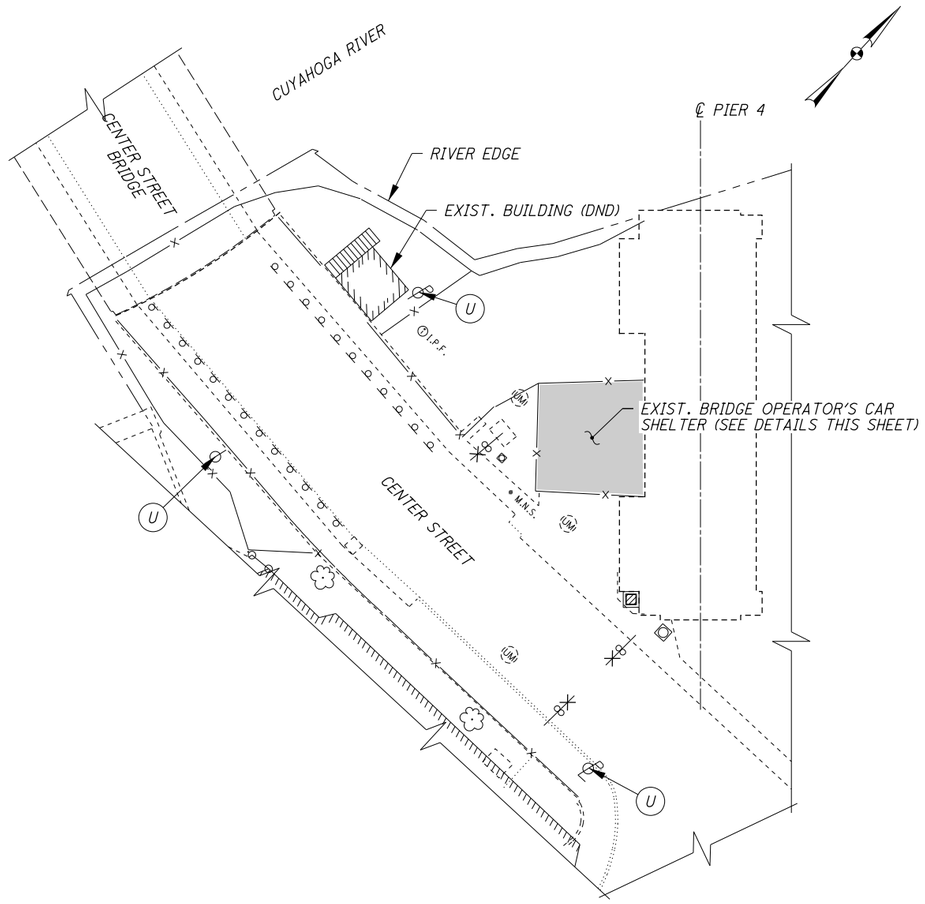
DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	JEB	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

MASONRY BLOCK WALL DETAILS (2 OF 2)

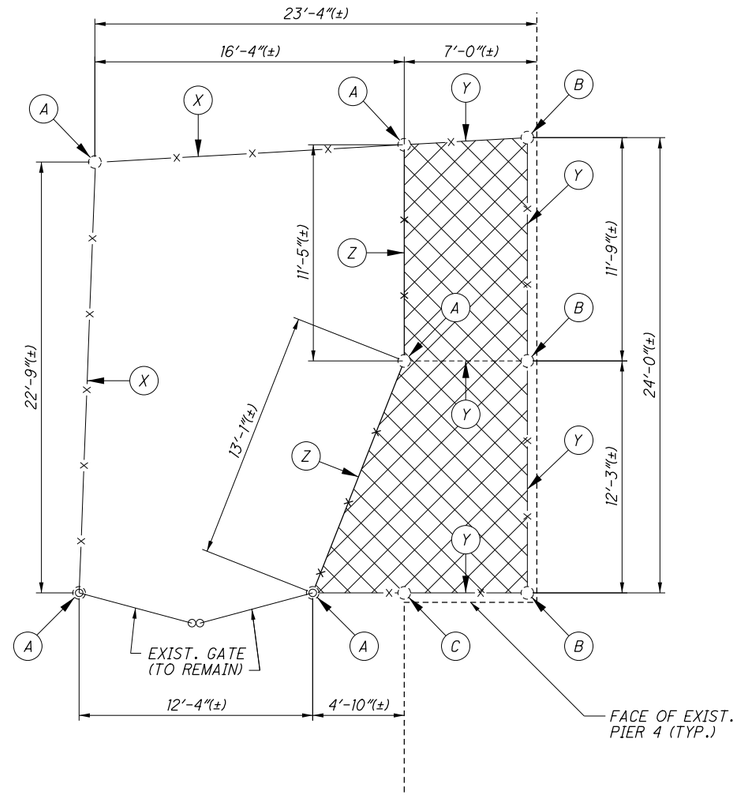
BRIDGE NO. CUY-6-1456
U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56
PID No. 99972



BRIDGE OPERATOR'S CAR SHELTER LOCATION PLAN

(EXISTING SUPERSTRUCTURE NOT SHOWN FOR CLARITY)



BRIDGE OPERATOR'S CAR SHELTER DETAILS

LEGEND

- (A) EXIST. STEEL POST TO REMAIN
- (B) EXIST. STEEL POST TO BE REMOVED
- (C) EXIST. STEEL POST (SEE NOTE 2)
- (U) EXIST. UTILITY POLE (DO NOT DISTURB)
- (X) EXIST. CHAIN-LINK FENCE AND BARS TO REMAIN
- (Y) EXIST. CHAIN-LINK FENCE AND BARS TO BE REMOVED
- (Z) PROP. 9'-0" TALL CHAIN LINK FENCE
- EXIST. CHAIN LINK FENCE COVER TO BE REMOVED

NOTES

1. THE CONTRACTOR SHALL COORDINATE ACCESS AND WORK WITHIN THE BRIDGE OPERATOR'S CAR SHELTER WITH THE CITY OF CLEVELAND BUREAU OF DOCKS AND BRIDGES.
2. THE STEEL POST ADJACENT TO THE CORNER OF THE PIER 4 PEDESTAL SHALL BE CUT AT A HEIGHT 6'-4" ABOVE THE SIDEWALK. ALL FENCING AND HORIZONTAL BRACING ABOVE THIS HEIGHT AND BETWEEN THE PIER AND SHELTER GATE SHALL ALSO BE REMOVED.
3. PAYMENT FOR COMPONENTS OF THE EXISTING BRIDGE OPERATOR'S CAR SHELTER TO BE REMOVED SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20-FOOT SPAN, AS PER PLAN.
4. FURNISH THE PROPOSED CHAIN-LINK FENCE IN ACCORDANCE WITH AASHTO M 181 AND THE MANUFACTURER'S RECOMMENDATIONS.
5. PAYMENT FOR THE PROPOSED CHAIN-LINK FENCE SHALL BE MADE AT THE CONTRACT PRICE FOR ITEM SPECIAL - STRUCTURES, BRIDGE OPERATOR'S CAR SHELTER.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
BPS	BPS	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
WJV		1800930	

BRIDGE OPERATOR'S CAR SHELTER DETAILS

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

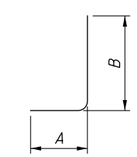
CUY-6-14.56

PID No. 99972

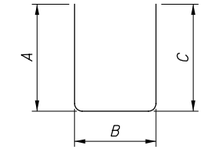
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
PIERS											
P501	44	2'-10"	130	1	2'-0"	1'-0"					
P502	34	11'-3"	399	2	0'-8"	10'-2"	0'-8"				
P801	11	33'-0"	969	STR							
SUB-TOTAL			1498								
COLUMNS											
C401	194	4'-2"	540	2	1'-4"	1'-8"	1'-4"				
C402	97	2'-4"	151	17	1'-4"						
C403	18	5'-10"	70	2	1'-9"	2'-6"	1'-9"				
C404	78	3'-4"	174	2	1'-2"	1'-2"	1'-2"				
C405	39	2'-2"	56	17	1'-2"						
C406	26	4'-4"	75	2	1'-5"	1'-8"	1'-5"				
C407	13	2'-5"	21	17	1'-5"						
C801	24	10'-4"	662	STR							
C802	12	9'-11"	318	STR							
C803	24	13'-0"	833	STR							
C804	24	12'-1"	774	STR							
C805	8	18'-8"	399	STR							
C806	8	18'-0"	384	STR							
C807	8	11'-8"	249	STR							
SUB-TOTAL			4706								
JACK ARCHES											
JA501	135	4'-5"	622	2	1'-10"	1'-0"	1'-10"				
JA502	145	4'-3"	643	2	1'-9"	1'-0"	1'-9"				
JA503	10	13'-8"	143	STR							
JA504	2	2'-11"	6	STR							
JA505	2	2'-4"	5	STR							
JA506	2	4'-10"	10	STR							
JA507	8	12'-7"	105	STR							
JA601	60	7'-0"	631	STR							
SUB-TOTAL			2165								
CORBELS											
S501	48	5'-7"	280	2	2'-7"	0'-8"	2'-7"				
S502	48	3'-2"	159	13	1'-6"	0'-8"	0'-8"	0'-10"			
SUB-TOTAL			439								

NOTE: ALL REINFORCING STEEL LISTED ABOVE IS SHOWN FOR INFORMATION ONLY.
REINFORCING STEEL IS INCLUDED FOR PAYMENT UNDER ASSOCIATED 511 PAY ITEMS.

BENDING DIAGRAMS



TYPE-1



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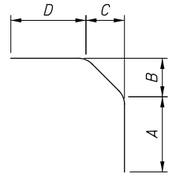

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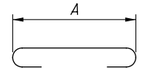

TYPE-17

REINFORCING STEEL NOTES

1. SERIES BARS - EACH BAR VARIES BY THE 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 P1101 IS A #11 BAR SIZE.
5. ALL REINFORCING STEEL SHALL BE EPOXY COATED.

DESIGN AGENCY Pennoni

DESIGNED	DRAWN	REVIEWED	DATE
EAT	EAT	DWJ	04/18/18
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BPS		1800930	

REINFORCING STEEL LIST

BRIDGE NO. CUY-6-1456

U.S. 6 (DETROIT-SUPERIOR BRIDGE) OVER CUYAHOGA RIVER

CUY-6-14.56

PID No. 99972

89 / 89

128 / 138

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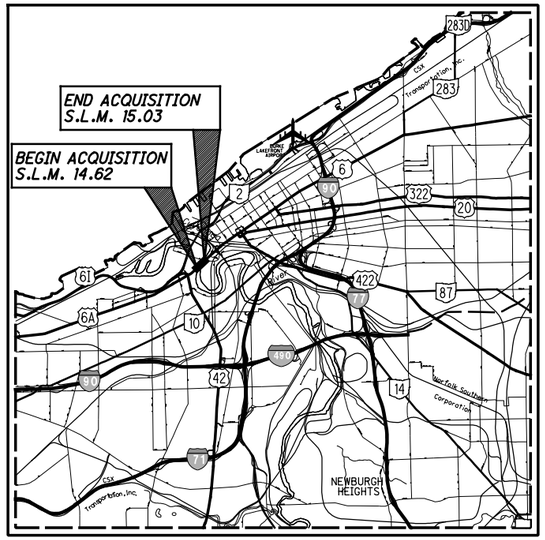
RIGHT OF WAY LEGEND SHEET

CUY-6-14.56

CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70



LOCATION MAP

LATITUDE: 41°29'31"N LONGITUDE: 81°42'22"W

SCALE IN MILES
0 1 2 3 4

N

PORTION TO BE IMPROVED
STATE & FEDERAL ROUTES 10 6
COUNTY & TOWNSHIP ROADS
OTHER ROADS

UTILITY OWNERS

TYPE	NAME & ADDRESS	
PHONE/ CABLE	CHARTER COMMUNICATONS 8179 DOW CIRCLE STRONGSVILLE, OH 44136 CONTACT: GARY NAUMANN (216) 575-8016, EXT. 5033 gary.naumann1@charter.com	AT&T 13630 LORAIN AVENUE 2ND FLOOR CLEVELAND, OH 44111 CONTACT: JAMES JANIS (216) 476-6142 pj8191@att.com
PHONE/ CABLE	WESTERN RESERVE COMMUNICATIONS 2801 HAMILTON AVENUE CLEVELAND, OH 44114 CONTACT: LOWELL KATZ (216) 621-8121 wrewireless@sbcglobal.net	ZAYO FIBER SOLUTIONS 4199 KINROSS LAKES PARKWAY SUITE 10 RICHFIELD, OH 44286 CONTACT: DAVE GALUSKA (234) 281-0025 dave.galuska@zayo.com
ELECTRICAL	CEI FIRST ENERGY 6896 MILLER ROAD BRECKSVILLE, OH 44141 CONTACT: TED RADER (440) 546-8738 raderT@firstenergycorp.com	CITY OF CLEVELAND DIVISION OF PUBLIC POWER 1300 LAKESIDE AVENUE CLEVELAND, OH 44114 CONTACT: CHRIS HIRZEL (216) 664-3922, EXT. 115 chrizel@cpp.org
STORMWATER /WATER	CITY OF CLEVELAND DIVISION OF WATER POLLUTION CONTROL 12302 KIRBY ROAD CLEVELAND, OH 44108 CONTACT: RACHID ZOGHAIB (216) 664-3785 rzoghaib@ClevelandWPC.com	CITY OF CLEVELAND DIVISION OF WATER 1201 LAKESIDE AVENUE CLEVELAND, OH 44114 CONTACT: FRED ROBERTS (216) 644-2444 EXT. 5590 Fred_roberts@ClevelandWater.com
GAS/ SANITARY	DOMINION ENERGY OHIO 320 SPRINGSIDE DRIVE SUITE 320 AKRON, OH 44333 CONTACT: MIKE ANTONIUS (330) 664-2488 relocation@dom.com EMAIL PLANS, ATTN: BILL SNYDER	NEORSD 3900 EUCLID AVE CLEVELAND, OH 44115 CONTACT: MARY MACIEJOWSKI (216) 881-6600 EXT 6466
TRAFFIC	CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING 601 LAKESIDE AVENUE CLEVELAND, OH 44114 CONTACT: ANDREW CROSS (216) 664-3197	

INDEX OF SHEETS:

CONVENTIONAL SYMBOLS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (Ex) x x (Pr)
Center Line
Right of Way (Ex) Ex R/W
Standard Highway Easement SH
Standard Highway Ease.(Ex) Ex SH
Temporary Right of Way TMP
Channel Ease. (Pr) CH
Utility Ease. (Ex) Ex U
Railroad or
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)

Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol , Example
Property Line Symbol , Example
Break Line Symbol , Example
Tree (Pr) , Tree (Ex) , Shrub (Ex)
Tree (Remove) , Shrub (Remove)
Evergreen (Ex) , Stump
Evergreen (Remove) , Stump (Remove)
Wetland (Pr) , Grass (Pr) , Aerial Target
Post (Ex) , Mailbox (Ex) MB , Mailbox (Pr) MB
Light (Ex) , Telephone Marker (Ex) TEL
Fire Hydrant (Ex) , Water Meter (Ex) W
Water Valve (Ex) , Utility Valve Unknown (Ex.)
Telephone Pole (Ex) , Power Pole (Ex)
Light Pole (Ex)

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

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES REPLACEMENT OF THE UPPER DECK WEARING SURFACE, CONCRETE PATCHING OR REPLACEMENT OF LOWER SUPERSTRUCTURE, SUBSTRUCTURE, STATION AND TUNNEL COMPONENTS, INSTALLATION OF FIBER-REINFORCED POLYMER WRAPS OVER PUBLIC AREAS, CONSTRUCTION OF VANDAL-PROTECTION WALLS, MODIFICATIONS TO THE CENTER STREET SWING BRIDGE OPERATOR'S CAR SHELTER, RESTORATION OF NAVIGATION LIGHTING AND DRAINAGE REPAIRS.

THE EXISTING AND PROPOSED RIGHT OF WAY SHALL BE REFERENCED FROM U.S. 6 CENTERLINE OF RIGHT OF WAY.

PLANS PREPARED BY:

FIRM NAME : EUTHENICS, INC.
R/W DESIGNER: DANIEL T. BENDER, P.E.
R/W REVIEWER: SCOTT A. HORAN, P.S.
FIELD REVIEWER: SCOTT A. HORAN, P.S.
PRELIMINARY FIELD REVIEW DATE: 11/10/17
TRACINGS FIELD REVIEW DATE: 2/6/18
OWNERSHIP UPDATED BY: DANIEL T. BENDER, PE.
DATE COMPLETED: 2/5/18
PLAN COMPLETION DATE: 2/8/18

STRUCTURE KEY

RESIDENTIAL
COMMERCIAL
OUT-BUILDING

LEGEND:
T = TEMPORARY

I, Scott A. Horan, P.S. have conducted a survey of the existing conditions for the Ohio Department of Transportation between November 2016 and November 2017. The results of that survey are contained herein. The horizontal coordinates expressed herein are based on the Ohio State Plane Coordinate System, North Zone on NAD 83 (CONUS) (MOL) datum. The Project Coordinates (US Survey Feet) are relative to State Plane Grid Coordinates US Survey Feet by a Project Adjustment Factor of 1.0000583234. As a part of this Project I have reestablished the locations of the existing property lines and centerline of existing Right of Way for the property takes herein. As a part of this project I have established the proposed property lines, calculated the Gross Take, Present Roadway Occupied (PRO), Net Take and Net Residue; as well as prepared the legal descriptions necessary to acquire the parcels as shown herein. As part of this work I have set right of way reference monuments along the right of way. All of my work contained herein was conducted in accordance with the Ohio Administrative Code Chapter 4733-37 Standards for Boundary Surveys unless so noted. The words I and my, as used herein, are to mean that either myself or someone working under my direct supervision.

Scott A. Horan 06/14/18

Scott A. Horan — Date

Professional Land Surveyor No. 8678

SURVEYORS SEAL

STATE OF OHIO
SCOTT A. HORAN
8678
REGISTERED PROFESSIONAL ENGINEER

FEDERAL PROJECT NO. E161111
PID NO. 99972
CALCULATED DTB CHECKED SAH
RIGHT OF WAY LEGEND SHEET
CUY-6-14.56
1 / 10
129 / 138

F:\Jobs\997 - CUY-6 Survey and RW\99972\row\sheets\99972RL001.dgn 6/14/2018 3:29:15 PM sahoran

CUY-6-14.56

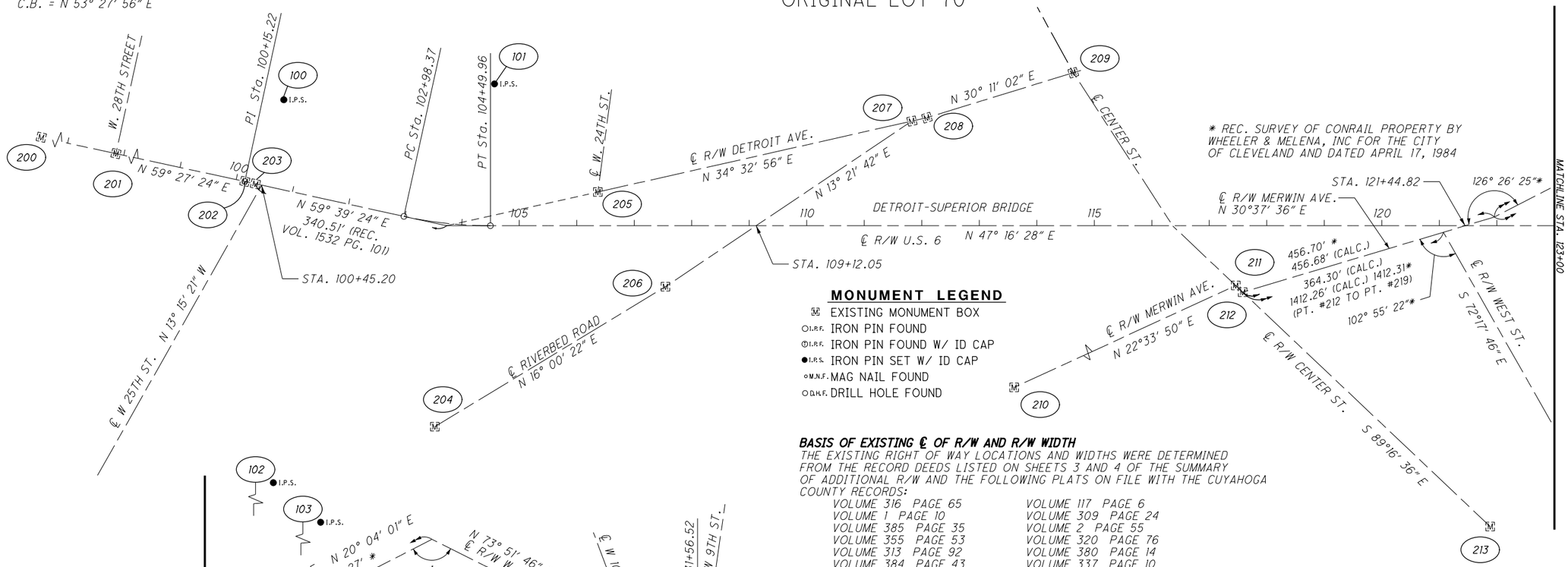
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70

U.S. 6 CURVE DATA
P.I. Sta. 103+74.46
Δ = 12° 22′ 56″ (LT)
Dc = 8° 10′ 07″
R = 701.42′
T = 76.09′
L = 151.58′
E = 4.11′
C = 151.29′
C.B. = N 53° 27′ 56″ E

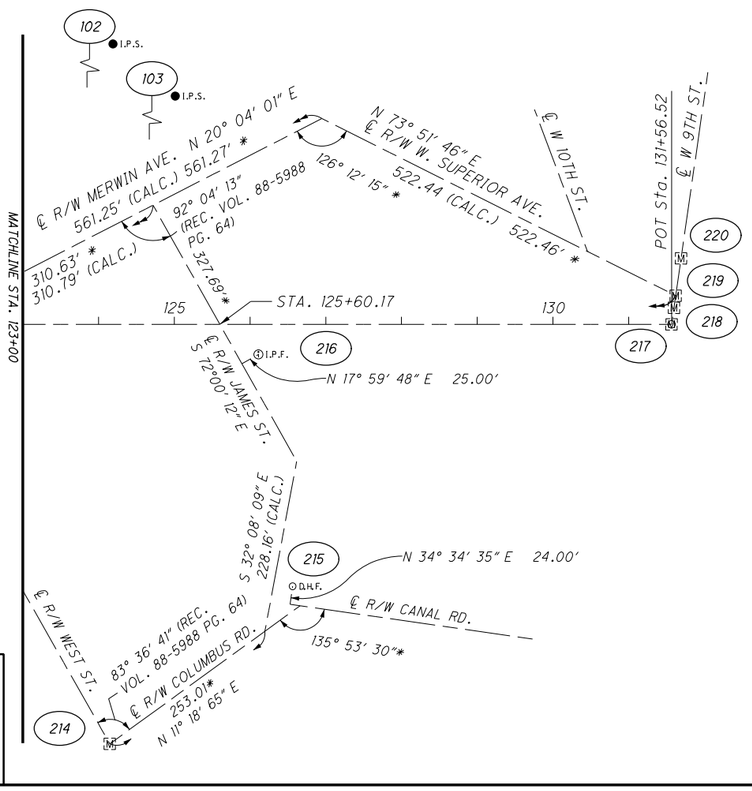
PROJECT CONTROL

100	STA. 100+50.96, 153.32′ LT. N 665,971.271 E 2,185,718.799	102	STA. 126+04.09, 763.49′ LT. N 668,076.431 E 2,187,195.770
101	STA. 104+57.11, 246.76′ LT. N 666,240.136 E 2,185,969.167	103	STA. 125+88.31, 411.02′ LT. N 667,806.791 E 2,187,423.320

BASIS FOR BEARINGS:
BEARINGS SHOWN HEARON ARE BASED UPON THE OHIO STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NAD 83 (CONUS)(MOL) DATUM AND ARE BASED ON VRS OBSERVATIONS OF THE PROJECT CONTROL MONUMENTS IN NOVEMBER OF 2016.



MONUMENT LEGEND
- M EXISTING MONUMENT BOX
- ○I.R.F. IRON PIN FOUND
- ⊕I.R.F. IRON PIN FOUND W/ ID CAP
- ●I.R.S. IRON PIN SET W/ ID CAP
- ◦M.N.F. MAG NAIL FOUND
- ○D.H.F. DRILL HOLE FOUND



BASIS OF EXISTING ℄ OF R/W AND R/W WIDTH
THE EXISTING RIGHT OF WAY LOCATIONS AND WIDTHS WERE DETERMINED FROM THE RECORD DEEDS LISTED ON SHEETS 3 AND 4 OF THE SUMMARY OF ADDITIONAL R/W AND THE FOLLOWING PLATS ON FILE WITH THE CUYAHOGA COUNTY RECORDS:

VOLUME 316 PAGE 65	VOLUME 117 PAGE 6
VOLUME 1 PAGE 10	VOLUME 309 PAGE 24
VOLUME 385 PAGE 35	VOLUME 2 PAGE 55
VOLUME 355 PAGE 53	VOLUME 320 PAGE 76
VOLUME 313 PAGE 92	VOLUME 380 PAGE 14
VOLUME 384 PAGE 43	VOLUME 337 PAGE 10
VOLUME 326 PAGE 71	VOLUME 326 PAGE 5
VOLUME 323 PAGE 65	

- RECORD SURVEY OF CONRAIL PROPERTY BY WHEELER & MELENA, INC FOR THE CITY OF CLEVELAND AND DATED APRIL 17, 1984
- RECORD CENTERLINE SURVEY PLAT FOR CUY-6-14.99 ON FILE WITH OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 12

EXISTING MONUMENTATION TABLE

PNT #	STATION	DESCRIPTION
200	91+25.82, 0.00' RT.	MON. BOX W/ 1" IRON PIN FND. & USED
201	94+00.42, 0.00' RT.	MON. BOX W/ DRILLHOLE IN STONE FND. & USED
202	100+15.22, 0.00' RT.	MON. BOX W/ 1" IRON PIN FND. & USED
203	100+34.08, 0.29' RT.	MON BOX W/ STONE FND. & USED FOR U.S. 6 P.I.
204	103+85.72, 353.89' RT.	MON. BOX W/ 1" IRON PIN FND & USED
205	-	MON. BOX OBSTRUCTING PIN (CANNOT SURVEY)
206	107+54.32, 106.04' RT.	MON. BOX W/ 1" IRON PIN FND. & USED
207	111+82.88, 182.08' LT.	MON. BOX W/ 1" IRON PIN FND. & USED FOR RIVERBED RD.
208	112+09.03, 187.97' LT.	MON. BOX W/ 1" IRON PIN FND. & USED
209	114+63.50, 266.15' LT.	MON. BOX W/ DRILLHOLE IN STONE FND. & USED
210	109+71.04, 460.52' RT.	MON. BOX W/ DRILLHOLE IN STONE FND. & USED
211	117+46.04, 103.89' RT.	MON. BOX W/ DRILLHOLE IN STONE FND. & USED
212	117+58.05, 115.65' RT.	MON. BOX W/D-HOLE IN STONE FND. & USED FOR MERWIN AVE.
213	121+88.48, 523.19' RT.	MON. BOX W/ DRILLHOLE IN STONE FND. & USED
214	124+14.86, 553.73' RT.	MON. BOX W/ 1" IRON PIN FND. & USED
215	126+48.13, 344.63' RT.	DRILLHOLE FND. & USED
216	126+11.09, 39.69' RT.	CAPPED IRON PIN FND. & USED FOR JAMES ST.
217	131+56.52, 0.00' RT.	MON. BOX W/ 3/4" IRON PIN FND. & USED
218	-	MON. BOX W/ 3/4" IRON PIN FND. & USED
219	-	MON. BOX W/ 3/4" IRON PIN FND. & USED
220	-	MON. BOX W/ 3/4" IRON PIN FND

I, Scott A. Horan, P.S. have conducted a survey of the existing conditions for the Ohio Department of Transportation between November 2016 and November 2017. The results of that survey are contained herein. The horizontal coordinates expressed herein are based on the Ohio State Plane Coordinate System, North Zone on NAD 83 (Conus)(Mol) datum. The Project Coordinates (US Survey feet) are relative to State Plane Grid Coordinates (US Survey feet) by a Project Adjustment Factor multiplier of 1.0000583234. As a part of this project I have reestablished the locations of the existing property lines and centerline of existing Right of Way for property takes contained herein. All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly knownas "A Minimum Standards for Boundary Surveys in the State of Ohio" unless noted. The words I and my as used herein are to mean either myself or someone working under my direct supervision.

Scott A Horan 06/14/18
Scott A. Horan, Professional Land Surveyor, No. 8678 Date:

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

HORIZONTAL SCALE IN FEET
0 50 100 200

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER SAH

CENTERLINE PLAT

CUY-6-14.56

2 / 10
130 / 138

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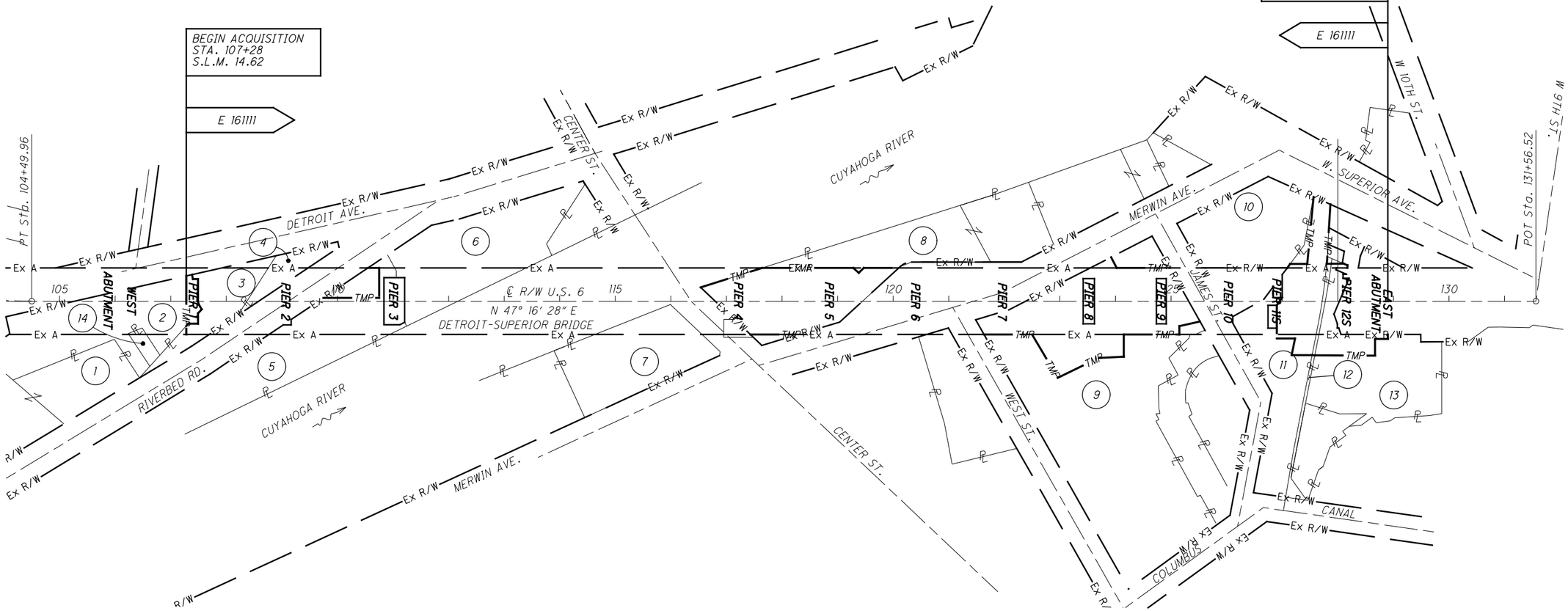
CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70



NOTE:
FOR REFERENCES, SEE CONSTRUCTION PLANS

EASEMENT NOTE:
THE FOLLOWING EASEMENTS ARE REMOVED FOR CLARITY:

EASEMENTS TO CUYAHOGA COUNTY:
KNOWN AS PARCELS 3 AND 4 IN V. 1479 AND P. 632

EX. STATE OF OHIO SEWER CONSTRUCTION, USE AND MAINTENANCE EASEMENT, V. 94-10463, P. 60

EX. STATE OF OHIO SEWER CONSTRUCTION, USE AND MAINTENANCE EASEMENT, V. 94-10463, P. 57

1. 003-20-005
CUYAHOGA METROPOLITAN HOUSING AUTHORITY
FKA CLEVELAND METROPOLITAN HOUSING AUTHORITY

2. 003-20-004
THE COUNTY OF CUYAHOGA, OHIO

3. 003-20-002
BOARD OF PARK COMMISSIONERS OF THE CLEVELAND METROPOLITAN PARK DISTRICT

4. 003-20-009
COUNTY OF CUYAHOGA, OHIO

5. 003-20-007
RIVERBED 007, LLC

6. 003-20-006 / 003-20-008
STONEBRIDGE WATERFRONT, LLC, A DELAWARE LIMITED LIABILITY COMPANY

7. 101-16-001
MARLIN INVESTMENT GROUP, LLC

8. 101-15-002
THE BOARD OF PARK COMMISSIONERS OF THE CLEVELAND METROPOLITAN PARK DISTRICT

9. 101-15-021
CITY OF CLEVELAND

10. 101-15-008
THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

11. 101-15-009
CITY OF CLEVELAND

12. 101-15-028
THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

13. 101-15-011/101-20-013
UNITED STATES OF AMERICA

14. 003-20-003
CUYAHOGA METROPOLITAN HOUSING AUTHORITY
FKA CLEVELAND METROPOLITAN HOUSING AUTHORITY

REV. BY	DATE	DESCRIPTION
DTB	11/16/18	PARCEL 6: UPDATED TEMPORARY R/W LIMITS
DATE COMPLETED		

HORIZONTAL SCALE IN FEET
0 50 100 200

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER SAH

PROPERTY MAP

CUY-6-14.56

3 / 10

131
138

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TOTAL NUMBER OF :

9 OWNERSHIPS 0 TOTAL TAKES

9 PARCELS 0 OWNERSHIPS W/ STRUCTURES INVOLVED

ALL AREAS IN ACRES

NET TAKE = GROSS TAKE - PRO IN TAKE

GRANTEE:

ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1	CUYAHOGA METROPOLITAN HOUSING	3, 6		003-20-005	0.424								STATE	NO ADDITIONAL R/W REQUIRED		
	AUTHORITY FKA CLEVELAND METROPOLITAN												100%			
	HOUSING AUTHORITY															
2-T	THE COUNTY OF CUYAHOGA, OHIO	3, 6	V. 1375, P. 406	003-20-004	0.406	0.0000	0.0423	0.0000	0.0423					MAINTAIN DETROIT-SUPERIOR BRIDGE		
			V. 1392, P. 416											EX. CUYAHOGA COUNTY BOARD OF COMMISSIONERS LEASE		
			V. 1393, P. 470											INSTRUMENT #200410010602		
			V. 1532, P. 161											EX. JOHN F. BROGAN 10' RIGHT OF WAY EASEMENT		
			V. 1909, P. 333											FOR INGRESS/EGRESS V. 1646, P. 323		
			V. 1990, P. 88											EX. EASEMENT TO ERECT PARTY WALL V. 642, P. 28 & 30		
														EX. VEHICULAR AND PEDESTRIAN PERMIT INGRESS/EGRESS		
														EASEMENT INSTRUMENT #200410010603		
														0.0423 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
3-T	BOARD OF PARK COMMISSIONERS OF THE	3, 6	201608080496	003-20-002	0.311	0.0000	0.2566	0.0000	0.2566					MAINTAIN DETROIT-SUPERIOR BRIDGE		
	CLEVELAND METROPOLITAN PARK DISTRICT													EX. STATE OF OHIO SEWER CONSTRUCTION, USE AND		
														MAINTENANCE EASEMENT, V. 94-10463, P. 60		
														0.2356 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
4-T	CUYAHOGA COUNTY, OHIO	3, 6	V. 1386, P. 623	003-20-009	0.1401 (c)	0.0000	0.1401	0.0000	0.1401					MAINTAIN DETROIT-SUPERIOR BRIDGE		
			V. 1366, P. 370											(c) NO RECORD AREA AVAILABLE FROM COUNTY AUDITOR		
			V. 1366, P. 371											0.0702 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
			V. 1386, P. 118													
			V. 1369, P. 611													
5	RIVERBED 007, LLC	3, 6	201712280745	003-20-007	1.243									NO ADDITIONAL R/W REQUIRED		
6-T	STONEBRIDGE WATERFRONT, LLC,	3, 6, 7	201302280492	003-20-006	0.9355									NO ADDITIONAL R/W REQUIRED		
	A DELAWARE LIMITED LIABILITY COMPANY															
				003-20-008	0.3565	0.0000	0.0745	0.0000	0.0745					MAINTAIN DETROIT-SUPERIOR BRIDGE FOR 3 MONTH DURATION		
														APPROXIMATELY 25 PARKING STALLS IMPACTED		
														EX. OHIO BELL TELEPHONE COMPANY CONSTRUCTION,		
														RECONSTRUCTION, MODIFICATION, SUPPLEMENTATION,		
														MAINTENANCE, OPERATION AND TRANSMISSION REMOVAL		
														EASEMENT INSTRUMENT #201011010493		
														EX. STATE OF OHIO SEWER CONSTRUCTION, USE AND		
														MAINTENANCE EASEMENT, V. 94-10463, P. 57		
														EX. OHIO BELL TELEPHONE COMPANY A.K.A. AMERITECH		
														OHIO INC. CONSTRUCTION, RECONSTRUCTION,		
														MODIFICATION, SUPPLEMENTATION, MAINTENANCE,		
														OPERATION AND TRANSMISSION REMOVAL EASEMENT		
														INSTRUMENT #200204220994		
														EX. BOARD OF COUNTY COMMISSIONERS OF CUYAHOGA		
														COUNTY OHIO CONSTRUCTION ANS PIERS FOUNDATION		
														MAINTENANCE EASEMENT, V. 1532, P. 161		
													STATE	0.0745 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
													100%			

NOTE: ALL TEMPORARY PARCELS TO BE OF 18 MONTH DURATION, ACCEPT OTHERWISE NOTED.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

TYPES OF TITLE LEGEND:

T = TEMPORARY EASEMENT

(c) = CALCULATED AREA

* DENOTES RIGHT OF WAY ENCROACHMENT

REV. BY	DATE	DESCRIPTION
DTB	11/16/18	PARCEL 6: UPDATED GROSS TAKE AREA, SET
		A 3 MONTH DURATION FOR EASEMENT AND
		REVISED THE NUMBER OF PARKING SPACES
		IMPACTED TO 25.

FIELD REVIEW BY DATE:

OWNERSHIP VERIFIED BY DATE:

DATE COMPLETED

FEDERAL PROJECT NO. E161111

PID NO. 99972

STATE JOB NO. 527174

R/W DESIGNER DTB

R/W REVIEWER SAH

SUMMARY OF ADDITIONAL RIGHT OF WAY

CUY-6-14.56

ALL AREAS IN ACRES

NET TAKE = GROSS TAKE - PRO IN TAKE

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
7	MARLIN INVESTMENT GROUP, LLC	3, 6	200808010726	101-16-001	0.554								STATE 100%	NO ADDITIONAL R/W REQUIRED		
8-T	THE BOARD OF COMMISSIONERS OF THE	3, 8	201408280564	101-15-002	0.652 (a)	0.0000	0.6554	0.0000	0.6554					(a) RECORDED DEED SHOWS RECORD AREA AS 1.177 AC.		
	CLEVELAND METROPOLITAN PARK DISTRICT		201410100649											MAINTAIN DETROIT-SUPERIOR BRIDGE		
														APPROXIMATELY 46 PARKING STALLS IMPACTED		
														0.6554 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
9-T	CITY OF CLEVELAND	3, 9	V. 88-5988, P. 64	101-15-021	3.300 (a)	0.0712	0.9837	0.0712	0.9125					MAINTAIN DETROIT-SUPERIOR BRIDGE		
														APPROXIMATELY 73 PARKING LOT STALLS IMPACTED		
			V. 1479, P. 629		0.0139	0.0139								*REMOVAL OF 2 BOLLARDS		
			V. 1479, P. 632		0.0241	0.0241								(a) COUNTY AUDITOR SHOWS RECORD AREAS AS: LAND		
			V. 1479, P. 632		0.0332	0.0332								TYPE 1, 1.527 AC. & LAND TYPE 2, 1.773 - TOTAL SHOWN		
														EX. CHESAPEAKE AND OHIO RAILWAY COMPANY 15 FEET IN		
														WIDTH OVER, ABOVE AND UNDER THE PREMISES EASEMENT		
														V. 88-5988, P. 64		
														EX. CLEVELAND UNION TERMINALS COMPANY 120 FEET IN		
														WIDTH CONSTRUCTION AND MAINTENANCE OF THE DETROIT-		
														SUPERIOR HIGH LEVEL BRIDGE EASEMENT.		
														V. 1479, P. 632		
														0.7880 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
10	THE GREATER CLEVELAND REGIONAL TRANSIT	3, 9, 10	V. 10710, P. 3	101-15-008	0.619									NO ADDITIONAL R/W REQUIRED		
	AUTHORITY															
11-T	CITY OF CLEVELAND	3, 10	V. 90-2362, P. 4	101-15-009	0.846	0.0000	0.3428	0.0000	0.3428					MAINTAIN DETROIT-SUPERIOR BRIDGE		
														EX. COUNTY OF CUYAHOGA CONSTRUCTION AND		
														MAINTENANCE OF A HIGH LEVEL BRIDGE OF REINFORCED		
														CONCRETE, AERIAL EASEMENT V. 1716, P. 574		
														0.2080 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
12-T	THE GREATER CLEVELAND REGIONAL TRANSIT	3, 10	V. 96-01629, P. 24	101-15-028	0.06	0.0000	0.0219	0.0000	0.0219					MAINTAIN DETROIT-SUPERIOR BRIDGE		
	AUTHORITY													0.0163 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
13-T	UNITED STATES OF AMERICA	3, 10	200812231183	101-15-011	0.861	0.0000	0.1744	0.0000	0.1744					MAINTAIN DETROIT-SUPERIOR BRIDGE		
														APPROXIMATELY 17 PARKING LOT STALLS IMPACTED		
														EX. CITY OF CLEVELAND UTILITY EASEMENTS		
														AFN #200812220451 & AFN #200811030330		
														EX. 1540 COLUMBUS CORP PIPELINE PURPOSES, POWER		
														TRANSMISSION PURPOSES, ENTRANCE, CONSTRUCTION,		
														MAINTENANCE, REPARATION AND RENEWAL OF FUTURE		
														TRANSMISSION AND COMMUNICATION LINES EASEMENT.		
														V. 15478, P. 650		
														EX. CITY OF CLEVELAND PEDESTRIAN PASSAGE USE,		
														MAINTENANCE AND RECONSTRUCTION EASEMENT.		
														V. 1695, P. 175		
														0.0746 AC. OVERLAPS DETRIOT-SUPERIOR AERIAL EASEMENT		
14	CUYAHOGA METROPOLITAN HOUSING	3, 6		003-20-003	0.046									NO ADDITIONAL R/W REQUIRED		
	AUTHORITY FKA CLEVELAND METROPOLITAN												STATE			
	HOUSING AUTHORITY												100%			

NOTE: ALL TEMPORARY PARCELS TO BE OF 18 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

TYPES OF TITLE LEGEND:

T = TEMPORARY EASEMENT

(c) = CALCULATED AREA

* DENOTES RIGHT OF WAY ENCROACHMENT

REV. BY	DATE	DESCRIPTION

FIELD REVIEW BY DATE:

OWNERSHIP VERIFIED BY DATE:

DATE COMPLETED

FEDERAL PROJECT NO. E161111

PID NO. 99972

STATE JOB NO. 527174

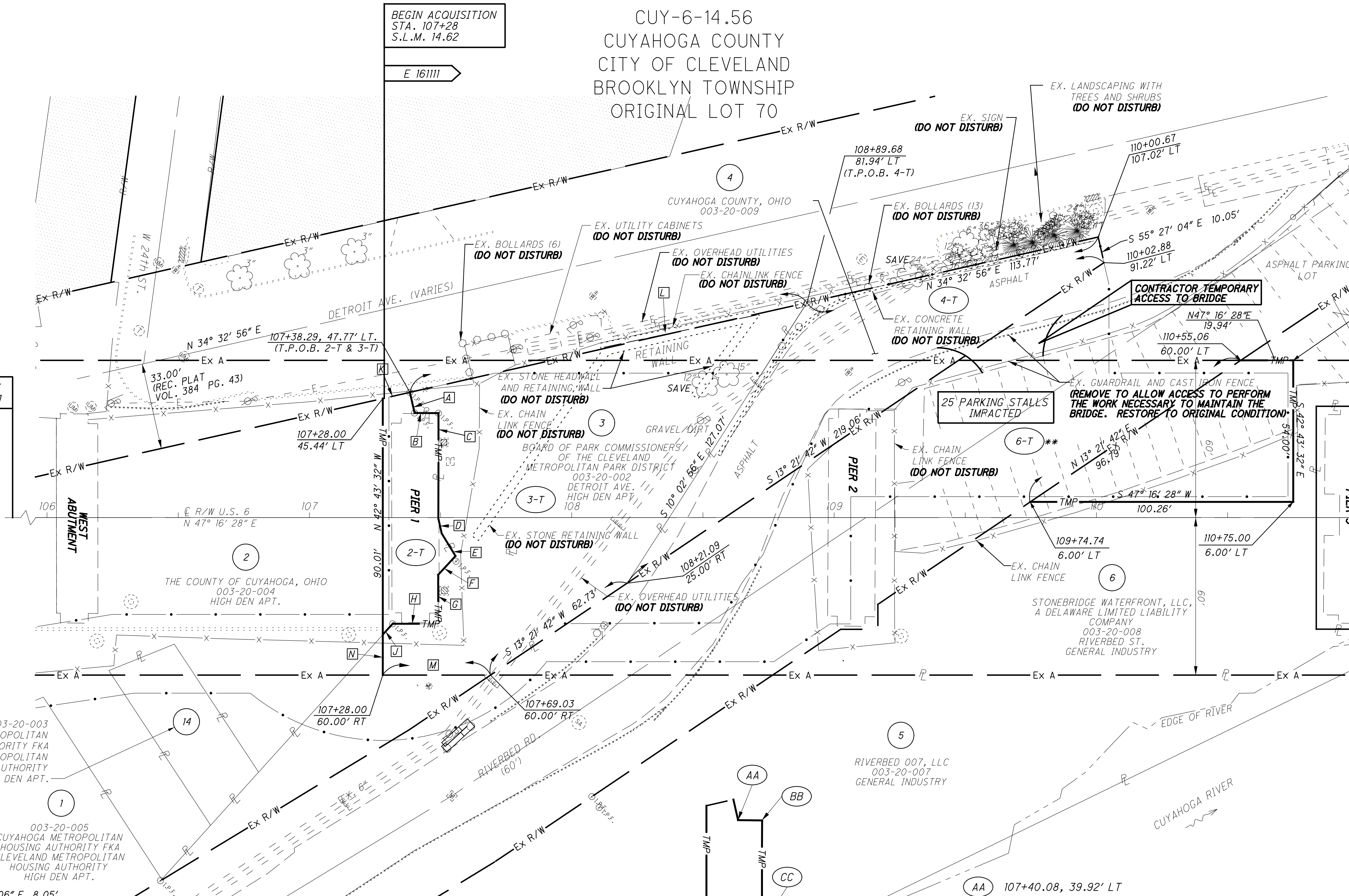
R/W DESIGNER DTB

R/W REVIEWER SAH

SUMMARY OF ADDITIONAL RIGHT OF WAY

CUY-6-14.56

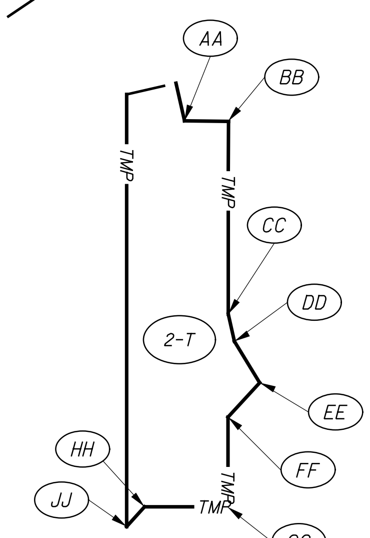
CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70



A	S 55° 36′ 06″ E 8.05′
B	N 47° 47′ 00″ E 9.12′
C	S 42° 38′ 32″ E 40.12′
D	S 55° 22′ 12″ E 5.86′
E	S 74° 21′ 41″ E 10.10′
F	S 00° 04′ 47″ W 9.73′
G	S 42° 38′ 32″ E 18.73′
H	S 47° 21′ 28″ W 17.36′
J	S 00° 37′ 10″ E 5.56′
K	N 34° 32′ 56″ E 10.55′
L	N 34° 32′ 56″ E 155.22′
M	S 47° 16′ 28″ W 41.03′
N	N 42° 43′ 32″ W 15.43′

PARCEL #	TOTAL AREA	AREA OF OVERLAP (ACRES) 2-T	3-T	4-T	6-T
2-T	0.0423				
3-T	0.2566				
4-T	0.1401				
6-T	0.1905				
AERIAL ESMT.		0.0423	0.2356	0.0702	0.0754

T.P.O.B. TRUE POINT OF BEGINNING
FOR ADDITIONAL MONUMENTATION, SEE CENTERLINE PLAT (SEE SHEET 2)
FOR ADDITIONAL NON-PUBLIC EASEMENTS, SEE PROPERTY MAP (SEE SHEET 3)
FOR MONUMENT LEGEND SEE CENTERLINE PLAT (SEE SHEET 2)



STATIONING DETAIL

AA	107+40.08, 39.92′ LT
BB	107+49.20, 39.84′ LT
CC	107+49.15, 0.28′ RT
DD	107+50.43, 6.00′ RT
EE	107+55.73, 14.60′ RT
FF	107+49.11, 21.74′ RT
GG	107+49.09, 40.47′ RT
HH	107+31.73, 40.45′ RT
JJ	107+28.00, 44.57′ RT

REV. BY	DATE	DESCRIPTION
DTB	11/16/18	PARCEL 6: UPDATED CONSTRUCTION LIMITS AND TEMPORARY EASEMENT LIMITS

DATE COMPLETED

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER SAH

RIGHT OF WAY DETAIL SHEET
STA. 106+00 TO STA. 111+00

CUY-6-14.56

6 / 10

134 / 138

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CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70

Ex R/W
DETROIT AVE. N 30° 11' 02" E
441.25' (REC. PLAT VOL. 313 PG. 92)
O.I.P.S.
CENTER ST.
EX. OVERHEARD UTILITY LINES
EX. UTILITY CABINETS (2)
EX. UTILITY CABINET
℄ RIVERBED ROAD (60')
EX. WALK
EX. CAST IRON FENCE
ASPHALT PARKING LOT
EX. CHAINLINK FENCE
30"
SAVE
6
STONEBRIDGE WATERFRONT, LLC, A DELAWARE LIMITED LIABILITY COMPANY
003-20-006
RIVERBED ST.
GENERAL INDUSTRY
GREEN AREA
BRIDGE
Ex A
MATCHLINE STA. 111+00, SHEET 6
MATCHLINE STA. 116+00, SHEET 8
PIER 3
112
113
114
115
N 47° 16' 28" E
℄ R/W U.S. 6
DETROIT-SUPERIOR BRIDGE
CUYAHOGA RIVER
60'
60'

REV. BY	DATE	DESCRIPTION
DTB	11/16/18	PARCEL 6 :UPDATED LIMITS OF CONSTRUCTION AND TEMPORARY R/W

DATE COMPLETED

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER -

RIGHT OF WAY DETAIL SHEET
STA. 111+00 TO STA. 116+00

CUY-6-14.56

7 / 10

135
138

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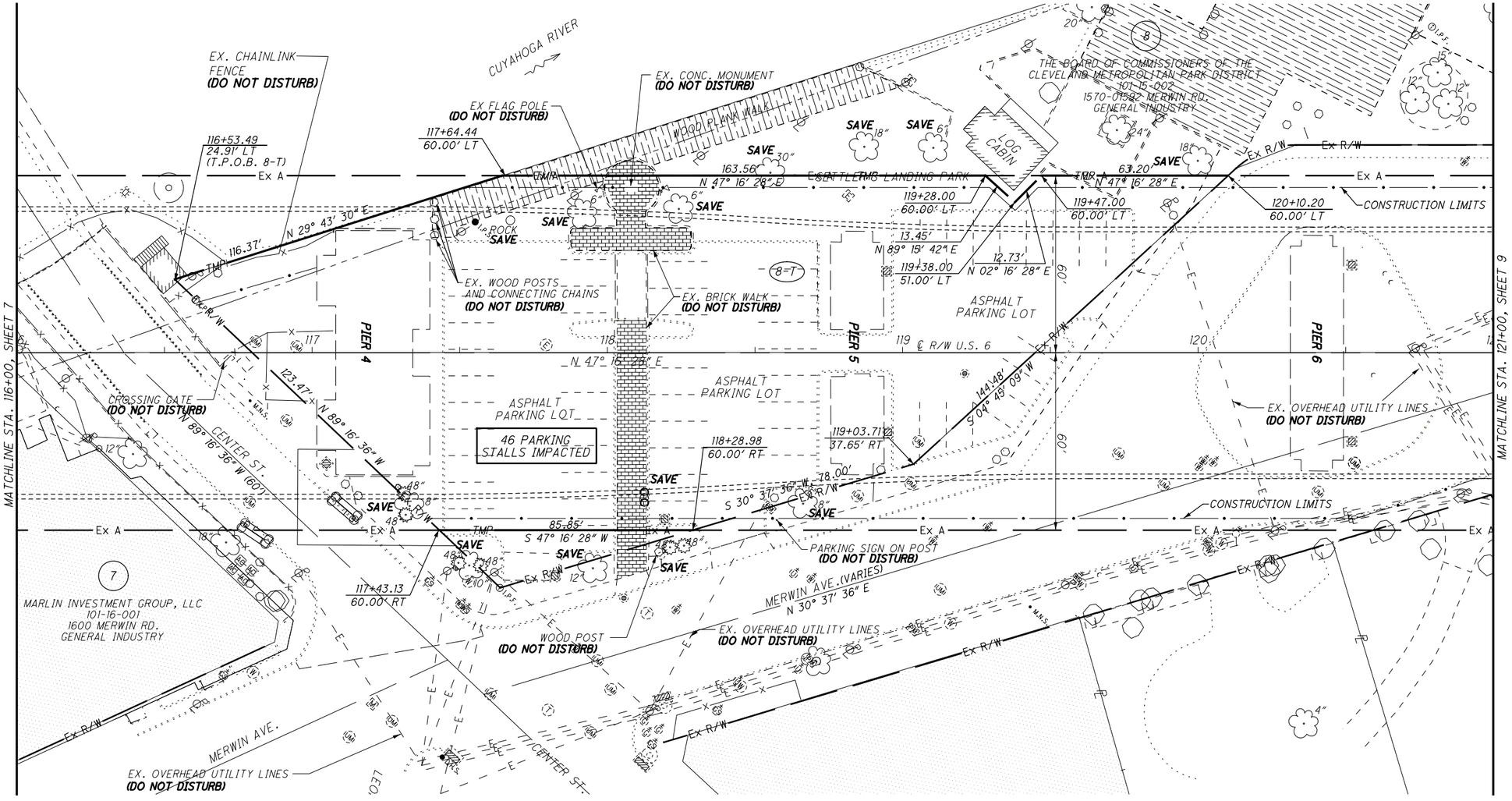
CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70



PARCEL #	TOTAL AREA	AREA OF OVERLAP (ACRES) 8-T
8-T	0.6554	
AERIAL ESMT.		0.6554

REV. BY	DATE	DESCRIPTION

DATE COMPLETED

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER SAH

RIGHT OF WAY DETAIL SHEET
STA. 116+00 TO STA. 121+00

CUY-6-14.56

8 / 10

136
138

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CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70

PARCEL #	TOTAL AREA	AREA OF OVERLAP (ACRES) 9-T
9-T	0.9125	
AERIAL ESMT.		0.7880

MATCHLINE STA. 121+00, SHEET 8

MATCHLINE STA. 126+00, SHEET 10

SETTLER'S LANDING PARK

CONSTRUCTION LIMITS

Ex R/W

Ex A

MERWIN AVE.

AREA UNDER CONSTRUCTION

℄ R/W MERWIN AVE. (VARIES)
N 20° 04' 01" E

EX. CHAINLINK FENCE (DO NOT DISTURB)

THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
101-15-008
1505 MERWIN AVE.
GENERAL INDUSTRY

EX. CONC. WALK

DOG PARK

WOOD POSTS (DO NOT DISTURB)

STEEL BOLLARDS (2) (DO NOT DISTURB)
21.52'
S 70° 25' 13" E

EX. BIKE RACK
S 70° 25' 13" E 21.52'
EX. ARM BASE

CONTRACTOR ACCESS TO BRIDGE

STEEL BOLLARDS (2) (REMOVE)

CONCRETE POST (DO NOT DISTURB)

123+92.00
79.05' LT

N 47° 16' 28" E 95.87'

124+97.87
60.00' LT

TMP

ASPHALT PARKING LOT

EX. OVERHEAD UTILITY LINES (DO NOT DISTURB)

SAVE

124+02.00
60.00' LT

EX. WOOD POSTS (15) AND CONNECTING CHAIN (DO NOT DISTURB)

EX. WOOD POSTS (12) AND CHAIN (DO NOT DISTURB)

EX. WOOD POSTS (16) AND CHAIN (DO NOT DISTURB)

EX. CONC. WALK

℄ R/W MERWIN AVE. (VARIES)
S 30° 37' 36" E

N 20° 04' 01" E 206.93' +TEL

PIER 7

PIER 8

PIER 9

PIER 10

℄ R/W U.S. 6

N 47° 16' 28" E

DETROIT-SUPERIOR BRIDGE

S 72° 00' 12" E

℄ R/W JAMES ST. (50')

EX. TRASH CAN

EX. CONC. WALK

N 30° 37' 35" E 62.21'

122+07.96
15.56' RT

12"+48.36
33.38' RT
(T.P.O.B. 9-T)

30.60'
N 72° 17' 47" W

CONSTRUCTION LIMITS

121+63.46
60.00' RT

122+50.00
60.00' RT

APPROXIMATELY 73 PARKING LOT STALLS IMPACTED

S 47° 16' 58" W 86.54'

N 73° 18' 19" W 90.55'

122+96.00
138.00' RT

S 21° 19' 56" W
82.29'

9-T

9

CITY OF CLEVELAND
101-15-021
WEST AVE.
GENERAL INDUSTRY

EX. OVERHEAD UTILITY LINES (DO NOT DISTURB)

EX. WOOD POSTS (12) AND CHAIN (DO NOT DISTURB)

℄ R/W WEST ST. (50')
S 72° 17' 46" E

124+15.00
60.00' RT

124+15.00
100.00' RT

123+70.00
102.00' RT

S 47° 16' 28" W 100.00'

S 42° 43' 32" E 40.00'

S 44° 43' 47" W
45.04'

125+15.00
45.00' RT

125+52.00
36.55' RT

37.95'
S 34° 24' 37" W

15.00'
S 42° 43' 32" E

125+15.00
60.00' RT

ASPHALT PARKING LOT

EX. CONC. STEPS

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HORIZONTAL SCALE IN FEET
0 10 20 40

R/W DESIGNER	PID NO.
DTB	99972
R/W REVIEWER	
SAH	

RIGHT OF WAY DETAIL SHEET
STA. 121+00 TO STA. 126+00

CUY-6-14.56

9 / 10

137
138

CUY-6-14.56
CUYAHOGA COUNTY
CITY OF CLEVELAND
BROOKLYN TOWNSHIP
ORIGINAL LOT 70

PARCEL #	TOTAL AREA	AREA OF OVERLAP (ACRES) 11-T	12-T	13-T
11-T	0.3428			
12-T	0.0219			
13-T	0.1744			
AERIAL ESMT.		0.2080	0.0163	0.0746

(AA)	S 21° 49′ 05″ E, 3.64′
(BB)	N 70° 25′ 55″ E, 20.70′
(CC)	S 47° 16′ 28″ W, 6.12′
(DD)	S 42° 43′ 32″ E, 7.23′
(EE)	N 47° 16′ 28″ E, 10.87′
(FF)	S 19° 41′ 45″ E, 25.82′
(GG)	S 47° 16′ 28″ W, 0.67′
(HH)	S 42° 43′ 32″ E, 1.57′
(JJ)	S 19° 41′ 45″ E, 42.43′
(KK)	S 61° 57′ 29″ E, 18.51′
(LL)	S 42° 43′ 32″ E, 7.65′
(MM)	N 47° 16′ 28″ E, 2.67′
(NN)	S 61° 57′ 29″ E, 12.42′
(RR)	N 31° 44′ 41″ W, 60.40′
(TT)	N 31° 44′ 42″ W, 99.04′
(PP)	Δ= 06° 28′ 23″ CB= S 34° 58′ 53″ E CL= 119.16′ R= 1055.25′ A= 119.22′
(SS)	Δ= 03° 46′ 29″ CB= N 33° 37′ 57″ W CL= 68.37′ R= 1038.00′ A= 68.38′
(UU)	Δ= 05° 46′ 51″ CB= N 34° 38′ 07″ W CL= 106.42′ R= 1055.25′ A= 106.47′

(A)	127+97.90, 60.00′ LT.
(B)	127+96.60,56.60′ LT.
(C)	128+15.63,48.46′ LT.
(D)	128+09.51, 48.46′ LT.
(E)	128+09.51, 41.23′ LT.
(F)	128+20.38, 41.23′ LT.
(G)	128+10.28, 17.47′ LT.
(H)	128+09.61, 17.47′ LT
(J)	128+09.61, 15.90′ LT.
(K)	127+93.01, 23.14′ RT.
(L)	127+99.11, 40.63′ RT.
(M)	127+99.11, 48.28′ RT.
(N)	128+01.78, 48.28′ RT.
(P)	128+05.87, 60.00′ RT.
(R)	127+65.17, 37.95′ RT.
(S)	127+77.44, 0.05′ RT.

DETAIL

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

PID NO. 99972

R/W DESIGNER DTB
R/W REVIEWER SAH

RIGHT OF WAY DETAIL SHEET
STA. 126+00 TO STA. 131+56.52

CUY-6-14.56

10 / 10

138 / 138

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SPECIAL PROVISIONS

METROPARKS ACCESS PERMIT:

REPAIR OF DETROIT-SUPERIOR BRIDGE OVER CUYAHOGA RIVER, CUY-6-14.56

PID: 99972

DATE: 9/21/2018

PERMIT-REPAIR DETROIT SUPERIOR BRIDGE (US-6), ODOT PID 99972

Permission hereby is granted on behalf of the BOARD OF PARK COMMISSIONERS OF THE CLEVELAND METROPOLITAN PARK DISTRICT ("Cleveland Metroparks") to Ohio Department of Transportation ("Permittee"), to close and access the subject bridge through Heritage Park property (collectively, the "Improvements") on Cleveland Metroparks land in the Ohio & Erie Canal Reservation within the area identified on the map attached hereto as Exhibit A and made a part hereof (the "Permit Area"), subject to the following terms and conditions:

1. Term of Permit.

This Permit shall take effect on the date of Cleveland Metroparks receipt of proof of insurance, as hereinbelow described, together with this Permit signed by Cleveland Metroparks and Permittee, provided that Permittee shall notify Cleveland Metroparks Ranger Department (440-331-5530) and Reservation Manager Jeremy Skaggs (216-341-1706) of its intent to commence said activities at least two (2) working days in advance of activities and provided further that this Permit shall not take effect before March 4, 2019, and shall continue until October 31, 2020, unless extended with prior written approval by Cleveland Metroparks, except that Permittee, at Permittee's sole cost and expense, thereafter shall be obligated to repair and maintain the Improvements in good condition, whether such repair or maintenance may be required by reason of work in regards to this Permit by Permittee or its subcontractors, or by any other reason such as, without limitation, activities by Cleveland Metroparks or any other party with respect to the Permit Area, and shall be permitted to enter upon the Permit Area from time to time for such repair and maintenance, upon request, and after approval of plans and specifications, pursuant to additional permit(s) issued by Cleveland Metroparks, as necessary; provided, however that Cleveland Metroparks maintains the right to revoke this Permit at any time for failure to comply with any of the terms and conditions hereof.

2. Conditions of Work.

(a) Plans and Specifications. Permittee shall execute the Improvements in accordance with the scope of work submitted and so approved by Cleveland Metroparks on April 24, 2018 by Mark Carpenter unless a modification thereof thereafter is approved in writing by Cleveland Metroparks. In addition, Permitee shall perform the following:

i. Follow the general schedule shown on Exhibit B, attached.
ii. Provide Cleveland Metroparks a property closure schedule at least two (2) months in advance of said closure.
iii. Invite Cleveland Metroparks to the pre-construction meeting and all subsequent progress meetings.
iv. Protect existing kiosk

(b) Compliance with Law. Plans and specifications for, work with respect to, and use of the Improvements must be in compliance with all

applicable laws, ordinances, rules, and regulations, including without limitation any and all conditions and requirements imposed by Cleveland Metroparks and other governmental authorities with competent jurisdiction.

(c) Permits, etc. Prior to commencing any work on the Improvements, Permittee shall have obtained any and all necessary permits, authorizations, and other consents from any and all governmental authorities with competent jurisdiction.

3. Driveway Requirements. (Intentionally omitted)

4. Use of Permit Area and Ohio & Erie Canal Reservation.

(a) Removal of Vegetation. Permittee agrees to remove from the Permit Area only vegetation that interferes with construction operations and further agrees that clear cutting of the Permit Area is not required or permitted. Notwithstanding the foregoing, no trees on Cleveland Metroparks property shall be removed, trimmed, or otherwise damaged unless otherwise approved in writing by Valerie Carter - Stone of the Cleveland Metroparks Natural Resources Division. Permittee properly shall dispose of trimmed and removed vegetation. Except as expressly permitted under this Permit, Permittee shall be liable to Cleveland Metroparks for loss or damage to any vegetation, including without limitation trees, arising out of, or associated with or related to, any of the activities described herein, the amount of such loss or damage being determined by Cleveland Metroparks.

(b) Removal of Topsoil and/or Dirt. Any topsoil and/or dirt removed for the Improvements shall be removed from Cleveland Metroparks property promptly by Permittee unless required for backfilling and grading.

(c) Storage and Parking Conditions. The Reservation Manager shall approve all parking and storage locations and periods of use. No storage of equipment or materials, parking of vehicles, including without limitation standing or stacking of trucks and parking of Permittee's employees' cars or trucks, shall be permitted on the Permit Area or adjoining Cleveland Metroparks property unless otherwise approved in writing by the Reservation Manager or this Permit, and such equipment, materials, or vehicles, including without limitation trucks, shall be at the risk of Permittee.

(d) Traffic Control. To ensure safety of park users, Permittee shall be required to provide traffic control measures. Such measures, whether they be in the form of flagmen, barricades, lighting, escorts, or any other devices, shall be developed by Permittee and shall follow the standards and guidelines of the Ohio Department of Transportation Manual of Uniform Traffic Control Devices for Streets and Highways, subject to the approval of Cleveland Metroparks Ranger Department. In the event of road closures or other temporary impediments to traffic, Ranger personnel are required and must be arranged in advance with Ranger Headquarters at 440-331-5530.

(e) Inspection Rights. To ensure compliance with the terms of this Permit, Cleveland Metroparks shall retain rights of inspection before, during, and after work with respect to the Improvements.

(f) Injury/Emergency Events. In the event of injury that arises in connection with work with respect to the Improvements, or upon the occurrence of an event that would constitute an emergency, Cleveland Metroparks Ranger Department must be notified immediately at 440-331-5530.

5. Use of Park Roadways and Trails.

(a) No Interference. The operation of equipment and vehicles, including without limitation trucks, on any roadway or trail, and access by persons entering or leaving the Permit Area shall be undertaken in a manner that shall not interfere with, or restrict the use of, or access to, park facilities by park visitors, including without limitation vehicle, bicycle, and pedestrian traffic.

(b) Limited Access. Access for vehicles, including without limitation trucks, to the Permit Area shall be as shown on Exhibit B. No other roadway shall be used for such access.

(c) Limitations on Vehicles. All Cleveland Metroparks roadways and parking lots have a 5 ton maximum gross vehicle weight limit, and trucks are prohibited. Trucks or other over-weight vehicles will be allowed on the route to the Permit Area, and the Permit Area, specified herein subject to the following conditions:

i. Damage caused by Permittee's vehicles, and to include vehicles operated by Permittee's partners, contractors, subcontractors and suppliers, are the responsibility of the Permittee.
ii. Said damage shall include, but not limited to, cracking, faulting, displacement, rutting and disintegration not present before Permittee's Improvement activities, shall be repaired at Permittee's expense and to the satisfaction of Cleveland Metroparks.
iii. The Permittee is strongly advised to video the approved access route if the above noted weight restrictions will be exceeded, and to have Agreements in place with partners, subcontractors and suppliers with regard to subject damage repair.

(d) Removal of Debris. All roadways and trails must be kept clear of construction debris, spillage, and mud at all times. Should debris, spillage, or mud be carried onto the roadway or trail from the Permit Area, it shall be removed immediately and, in any event, the roadway and trail shall be left clean at the end of each work day.

6. Restoration of Permit Area.

(a) Restoration. Permittee, at Permittee's sole cost and expense, promptly shall restore all surfaces, including without limitation driveways, parking lots, walkways, lawns, grass areas, and fences, to the condition existing before being disturbed.

(b) All Purpose Trail Specifications. Without limiting the generality of the foregoing, Permittee, at Permittee's sole cost and expense, promptly shall restore all purpose trails to the condition existing before being disturbed, including without limitation the following:

i. All repair areas will be full width; partial width patches will not be permitted.
ii. After existing asphalt removed, existing subbase shall be inspected by Cleveland Metroparks and direction given as to re-grading and compaction or subbase replacement.
iii. Subbase shall be replace as directed with not less than 6" ODOT CMS item 304 limestone aggregate (not slag), compacted, and placed on proof rolled subgrade.
iv. Installation of not less than 3" ODOT CMS item 448 Asphaltic Concrete.
v. Asphalt joints shall be "butt" type, perpendicular to trail alignment and saw-cut full asphalt depth, no "feather" edges permitted, and sealed per ODOT CMS 705.04.
vi. Compliance of all materials with requirements of State of Ohio, Department of Transportation, and Construction & Material Specifications.

It is advised that the Permittee video the access trails and roadways prior to commencing activities.

(c) Seed Specifications. All soil areas disturbed by Permitee's activities shall be seeded and mulched per ODOT CMS 659. The seed mixture for restoration of lawn and roadside areas shall be a mixture of 20% Kentucky 31 Fescue, 25% common Kentucky Bluegrass, 20% Manhattan Rye Grass, and 35% Creeping Red Fescue at the rate of eight (8) pounds per one thousand square feet (8:1000). When specifically required, other areas shall be seeded with ODOT CMS 659 Type 5B Native Wildflower and Grass Mixture. Mulching material shall conform to ODOT CMS 659. Topsoil shall conform to ODOT CMS 653.

7. Indemnification.

Permittee agrees to indemnify, hold harmless, and, if requested, defend Cleveland Metroparks, and any and all of Cleveland Metroparks' officers, employees, and agents from and against any and all liabilities, costs, claims, demands, fines, penalties, proceedings, actions, and causes of action, including without limitation reasonable attorneys' fees, arising out of, or associated with, or related to, any of the activities described herein.

8. Insurance.

Permittee understands that insurance carried by Cleveland Metroparks will not include insurance related to the Activities. Permittee shall maintain self-insurance for claims for bodily injury (including death) and property damage related to this Permit, the Permit Area, and the Activities in accordance with its customary practices, including without limitation maintenance of an assigned reserve therefore, up to commercially reasonable limits but not less than One Million Dollars ($1,000,000) per occurrence. Promptly upon request by Cleveland Metroparks from time to time, Permittee shall provide Cleveland Metroparks with a letter of confirmation with respect to such self insurance and assigned reserve, in form satisfactory to Cleveland Metroparks.

9. Termination of Permit.

If at any time the Permit Area ceases to be used by Permittee for the purpose specified herein, the rights hereby granted automatically shall terminate whereupon Permittee, if Cleveland Metroparks so requests, shall remove the Improvements from the Permit Area in a manner satisfactory to Cleveland Metroparks and, if either Cleveland Metroparks or Permittee so requests, Cleveland Metroparks and Permittee promptly shall execute and record a document that evidences such termination.

10. Entire Agreement.

This Permit constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, written or oral, with respect thereto.

11. Modification.

No modification of this Permit shall be binding upon Cleveland Metroparks or Permittee unless set forth in writing and executed by Cleveland Metroparks and Permittee.

12. Severability.

If any provision of this Permit shall be or become invalid or unenforceable, then this Permit shall be divisible as to such provision, and the remainder of this Permit shall be and remain valid and binding as though such provision were not included herein.

13. Third-Party Rights.

Nothing herein expressed or implied is intended or shall be construed to confer upon any other entity, other than as herein set forth, any rights or remedies under, or by reason of, this Permit.

14. Acceptance of Permit.

Acceptance of this Permit by Permittee will constitute acceptance of all conditions set forth herein.

Board of Park Commissioners of the
Cleveland Metropolitan Park District
4101 Fulton Parkway
Cleveland, Ohio 44144
(216) 351-6300

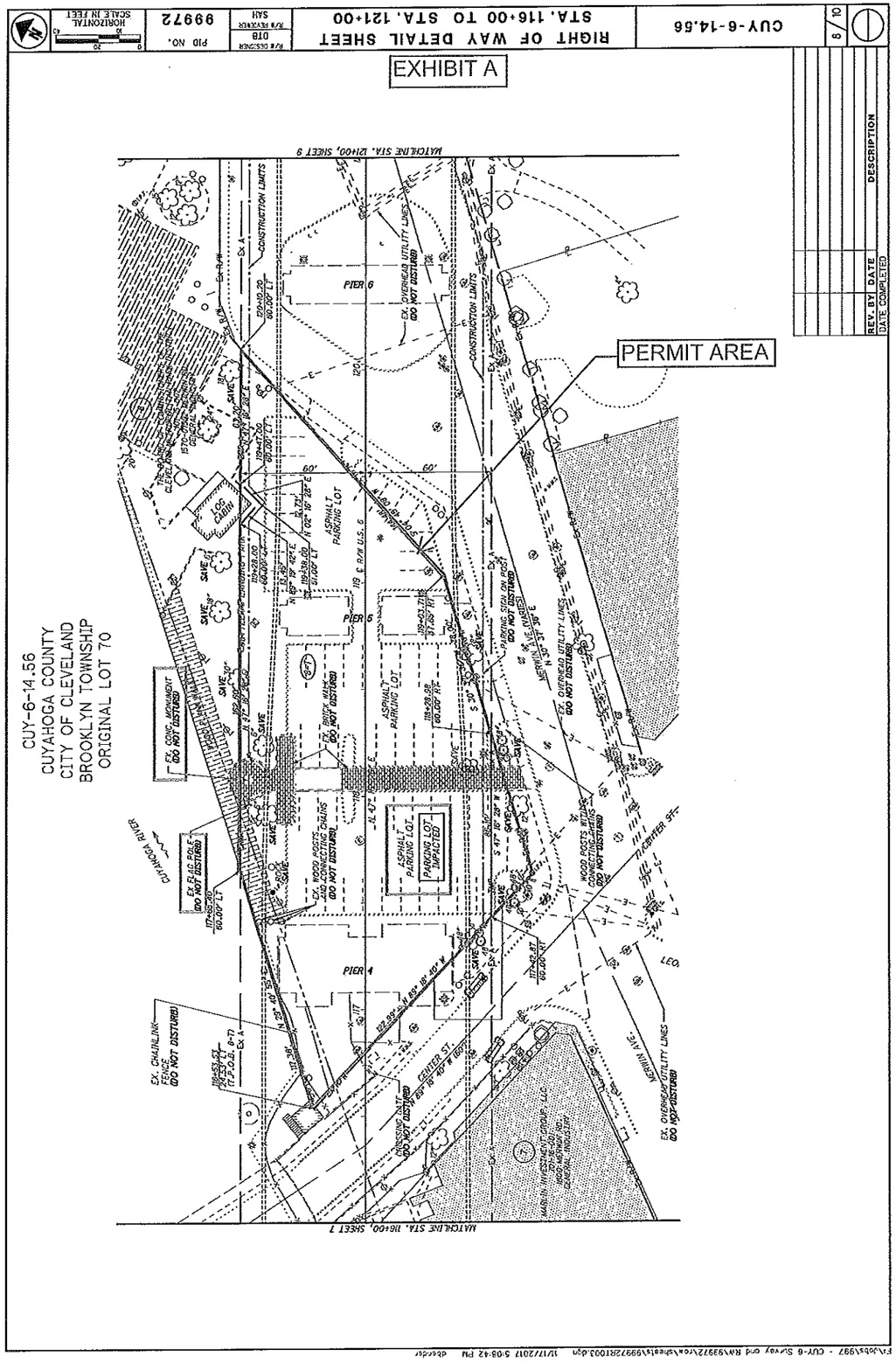
Accepted:

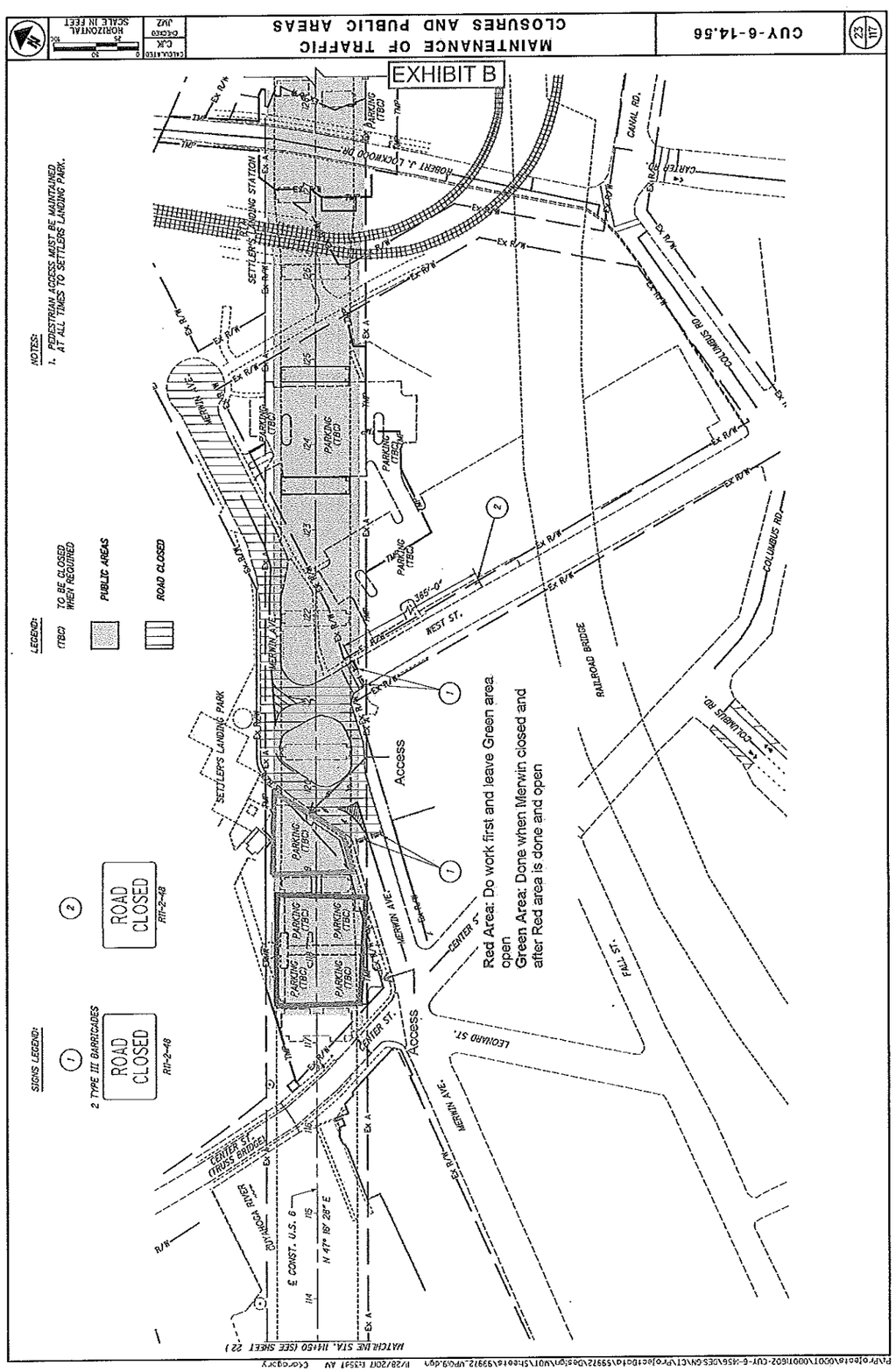
Dan Dougherty, P.E.
ODOT District 12 Real Estate Administrator
5500 Transportation Blvd.
Garfield Heights, Ohio 44125
216-584-2130
dan.dougherty@dot.ohio.gov

Date: 4-25-18

John C. Kilgore, P.E.
Manager of Facilities Engineering
216-635-3251
jck@clevelandmetroparks.com

Date: 9/21/18





CERTIFICATE OF SELF-INSURANCE

Insured	
Department of Transportation	This certificate is issued pursuant to Chapter 2743 of the Ohio Revised Code.

COVERAGES

To the extent permitted by Ohio law and except for situations where officer, employee or governmental immunity would apply, the State of Ohio, Department of Transportation will be responsible for any and all claims for which it is legally liable. Should suit be filed in the Ohio Court of Claims in accordance with Chapter 2743 of the Ohio Revised Code, the State of Ohio, Department of Transportation would be responsible for the payment of any settlement or judgment rendered against them.

Type of Coverage	Effective Date	Expiration Date	Coverage limits
General Liability	Continuous	Continuous	Self-Insured
Vehicle Liability	11/16/2016	12/31/2021	Self-Insured Cert# 061 $2,000,000 per occ

Description of Operations/Locations/Vehicles/Restrictions/Special Items
,

Certificate Holder	
	State of Ohio, by and through the Department of Administrative Services, General Services Division, Office of Risk Management Traci Brodie Risk Manager – Underwriting & Analytics Date Issued: 1/30/2017