

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

**DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE**

Contract Documents

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020



NOTICE TO APPARENT LOW BIDDER

**SEMA CONSTRUCTION, INC.
7353 S EAGLE ST.
CENTENNIAL, CO 80112**

The EXECUTIVE DIRECTOR OF THE DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE has considered the Bids submitted on **December 3, 2020**, for work to be done and materials to be furnished in and for:

CONTRACT – 202056263 \ 48th Avenue Viaduct Rehabilitation

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to the approval and execution of the Contract Documents by the City in accordance with the Charter of the City and County of Denver, and to your furnishing the items specified below. The award is based on the total bid items: **Sixty-Five (65) bid items (201-00005 through 700-70600)** the total estimated cost thereof being: **Two Million Seven Hundred Ninety-Nine Thousand Nine Hundred Ninety-Two Dollars and Sixty-One Cents (\$2,799,992.61)**.

In accordance with the requirements set forth in the Contract Documents, you are required to furnish the following documents:

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability; and
- b. Payment and Performance Bond along with One original Power of Attorney relative to Performance and/or Payment Bond.

All construction Contracts made and entered into by the City and County of Denver are subject to Affirmative Action and Equal Opportunity Rules and Regulations, as adopted by the Manager of the Department of Transportation and Infrastructure, and each contract requiring payment by the City of one-half million dollars (\$500,000.00) or more shall first be approved by the City Council acting by ordinance and in accordance with Section 3.2.6 of the Charter of the City and County of Denver.

Prior to issuance of Notice to Proceed, all Equal Opportunity requirements must be completed. Additional information may be obtained by contacting the Director of DSBO at (720-913-1999).

City and County of Denver Department of Transportation & Infrastructure
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/doti
p. 720.865.8630 | f. 720.865.8795



NOTICE TO APPARENT LOW BIDDER

CONTRACT NO. 202056263

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The Bid Security submitted with your Bid, will be returned upon execution of the Contract and furnishing of the Performance Bond. In the event you should fail to execute the Contract and to furnish the performance Bond within the time limit specified, said Bid Security will be retained by the City and County of Denver as liquidated damages, and not as a penalty for the delay and extra work caused thereby.

Dated at Denver, Colorado this 18th day of December 2020.

CITY AND COUNTY OF DENVER

By: *Eulois Cleckley* for
Eulois Cleckley
Executive Director of the
Department of Transportation and Infrastructure

cc: Treasury, DSBO, PM, Prevailing Wage, PRO, File

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

**DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE**

Bid Form Package

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

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This Checklist is provided solely for the assistance of the bidders, and need not be returned by Bidders with your BID FORM PACKAGE.

BIDDER'S CHECKLIST

These forms comprise the Bid Form and Submittal Package. Please note that a copy of the executed bid bond is to be submitted via QuestCDN at the time of bid opening, and that the original bid bond must be mailed and received within 7 calendar days after the bid due date.

Bidders must utilize the Bid Worksheet in the online bidding section of QuestCDN to submit their bid item pricing. The totals from the worksheet are required on page BF-7 of the Submittal Package.

FORM/ PAGE NO.	COMMENTS	COMPLETE
BF-4 – BF-5	a.) Legal name, address, Acknowledgment signature and attestation (if required)	<input checked="" type="checkbox"/>
BF-6+	a.) Complete all blanks b.) Legal name required	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-7	a.) Write out bid total or bid totals in words and figures in the blank form space(s) provided. b.) Calculate Textura® Construction Payment Management System Fee from chart on pg. BF-3 and write fee in the space provided.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-8	a.) List all subcontractors who are performing work on this project.	<input checked="" type="checkbox"/>
BF-9 – BF-10	a.) Fully complete 1A - List of Proposed Subcontractors, Subconsultants, and/or Suppliers.	<input checked="" type="checkbox"/>
BF-11	a.) Complete all blanks b.) If Addenda have been issued, complete bottom section.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-12	a.) Complete appropriate sections - signature(s) required. b.) If corporation, then corporate seal required.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-13	a.) Fully complete Commitment to Participation	<input checked="" type="checkbox"/>
BF-14	a.) Fully complete Letter(s) of Intent	<input checked="" type="checkbox"/>
BF-16	a.) Fill in all Bid Bond blanks b.) Signatures required c.) Corporate Seal if required d.) Dated e.) Attach Surety Agents Power of Attorney or Certified or cashier's check made out to the Manager of Revenue referencing Bidder's Company and Contract Number.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-17- BF-20	a.) Each bidder, as a condition of responsiveness to this solicitation, shall complete and return the "Diversity and Inclusiveness in City Solicitations Information Request Form" with their Bid.	<input checked="" type="checkbox"/>

Textura® Construction Payment Management System (“Textura”)

Bidder recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (“Textura”) for this Project to request payment from the City and to pay all first tier subcontractors and suppliers and further record payment to all certified subcontractors or suppliers that are listed for participation towards any assigned program goal. All fees associated with Textura are to be paid by the bidder for billings for work performed. Bidders are required, when preparing a bid, to enter the price of Textura on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with Textura. The bidder will calculate the fee based on their total bid (not including any alternates, if applicable) and the table below, and then include it on the line item provided in the bid form labeled “Textura® Construction Payment Management System Fee”. This expense becomes part of the contract and billable to the City. All costs including, but not limited to, costs associated with training, entering data, and/or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Bidder will be responsible for any tax on the Textura fee. As with other taxes, the City will not reimburse bidder for this cost and therefore this cost should be included in bidder’s bid. Textura will invoice the awarded bidder directly.

Project Value	Project Fee (GC + Sub Usage)
\$100,000 – 249,999.99	\$780
\$250,000 - \$499,999.99	\$1,625
\$500,000 - \$999,999.99	\$3,250
\$1,000,000 - \$2,999,999.99	\$5,850
\$3,000,000 - \$4,999,999.99	\$9,100
\$5,000,000 - \$9,999,999.99	\$12,220
\$10,000,000 - \$19,999,999.99	\$20,345
\$20,000,000 - \$49,999,999.99	\$32,500
\$50,000,000 - \$99,999,999.99	\$48,750
\$100,000,000 - \$199,999,999.99	\$69,095
\$200,000,000 - \$299,999,999.99	\$85,345
\$300,000,000 - \$399,999,999.99	\$109,720
\$400,000,000 - \$499,999,999.99	\$142,220
\$500,000,000 - \$999,999,999.99	\$162,500
\$1,000,000,000 - \$1,999,999,999.99	\$345,345
\$2,000,000,000 - \$4,999,999,999.99	\$650,000
\$5,000,000,000 - \$9,999,999,999.99	\$1,015,625
\$10,000,000,000 or greater	\$1,503,125

For more information:

<http://www.denvergov.org/content/denvergov/en/contract-administration/bidding-process.html>

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**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE
BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT**

CONTRACT NO. 202056263

48TH AVENUE VIADUCT REHABILITATION

BIDDER: SEMA Construction, Inc.
(Legal Name per Colorado Secretary of State)

ADDRESS: 7353 S. Eagle Street
Centennial, CO 80112

CONTACT PERSON FOR ALL MATTERS RELATING TO THIS DOCUMENT

NAME: Randy Smith, P.E. **TITLE:** Estimator
EMAIL: rsmith@semaconstruction.com **PHONE NUMBER:** (303) 627-2600

AUTHORIZED ELECTRONIC SIGNATORY

NAME: T. Brett Ames, Vice President or Steven C. Mills, Vice President - Contracts
EMAIL: estimating.co@semaconstruction.com / smills@semaconstruction.com

The undersigned bidder states that the undersigned bidder has received and had an opportunity to fully and thoroughly examine a complete set of the Contract Documents for **Contract No. 202056263 - 48th Avenue Viaduct Rehabilitation**, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated October 14, 2020.

The undersigned bidder acknowledges that a complete and final set of the Contract Documents for the referenced Project, the components of which are identified below, are bound and maintained as the record set of Contract Documents by the Contract Administration Division of the Department of Transportation and Infrastructure and that this Record Set is available for examination by the undersigned bidder.

The undersigned bidder, having thoroughly examined each of the components identified below and contained in Contract Documents, HEREBY SUBMITS THIS BID FORM AND SUBMITTAL PACKAGE, fully understanding that the Contract Documents, as defined in Paragraph 1 of the contract, including this executed Bid Form and Submittal Package, constitute all of the terms, conditions and requirements upon which this submission is based and further understanding that, by submission of this Bid Form and Submittal Package, the City shall rely on the representations and commitments of the undersigned bidder contained herein.

The following completed documents comprising this Bid Form and Submittal Package will be included with and, by this reference, are expressly incorporated into the Contract Documents specified at Paragraph 1 of the Contract:

- Bid Form and Submittal Package Acknowledgment Form
- Bid Form
- List of Proposed Minority/Women Owned Business Enterprise(s)
- Commitment to Minority/Women Owned Business Enterprise Participation
- Minority/Women Owned Business Enterprise(s) of Intent
- Letter of Intent
- Bid Bond
- Certificate of Insurance

The following designated documents constitute that portion of the Contract Documents made available by the Notice of Invitation for Bids, but not included in the Bid Form and Submittal Package:

- Notice of Invitation for Bids
- Instructions to Bidders
- Addenda (as applicable)
- Equal Employment Opportunity Provisions (Appendix A and Appendix F)
- Contract Form
- General Contract Conditions
- Special Contract Conditions
- Performance and Payment Bond
- Notice to Apparent Low Bidder
- Notice to Proceed
- Contractor's Certification of Payment Form
- Final Release and Certificate of Payment
- Certificate of Contract Receipt
- Change Orders (as applicable)
- Federal Requirements (as applicable)
- Prevailing Wage Rate Schedule(s)
- Technical Specifications
- Contract Drawings
- Accepted Shop Drawings

The undersigned bidder expressly assumes responsibility for the complete contents of these designated documents as bound together with the Bid Form and Submittal Package submitted herewith and designated the Contract Documents.

IN WITNESS WHEREOF, the undersigned bidder has signed personally or by duly authorized officer or agent and duly attested.

BIDDER:

ATTEST:

Name: SEMA Construction, Inc.
 By: 
 Title: Vice President

By: 



**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

BID FORM

CONTRACT NO. 202056263

48TH AVENUE VIADUCT REHABILITATION

BIDDER: SEMA Construction, Inc.

(Legal Name per Colorado Secretary of State)

TO: The Manager of the Department of Transportation and Infrastructure
City and County of Denver
c/o Contract Administration
201 West Colfax, Dept. 614
Denver, Colorado 80202

The Undersigned Bidder, having examined the plans, technical specifications, and remainder of the proposed Contract Documents as designated and enumerated in the General and Special Contract Conditions and any and all addenda thereto; having investigated the location of and conditions affecting the proposed Work; and being acquainted with and fully understanding the extent and character of the Work covered by this bid, and all factors and conditions affecting or which may be affected by Work, HEREBY SUBMITS THIS BID, pursuant to an advertisement of a Notice of Invitation for Bids as published on **October 14, 2020**, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: **Contract No. 202056263 - 48th Avenue Viaduct Rehabilitation**, in Denver, Colorado, in full accordance with and conformity to the Plans, Technical Specifications, and Contract Documents hereto attached or by reference made a part hereof, at and for the following price(s) set forth on this Bid Form.

The following documents, which taken as a whole constitute the Contract Documents for this Project, and which are incorporated herein, by reference, were made available to the Bidder as provided in the Advertisement of Notice of Invitation for Bids, were received by the bidder, and form the basis for this bid:

Advertisement of Notice of Invitation for Bids
Instructions to Bidders
Commitment to MWBE Participation
Article III, Divisions 1 and 3 of Chapter 28, D.R.M.C.
Bid Bond
Addenda (as applicable)
Equal Employment Opportunity Provisions (Appendix A and Appendix F)
Bid Form
Contract Form
General Contract Conditions
Special Contract Conditions
Performance and Payment Bond
Notice to Apparent Low Bidder
Notice to Proceed
Contractor's Certification of Payment Form
Final Release and Certificate of Payment
Certificate of Contract Receipt
Change Orders (as applicable)
Federal Requirements (as applicable)
Prevailing Wage Rate Schedule(s)
Technical Specifications
Contract Drawing
Accepted Shop Drawings
Certificate of Insurance

48th Avenue Viaduct Rehabilitation (#7346048)						
Contract No. 202056263						
SEMA Construction Inc.						
Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
1	201-00005	REMOVAL OF DEBRIS	L S	1	\$4,832.70	\$4,832.70
2	202-00010	REMOVAL OF TREE	EACH	4	\$380.23	\$1,520.92
3	202-00026	REMOVAL OF SLOPE AND DITCH PAVING	SY	80	\$49.47	\$3,957.60
4	202-00200	REMOVAL OF SIDEWALK	SY	23	\$62.19	\$1,430.37
5	202-00203	REMOVAL OF CURB AND GUTTER	LF	34	\$42.07	\$1,430.38
6	202-00246	REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)	SY	3658	\$10.29	\$37,640.82
7	202-00420	REMOVAL OF PEDESTRIAN RAIL	LF	40	\$27.10	\$1,084.00
8	202-00426	REMOVAL OF BRIDGE RAILING (SPECIAL)	LF	50	\$21.68	\$1,084.00
9	202-00453	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2)	SY	178	\$285.00	\$50,730.00
10	202-00460	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 3)	SY	107	\$347.00	\$37,129.00
11	202-00495	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	L S	1	\$11,216.84	\$11,216.84
12	202-00500	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	EACH	4	\$1,138.56	\$4,554.24
13	202-00503	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	SY	45	\$588.17	\$26,467.65
14	202-00504	REMOVAL OF EXPANSION DEVICE	LF	69	\$1,193.05	\$82,320.45
15	202-00505	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	SF	746	\$28.44	\$21,216.24
16	202-04010	CLEAN INLET	EACH	2	\$497.08	\$994.16
17	203-01597	POTHOLING	HOUR	20	\$238.56	\$4,771.20
18	203-01620	SWEEPING	HOUR	40	\$170.40	\$6,816.00
19	208-00020	SILT FENCE	LF	835	\$1.51	\$1,260.85
20	208-00035	AGGREGATE BAG	LF	56	\$14.43	\$808.08
21	208-00054	STORM DRAIN INLET PROTECTION (TYPE II)	EACH	9	\$331.72	\$2,985.48
22	210-00410	MODIFY BRIDGE EXPANSION DEVICE	EACH	20	\$642.04	\$12,840.80
23	240-00000	WILDLIFE BIOLOGIST	HOUR	40	\$116.38	\$4,655.20
24	240-00010	REMOVAL OF NESTS	HOUR	15	\$96.56	\$1,448.40
25	250-00010	ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT	L S	1	\$3,505.74	\$3,505.74
26	250-00110	HEALTH AND SAFETY OFFICER	HOUR	30	\$122.69	\$3,680.70
27	403-34751	HOT MIX ASPHALT (GRADING SX) (75) (PG 64-28)	TON	444	\$168.06	\$74,618.64
28	408-01100	JOINT SEALANT	LF	106	\$12.12	\$1,284.72
29	507-00000	CONCRETE SLOPE AND DITCH PAVING	CY	9	\$1,441.17	\$12,970.53
30	513-00600	BRIDGE DRAIN	EACH	4	\$10,579.02	\$42,316.08
31	515-00120	WATERPROOFING (MEMBRANE)	SY	3658	\$18.90	\$69,136.20
32	515-00400	CONCRETE SEALER	SY	1567	\$17.85	\$27,970.95
33	518-00106	WATERSTOP (6 INCH)	LF	9	\$16.19	\$145.71
34	518-01004	BRIDGE EXPANSION DEVICE (0-4 INCH)	LF	69	\$961.43	\$66,338.67
35	519-01000	EPOXY RESIN (INJECTION)	LF	30	\$197.89	\$5,936.70
36	601-03040	CONCRETE CLASS D (BRIDGE)	CY	25	\$906.39	\$22,659.75
37	601-03057	CONCRETE CLASS DR	CY	47	\$3,250.80	\$152,787.60
38	601-06100	CONCRETE (PATCHING)	CY	6	\$3,189.05	\$19,134.30
39	601-06102	CONCRETE (PATCHING)	CF	265	\$214.98	\$56,969.70
40	601-51005	GALVANIC ANODES	EACH	1960	\$16.69	\$32,712.40
41	602-00000	REINFORCING STEEL	LB	2126	\$3.23	\$6,866.98
42	602-00020	REINFORCING STEEL (EPOXY COATED)	LB	3257	\$3.76	\$12,246.32
43	602-00030	REINFORCING (FIBER REINFORCED POLYMER)(SURFACE)	MKFT	34	\$1,761.42	\$59,888.28
44	606-00302	GUARDRAIL TYPE 3 (31 INCH MIDWEST GUARDRAIL SYSTEM)	LF	25	\$63.43	\$1,585.75
45	606-01380	TRANSITION TYPE 3H	EACH	1	\$1,758.80	\$1,758.80
46	606-01390	END ANCHORAGE TYPE 3K	EACH	1	\$2,306.63	\$2,306.63
47	606-10200	BRIDGE RAIL (SPECIAL)	LF	50	\$92.99	\$4,649.50
48	607-11525	FENCE (PLASTIC)	LF	30	\$8.68	\$260.40
49	620-00020	SANITARY FACILITY	EACH	2	\$954.25	\$1,908.50
50	621-00530	OVERHEAD CONTACT SYSTEM (OCS) TEMPORARY PROTECTIVE STRUCTURE	LF	148	\$887.28	\$131,317.44
51	625-00000	CONSTRUCTION SURVEYING	L S	1	\$7,553.83	\$7,553.83
52	626-00000	MOBILIZATION	L S	1	\$194,701.00	\$194,701.00
53	626-01113	PUBLIC INFORMATION MANAGEMENT (TIER III)	DAY	150	\$95.43	\$14,314.50
54	627-00008	MODIFIED EPOXY PAVEMENT MARKING	GAL	9	\$497.74	\$4,479.66
55	630-00016	TRAFFIC CONTROL (SPECIAL) LS	L S	1	\$284,333.25	\$284,333.25
56	631-00000	RAILROAD COORDINATION	HOUR	100	\$170.40	\$17,040.00
57	632-10000	RTD/DTO COORDINATION	HOUR	80	\$194.60	\$15,568.00
58	Textura	Textura Fee (Refer to BF-3)	EACH	1	\$5,850.00	\$5,850.00
59	700-70038	F/A RAILROAD COORDINATION FEES	F/A	1	\$15,000.00	\$15,000.00
60	700-70039	F/A RAILROAD CONTRACTOR ORIENTATION COURSE	F/A	1	\$7,500.00	\$7,500.00
61	700-70041	F/A RAILROAD INSPECTOR COORDINATOR	F/A	1	\$50,000.00	\$50,000.00
62	700-70042	F/A RAILROAD FLAGGING	F/A	1	\$100,000.00	\$100,000.00
63	700-70043	F/A RTD RAIL SHUTDOWNS	F/A	1	\$930,000.00	\$930,000.00
64	700-70380	A/A EROSION CONTROL	A/A	1	\$3,000.00	\$3,000.00
65	700-70589	A/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	A/A	1	\$5,000.00	\$5,000.00
66	700-70600	A/A LIGHTING/ELECTRICAL SYSTEM REPAIRS	A/A	1	\$7,500.00	\$7,500.00
BID ITEMS TOTAL AMOUNT						\$2,799,992.61

The Undersigned Bidder proposes to subcontract the following Work in accordance with General Contract Conditions, Title 5, SUBCONTRACTS, and represents that, to the greatest degree practical, all subcontractors known at the time of bid submittal have been identified.

Item of Work	Percent (%) of Total; Work	Proposed Subcontractor and Address
Asphalt Paving	2 . 54	P&H Equipment, Inc. 181 East 56th Ave, Suite 100, Denver, CO
Waterproofing, Coating	2 . 79	NPW Contracting, Inc., 444 Santa Fe Drive, Denver, CO
Asphalt Milling	0 . 29	Alpha Milling Company, Inc., 6015 W. 56th Avenue, Arvada, CO
Pavement Markings	0 . 57	American Striping Company, 6829 S Dawson Cir, Centennial, CO
Guardrail	0 . 21	Ideal Fencing, Corp., 5795 Ideal Drive, Erie, CO
Public Information Services	0 . 45	ZoZo Group, Inc., 2590 N Washington St. Denver, CO 80205
Traffic Control Services	5 . 76	Advanced Traffic Services, Inc., P.O.BOX 440199 Aurora, CO 80044
Rebar, Grout, Anodes Materials	1 . 68	Hot Shot Supply, 5351 Lincoln St, Denver, CO
Epoxy Injection, FRB Repair	2 . 24	Restruction Corp., 3870 Platte Ave., Sedalia, CO
Environmental/Health	0 . 42	Cascade Environmental, 9956 W. Remington Pl A10, Ste. 173, Littleton, CO

(Copy this page if additional room is required.)



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO)
1A - LIST OF PROPOSED SUBCONTRACTORS, SUBCONSULTANTS,
AND/OR SUPPLIERS

City & County of Denver Contract No.: 202056263

The undersigned proposes to utilize all listed firms. Any certified firm listed must be certified by the City and County of Denver and a **Letter of Intent (LOI)** submitted for each. If additional pages are required, please copy and attach the second page. This form must be updated and submitted to DSBO when subcontractors, subconsultants, and/or suppliers are added throughout the contract duration.

Contractor/Consultant		
Name of Firm: SEMA Construction, Inc. <input type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)		
Firm's Representative: T. Brett Ames, Vice President		
Signature:		Date: 12/3/20
Address: 7353 S. Eagle St.		
City: Centennial	State: CO	Zip: 80112
Phone: (303) 627-2600	Email: estimating.co@semaconstruction.com	
Total Contract Value \$:	Self-Performing Contract Value \$:	

Subcontractors, Subconsultants, and/or Suppliers	
Name of Firm: P&H Equipment, Inc. <input checked="" type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative: Tom Fanning	
Phone: 303-339-3191	Email: Tom@phequipment.net
Type of Service: Asphalt Paving	Contract Value \$: 68,714.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: NPW Contracting, Inc. <input checked="" type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative: Cody Grosvenor	
Phone: (720) 641-8217	Email: cody@npwcontracting.com
Type of Service: Waterproofing, Concrete Coating	Contract Value \$: 78,143.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: ZoZo Group <input checked="" type="checkbox"/> MWBE (v) <input checked="" type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative: LaSheita Sayer	
Phone: (720) 949-2020	Email: lasheita@zozogroup.com
Type of Service: Public Information Services	Contract Value \$: 12,600.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: Advanced Traffic Services, LLC. <input checked="" type="checkbox"/> MWBE (v) <input checked="" type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative: Duran Hill	
Phone: 303-434-2836	Email: Info@advancedtrafficteam.com
Type of Service: Traffic Control Services	Contract Value \$: 161,335.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: Hot Shot Supply <input checked="" type="checkbox"/> MWBE (v) <input checked="" type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input checked="" type="checkbox"/> EBE (v)	
Firm's Representative: Mike Shannon	
Phone: 720-989-5072	Email: mike@hotshotsupplyco.com
Type of Service: Rebar, Grout, Anodes Material	Contract Value \$: 47,308.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: American Striping Company <input checked="" type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input checked="" type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative: Tony Ciccio	
Phone: (303) 495-5950	Email: tony@americanstripingcompany.com
Type of Service: Pavement Markings	Contract Value \$: 16,075.00
Anticipated Start Date: 04/01/2021	Anticipated Completion Date: 09/30/2021

Name of Firm: <input type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:

Name of Firm: <input type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:

Name of Firm: <input type="checkbox"/> MWBE (v) <input type="checkbox"/> SBE (v) <input type="checkbox"/> DBE (v) <input type="checkbox"/> EBE (v)	
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:

The undersigned Bidder acknowledges the right of the City to reject any or all bids submitted, to waive informalities in bids and to re-advertise this Project for bids.

The undersigned certifies that it has carefully checked all works and figures and all statements made in these Bid Forms.

This bid is submitted upon the declaration that neither, I (we), nor, to the best of my (our) knowledge, none of the members of my (our) firm or company have either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

Business Address of Bidder: 7353 S. Eagle Street

City, State, Zip Code: Centennial, CO 80112

Telephone Number of Bidder: (303) 627-2600

Fax No. (303) 627-2626

Social Security or Federal Employer ID Number of Bidder: 84-1163868

Name and location of the last work of this kind herein contemplated upon which the Bidder was engaged:
Park Avenue Rehabilitation, Denver, CO

For information relative thereto, please refer to:

Name: Kayla Lorentz

Title: Project Manager IPM

Address: 201 W. Colfax, Denver, CO 80202

The undersigned acknowledges receipt, understanding, and full consideration of the following addenda to the Contract Documents:

Addenda Number 1 Date 11/20/20

Addenda Number _____ Date _____

Addenda Number _____ Date _____

Dated this 3rd day of December, 2020.

Signature of Bidder:

If an Individual: _____ doing business
as _____

If a Partnership: _____
by: _____ General Partner.

If a Corporation: _____
SEMA Construction, Inc.
a Colorado "S" _____ Corporation,
by:  _____, Vice-
its President.

Attest:

Secretary (Corporate Seal)



If a Joint Venture, signature of all Joint Venture participants:

Firm: _____
Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)

Firm: _____
Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)

Firm: _____
Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) COMMITMENT TO MWBE PARTICIPATION

This page must be completed by all Bidders/Proposers to indicate their commitment towards satisfying the MWBE participation goal. The commitment will be incorporated into the contract and thereby the selected Bidder/Proposer's will be held to that commitment. (Please check the appropriate box):

COMPLETE IF YOU ARE A NON MWBE PRIME:

The City and County of Denver has specified a 12 % MWBE Participation goal on this project. The Bidder/Proposer is committed to meeting 12 % MWBE Participation on the contract.

COMPLETE IF YOU ARE A MWBE PRIME:

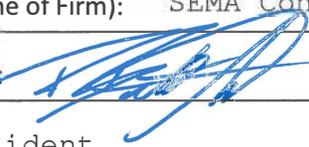
The City and County of Denver has specified a _____% MWBE Participation goal on this project. The Bidder/Proposer is a certified MWBE with the City and County of Denver and is committed to meeting _____% MWBE Participation on the contract.

COMPLETE IF YOU ARE UNABLE TO MEET PROJECT GOAL:

The City and County of Denver has specified a _____% MWBE Participation goal on this project. The Bidder/Proposer is unable to meet this project goal but is committed to a _____% MWBE Participation on the contract. The Bidder/Proposer must make adequate good faith efforts to meet this goal in order to be deemed responsive. The Bidder/Proposer must submit a detailed statement and documentation of their good faith efforts. Award of the contract will be conditioned on meeting the requirements of this section, in accordance of Chapter 28 of the D.R.M.C. to the Division of Small Business Opportunity.

The undersigned Bidder/Proposer hereby agrees and understands that they must comply with their MWBE commitments in this project in conformity with the Requirements, Terms, and Conditions of this MWBE Procurement/Contract Language.

Bidder/Proposer (Name of Firm): SEMA Construction, Inc.

Firm's Representative: 

Title: Vice President

Signature (Firm's Representative): _____

Date: 12/3/20

Address: 7353 S. Eagle St

City: Centennial

State: CO

Zip: 80112

Phone: (303) 627-2600

Email: estimating.co@semaconstruction.com

Revised 7/14/2020



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

Contract No.: 202056263

Project Name: 48th Avenue Viaduct Rehabilitation

A. The undersigned Bidder/Proposer intends to engage the undersigned MWBE, SBE, EBE or DBE to perform work if awarded the contract. This Letter of Intent Must be Signed by the Bidder/Proposer and MWBE, SBE, EBE or DBE. Certified self-performing Prime must complete both sections A and B. If the MWBE, SBE, EBE or DBE is a lower tier, section C must be completed and signed by the firm directly utilizing the certified firm.

Bidder/Proposer (Name of Firm): SEMA Construction, Inc.

Self-Performing:
 Yes No

Firm's Representative: T. Brett Ames

Title: Vice President

Signature (Firm's Representative):

Date:

Address: 7353 S. Eagle St

City: Centennial

State: CO

Zip: 80112

Phone: (303) 627-2600

Email: estimating.co@semaconstruction.com

B. The Following Section is To Be Completed by the MWBE, SBE, EBE or DBE, at any tier. Identify the scope of the work and NAICS code(s) to be performed and/or supply item that will be provided by the MWBE, SBE, EBE or DBE.

Name of Firm:

MWBE(v) SBE(v)
 EBE(v) DBE(v)

Firm's Representative:

Title:

Signature:

Date:

Address:

City:

State:

Zip:

Phone:

Email:

Scope of Work:

NAICS Code(s):

The Bidder/Proposer intends to utilize the aforementioned MWBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor MWBE, SBE, EBE or DBE bid amount is:

\$	%
----	---

C. Lower Tier Utilization: If the certified firm is not a direct first tier subcontractor, subconsultant, and/or supplier to the Bidder/Proposer, please indicate the name of the firm that is utilizing the certified firm:

Name of Firm:

Firm's Representative:

Title:

Signature:

Date:

*If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this **Letter of Intent** shall be null and void.*

DSBO Version 1 Last Revised: June 5, 2020

CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT SEMA Construction, Inc., as Principal, and Federal Insurance Company / Fidelity and Deposit Company of Maryland, a corporation organized and existing under and by virtue of the laws of the State of IN / IL, and authorized to do business within the State of Colorado, as Surety, are held and firmly bound unto the City and County of Denver, Colorado, as Oblige, in full and just sum of Five Percent of the Total Amount Bid Dollars, (\$ 5%), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, the said Principal is herewith submitting its bid, dated December 3, 2020, for the construction of: **Contract No. 202056263 - 48th Avenue Viaduct Rehabilitation**, as set forth in detail in the Contract Documents for the City and County of Denver, Colorado, and said Oblige has required as a condition for receiving said bid that the Principal deposit specified bid security in the amount of not less than five percent (5%) of the amount of said bid, as it relates to work to be performed for the City, conditioned that in event of failure of the Principal to execute the Contract, for such construction and furnish required Performance and Payment Bond if the contract is offered him that said sum be paid immediately to the Oblige as liquidated damages, and not as a penalty, for the Principal's failure to perform.

The condition of this obligation is such that if the aforesaid Principal shall, within the period specified therefore, on the prescribed form presented to him for signature, enter into a written contract with the Oblige in accordance with his bid as accepted and give Performance and Payment Bond with good and sufficient surety or sureties, upon the form prescribed by the Oblige, for the faithful performance and the proper fulfillment of said Contract, or in the event of withdrawal of said bid within the time specified, or upon the payment to the Oblige of the sum determined upon herein, as liquidated damages and not as penalty, in the event the Principal fails to enter into said contract and give such Performance and Payment Bond within the time specified, then this Obligation shall be null and void, otherwise to remain in full force and effect.

Signed, sealed and delivered this 3rd day of December, 2020.

ATTEST



Secretary


Seal if Bidder is Corporation
(Attach Power-of-Attorney)

SEMA Construction, Inc.
Principal

By: 

Title: Vice President

Federal Insurance Company / Fidelity and Deposit Company of Maryland
Surety

By: 
Angela M. Tindol, Attorney-in-Fact


BF-15


[SEAL]
October 14, 2020



Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Know All by These Presents, That **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, and **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, do each hereby constitute and appoint **Stephnie Logan and Judith Munson of Phoenix, Arizona; Anuj Jain, Charles M. McDaniel, Angela M. Tindol and Mona D. Weaver of Greenwood Village, Colorado** -----

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** have each executed and attested these presents and affixed their corporate seals on this **22nd** day of **July, 2019**.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney

Stephen M. Haney, Vice President



STATE OF NEW JERSEY

County of Hunterdon

ss.

On this **22nd** day of **July, 2019**, before me, a Notary Public of New Jersey, personally came Dawn M. Chloros, to me known to be Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY**, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros, being by me duly sworn, did depose and say that she is Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that she signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that she is acquainted with Stephen M. Haney, and knows him to be Vice President of said Companies; and that the signature of Stephen M. Haney, subscribed to said Power of Attorney is in the genuine handwriting of Stephen M. Haney, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal



KATHERINE J. ADELAAR
NOTARY PUBLIC OF NEW JERSEY
No. 2316685
Commission Expires July 16, 2024

Katherine J. Adelaar

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** on August 30, 2016:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this **December 3, 2020**

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by **Robert D. Murray**, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint, **Anuj JAIN, Mona D. WEAVER, Angela M. TINDOL, Judith MUNSON, Stephnie LOGAN and Kathryn E. KADE, of Greenwood Village, Colorado**, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons. The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 22nd day of July A.D. 2020.



ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: *Robert D. Murray*
Vice President

By: *Dawn E. Brown*
Secretary

**State of Maryland
County of Baltimore**

On this 22nd day of July, 2020, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.



Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 3rd day of December 2020



Brian M. Hodges, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsfclaims@zurichna.com
800-626-4577



Office of Economic Development
 Division of Small Business Opportunity
 201 W Colfax Ave, Dept 907
 Denver, CO 80202
 P: 720.913.1714
 F: 720.913.1809
www.denvergov.org/oed

Diversity and Inclusiveness* in City Solicitations Information Request Form

Denver Executive Order No. 101 establishes strategies between the City and private industry to use diversity and inclusiveness to promote economic development in the City and County of Denver and to encourage more businesses to compete for City contracts and procurements. The Executive Order requires, among other things, the collection of certain information regarding the practices of the City's contractors and consultants toward diversity and inclusiveness and encourages/requires City agencies to include diversity and inclusiveness policies in selection criteria where legally permitted in solicitations for City services or goods.

Answer each question below. Missing or incomplete responses will be recorded as "no", "not applicable", or "none". **A proposal or response to a solicitation by a contractor/consultant that does not include this completed form shall be deemed non-responsive and rejected.**

Business Email Address * estimating.co@semaconstruction.com

Enter Email Address of City and County of Denver contact person facilitating this solicitation * pw.procurement@denvergov.org

Project Name * 48th Avenue Viaduct Rehabilitation

Solicitation No. (Check Below if Not Applicable) * 202056263/Quest eBidDoc #7346048

Check Here if Solicitation No. is N/A

Name of Your Company * SEMA Construction, Inc.

What Industry is Your Business? *

- | | | |
|---|---|---|
| <input type="checkbox"/> Technology | <input type="checkbox"/> Financial | <input type="checkbox"/> Manufacturing |
| <input checked="" type="checkbox"/> Construction, Landscape, Maintenance Services | <input type="checkbox"/> Goods/Services | <input type="checkbox"/> Wholesale/Retail Trade |
| <input type="checkbox"/> Professional | <input type="checkbox"/> Transportation/Hauling | <input type="checkbox"/> Other |

Address * 7353 S. Eagle

City * Centennial **State** CO **Zip Code *** 80112

Business Phone Number * (303) 627-2600

Business Facsimile Number (303) 627-2626

1. How many employees does your company employ? *

- 1-10 51-100
 11-50 Over 100

1.1 How many of your employees are:

Number of Full Time: * ~450 **Number of Part Time: *** 0

2. Do you have a Diversity and Inclusiveness Program? *

- Yes No

If **No**, and your company size is less than 10 employees continue to question 10. Complete and sign the form.

If **Yes**, does it address:

2.1. Employment and retention? *

- Yes No

2.2. Procurement and supply chain activities? *

- Yes No

2.3. Customer Service? *

- Yes No

3. Provide a detailed narrative of your company's diversity and inclusiveness principles and programs. This may include, for example, (i) diversity and inclusiveness employee training programs, equal opportunity policies, and the budget amount spent on an annual basis for workplace diversity; or (ii) diversity and inclusiveness training and information to improve customer service. (If Not Applicable, please type N/A below) *

SEMA is committed to taking affirmative action to employ and advance in employment qualified individuals with disabilities, special disabled veterans and veterans of the Vietnam era at all levels of employment. In furtherance of its commitment, SEMA developed an Affirmative Action Program as well as an Affirmative Action policy (attached). The program and policy will be updated on an annual basis.

4. Does your company regularly communicate its diversity and inclusiveness policies to employees? *

- Yes No

If you answered Yes to Question 4, how does your company regularly communicate its diversity and inclusiveness policies to employees? (Select all that apply) *

- Employee Training
 Pamphlets
 Public EEO Postings
 Other:

5. How often do you provide training and diversity and inclusiveness principles? *

- Monthly
- Quarterly
- Annually
- N/A
- Other:

5.1 What percentage of the total number of employees generally participate? *

- 0-25%
- 26-50%
- 51-75%
- 76-100%
- N/A

6. State how you achieve diversity and inclusiveness in supply and procurement activities. This may include, for example, narratives of training programs, equal opportunity policies, diversity or inclusiveness partnership programs, mentoring and outreach programs, and the amount and description of budget spent on an annual basis for procurement and supplier diversity and inclusiveness. (If Not Applicable, please type N/A below) *

Diversity and inclusion in Supply and Procurement starts during the procurement phase of bidding work. When soliciting quotes, we contact all the local MWBE contractors via email and/or fax with a formal Request for Proposal. Minority and Women-Owned businesses are encouraged to reply to our solicitations. We then make our estimating team available to answer questions and clarify our approach to a project. We also make sure we right-size the bid package, so all contractors can have an opportunity at the work.

7. Do you have a diversity and inclusiveness committee? *

- Yes
- No

7.1 If Yes, how often does it meet? *

- Monthly
- Quarterly
- Annually
- Other:

7.2. If you responded that you do not have a diversity and inclusiveness committee, describe any plans your company may have to establish such a committee. (If Not Applicable, please type N/A below) *

At this time, there are no plans to establish a formal diversity and inclusiveness committee due to the limited number of Senior Managers. We feel that this is part of our routine. It has been and continues to be a focus of Senior Management to provide successful opportunities to subcontractors and suppliers in the MWBE contracting community.

8. Do you have a budget for diversity and inclusiveness efforts? *

Yes No

9. Does your company integrate diversity and inclusion competencies into executive/manager performance evaluation plans? *

Yes No

10. If you responded that you do not have a diversity and inclusiveness program, describe any plans your company may have to adopt such a program.

N/A

11. Would you like information detailing how to implement a Diversity and Inclusiveness program? *

Yes No

If yes, please email XO101@denvergov.org.

I attest that the information represented herein is true, correct and complete, to the best of my knowledge. *



Signature of Person Completing Form *

12/3/20

Date

T. Brett Ames, Vice President

Printed Name of Person Completing Form

NOTE: Attach additional sheets or documentation as necessary for a complete response.

*"Diversity and Inclusiveness Program" means a program that invites values, perspectives and contributions of people from diverse backgrounds, and integrates diversity into its hiring and retention policies, training opportunities, and business development methods to provide an equal opportunity for each person to participate, contribute, and succeed within the organization's workplace. "Diversity" encompasses a wide variety of human differences, including differences such as race, age, gender, gender identity, sexual orientation, ethnicity, physical disabilities, appearance, historically underutilized and disadvantaged persons, as well as social identities such as religion, marital status, socio-economic status, lifestyle, education, parental status, geographic background, language ability, and veteran status."

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

**DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE**

Addenda

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

**CONTRACT NO: 202056263
PROJECT NAME: 48th Avenue Viaduct Rehabilitation**

ADDENDUM NO. 1 TO CONTRACT DOCUMENTS

Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above-mentioned project as hereinafter described in the following attachments:

TECHNICAL SPECIFICATIONS/DRAWINGS REVISIONS AND CHANGES:

The as built construction drawings, RR agreements, and inspection reports can be found using the link:
<https://app.box.com/s/t399hdohc3p7old9peotkfsmzvwxv8s>

Note: All provided information applicable to the existing bridges including but not limited to as-built construction drawings may be different from actual field conditions. The contractor is responsible for verifying field conditions prior to ordering, fabricating, or installing any material. No additional payment will be made to account for discrepancies.

QUESTIONS AND ANSWERS:

Q1. I am not seeing a requirement for railroad protective insurance. Will it be required or is Denver handling that? The documents tell us we need to coordinate with UPRR, BNSF and RTD, but don't specify if railroad insurance is needed. If it is required, we need the train counts for each line.

A1. The Contractor shall obtain all necessary insurance for construction in BNSF and UPRR property. The required insurance shall be kept in full force and effect during the performance of work and thereafter until the Contactor removes all tools, equipment, and material from BNSF's and UPRR's property and cleans the premises in a manner reasonably satisfactory to BNSF and UPRR. The insurance may include railroad liability of \$5,000,000/incident and \$10,000,000/aggregate and general liability of \$2,000,000/incident and \$6,000,000/aggregate. (Pg. 107).

Q2. I am reaching out regarding the 48th Ave Viaduct Rehabilitation Project. Yeh and Associates, Inc. (Yeh) has been approached by contractors developing bids on this project for quality control materials testing. However, Yeh currently has an On-Call contract with the City and County of Denver for Materials Testing and Inspections. CCD is our highest priority and we do not want to disrupt our relationship with a conflict of interest. Will the 48th Ave Viaduct Project be seeking proposals for Quality Assurance Materials Testing and/or Inspections from its On-Call contractors or performing these tasks in house?

A2. We will be selecting a QA Materials testing firm from our on-call list after there is an apparent low bidder to avoid any conflicts of interest with the contractors selected QC firm.

Q3. Please provide information of train movements through the project area including number of trains on each track along with speed and proportion of passenger trains.

A3. All information and data regarding RTD, UPRR, and BNSF operations shall be coordinated directly with these entities.

Q4. Can the city provide copies of existing agreements with the RR for review by the contractors including the C&M agreements with UPRR and BNSF and any agreements with RTD/DTO?

A4. Please see the link provided above.

Q5. Can the Department provide as-builts of the existing structure?

A5. Please see the link provided above.

Q6. Please confirm that application for ROE cannot be submitted until NTP has been obtained as has been our experience on another project with the railroad.

A6. Application for the ROE cannot be submitted until NTP has been issued.

Q7. Please confirm that a completed and executed ROE is required prior to requesting flagging for the project.

A7. A completed and executed ROE is required prior to requesting flagging.

Q8. Will the 30-day notice to request flaggers be required to re-request flaggers if there is a suspension of flagging work on the project?

A8. The Contractor is in full control of their work plan and shall coordinate their work plan with UPRR, BNSF, and RTD/DTO. Any gaps or suspension of work requiring flaggers shall be considered in the contractor's work plan and coordinated with the railroads accordingly.

Q9. Based on the revisions to 631, our interpretation is that RR Coordination and or RTD coordination will pay for the following management efforts: ROE Submittals, preparation of construction submittals, daily coordination with RR flagging and other RR staff as required, etc. Please confirm this understanding.

A9. Item 631 Railroad Coordination and Item 632 RTD/DTO Coordination consists of all elements required to coordinate the work with the railroads per the special provision including, but not limited to, the items listed.

Q10. Sheet B19 indicates "Restrict live load beyond centerline of exterior girder during overhang repair". Has the railing been determined to be able to withstand impact loads during the overhang repair or should it be anticipated that positive barrier separation will be required to limit potential impacts?

A10. Stability of the structure during construction is the responsibility of the Contractor. The restriction noted in the plans is based on the approximate removal area and depth considering the vertical live load effects only. The Contractor shall review their means and methods to restrict live load beyond the centerline of the exterior girder by whatever means they feel is appropriate. If the Contractor elects to apply live loads beyond the limits stated, they shall review the stability of the deck overhang and bridge rail considering factors, including but not limited to, their means and methods, traffic control, applied loads including collision, temporary falsework/formwork, and any other considerations required.

Q11. Per specification 518 – Bridge Expansion Device, does the licensed engineer developing the shop drawings for the expansion device, required to be licensed in the State of Colorado? Can prior experience be a substitute for having the technical representative present during the phased installation of the expansion device?

A11. Yes, PE shall be licensed in the State of Colorado. Prior experience cannot be substituted for the technical representative.

Q12. On sheet B07 – Per Note 5 – 7, how shall temporary girder falsework be compensated if required?

A12. Falsework is included in the cost of the work if required per note on B01 and Section 601.11 of the standard specifications.

Q13. On sheet B15 – Note 2 – who is responsible for the cost of the pull-off adhesion test?

A13. The pull-off adhesion/strength test is included in Item 602 Reinforcing (Fiber Reinforced Polymer)(Surface) per the special provision.

Q14. Please confirm that a completed ROE be required prior to reviews by UPRR or BNSF are completed?

A14. The ROE is not required to be approved prior to submitting construction submittals to UPRR, BNSF or RTD/DTO. Please note, any submittals provided to the railroads prior to NTP are at the contractor's own risk. An NTP is still required to obtain the ROE.

Q15. Please add a bid item for mechanical splices, as the rebar weight for the splice length is ~ \$2 and a mechanical splice is ~ \$40.

A15. Mechanical couplers are included in the cost of Item 602 Reinforcing Steel and Item 602 Reinforcing Steel (Epoxy Coated). The Contractor is allowed to substitute mechanical couplers for splices at no cost to the project.

Q16. Please define the longitudinal limits of Overhead Contact System Temporary Protective Structure required above the RTD tracks.

A16. The protective structure shall extend outside the minimum clearance envelope required by RTD per the special provision and RTD requirements. The contractor is responsible for the design of the protective structure and shall determine the minimum longitudinal limits that are required based on requirements to protect the track from falling debris, protect RTD operations and trains from falling debris, maintain RTD clearance envelopes, protect the existing structure from electrical arcing, protect workers from electrical arcing, and to allow the contractor to safely perform the work.

Q17. When is the anticipated NTP on the project as the HMA (PG 64-78) isn't available until May?

A17. The estimated NTP for construction is 4/1/2021

Q18. Does the 12% Goal include the Textura Fee?

A18. The 12% MWBE participation is on the total base bid amount, which is inclusive of the Textura fee.

Q19. Please explain how the goal of 12% translates to the total dollar amount.

A19. In determining whether a bidder's committed level of participation meets the stated MWBE goal, DSBO shall base its calculation of applicable dollar amounts and percentages on the total base bid amount. The bidder should multiply their total bid amount by 12% to get the applicable dollar value of the MWBE participation.

Q20. Can you please make the inspection report of the bridge available?

A20. The inspection report is provided in the link above.

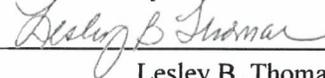
Q21. Are force accounts included in goal percent?

A21. The MWBE participation goal applies to the total bid amount, inclusive of force accounts.

Q22. I was notified by the engineer with Master Builders Solutions, a supplier of the fiber reinforced wrapping, that designed capacity requirements specified in the plans for this fiber wrap product are way higher than what the fiber wrap product is able to achieve. It will only achieve maybe a 1/3 of the capacity required in the specs using 5 layers of wrap. Therefore they cannot recommend fiber wrap for use on this project. Not sure if this is really an issue or not. Still waiting to hear back from other suppliers/subcontractors.

A22. After review of the plans and specifications, the required shear strength as shown in Note 5 on Sheet 20 (B15) shall be revised to 176 kips/ft. It is noted that this strength is a combined total for both "legs" (i.e. fiber wrap on both sides of the cap) of the fiber wrap. Refer to the attached plan sheet within the addendum.

This **ADDENDUM** shall be attached to, become a part of, and be returned with the Bid Proposal.



Lesley B. Thomas
City Engineer
November 24, 2020

Date

The undersigned bidder acknowledges receipt of this Addendum. The Proposal submitted herewith is in accordance with the stipulations set forth herein.

SEMA Construction, Inc.

Contractor

ADDENDUM NO. 1

1/4/21

Date



CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

**DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE**

Bid Documents Package

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

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DENVER
THE MILE HIGH CITY

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
201-00005	REMOVAL OF DEBRIS	1	L S
202-00010	REMOVAL OF TREE	4	EACH
202-00026	REMOVAL OF SLOPE AND DITCH PAVING	80	SY
202-00200	REMOVAL OF SIDEWALK	23	SY
202-00203	REMOVAL OF CURB AND GUTTER	34	LF
202-00246	REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)	3,658	SY
202-00420	REMOVAL OF PEDESTRIAN RAIL	40	LF
202-00426	REMOVAL OF BRIDGE RAILING (SPECIAL)	50	LF
202-00453	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2)	178	SY
202-00460	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 3)	107	SY
202-00495	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	1	L S
202-00500	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	4	EACH
202-00503	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	45	SY
202-00504	REMOVAL OF EXPANSION DEVICE	69	LF
202-00505	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	746	SF
202-04010	CLEAN INLET	2	EACH



DENVER
THE MILE HIGH CITY

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
203-01597	POTHOLING	20	HOUR
203-01620	SWEEPING	40	HOUR
208-00020	SILT FENCE	835	LF
208-00035	AGGREGATE BAG	56	LF
208-00054	STORM DRAIN INLET PROTECTION (TYPE II)	9	EACH
210-00410	MODIFY BRIDGE EXPANSION DEVICE	20	EACH
240-00000	WILDLIFE BIOLOGIST	40	HOUR
240-00010	REMOVAL OF NESTS	15	HOUR
250-00010	ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT	1	L S
250-00110	HEALTH AND SAFETY OFFICER	30	HOUR
403-34751	HOT MIX ASPHALT (GRADING SX) (75) (PG 64- 28)	444	TON
408-01100	JOINT SEALANT	106	LF
507-00000	CONCRETE SLOPE AND DITCH PAVING	9	CY
513-00600	BRIDGE DRAIN	4	EACH
515-00120	WATERPROOFING (MEMBRANE)	3,658	SY
515-00400	CONCRETE SEALER	1,567	SY
518-00106	WATERSTOP (6 INCH)	9	LF
518-01004	BRIDGE EXPANSION DEVICE (0-4 INCH)	69	LF
519-01000	EPOXY RESIN (INJECTION)	30	LF



DENVER
THE MILE HIGH CITY

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
601-03040	CONCRETE CLASS D (BRIDGE)	25	CY
601-03057	CONCRETE CLASS DR	47	CY
601-06100	CONCRETE (PATCHING)	6	CY
601-06102	CONCRETE (PATCHING)	265	CF
601-51005	GALVANIC ANODES	1,960	EACH
602-00000	REINFORCING STEEL	2,126	LB
602-00020	REINFORCING STEEL (EPOXY COATED)	3,257	LB
602-00030	REINFORCING (FIBER REINFORCED POLYMER)(SURFACE)	34	MKFT
606-00302	GUARDRAIL TYPE 3 (31 INCH MIDWEST GUARDRAIL SYSTEM)	25	LF
606-01380	TRANSITION TYPE 3H	1	EACH
606-01390	END ANCHORAGE TYPE 3K	1	EACH
606-10200	BRIDGE RAIL (SPECIAL)	50	LF
607-11525	FENCE (PLASTIC)	30	LF
620-00020	SANITARY FACILITY	2	EACH
621-00530	OVERHEAD CONTACT SYSTEM (OCS) TEMPORARY PROTECTIVE STRUCTURE	148	LF
625-00000	CONSTRUCTION SURVEYING	1	L S
626-00000	MOBILIZATION	1	L S



DENVER
THE MILE HIGH CITY

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
626-01113	PUBLIC INFORMATION MANAGEMENT (TIER III)	150	DAY
627-00008	MODIFIED EPOXY PAVEMENT MARKING	9	GAL
630-00016	TRAFFIC CONTROL (SPECIAL) LS	1	L S
631-00000	RAILROAD COORDINATION	100	HOURL
632-10000	RTD/DTO COORDINATION	80	HOURL
700-70038	F/A RAILROAD COORDINATION FEES	1	F/A
700-70039	F/A RAILROAD CONTRACTOR ORIENTATION COURSE	1	F/A
700-70041	F/A RAILROAD INSPECTOR COORDINATOR	1	F/A
700-70042	F/A RAILROAD FLAGGING	1	F/A
700-70043	F/A RTD RAIL SHUTDOWNS <ul style="list-style-type: none"> • <i>OVERHEAD POWER SHUTDOWN (4 EACH)</i> • <i>ADDITIONAL FLAGGER OR WATCHMAN (4 EACH)</i> • <i>SPECIAL INSPECTION (4 EACH)</i> • <i>GENERATOR TEMPORARY POWER (4 EACH)</i> • <i>BUS BRIDGES (15/DAY)</i> 	1	F/A
700-70380	A/A EROSION CONTROL		A/A
700-70589	A/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT		A/A
700-70600	A/A LIGHTING/ELECTRICAL SYSTEM REPAIRS		A/A

CITY AND COUNTY OF DENVER

**NOTICE OF INVITATION FOR BIDS
FOR CONTRACT NO. 202056263**

48TH AVENUE VIADUCT REHABILITATION

**BID SCHEDULE:
10:00 a.m., Local Time
December 3, 2020**

Bids will be received and accepted via the online electronic bid service, www.QuestCDN.com. Bids must be submitted via QuestCDN no later than **December 3, 2020 at 10:00 a.m.**. To access the electronic bid form, download the required documents from QuestCDN and click the online bidding button at the top of the advertisement. Prospective bidders must be on the plan holders list at QuestCDN for bids to be accepted. Bidders will be charged a fee of \$30.00 to submit a bid electronically. All properly uploaded bids will then be opened, witnessed and read aloud.

GENERAL STATEMENT OF WORK:

This project will rehabilitate the bridge viaduct on 48th Avenue over the UPRR, BNSF, and RTD commuter rails. Work will include specialized deck repairs, expansion joint replacement, installation and removal of the waterproofing membrane, asphalt wearing surface and other specialized sub contractors.

ESTIMATED CONSTRUCTION COST:

The estimated cost of construction for this project is between \$2,570,000.00 and \$3,140,000.00.

DOCUMENTS AND BID INFORMATION AVAILABLE:

Contract Documents complete with Technical Specifications and, if applicable, construction drawings will be available on the first day of publication at: www.QuestCDN.com. To download digital Contract Documents at a cost of \$15 per download, reference eBid Document Number #7346048. Contact QuestCDN at 952-233-1632 or info@questcdn.com for assistance.

PRE-BID MEETING:

A **virtual pre-bid meeting** will be held for this Project at 10:00 a.m., local time, on October 27, 2020. The teleconference call-in number and conference ID can be found on the project page at www.work4denver.com.

DEADLINE TO SUBMIT QUESTIONS: November 11, 2020 by 10:00 a.m. local time.

PREQUALIFICATION REQUIREMENTS:

Each bidder must be prequalified in category **1G(1) MAJOR BRIDGE WORK** at or above the **\$3,000,000.00** monetary level in accordance with the City's Rules and Regulations Governing Prequalification of Contractors. Each bidder must have submitted a prequalification application a minimum of ten (10) calendar days prior to the response due date. Applications must be submitted via email to pw.prequal@denvergov.org. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification.

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE PARTICIPATION:

Article III, Division 3 of Chapter 28 of the D.R.M.C. states the Director of the Division of Small Business Opportunity has the authority to establish a project goal for expenditure contracted by the City and County of Denver. The specific goal for this project is:

12% Minority and Women-Owned Business Enterprise (MWBE) Participation

Project goals must be met with certified participants as set forth in Section 28-62, D.R.M.C. or through the demonstration of a sufficient good faith effort under Section 28-60 D.R.M.C.

MISCELLANEOUS:

Contracts for construction, reconstruction, and remodeling are subject to the City prevailing wage rate requirements established pursuant to Section 20-76, D.R.M.C.

City contracts are subject to payment of City Minimum Wage established pursuant to Section 20-82 through 20-84 D.R.M.C.

As its best interest may appear, the City and County of Denver reserves the right to reject any or all bids and to waive informalities in bids.

A modified version of this Notice of Invitation for Bids and the project's Statement of Quantities is available on the City and County of Denver's website at: www.work4denver.com.

Publication Dates: October 14, 15, 16, 2020
Published In: The Daily Journal

CITY AND COUNTY OF DENVER INSTRUCTIONS TO BIDDERS

IB-1 INSTRUCTION TO BIDDERS

These Instructions to Bidders are a part of the Contract Documents and are intended to serve as a guide to bidders. They are general in nature and may be amended or supplemented as needed to support any one specific invitation to bid. Each bidder shall prepare its bid in strict compliance with all requirements of the Contract Documents and by careful application of these instructions.

IB-2 BIDDING

The copy of the Contract Documents contains the Bid Form and Submittal Package for this Project, which must be used to submit a bid hereunder. The bidder must fully complete, execute and submit this Bid Form and Submittal Package, along with any other specified components of the Contract Documents, via QuestCDN's electronic bidding platform as its bid for the referenced Project.

A bidder is not required to submit as part of its bid the entire set of Contract Documents distributed by the City pursuant to the Notice of Invitation for Bids, if the bidder executes and submits the Bidder Acknowledgment Form included with the Bid Form and Submittal Package as part of its bid. However, each bidder, by submitting its bid, shall be conclusively presumed to have received and reviewed all of the information contained in the Contract Documents as this term is further defined herein.

Bid guarantee will be accepted electronically as part of the Bid packet submitted via QuestCDN. The bid guarantee must be received by the City within seven calendar days following the bid opening date to:

Department of Transportation and Infrastructure
Attention: Contract Administration
201 W. Colfax Ave. Dept. 614
Denver, CO 80202

IB-3 CONTRACT DOCUMENTS AS PUBLISHED BY CITY

Each bidder shall be responsible for, and shall be deemed to have received, all the information contained in the Contract Documents as distributed by the City pursuant to the Notice of Invitation for Bids, including addenda, whether or not such bidder has reviewed all or part of the Contract Documents in either its hard copy form or in any other format. If organizations or companies other than the City or its design professional distribute the City's Contract Documents for review by prospective bidders, whether in hard copy or via electronic or other media, neither the City nor its design professional shall be responsible for the content, completeness or accuracy of any information distributed or transmitted by any such organization or company.

IB-4 COMPLETING AND SIGNING THE BID FORMS

The bidder must complete the Bid Form by legibly writing or printing in ink, in words and figures as required, all the bidder's prices offered for the Work to be performed. All blank spaces, which require a response of the bidder, must be properly completed in full. If in the process of evaluating a bid, words and figures, as written on the Bid Form by the bidder, do not agree, the written words will govern.

For Bid Forms requiring unit price bids, the bidder shall write in the Bid Worksheet spaces provided a unit price for each item for which a quantity is given and shall also write the product of each unit price and the quantity specified in the "Amount" or "Total" space provided.

Each bidder must sign the Bid Form and give the bidder's current business address. If an individual, the signature must be of the individual offering the bid; if a partnership, the signature must be that of a general

partner; and if a corporation, both the president and the secretary must sign and the seal of the corporation must be affixed. Signatures of other persons may be acceptable if the bid contains sufficient evidence, satisfactory to the City in its sole discretion, to indicate that the other persons are authorized to bind the bidder.

IB-5 UNACCEPTABLE BIDS

The City will not accept bids from Bidders not prequalified with the City (if prequalification is required for this project), in arrears to the City upon debt or contract, or which are defaulters (as surety or otherwise) upon any obligation to the City.

IB-6 INFORMAL AND UNBALANCED BIDS

Any alteration, interlineations, erasure, omission, deletion or addition by the bidder to the Bid Form and Submittal Package or other parts of the Contract Documents submitted with the Bid Form and Submittal Package, as originally issued to the bidder, shall render the accompanying bid informal and may constitute cause for rejection.

Any unauthorized addition, conditional or alternate bids, failure to provide a unit price, lump sum amount or authorized alternate item specified or other irregularities of any kind which tend to render the bid incomplete, indefinite or ambiguous shall render the bid informal and may constitute cause for rejection.

Bids that are unbalanced so that each item does not reasonably carry its own proportion of cost or that contain inadequate or unreasonable prices for any item may be rejected. Bids, which have not acknowledged all addenda to the Contract Documents issued for this bid, may also be rejected.

The right is reserved by the City to reject any or all bids and to waive any informalities where it is deemed by the City to be in the best interests of the City to do so.

IB-7 ONLY ONE BID ACCEPTED

The City will accept only one bid for the same work from any one bidder. This includes bids that may be submitted under different names by one business enterprise.

IB-8 BID GUARANTEE

As a guarantee of good faith on the part of the bidder, each bid must be accompanied by a bid guarantee, consisting of either a certified or cashier's check made payable without condition to the order of the City and County of Denver or a bid bond written by an approved corporate surety in favor of the City and County of Denver. If the bid of a bidder is acceptable and the bidder is notified by the Manager that it is considered to be the Apparent Low Bidder and said bidder fails to execute a contract in the form prescribed or to furnish a performance and payment bond with a legally responsible and approved surety or to furnish the required evidence of insurance or satisfy all conditions precedent to contract execution within five (5) days after such notice is made by the City, said bid guarantee shall be forfeited to the City as liquidated damages and not as a penalty.

The bid guarantee shall be in the amount of five percent (5%) of the total bid unless otherwise specified in the Notice of Invitation for Bids and on the form appearing in the Contract Documents in the Bid Form and Submittal Package. Failure to submit a properly executed bid guarantee, on the form provided herein may, in the City's sole discretion, constitute cause for rejection.

Following award and execution of the Contract by the Apparent Low Bidder, or earlier in the sole discretion of the City, bid guarantees of all but the Apparent Low Bidder will be returned. When the Apparent Low Bidder executes the Contract and delivers to the City satisfactory performance and payment bonds, required insurance documentation, and has satisfied all conditions precedent to contract execution by the City, and

after approval, if any, by the Council of the City of the proposed Contract with the Apparent Low Bidder, the bid guarantee of the Apparent Low Bidder shall be returned. Such return shall be made within one hundred twenty (120) days from date bids are opened unless otherwise specified in the Special Contract Conditions.

IB-9 SITE INSPECTION AND INVESTIGATIONS

Prior to submitting a bid, the bidder is invited to inspect the work site and its surroundings. Although the bidder is not required to make such an inspection before bidding, for purposes of the Contract it shall be conclusively presumed that by failing to make such an inspection, the bidder has waived the right to later claim additional compensation or time extensions for conditions which would have been evident had the site been inspected.

Drawings and Technical Specifications, defining the Work to be done, were prepared on the basis of interpretation by the design professionals of information derived from investigations of the work site. Such information and data are subject to sampling errors, and the interpretation of the information and data depends to a degree on the judgment of the design professional. In view of this, the bidder is invited to make such additional investigations as the bidder's judgment dictates the need for such investigations. Information about the degree of difficulty of the Work to be done cannot totally be derived from either the Drawings or Technical Specifications or from the Manager or his representatives.

Since the bid information cannot be guaranteed, the Contractor shall have assumed the risks attendant to successful performance of the Work and shall never make claim for additional compensation or time extensions on the grounds that the nature or amount of work to be done was not understood by the bidder at the time of the bidding.

IB-10 INCONSISTENCIES

Any seeming inconsistencies or ambiguities between different provisions of the Contract Documents or any point which the bidder believes requires a decision or interpretation by the City must be inquired into by the bidder by addressing a formal written communication to the Manager of the Department of Transportation and Infrastructure and sending or delivering it to the office advertising this Project for bid at least forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, before the time set for the opening of bids.

Information about the decision or interpretation made in response to any inquiry will be posted on www.work4denver.com. If the matter raised requires, in the sole discretion of the Manager, that an addendum to the bid documents be issued, such addendum will be published, and each bidder shall be required to acknowledge the addendum by signing and identifying it in the Bid Form when submitting the bid.

After bids are opened, all bidders must abide by the formal response of the Manager, as to any interpretation. The City shall not be bound, and the bidder shall not rely on any oral communication, interpretation clarification or determination of the Contract Documents prior to bid opening.

IB-11 WITHDRAWAL OF BID

A bidder may withdraw its bid at any time prior to the time for receipt of bids set forth in the Notice of Invitation for Bids by making written request upon the Manager of the Department of Transportation and Infrastructure. After such time, no bid may be withdrawn or modified.

Such request must be signed by the persons authorized to bind the bidder as defined in IB-4, COMPLETING AND SIGNING THE BID FORMS.

IB-12 WEBSITE

It shall be conclusively presumed that the bidder has, before submitting any bid, read and shall take full responsibility for all addenda, posted decisions, and other information relevant to the bid posted by the City on the www.QuestCDN.com website.

IB-13 PRE-BID MEETING

Bidders are urged to attend the pre-bid meeting(s) scheduled for this Project. Attendance is not mandatory; however, bidders will be held responsible for all information presented at such meeting(s).

IB-14 ADDENDA

As its best interests may require, the City may issue addenda to the Contract Documents. Such addenda shall be made available to all persons having purchased a set of Contract Documents as set forth in the Notice of Invitation for Bids contained herein. All bidders must acknowledge receipt of all addenda on the Bid Form at the time of submission of the bid.

IB-15 VIRTUAL BID OPENING

Unless otherwise suspended, delayed or canceled by posted notice from the Manager, bid opening will occur via teleconference at the time designated in the Notice of Invitation for Bid.

IB-16 EVALUATION OF BIDS AND BASIS OF BID SELECTION

Bids will be evaluated after being read in open meeting at the place designated for such bid opening. All low bidders' bids will be reviewed for responsiveness to the requirements of the Contract Documents and whether or not the bids contain irregularities which could give any bidder an unfair advantage.

Selection will be made on the basis of the lowest, total, responsive, qualified bid, which bid shall include the total base bid set forth on the Bid Form, plus the total of any alternates set forth on the Bid Form and selected by the City during evaluation. Alternates, if any are included in the bid, will be selected in the priority shown on the Bid Form, subject to the limits of available funds. Bid selection will be subject to all requirements and special bidder qualifications contained herein and subject to approval of such resulting Contract in accordance with the Charter and Revised Municipal Code of the City and County of Denver. In addition to all other specified requirements, the City will correct arithmetical errors in all bids and corrected totals only will be considered as the basis of selection.

Upon concluding that the bid is, in fact, the lowest, total, responsive bid to the bidding conditions and that of a responsible, qualified bidder, the City will notify the Apparent Low Bidder.

As its best interests may appear, the City and County of Denver reserves the right to waive informalities in bids, to reject any and all bids and to rebid the Project.

IB-17 NOTICE TO APPARENT LOW BIDDER

The Notice to Apparent Low Bidder, a form of which is included in the Contract Special Conditions Section of the Contract Documents, is issued by the City directly to the selected bidder and informs the bidder that the Manager intends to seek approval of the execution of the Contract by the City in accordance with the Charter and Revised Municipal Code of the City and County of Denver. Specifically, it informs the bidder of its obligations with respect to execution of the Contract and instructs the bidder on how to proceed toward execution of the Contract. The City reserves the right to notify the Apparent Low Bidder, at any time within one hundred twenty (120) days from the date of the opening of the bids, that approval to contract with the Apparent Low Bidder shall be sought in accordance with the Charter and Revised Municipal Code of the City and County of Denver.

In accordance with the terms and conditions contained in the Bid Form and Submittal Package and any additional requirements set forth in the Notice to Apparent Low Bidder or elsewhere in the Contract Documents, the Apparent Low Bidder shall execute the Contract Form contained in the Contract Documents made available by the City for execution in the appropriate number of counterparts. The Apparent Low Bidder shall return the fully executed Contract Document sets, along with any supplemental documents required herein, to the City and shall comply with all other conditions, precedent to Contract execution within five (5) days of the date of issuance of the Notice to Apparent Low Bidder by the City. Failure to comply with each of these requirements within five (5) days of the date of issuance of the Notice to Apparent Low Bidder by the City shall render the bid nonresponsive and may constitute cause for rejection.

Issuance of such Notice shall not, however, constitute a commitment on the part of the City or create any rights in the Apparent Low Bidder to any contract with the City.

IB-18 EXECUTION OF CONTRACT

The process of executing a contract requires action by both the apparent low bidder and the City. After it notifies the Apparent Low Bidder, the City will prepare the Contract Documents by incorporating all of the documents submitted by the Apparent Low Bidder into one or more executable copies. Upon notification that contracts documents are ready for execution the Apparent Low Bidder shall execute the contract documents. At this time, the successful bidder shall also provide certain supplemental documents for incorporation into the Contract Documents. These supplemental documents shall include: the properly executed Certificate of Insurance Forms evidencing the apparent low bidder's satisfactory compliance with the insurance requirements set forth in the Contract Documents; a properly executed Payment and Performance Bond Form and appropriate Power of Attorney evidencing the Apparent Low Bidder's satisfactory compliance with the bonding requirements set forth in the Contract Documents; and documentation of compliance with any other conditions precedent to execution of the Contract by the City set forth in the Contract Documents. The insurance and bond forms contained in the Contract Special Conditions Section of the Contract Documents must be used in satisfying these supplemental document requirements.

These documents are then delivered to the City within the prescribed time period for examination of the documents to determine whether or not the Contractor has correctly executed the Contract and has correctly provided the required supplemental documents and that these documents are satisfactorily and properly completed. From here, all of the documents are forwarded to the City Attorney who will, if the insurance and bonding offered is acceptable and if all other elements of the Contract Documents are in order, recommend that the Manager and the Mayor approve the documents and, when required by the City Charter, prepare an ordinance for submittal to City Council authorizing the execution of the Contract. The City Attorney shall in all applicable instances submit the proposed contract and ordinance to City Council. After City Council approval, the Contract shall be reviewed by the City Attorney and routed for execution by the Mayor, the Clerk for attestation and the Auditor for countersignature and registration. When the total process of contract execution is complete, a Notice to Proceed will be issued and a single executed copy of the Contract will be delivered to the Contractor. Any work performed or a material purchased prior to the issuance of Notice to Proceed is at the Contractor's risk.

IB-19 BONDING REQUIREMENTS

In accordance with the provisions of General Contract Conditions, Title 15, PERFORMANCE AND PAYMENT BONDS, the minimum bonding requirements for this Contract are set forth in the form **CITY AND COUNTY OF DENVER PERFORMANCE AND PAYMENT BOND** contained in the Special Conditions Section of the Contract Documents. Upon receipt of Notice to Apparent Low Bidder, the apparent low bidder must cause this form bond to be purchased, executed and furnished, along with

appropriate Powers of Attorney and a surety authorization letter (in form similar to the one attached), to the City in accordance with the instructions contained herein.

IB-20 INSURANCE REQUIREMENTS

The minimum insurance requirements for this Contract are set forth in the Special Conditions Section of the Contract Documents. Bidders are urged to consider, in preparing a bid hereunder, that each condition, requirement or specification set forth in the form certificate must be complied with by the Contractor and all subcontractors performing Work on the Project, unless such requirements are specifically accepted in writing by the City's Risk Management Office. The Contractor must either include all subcontractors performing work hereunder as insureds under each required policy or furnish a separate certificate for each subcontractor. In either case, the Contractor shall insure that each subcontractor complies with all of the coverage requirements.

IB-21 PERMITS AND LICENSES

All permits, licenses and approvals required in the prosecution of the work shall be obtained and paid for by the Contractor.

IB-22 PREVAILING WAGE REQUIREMENTS

Contractor shall comply with, and agrees to be bound by, all requirements, conditions and City determinations regarding the Payment of Prevailing Wages Ordinance, Sections 20-76 through 20-79, D.R.M.C. including, but not limited to, the requirement that every covered worker working on a City owned or leased building or on City-owned land shall be paid no less than the prevailing wages and fringe benefits **in effect on the date the bid** or request for proposal was advertised. In the event a request for bids, or a request for proposal, was not advertised, Contractor shall pay every covered worker no less than the prevailing wages and fringe benefits in effect on the date funds for the contract were encumbered.

Date bid or proposal issuance was advertised **October 14, 2020**.

Prevailing wage and fringe rates will adjust on the yearly anniversary of the actual date of bid or proposal issuance, if applicable, or the date of the written encumbrance if no bid/proposal issuance date is applicable. Unless expressly provided for in this Agreement, Contractor will receive no additional compensation for increases in prevailing wages or fringe benefits.

Contractor shall provide the Auditor with a list of all subcontractors providing any services under the contract.

Contractor shall provide the Auditor with electronically-certified payroll records for all covered workers employed under the contract.

Contractor shall prominently post at the work site the current prevailing wage and fringe benefit rates. The posting must inform workers that any complaints regarding the payment of prevailing wages or fringe benefits may be submitted to the Denver Auditor by calling 720-913-5000 or emailing auditor@denvergov.org.

If Contractor fails to pay workers as required by the Prevailing Wage Ordinance, Contractor will not be paid until documentation of payment satisfactory to the Auditor has been provided. The City may, by written notice, suspend or terminate work if Contractor fails to pay required wages and fringe benefits.

IB-23 PAYMENT OF CITY MINIMUM WAGE

Contractor shall comply with, and agrees to be bound by, all requirements, conditions, and City determinations regarding the City's Minimum Wage Ordinance, Sections 20-82 through 20-84 D.R.M.C., including, but not limited to, the requirement that every covered worker shall be paid no less than the City Minimum Wage in accordance with the foregoing D.R.M.C. Sections.

Instances in which a worker is covered by both Prevailing Wage rate requirements and City Minimum Wage rate requirements, Contractor shall pay every covered worker the greater of the two.

The services being requested in this solicitation may involve services that are covered pursuant to Division 3.75 of Article IV of Chapter 20 of the Denver Revised Municipal Code ("D.R.M.C."), which is designed to address the issue of wage equity and cost of living affordability in the City & County of Denver. Contractor agrees that any contract with the City shall include a requirement that Contractor will comply with the provisions of D.R.M.C. §§20-82 through 20-84, including, but not limited to, paying all covered workers no less than the City Minimum Wage for all covered services rendered in connection with the Contract. Additionally, Contractor agrees that the contract shall require compliance with all current and future federal and state laws and City ordinances.

IB-24 TAX REQUIREMENTS

General. Bidders are referred to the General Contract Condition 323, TAXES, as to taxes to which they may be subject in performing the Work under this Contract, including but not limited to sales and use taxes and the Denver Occupational Privilege Tax. The following instructions are to be considered along with the General Contract Conditions and not in lieu of them.

Sales and Use Tax. The City of Denver imposes consumer use tax on all construction and building materials used on any construction project located in Denver. Denver does not exempt governmental or charitable projects.

It is the responsibility of the Contractor and its subcontractors to apply to the Colorado Department of Revenue ("CDOR") for a certificate, or certificates, of exemption indicating that their purchase of construction or building materials is for a public project, and to deliver to the City copies of such applications as soon as possible after approval by the CDOR. Bidders shall include Denver sales/use tax, Occupational Privilege taxes, and shall not include in their bid amounts the exempt state, RTD, and Cultural Facilities District Sales and Use Taxes.

Denver Occupational Privilege Tax. Any employee working for a contractor, or a subcontractor, who earns \$500 or more working in Denver during a calendar month, is subject to the payment of the Employee Occupational Privilege Tax. The Contractor and any subcontractor must pay the Business Occupational Privilege Tax for each of its employees who are subject to such tax.

IB-25 DIVERSITY AND INCLUSIVENESS IN CITY SOLICITATIONS

Each bidder shall, as a condition of responsiveness to this solicitation, complete and return the "Diversity and Inclusiveness in City Solicitations Information Request Form" with their Bid.

Using the "Diversity and Inclusiveness in City Solicitations Information Request Form" provided, please state whether you have a diversity and inclusiveness program for employment and retention, procurement and supply chain activities, or customer service and provide the additional information requested on the form. The information provided on the "Diversity and Inclusiveness in City Solicitations Information Request Form" will provide an opportunity for City contractors to describe their own diversity and inclusiveness practices. Contractors are not expected to conduct intrusive examinations of its employees,

managers, or business partners in order to describe diversity and inclusiveness measures. Rather, the City simply seeks a description of the contractor's current practices, if any.

Diversity and Inclusiveness information provided by City contractors in response to City solicitations for services or goods will be collated, analyzed, and made available in reports consistent with City Executive Order No. 101. However, no personally identifiable provided by or obtained from contractor's will be in such reports.

IB-26 MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE (MWBE) REQUIREMENTS

Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), referred to in these Bid Documents as the "MWBE Ordinance" and any Rules or Regulations promulgated pursuant thereto apply to this Project and are incorporated into these Bid Documents by reference. Under the MWBE Ordinance, the Director of DSBO ("Director") has the authority to establish participation goals on contracts for construction, reconstruction, remodeling, professional and design work with the City and County of Denver. The participation goal is stated in the Notice of Invitation for Bids found herein. In order to comply with the bid requirements of the MWBE Ordinance, or any additional requirements, a bidder shall either meet the established participation goal or, in the alternative, demonstrate that the bidder has demonstrated sufficient good faith efforts to meet the goal in accordance with the MWBE Ordinance. A bidder's failure to comply with the MWBE Ordinance, any Rules or Regulations promulgated pursuant thereto, or any additional requirement contained herein shall render the bid non-responsive and shall constitute cause for rejection. Failure by the contractor awarded the contract to comply with MWBE Ordinance requirements during the performance of the contract is a material breach of the contract, which may result in the imposition of sanctions on the Contractor, as deemed appropriate by DSBO. Copies of the MWBE Ordinance and its accompanying Rules and Regulations are available for the use and review of bidders from DSBO. As well as additional MWBE Guidance which can be found here: <https://www.denvergov.org/dsbo>.

Meeting Established Goal

1. All MWBEs listed for participation toward meeting the goal must be properly certified by the City on or before the date bids are opened. The MWBE(s) must be certified in the NAICS code(s) that coincide with the scope of work the identified firm will be performing to count towards the participation goal. DSBO maintains an MWBE Directory ("Directory"), which is a current list of MWBEs certified by the City. A copy of the Directory is located at the DSBO web site at <https://www.denvergov.org/dsbo>. Bidders are encouraged to use the Directory to assist in identifying MWBEs for the work and supplies required for the Project. Bidders are reminded that changes may be made to the Directory at any time in accordance with the City's MWBE Ordinance. Procedures established to administer this program and a current copy of the Directory must always be used in preparing a bid. MWBE certification or listing in the Directory is not a representation or warranty by the City regarding the qualifications of any listed MWBE.
2. If a bidder is participating in a joint venture with a certified MWBE firm, bidders must submit the Joint Venture Agreement to the DSBO **at least ten (10) business days prior to the bid opening**. The Joint Venture must be approved prior to the bid opening by the DSBO. Approval by the DSBO includes determining the amount the Joint Venture will count towards the participation goal.
3. Each bidder shall submit Bid Form pages entitled Commitment to MWBE Participation, 1A- List of Proposed Subcontractors, Subconsultants, and/or Suppliers, and Letter(s) of Intent for all tiers with the bid at the time of bid opening. DSBO will evaluate each bid to determine responsiveness of the bid with regard to MWBE Ordinance requirements. **An MWBE Prime Bidder must submit a Letter of Intent for itself for self-performed work.** The MWBE Letter of Intent evidences the Bidder's

understanding that the Bidder has or will enter into a contractual relationship with the MWBE or that the Bidder's subcontractor(s), subconsultant(s), and/or supplier(s) will do so. Bidders are urged to carefully review these Letters of Intent before submission to the City to ensure the documents are properly completed and executed by the appropriate parties. **Only the MWBEs identified and the precise levels of participation listed for each, at the time of bid opening, will be considered in determining whether the bidder has met the designated participation goal. Additional, participation submitted after bid opening will not be considered in determining responsiveness.**

- a. In determining whether a bidder's committed level of participation meets the stated MWBE goal, DSBO shall base its calculation of applicable dollar amounts and percentages on the total base bid amount. If a bid contains alternates, participation contained in any alternate will not count towards satisfaction of the Participation goal at time of bid opening. However, should any designated alternate be selected by the City for inclusion in the contract ultimately awarded, the MWBE goal percentage level submitted at time of bid opening, on the base bid, will also apply to the selected alternates and must be maintained through the remaining term of the contract on the total contract amount, including any alternate work. Therefore, bidders are urged to consider participation in preparing bids for designated alternates.
- b. In utilizing the MWBE participation of a Supplier the following will count towards satisfaction of the goal:
 - i. If the materials or supplies are obtained from a MWBE manufacturer, count one hundred percent (100%) of the cost of the materials or supplies toward the participation goal.
 - ii. Only sixty percent (60%) of the value of the commercially useful function performed by MWBE Regular Dealers shall count toward satisfaction of the participation goal.
 - iii. Only the bona fide commissions earned by such Manufacturer Representatives or Brokers for its performance of a commercially useful function will count toward meeting the participation goals. The bidder must separate the bona fide brokerage commissions from the actual cost of the supplies or materials provided to determine the actual dollar amount of participation that can be counted towards meeting the goal.
- c. Any agreement between a bidder and an MWBE in which the bidder requires that the MWBE not provide subcontracting quotations to other bidders is prohibited and shall render a bidder's bid nonresponsive. D.R.M.C. 28-68(f)

Good Faith Effort

If the bidder has not fully met the participation goal as provided in D.R.M.C. Section 28-62, then it shall demonstrate that it has made good faith efforts to meet such goal. The bidder shall furnish to the Director, with the bid at time of bid opening by the City a detailed statement of its good faith efforts to meet the participation goal established by the Director. The statement of good faith efforts shall include a specific response to address each of the categories, as outlined in the MWBE Ordinance, D.R.M.C. Section 28-62, and any additional criteria that the Director may establish by rule or regulation consistent with the purposes of the MWBE Ordinance. A bidder may include any additional information it believes may be relevant. Good faith efforts must be demonstrated to be substantive and not merely for formalistic compliance with the MWBE Ordinance. The scope and adequacy of the efforts will be considered in determining whether

the bidder has achieved a good faith effort. Failure of a bidder to show good faith efforts shall render its overall good faith effort showing insufficient and its bid nonresponsive.

IB-27 DISCLOSURE OF INFORMATION

All submissions and other materials provided or produced pursuant to this Invitation for Bids may be subject to the Colorado Open Records Law, C.R.S. 24-72-201, et seq. As such, bidders are urged to review these disclosure requirements and any exceptions to disclosure of information furnished by another party and, prior to submission of a bid to the City, appropriately identify materials that are not subject to disclosure. In the event of a request to the City for disclosure of such information, the City shall advise the bidder of such request to give the bidder an opportunity to object to the disclosure of designated confidential materials furnished to the City. In the event of the filing of a lawsuit to compel such disclosure, the City will tender all such material to the court for judicial determination of the issue of disclosure and each bidder agrees to intervene in such lawsuit to protect and assert its claims of privilege against disclosure of such material. Each bidder further agrees to defend, indemnify and save and hold harmless the City, its officers, agents and employees, from any claim, damages, expense, loss or costs arising out of the bidder's intervention to protect and assert its claims of privilege against disclosure under the Open Records Law including, but not limited to, prompt reimbursement to the City of all reasonable attorney fees, costs and damages that the City may incur directly or may be ordered to pay by such court.

IB-28 GENERAL BIDDING INFORMATION

Bidders are instructed to contact the Contract Administrator designated below for this Project for pre-bid, post-bid and general City bidding information. Bidders can also visit www.work4denver.com for information, both general and project specific. The Contract Administrator assigned to this project is **Isabelle Oldani** who can be reached via email at pw.procurement@denvergov.org.

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IB-29 PAYMENT PROCEDURE REQUIREMENTS

Bidder recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (“Textura”) for this Project to request payment from the City and to pay all first tier subcontractors and suppliers and further record payment to all certified subcontractors or suppliers that are listed for participation towards any assigned program goal. All fees associated with Textura are to be paid by the bidder for billings for work performed. Bidders are required, when preparing a bid, to enter the price of Textura on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with Textura. The bidder will calculate the fee based on their total bid (not including any alternates, if applicable) and the table below, and then include it on the line item provided in the bid form labeled “**Textura® Construction Payment Management System Fee**”. This expense becomes part of the contract and billable to the City. All costs including, but not limited to, costs associated with training, entering data, and/or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Bidder will be responsible for any tax on the Textura fee. As with other taxes, the City will not reimburse bidder for this cost and therefore this cost should be included in bidder’s bid. Textura will invoice the awarded bidder directly.

Project Value	Project Fee (GC + Sub Usage)
\$100,000 – 249,999.99	\$780
\$250,000 - \$499,999.99	\$1,625
\$500,000 - \$999,999.99	\$3,250
\$1,000,000 - \$2,999,999.99	\$5,850
\$3,000,000 - \$4,999,999.99	\$9,100
\$5,000,000 - \$9,999,999.99	\$12,220
\$10,000,000 - \$19,999,999.99	\$20,345
\$20,000,000 - \$49,999,999.99	\$32,500

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**RULES AND REGULATIONS
REGARDING
EQUAL EMPLOYMENT OPPORTUNITY**

Promulgated and adopted by the Manager of Public Works pursuant to and by authority of Article III, Division 2, Chapter 28 of the Revised Municipal Code of the City and County of Denver, and for the purpose of insuring that contractors, subcontractors and suppliers soliciting and receiving compensation for contract work from or through the City and County of Denver provide equal opportunity in employment without regard to race, color, creed, sex, national origin, age, religion, marital status, political opinion or affiliation or mental or physical handicap and meet certain requirements for the hiring, training, promotion and treatment during employment of members of ethnic groups subjected to differential treatment, including persons of African descent (Black), Spanish-surnamed (Hispanic), Asian-American and American Indian groups.

**RULE I
DEFINITIONS**

- A. "City" means the City and County of Denver.
- B. "Manager" shall mean the Manager of Public Works for the City and County of Denver.
- C. "Contract" means a contract entered into with the City and County of Denver, financed in whole or in part by local resources or funds of the City and County of Denver, for the construction of any public building or prosecution or completion of any public work.
- D. "Contractor" means the original party to a contract with the City and County of Denver, also referred to as the "general" or "prime" contractor.
- E. "Director" means the Director of the Mayor's Office of Contract Compliance.
- F. "Subcontractor" means any person company, association, partnership, corporation, or other entity which assumes by subordinate agreement some or all of the obligations of the general or prime contractor.
- G. The Phrase "Bidding Specifications" as used in Article III, Division 2 of Chapter 28 of the Revised Municipal Code shall include **BID CONDITION, INVITATION TO BID AND NOTICE OF PROPOSAL**.
- H. "Affirmative Action Program" means a set of specific and result-oriented procedures or steps to which a contractor commits himself to apply every good faith effort to employ members of ethnic minority groups, to include persons of African descent (Black), Spanish surnamed (Hispanic), Asian-American, American Indians, and persons with mental or physical handicap.
- I. "Mayor's Office of Contract Compliance" means the City agency established pursuant to Article III, Division 1 of Chapter 28 of the Denver Revised Municipal Code.

Revised: 10/19/93

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RULE II
NOTICE OF HEARING

When results of conciliation efforts are unsatisfactory to the Manager and he is informed in accordance with Article III, Division 2 of Chapter 28 of the Revised Municipal Code that a contractor or subcontractor has apparently failed to meet affirmative action and equal employment opportunity requirements after a reasonable period of notice to correct deficiencies, the Manager will, prior to imposition of any sanctions, afford the general contractor a hearing in order to determine whether the contractor or his subcontractors have failed to comply with the affirmative action and equal employment opportunity requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or of the contract. Written notice of such hearing shall be delivered personally or sent by certified mail return receipt requested, to the contractor and to any subcontractor involved at least ten days prior to the date scheduled for the hearing.

RULE III
HEARING

- A. Contractors will appear at hearings and may be represented by counsel, and may present testimony orally and other evidence.
- B. Hearings shall be conducted by one or more hearing examiners designated as such by the Manager.
- C. The Director of the Mayor's Office of Contract Compliance may participate in hearings as a witness.
- D. Hearings shall be held at the place specified in the notice of hearing.
- E. All oral testimony shall be given under oath or affirmation and a record of such proceedings shall be made.
- F. All hearings shall be open to the public.
- G. The hearing officer shall make recommendations to the Manager who shall make a final decision.

REGULATIONS

REGULATION NO. 1. **ORDINANCE:** The Rules and Regulations of the Manager shall be inserted in the bidding specifications for every contract for which bidding is required.

REGULATION NO. 2. **EXEMPTIONS:** Each contract and subcontract, regardless of dollar amount, shall be subject to affirmative action requirements unless specifically exempted in writing individually by the Manager. Exemptions apply only to "affirmative action" in equal employment opportunity, and are not to be construed as condonation in any manner of "discrimination" or "discriminatory practices" in employment because of race, color, creed, sex, age, national origin, religion, marital status, political opinion or mental or physical handicap.

Revised: 10/19/93

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REGULATION NO. 3. DIRECTOR OF CONTRACT COMPLIANCE: The Director of the Mayor's Office of Contract Compliance shall perform the duties assigned to such official by Article III, Division 2 of Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Mayor's Office of Contract Compliance or designated representatives shall inform bidders and contractors of affirmative action procedures, programs, and goals in accordance with the ordinance at pre-bid and pre-construction conference; (2) make regular on-site inspections; (3) supply contractors and subcontractors with report forms to be completed by them when requested, and furnished to the Director of the Mayor's Office of Contract Compliance; and (4) review payroll records, employment records and practices of general contractors and their subcontractors and suppliers during the performance of any contract. The Director of the Mayor's Office of Contract Compliance shall promptly report apparent affirmative action deficiencies to the Manager.

REGULATION NO. 4. GOALS AND TIMETABLES: In general, goals and timetables should take into account anticipated vacancies and the availability of skills in the market place from which employees should be drawn. In addition, where discrimination in employment by a general contractor or any of his subcontractors is indicated, a corrective action program will take into account the need by the general contractor and his subcontractors to correct past discriminatory practices and reach goals of minority manpower utilization on a timely basis through such recruiting and advertising efforts as are necessary and appropriate.

REGULATION NO. 5. AWARD OF CONTRACTS: It shall be the responsibility of the Director of the Mayor's Office of Contract Compliance to determine the affirmative action capability of bidders, contractors and subcontractors and to recommend to the Manager the award of contracts to those bidders, contractors and subcontractors and suppliers who demonstrate the ability and willingness to comply with the terms of their contract.

REGULATION NO. 6. PUBLICATION AND DUPLICATION: Copies of these Rules and Regulations as amended by the Manager from time to time, shall as soon as practicable and after Notice being published will be made a part of all City Contracts.

REGULATION NO. 7. NOTICE TO PROCEED: Prior to issuance of Notice to Proceed a sign-off will be required of the Director of the Mayor's Office of Contract Compliance or his designee.

REGULATION NO. 8. CONTRACTS WITH SUBCONTRACTORS: To the greatest extent possible the contractor shall make a good faith effort to contract with minority contractors, subcontractors and suppliers for services and supplies by taking affirmative actions which include but are not limited to the following:

1. Advertise invitations for subcontractor bids in minority community news media.
2. Contact minority contractor organizations for referral of prospective subcontractors.
3. Purchase materials and supplies from minority material suppliers.

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REGULATION NO. 9. AGENCY REFERRALS: it shall be no excuse that the union with which the contractor or subcontractor has an agreement providing for referral, exclusive or otherwise, failed to refer minority employees.

REGULATION NO. 10. CLAUSES: The Manager shall include the appropriate clauses in every contract and the contractor shall cause to be inserted in every subcontract the appropriate clauses:

1. **APPENDIX A:** City and County of Denver Equal Opportunity Clause-ALL CONTRACTS funded only with City & County of Denver monies.
2. **APPENDIX B:** Equal Opportunity Clause (11246)-ALL FEDERAL ASSISTED
3. **APPENDIX C:** Section 3-Assurance of Compliance-HUD ASSISTED PROJECTS.
4. **APPENDIX D:** Section 3-Clause-HUD ASSISTED PROJECTS.

All amendments to the appendices shall be included by reference.

REGULATION NO. 11. SHOW CAUSE NOTICES: When the Manager has reasonable cause to believe that a contractor has violated Article III, Division 2 of Chapter 28 of the Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen days why enforcement procedures, or other appropriate action to insure compliance, should not be instituted.

REGULATION NO. 12. **BID CONDITIONS-AFFIRMATIVE ACTION
REQUIREMENTS-
EQUAL EMPLOYMENT OPPORTUNITY:**

1. **APPENDIX E:**

The Bid Conditions-Affirmative Action Requirements-Equal Employment Opportunity as amended and published by the U.S. Department of Labor, Employment Standards Administration, Office of Federal Contract Compliance, shall be inserted verbatim for bidding specification for every non-exempt contract involving the use of Federal funds.

2. **APPENDIX F:**

The Bid Conditions-Affirmative Action Requirements-Equal Employment Opportunity as published by the Department of Public Works, City and County of Denver shall be inserted verbatim as bidding specifications for every non-exempt contract using City funds.

Revised: 04/12/91

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APPENDIX A

CITY AND COUNTY OF DENVER EQUAL OPPORTUNITY CLAUSE-ALL CONTRACTS

1. The contractor will not discriminate against any employee or applicant for employment because of race creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap.
3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided, advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. Each contractor will comply with all provisions of Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the rules, regulations, and relevant orders of the Manager and Director.
5. The contractor will furnish all information and reports required by Article III, Division 2, Chapter 28 of the Revised Municipal Code, and by rules, regulations and orders of the Manager and Director or pursuant thereto, and will permit access to his books, records, and accounts by the Manager, Director or their designee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further City contracts in accordance with procedures authorized in Article III, Division 2, Chapter 28 of the Revised Municipal Code, or by rules, regulations, or order of the Manager.

Revised: 09/28/90

EEO-A1

7. The contractor will include Regulation 12 Paragraph 2 and the provisions of paragraphs (1) through (6) in every subcontract or purchase order unless, exempted by rules, regulations, or orders of the Manager issued pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, so that such provisions will be binding upon each subcontractor or suppliers. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

The applicant further agrees to be bound by the above equal opportunity clauses with respect to its own employment practices when it participates in City contracts. The contractor agrees to assist and cooperate actively with the Manager and the Director in obtaining compliance of subcontractors and suppliers with the equal opportunity clause and the rules, regulations and relevant orders of the Manager, and will furnish the Manager and the Director such information as they may require for the supervision of compliance, and will otherwise assist the Manager and Director in the discharge of the City's primary responsibility for securing compliance. The contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

The contractor will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the Manager and Director. In addition, the contractor agrees that failure or refusal to comply with these undertakings the Manager may take any or all of the following actions:

- (A) Cancellation, termination, or suspension in whole or in part of this contract.
- (B) Refrain from extending any further assistance to the applicant under the program with respect to which the failure occurred until satisfactory assurance of future compliance has been received from such applicant.
- (C) Refer the case to the City Attorney for appropriate legal proceedings.

SUBCONTRACTS: Each prime contractor or subcontractor shall include the equal opportunity clause in each of its subcontracts.

Revised: 10/02/90

EEO-A2

APPENDIX F
BID CONDITIONS
AFFIRMATIVE ACTION REQUIREMENTS
EQUAL EMPLOYMENT OPPORTUNITY

For all Non-Exempt Construction Contracts to be Awarded by
the City and County of Denver, Department of Public Works

NOTICE

EACH BIDDER, CONTRACTOR OR SUBCONTRACTOR (HEREINAFTER THE CONTRACTOR) MUST FULLY COMPLY WITH THE REQUIREMENTS OF THESE BID CONDITIONS AS TO EACH CONSTRUCTION TRADE IT INTENDS TO USE ON THIS CONSTRUCTION CONTRACT, AND ALL OTHER CONSTRUCTION WORK (BOTH CITY AND NON-CITY) IN THE DENVER AREA DURING THE PERFORMANCE OF THIS CONTRACT OR SUBCONTRACT. THE CONTRACTOR COMMITS ITSELF TO THE GOALS FOR MINORITY MANPOWER UTILIZATION, AS APPLICABLE, AND ALL OTHER REQUIREMENTS, TERMS AND CONDITION OF THESE BID CONDITIONS BY SUBMITTING A PROPERLY SIGNED BID.

THE CONTRACTOR SHALL APPOINT A COMPANY EXECUTIVE TO ASSUME THE RESPONSIBILITY FOR THE IMPLEMENTATION OF THE REQUIREMENTS, TERMS AND CONDITIONS OF THESE BID CONDITIONS.

MICHAEL D. MUSGRAVE
Manager of Public Works
City and County of Denver

Revised: 10/19/93

EEO-F1

A. **REQUIREMENTS --AN AFFIRMATIVE ACTION PLAN:**

Contractors shall be subject to the provisions and requirements of these bid conditions including the goals and timetables for minority' and female utilization, and specific affirmative action steps set forth by the Office of Contract Compliance. The contractor's commitment to the goals for minority, and female utilization as required constitutes a commitment that it will make every good faith effort to meet such goals.

1. **GOALS AND TIMETABLES:**

The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade are as follows:

GOALS FOR MINORITY PARTICIPATION FOR EACH TRADE From January 1, 1982 to 21.7% - 23.5% Until Further Notice	GOALS FOR FEMALE PARTICIPATION FOR EACH TRADE From January 1, 1982 to 6.9% Until Further Notice
--	---

The goals for minority and female utilization above are expressed in terms of hours of training and employment as a proportion of the total number of hours to be worked by the contractor's aggregate workforce, which includes all supervisory personnel, in each trade, on all projects for the City and County of Denver during the performance of its contract (i.e., The period beginning with the first day of work on the City and County of Denver funded construction contract and ending with the last day of work).

¹"Minority" is defined as including, Blacks, Spanish Surname Americans, Asian-Americans, and American Indians, and includes both men and Minority women.

Revised: 10/02/90

EEO-F2

The hours of minority and female employment and training must be substantially uniform throughout the length of the contract in each trade and minorities and females must be employed evenly on each of a contractor's projects. Therefore, the transfer of minority or female employees from contractor to contractor or from project to project for the purpose of meeting the contractor's goals shall be a violation of these Bid Conditions.

If the contractor counts the nonworking hours of apprentices they must be employed by the contractor during the training period; the contractor must have made a commitment to employ apprentices at the completion of their training subject to the availability of employment opportunities; and the apprentices must be trained pursuant to training programs approved by the Bureau of Apprenticeship and Training.

2. **SPECIFIC AFFIRMATIVE ACTION STEPS:**

No contractor shall be found to be in noncompliance solely on account of its failure to meet its goals, but will be given an opportunity to demonstrate that the contractor has instituted all the specific affirmative action steps specified and has made every good faith effort to make these steps work toward the attainment of its goals within the timetables, all to the purpose of expanding minority and female utilization in its aggregate workforce. A contractor, who fails to comply with its obligation under the Equal Opportunity Clause of its contract and fails to achieve its commitments to the goals for minority and female utilization has the burden of proving that it has engaged in an Affirmative Action Program directed at increasing minority and female utilization and that such efforts were at least as extensive and as specific as the following:

Revised: 11/12/82

EEO-F3

- a. The contractor should have notified minority and female organizations when employment opportunities were available and should have maintained records of the organization's response.
- b. The contractor should have maintained a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the contractor, the reasons. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred, not employed by the contractor, the file should have documented this and their reasons.
- c. The contractor should have promptly notified the Department of Public Works, and Mayor's Office of Contract Compliance when the union or unions with which the contractor has collective bargaining agreements did not refer to the contractor a minority or female sent by the contractor, or when the contractor has other information that the union referral process has impeded efforts to meet its goals.
- d. The contractor should have disseminated its EEO policy within its organization by including it in any employee handbook or policy manual; by publicizing it in company newspapers and annual reports and by advertising such policy at reasonable intervals in union publications. The EEO policy should be further disseminated by conducting staff meetings to explain and discuss the policy; by posting of the policy; and by review of the policy with minority and female employees.

Revised: 10/19/93

EEO-F4

- e. The contractor should have disseminated its EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.
- f. The contractor should have made both specific and reasonably recurrent written and oral recruitment efforts. Such efforts should have been directed at minority and female organizations, schools with substantial minority and female enrollment, and minority and female recruitment and training organizations within the contractor's recruitment area.
- g. The contractor should have evidence available for inspection that all tests and other selection techniques used to select from among candidates for hire, transfer, promotion, training, or retention are being used in a manner that does not violate the OFCCP Testing Guidelines in 41 CFR Part 60-3.
- h. The contractor should have made sure that seniority practices and job classifications do not have a discriminatory effect.
- i. The contractor should have made certain that all facilities are not segregated by race.
- j. The contractor should have continually monitored all personnel activities to ensure that its EEO policy was being carried out including the evaluation of minority and female employees for promotional

Revised: 10/19/93

EEO-F5

opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.

k. The contractor should have solicited bids for subcontracts from available minority and female subcontractors engaged in the trades covered by these Bid conditions, including circulation of minority and female contractor associations.

NOTE: The Director and the Mayor's Office of Contract Compliance will provide technical assistance on questions pertaining to minority and female recruitment sources, minority and female community organizations, and minority and female news media upon receipt of a request for assistance from a contractor.

3. **NON-DISCRIMINATION:** In no event may a contractor utilize the goals and affirmative action steps required in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex, marital status, national origin, age, mental or physical handicap, political opinion or affiliation.

4. **COMPLIANCE AND ENFORCEMENT:** In all cases, the compliance of a contractor will be determined in accordance with its obligations under the terms of these Bid Conditions. All contractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors in writing of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority and female employment and training.

Revised: 10/19/93

EEO-F6

A. **Contractors Subject to these Bid Conditions:**

In regard to these Bid Conditions, if the contractor meets the goals set forth therein or can demonstrate that it has made every good faith effort to meet these goals, the contractor shall be presumed to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, the implementing regulations and its obligations under these Bid Conditions. In the event, no formal sanctions or proceedings leading toward sanctions shall be instituted unless the contracting or administering agency otherwise determines that the contractor is violating the Equal Opportunity Clause.

1. Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article III, Division 2, Chapter 28 of the Revised Municipal Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the contractor has not met the goals contained in these Bid Conditions. The contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.
2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article III, Division 2, Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".

Revised: 09/26/90

EEO-F7

3. The Mayor's Office of Contract Compliance shall review the contractor's employment practices during the performance of the contract. If the Mayor's Office of Contract Compliance determines that the contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

B. **Obligations Applicable to Contractors:**

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority or female employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, Title VI of the Civil Rights Act of 1964, as amended, and Article III, Division 2, Chapter 28 of the Revised Municipal Code. It is the policy of the Department of Public Works that contractors have a responsibility to provide equal employment opportunity, if they wish to participate in City and County of Denver contracts. To the extent they have delegated the responsibility for some of their employment practices to a labor organization and, as a result, are prevented from meeting their obligations pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, such Contractors cannot be considered to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, or its implementing rules and regulations.

Revised: 10/19/93

EEO-F8

C. **General Requirements**

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall be bound by these Bid Conditions to the full extent as if it were the prime contractor. The contractor shall not, however, be held accountable for the failure of its subcontractors to fulfill their obligations under these Bid Conditions. However, the prime contractor shall give notice to the Director of any refusal or failure of any subcontractor to fulfill the obligations under these Bid Conditions. A subcontractor's failure to comply will be treated in the same manner as such failure by a prime contractor.

1. Contractors hereby agree to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who is determined not to be a "responsive" bidder for the City and County of Denver contracts pursuant to the Ordinance.
2. The contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.

Revised: 04/12/91

EEO-F9

3. Nothing herein is intended to relieve any contractor during the term of its contract from compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the Equal Opportunity Clause of its contract with respect to matters not covered in these Bid Conditions.
4. Contractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the Office of Contract Compliance.
5. Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Manager of Public Works, City and County Building, Room 379, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.

Revised: 04/12/91

EEO-F10

**CITY AND COUNTY OF DENVER
CONTRACT NO. 202056263**

48TH AVENUE VIADUCT REHABILITATION

CONTRACT

THIS CONTRACT AND AGREEMENT, made and entered into by and between the City and County of Denver, a municipal corporation of the State of Colorado, hereinafter referred to as the "City," party of the first part, and contractor listed below, hereinafter referred to as the "Contractor," party of the second part,

**SEMA CONSTRUCTION, INC.
7353 S EAGLE ST. CENTENNIAL, CO 80112**

WITNESSETH, commencing on **October 14, 2020**, and for at least three (3) days the City advertised that sealed bids would be received for furnishing all labor, tools, supplies, equipment, materials, and everything necessary and required for the following:

<p>CONTRACT NO. 202056263</p> <p>48TH AVENUE VIADUCT REHABILITATION</p>

WHEREAS, bids pursuant to said advertisement have been received by the Manager of the Department of Transportation and Infrastructure, who has recommended that a Contract for said work be made and entered into with the above named Contractor who was the lowest, responsive, qualified bidder therefore, and

WHEREAS, said Contractor is now willing and able to perform all of said work in accordance with said advertisement and its bid.

NOW THEREFORE, in consideration of the compensation to be paid the Contractor, the mutual agreements hereinafter contained, and subject to the terms hereinafter stated, it is mutually agreed as follows:

1. CONTRACT DOCUMENTS

It is agreed by the parties hereto that the following list of documents, instruments, technical specifications, plans, drawings and other materials which are attached hereto and bound herewith, incorporated herein by reference or otherwise referenced in these documents constitute and shall be referred to either as the "Contract Documents" or the "Contract," and all of said documents, instruments, technical specifications, Plans, Drawings and other materials taken together as a whole constitute the Contract between the parties hereto, and they are as fully a part of this agreement as if they were set out verbatim and in full herein:

- Advertisement of Notice of Invitation for Bids*
- Instructions to Bidders*
- Commitment to MWBE Participation*
- Letters(s) of Intent*
- IA - List of Proposed Subcontractors, Subconsultants, and/or Suppliers*
- Article III, Divisions 1, 2, and 3 of Chapter 28, D.R.M.C.*
- Bid Bond*
- Addenda (as applicable)*
- Equal Employment Opportunity Provisions (Appendix A and Appendix F)*
- Bid Form*
- Contract Form*

General Contract Conditions
Special Contract Conditions
Performance and Payment Bond
Notice to Apparent Low Bidder
Notice to Proceed
Contractor's Certification of Payment Form
Final Release and Certificate of Payment
Certificate of Contract Release
Change Orders (as applicable)
Federal Requirements (as applicable)
Prevailing Wage Rate Schedule(s)
Technical Specifications
Contract Drawings
Accepted Shop Drawings

2. SCOPE OF WORK

The Contractor agrees to and shall furnish all labor, tools, supplies, equipment, materials and everything necessary for and required to do, perform and complete all of the Work described, drawn, set forth, shown and included in said Contract Documents.

3. TERMS OF PERFORMANCE

The Contractor agrees to undertake the performance of the Work under this Contract within ten (10) days after being notified to commence work by issuance of a Notice to Proceed in substantially the form contained herein from the Manager and agrees to fully complete said Work within **180 (One Hundred and Eighty)** consecutive calendar days from the effective date of said Notice, plus such extension or extensions of time as may be granted in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

4. TERMS OF PAYMENT

The City agrees to pay the Contractor for the performance of all of the Work required under this Contract, and the Contractor agrees to accept as the Contractor's full and only compensation therefore, such sum or sums of money as may be proper in accordance with the price or prices set forth in the Contractor's Bid Form hereto attached and made a part hereof for **bid item numbers Bid Items Total Amount (201-00005 through 700-70600 including Five [5] Force Accounts and Three [3] Allowance Accounts, (Sixty Five [65]) total bid items.**, the total estimated cost thereof being **Two Million Seven Hundred Ninety-Nine Thousand Nine Hundred Ninety-Two Dollars and Sixty-One Cents (\$2,799,992.61).**

Adjustments to said Contract Amount and payment of amounts due hereunder shall be made in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

5. NO DISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this contract, the Contractor may not refuse to hire, discharge, promote or demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender identity or gender expression, marital status, or physical or mental disability. The Contractor shall insert the foregoing provision in all subcontracts.

6. COMPLIANCE WITH MWBE REQUIREMENTS

This Contract is subject to all applicable provisions of Divisions 1 and 3 of Article III, of Chapter 28, Denver Revised Municipal Code (D.R.M.C.) referred to in this Contract as the "MWBE Ordinance" any corresponding Rules and Regulations, and any additional requirements contained herein. Without limiting the general applicability of the foregoing, the Contractor/Consultant acknowledges its continuing duty,

pursuant to the D.R.M.C., to maintain throughout the duration of this Contract, and compliance with the MWBE commitment of **13.72%**, upon which the City approved the award of this Contract to the Contractor/Consultant. The Contractor/Consultant further acknowledges that failure to maintain such participation commitments or otherwise comply with the requirements of the MWBE Ordinance, any corresponding Rules and Regulations, and any additional requirements contained herein, shall subject the Contractor/Consultant to sanctions in accordance with Section 28-76 of the D.R.M.C. Nothing contained in this provision or in the MWBE Ordinance shall negate the City's right to prior approval of subcontractors, or substitutes therefore, under this Contract.

7. WAGE RATE REQUIREMENTS

In performance of all Work hereunder, the Contractor agrees to comply with and be bound by all requirements and conditions of the City's Payment of Prevailing Wages Ordinance, Sections 20-76 through 20-79, D.R.M.C. and any determinations made by the City pursuant thereto as well as the City's Minimum Wage Protections Sections 20-82 through 20-84 D.R.M.C. and any determinations made by the City pursuant thereto. In the event a covered worker falls under both ordinances, Contractor shall pay the greater of the two rates.

8. APPLICABILITY OF LAWS

The Agreement between the Contractor and the City shall be deemed to have been made in the City and County of Denver, State of Colorado and shall be subject to, governed by, and interpreted and construed by or in accordance with the laws of the State of Colorado and the Charter, Revised Municipal Code, Rules, Regulations, Executive Orders and fiscal rules of the City. As such, the Contractor shall at all times comply with the provisions of the Charter, Revised Municipal Code, Rules, Regulations, Executive Orders and fiscal rules of the City, and those State of Colorado and Federal Laws, Rules and Regulations, which in any manner limit, control or apply to the actions or operations of the Contractor, any subcontractors, employees, agents or servants of the Contractor engaged in the Work or affecting the materials and equipment used in the performance of the Work, as the same may be, from time to time, promulgated, revised or amended. The Charter and Revised Municipal Code of the City and County of Denver, as the same may be amended from time to time, are hereby expressly incorporated into this Agreement as if fully set out herein by this reference.

9. APPROPRIATION

The amount of money, which has been appropriated and encumbered for the purpose of this contract, to date, is equal to or in excess of the Contract Amount. The Manager, upon reasonable written request, will advise the Contractor in writing of the total amount of appropriated and encumbered funds, which remain available for payment for all Work under the Contract.

The issuance of any change order or other form or order or directive by the City which would cause the aggregate payable under the contract to exceed the amount appropriated for the contract is expressly prohibited. In no event shall the issuance of any change order or other form of order or directive by the City be considered valid or binding if it requires additional compensable work to be performed, which work will cause the aggregate amount available under the Contract to exceed the amount appropriated and encumbered for this Contract, unless and until such time as the Contractor has been advised in writing by the Manager that a lawful appropriation, sufficient to cover the entire cost of such additional work, has been made.

It shall be the responsibility of the Contractor to verify that the amounts already appropriated for this Contract are sufficient to cover the entire cost of such work, and any work undertaken or performed in excess of the amount appropriated is undertaken or performed in violation of the terms of this contract, without the proper authorization for such work, and at the Contractor's own risk.

10. APPROVALS

In the event this Contract calls for the payment by the City of five hundred thousand dollars (\$500,000.00) or more, approval by the Board of Councilmen of the City and County of Denver, acting by ordinance, in accordance with Section 3.2.6 of the Charter of the City and County of Denver, is and shall be an express condition precedent to the lawful and binding execution and effect and performance of this contract.

11. ASSIGNMENT

The Contractor shall not assign any of its rights, benefits, obligations or duties under this Contract except upon the prior written consent and approval of the Manager to such assignment.

12. DISPUTES RESOLUTION PROCESS

It is the express intention of the parties to this Contract that all disputes of any nature whatsoever regarding the Contract including, but not limited to, any claims for compensation or damages arising out of breach or default under this Contract, shall be resolved by administrative hearing pursuant to the provisions of Section 56-106, D.R.M.C., or, as applicable, Section 28-69 D.R.M.C. for Minority and Women-Owned Business Enterprise disputes. The Contractor expressly agrees that this dispute resolution process is the only dispute resolution mechanism that will be recognized by the parties for any claims put forward by the Contractor, notwithstanding any other claimed theory of entitlement on the part of the Contractor or its subcontractors or suppliers.

13. CONTRACT BINDING

It is agreed that this Contract shall be binding on and inure to the benefit of the parties hereto, their heirs, executors, administrators, assigns and successors.

14. PARAGRAPH HEADINGS

The captions and headings set forth herein are for convenience of reference only and shall not be construed so as to define or limit the terms and provisions hereof.

15. SEVERABILITY

It is understood and agreed by the parties hereto that, if any part, term, or provision of this Contract, except for the provisions of this Contract requiring prior appropriation and limiting the total amount to be paid by the City, is by the courts held to be illegal or in conflict with any law of the State of Colorado, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular part, term or provision held to be invalid.

16. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS

Contractor consents to the use of electronic signatures by the City. The Agreement, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Agreement in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Contract Control Number: DOTI-202056263-00
Contractor Name: SEMA CONSTRUCTION, INC.

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of:

SEAL

CITY AND COUNTY OF DENVER:

ATTEST:

By:

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

Attorney for the City and County of Denver

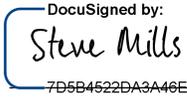
By:

By:

By:

Contract Control Number:
Contractor Name:

DOTI-202056263-00
SEMA CONSTRUCTION, INC.

By:  _____
7D5B4522DA3A48E...

Name: Steve Mills
(please print)

Title: Corporate V.P., Contracts
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)

**STANDARD SPECIFICATIONS FOR CONSTRUCTION
GENERAL CONTRACT CONDITIONS**

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CITY AND COUNTY OF DENVER
SPECIAL CONTRACT CONDITIONS

SC-1 CONSTRUCTION SPECIFICATIONS

Except as amended herein or in the attached Technical Specifications, all Work performed under the terms of this Contract shall be governed by the applicable provisions of the following latest editions:

City and County of Denver:

Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS,
(2011 Edition)

Transportation Standards and Details for the Engineering Division

City and County of Denver Traffic Standard Drawings

Wastewater Capital Projects Management

<https://www.denvergov.org/content/denvergov/en/wastewater-management/capital-projects-management.html>

Colorado Department of Transportation:

Standard Specifications for Road and Bridge Construction
(Sections 200 through 700 of the 2019 Edition)

Federal Highway Administration:

Manual on Uniform Traffic Control Devices for Streets & Highways (MUTCD)

Building & Fire Codes:

Building Code of the City and County of Denver

(International Building Code 2018 Series, City and County of Denver Amendments 2019)

<https://www.denvergov.org/content/denvergov/en/denver-development-services/help-me-find/building-codes-and-policies.html>

National Fire Protection Association Standards

(As referenced in the Building Code of the City and County of Denver)

The aforementioned City and County of Denver documents are available for review at the Capital Projects Management Office, 201 W. Colfax Ave., Dept. 506, (5th floor), Denver, CO 80202. The *Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS* is available at: <https://www.denvergov.org/content/denvergov/en/contract-administration/contractor-resources.html> *Transportation Standards and Details for the Engineering Division* and the Wastewater Management Division – *Standard Detail Drawings*, are available at <http://www.denvergov.org>.

The “*Colorado Department of Transportation Standard Specifications for Road and Bridge Construction*” is available for review on CDOT’s website at <http://www.coloradodot.info/> and can be purchased from the Colorado Department of Transportation.

The *Manual on Uniform Traffic Control Devices for Streets & Highways* is available for review at the Federal Highway Administration Website at: www.fhwa.dot.gov, The FHWA website also contains purchasing information.

SC-2 DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE (REPLACES GENERAL CONTRACT CONDITION 203)

As of January 1, 2020, the functions of Public Works are housed in the new Department of Transportation and Infrastructure. For purposes of this Contract all references (including, but not limited to, references appearing in the body of the contract, General Conditions, Special Conditions, Exhibits, Contract Documents or Policies and Procedures) to the Department of Public Works will have the same meaning as the Department of Transportation and Infrastructure.

Vested exclusively in the Department of Transportation and Infrastructure is the management and control of the design and construction of general and local public improvements undertaken by the City and County of Denver, except for: (i) work which is under the management and control of the Department of Aviation; (ii) that work performed by the Denver Board of Water Commissioners; (iii) any such work that the Mayor has specifically assigned to another department or agency; and (iv) work under the authority of the Department of Transportation and Infrastructure that is performed with the permission of the Manager of Transportation and Infrastructure by private entities at their own expense.

SC-3 MANAGER OF DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE (REPLACES GENERAL CONTRACT CONDITION 204)

General Condition 204 "Manager of Public Works" is hereby deleted in its entirety and replaced with the following:

As of January 1, 2020, the functions of Public Works are housed in the new Department of Transportation and Infrastructure. The Manager of Public Works / Executive Director of Public Works will become the Executive Director of Transportation and Infrastructure. Manager of Public Works, Executive Director of Public Works, Executive Director of Transportation and Infrastructure and Manager of Transportation and Infrastructure will have the same meaning for purposes of this Agreement.

SC-4 DEPUTY MANAGER / CITY ENGINEER

General condition 109 DEPUTY MANAGER is hereby deleted in its entirety and replaced with the following:

The "Deputy Manager" means the official who reports directly to the Manager and exercises supervisory responsibility in the City agency defined in Title 2 herein that is responsible for the Project. The Manager hereby designates the City Engineer as the Deputy Manager for purposes of this Contract. The City Engineer shall have responsibility for this Project and shall undertake all duties, responsibilities, rights and authority, including specific actions and decisions, delegated to the Deputy Manager under the various terms and conditions of this Contract.

SC-5 PROJECT DELIVERY ADMINISTRATION / CITY ENGINEER

Project Delivery Administration is a division of the Department of Transportation and Infrastructure and is supervised by the City Engineer, who is subordinate to the Manager of Transportation and Infrastructure. This Division is responsible for the planning, design, construction, operation and maintenance of all of the City's transportation facilities and the planning, design and construction of all of the City's wastewater facilities, except for the City's Municipal Airport System. All other references to the Transportation Division or the Deputy Manager of Public Works are deleted and replaced with references to the Engineering Division and the City Engineer, respectively.

SC-6 [RESERVED]**SC-7 CITY DELEGATION OF AUTHORITY**

With reference to General Contract Condition 109, DEPUTY MANAGER and General Contract Condition 212, CITY'S CONTRACT ADMINISTRATION LINE OF AUTHORITY, the Manager hereby designates the City Engineer as the City official responsible for those certain actions and decisions designated as the responsibility of the Deputy Manager under the General Conditions and delegates to the City Engineer the authority necessary to undertake those responsibilities under this Contract. The City Engineer shall have supervisory responsibility over the Project Manager. Additionally, Contractor questions concerning the Plans and Technical Specifications shall be directed to:

Department of Transportation and Infrastructure:Project Manager

Kevin Rens

Telephone

720.865.3151

Consultant

David Evans and Associates, Inc.

Name

Cody Keraga

Telephone

720.225.4684

SC-8 LIQUIDATED DAMAGES

Should the Contractor fail to complete all Work within the Contract Time allocated under the Contract Form at Paragraph 3, TERMS OF PERFORMANCE, the Contractor shall become liable to the City and County of Denver for liquidated damages, and not as a penalty, at the rate of **\$3,300.00** for each Day that the Contractor exceeds the time limits herein specified, all in accordance with provisions of General Contract Condition 602, LIQUIDATED DAMAGES; ADMINISTRATIVE COSTS; ACTUAL DAMAGES.

Representative hourly rates for the City administrative costs described in General Contract Condition 602.2 shall be as follows for this Project:

Project Manager	\$69 per hour
Project Engineer	\$63 per hour
Inspector	\$49 per hour
Surveying, if necessary	\$100 per hour

SC-9 SUBCONTRACTS

In accordance with General Contract Condition 501, SUBCONTRACTS, no limit shall apply to that percentage of the Work, which may be sublet providing that the subcontractors receive prior approval in accordance with General Contract Condition 502, SUBCONTRACTOR ACCEPTANCE.

SC-10 PAYMENTS TO CONTRACTORS

The application for payment shall be submitted through Textura® Corporations Construction Management Website. Contractor recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System ("Textura") for this Project to request payment from the City and to pay all first tier subcontractors and suppliers and further record payment to all certified subcontractors or suppliers that are listed for participation towards any assigned SMWDBE program goal. Contractor further agrees that, to the fullest extent possible within Textura, the City shall be entitled to all non-Confidential records, reports, data and other information related to the project that are available to Contractor through Textura, including, but not limited to, information related to Contractor and subcontractor billings. To that end, Contractor agrees it will activate any available settings within Textura necessary to grant the City access to

such non-Confidential information related to the contract and the project. Applications for payment shall be based on the Contract Unit Prices or the approved Schedule of Values described in GC 903.1

In accordance with General Contract Condition 902, PAYMENT PROCEDURE, the party(ies) responsible for review of all Pay Applications shall be:

<u>Agency/Firm</u>	<u>Name</u>	<u>Telephone</u>
Department of Transportation and Infrastructure	Kevin Rens	720.865.3151

In accordance with General Contract Condition 906, APPLICATIONS FOR PAYMENT, each Application submitted shall include the following:

1. The estimate of Work completed shall be based on the approved schedule of values or unit prices, as applicable, and the percent of the Work complete.
2. Each Application for Payment shall include each and every independent subcontractor's payroll information including pay dates and pay amounts.
3. The Contractor, and its subcontractors of all tiers who have performed work, shall also submit to the Auditor and other appropriate officials of the City prior to submitting the payment application, information required by General Contract Condition 1004, REPORTING WAGES PAID.
4. Starting with the second payment application, the payment applications shall be accompanied by a completed Contractors' Certification of Payment Form (CCP), listing all first tier subcontractors and suppliers and all certified subcontractors or suppliers that are listed for participation towards any assigned SMWDBE program goal. The final payment application must be accompanied by an executed Final Claim Release Form and Certificate of Contract Release Form from the Contractor.

The forms, Final Release and Certificate of Payment (Subcontractor/Supplier) and the Contractor's Certification of Payment (CCP), both of which must be used are attached below. If subcontractor or supplier payments are disbursed via Textura® CPM, those systems generated Release and CCP forms are acceptable.

Title 20, 2003 Final Settlement, section .2, item F is modified to read as follows:

F. At time of request for final payment, Contractor shall submit a complete and final, unconditional waiver or release of any and all lien and claim rights for all labor, equipment, and material used or furnished to complete the Work in the form and format generated within the Textura CPM system. Contractor shall also return an executed Certificate of Contract Release (below), upon request from the City.

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DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE

**FINAL RELEASE AND CERTIFICATE OF PAYMENT
(PRIME CONTRACTOR)**

(PROJECT NO. and NAME)

Date: _____, 20__.

(NAME OF OWNER)

Contract #: _____.

(NAME OF PRIME CONTRACTOR)

Contract Value: \$ _____.

Current Progress Payment: \$ _____.

Date: _____.

Total Paid to Date: \$ _____.

Date of Last Work: _____.

The Undersigned hereby certifies that all costs, charges or expenses incurred by the undersigned or on behalf of the undersigned for any work, labor or services performed and for any materials, supplies or equipment provided on the above referenced Project or used in connection with the above referenced Subcontract (the "Work Effort") have been duly paid in full.

The Undersigned further certifies that each of the undersigned's subcontractors and suppliers that incurred or caused to be incurred, on their behalf, costs, charges or expenses in connection with the undersigned's Work Effort on the above referenced Project have been duly paid in full.

In consideration of \$ _____ representing the Current Progress Payment referenced above and in further consideration of the Total Paid to Date, also referenced above, and other good and valuable consideration received and accepted by the undersigned this ____ day of _____, 20__, the Undersigned hereby releases and discharges the City and County of Denver (the "City"), the above referenced City Project, the City's premises and property and the above referenced Contractor from all claims, liens, rights, liabilities, demands and obligations, whether known or unknown, of every nature arising out of or in connection with the performance of the work effort.

As additional consideration for the payments referenced above, the undersigned agrees to defend, indemnify and save and hold harmless the City, its officers, employees, agents and assigns and the above-referenced Contractor from and against all costs, losses, damages, causes of action, judgments under the subcontract and expenses arising out of or in connection with any claim or claims against the City or the Contractor which arise out of the Undersigned's performance of the Work Effort and which may be asserted by the Undersigned or any of its suppliers or subcontractors of any tier or any of their representatives, officers, agents, or employees.

It is acknowledged that this release is for the benefit of and may be relied upon by the City and the referenced Contractor.

The foregoing shall not relieve the undersigned of any obligation under the provisions of the Undersigned's subcontract, as the subcontract may have been amended, which by their nature survive completion of the Undersigned's work effort including, without limitation, warranties, guarantees, insurance requirements and indemnities.

STATE OF COLORADO) ss.
CITY OF _____)

(Name of Contractor)

Signed and sworn before me this
day of _____, 20__.

By: _____

Notary Public/Commissioner of Oaths
My Commission Expires

Title: _____

SC-11 CONTRACT FORMS

In accordance with the terms and conditions of the Contract Documents, the City requires the use of certain form documents in complying with or satisfying various obligations, notifications and conditions in contracting with the City or performing Work hereunder. These form documents are referenced by title throughout the Contract Documents for mandatory use as directed. The following are the forms that shall be detached and utilized in accordance with the Contract Documents:

1. Performance and Payment Bond
2. Performance and Payment Bond Surety Authorization Letter (Sample)
3. Final Release and Certificate of Payment
4. Certificate of Contract Release, if requested by the City

The following are forms that will be issued by the City during construction:

1. Notice to Apparent Low Bidder (Sample)
2. Notice To Proceed (Sample)
3. Certificate of Contract Release (Sample)

SC-12 CONSTRUCTION INSPECTION BY THE CITY

General Condition 1701, CONSTRUCTION INSPECTION BY THE CITY, is modified as follows:

1701.1 Persons who are employees of the City or who are under contract to the City or the City as lessee will be assigned to inspect and test the Work. These persons may perform any tests and observe the Work to determine whether or not designs, materials used, manufacturing and construction processes and methods applied, and equipment installed satisfy the requirements of the drawings and specifications, accepted Shop Drawings, Product Data and Samples, and the General Contractor's warranties and guarantees. The General Contractor shall permit these inspectors unlimited access to the Work and provide means of safe access to the Work, which cost shall be included as a Cost of the Work without any increase to the Guaranteed Maximum Price. In addition, General Contractor shall provide whatever access and means of access are needed to off-site facilities used to store or manufacture materials and equipment to be incorporated into the Work and shall respond to any other reasonable request to further the inspector's ability to observe or complete any tests. Such inspections shall not relieve the General Contractor of any of its quality control responsibilities or any other obligations under the Contract. All inspections and all tests conducted by the City are for the convenience and benefit of the City. These inspections and tests do not constitute acceptance of the materials or Work tested or inspected, and the City may reject or accept any Work or materials at any time prior to the inspections pursuant to G.C. 2002, whether or not previous inspections or tests were conducted by the inspector or a City representative.

.2 Building Inspection will perform building code compliance inspections for structures designed for human occupancy. It is the General Contractor's responsibility to schedule and obtain these inspections. If a code compliance inspection results in identification of a condition which will be at variance to the Contract Documents, the General Contractor shall immediately notify the Project Manager and confirm such notification with formal correspondence no later than forty-eight (48) hours after the occurrence.

.3 When any unit of government or political subdivision, utility or railroad corporation is to pay a portion of the cost of the Work, its respective representatives shall have the right to inspect the Work. This inspection shall not make any unit of government or political subdivision, utility or railroad corporation a party to the Contract, and shall not interfere with the rights of either party.

SC-13 DISPOSAL OF NON-HAZARDOUS WASTE AT DADS

In accordance with the Landfill Agreement made between the City and Waste Management of Colorado, Inc., bidders will be required to haul dedicated loads (non-hazardous entire loads of waste) to the Denver-Arapahoe Disposal Site (“DADS”) for disposal. DADS is located at Highway 30 and Hampden Avenue in Arapahoe County, Colorado. The City will pay all fees associated with such disposal but the bidder shall be responsible for the costs of transporting the loads. Non-hazardous waste is defined as those substances and materials not defined or classified as hazardous by the Colorado Hazardous Waste Commission pursuant to C.R.S. §25-15-101(6), as amended from time to time, and includes construction debris, soil and asbestos. Bidders shall not use Gun Club Road between I-70 and Mississippi Avenue as a means of access to DADS.

SC-14 PROHIBITION ON USE OF CCA-TREATED WOOD PRODUCTS

The use of any wood products pressure-treated with chromated copper arsenate (CCA) is prohibited. Examples of CCA-treated wood products include wood used in play structures, decks, picnic tables, landscaping timbers, fencing, patios, walkways and boardwalks.

SC-15 WAIVER OF: PART 8 OF ARTICLE 20 OF TITLE 13, COLORADO REVISED STATUTES

The Contractor specifically waives all the provisions of Part 8 of Article 20 of Title 13, Colorado Revised Statutes regarding defects in the Work under this Construction Contract.

SC-16 ATTORNEY’S FEES

Colorado Revised Statute 38-26-107 requires that in the event any person or company files a verified statement of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to the Contractor sufficient funds to insure the payment of any such claims. Should the City and County of Denver be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, the Contractor agrees to pay to the City its costs and a reasonable attorney’s fee which cost shall be included as a Cost of the Work.

Because the City Attorney Staff does not bill the City for legal services on an hourly basis, the Contractor agrees a reasonable fee shall be computed at the rate of one hundred dollars per hour of City Attorney time.

SC-17 INSURANCE

General Condition 1601 is hereby deleted in its entirety and replaced with the following:

(1) General Conditions: Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, or any extension thereof, during any warranty period, and for eight (8) years after termination of the Agreement. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as “A-”VIII or better. Each policy shall contain a valid provision or endorsement requiring notification to the City in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the parties identified in the Notices section of this Agreement. Such notice shall reference the City contract number listed on the signature page of this Agreement. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the parties identified in the Notices section by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s) and referencing the City’s contract number. If any policy is in excess of a deductible or self-insured retention, the City must be notified by the Contractor. Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum

requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

(2) Proof of Insurance: Contractor shall provide a copy of this Agreement to its insurance agent or broker. Contractor may not commence services or work relating to the Agreement prior to placement of coverage. Contractor certifies that the certificate of insurance attached as part of the Contract Documents, preferably an ACORD certificate, complies with all insurance requirements of this Agreement. The City requests that the City's contract number be referenced on the Certificate. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's Risk Management Office may require additional proof of insurance, including but not limited to policies and endorsements.

(3) Additional Insureds: For Commercial General Liability, Auto Liability and Contractors Pollution Liability, Contractor and subcontractor's insurer(s) shall name the City and County of Denver, its elected and appointed officials, employees and volunteers as additional insured.

(4) Waiver of Subrogation: For all coverages, Contractor's insurer shall waive subrogation rights against the City.

(5) Subcontractors and Subconsultants: All subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) shall be subject to all of the requirements herein and shall procure and maintain the same coverages required of the Contractor. Contractor shall include all such subcontractors as additional insured under its policies (with the exception of Workers' Compensation) or shall ensure that all such subcontractors and subconsultants maintain the required coverages. Contractor agrees to provide proof of insurance for all such subcontractors and subconsultants upon request by the City.

(6) Workers' Compensation/Employer's Liability Insurance: Contractor shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims. Contractor expressly represents to the City, as a material representation upon which the City is relying in entering into this Agreement, that none of the Contractor's officers or employees who may be eligible under any statute or law to reject Workers' Compensation Insurance shall effect such rejection during any part of the term of this Agreement, and that any such rejections previously effected, have been revoked as of the date Contractor executes this Agreement.

(7) Commercial General Liability: Contractor shall maintain a Commercial General Liability insurance policy with limits of \$1,000,000 for each occurrence, \$1,000,000 for each personal and advertising injury claim, \$2,000,000 products and completed operations aggregate, and \$2,000,000 policy aggregate.

(8) Business Automobile Liability: Contractor shall maintain Business Automobile Liability with limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement.

(9) Additional Provisions:

- (a) For Commercial General Liability, the policies must provide the following:
 - (i) That this Agreement is an Insured Contract under the policy;
 - (ii) Defense costs in excess of policy limits;

- (iii) A severability of interests or separation of insureds provision (no insured vs. insured exclusion); and
 - (iv) A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City.
- (b) For claims-made coverage:
- (i) The retroactive date must be on or before the contract date or the first date when any goods or services were provided to the City, whichever is earlier.
- (c) Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage is in force.

SC-18 GREENPRINT DENVER REQUIREMENTS

In accordance with the City and County of Denver Executive Order 123: Greenprint Denver Office and Sustainability Policy, as amended, Contractor shall adhere to sections of Executive Order 123 pertinent to the construction of the built environment. This includes but is not limited to: all construction and renovation of buildings shall follow instructions and memorandum for high performance buildings; horizontal projects shall include the use of fly ash concrete and recycled aggregate where possible; and, all projects shall recycle construction and demolition waste, and install materials that contain recycled content whenever possible using the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) as guidance. Non-hazardous solid waste that is eligible for reuse or recycling is not subject to the DADS disposal requirement defined in SC-13.

A completed “Greenprint Denver Closeout Form for Construction Projects” shall be delivered to the Project Manager as a submittal requirement of Final Acceptance.

<https://www.denvergov.org/content/denvergov/en/contract-administration/contractor-resources.html>

SC-19 RESERVED

SC-20 DEFENSE AND INDEMNIFICATION

Title 1602 is hereby deleted in its entirety and replaced with the following:

- (a) To the fullest extent permitted by law, the Contractor hereby agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees for, from and against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, resulting from, or related to the work performed under this Agreement that are due to the negligence or fault of the Contractor or the Contractor’s agents, representatives, subcontractors, or suppliers (“Claims”). This indemnity shall be interpreted in the broadest possible manner consistent with the applicable law to indemnify the City.
- (b) Contractor’s duty to defend and indemnify City shall arise at the time written notice of the Claim is first provided to City regardless of whether suit has been filed and even if Contractor is not named as a Defendant.
- (c) Contractor will defend any and all Claims which may be brought or threatened against City and will pay on behalf of City any expenses incurred by reason of such Claims including, but not limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation. Such payments on behalf of City shall be in addition to any other legal remedies available to City and shall not be considered City’s exclusive remedy.

- (d) Insurance coverage requirements specified in this Agreement shall in no way lessen or limit the liability of the Contractor under the terms of this indemnification obligation. The Contractor shall obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.
- (e) This defense and indemnification obligation shall survive the expiration or termination of this Agreement.

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**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

Bond No. K4022175A / 9355780

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned **SEMA CONSTRUCTION, INC., 7353 S Eagle St., Centennial, CO 80112**, a corporation organized and existing under and by virtue of the laws of the State of Colorado, hereafter referred to as the "Contractor", and Federal Insurance Company / Fidelity and Deposit Company of Maryland, a corporation organized and existing under and by virtue of the laws of the State of IN / IL, and authorized to transact business in the State of Colorado, as Surety, are held and firmly bound unto the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado, hereinafter referred to as the "City", in the penal sum of **Two Million Seven Hundred Ninety-Nine Thousand Nine Hundred Ninety-Two Dollars and Sixty-One Cents (\$2,799,992.61)**, lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves and our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents;

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bounden Contractor has entered into a written contract with the aforesaid City for furnishing all labor and tools, supplies, equipment, superintendence, materials and everything necessary for and required to do, perform and complete the construction of **Contract No. 202056263 - 48th Avenue Viaduct Rehabilitation**, Denver, Colorado, and has bound itself to complete the project within the time or times specified or pay liquidated damages, all as designated, defined and described in the said Contract and Conditions thereof, and in accordance with the Plans and Technical Specifications therefore, a copy of said Contract being made a part hereof;

NOW, THEREFORE, if the said Contractor shall and will, in all particulars well and truly and faithfully observe, perform and abide by each and every Covenant, Condition and part of said Contract, and the Conditions, Technical Specifications, Plans, and other Contract Documents thereto attached, or by reference made a part thereof and any alterations in and additions thereto, according to the true intent and meaning in such case, then this obligation shall be and become null and void; otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor shall satisfy all claims and demands incurred by the Contractor in the performance of said Contract, and shall fully indemnify and save harmless the City from all damages, claims, demands, expense and charge of every kind (including claims of patent infringement) arising from any act, omission, or neglect of said Contractor, its agents, or employees with relation to said work; and shall fully reimburse and repay to the City all costs, damages, and expenses which it may incur in making good any default based upon the failure of the Contractor to fulfill its obligation to furnish maintenance, repairs or replacements for the full guarantee period provided in the Contract Documents, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if said Contractor shall at all times promptly make payments of all amounts lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental machinery, tools or equipment used or performed in the prosecution of work provided for in the above Contract and that if the Contractor will indemnify and save harmless the City for the extent of any and all payments in connection with the carrying out of such Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other supplies or materials used or consumed by said Contractor or its subcontractors in performance of the work contracted to be done, or fails to pay any person who supplies rental machinery, tools or equipment, all amounts due as the result of the use of such machinery, tools or equipment in the prosecution of the work, the Surety will pay the same in any amount not exceeding the amount of this obligation, together with interest as provided by law;

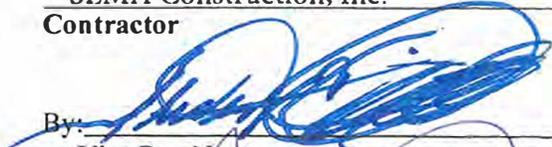
PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications and Plans accompanying the same, shall in any way affect its obligation on this bond and it does hereby waive notice of any change, extension of time, alteration or addition to the terms of the Contract, or contracts, or to the work, or to the Technical Specifications and Plans.

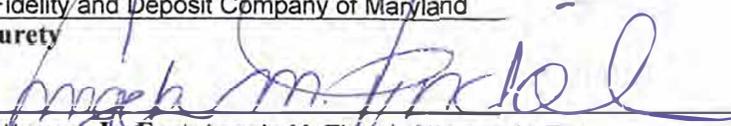
IN WITNESS WHEREOF, said Contractor and said Surety have executed these presents as of this _____ day of _____, 20_____

Attest:

Secretary

SEMA Construction, Inc.
Contractor

By: 
Vice President Steven C. Mills
Federal Insurance Company
Fidelity and Deposit Company of Maryland
Surety

By: 
Attorney-In-Fact Angela M. Tindol, Attorney-in-Fact

(Accompany this bond with Attorney-in-Fact's authority from the Surety to execute bond, certified to include the date of the bond).

APPROVED AS TO FORM:
Attorney for the City and County of Denver

Signature by the CAO will be provided later
By: _____ and fully incorporated herein.
Assistant City Attorney

APPROVED FOR THE CITY AND COUNTY OF
DENVER

Signature by the Mayor will be provided later
By: _____ and fully incorporated herein.
MAYOR

Signature by the ED will be provided later
By: _____ and fully incorporated herein.
**EXECUTIVE DIRECTOR OF THE DEPARTMENT
OF TRANSPORTATION AND INFRASTRUCTURE**



Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Know All by These Presents, That FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, and PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, do each hereby constitute and appoint Stephanie Logan and Judith Munson of Phoenix, Arizona; Anuj Jain, Charles M. McDaniel, Angela M. Tindol and Mona D. Weaver of Greenwood Village, Colorado -----

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any Instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY have each executed and attested these presents and affixed their corporate seals on this 22nd day of July, 2019.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney

Stephen M. Haney, Vice President



STATE OF NEW JERSEY

County of Hunterdon

On this 22nd day of July, 2019, before me, a Notary Public of New Jersey, personally came Dawn M. Chloros, to me known to be Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros, being by me duly sworn, did depose and say that she is Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that she signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that she is acquainted with Stephen M. Haney, and knows him to be Vice President of said Companies; and that the signature of Stephen M. Haney, subscribed to said Power of Attorney is in the genuine handwriting of Stephen M. Haney, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal



KATHERINE J. ADELAAR
NOTARY PUBLIC OF NEW JERSEY
No. 2316685
Commission Expires July 16, 2024

Katherine J. Adelaar
Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this



Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail surety@chubb.com

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by **Robert D. Murray**, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint, **Anuj JAIN, Mona D. WEAVER, Angela M. TINDOL, Judith MUNSON, Stephanie LOGAN and Kathryn E. KADE, of Greenwood Village, Colorado**, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons. The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 22nd day of July A.D. 2020.



ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: *Robert D. Murray*
Vice President

By: *Dawn E. Brown*
Secretary

**State of Maryland
County of Baltimore**

On this 22nd day of July, 2020, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.



Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8. of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this _____ day of _____, _____.



Brian M. Hodges, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsfclaims@zurichna.com
800-626-4577



**PERFORMANCE AND PAYMENT BOND
SURETY AUTHORIZATION**

FAX NUMBER: 720-913-3183
TELEPHONE NUMBER: 720-913-3267

Assistant City Attorney
201 W. Colfax Ave. Dept 1207
Denver, Colorado 80202

RE: SEMA CONSTRUCTION, INC.

Contract No: 202056263
Project Name: 48th Avenue Viaduct Rehabilitation
Contract Amount: \$2,799,992.61
Performance and Payment Bond No.: K4022175A / 9355780

Dear Assistant City Attorney,

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through Federal Insurance Company / Fidelity and Deposit Company of Maryland insurance company, on January 5, 2021.

We hereby authorize the City and County of Denver, the Department of Transportation the Infrastructure, to date all bonds and powers of attorney to coincide with the date of the contract.

If you should have any additional questions or concerns, please don't hesitate to give me a call at 303-915-0219.

Thank you.

Sincerely,

Alliant Insurance Services, Inc.



Angela M. Tindol
Account Manager - Lead

City and County of Denver Department of Transportation & Infrastructure
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dot

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NOTICE TO APPARENT LOW BIDDER

Name
Address
City, State Zip

The EXECUTIVE DIRECTOR OF THE DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE has considered the Bids submitted on **December 3, 2020**, for work to be done and materials to be furnished in and for:

CONTRACT 202056263 - 48th Avenue Viaduct Rehabilitation

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to the approval and execution of the Contract Documents by the City in accordance with the Charter of the City and County of Denver, and to your furnishing the items specified below. The award is based on the total bid items: **(#) bid items (# through #)** the total estimated cost thereof being: **(Contract Written Amount) (\$_____)**.

It will be necessary for you to appear forthwith at the office of the Department of Transportation and Infrastructure, Contract Administration, 201 W. Colfax Ave., Dept 614, Denver, Colorado 80202, to receive the said Contract Documents, execute the same and return them to the Department of Transportation and Infrastructure, Contract Administration within the time limit set forth in the Bid Package Documents.

In accordance with the requirements set forth in the Contract Documents, you are required to furnish the following documents:

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability; and,
- b. Payment and Performance Bond along with One original Power of Attorney relative to Performance and/or Payment Bond.

All construction Contracts made and entered into by the City and County of Denver are subject to Affirmative Action and Equal Opportunity Rules and Regulations, as adopted by the Manager of the Department of Transportation and Infrastructure, and each contract requiring payment by the City of one-half million dollars (\$500,000.00) or more shall first be approved by the City Council acting by ordinance and in accordance with Section 3.2.6 of the Charter of the City and County of Denver.

Prior to issuance of Notice to Proceed, all DSBO requirements must be completed. Additional information may be obtained by contacting the Director of DSBO at (720-913-1714).

NOTICE TO APPARENT LOW BIDDER

CONTRACT NO. 202056263

Page 2

The Bid Security submitted with your Bid, will be returned upon execution of the Contract and furnishing of the Performance Bond. In the event you should fail to execute the Contract and to furnish the performance Bond within the time limit specified, said Bid Security will be retained by the City and County of Denver as liquidated damages, and not as a penalty for the delay and extra work caused thereby.

Dated at Denver, Colorado this _____ day of _____ 20__.

CITY AND COUNTY OF DENVER

By _____
Executive Director of the Department of Transportation and Infrastructure

SAMPLE

City and County of Denver Department of Transportation & Infrastructure

201 West Colfax Avenue, Dept 608 | Denver, CO 80202

www.denvergov.org/doti

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**NOTICE TO PROCEED
(SAMPLE)**

Current Date

Name
Company
Street
City/State/Zip

CONTRACT NO. 202056263 - 48th Avenue Viaduct Rehabilitation

In accordance with General Contract Condition 302 of the Standard Specifications for Construction, General Contract Conditions, 2011 Edition, you are hereby authorized and directed to proceed on _____ with the work of constructing contract number 202056263, as set forth in detail in the contract documents for the City and County of Denver.

With a contract time of 180 calendar days, the project must be complete on or before _____.

If you have not already done so, you must submit your construction schedule, in accordance with General Contract Condition 306.2.B, to the Project Manager within 10 days. Additionally, you must submit your tax-exempt certificate, and copies of your subcontractors' certificates, in accordance with General Contract Condition 323.5, to the Project Manager as soon as possible. Failure to submit these certificates will delay processing of payment applications.

Sincerely,

By: _____
Lesley B. Thomas
City Engineer

cc:

City and County of Denver Department of Transportation & Infrastructure
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/doti

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Certificate of Contract Release
202056263 - 48th Avenue Viaduct Rehabilitation

Current Date
Name
Street Address
City, State, Zip

Upon receipt of the below stated amount from the City and County of Denver, as full and final payment of the cost of the improvements provided for in the foregoing contract, _____ dollars and _____ cents (\$ _____), in cash, being the remainder of the full amount accruing to the undersigned by virtue of said contract; said cash also covering and including full payment for the cost of all work, extra work and material furnished by the undersigned in the construction of said improvements, and all incidentals thereto, and the undersigned hereby releases said City and County of Denver from any and all claims or demands whatsoever, regardless of how denominated, growing out of said contract.

The Undersigned further certifies that each of the undersigned's subcontractors and suppliers that incurred or caused to be incurred, on their behalf, costs, charges or expenses in connection with the undersigned's Work effort on the above referenced Project have been duly paid in full. The undersigned further agrees to defend, indemnify and save and hold harmless the City, its officers, employees, agents and assigns and the above-referenced Contractor from and against all costs, losses, damages, causes of action, judgments under the subcontract and expenses arising out of or in connection with any claim or claims against the City or the Contractor which arise out of the Undersigned's performance of the Work effort and which may be asserted by the Undersigned or any of its suppliers or subcontractors of any tier or any of their representatives, officers, agents, or employees.

And these presents are to certify that all persons performing work upon or furnishing materials for said improvements under the foregoing contract have been paid in full and this payment to be made as described herein is the last or final payment.

Contractor's Signature

Date Signed

If there are any questions, please contact me by telephone at (###) ###-####. Please return this document to me via email at pw.procurement@denvergov.org.

Sincerely,

Contract Administration

City and County of Denver Department of Transportation & Infrastructure
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/doti

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CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE

Prevailing Wage Rates

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020



TO: All Users of the City and County of Denver Prevailing Wage Schedules
FROM: Ryland Feno, Classification & Compensation Technician II
DATE: January 06, 2020
SUBJECT: Latest Change to Prevailing Wage Schedules

Please be advised prevailing wage rates for some building, heavy, highway, and residential construction trades have not been updated by the United States Department of Labor (DOL) since March 1, 2002. The Career Service Board, in their meeting held on April 21, 2011, approved the use of the attached supplemental wage rates until prevailing wage rates for these classifications of work are again published by the United States Department of Labor in accordance with the Davis-Bacon Act.

The effective date for this publication will be **Friday, January 03, 2020** and applies to the City and County of Denver for **HIGHWAY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO20200009
Superseded General Decision No. CO20190009
Modification No. 0
Publication Date: 01/03/2020
(6 pages)

Unless otherwise specified in this document, apprentices shall be permitted only if they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor (DOL). The employer and the individual apprentice must be registered in a program which has received prior approval by the DOL. Any employer who employs an apprentice and is found to be in violation of this provision shall be required to pay said apprentice the full journeyman scale.

Attachments as listed above.

***Career Service Board approved to adjust all Davis Bacon classifications under \$13.00 to comply with the city's minimum wage. The effective date is August 15, 2019. See page 7 for reference.**

Office of Human Resources
201 W. Colfax Ave. Dept. 412 | Denver, CO 80202
p: 720.913.5751 | f: 720.913.5720
www.denvergov.org/humanresources

"General Decision Number: CO20200009 01/03/2020

Superseded General Decision Number: CO20190009

State: Colorado

Construction Type: Highway

Counties: Denver and Douglas Counties in Colorado.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020

* CARP9901-008 11/01/2019

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 26.50	10.32

ELEC0068-016 03/01/2011		

	Rates	Fringes
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TRAFFIC SIGNALIZATION:

Traffic Signal Installation

Zone 1.....	\$ 26.42	4.75%+8.68
Zone 2.....	\$ 29.42	4.75%+8.68

TRAFFIC SIGNAL INSTALLER ZONE DEFINITIONS

Zone 1 shall be a 35 mile radius, measured from the following addresses in each of the following cities:

- Colorado Springs - Nevada & Bijou
- Denver - Ellsworth Avenue & Broadway
- Ft. Collins - Prospect & College
- Grand Junction - 12th & North Avenue
- Pueblo - I-25 & Highway 50

All work outside of these areas shall be paid Zone 2 rates.

 ENGI0009-008 05/01/2018

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
(3)-Hydraulic Backhoe (Wheel Mounted, under 3/4 yds), Hydraulic Backhoe (Backhoe/Loader combination), Drill Rig Caisson (smaller than Watson 2500 and similar), Loader (up to and including 6 cu. yd.).....	\$ 28.25	10.70
(3)-Loader (under 6 cu. yd.) Denver County.....	\$ 28.25	10.70
(3)-Motor Grader (blade- rough) Douglas County.....	\$ 28.25	10.70
(4)-Crane (50 tons and under), Scraper (single bowl, under 40 cu. yd).....	\$ 28.40	10.70
(4)-Loader (over 6 cu. yd) Denver County.....	\$ 28.40	10.70
(5)-Drill Rig Caisson (Watson 2500 similar or larger), Crane (51-90 tons), Scraper (40 cu.yd and over),.....	\$ 28.57	10.70
(5)-Motor Grader (blade- finish) Douglas County.....	\$ 28.57	10.70
(6)-Crane (91-140 tons).....	\$ 29.55	10.70

 SUCO2011-004 09/15/2011

	Rates	Fringes
CARPENTER (Excludes Form Work)...	\$ 19.27	5.08
CEMENT MASON/CONCRETE FINISHER		
Denver.....	\$ 20.18	5.75
Douglas.....	\$ 18.75	3.00
ELECTRICIAN (Excludes Traffic Signal Installation).....	\$ 35.13	6.83
FENCE ERECTOR (Excludes Link/Cyclone Fence Erection).....	\$ 13.02	3.20
GUARDRAIL INSTALLER.....	\$ 12.89	3.20
HIGHWAY/PARKING LOT STRIPING:Painter		
Denver.....	\$ 12.62	3.21
Douglas.....	\$ 13.89	3.21
IRONWORKER, REINFORCING (Excludes Guardrail Installation).....	\$ 16.69	5.45
IRONWORKER, STRUCTURAL (Includes Link/Cyclone Fence Erection, Excludes Guardrail Installation).....	\$ 18.22	6.01
LABORER		
Asphalt Raker.....	\$ 16.29	4.25
Asphalt Shoveler.....	\$ 21.21	4.25
Asphalt Spreader.....	\$ 18.58	4.65
Common or General		
Denver.....	\$ 16.76	6.77
Douglas.....	\$ 16.29	4.25
Concrete Saw (Hand Held)....	\$ 16.29	6.14
Landscape and Irrigation....	\$ 12.26	3.16
Mason Tender- Cement/Concrete		
Denver.....	\$ 16.96	4.04
Douglas.....	\$ 16.29	4.25
Pipelayer		
Denver.....	\$ 13.55	2.41
Douglas.....	\$ 16.30	2.18
Traffic Control (Flagger)...	\$ 9.55	3.05
Traffic Control (Sets Up/Moves Barrels, Cones,		

Install Signs, Arrow Boards and Place Stationary Flags)(Excludes Flaggers).....	\$ 12.43	3.22
PAINTER (Spray Only).....	\$ 16.99	2.87
POWER EQUIPMENT OPERATOR:		
Asphalt Laydown		
Denver.....	\$ 22.67	8.72
Douglas.....	\$ 23.67	8.47
Asphalt Paver		
Denver.....	\$ 24.97	6.13
Douglas.....	\$ 25.44	3.50
Asphalt Roller		
Denver.....	\$ 23.13	7.55
Douglas.....	\$ 23.63	6.43
Asphalt Spreader.....	\$ 22.67	8.72
Backhoe/Trackhoe		
Douglas.....	\$ 23.82	6.00
Bobcat/Skid Loader.....	\$ 15.37	4.28
Boom.....	\$ 22.67	8.72
Broom/Sweeper		
Denver.....	\$ 22.47	8.72
Douglas.....	\$ 22.96	8.22
Bulldozer.....	\$ 26.90	5.59
Concrete Pump.....	\$ 21.60	5.21
Drill		
Denver.....	\$ 20.48	4.71
Douglas.....	\$ 20.71	2.66
Forklift.....	\$ 15.91	4.68
Grader/Blade		
Denver.....	\$ 22.67	8.72
Guardrail/Post Driver.....	\$ 16.07	4.41
Loader (Front End)		
Douglas.....	\$ 21.67	8.22
Mechanic		
Denver.....	\$ 22.89	8.72
Douglas.....	\$ 23.88	8.22
Oiler		
Denver.....	\$ 23.73	8.41
Douglas.....	\$ 24.90	7.67
Roller/Compactor (Dirt and Grade Compaction)		
Denver.....	\$ 20.30	5.51
Douglas.....	\$ 22.78	4.86
Rotomill.....	\$ 16.22	4.41
Screed		
Denver.....	\$ 22.67	8.38
Douglas.....	\$ 29.99	1.40
Tractor.....	\$ 13.13	2.95

TRAFFIC SIGNALIZATION:

Groundsman

Denver.....	\$ 17.90	3.41
Douglas.....	\$ 18.67	7.17

TRUCK DRIVER

Distributor

Denver.....	\$ 17.81	5.82
Douglas.....	\$ 16.98	5.27

Dump Truck

Denver.....	\$ 15.27	5.27
Douglas.....	\$ 16.39	5.27

Lowboy Truck.....	\$ 17.25	5.27
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Mechanic.....	\$ 26.48	3.50
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Multi-Purpose Specialty &

Hoisting Truck

Denver.....	\$ 17.49	3.17
Douglas.....	\$ 20.05	2.88

Pickup and Pilot Car

Denver.....	\$ 14.24	3.77
Douglas.....	\$ 16.43	3.68

Semi/Trailer Truck.....	\$ 18.39	4.13
-------------------------	----------	------

Truck Mounted Attenuator....	\$ 12.43	3.22
------------------------------	----------	------

Water Truck

Denver.....	\$ 26.27	5.27
Douglas.....	\$ 19.46	2.58

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

**Office of Human Resources
Supplemental Rtes
(Specific to the Denver Projects)
Revised 08/21/2019)**

Classification		Base	Fringe
Guard Rail Installer		\$13.00	\$3.20
Highway Parking Lot Striping: Painter		\$13.00	\$3.21
Ironworker (Ornamental)		\$26.05	\$12.00
Laborer	Removal of Asbestos	\$21.03	\$8.55
Laborer (Landscape & Irrigation)		\$13.00	\$3.16
Laborer: Traffic Control (Flagger)		\$13.00	\$3.05
Laborer: Stationary Flags(excludes Flaggers)		\$13.00	\$3.22
Line Construction	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck Crew	\$25.74	\$8.09
Millwright		\$28.00	\$10.00
Pipefitter		\$30.45	\$12.85
Plumber		\$30.19	\$13.55
Power Equipment Operator (Tunnels Above and Below Ground, shafts and raises):	Group 1	\$25.12	\$10.81
	Group 2	\$25.47	\$10.85
	Group 3	\$25.57	\$10.86
	Group 4	\$25.82	\$10.88
	Group 5	\$25.97	\$10.90
	Group 6	\$26.12	\$10.91
	Group 7	\$26.37	\$10.94
Power Equipment Operator	Group 1	\$22.97	\$10.60
	Group 2	\$23.32	\$10.63
	Group 3	\$23.67	\$10.67
	Group 4	\$23.82	\$10.68
	Group 5	\$23.97	\$10.70
	Group 6	\$24.12	\$10.71
	Group 7	\$24.88	\$10.79
Truck Driver	Group 1	\$18.42	\$10.00
	Group 2	\$19.14	\$10.07
	Group 3	\$19.48	\$10.11
	Group 4	\$20.01	\$10.16
	Group 5	\$20.66	\$10.23
	Group 6	\$21.46	\$10.31
Truck Driver: Truck Mounted Attenuator		\$13.00	\$3.22

Go to <http://www.denvergov.org/Auditor> to view the Prevailing Wage Clarification Document for a list of complete classifications used.

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE

Addenda

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE**

**CONTRACT NO: 202056263
PROJECT NAME: 48th Avenue Viaduct Rehabilitation**

ADDENDUM NO. 1 TO CONTRACT DOCUMENTS

Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above-mentioned project as hereinafter described in the following attachments:

TECHNICAL SPECIFICATIONS/DRAWINGS REVISIONS AND CHANGES:

The as built construction drawings, RR agreements, and inspection reports can be found using the link:
<https://app.box.com/s/t399hdohc3p7old9peotkfsmvxwv8s>

Note: All provided information applicable to the existing bridges including but not limited to as-built construction drawings may be different from actual field conditions. The contractor is responsible for verifying field conditions prior to ordering, fabricating, or installing any material. No additional payment will be made to account for discrepancies.

QUESTIONS AND ANSWERS:

Q1. I am not seeing a requirement for railroad protective insurance. Will it be required or is Denver handling that? The documents tell us we need to coordinate with UPRR, BNSF and RTD, but don't specify if railroad insurance is needed. If it is required, we need the train counts for each line.

A1. The Contractor shall obtain all necessary insurance for construction in BNSF and UPRR property. The required insurance shall be kept in full force and effect during the performance of work and thereafter until the Contactor removes all tools, equipment, and material from BNSF's and UPRR's property and cleans the premises in a manner reasonably satisfactory to BNSF and UPRR. The insurance may include railroad liability of \$5,000,000/incident and \$10,000,000/aggregate and general liability of \$2,000,000/incident and \$6,000,000/aggregate. (Pg. 107).

Q2. I am reaching out regarding the 48th Ave Viaduct Rehabilitation Project. Yeh and Associates, Inc. (Yeh) has been approached by contractors developing bids on this project for quality control materials testing. However, Yeh currently has an On-Call contract with the City and County of Denver for Materials Testing and Inspections. CCD is our highest priority and we do not want to disrupt our relationship with a conflict of interest. Will the 48th Ave Viaduct Project be seeking proposals for Quality Assurance Materials Testing and/or Inspections from its On-Call contractors or performing these tasks in house?

A2. We will be selecting a QA Materials testing firm from our on-call list after there is an apparent low bidder to avoid any conflicts of interest with the contractors selected QC firm.

Q3. Please provide information of train movements through the project area including number of trains on each track along with speed and proportion of passenger trains.

A3. All information and data regarding RTD, UPRR, and BNSF operations shall be coordinated directly with these entities.

Q4. Can the city provide copies of existing agreements with the RR for review by the contractors including the C&M agreements with UPRR and BNSF and any agreements with RTD/DTO?

A4. Please see the link provided above.

Q5. Can the Department provide as-builts of the existing structure?

A5. Please see the link provided above.

Q6. Please confirm that application for ROE cannot be submitted until NTP has been obtained as has been our experience on another project with the railroad.

A6. Application for the ROE cannot be submitted until NTP has been issued.

Q7. Please confirm that a completed and executed ROE is required prior to requesting flagging for the project.

A7. A completed and executed ROE is required prior to requesting flagging.

Q8. Will the 30-day notice to request flaggers be required to re-request flaggers if there is a suspension of flagging work on the project?

A8. The Contractor is in full control of their work plan and shall coordinate their work plan with UPRR, BNSF, and RTD/DTO. Any gaps or suspension of work requiring flaggers shall be considered in the contractor's work plan and coordinated with the railroads accordingly.

Q9. Based on the revisions to 631, our interpretation is that RR Coordination and or RTD coordination will pay for the following management efforts: ROE Submittals, preparation of construction submittals, daily coordination with RR flagging and other RR staff as required, etc. Please confirm this understanding.

A9. Item 631 Railroad Coordination and Item 632 RTD/DTO Coordination consists of all elements required to coordinate the work with the railroads per the special provision including, but not limited to, the items listed.

Q10. Sheet B19 indicates "Restrict live load beyond centerline of exterior girder during overhang repair". Has the railing been determined to be able to withstand impact loads during the overhang repair or should it be anticipated that positive barrier separation will be required to limit potential impacts?

A10. Stability of the structure during construction is the responsibility of the Contractor. The restriction noted in the plans is based on the approximate removal area and depth considering the vertical live load effects only. The Contractor shall review their means and methods to restrict live load beyond the centerline of the exterior girder by whatever means they feel is appropriate. If the Contractor elects to apply live loads beyond the limits stated, they shall review the stability of the deck overhang and bridge rail considering factors, including but not limited to, their means and methods, traffic control, applied loads including collision, temporary falsework/formwork, and any other considerations required.

Q11. Per specification 518 – Bridge Expansion Device, does the licensed engineer developing the shop drawings for the expansion device, required to be licensed in the State of Colorado? Can prior experience be a substitute for having the technical representative present during the phased installation of the expansion device?

A11. Yes, PE shall be licensed in the State of Colorado. Prior experience cannot be substituted for the technical representative.

Q12. On sheet B07 – Per Note 5 – 7, how shall temporary girder falsework be compensated if required?

A12. Falsework is included in the cost of the work if required per note on B01 and Section 601.11 of the standard specifications.

Q13. On sheet B15 – Note 2 – who is responsible for the cost of the pull-off adhesion test?

A13. The pull-off adhesion/strength test is included in Item 602 Reinforcing (Fiber Reinforced Polymer)(Surface) per the special provision.

Q14. Please confirm that a completed ROE be required prior to reviews by UPRR or BNSF are completed?

A14. The ROE is not required to be approved prior to submitting construction submittals to UPRR, BNSF or RTD/DTO. Please note, any submittals provided to the railroads prior to NTP are at the contractor's own risk. An NTP is still required to obtain the ROE.

Q15. Please add a bid item for mechanical splices, as the rebar weight for the splice length is ~ \$2 and a mechanical splice is ~ \$40.

A15. Mechanical couplers are included in the cost of Item 602 Reinforcing Steel and Item 602 Reinforcing Steel (Epoxy Coated). The Contractor is allowed to substitute mechanical couplers for splices at no cost to the project.

Q16. Please define the longitudinal limits of Overhead Contact System Temporary Protective Structure required above the RTD tracks.

A16. The protective structure shall extend outside the minimum clearance envelope required by RTD per the special provision and RTD requirements. The contractor is responsible for the design of the protective structure and shall determine the minimum longitudinal limits that are required based on requirements to protect the track from falling debris, protect RTD operations and trains from falling debris, maintain RTD clearance envelopes, protect the existing structure from electrical arcing, protect workers from electrical arcing, and to allow the contractor to safely perform the work.

Q17. When is the anticipated NTP on the project as the HMA (PG 64-78) isn't available until May?

A17. The estimated NTP for construction is 4/1/2021

Q18. Does the 12% Goal include the Textura Fee?

A18. The 12% MWBE participation is on the total base bid amount, which is inclusive of the Textura fee.

Q19. Please explain how the goal of 12% translates to the total dollar amount.

A19. In determining whether a bidder's committed level of participation meets the stated MWBE goal, DSBO shall base its calculation of applicable dollar amounts and percentages on the total base bid amount. The bidder should multiply their total bid amount by 12% to get the applicable dollar value of the MWBE participation.

Q20. Can you please make the inspection report of the bridge available?

A20. The inspection report is provided in the link above.

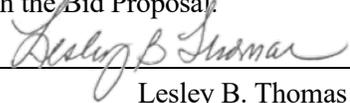
Q21. Are force accounts included in goal percent?

A21. The MWBE participation goal applies to the total bid amount, inclusive of force accounts.

Q22. I was notified by the engineer with Master Builders Solutions, a supplier of the fiber reinforced wrapping, that designed capacity requirements specified in the plans for this fiber wrap product are way higher than what the fiber wrap product is able to achieve. It will only achieve maybe a 1/3 of the capacity required in the specs using 5 layers of wrap. Therefore they cannot recommend fiber wrap for use on this project. Not sure if this is really an issue or not. Still waiting to hear back from other suppliers/subcontractors.

A22. After review of the plans and specifications, the required shear strength as shown in Note 5 on Sheet 20 (B15) shall be revised to 176 kips/ft. It is noted that this strength is a combined total for both "legs" (i.e. fiber wrap on both sides of the cap) of the fiber wrap. Refer to the attached plan sheet within the addendum.

This **ADDENDUM** shall be attached to, become a part of, and be returned with the Bid Proposal:



Lesley B. Thomas
City Engineer
November 24, 2020

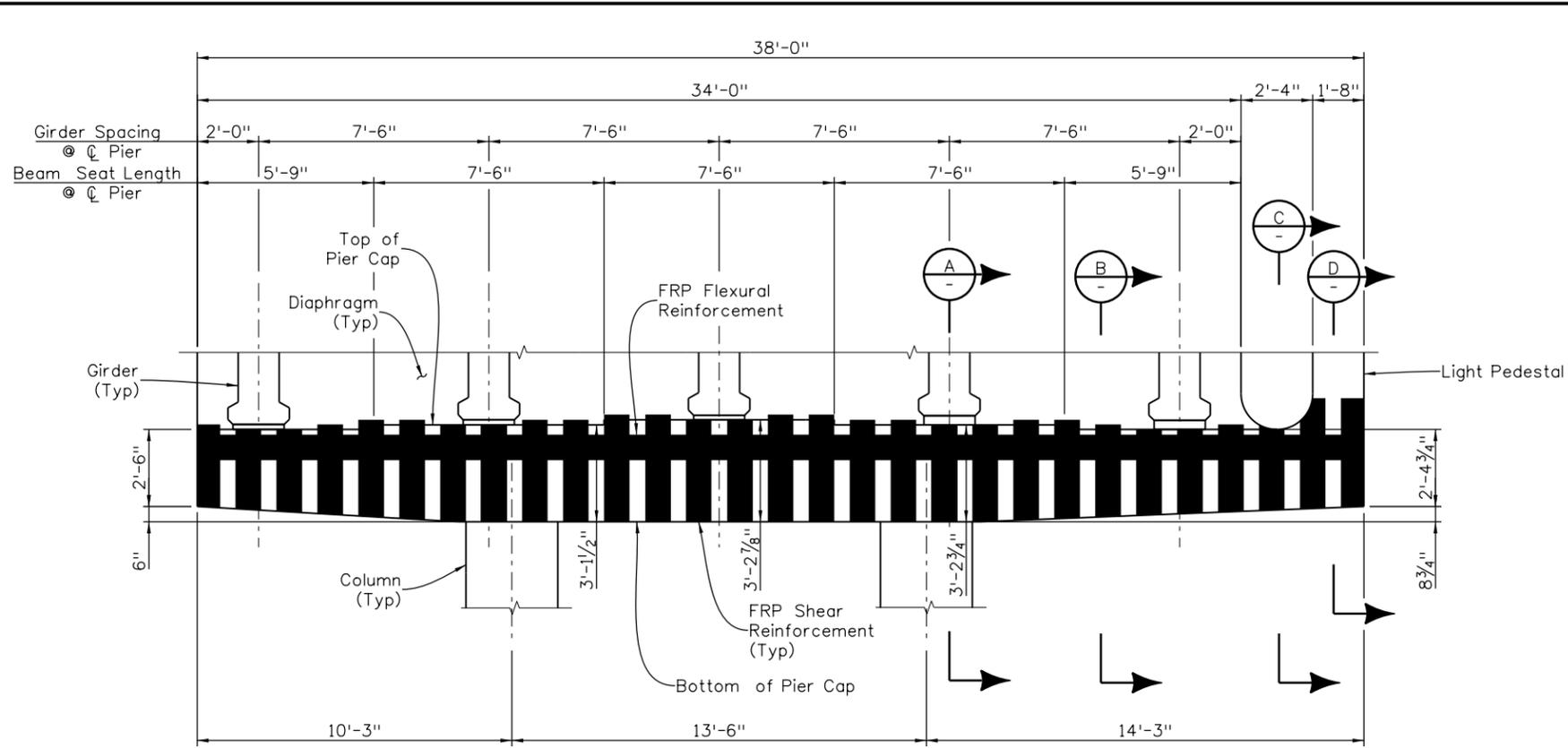
Date

The undersigned bidder acknowledges receipt of this Addendum. The Proposal submitted herewith is in accordance with the stipulations set forth herein.

Contractor

ADDENDUM NO. 1

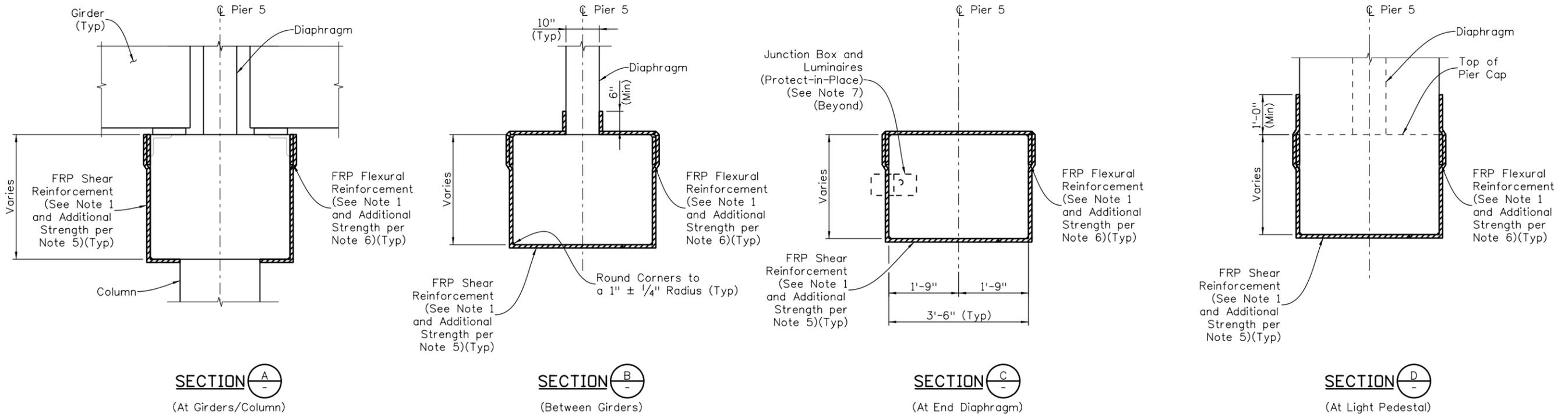
Date



PIER 5 ELEVATION
(Looking East)

NOTES:

- All FRP strip width, number of layers, and spacing shall be determined by the Contractor.
- Prior to FRP installation:
 - Contractor shall perform concrete spill repairs per Sheet B14 and the special provisions.
 - The existing concrete soundness shall be verified using a pull-off adhesion test of 200 psi according to ASTM 4541.
 - The surface shall be prepared using an approved abrasive or water-blasting technique. All deformations, holes or voids shall be filled with a compatible epoxy putty/paste or as directed by the Engineer. Existing corners to receive FRP shall be rounded with a radius = $1'' \pm \frac{1}{4}''$.
 - Following the surface preparation, all existing cracks that are 0.016 inches and wider shall be pressure injected with epoxy in accordance with ACI 224.1R-07, Project Special Provisions, Details on Sheet B14, and as directed by Engineer.
- FRP system primers, resins and ply material shall be mixed, installed and cured in accordance with the Project Special Provisions and approved manufacturer's recommendations.
- After installation of FRP, concrete elements strengthened by FRP composite material shall receive a final surface finish matching the texture and color of the existing concrete along the full length of the members.
- Additional Design Shear Strength Required ($\phi_{frp} V_{frp}$) = **176** kips/ft.
Additional Design Flexure Strength Required = 350 (kip-ft).
Per AASHTO LRFD FRP Specifications (2012),
 $M_{frp} = T_{frp} (h-k2c)$ in Eq. 3.4.1.1-1
- Contractor to coordinate lighting at pier 5 with Engineer. This work shall not be measured and paid for separately, but shall be included in Bid Item 602 Reinforcing (Fiber Reinforced Polymer)(Surface).



SECTION A
(At Girders/Column)

SECTION B
(Between Girders)

SECTION C
(At End Diaphragm)

SECTION D
(At Light Pedestal)

Print Date: 7/20/2020
File Name: 48thVia_Pier-5_FRPDets_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

As Constructed
No Revisions:
Revised:
Void:

48TH AVE VIADUCT REHABILITATION PIER 5 FRP DETAILS			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B15 of 26

Project No./Code
201843741
Sheet Number
20

R:\48thVia_Pier-5_FRPDets_01.dgn

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE

Technical Specifications

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

GENERAL CONTRACT CONDITIONS

General Contract Conditions shall be the City and County of Denver, Department of Transportation and Infrastructure, “Standard Specifications for Construction General Contract Conditions,” 2011 edition and hereinafter modified shall be used for this project.

CONSTRUCTION SPECIFICATIONS

Standard Construction Specifications shall be the Colorado Department of Transportation “Standard Specifications for Road and Bridge Construction,” (Sections 101, 102.05, 105.02, 106.01 to 106.10, 106.12, 106.13, 107.01, 107.06, 107.08, 107.12, 200 through 700, and other sections as referenced in the Contract Documents) adopted in 2019 and as hereinafter modified shall be used for this project.

The Project Special Provisions take precedence over Specifications or Plans and supplement or amend the referenced “Standard Specifications for Road and Bridge Construction” adopted in 2019 by the Colorado Department of Transportation, which is to be used to control construction of this project.

DETAILED CONSTRUCTION SPECIFICATIONS

The Detailed Specifications for this project are defined in the City of Denver Contract Requirements and Contract Documents. References to “Department” or “DOT” in the Standard Specifications shall be considered to mean City and County of Denver.

STANDARD CONSTRUCTION DETAILS

Applicable City and County of Denver standard details are required to be used by the Contractor. For other applicable details, except as modified or altered by the general notes on the Contract Drawings to be approved or by the revisions to Technical Specifications and Contract Documents, it is the intent of the City to use the 2019 Colorado Department of Transportation M & S Standards, or most recent edition.

Transportation related appurtenances shall be constructed as specified in the most recent edition of the City and County of Denver, Department of Transportation and Infrastructure documents titled:

- Transportation Standards and Details for the Engineering Division
- Traffic Signal and Sign & Markings Standards
- Manuals and Regulations for Wastewater

These documents can be found at the following web address:

<https://www.denvergov.org/content/denvergov/en/transportation-infrastructure/documents/engineering-plan-review/manuals-regulations.html>.

CITY AND COUNTY OF DENVER
48TH AVENUE VIADUCT REHABILITATION
CCD PROJECT MASTER NO. 2020-PROJMSTR-0000445

The Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, dated 2019, control construction of this project. The following Special Provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and Plans.

PROJECT SPECIAL PROVISIONS

Description	Date	Page
General Contract Conditions	(August 19, 2020)	i
Construction Specifications	(August 19, 2020)	i
Detailed Construction Specifications	(August 19, 2020)	i
Standard Construction Details	(August 19, 2020)	i
Index Pages	(August 19, 2020)	ii - iv
Commencement and Completion of Work	(August 19, 2020)	1
Revision of Section 101 – Definition of Terms	(August 19, 2020)	3
Revision of Section 105 – Cooperation between Contractors	(August 19, 2020)	4
Revision of Section 106 – Conformity to the Contract of Hot Mix Asphalt	(August 19, 2020)	5
Revision of Section 107 – Performance of Safety Critical Work	(August 19, 2020)	6
Revision of Section 202 – Removal of Debris	(August 19, 2020)	8
Revision of Section 202 – Removal of Tree	(August 19, 2020)	9
Revision of Section 202 – Removal of Slope and Ditch Paving	(August 19, 2020)	10
Revision of Section 202 – Removal of Sidewalk	(August 19, 2020)	11
Revision of Section 202 – Removal of Curb and Gutter	(August 19, 2020)	12
Revision of Section 202 – Removal of Asphalt Mat (Planing)(Special)	(August 19, 2020)	13
Revision of Section 202 – Removal of Pedestrian Rail	(August 19, 2020)	16
Revision of Section 202 – Removal of Bridge Railing (Special)	(August 19, 2020)	17
Revision of Section 202 – Removal of Portions of Present Structure (Class 2 and 3)	(August 19, 2020)	18
Revision of Section 202 – Removal of Portions of Present Structure (Concrete Bridge Rail)	(August 19, 2020)	22
Revision of Section 202 – Removal of Portions of Present Structure (Deck Drain System)	(August 19, 2020)	25
Revision of Section 202 – Removal of Portions of Present Structure (Deteriorated Concrete Repair)	(August 19, 2020)	28
Revision of Section 202 – Removal of Expansion Device	(August 19, 2020)	31
Revision of Section 202 – Clean Inlet	(August 19, 2020)	33
Revision of Section 202 – Sandblasting Reinforcing Steel	(August 19, 2020)	34
Revision of Section 208 – Erosion Control	(August 19, 2020)	35
Revision of Section 210 – Modify Bridge Expansion Device	(August 19, 2020)	49
Revision of Section 240 – Protection of Migratory Birds Biological Work Performed By The Contractor's Biologist	(August 19, 2020)	50
Revision of Section 403 – Hot Mix Asphalt	(August 19, 2020)	53
Revision of Section 408 – Joint Sealant	(August 19, 2020)	56
Revision of Section 513 – Bridge Drain	(August 19, 2020)	57

**CITY AND COUNTY OF DENVER
48TH AVENUE VIADUCT REHABILITATION
CCD PROJECT MASTER NO. 2020-PROJMSTR-0000445**

PROJECT SPECIAL PROVISIONS

Description	Date	Page
Revision of Section 518 – Bridge Expansion Device	(August 19, 2020)	58
Revision of Section 519 – Epoxy Resin (Injection)	(August 19, 2020)	59
Revision of Section 601 – Concrete Class DR	(August 19, 2020)	62
Revision of Section 601 – Concrete (Patching)	(August 19, 2020)	67
Revision of Section 601 – Galvanic Anodes	(August 19, 2020)	69
Revision of Section 602 – Reinforcing (Fiber Reinforced Polymer) (Surface)	(August 19, 2020)	72
Revision of Section 606 – Bridge Rail (Special)	(August 19, 2020)	84
Revision of Section 621 – OCS Temporary Protective Structure	(August 19, 2020)	85
Revision of Section 625 – Construction Surveying	(August 19, 2020)	88
Revision of Section 626 – Public Information Management (Tier III)	(August 19, 2020)	89
Revision of Section 630 – Construction Zone Traffic Control	(August 19, 2020)	94
Revision of Section 630 – Portable Message Sign Panel	(August 19, 2020)	103
Revision of Section 631 – Railroad Coordination	(August 19, 2020)	105
Revision of Section 632 – RTD/DTO Coordination	(August 19, 2020)	111
Force and Allowance Account Items	(August 19, 2020)	116
Utilities	(August 19, 2020)	118
Denver Noise Ordinance Permit Variance Template	(August 19, 2020)	119

**CITY AND COUNTY OF DENVER
48TH AVENUE VIADUCT REHABILITATION
CCD PROJECT MASTER NO. 2020-PROJMSTR-0000445**

CDOT STANDARD SPECIAL PROVISIONS (2019)

Description	Date	No. of Pages
Revision of Section 601 – Concrete Mix Designs	(January 13, 2020)	1
Revision of Section 601 – Structural Concrete	(October 4, 2019)	17
Revision of Section 630 – Barrier (Temporary)	(October 4, 2019)	1
Railroad Insurance	(October 1, 2019)	1

**COMMENCEMENT AND COMPLETION OF WORK
(WORKING HOURS, SCHEDULE, AND CITY FURLOUGH DAYS)**

The Contractor shall commence work under the Contract per the City General Contract Conditions. The Contractor shall optimize the work tasks to minimize disruption to Regional Transportation District and Denver Transit Operators (RTD/DTO) operations. Bus bridges necessary to maintain RTD/DTO operations will only be allowed if approved by the Engineer, and their use shall be kept to a minimum.

Salient features to be shown on the Contractor's Progress Schedule are:

1. Notice to Proceed
2. Mobilization(s)
3. Construction Traffic Control
4. Railroad Right-of-Entry (including RTD/DTO, UPRR, and BNSF)
5. Removal and Replacement of Expansion Device
6. Removal of Asphalt Mat
7. Concrete Deck Repairs
8. Placement of Waterproofing Membrane and Asphalt Wearing Surface.
9. Pier 5 Repairs and FRP Installation
10. Pier 8 Repairs
11. Superstructure concrete repairs
12. Substructure concrete repairs
13. Installation of Guardrail and Moment Slab
14. Final Striping
15. Anticipated Substantial Completion
16. Anticipated Final Completion

Contractor Schedule

The Contractor's progress schedule shall be a Critical Path Method Schedule submitted for approval. The schedule shall include 20 days of down time (float) for utility conflicts and delays.

The Contractor will not be compensated for administrative or management costs incurred during down time due to utility or other delays. No additional payment will be made for out of sequence work.

Work Restrictions – Nights and Weekends

No work shall be conducted at night or on weekends without prior written approval of the City Project Manager unless otherwise noted in these special provisions or general contract provisions.

Work Restrictions for City Holidays

Work shall not occur on holidays listed below. Work shall cease at 12:00 pm (noon) the day before the holiday or on the Friday before a Monday holiday. Work may resume at 9:00 am the first weekday after the holiday. All travel ways shall be open to the public and clear of obstructions during the holiday non-working periods listed above.

-2-

**COMMENCEMENT AND COMPLETION OF WORK
(WORKING HOURS, SCHEDULE, AND CITY FURLOUGH DAYS)**

Holidays:

- New Year's Day
- Martin Luther King Day
- President's Day
- Cesar Chavez Day
- Memorial Day
- Independence Day
- Labor Day
- Veteran's Day
- Thanksgiving Day
- Christmas Day

Work Restrictions for City Sponsored or Sanctioned Events

Work may be restricted by City sponsored or sanctioned events. The City Project Manager will inform the Contractor of such events a minimum of two weeks prior to said event.

Work Requirements of City Noise Ordinance and Street Occupancy Permit

Work shall be in conformance with the City's Noise Ordinance and the Contractor's street occupancy permit.

Contract Compliance

All the Contractor's costs of whatsoever nature required to comply with all of the above requirements shall be included in the Work, and no additional payment will be made for any reason.

**REVISION OF SECTION 101
DEFINITION OF TERMS**

Section 101 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 101.28 shall be replaced by the following:

The City and County of Denver's Department of Transportation and Infrastructure.

Subsection 101.29 shall be replaced with the following:

The designated Project Engineer with the City and County of Denver Department of Transportation and Infrastructure, who is responsible for engineering and administrative supervision of the project.

Subsection 101.33 shall be replaced with the following:

Allowance Account Items shall be in accordance with the Provisions of the Special Provisions.

Subsection 101.51 shall be replaced with the following:

The City and County of Denver's duly authorized representative who is in direct charge of the work and is responsible for the administration and satisfactory completion of the project under contract. The Project Engineer or Manager for this project will be an employee with the City's Department of Transportation and Infrastructure.

Subsection 101.76 shall include the following:

Where applicable, State shall mean City and County of Denver, Colorado.

**REVISION OF SECTION 105
COOPERATION BETWEEN CONTRACTORS**

Section 105 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 105.12 shall include the following:

Other construction agencies may be working near the project limits. The Contractor for this project shall conduct and coordinate the work with these contractors so as not to interfere with or hinder the progress and completion of the work being performed by other agencies or contractors. The Contractor shall contact all contractors working near the project limits and assign contact personnel between them. The Contractor shall notify the Engineer in writing of these contacts and of what arrangements have been made.

All traffic control conflicts that arise between the needs of the various construction contractors or other agencies shall be brought to the attention of the Engineer. The Engineer shall determine the method of resolution in such instances.

The Contractor shall coordinate all lane closures to ensure that minimum lane requirements are met.

A known project in close proximity is the Colorado Department of Transportation Central 70 project. The Contractor shall coordinate with Kim Blair (kim.blair@denvergov.org) at the City and County of Denver as well as directly with the Contractor. The Contractor shall provide the project schedule, lane closures, on-going project status, or any other information requested. The Contractor is encouraged to sign up for construction updates through CDOT's C-70 website (<https://www.codot.gov/projects/i70east/central-70>).

Additionally, construction of the City and County of Denver's Park Avenue Viaduct Rehabilitation project may occur at the same time as construction of the 48th Avenue project. As both projects have the potential to affect the Regional Transportation District's (RTD) commuter rail lines, the Contractor shall coordinate with the City and County of Denver, RTD/Denver Transit Operators (DTO), and with the Contractor of the Park Avenue project. The Contractor shall coordinate lane closure and signage in the area of the project(s) and closures and impacts to RTD/DTO corridors to prevent duplicate or multiple closures, depending on input from RTD/DTO on their requirements and needs.

The Department will not recognize claims filed for impact from outside contractor presence due to the Contractor's failure to coordinate.

All costs subsidiary and incidental to the foregoing requirements shall be included in the original contract prices for the project and will not be paid separately.

**REVISION OF SECTION 106
CONFORMITY TO THE CONTRACT OF HOT MIX ASPHALT**

Section 106 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 106.05 shall include the following:

For this project, Contractor process control testing of hot mix asphalt is voluntary.

**REVISION OF SECTION 107
PERFORMANCE OF SAFETY CRITICAL WORK**

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.061 is hereby added to this project as follows:

107.061 Performance of Safety Critical Work. The following work elements are considered safety critical work for this project:

- (1) Temporary works: falsework, shoring that exceeds 5 feet in height, cofferdams, temporary bridges, and temporary OCS protection structures.
- (2) Work requiring the use of cranes or other heavy lifting equipment to make overhead repairs, or to complete work near active traffic lanes, rail facilities, or when construction materials are being lifted that may fall onto active traffic lanes and rail facilities.
- (3) Work within 50 feet of active railroad track centerline.

The Contractor shall submit, for record purposes only, an initial detailed construction plan that addresses safe construction of each of the safety critical elements. When the specifications already require an erection plan, a bridge removal plan, or a removal of portion of bridge plan, it shall be included as a part of this plan. The detailed construction plan shall be submitted two weeks prior to the safety critical element conference described below. The construction plan shall be stamped "Approved for Construction" and signed by the Contractor. The construction plan will not be approved by the Engineer.

The Construction Plan shall include the following:

- (1) Safety Critical Element for which the plan is being prepared and submitted.
- (2) Contractor or subcontractor responsible for the plan preparation and the work.
- (3) Schedule, procedures, equipment, and sequence of operations, that comply with the working hour limitations
- (4) Temporary works required: falsework, bracing, shoring, etc.
- (5) Underground, above grade, and overhead utilities identification and protective steps taken.
- (6) Additional actions that will be taken to ensure that the work will be performed safely.
- (7) Names and qualifications of workers who will be in responsible charge of the work:
 - A. Years of experience performing similar work
 - B. Training taken in performing similar work
 - C. Certifications earned in performing similar work
- (8) Names and qualifications of workers operating cranes or other lifting equipment
 - A. Years of experience performing similar work
 - B. Training taken in performing similar work
 - C. Certifications earned in performing similar work
- (9) The construction plan shall address how the Contractor will handle contingencies such as:
 - A. Unplanned events (storms, traffic accidents, etc.)
 - B. Structural elements that don't fit or line up
 - C. Work that cannot be completed in time for the roadway to be reopened to traffic
 - D. Replacement of workers who don't perform the work safely
 - E. Unexpected absence of critical management team
 - F. Equipment failure
 - G. Other potential difficulties inherent in the type of work being performed
- (10) Name and qualifications of Contractor's person designated to determine and notify the Engineer in writing when it is safe to open a route to traffic after it has been closed for safety critical work.

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**REVISION OF SECTION 107
PERFORMANCE OF SAFETY CRITICAL WORK**

- (11) Erection plan or bridge removal plan when submitted as required elsewhere by the specifications. Plan requirements that overlap with above requirements may be submitted only once.

A safety critical element conference shall be held two weeks prior to beginning construction on each safety critical element. The Engineer, the Contractor, the safety critical element subcontractors, and the Contractor's Engineer shall attend the conference. Required pre-erection conferences or bridge removal conferences may be included as a part of this conference.

After the safety critical element conference, and prior to beginning work on the safety critical element, the Contractor shall submit a final construction plan to the Engineer for record purposes only. The Contractor's Engineer shall sign and seal temporary works, such as falsework, shoring, etc., related to construction plans for the safety critical elements. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Contractor shall perform safety critical work only when the Engineer is on the project site. The Contractor's Engineer shall be on site to inspect and provide written approval of safety critical work for which he provided signed and sealed construction details. Unless otherwise directed or approved, the Contractor's Engineer need not be on site during the actual performance of safety critical work, but shall be present to conduct inspection for written approval of the safety critical work.

When ordered by the Engineer, the Contractor shall immediately stop safety critical work that is being performed in an unsafe manner or will result in an unsafe situation for the traveling public. Prior to stopping work, the Contractor shall make the situation safe for work stoppage. The Contractor shall submit an acceptable plan to correct the unsafe process before the Engineer will authorize resumption of the work.

When ordered by the Engineer, the Contractor shall remove workers from the project that are performing the safety critical work in a manner that creates an unsafe situation for the public in accordance with subsection 108.05.

Should an unplanned event occur or the safety critical operation deviate from the submitted plan, the Contractor shall immediately cease operations on the safety critical element, except for performing any work necessary to ensure worksite safety, and provide proper protection of the work and the traveling public. If the Contractor intends to modify the submitted plan, he shall submit a revised plan to the Engineer prior to resuming operations.

All costs associated with the preparation and implementation of each safety critical element construction plan will not be measured and paid for separately, but shall be included in the work.

The Contractor shall not be relieved from ultimate liability for unsafe or negligent acts or receive a waiver of the Colorado Governmental Immunity Act on behalf of the Department.

**REVISION OF SECTION 202
REMOVAL OF DEBRIS**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Debris shall be full removal and disposal of the debris from the structure located on top of the pier caps and girder flanges to the satisfaction of the Engineer. Debris contains Pigeon droppings and other potentially hazardous bird debris. It shall be removed and disposed of according to all Federal, State, and Local laws and according to Section 250 of the Standard Specifications.

Subsection 202.11 shall include the following:

Removal of Debris will not be measured, but will be lump sum.

Subsection 202.12 shall include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Debris	Lump Sum

Payment for Removal of Debris will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

**REVISION OF SECTION 202
REMOVAL OF TREE**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of tree shall be full removal and disposal of the trees to be removed as designated in the plans to 1 foot below existing grade. The existing trees are small Siberian elms.

Excavation and backfill required to fully remove the trees to 1 foot below existing grade shall be included in the work. Backfill shall be all on-site material removed during the removal process and shall be compacted per Section 206 of the Standard Specifications. Finished grade shall match existing grade. Any additional material required to fully backfill shall be Embankment Material or Structure Backfill (Class 2) and shall be included in the work.

Subsection 202.11 shall include the following:

Removal of Tree will be measured by each tree removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Tree	Each

Payment for Removal of Tree will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

Removal and disposal of slope and ditch paving will be measured and paid for separately.

**REVISION OF SECTION 202
REMOVAL OF SLOPE AND DITCH PAVING**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Slope and Ditch Paving shall be full removal and disposal of the slope paving to be removed as designated in the plans or as directed by the Engineer. Sawcutting, removal, hauling, and disposal of the concrete and reinforcing (if present) shall be included in the work.

If reinforcing is present in the existing slope paving, a minimum length of 1-foot projecting from the slope paving to remain shall be protected in place.

Excavation and backfill required to remove the slope and ditch paving shall be included in the work. Backfill shall be Structure Backfill (Class 2) and shall be compacted per Section 206 of the Standard Specifications.

Shrub, vegetation, and debris removal and disposal on or within the limits of the existing and proposed slope paving will not be measured and paid for separately, but shall be included in the work.

Slope and ditch paving that is removed or damaged that is designated to remain or outside of the limits to be removed as directed by the Engineer shall be repaired per the details in the plans. The repair shall be performed at the cost of the Contractor.

Subsection 202.11 shall include the following:

Removal of Slope and Ditch paving will be measured by area removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item

Removal of Slope and Ditch Paving

Pay Unit

Square Yard

Payment for Removal of Slope and Ditch paving will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

**REVISION OF SECTION 202
REMOVAL OF SIDEWALK**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Sidewalk shall be full removal and disposal of the sidewalk to be removed as designated in the plans or as directed by the Engineer. Sawcutting, removal, hauling, and disposal of the concrete and reinforcing (if present) shall be included in the work.

If reinforcing is present in the existing sidewalk, it shall be cut at the limits of removal of the concrete and painted with galvanization or epoxy. Galvanization or epoxy may be an aerosol or painted application as approved by the Engineer.

Excavation and backfill required to remove the sidewalk shall be included in the work. Backfill shall be Structure Backfill (Class 2) and shall be compacted per Section 206 of the Standard Specifications.

Sidewalk that is removed or damaged that is designated to remain or outside of the limits to be removed as directed by the Engineer shall be repaired at the Contractor's expense. A repair shall be submitted by the Contractor and approved by the Engineer prior to performing any repairs.

Subsection 202.11 shall include the following:

Removal of Sidewalk will be measured by the area removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item

Removal of Sidewalk

Pay Unit

Square Yard

Payment for Removal of Sidewalk will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

**REVISION OF SECTION 202
REMOVAL OF CURB AND GUTTER**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Curb and Gutter shall be full removal and disposal of the curb and gutter to be removed as designated in the plans or as directed by the Engineer. Sawcutting, removal, hauling, and disposal of the concrete and reinforcing (if present) shall be included in the work.

If reinforcing is present in the existing curb or gutter, it shall be cut at the limits of removal of the concrete and painted with galvanization or epoxy. Galvanization or epoxy may be an aerosol or painted application as approved by the Engineer.

Excavation and backfill required to remove the curb and gutter shall be included in the work. Backfill shall be Structure Backfill (Class 2) and shall be compacted per Section 206 of the Standard Specifications.

Curb, and gutter that is removed or damaged that is designated to remain or outside of the limits to be removed as directed by the Engineer shall be repaired at the Contractor's expense. A repair shall be submitted by the Contractor and approved by the Engineer prior to performing any repairs.

Subsection 202.11 shall include the following:

Removal of Curb and Gutter will be measured by the length removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item

Removal of Curb and Gutter

Pay Unit

Linear Foot

Payment for Removal of Curb and Gutter will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

**REVISION OF SECTION 202
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of the removal of all asphalt material and the removal of waterproofing membrane from the surface of the concrete.

CONSTRUCTION REQUIREMENTS

All asphalt material and waterproofing membrane (if present) shall be removed from the surface of the bridge deck. The surface of the deck shall be relatively smooth upon completion of removal operations. Jagged or broken edges or otherwise unsmooth areas shall be removed and ground smooth.

The Contractor is responsible for cleaning and maintaining the deck prior to and during placement of the new surface treatment.

Prior to beginning removal operations, the Contractor shall submit a removal plan for approval. This plan shall include as a minimum:

- (1) Methods of removal including confined areas that are unreachable with large equipment.
- (2) The type and number of all equipment to be used. If cold milling is to be performed for removal of the final ½ inch of asphalt, appropriate information must be provided to demonstrate the equipment meets the requirements of this specification.
- (3) The width, location and phasing of removal passes along with the proposed schedule for these passes.

The Contractor shall remove the existing asphalt by cold milling to within ½ inch of the concrete deck. Removal of the remaining ½ inch of asphalt and any existing membrane shall be performed by any one or combinations of the following three methods:

- 1) Scraping with a loader equipped with a smooth-edged bucket (no teeth).
- 2) Diamond grinding.
- 3) Cold milling with equipment that has the capabilities and features as described below.

Cold milling equipment must be able to:

- (a) Remove concrete to a depth of ¼ inch.
- (b) Provide a surface relief of at most ¼ inch.
- (c) Provide a 5/32 inch grade tolerance.

Cold milling equipment must have the following features:

- (a) 3 or 4 riding tracks.
- (b) An automatic grade control system with electronic averaging having 3 sensors on each side of the equipment.
- (c) A conveyor system that leaves no debris on the bridge.
- (d) A drum that operates in an up-milling direction.

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**REVISION OF SECTION 202
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)**

- (e) Bullet tooth tools with tungsten carbide steel cutting tips.
- (f) A maximum tool spacing of ¼ inch.
- (g) A maximum operating track pair or set (axle) weight of 47,000 pounds, or as equivalent to the Tandem Axle Group as shown on the Colorado Bridge Weight Limit Map, White (10 feet less than or equal to d less than or equal to 12 feet, with d the spacing between axle groups)
- (h) A maximum track unit weight of 5875 pounds per foot.
- (i) New tooth tools at the start of the job.

For all cold milling operations, the Contractor shall:

1. Saw cut the outline of the asphalt surfacing to be removed to a depth of ½ inch.
2. Provide personnel on each side of the milling drum to monitor milling activities. Maintain constant radio communication with the operator during milling activities.
3. Verify the depth of the asphalt surfacing every 50 feet at one location on each shoulder and in the traveled way or as shown in the plans.

If the Contractor proposes a milling machine that exceeds the maximum operating one track weight or maximum track weight per foot, or the machine does not conform to the same configuration assumptions used in determining these weight limit assumptions, the Contractor's Engineer shall rate the bridge for the proposed milling machine or complete a comparative analysis using the Colorado Bridge Weight Limit Map. The Contractor shall provide to the Engineer for review a stamped certified letter and accompanying rating of the bridge or comparative analysis for the proposed milling machine.

A small width rotomill (maximum 2-foot head) and low impact hand tools may be used in confined areas where the primary removal equipment will have difficulty accessing.

In the transverse direction, removal shall extend to the face of the barriers. The removal depth near the face of the barriers shall be consistent with the remainder of the bridge deck.

Hydrodemolition and pressure jetting will not be permitted for removal operations.

After cold milling is complete, the Contractor shall ensure that the coarse aggregate remaining at the removal depth is firmly embedded and remove it if it is not.

The Contractor shall prepare the bridge deck surface for placement of the new overlay. All construction debris, wearing surface material, and residual materials from the scarification process shall be completely removed from the bridge deck.

If cold milling is to be performed for removal of the final ½ inch of asphalt, the Contractor shall furnish a documented history of successfully performing cold milling on bridge decks with equipment similar to that described herein. The documentation shall include three projects within the past five years and shall include equipment type used as well as specifics regarding the bridges.

If mechanical milling results in the exposure of reinforcing steel, the operation shall be stopped immediately, and the depth of removal adjusted. Damaged or dislodged reinforcing steel as a result of Contractor negligence during the operation shall be repaired or replaced at the Contractor's expense.

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**REVISION OF SECTION 202
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)**

The Contractor shall take all necessary precautions to protect the expansion devices, barriers, and drains from damage. All damage to the bridge expansion devices, barriers, drains or any other property of the City resulting from removal operations shall be repaired at the Contractor's expense without time extension and per approval of the Engineer.

The Contractor shall take all precautions to protect the bridge deck from damage that would not ordinarily occur with the removal methods described herein. This includes damage to deck reinforcing and post-tensioning. Such damage resulting from removal operations shall be repaired at the Contractor's expense without time extension and per approval of the Engineer.

The Contractor shall provide protection to the railroads, live traffic and waterways below from any falling debris in work areas.

At the completion of each day's work, vertical edges caused by planing that are greater than $\frac{3}{4}$ inch in height shall be: Longitudinal - tapered edges parallel to the direction of traffic shall be tapered to not less than a 3:1 (horizontal: vertical) slope, Transverse - tapered edges perpendicular to the direction of traffic shall be tapered to not less than a 50:1 (horizontal: vertical) slope.

All removal operations shall be completed parallel to the travel lanes unless otherwise directed by the Engineer.

METHOD OF MEASUREMENT

Removal of Asphalt Mat (Planing) (Special) will be measured by the actual quantity completed to the required depth and accepted.

BASIS OF PAYMENT

The accepted quantities of Removal of Asphalt Mat (Planing) (Special) will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Asphalt Mat (Planing) (Special)	Square Yard

Payment for Removal of Asphalt Mat (Planing) (Special) will be full compensation for all labor, materials, tools, equipment, and incidentals required to remove the asphalt and any waterproofing membrane as designated in the plans, as specified in these special provisions, and as directed by the Engineer.

Asphalt depth verification will not be measured and paid for separately but shall be included in the work.

Methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris will not be paid for separately, but shall be included in the work.

**REVISION OF SECTION 202
REMOVAL OF PEDESTRIAN RAIL**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Pedestrian Rail shall be full removal and disposal of the pedestrian rail to be removed as designated in the plans or as directed by the Engineer. Sawcutting, removal, hauling, and disposal of the rail shall be included in the work.

The pedestrian rail has been tested and contains lead-based paint. The Contractor shall mitigate the lead during the removal process including handling, shipping, and disposal. The Contractor shall perform the work in accordance with Subsection 250.04 Heavy Metal Based Paint Management of the Standard Specifications.

Removal includes all portions of the railing, including base plates, anchor bolts, and nuts. Anchor bolts embedded in sidewalk to be removed shall be included in the cost of the removal of pedestrian rail. Anchor bolts embedded in sidewalk to remain shall be cut and ground flush with the sidewalk concrete.

Pedestrian rail that is removed or damaged that is designated to remain or outside of the limits to be removed as directed by the Engineer shall be repaired at the Contractor's expense. A repair shall be submitted by the Contractor and approved by the Engineer prior to performing any repairs.

Subsection 202.11 shall include the following:

Removal of Pedestrian rail will be measured by the length removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item

Removal of Pedestrian Rail

Pay Unit

Linear Foot

Payment for Removal of Pedestrian Rail will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work including all lead-based paint mitigation and disposal.

**REVISION OF SECTION 202
REMOVAL OF BRIDGE RAILING (SPECIAL)**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Removal of Bridge Railing shall be removal and disposal of the bridge railing to the limits shown in the plans or as directed by the Engineer. Cutting, removal, hauling, and disposal of the rail shall be included in the work.

Removal of pipe rails shall be the full extent between splices to remove all of the damaged rails. The inside tube and lock screw of the splice shall be removed and replaced.

Removal of posts shall be the full post at the locations shown in the plans or as directed by the Engineer. Non-damaged posts not designated to be removed in the plans shall remain and only the rails replaced as shown in the plans. Existing post anchor bolts shall remain and nuts shall be reset to anchor new post.

Subsection 202.11 shall include the following:

Removal of Bridge Railing (Special) quantities are approximate. The actual accepted quantities Removal of Bridge Railing (Special) will be measured by the length of bridge rail removed and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Bridge Railing (Special)	Linear Foot

Payment for Removal of Bridge Railing (Special) will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the work.

Removal of posts, where directed or shown in the plans, will not be measured separately, but shall be included the cost.

**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of saw cutting, removal and disposal of existing deteriorated bridge deck and approach slab concrete. Removal operations shall be conducted so that the traveling public is protected, and so that interference with the traveling public using the structure is minimized.

The applicable classes of removal shall be performed as defined in the plans. The locations and limits of removal will be as determined by the Engineer.

CONSTRUCTION REQUIREMENTS

a) General:

At least 10 working days before beginning removal, the Contractor shall submit a Method Statement to the Engineer with details of the removal operations including the means, methods, sequence of removal, tools, and equipment to be used.

The Contractor's Method Statement shall also include proposed methods used to:

- (1) Determine the locations and limits of deteriorating concrete
- (2) Prevent debris from falling to the ground or waterways below the structure
- (3) Protect the traveling public using the structure, and adjacent to the structure, from airborne debris generated by the removal operations.

All removal operations, methods, and equipment must be approved by the Engineer before the work begins.

The Contractor shall control dust and run-off in accordance with applicable governmental agencies. The Contractor is responsible for the proper disposal of all material removed, including but not limited to, material collected by vacuuming the deck.

Prior to removal of concrete, the Contractor shall sound the bridge deck for delamination in accordance with ASTM D4580, Procedure B Chain Drag. The Contractor shall mark the areas of deteriorated concrete to be removed as directed by the Engineer. Removal and patching areas not designated for removal by the Engineer will not be measured or paid for.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer. The Contractor shall saw cut along the removal limits prior to removal. Removal operations shall not occur prior to approval of the Engineer. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be approximately ¾-inch.

The Contractor shall remove and repair only the amount of work that can be completed and reopened to traffic within the designated lane closure times as specified in the Traffic Control Plan.

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel, including any vertical stirrups, and/or structural steel including welded shear connectors projecting into the bridge deck. All bars or shear connectors damaged by the Contractor's operations shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

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REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting per Revision of Section 202 Sandblasting. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

Following sandblasting, the condition of all exposed reinforcing bars will be inspected by the Engineer. If, in the opinion of the Engineer, the loss of original cross-sectional area of the bar due to deterioration is 25 percent or more, the Contractor shall add additional bars to replace the section area loss due to deterioration, as approved by the Engineer. New added bars shall be lap spliced as shown in the plans. If the required lap splice length cannot be utilized, a mechanical splice shall be used. The mechanical splice shall develop at least 125 percent of the specified yield strength of the bar. The Mechanical splice shall be selected from CDOT's Approved Products List. All minimum clearances shall be maintained as defined in the plans. As an alternative, the Contractor may remove additional sound concrete to achieve the required lap length. Payment for additional removals and repairs will be based on the unit price for the appropriate class of removal and repair method.

All reinforcing steel shall be secured to adjacent bars or to the bridge deck as provided in subsection 602.

All areas of the prepared surface contaminated by oil or other materials detrimental to bonding shall be thoroughly cleaned by a method approved by the Engineer.

b) Surface Preparation Equipment

Pneumatic hammers heavier than nominal 15-pound class will not be permitted. Pneumatic hammers and chipping tools shall not be operated at an angle exceeding 60° relative to the surface of the slab. Such tools may be started in the vertical position but must be immediately tilted to 60° operating angle.

Hand tools such as hammers and chisels shall be provided for removal of final particles of loose, unbonded concrete. Only short, one-handed hammers with a maximum head weight of 5 pounds will be allowed unless Class 3 removal is designated. Hydraulic demolition may be utilized with approval of Engineer.

Sandblasting equipment shall meet the requirements of Revision of Section 202 Sandblasting.

d) Class 2:

Removal of Portions of Present Structure (Class 2) shall consist of removing existing bridge deck concrete within the limits shown on the plans, or as designated by the Engineer. Class 2 removal shall begin at the surface of the existing concrete bridge deck and extend to sound concrete, but not more or less than the maximum and minimum for Class 2 shown in the plans.

Wherever solid bond between existing concrete and reinforcing steel is lacking, or where more than half of the diameter of the reinforcing bars is exposed by removal of concrete, the concrete adjacent to the bar shall be removed to a minimum clearance of one inch below and around the bar in all directions to permit new concrete to bond to the entire periphery of the bar. Care shall be taken so as not to fracture sound concrete in the bottom half of the bridge deck.

**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)**

Removal may be performed by power chipping or hand tools in accordance with these specifications or as otherwise approved by the Engineer.

If loose or deteriorated concrete exists below Class 2 limits, Class 3 removal is required.

e) Class 3:

Removal of Portions of Present Structure (Class 3) shall consist of removing existing bridge deck concrete within the limits shown on the plans, or as designated by the Engineer, following the Class 2 removal work. The concrete within the designated limits shall be removed full depth from the top of bridge deck to bottom of bridge deck.

The Contractor shall take all precautions necessary to prevent damage to diaphragms and girders below the removal limits and to minimize spalling on the bottom of the bridge deck slab adjacent to the removal boundaries.

The Contractor shall implement a containment system that prevents debris from falling to the ground or waterways below the structure.

The Contractor is responsible for the disposal of all removed material and debris.

METHOD OF MEASUREMENT

Removal of Portions of Present Structure will be measured by the actual quantity completed and accepted to the required depth for each class. Each area of bridge deck removal will only be measured once as Class 2 or Class 3; measurement of removal areas will not overlap.

Removal and repairs beyond the minimum required lap length of reinforcing steel will not be measured or paid for, but will be at the contractors expense.

Cleaning of prepared surfaces contaminated by oil or other materials detrimental to bonding will not be measured and paid for separately, but shall be included in the work.

BASIS OF PAYMENT

Planned deck rehabilitation quantities are approximate. The actual accepted quantities of Removal of Portions of Present Structure will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Portions of Present Structure (Class 2)	Square Yard
Removal of Portions of Present Structure (Class 3)	Square Yard

Payment for Removal of Portions of Present Structure will be full compensation for all labor, materials, tools, equipment and incidentals required to complete the item including saw cutting removal of concrete to the required depth, sandblasting or hand cleaning reinforcing steel including epoxy repair, and disposal of removed materials and debris.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)**

Methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris will not be paid for separately, but shall be included in the work.

Cleaning, straightening, and repairing epoxy coating of existing reinforcing steel will not be paid for separately, but shall be included in the work.

Sounding and marking repair areas will not be paid for separately, but shall be included in the work.

Payment for the new reinforcement steel will be made in accordance with Section 602. Payment for the Mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size.

**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(CONCRETE BRIDGE RAIL)**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of removal of a portion of the concrete bridge rail at the northwest corner of the structure at the location and to the limits shown in the plans. It includes removing corroded steel, sandblasting reinforcing steel or welded wire fabric that remains, and sandblasting the newly exposed concrete surfaces at the removal locations.

CONSTRUCTION REQUIREMENTS

Removal operations shall be conducted so that the traveling public is protected, and so there will be minimal interference with the railroad, pedestrians, or the traveling public on or below the structure. Removal operations shall also be coordinated with the Railroad so as to not interfere with daily train operations.

The work shall be done in accordance with these Special Provisions and Revision of Section 202 Sandblasting and in conformity with the plans, or as directed by the Engineer.

The existing bridge rail and guardrail to remain shall be prepared to fit the new construction, and shall be protected from damage. Any damage caused by the Contractor to any portion of the structure not intended for repair shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer, but to a minimum depth to provide 1 inch clear around all existing reinforcing steel projecting into the removal area, or to sound concrete, whichever is deeper. Removal operations shall not occur prior to approval of the Engineer. The Contractor shall saw cut along the removal limits prior to removal. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be approximately ¾-inch.

The Contractor shall take all steps necessary to minimize spalling on the face of the existing concrete adjacent to the removal boundaries. Removals adjacent to the removal boundaries shall not use pneumatic hammers heavier than nominal 15-pound class.

Hand tools such as hammers and chisels shall be used for removal of particles of loose, unbonded concrete. Exposed concrete surfaces within the removal limits shall be sandblasted to remove all final fractured or loose particles. Any damage caused by the Contractor to any portion of the structure not intended for repair shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel or welded wire fabric intended to remain in place. Any reinforcing damaged by the Contractor's operation shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(CONCRETE BRIDGE RAIL)**

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting per Revision of Section 202 Sandblasting. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

Following sandblasting, the condition of all exposed reinforcing bars will be inspected by the Engineer. If, in the opinion of the Engineer, the loss of original cross-sectional area of the bar due to deterioration is 25 percent or more, the Contractor shall add additional bars as approved by the Engineer. New added bars shall be lap spliced as shown in the plans. If the required lap splice length cannot be utilized, a mechanical splice shall be used. The mechanical splice shall develop at least 125 percent of the specified yield strength of the bar. The mechanical splice shall be selected from CDOT's Approved Products List (APL). All minimum clearances shall be maintained as defined in the plans. Payment for the mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size. As an alternative, the Contractor may remove additional sound concrete to achieve the required lap length. Payment for additional removals and repairs will be based on the unit price for the appropriate class of removal and repair method.

All reinforcing steel shall be secured to adjacent bars as provided in subsection 602.

All areas of the prepared surface contaminated by oil or other materials detrimental to bonding shall be thoroughly cleaned by a method approved by the Engineer.

The Contractor is responsible for the disposal of all removed material and debris.

All materials removed from the existing structure shall become the property of the Contractor and shall be disposed of properly off-site at the Contractor's expense.

METHOD OF MEASUREMENT

Removal of Portions of Present Structure (LS) will not be measured, but will be the lump sum for the removal and disposal of the concrete at the northwest corner of the bridge as shown in the plans.

Cleaning of prepared surfaces contaminated by oil or other materials detrimental to bonding will not be measured and paid for separately, but shall be included in the work.

BASIS OF PAYMENT

The accepted quantities will be paid for at the contract unit price.

Payment will be made under:

Pay Item

Removal of Portions of Present Structure

Pay Unit

Lump Sum

Payment for Removal of Portions of Present Structure will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the neat line removals to the required depth, methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(CONCRETE BRIDGE RAIL)**

Payment for the new reinforcement steel will be made in accordance with Section 602. Payment for the Mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size.

Cleaning, straightening, and repairing epoxy coating of existing reinforcing steel will not be paid for separately, but shall be included in the work.

Saw cutting will not be paid for separately, but shall be included in the work.

Sounding and marking repair areas will not be paid for separately, but shall be included in the work.

Sandblasting will not be paid for separately, but shall be included in the work.

Disposal of removed materials and debris will not be paid for separately, but shall be included in the work.

**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DECK DRAIN SYSTEM)**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of removal and disposal of deck drain and drain pipe system at the locations and to the limits shown in the plans. It includes removal of all portions of the existing system including deck scupper, deck concrete, deck reinforcing, grate, drain pipe, brackets, anchors, and any other portions required to remove the system.

CONSTRUCTION REQUIREMENTS

At least 10 working days before beginning removal, the Contractor shall submit a Method Statement to the Engineer with details of the removal operations including the means, methods, sequence of removal, tools, and equipment to be used. All removal operations, methods, and equipment must be approved by the Engineer before the work begins.

The Contractor's Method Statement shall include proposed methods used to:

- (1) Remove existing deck around existing inlet,
- (2) Prevent debris from falling to the ground below the structure,
- (3) Protect the traveling public using the structure, and adjacent to the structure, from airborne debris generated by the removal operations.

Removal operations shall be conducted so that the traveling public and pedestrians is protected, and so there will be minimal interference with the traveling public and pedestrians on or below the structure.

The work shall be done in accordance with these Special Provisions and in conformity with the plans, or as directed by the Engineer.

The existing deck, bridge rail, pier cap, pier columns, and electrical system to remain shall be prepared to fit the new construction, and shall be protected from damage. Any damage caused by the Contractor to any portion of the structure not intended for removal shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer, but to a minimum depth to provide 1 inch clear around all existing reinforcing steel projecting into the removal area, to sound concrete, or to allow removal and replacement of the deck drain, whichever is deeper. Removal operations shall not occur prior to approval of the Engineer. The Contractor shall saw cut along the removal limits prior to removal. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be approximately $\frac{3}{4}$ -inch.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DECK DRAIN SYSTEM)**

The Contractor shall take all steps necessary to minimize spalling on the face of the existing concrete adjacent to the removal boundaries. Removals adjacent to the removal boundaries shall not use pneumatic hammers heavier than nominal 15-pound class.

Exposed concrete surfaces within the removal limits shall be sandblasted to remove all final fractured or loose particles.

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel or welded wire fabric intended to remain in place. Any reinforcing damaged by the Contractor's operation shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting per Revision of Section 202 Sandblasting. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

Following sandblasting, the condition of all exposed reinforcing bars will be inspected by the Engineer. If, in the opinion of the Engineer, the loss of original cross-sectional area of the bar due to deterioration is 25 percent or more, the Contractor shall add additional bars as approved by the Engineer. New added bars shall be lap spliced as shown in the plans. If the required lap splice length cannot be utilized, a mechanical splice shall be used. The mechanical splice shall develop at least 125 percent of the specified yield strength of the bar. The mechanical splice shall be selected from CDOT's Approved Products List (APL). All minimum clearances shall be maintained as defined in the plans. Payment for the mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size. As an alternative, the Contractor may remove additional sound concrete to achieve the required lap length. Payment for additional removals and repairs will be based on the unit price for the appropriate class of removal and repair method.

All reinforcing steel shall be secured to adjacent bars as provided in subsection 602.

All areas of the prepared surface contaminated by oil or other materials detrimental to bonding shall be thoroughly cleaned by a method approved by the Engineer.

The Contractor is responsible for the disposal of all removed material and debris.

All materials removed from the existing structure shall become the property of the Contractor and shall be disposed of properly off-site at the Contractor's expense.

The deck drain, drain pipes, anchors, and all portions of the system at the locations and limits shown in the plans shall be included in the work. Anchor bolts to be removed shall be cut and ground flush with the concrete surface. Exposed steel shall be painted with galvanization or epoxy after grinding. All concrete and reinforcing removals shown in the plans shall be included in the work.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DECK DRAIN SYSTEM)**

METHOD OF MEASUREMENT

Removal of Portions of Present Structure (EA) will be measured by each deck drain system removed to the limits shown in the plans and accepted.

Cleaning of prepared surfaces contaminated by oil or other materials detrimental to bonding will not be measured and paid for separately, but shall be included in the work.

BASIS OF PAYMENT

The accepted quantities will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Portions of Present Structure	Each

Payment for Removal of Portions of Present Structure will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the neat line removals to the required depth, methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris.

Payment for the new reinforcement steel will be made in accordance with Section 602. Payment for the Mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size.

Cleaning, straightening, and repairing epoxy coating of existing reinforcing steel will not be paid for separately, but shall be included in the work.

Saw cutting will not be paid for separately, but shall be included in the work.

Sandblasting will not be paid for separately, but shall be included in the work.

Disposal of removed materials and debris will not be paid for separately, but shall be included in the work.

**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DETERIORATED CONCRETE REPAIR)**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of saw cutting, removal and disposal of existing deteriorated, spalled and unsound concrete as shown in the plans.

It also consists of removing corroded steel, sandblasting reinforcing steel or welded wire fabric that remains, and sandblasting the newly exposed concrete surfaces at the removal locations.

CONSTRUCTION REQUIREMENTS

At least 10 working days before beginning removal, the Contractor shall submit a Method Statement to the Engineer with details of the removal operations including the means, methods, sequence of removal, tools, and equipment to be used. All removal operations, methods, and equipment must be approved by the Engineer before the work begins.

The Contractor's Method Statement shall include proposed methods used to:

- (1) Determine the locations, and limits, of deteriorating concrete,
- (2) Prevent debris from falling to the ground below the structure,
- (3) Protect the traveling public using the structure, and adjacent to the structure, from airborne debris generated by the removal operations.

Removal operations shall be conducted so that the traveling public is protected, and so there will be minimal interference with the railroad or the traveling public on or below the structure. Removal operations shall also be coordinated with the Railroad so as to not interfere with daily train operations.

The work shall be done in accordance with these Special Provisions and Revision of Section 202 Sandblasting and in conformity with the plans, or as directed by the Engineer.

The existing bridge rail and guardrail to remain shall be prepared to fit the new construction, and shall be protected from damage. Any damage caused by the Contractor to any portion of the structure not intended for repair shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer, but to a minimum depth to provide 1 inch clear around all existing reinforcing steel projecting into the removal area, or to sound concrete, whichever is deeper. Removal operations shall not occur prior to approval of the Engineer. The Contractor shall saw cut along the removal limits prior to removal. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be approximately ¾-inch.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DETERIORATED CONCRETE REPAIR)**

The Contractor shall take all steps necessary to minimize spalling on the face of the existing concrete adjacent to the removal boundaries. Removals adjacent to the removal boundaries shall not use pneumatic hammers heavier than nominal 15-pound class.

Hand tools such as hammers and chisels shall be used for removal of particles of loose, unbonded concrete. Exposed concrete surfaces within the removal limits shall be sandblasted to remove all final fractured or loose particles. Any damage caused by the Contractor to any portion of the structure not intended for repair shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel or welded wire fabric intended to remain in place. Any reinforcing damaged by the Contractor's operation shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting per Revision of Section 202 Sandblasting. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

Following sandblasting, the condition of all exposed reinforcing bars will be inspected by the Engineer. If, in the opinion of the Engineer, the loss of original cross-sectional area of the bar due to deterioration is 25 percent or more, the Contractor shall add additional bars as approved by the Engineer. New added bars shall be lap spliced as shown in the plans. If the required lap splice length cannot be utilized, a mechanical splice shall be used. The mechanical splice shall develop at least 125 percent of the specified yield strength of the bar. The mechanical splice shall be selected from CDOT's Approved Products List (APL). All minimum clearances shall be maintained as defined in the plans. Payment for the mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size. As an alternative, the Contractor may remove additional sound concrete to achieve the required lap length. Payment for additional removals and repairs will be based on the unit price for the appropriate class of removal and repair method.

All reinforcing steel shall be secured to adjacent bars as provided in subsection 602.

All areas of the prepared surface contaminated by oil or other materials detrimental to bonding shall be thoroughly cleaned by a method approved by the Engineer.

The Contractor is responsible for the disposal of all removed material and debris.

All materials removed from the existing structure shall become the property of the Contractor and shall be disposed of properly off-site at the Contractor's expense.

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**REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
(DETERIORATED CONCRETE REPAIR)**

METHOD OF MEASUREMENT

Removal of Portions of Present Structure (SF* and SY**) will be measured by the area completed and accepted for the removal of deteriorated concrete for spall, deteriorated, and delaminated concrete repairs.

Removal and repairs beyond the minimum required lap length of reinforcing steel will not be measured or paid for, but will be at the contractors expense.

Cleaning of prepared surfaces contaminated by oil or other materials detrimental to bonding will not be measured and paid for separately, but shall be included in the work.

BASIS OF PAYMENT

Planned rehabilitation quantities are approximate. The accepted quantities will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Portions of Present Structure	Square Foot *
Removal of Portions of Present Structure	Square Yard **

* Square Foot measurement and payment will be for the spall, delamination, and deteriorated concrete removal of the abutments, pier caps, pier columns, girders, curbs, bridge rail (except at northwest corner) and sidewalk.

** Square Yard measurement and payment will be for the spall, delamination, and deteriorated concrete removal of the underside and outside edge of the deck overhang including back of sidewalk.

Payment for Removal of Portions of Present Structure will be full compensation for all labor, materials, tools, equipment, disposal, and incidentals required to perform the neat line removals to the required depth, methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris.

Payment for the new reinforcement steel will be made in accordance with Section 602. Payment for the Mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size.

Cleaning, straightening, and repairing epoxy coating of existing reinforcing steel will not be paid for separately, but shall be included in the work.

Saw cutting will not be paid for separately, but shall be included in the work.

Sounding and marking repair areas will not be paid for separately, but shall be included in the work.

Sandblasting will not be paid for separately, but shall be included in the work.

Disposal of removed materials and debris will not be paid for separately, but shall be included in the work.

REVISION OF SECTION 202 REMOVAL OF EXPANSION DEVICE

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work shall consist of removing existing bridge expansion devices in accordance with these specifications and in conformity with the lines and details shown on the plans or as approved by the Engineer. This work shall include saw cutting, removal of concrete, removal of reinforcing steel not designated in the plans to remain, straightening existing reinforcing steel to remain, sandblasting or hand cleaning reinforcing steel including epoxy repair, and disposal of removed materials and debris.

CONSTRUCTION REQUIREMENTS

At least 10 working days before beginning removal, the Contractor shall submit a method statement to the Engineer with details of the removal operations including the means, methods, sequence of removal, tools, and equipment to be used. All removal operations, methods, and equipment must be approved by the Engineer before the work begins.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer. The Contractor shall saw cut along the removal limits prior to removal. Removal operations shall not occur prior to approval of the Engineer. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be $\frac{3}{4}$ -inch minimum.

The Contractor shall take all steps necessary to minimize spalling on the face of the existing concrete adjacent to the removal boundaries. Removals adjacent to the removal boundaries shall not use pneumatic hammers heavier than nominal 15-pound class. Hand tools such as hammers and chisels shall be used for removal of particles of loose, unbonded concrete. Exposed concrete surfaces within the removal limits shall be sandblasted to remove all final fractured or loose particles. Any damage caused by the Contractor to any portion of the structure not intended for repair shall be repaired in kind by the Contractor at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel intended to remain in place. Any reinforcing bars damaged by the Contractor's operation shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer, with no allowance for contract time extension.

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting. Sandblasting equipment shall be capable of removing rust scale from non-epoxy reinforcing bars. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

The Contractor is responsible for the disposal of all removed material and debris

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**REVISION OF SECTION 202
REMOVAL OF EXPANSION DEVICE**

METHOD OF MEASUREMENT

Removal of Expansion Device will be measured by the actual quantity removed and accepted, from face of curb to face of curb along the joint.

BASIS OF PAYMENT

The accepted quantities of Removal of Expansion Device will be paid at the contract unit price.

Payment will be made under:

Pay Item

Removal of Expansion Device

Pay Unit

Linear Foot

Payment for Removal of Expansion Device will be full compensation for all labor, materials, tools, equipment and incidentals necessary to complete the item including saw cutting, removal of concrete as designated in the plans, reinforcing steel not designated to remain in the plans, straightening existing reinforcing steel to remain, removal of expansion device and sandblasting or hand cleaning including epoxy coating repair, and disposal of removed materials and debris.

**REVISION OF SECTION 202
CLEAN INLET**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

This work consists of removal and disposal of all foreign materials in the bridge deck drain inlet system at Pier 7.

CONSTRUCTION REQUIREMENTS

The Contractor shall remove and dispose of all foreign materials, dirt and debris collected in the deck drain and pipe system. Cleaning shall be done by vacuum truck removal method unless otherwise approved by the Engineer in writing. If approved by the Engineer, a combination of hand tools and equipment may also be used at designated locations. The Contractor may be required to remove and reset portions of the drain pipe to fully clean the inlet and pipe system.

If the Contractor prefers an alternate cleaning method, at least 10 working days prior to beginning the work, the Contractor shall submit a method statement to the Engineer. The method statement shall include details of the removal operations including the means, methods, sequence of removal, tools, and equipment.

Limits of cleaning the inlet shall extend from the grate to the daylight location of outlet pipe.

The Contractor shall document how much sediment is removed and provide the volume quantity to the Engineer. The Contractor shall remove and fully re-secure all grates per CDOT M-Standards. The Contractor shall treat the bolts with anti-seize compound prior to re-installation.

METHOD OF MEASUREMENT

Clean Inlet will be measured by the quantity of bridge deck drain inlets cleaned as designated in the plans, and accepted irrespective of the type, depth, or size.

BASIS OF PAYMENT

The accepted quantities of Clean Inlet will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Clean Inlet	Each

Payment for Clean Inlet will be full compensation for all labor, materials, tools, equipment, disposal, submittals, method statement, and incidentals required to complete the work including disposal of the collected materials.

Any work to remove and reset portions of the system will not be measured and paid for separately, but shall be included in the work.

All work, including drilling out of broken bolts, re-tapping bolt holes, replacement bolts, anti-seize treatment, and providing missing bolts, necessary to re-secure the grates shall be included in the cost of the work.

**REVISION OF SECTION 202
SANBLASTING REINFORCING STEEL**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Sandblasting shall consist of cleaning exposed non-epoxy reinforcing steel designated to remain in place and roughening the surface and removing all fractured particles from the entire existing concrete surface against which new concrete is to be placed.

CONSTRUCTION REQUIREMENTS

Sandblasting equipment shall be capable of removing rust scale and concrete fragments or laitance from reinforcing steel, roughening existing surface, and removing all fractured particles from the existing concrete surface.

Following the removal of adjacent concrete, all exposed non-epoxy reinforcing steel designated to remain in place shall be cleaned to sound steel by sandblasting. Sound steel is defined as free of oil, dirt, concrete fragments, or laitance, loose rust scale, and other coatings of any character that would limit or inhibit the bond with the new concrete. Epoxy-coated steel shall not be sandblasted.

Rust that may form on the reinforcing steel within seven calendar days following the accepted sandblasting, will not be cause for rejection of the steel.

When acceptable reinforcing steel is exposed to the elements for more than seven calendar days prior to encasement in concrete, adequate measures shall be taken by the Contractor, as approved by the Engineer, to protect the steel from contamination or corrosion. Reinforcing steel contaminated or corroded, shall be re-sandblasted at the Contractor's expense. No adjustment in Contract time will be made for re-sandblasting.

BASIS OF PAYMENT

Sandblasting, including labor, materials, tools, equipment and incidentals, will not be measured and paid for separately but shall be included in the work.

REVISION OF SECTION 208 EROSION CONTROL

Section 208 of the Standard Specifications is hereby removed in its entirety and replace with the following:

DEFINITIONS

Definitions used for this Section shall consist of those listed in Title 1 of the City and County of Denver “Standard Specifications for Construction, General Contract Conditions”, 2011 edition.

Definitions used for this Section hereby incorporate those identified within the City and County of Denver Construction Activities Stormwater Manual (CASM).

Additional Definitions applicable to this Section are listed heretofore:

Basis of Payment: The terms under which “Work” is paid, as a designated “Pay Item” in accordance with the quantity measured and the “Pay Unit.”

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, installation of devices, maintenance procedures, and other management practices deployed to stabilize the construction site to prevent or reduce the pollution of State Waters (see definition below). Stormwater BMPs can be classified as "structural" (i.e., devices installed or constructed on a site) or "non-structural" (procedures, such as modified landscaping practices).

Colorado Department of Health and Environment (CDPHE): State of Colorado, Water Quality Control Division responsible for issuance of State Construction Stormwater Permit.

Construction Activities Stormwater Discharge Permit (CASDP): Permit issued by the City for compliance with City & County of Denver Revised Municipal Code and Department of Transportation and Infrastructure Rules & Regulations concerning the discharge of pollutants in storm generated runoff from construction sites to Municipal Separate Storm Sewer System (MS4, see definition below) or State Waters, via the Municipal Separate Storm Sewer System (MS4).

Construction Activities Stormwater Manual (CASM): City and County of Denver Construction Activities Stormwater Manual (CASM), 2010 edition.

Colorado Department of Transportation (CDOT): State agency that has published standards for Erosion Control with accompanying Erosion Control Supervisor certification courses.

Erosion Control Supervisor (ECS): The Erosion Control Supervisor is assigned by the Contractor to perform duties as described in this Section. The ECS shall be properly trained in BMPs per requirements of Part V below, and shall be under the direction of a Professional Engineer licensed in the State of Colorado when performing any modifications to the Project Stormwater Management Plan (SWMP), as required by CDPHE.

Final Stabilization: Point of construction when all ground surface disturbing activities at the site have been completed and uniform vegetative cover has reached 70% of pre-disturbance vegetative cover (as judged by comparison to nearest fallow vegetation), or equivalent permanent features have been employed. At this point, all temporary BMPs can be removed, all construction and equipment maintenance wastes have been disposed of properly; and all elements of the Stormwater Management Plan have been completed.

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**REVISION OF SECTION 208
EROSION CONTROL**

Major SWMP Modification: Changes to the original SWMP that removes or adds additional area to the Project, or modifies the hydrology or drainage of the Project. A Major SWMP Modification requires the submission of revised Stormwater Management Plan (SWMP) elements to the Permit Authority for review and approval. Any adjustments to a SWMP must be performed either by or under the direction of a Professional Engineer licensed in the State of Colorado.

Minor SWMP Modification: Modification to the SWMP that does NOT increase the scope or change hydrology of the Project but: modifies/improves specific BMPs in use at site, indicates progression in phasing of the Project, or specifies relocation of previously approved BMPs within the Project. Any adjustments to a SWMP must be performed either by or under the direction of a Professional Engineer licensed in the State of Colorado.

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- a) Owned or operated by a State, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of stormwater or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under Section 208 of the Federal Clean Water Act that discharges to State Waters;
- b) designed or used for collecting or conveying stormwater;
- c) which is not a combined sewer; and
- d) which is not part of a Publicly Owned Treatment Works (POTW).

Permit Authority: The Department authorized by the City to review and process CASDP Applications for Capital and/ or governmental sponsored Projects. The responsible City department serving as the Permit Authority is the Engineering, Regulatory and Analytics Office. As a clarification, the Development Services Department of the City serves as the point of intake and permit processing center.

Permit Enforcement Authority: The Department authorized by the City to inspect and enforce CASDP Rules and Conditions for all construction Projects within the City's MS4 Boundary. The responsible City department serving as the Permit Enforcement Authority is the Wastewater Management Division of the Department of Transportation and Infrastructure.

State Construction Stormwater Permit: Colorado Revised Statutes require that all construction sites/development Projects, which, by definition, disturb one or more acres in area, shall be covered by a State issued general permit for construction activities. Information on the application requirements for the State permit can be obtained by phone at 303-692-3500; or by visiting their offices located at 4300 Cherry Creek Drive South, Denver, CO 80246 – 1530. or on the Web at: <https://www.colorado.gov/pacific/cdphe/news/water-quality-permits>.

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**REVISION OF SECTION 208
EROSION CONTROL**

State Waters: Any and all surface waters which are contained in or flow in or through this State, not to include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.

Examples of State Waters include, but are not limited to, perennial streams, intermittent or ephemeral gulches and arroyos, ponds, lakes, reservoirs, irrigation canals or ditches, wetlands, stormwater conveyances (when they discharge to a surface water), and groundwater.

Stormwater Management Plan (SWMP): The Stormwater Management Plan contains the requirements necessary to accomplish all the following:

The SWMP establishes a minimum standard to construct, install, maintain, and remove required BMPs during the life of the Contract to prevent or minimize pollution of stormwater due to erosion, sediment transport, and construction related pollutant generated during all phases of the Project. A SWMP consists of the following elements:

- (i) CASDP Narrative Worksheet with Narrative Report. The Narrative Report and supporting documents should fully address the methods to be used to prevent sediment, debris, and other pollutants from entering the MS4 and/ or State Waters in and around the Project area. Proposed structural and non-structural BMPs should be described with sufficient implementation detail to insure that the logical phases of the proposed construction Project meet the performance standards listed in the CASM.
- (ii) Proposed site drawings and Best Management Practice (BMP) installation details as they apply to the site conforming to the Urban Storm Drainage Criteria Manual, Vol. 3, "Best Management Practices", most current version as issued by the Urban Drainage and Flood Control District (UDFCD), or those established by the City's Department of Transportation and Infrastructure. If erosion control drawings were included within the bid documents for the Project, they shall be used for bid purposes and initial planning/ deployment of BMPs on the Project. If provided drawings are signed/ sealed by a Professional Engineer, they have been pre-approved by the Permit Authority and may be used without revision for purposes of submitting for CASDP. If provided drawings do not have signature/ seal of Professional Engineer licensed by the State of Colorado, they will require revision by the Contractor with Professional Engineer signature/ seal prior to submission to the City and County of Denver for CASDP
- (iii) Supporting documentation related to proposed BMPs that are not currently identified in UDFCD Vol. 3 or as otherwise published by the City.

Any preparation of or adjustments to a SWMP must be performed either by or under the supervision of a Professional Engineer licensed in the State of Colorado. SWMP elements submitted to the City shall also meet currently established criteria of the CDPHE as the SWMP must meet all local, State and Federal requirements

Substantial Completion of Erosion Control: Point of construction when permanent BMPs have been installed, initial growth is in place, and the site is waiting for vegetative cover to reach 70% of pre-disturbance vegetative cover.

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REVISION OF SECTION 208 EROSION CONTROL

DESCRIPTION

This Work shall consist of constructing, installing, maintaining, and removing when required, BMPs during the life of the Contract until Final Stabilization to prevent or minimize erosion, sedimentation, and pollution of any waters including storm, drainageways, MS4, State Waters, and/ or wetlands. Work under this Section includes the Contractor obtaining required Permits, utilizing SWMP elements provided in the Contract, and/ or SWMP elements specifically prepared by the Contractor as defined herein. The work shall also consist of providing on-going maintenance and monitoring of the SWMP as may be necessary due to the specific and/or dynamic needs of the Project as well as meet all requirements set forth within the CASM.

The Contractor shall coordinate the construction of temporary BMPs with the construction of permanent BMPs to assure economical, effective, and continuous erosion and sediment control and water pollution prevention throughout the construction period until Final Stabilization is achieved.

When a provision of this Section or an order by the Permit Enforcement Authority requires that an action be immediate or taken immediately, it shall be understood that the Contractor shall at once begin effecting completion of the action and pursue it to completion in a manner acceptable to the Permit Enforcement Authority, and in accordance with applicable Permitting requirements.

MATERIALS

The materials to be used for BMPs shall conform to each specific detail as set forth within the Project SWMP or as noted on the Contract Drawings.

EROSION CONTROL PERMIT STATUS

The current SWMP status for the Project is as follows:

A SWMP is currently not required for this project as the proposed disturbed area and/ or proximity to stream does not meet the minimum criteria for requiring a CASDP. However, the responsibilities for minimizing sediment pollution from the Project have not been waived, and as such, the City hereby requires the Contractor to perform as specified in the following notes. Because a SWMP and CASDP are not necessary for the Project, all cost for performance of the following notes shall not be paid for separately, but shall be included in the work.

“A CASDP Permit will not be required for this project, however, the Contractor and/or their authorized agents shall ensure that all potential pollutants generated during demolition, excavation, trenching, boring, grading, or other construction Work associated with this permit, be prevented from discharge to stormwater conveyance systems in the vicinity of the Project.

The Contractor and/or their authorized agents shall remove all sediment, mud, construction debris, or other potential pollutants that may have been discharged to or, accumulate in the flow lines of storm drainage appurtenances and public rights of ways of the City and County of Denver as a result of construction activities associated with this Project. All removals shall be conducted in a timely manner.

The Contractor shall be held responsible for remediation of any adverse impacts to the MS4, State Waters, waterways, wetlands, and or other public or private properties, resulting from work done as part of this Project.

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**REVISION OF SECTION 208
EROSION CONTROL**

The Contractor and/or their authorized agents shall insure that all loads of cut and fill material imported to or exported from the Project shall be properly covered to prevent loss of the material during transport on public rights of way.” (Sec.49-552; Revised Municipal Code).

Approved erosion and sediment control ‘Best Management Practices’ shall be maintained and kept in good repair for the duration of the Project. All necessary maintenance and repair shall be completed immediately upon discovery of any deficiency or defect

The Contractor and/or their authorized agents shall implement the following Best Management Practices (BMPs) on site during construction. Best Management Practice (BMP) installation details and maintenance shall conform to the Urban Storm Drainage Criteria Manual, Vol. 3, "Best Management Practices", most current version as issued by the Urban Drainage and Flood Control District (UDFCD), or those established by the City’s Department of Transportation and Infrastructure.

1. **VEHICLE TRACKING CONTROL:** This BMP is required at all access points to a construction site that are used by vehicular traffic or construction equipment.
2. **INLET PROTECTION:** This BMP is required on all existing or proposed storm sewer inlets in the vicinity of the construction site that may receive site runoff. The BMP must be appropriate to the type of storm inlet and appropriate for the ground surface at the inlet.
3. **INTERIM SITE STABILIZATION:** This BMP is required to provide a measure for preventing the discharge of sediment from construction sites where overlot grading or other site disturbance has occurred. This BMP is particularly necessary on sites where construction activities/disturbance will be limited to small areas of the project site. Acceptable BMPs include:
 - a) Preserving existing vegetation
 - b) Seeding and planting
 - c) Mulching
 - d) Mulching and seeding
 - e) Temporary/Permanent re-vegetation operations
 - f) Chemical soil stabilizer application (requires Permit Enforcement Authority approval)
4. **WASTE MANAGEMENT/CONTAINMENT:** This BMP requires that all construction wastes, fuels, lubricants, chemical wastes, trash, sanitary wastes, contaminated soils or debris shall be contained on site, protected from contact with precipitation or surface runoff, periodically removed from the construction site, and properly disposed of.
5. **SPILL PREVENTION /CONTAINMENT:** This BMP defines the measures proposed for preventing, controlling, or containing spills of fuel, lubricants, or other pollutants; and protecting potential pollutants from contact with precipitation or runoff.

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REVISION OF SECTION 208 EROSION CONTROL

6. **CHUTE WASHOUT CONTAINMENT:** Water used in the cleaning of ready mixed concrete truck delivery chutes shall be discharged into a predefined, bermed containment area on the job site. The required containment area is to be bermed so that wash water is totally contained. Wash water discharged into the containment area shall be allowed to infiltrate or evaporate. Dried concrete waste shall be removed from the containment area and properly disposed of. The direct or indirect discharge of water containing waste concrete to the storm sewer system is prohibited (Sec.56-102a, c; Revised Municipal Code, City and County of Denver).
7. **STREET SWEEPING:** This BMP requires that paved surfaces which are adjacent to construction sites be swept in a timely manner when sediment and other materials are tracked or discharged on to them. Either sweeping by hand or use of street sweepers is acceptable. Street sweepers using water while sweeping is preferred in order to minimize dust. Flushing off paved surfaces with water is prohibited.
8. **PERIMETER CONTROL:** This BMP requires that a construction site install a perimeter control measure along the edge of the construction site, to prevent, or filter the discharge of surface runoff from the construction site. The type of perimeter control used shall be determined based on site conditions and location. Maintenance and repair of the control measure shall occur as needed, in a timely manner.
9. **STOCK PILES:** Soils that will be stockpiled for more than thirty (30) days shall be protected from wind and water erosion within fourteen (14) days of stockpile construction. Stabilization of stockpiles located within 100 feet of an MS4 or State Waters, or with slopes 3 to 1 or greater shall be completed within seven (7) days following stockpile construction. Stabilization and protection of the stockpile may be accomplished by any of the following: Mulching, Temporary/Permanent Revegetation Operations, Chemical Soil Stabilizer Application (requires Permit Enforcement Authority approval), or erosion control matting/Geotextiles. If stockpiles are located within 100 feet of top of bank of an MS4 or State Waters, a drainageway or the site perimeter, additional sediment controls shall be required.
10. **SAW CUTTING OPERATIONS:** The Contractor shall protect all storm sewer facilities adjacent to any location where pavement cutting operations involving wheel cutting, saw cutting, or abrasive water jet cutting are to occur. The Contractor shall remove and properly dispose of all waste products generated by said cutting operations on a daily basis or as needed throughout the work day. The discharge of any water contaminated by waste products from cutting operations to the storm sewer system is prohibited. (Sec.56-102a, c; Revised Municipal Code, City and County of Denver).”

CONSTRUCTION REQUIREMENTS

A) SCHEDULES

At least 10 working days prior to the beginning of any construction work, the Contractor shall submit for approval a schedule for accomplishment of temporary and permanent BMPs shown in the SWMP. This schedule shall specifically indicate the sequence of clearing and grubbing, earthwork operations, and construction of temporary and permanent BMPs. The schedule shall include BMPs for all areas within the Project boundaries, including but not limited to, haul roads, borrow pits, and storage and other staging sites. Work shall not be started until the BMP schedule has been approved in writing by the Project Manager, and on site pre-construction inspection is performed and approved by CCD’s NPDES inspector. Once the work has started, and during the active construction period, the Contractor shall update the schedule for all BMPs on a regular basis, and as required to keep the SWMP in compliance.

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EROSION CONTROL**

B) CONSTRUCTION IMPLEMENTATION

The Contractor shall incorporate into the Project all BMPs that are appropriate for the current phase of work, as outlined in the accepted schedule.

C) UNFORSEEN CONDITIONS

The Contractor shall direct the ECS (under the supervision of a Professional Engineer licensed in the State of Colorado) to design and implement BMPs for correcting conditions unforeseen during design of the Project, or as possible for emergency situations, which arise during construction. The Project's SWMP, UDFCD Vol 3 standards and details, and CDOTs "Erosion Control and Storm-Water Quality Guide," and any approved modification to these documents as proposed by the Contractor, shall be used as reference documents for the purpose of designing appropriate BMPs. Measures and methods proposed by the Contractor to deal with unforeseen conditions shall be reviewed and approved in writing by the Permit Enforcement Authority and the Project Manager prior to implementation and construction.

In an emergency situation, the Contractor shall use best judgment for immediately responding to the emergency situation as it arises, and shall notify the Permit Enforcement Authority and ECS of the emergency situation and BMPs employed in response as soon as practical after installation.

D) PERMITS

The Contractor shall obtain all required permits for the Project including those required by federal, state, and local agencies. The Contractor shall obtain (or transfer from the City when specified) required erosion control and water quality permits and shall be responsible for compliance with all requirements under any such permits.

E) EROSION CONTROL SUPERVISOR

Contractor shall assign to the Project an employee or subcontractor to serve as Erosion Control Supervisor (ECS). The ECS shall be a person other than the Contractor's superintendent, foreman, or equivalent supervisory position. The ECS shall be experienced in aspects of BMP construction and have satisfactorily completed a Colorado DOT or equivalent ECS training program authorized by the City. Proof that this requirement has been met shall be submitted to the Project Manager at least ten working days prior to the beginning of any soil disturbance work. A list of authorized ECS training programs is available from the City upon request. Additionally, per definition, the ECS shall be under the direction of a Professional Engineer licensed in the State of Colorado when performing any modifications to the Project Stormwater Management Plan (SWMP).

The ECS shall be responsible for oversight of the implementation, maintenance, and revision of the SWMP for the duration of the Project. CCD requires the ECS to fulfill responsibilities as outlined by CDPS such as having financial control and authority to implement BMPs. The ECS's responsibilities shall be as follows:

- 1) Ensure compliance with all water quality permits or certifications in effect during the construction work.

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- 2) Supervise the installation, construction, and maintenance of all BMPs specified in the Contract and coordinate the construction of BMPs with all other construction operations.
- 3) Direct the implementation of suitable BMPs as necessary to correct unforeseen conditions or emergency situations. Direct the dismantling of those features when their purpose has been fulfilled due to completion of each Project phase unless the Permit Enforcement Authority agrees that the features be left in place.
- 4) Attend the preconstruction conference, erosion control preconstruction inspection, Project scheduling meetings, weekly construction/ field meetings, substantial completion and final stabilization inspections, and other meetings regarding construction that could impact water quality.
- 5) Evaluate all non-stormwater coming onto the site, such as springs, seeps, and landscape irrigation return flow. If such flow is identified, the ECS shall propose appropriate SWMP modifications to the Contractor to protect off-site water from becoming contaminated with sediment or other pollutants.
- 6) Coordinate with the Contractor to implement necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities.
- 7) Coordinate with the Contractor to ensure all labor, material, and equipment deployed to meet SWMP requirements is judged appropriately.
- 8) During construction, update and record the following items in the SWMP as changes occur:
 - (i) Construction boundaries (may require Major SWMP Modification)
 - (ii) Areas of disturbance (may require Major SWMP Modification)
 - (iii) Areas used for storage of construction materials, equipment, soils, or wastes.
 - (iv) Location of any dedicated asphalt or concrete batch plants.
 - (v) Location of construction offices and staging areas.
 - (vi) Location of work access routes during construction.
 - (vii) Location of borrow or waste.
 - (viii) Location of temporary or permanent stabilization.

The ECS shall start a new site map before the current one becomes illegible. All site maps shall remain with the SWMP paperwork.
- 9) Amend the SWMP whenever there are: additions, deletions, or changes in locations of BMPs. SWMP revisions shall be recorded immediately. Items shall be dated and signed at time of occurrence. Specifically, amendments shall include the following:
 - (i) A change in design, construction, operation, or maintenance of the site which would require the implementation of new or revised BMPs; or
 - (ii) Changes when the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activity.
 - (iii) Changes when temporary BMPs are no longer necessary from changes in Project phase and are removed. All inspection and maintenance activities or other repairs shall be documented.

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EROSION CONTROL**

- 10) Modify the site map with arrows to indicate direction of surface and storm water flowing across the Project site.
- 11) When adding or revising BMPs in the SWMP, amend the narrative to explain what, when, where, why, and how the BMP is being used, and add a detail to the SWMP.
- 12) If using existing topography, vegetation, etc. as a BMP, label it as such in the SWMP site map; amend the Narrative to explain when, why, and how the BMP is being used in the SWMP.
- 13) Record on the SWMP, and implement the approved plan for concrete and asphalt saw cutting, grinding, and milling containment and removal.
- 14) Update the potential pollutants list in the SWMP throughout construction meeting CASDP requirements.
- 15) Spills, leaks, or overflows that result in the discharge of pollutants shall be documented on the inspection form. The ECS shall record the time and date, weather conditions, reasons for spill, and how it was remediated. The ECS shall immediately report to the Contractor and Project Manager the following instances of noncompliance:
 - (i) Noncompliance which may endanger health or environment.
 - (ii) Spills or discharge of hazardous substance or oil which may cause pollution of the City MS4 or State Waters
 - (iii) Discharge of stormwater which may cause an exceedance of a water quality standard
- 16) Perform a thorough inspection of the stormwater management system at least every seven (7) days and within 24 hours after any precipitation or snowmelt event with the potential to cause surface erosion. If no land disturbing construction activities are present during a storm event, post-storm event inspections shall be conducted prior to commencing any new land disturbing construction activities, but no later than seventy-two (72) hours following the storm event. The inspection records shall be kept on-site in a written or previously approved format. Inspections shall be conducted during the progress of the work, during work suspensions, or until Final Stabilization of all disturbed areas is approved by Permit Enforcement Authority and shall include the following services at a minimum:
 - (i) The construction site perimeter, disturbed areas, and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. BMPs identified in the SWMP shall be observed to ensure that they are operating correctly.
 - (ii) The description of potential pollutant sources, and the BMPs identified in the SWMP, shall be revised and modified as appropriate based on the results of the inspection as soon as practicable after such inspection. Modification to the SWMP shall be implemented in a timely manner and in accordance with applicable Permit requirements.

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- (iii) The operator shall keep a record of inspections. Uncontrolled releases of sediment or polluted storm water or measurable quantities of sediment found off the site shall be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measures taken to clean up the sediment that has left the site. Inspection records shall be made available to the City upon request. Note: documentation of uncontrolled releases at site DOES NOT alleviate any State or Federal requirements for reporting of discharges or upset conditions. Care shall be taken to ensure compliance with all regulatory requirements at site.
- (iv) Seven (7) day inspections are required during construction and at all times until Final Stabilization has been achieved. Seeding and mulching of disturbed areas does NOT count as final stabilization until such time as 70% pre disturbed vegetative cover has been achieved. Sites with growth in place sufficient to deter erosion that have not yet achieved final stabilization may petition the City to grant an alternative inspection schedule while awaiting additional growth for final stabilization. These inspections must be conducted in accordance with the above paragraphs.

F) APPLYING BMPS TO STABILIZE SITE

The duration of the exposure of incomplete construction to the effects of weather shall be as short as practicable. BMPs such as: seeding, surface roughening, mulching, applying tackifier, use of geotextiles and matting, permanent landscaping, or other selected BMPs shall be applied within fourteen (14) calendar days of completion of grading/soil disturbance activities to stabilize the construction site unless disturbed area is within 100 feet of an MS4 or State Waters or has slopes of 3 to 1 or greater in which case BMPs shall be implemented within seven (7) calendar days of completion of grading activities. Disturbed areas where work is temporarily halted shall be temporarily stabilized within seven (7) days after the activity ceased unless work is to be resumed within thirty (30) calendar days after the activity ceased.

Clearing and grubbing operations shall be scheduled and performed to minimize both the area of the Project disturbed at a given time and the amount of time that disturbed areas remain open. BMPs such as temporary seeding are required between successive construction stages when disturbed areas will not be stable or active for thirty (30) calendar days or more. No payment will be made for additional work required because the Contractor has failed to properly coordinate the BMP schedule, thus causing previously stabilized areas to be disturbed by operations that could have been performed prior to the stabilization. Upon failure of the Contractor to coordinate the permanent BMPs with the grading operations in a manner to effectively control erosion and prevent water pollution, the Permit Enforcement Authority can suspend the Contractor's grading operations and the Project Manager can withhold monies due to the Contractor on current estimates until such time that all aspects of the work are coordinated in an acceptable manner.

G) WORK OUTSIDE LIMITS OF CONSTRUCTION

Non-contiguous areas outside the limits of construction that are used by the Contractor that include, but are not limited to, borrow pits, haul routes, storage and disposal areas, field offices, maintenance, batching areas, etc., shall have appropriate BMPs implemented by the Contractor at the Contractor's expense. Should said areas meet applicable CASDP Permit criteria, the Contractor shall obtain a separate CASDP or amend existing CASDP for each area as applicable at no additional expense to the City.

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**REVISION OF SECTION 208
EROSION CONTROL**

H) MAINTENANCE

The Contractor shall continuously maintain erosion and sediment control BMPs on a daily basis or as directed by the ECS so that they function properly during and after construction (including work suspensions) until Final Stabilization has been approved by the Permit Enforcement Authority. Maintenance includes, but is not limited to, the following items:

- (i) From the time seeding and mulching work begins until the date the Project has reached Substantial Completion of Erosion Control, the Contractor shall keep all seeded areas stabilized at all times. Any damage to seeded areas or to mulch materials shall be promptly repaired.
- (ii) All inspection sediment removal, and BMP maintenance activities to comply with all Federal, State & Local erosion control permit requirements until Final Stabilization is reached.
- (iii) All removal and replacement of existing BMPs due to damage to same suffered either by the contractor, outside agencies, the public, or acts of God.
- (iv) All required mechanical and/or manual street sweeping.
- (v) Discretionary changes required of any regulatory enforcement officer.

If the Contractor fails to maintain the BMPs in accordance with the Contract, or as directed, the City may at the expiration of a period of 48 hours, after having given the Contractor written notice, proceed to maintain BMPs as deemed necessary. The cost thereof will be deducted from any compensation due, or which may become due to the Contractor under this Contract.

I) MINOR SWMP MODIFICATIONS

Shall be made in the field by the Contractor and thoroughly documented in the Contractor's SWMP narrative and drawings. Should the Permit Enforcement Authority deem minor field modifications inadequate, the Contractor may be required to a) make specific modifications as requested by the Permit Enforcement Authority or b) return to the original approved design specifications. Minor SWMP Modifications are allowed, covered under the original CASDP, and required as part of standard maintenance and operation.

J) MAJOR SWMP MODIFICATIONS

The City reserves the right to require changes in the Work or Project Limits that may require a Major Modification to the SWMP and/ or CASDP due to unforeseen circumstances. Should this occur, the Contractor will be responsible for the following (as applicable) and applying for CASDP amendment

- (i) Make required revisions to comply with changing Federal or State rulemaking if it occurs within timeframe of the Project.
- (ii) Make required revisions due to unforeseen or unplanned conditions leading to deficient Drawings/ SWMP (hazardous materials encountered, landfills, expansion of work limits, etc.)
- (iii) Prepare revised SWMP elements endorsed by a Professional Engineer licensed in the State of Colorado.

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**REVISION OF SECTION 208
EROSION CONTROL**

K) SUBSTANTIAL COMPLETION OF EROSION CONTROL

When a CASDP is required for the Project, Substantial Completion of the Project as defined by the City and County of Denver General Contract Conditions cannot be reached until Substantial Completion of Erosion Control has been granted. Granting of Substantial Completion of Erosion Control must be requested by the Contractor and be approved by the Permit Enforcement Authority in the form of a "Certificate of Substantial Completion of Erosion Control".

L) FINAL STABILIZATION

Granting of Final Stabilization must be requested by the Contractor and be approved by the Permit Enforcement Authority. Other permanent soil stabilization techniques may be proposed, in writing, by the Contractor and used upon approval, in writing, by the Project Manager and Permit Enforcement Authority.

The Contractor shall follow the following procedures for approval of Final Stabilization:

- (i) The Contractor shall file Inactivation Request for Construction Activities Stormwater Discharge Permit (available within CASDP guidance documents) with the Permit Enforcement Authority.
- (ii) The Contractor shall coordinate with the Permit Enforcement Authority to hold a Final Inactivation Inspection.
- (iii) If passing, the Permit Enforcement Authority transmits a letter of approval for Final Stabilization.
- (iv) If not passing, the Permit Enforcement Authority transmits a letter of denial for Final Stabilization with associated inspection report to Contractor.
- (v) Stabilization, inspection and maintenance requirements shall continue until confirmation of having met final closure requirements have been granted in writing by the Permit Enforcement Authority. When Final Stabilization has been reached, the Permit Enforcement Authority shall issue a "Certificate of Final Stabilization".
- (vi) Once the Inactivation request is approved by the City and County of Denver, the contractor can apply to close the State Stormwater Permit.

M) FINAL ACCEPTANCE

CASDP obligations (including reaching Final Stabilization) may hinder the ability to reach Final Acceptance for the overall Project as defined in the City General Contract Conditions.

CONSTRUCTION OF BMPS

BMPs shall be constructed so that they conform to all requirements as set forth within the Project SWMP. They shall meet all requirements set forth within each BMP detail and shall be installed and maintained so that they function in an effective and operable manner.

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EROSION CONTROL**

METHOD OF MEASUREMENT

Silt fence, silt berms, erosion logs, gravel bags, silt dikes, temporary berms, temporary diversions, temporary drains, and brush barriers will be measured by the actual number of linear feet that are installed and accepted. Stakes, anchors, connections and tie downs used for temporary slope drains will not be measured and paid for separately, but shall be included in the work.

Storm drain inlet protection will be measured by the unit as specified in the Contract. Sediment trap and sediment basin quantities will be measured by the unit which shall include all excavation and embankment required to construct the item.

Removal and disposal of sediment, concrete & trash that is or is not generated by construction activities will not be measured separately but shall be included in the work.

Any excavation required for the removal of sediment from traps, basins, areas adjacent to silt fences and erosion bales, and any other cleanout excavation of accumulated sediment, and removal of check dams or storm drain inlet protection will not be measured separately but shall be included in the work.

All work required per this specification that is not specifically a bid item in the summary of approximate quantities or listed below, will not be measured and paid for separately, but shall be included in the work.

BASIS OF PAYMENT

Work to furnish, install, maintain, replace (if not due to contractor negligence), remove, and dispose of BMPs specified in the Contract will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Silt Fence	Linear Feet
Aggregate Bag	Linear Feet
Storm Drain Inlet Protection (Type II)	Each

Temporary BMPs will be measured and paid for by the BMPs used, except that surface roughening, removal and disposal of sediment, and removal of trash will not be measured and paid for separately.

Payment for each BMP item will be full compensation for all work, materials and equipment required to furnish, install, maintain, remove, and dispose of it. BMPs as deployed per the SWMP requiring replacement due to Contractor negligence and or carelessness shall be provided at the Contractor's expense.

Temporary BMPs required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or for the Contractor's convenience, shall be performed at the Contractor's expense.

If the Contractor fails to complete construction within the approved contract time, payment will not be made for Section 208 pay items for the period of time after expiration of the approved contract time. These items shall be provided at the Contractor's expense.

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The cost for any corrective actions required by the State or City due to contractor's failure to obtain or comply with applicable Permits will be borne by the Contractor, including fines and penalties. In the case of failures on the part of the Contractor in controlling erosion, sedimentation, and/or water pollution, the City may provide the necessary corrective actions. All corrective action costs, including Project engineering costs, will be charged to the Contractor, and appropriate deduction will be made from the Contractor's monthly pay estimate.

The sole remedy for additional costs associated with installation of BMPs as required by regulatory agencies to ensure compliance with local and State requirements shall be per unit BMP as provided in the Bid Schedule of this Contract. The Contractor however may submit a separate itemized Change Order for any required Major SWMP Modification proposed by the City during the course of the Project.

Additional stabilized construction/ staging area proposed by the Contractor beyond the area included in the Bid shall be installed per requirements of the Permit Authority and Permit Enforcement Authority without any additional compensation.

Payment for storm drain inlet protection will be full compensation for all work, materials, and equipment required to complete the item, including surface preparation, maintenance throughout the Project, and removal upon completion of the work. Aggregate will not be measured and paid for separately, but shall be included in the work.

Surveying of permanent BMPs will not be measured and paid for separately, but shall be included in the work.

**REVISION OF SECTION 210
MODIFY BRIDGE EXPANSION DEVICE**

Section 210 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

This work consists of removal and disposal of all foreign materials on and around the bridge bearings including sandblasting the bearings.

CONSTRUCTION REQUIREMENTS

The Contractor shall clean the bridge bearings by sandblasting (or alternate approved method) all exposed portions of the bearing plates, bolts, and nuts. The Contractor shall also remove and dispose of all foreign materials, dirt and debris collected within 2 feet of the bearings on top of the pier cap. Cleaning shall be done by vacuum truck removal method and/or sandblasting. If approved by Engineer, a combination of hand tools and equipment may also be used at designated locations.

All water from sandblasting shall be contained, collected, and treated according to all Federal, State, and Local laws prior to disposal.

Pigeon droppings and other potentially hazardous bird debris may be present on the pier cap. It shall be removed and disposed of according to all Federal, State, and Local laws and according to Section 250 of the Standard Specifications.

METHOD OF MEASUREMENT

Modify Bridge Expansion Device will be measured by the quantity of bridge bearings cleaned as designated in the plans, and accepted.

BASIS OF PAYMENT

The accepted quantities of Modify Bridge Expansion Device will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Modify Bridge Expansion Device	Each

Payment for Modify Bridge Expansion Device will be full compensation for all labor, materials, tools, equipment, and incidentals required to complete the work including disposal of the collected materials.

**REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST**

Section 240 is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

240.01 This work consists of protecting migratory birds during construction.

MATERIALS AND CONSTRUCTION REQUIREMENTS

240.02 The Contractor shall schedule removal operations and work on structures to avoid taking (pursue, hunt, take, capture or kill; attempt to take, capture, kill or possess) migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall retain a qualified wildlife biologist for this project. The wildlife biologist shall have a minimum of three years experience conducting migratory bird surveys and implementing the requirements of the MBTA. The Contractor shall submit documentation of the biologist's education and experience to the Engineer for acceptance. A biologist with less experience may be used by the Contractor subject to the approval of the Engineer based on review of the biologist's qualifications.

The wildlife biologist shall record the location of each protected nest, bird species, the protection method used, and the date installed. A copy of these records shall be submitted to the Engineer.

(a) *Vegetation Removal.* When possible, vegetation shall be cleared prior to the time when active nests are present. Vegetation removal activities shall be timed to avoid the migratory bird breeding season which begins on April 1 and runs to August 31. All areas scheduled for removal between April 1 and August 31 shall first be surveyed within the work limits for active migratory bird nests. The Contractor's wildlife biologist shall also survey for active migratory bird nests within 50 feet outside work limits. Contractor personnel shall enter areas outside City right of way only if a written, signed document granting permission to enter the property has been obtained from the property owner. The Contractor shall document all denials of permission to enter property. The Contractor shall avoid all active migratory bird nests. The Contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive. Inactive nest removal and other necessary measures shall be incorporated into the work as follows:

1. *Tree and Shrub Removal or Trimming.* Tree and shrub removal or trimming shall occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests shall be conducted by the wildlife biologist within the seven days immediately prior to the beginning of work in each area of tree and shrub removal or trimming. The survey shall be conducted for each phase of tree and shrub removal or trimming.

If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest shall remain undisturbed and protected until the nest becomes inactive. The nest shall be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be undisturbed. This buffer dimension may be changed if determined appropriate by the wildlife biologist and approved by the Engineer. Work shall not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

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**REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST**

2. *Grasses and Other Vegetation Management.* Due to the potential for encountering ground nesting birds' habitat, if work occurs between April 1 and August 31, the area shall be surveyed by a wildlife biologist within the seven days immediately prior to ground disturbing activities.

The undisturbed ground cover to 50 feet beyond the planned disturbance, or to the right of way line, whichever is less, shall be maintained at a height of 6 inches or less beginning April 1 and continuing until August 31 or until the end of ground disturbance work, whichever comes first.

If birds establish a nest within the survey area, an appropriate buffer of 50 feet will be established around the nest by the Contractor's biologist. This buffer dimension may be changed if determined appropriate by the Contractor's biologist and approved by the Engineer. The Contractor shall install fence (plastic) at the perimeter of the buffer. Work shall not proceed within the buffer until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

- (b) *Work on structures.* The Contractor shall prosecute work on structures in a manner that does not result in a taking of migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall not prosecute the work on structures during the primary breeding season, April 1 through August 31, unless he takes the following actions:

- (1) The Contractor shall remove existing nests prior to April 1. If the Contract is not awarded prior to April 1 and the City has removed existing nests, then the monitoring of nest building shall become the Contractor's responsibility upon Notice to Proceed.
- (2) During the time that the birds are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity.
- (3) If the birds have started to build any nests, they shall be removed before the nest is completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.
- (4) Installation of netting may be used to prevent nest building. The netting shall be monitored and repaired or replaced as needed. Netting shall consist of a mesh with openings that are $\frac{3}{4}$ inch by $\frac{3}{4}$ inch or less.

If an active nest become established, i.e., there are eggs or young in the nest, all work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied as determined by the wildlife biologist and approved by the Engineer. The Contractor shall prevent construction activity from displacing birds after they have laid their eggs and before the young have fledged.

If the project continues into the following spring, this cycle shall be repeated. When work on the structure is complete, the Contractor shall remove and properly dispose of netting used on the structure.

- (c) *Taking of a Migratory Bird.* The taking of a migratory bird shall be reported to the Engineer. The Contractor shall be responsible for all penalties levied by the U. S. Fish and Wildlife Service (USFWS) for the taking of a migratory bird.

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**REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST**

METHOD OF MEASUREMENT

240.03 Wildlife Biologist will be measured by the actual authorized number of hours a wildlife biologist is on site performing the required tasks.

Removal of nests will be measured by the actual number of man-hours spent removing inactive nests just prior to and during the breeding season, April 1 through August 31. During this period, the Contractor shall submit to the Engineer each week for approval a list of the workers who removed nests and the number of hours each one spent removing nests.

BASIS OF PAYMENT

240.04 The accepted quantities measured as provided above will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

<u>Pay Item</u>	<u>Pay Unit</u>
Wildlife Biologist	Hour
Removal of Nests	Hour

Payment for Wildlife Biologist will be full compensation for all work and materials required to complete the item, including wildlife biologist, wildlife survey, and documentation (record of nest location and protection method)

Payment for Removal of Nests will be full compensation for all work and material required to complete the work.

Removal of trees will be measured and paid for in accordance with Section 202.

Fence (Plastic) will be measured and paid for in accordance with Section 607

**REVISION OF SECTION 403
HOT MIX ASPHALT**

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

Table 403-1					
Property	Test Method	Value For Grading			
		SX(75)			
Air Voids, percent at: N (design)	CPL 5115	3.5 – 4.5			
Lab Compaction (Revolutions): N (design)	CPL 5115	75			
Stability, minimum	CPL 5106	30			
Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces, % minimum*	CP 45	60			
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80			
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)			
Grade of Asphalt Cement, Top Layer		PG 64-28			
Grade of Asphalt Cement, Layers below Top		PG 64-28			
Voids in the Mineral Aggregate (VMA) % minimum	CP 48	See Table 403-2			
Voids Filled with Asphalt (VFA), %	AI MS-2	65-75			
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50	0.6 – 1.2 0.8 – 1.6			
<p>Note: AI MS-2 = Asphalt Institute Manual Series 2</p> <p>Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.</p> <p>Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. Gradations for mixes with a nominal maximum aggregate size of 3/4" to 3/8" are considered a coarse gradation if they pass below the maximum density line at the #8 screen. Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen.</p> <p>*Fractured face requirements for SF may be waived by RME depending on project conditions.</p>					

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**REVISION OF SECTION 403
HOT MIX ASPHALT**

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum. The City will establish the production asphalt cement and volumetric targets based on the Contractor's mix design and the relationships shown between the hot mix asphalt mixture volumetric properties and asphalt cement contents on the Form 429. The City may select a different AC content other than the one shown at optimum on the Contractor's mix design in order to establish the production targets as contained on the Form 43. Historically, Air Voids adjustments typically result in asphalt cement increases from 0.1 to 0.5 percent. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

Table 403-2

Nominal Maximum Size*, mm (inches)	Minimum Voids in the Mineral Aggregate (VMA)			
	***Design Air Voids **			
	3.5%	4.0%	4.5%	5.0%
37.5 (1½)	11.6	11.7	11.8	N/A
25.0 (1)	12.6	12.7	12.8	
19.0 (¾)	13.6	13.7	13.8	
12.5 (½)	14.6	14.7	14.8	
9.5 (⅜)	15.6	15.7	15.8	
4.75 (No. 4)	16.6	16.7	16.8	16.9
	* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air voids beyond those listed.			

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

The hot mix asphalt shall not contain any reclaimed asphalt pavement.

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**REVISION OF SECTION 403
HOT MIX ASPHALT**

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading __).

Acceptance samples shall be taken at the location specified in Method A of CP-41..

Subsection 403.03 shall include the following:

The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

Delete subsection 403.05 and replace with the following:

403.05 The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton for the bituminous mixture.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Hot Mix Asphalt (Grading SX)(75)(PG 64-28)	Ton

Aggregate, asphalt recycling agent, asphalt cement, additives, hydrated lime, and all other work and materials necessary to complete each hot mix asphalt item will not be paid for separately, but shall be included in the unit price bid. When the pay item includes the PG binder grade, any change to the submitted mix design optimum asphalt cement content to establish production targets on the Form 43 will not be measured and paid for separately, but shall be included in the work. No additional compensation will be considered or paid for any additional asphalt cement, plant modifications and additional personnel required to produce the HMA as a result in a change to the mix design asphalt cement content.

Historically, typical asphalt cement increases reflected on the Form 43 are from 0.1 to 0.5 percent. However, the Contractor should anticipate the AC increases typical of his mixes. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

When the pay item does not include the PG binder grade, asphalt cement will be measured and paid for in accordance with Section 411. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

Excavation, preparation, and tack coat of areas to be patched will not be measured and paid for separately, but shall be included in the work.

**REVISION OF SECTION 408
JOINT SEALANT**

Section 408 of the Standard specifications is hereby revised for this project as follows:

Subsection 408.01 shall include the following:

This work consists of furnishing and installing hot poured joint sealant in single or multiple path saw cuts on hot mix asphalt overlay in accordance with these specifications and in conformity with the lines and details shown on the plans or as directed by the Engineer.

For replacement of existing joints at the top surface of concrete deck and approach slab, this work also includes removal of joint seal and cleaning of the joint.

Subsection 408.03 shall include the following:

For replacement of existing joints at the top surface of concrete deck and approach slab, all joint seal material and debris shall be removed, and the joint cleaned prior to the hot compressed air lance cleaning associated with the placement of new joint material.

The location, width, and depth of the saw cut for the joint sealant shall be in conformity with the plans or as directed by the Engineer.

Delete subsection 408.04 and replace with the following:

Joint sealant will be measured by the actual curb to curb quantity completed and accepted. Joint sealant will be paid for as the single length for multiple sawcuts and seals per joint.

Delete subsection 408.05 and replace with the following:

The accepted quantities of Joint Sealant will be paid for at the contract unit price.

Payment will be made under:

Pay Item

Joint Sealant

Pay Unit

Linear Foot

Payment for Joint Sealant will be full compensation for all labor, materials, tools, equipment and incidentals required to complete the item.

Saw cutting, removal, and cleaning will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 513
BRIDGE DRAIN**

Section 513 is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

513.01 This work shall consist of furnishing and placing bridge drains and drain pipe in accordance with the details shown on the plans and the specifications. The work shall include, but not be limited to, bridge inlet, grates, pipe, brackets, anchors, cleanouts, splices, caps, and other items required to complete the installation of the deck drain system.

MATERIALS

513.02 Pipe for bridge drains shall meet the requirements of ASTM A53 and shall be standard weight.

Down spout pipe shall be hot dipped galvanized after fabrication. Galvanizing shall meet the requirements of AASHTO M111.

Metal used in the manufacture of castings shall meet the requirements of ASTM A48 Class 35B.

CONSTRUCTION REQUIREMENTS

513.03 Bridge drains shall be placed and secured at the locations shown on the plans prior to placement of concrete.

Prior to fabrication of any portions of the system, the Contractor shall field verify all dependent measurements and verify all required pipe, inlet, and splice sizes. The City is not liable for bridge drain system elements that are fabricated with incorrect dimensions and will not pay for any incorrectly fabricated elements.

Prior to fabrication of this item, two sets of working drawings which comply with the requirements of Section 105 shall be submitted to the Engineer for information only. The working drawings will not be approved or returned.

METHOD OF MEASUREMENT

513.04 Bridge drains will be measured by the number of bridge drain systems installed and accepted.

BASIS OF PAYMENT

513.05 The accepted quantities of bridge drains will be paid for at the contract unit price per each.

Payment will be made under:

Pay Item
Bridge Drain

Pay Unit
Each

**REVISION OF SECTION 518
BRIDGE EXPANSION DEVICE**

Section 518 of the Standard Specifications is hereby revised for this project as follows:

In subsection 518.04, delete the second paragraph and replace with the following:

The device shall consist of a continuous premolded elastomeric expansion joint seal (also called neoprene gland) and steel extrusions as shown on the plans, required by the manufacturer, or specified herein for attaching the elastomeric expansion joint seal to the anchored steel extrusions. The expansion device shall have a rated range of movement of 4 inches including rotations.

In subsection 518.04, delete the fourth paragraph and replace with the following:

Structural steel extrusions for strip seal expansion devices shall conform to the specifications of ASTM A709 Grade 36 or Grade 50W, steel extrusions for modular expansion devices and cover plates shall conform to the specifications of ASTM A709 Grade 50 or Grade 50W, whereas other structural steel shall conform to the specifications of ASTM A709 Grade 36, Grade 50 or Grade 50W. Fabrication and welding of structural steel shall conform to the requirements of Section 509. The material designations for all steel components shall be shown in the Contractor's shop drawings.

In subsection 518.09, delete the first and second paragraph and replace with the following:

The Contractor shall furnish sealed shop drawings in conformity with subsection 105.02 for all elastomeric expansion devices bid under this section. Working drawings and shop drawings not signed by a PE will not be acceptable for this project. Shop drawings shall specifically identify each piece, location of welding, bends in the extrusions, galvanizing, and installation hardware. The manufacturer's instructions for proper installation of the expansion joint device shall be included in the shop drawings. Shop drawings which lack manufacturer's installation instructions will be returned for resubmittal.

Where applicable according to the plans, details of the expansion device through cover plates, and connections shall be shown on the shop drawings.

Subsection 518.09 shall include the following:

The installation of the new bridge expansion device shall conform to the staged construction required by the Lane Closure Policy unless otherwise directed or approved by the Engineer.

Subsection 518.13 shall include the following:

The cost for the technical representative of the manufacturer shall be included in the work.

REVISION OF SECTION 519 EPOXY RESIN (INJECTION)

Section 519 is hereby added to the Standard Specifications as follows:

DESCRIPTION

519.01 This work consists of furnishing and injecting existing concrete cracks with epoxy resin as part of a Fiber Reinforced Polymer (FRP) composite system on an existing bridge. All work shall be in accordance with the Contract Plans and these Specifications.

MATERIALS

519.02 The Contractor shall use an epoxy that is compatible with the FRP composite system selected for this project. The Epoxy shall be a two-part type, low viscosity epoxy adhesive material containing 100% solids and shall meet or exceed the following characteristics when tested in accordance with the following standards:

(a) Characteristics of Components:

- 1) Component A - shall be a blend of modified epoxy resins.
- 2) Component B - shall be a blend of modified amine curing agents.

(b) Test Method Requirements:

- 1) Component A - Brookfield RVT, 700 maximum; Viscosity @ 77 +/- 3 degrees F., cps; Spindle No. 2 @ 20 rpm.
- 2) Component B - Brookfield RVT, 240 maximum; Viscosity @ 77 +/- 3 degrees F, cps; Spindle No. 2. @ 20 rpm.

(c) Properties of Combined Components: When mixed in the ratio of two parts Component A to one part Component B by volume; or 100 parts Component A to 44 parts Component B by weight, shall be:

- 1) Potlife, 60g @ 77 +/- 3 degrees F., minutes; 25 minutes maximum.

(d) Properties of the Cured Adhesive: When cured for seven days @ 77 +/- 3 degrees F., unless otherwise specified, shall be:

- 1) Ultimate Tensile Strength, psi: ASTM D638; 8000 minimum.
- 2) Compressive Yield Strength, psi: ASTM D695*; 15,000 minimum.
- 3) Heat Deflection Temperature: ASTM D648*; 130 F. minimum.

Test specimens must be cured in a manner such that the peak exothermic temperature of the adhesive does not exceed 77 degrees F.

The Contractor shall submit a Manufacturer's Certificate of Compliance to the Engineer, in accordance with Section 106.12, confirming that the materials are both compatible with the FRP system and that they conform to the material properties specified above.

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**REVISION OF SECTION 519
EPOXY RESIN (INJECTION)****CONSTRUCTION REQUIREMENTS**

519.03 General. All existing cracks in the pier cap with a width greater than or equal to 0.016 inches shall be pressure injected with epoxy in accordance with ACI 224.1R-07. Crack width determination shall be taken a minimum of 1/8 inch below the concrete surface using a measuring device capable of penetrating into the crack. Cracks in the deck, girders, and columns shall not be injected.

519.04 Equipment.

- (a) *Type.* The equipment used to meter and mix the two injection adhesive components and inject the mixed adhesive into the crack shall be portable, positive displacement type pumps with interlock to provide positive ratio control of exact proportions of the two components at the nozzle. The pumps shall be electric or air powered and shall provide in-line metering and mixing. The same manufacturer shall be used for both the injection equipment and the epoxy resin adhesive.
- (b) *Discharge Pressure.* The injection equipment shall have automatic pressure control capable of discharging the mixed adhesive at any pre-set pressure up to 200 psi + 5 psi and shall be equipped with a manual pressure control override. For injection of the gel epoxy, the equipment shall be equipped with the above features and be able to pump at up to 5,000 psi.
- (c) *Ratio Tolerance.* The equipment shall have the capability of maintaining the volume ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of + 5% by volume at any discharge pressure up to 200 psi. For gel epoxies, the ratio will be checked by weight at up to 5,000 psi.
- (d) *Automatic Shut-Off Control.* The injection equipment shall be equipped with sensors on both the Component A and B reservoirs that will automatically stop the machine when only one component is being pumped to the mixing head.

519.05 Surface Preparation. Installation of joint sealers shall not proceed until contaminants capable of interfering with their adhesion are removed from joint substrates.

Surfaces adjacent to joints or other areas of application shall be cleaned of dirt, dust, grease, oil or other foreign matter detrimental to bond of epoxy injection surface seal system.

Entry ports shall be provided along the crack at intervals of not less than the thickness of the concrete member at that location.

Surface seal material shall be applied to the face of the crack or end. For through cracks, surface seal shall be applied to both faces.

Enough time for the surface seal material to gain adequate strength shall pass before proceeding with the injection.

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**REVISION OF SECTION 519
EPOXY RESIN (INJECTION)**

519.06 Installation and Application. Both sides of the crack shall be sealed with an epoxy mortar or oil-free clay, leaving small holes through which epoxy resin shall be injected. 1/8" to 1/4" diameter tubing may be used to form holes. Holes shall be 2"-4" long, roughly 8" apart.

Injection of epoxy adhesive shall begin at lower entry port and continue until there is an appearance of epoxy adhesive at the next entry port adjacent to the entry port being pumped.

When epoxy adhesive travel is indicated by appearance at the next adjacent port, injection shall be discontinued on the entry port being pumped, and epoxy injection shall be transferred to next adjacent port where epoxy adhesive has appeared.

Epoxy adhesive injection shall be continuously performed until cracks are completely filled.

If port to port travel of epoxy adhesive is not indicated, the Contractor shall stop work immediately and notify the Engineer.

When cracks or joints are completely filled, epoxy adhesive shall be cured for sufficient time to allow removal of injection or port sealing devices.

519.07 Storage and Handling. Storage and handling of all components of the epoxy system shall conform to Sections 106.08 and 106.09 as approved by the Engineer.

All materials shall be used and installed before the shelf life expiration date. All materials for which the shelf life date has been reached and surpassed shall be removed from the project site.

METHOD OF MEASUREMENT

519.08 Injection of epoxy resin in existing cracks will be measured by the linear feet of cracks injected. Injection length will be the minimum distance between the ends of the crack along each face to be sealed. Sealant of any cracks in the existing deck, girders, columns and any cracks with a width less than 0.016 inches will not be measured or paid for.

BASIS OF PAYMENT

519.09 Epoxy Resin (Injection) will be paid at the unit price bid as follows:

Payment will be made under:

Pay Item

Epoxy Resin (Injection)

Pay Unit

Linear Foot

Payment for Epoxy Resin (Injection) will be full compensation for all labor, equipment, materials and all incidentals necessary to prepare the joint surfaces, seal the surfaces, install and remove ports and complete the epoxy injection.

REVISION OF SECTION 601 CONCRETE CLASS DR

Section 601 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing and placing concrete patching material in accordance with these specifications and in conformity with the lines, grades and dimensions as shown on the plans or established.

MATERIALS

The concrete patching material may be pre-packaged Concrete patching material or Class DR concrete.

(a) *Pre-Packaged Concrete Patching Material.* Concrete patching material shall be polymer modified hydraulic cement and shall be one of the following:

- (1) Rapid Set DOT Concrete Mix as manufactured by:
CTS Cement Manufacturing Company
11065 Knott Avenue
Cypress, CA 90630
- (2) HD 50 as manufactured by
Dayton Superior Corp.
1125 Byers Road
Miamisburg, Ohio 45342
- (3) or approved equal

Alternate concrete patching materials shall demonstrate 1/32-inch maximum mid panel and end crack widths, 0 percent delamination, and 0 percent spalling as tested by NTPEP in a one-year field evaluation. The Contractor shall refer to rapid-set concrete patch materials at www.ntpep.org.

The Contractor shall obtain and provide to the Engineer documentation from the Concrete patching material supplier of the expiration dates of the material components that will be used on the project.

Concrete patching material shall attain an average compressive strength of at least 2,500 psi prior to placing traffic and 4,500 psi at 28 days. Concrete patching material compressive strengths shall be tested according to ASTM C39 or ASTM C109. The compressive strengths shall be used to develop a strength versus time curve for the material. Three strength data points shall be determined to assess the necessary time to wait before traffic is allowed on the material. Maturity meter data may also be submitted to allow the use of maturity meter to determine when the patching material has gained the required strength for opening to traffic.

Pre-packaged concrete patching material shall be on the CDOT Approved Product List for PrePackaged Class DR.

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**REVISION OF SECTION 601
CONCRETE CLASS DR**

Concrete patching material shall provide a minimum bond strength of 2,000 psi at 28 days, as tested by ASTM C882.

Concrete patching material shall have a relative durability factor greater than 90 and a mass loss not to exceed 2.0 percent as tested by ASTM C666.

Concrete patching material shall have a maximum expansion of 0.05 percent, at 28 days as tested by ASTM C157

ASTM C39, C109, C882 and C157 testing shall be from the same lot of concrete patching material being used on the project. A CTR, in accordance with subsection 106.13, shall be submitted to the Engineer for approval at least 2 weeks prior to placement.

Two bags of the concrete patching material, and two bags of the extending aggregate if used, from the same lot to be used on the project shall be submitted to an accredited Lab to verify compressive strength, and set time properties, by the Contractor before the concrete patching material is to be used on the project. Test results shall be submitted to the Engineer for acceptance. Verification of the strength properties will be achieved if the test results are either equal in strength or stronger than those advertised. Verification of the set time will be achieved if the set time is equal or less than the advertised value. Testing shall be included in the cost of the materials. Test results from other projects using the same lot may be submitted. If the project uses material from more than one lot, test results are required for each lot used.

When Anodes are specified and are to be installed with pre-packaged concrete patching material, the Contractor shall submit test results of ASTM C1760 that the concrete patching material has an electrical resistivity of 15,000 Ohm-centimeters or less. Concrete patching materials that do not meet the electrical resistivity requirements may be used with special anode installation methods recommended by the anode manufacturer and approved by the Engineer. Additional work for special anode installation methods shall be included in the bid price. It is the responsibility of the Contractor to verify and provide a material that is acceptable to the anode manufacturer prior to bidding on the project. Rejection of incompatible materials and substitution of compatible materials will be at the Contractor's expense.

- (b) *Class DR Concrete.* Class DR Concrete shall have a minimum cement content of 615 pounds per cubic yard, an air content of 5 to 8 percent, a maximum water to cement ratio of 0.44, a minimum 6 hour compressive strength of 2,500 psi and a minimum 28 day compressive strength of 4,500 psi. The concrete mix shall consist of a minimum of 50 percent AASHTO M 43 Size No. 7 or Size No. 8 coarse aggregate by weight of total aggregate. Lab test results shall show that the unrestrained shrinkage is less than 0.050 percent when tested by CP-L 4103.

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**REVISION OF SECTION 601
CONCRETE CLASS DR**

ASTM C150 Type III or ASTM C1157 Type HE cement may be used in lieu of Concrete Class DR, as approved.

The Contractor shall develop maturity relationships in accordance with CP 69. The Contractor shall provide a multi-channel maturity meter and all necessary wire and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meter and wire. Placement shall be as directed by the Engineer.

CONSTRUCTION REQUIREMENTS

- (a) *Pre-Packaged Concrete Patching Material.* Concrete patching material shall be placed in the repair areas before the expiration date of the material. Proportions of all mix components shall be measured by volume measurement (number of bags of standard weight and quantity of water or liquid component in gallons or quarts). If partial bags are used the bagged mix, extending aggregate, and water shall be weighed on a calibrated scale provided by the Contractor. The Contractor shall submit the Concrete patching material mix design for approval two weeks before any concrete patching material is placed. The Contractor shall also submit a method statement describing what type of equipment will be used to batch the patching material, including the type of mixer, the type of material, volume measures to be used, scales for partial bags, procedures to insure accurate proportioning of the patching material components, and tools to be used in placing and finishing the surface of the patch.

The Contractor shall produce a batch ticket for each mixed batch of concrete patching material with the following information shown on each ticket:

- (1) Project No.
- (2) Bridge No.
- (3) Structure Temperature
- (4) Date and Time of batch
- (5) Material Type, name, and manufacturer
- (6) Material expiration date
- (7) Weight or volume of bag mix concrete
- (8) Weight or volume of extending aggregate
- (9) Weight or volume of water or liquid component
- (10) Location of placement (Lane and Station Limits)

The tickets shall be available on site for City personnel to inspect.

Each day the Contractor shall provide to the Engineer tickets for each bridge in separate envelopes stating Project Number, Bridge Number, Date of Paving, Type of Material, Daily Total, and Cumulative Total.

Concrete patching material minimum and maximum thicknesses shall be per recommendation of the material manufacturer.

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REVISION OF SECTION 601 CONCRETE CLASS DR

Concrete patching material site preparation, batching, extending with aggregate, mixing, placement, placement during cold temperatures, consolidation, and curing shall be in accordance with the manufacturer's recommendations. A mix may be extended up to 90 percent of the manufacturer's maximum extension.

The surface of concrete patching material shall have a similar texture as the adjacent driving surfaces.

The Contractor shall submit a report consisting of the mix proportions and compressive strength vs time curve information to the Engineer at least two weeks before the material is to be used on the project.

Field cast cylinders or cubes shall be taken by a qualified testing representative, with a minimum ACI Field Testing Technician Grade I certification, and test results shall be submitted to the Engineer within 24 hours, the first day and every other subsequent day deck patching material is placed with compressive strength determined at 24 hours according to ASTM C 39 or ASTM C109.

Areas patched with Concrete Class DR shall not be opened to traffic until concrete patching material has reached a compressive strength of 2,500 psi using the compressive strength versus time curve developed for the material.

- (b) Class DR Concrete. Class DR Concrete shall be placed in accordance with Class D concrete with the following changes:

The area to be patched with Class DR Concrete and anodes shall be saturated surface dry before placement and shall be free of standing water at the time of placement.

Portions of decks patched with Concrete Class DR shall not be opened to traffic until the concrete's compressive strength, determined by CP 69, has achieved at least 2500 psi.

Concrete Class DR shall be cured until a compressive strength of at least 2500 psi has been achieved. The curing compound shall conform to ASTM C309, Type 2 applied at a rate of 1 gallon per 100 square feet. The curing compound shall be applied as a fine spray within 10 minutes of discontinuing the finishing operation. Before and during application the curing compound shall be kept thoroughly mixed. Curing blankets with a minimum R-value of 0.5 shall be provided and shall be placed as soon as they can be placed without marring the surface. When the ambient temperature is below 50 degrees Fahrenheit, the Contractor shall maintain the concrete temperature above 50 degrees Fahrenheit during the curing period.

METHOD OF MEASUREMENT

Concrete Class DR will be measured and paid for as the actual quantity placed and accepted by the Engineer. The Contractor may stockpile material at their own risk. All unused concrete patching material shall remain the property of the Contractor. The City will not purchase leftover materials or pay any restocking fees.

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**REVISION OF SECTION 601
CONCRETE CLASS DR**

BASIS OF PAYMENT

The accepted quantities will be paid for at the contract unit price per unit of measurement for each of the pay items listed below that appear in the bid schedule.

Pay Item

Concrete Class DR

Pay Unit

Cubic Yard

Payment for Concrete Class DR will be full compensation for all the work, materials, tools, equipment, testing, and incidentals required to complete patching, excluding special installation of anodes when specified, when required.

Furnishing all appurtenances including the molding, curing and breaking of cylinders or cubes for generating the strength versus time curve and for determining the information cylinder or cube strength will not be measured and paid for separately, but shall be included in the work.

REVISION OF SECTION 601 CONCRETE (PATCHING)

Section 601 of the Standard Specifications is hereby revised for this project as follows:

Subsection 601.01 shall include the following:

Concrete (Patching). This work consists of furnishing and placing material in accordance with these specifications and in conformity with the lines, grades and dimensions as shown on the plans or established.

Subsection 601.02 shall include the following:

Materials for concrete patching shall be from the list shown on the CDOT's Approved Product List, category: concrete, repair/patching, rapid set, vertical & overhead or an approved equal. This list may be viewed at the following internet link: <https://www.codot.gov/business/apl> or <https://apps.coloradodot.info/apl/AplSearch.cfm>. Concrete patching material shall have an average compressive strength of 4500 psi at 28 days.

Concrete patching material may be extended only in accordance with the manufacturer's recommendations. The Contractor shall submit a report consisting of the mix proportions and compressive strength information. Compressive strength measurements shall be taken at one hour, three hours, six hours, 24 hours, 7 days and 28 days according to ASTM C 39 Compressive Strength of Cylindrical Concrete Specimens. Test results shall be the average of at least three specimens molded according to AASHTO T 126 Making and Curing Concrete Test Specimens in the Laboratory.

At the deck overhang repairs, a pourable or pumpable concrete patching material is required due to the anticipated area and potential depth of the repairs. As the list of pourable or pumpable concrete patching materials on the CDOT Approved Product List is short, the contract may substitute Concrete Class D meeting the requirements of the standard specifications or Concrete Class DR meeting the requirements of the special provision. Pourable/pumpable shall be concrete with a slump of 5 inches plus or minus 1 inch without reducing the water/cement ratio.

Subsection 601.12 (a) shall include the following:

Concrete patching material shall be placed in the repair areas before the expiration date of the material.

Concrete patching material shall be placed and consolidated to fill voids left at removed existing concrete. The surface of concrete patching material shall be smooth and match the surrounding concrete surfaces. Concrete patching material shall not extend above a waterproofing membrane.

Concrete patching material minimum and maximum thickness shall be per recommendation of the material manufacturer.

Concrete patching material site preparation, batching, extending with aggregate, mixing, placement, placement during cold temperatures, consolidation, and curing shall be in accordance with the manufacturer's recommendations. A mix may be extended up to 90 percent of the manufacturer's maximum extension.

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**REVISION OF SECTION 601
CONCRETE (PATCHING)**

Subsection 601.19 shall include the following:

Concrete (Patching) will be measured and paid for as the actual quantity placed and accepted by the Engineer.

Subsection 601.20 shall include the following:

Pay Item

Concrete (Patching)

Concrete (Patching)

Pay Unit

Cubic Feet*

Cubic Yard**

* Cubic Feet measurement and payment will be for the concrete patching of the abutments, pier caps, pier columns, girders, curbs, bridge rail (except at northwest corner) and sidewalk.

** Cubic Yard measurement and payment will be for the concrete patching of the underside and outside edge of the deck overhang including back of sidewalk.

Payment for Concrete (Patching) will be full compensation for all the work, materials, tools, equipment, and incidentals required to replace removed concrete from structures. Furnishing, calibrating, and use of rebound

REVISION OF SECTION 601 GALVANIC ANODES

Section 601 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing and installing galvanic anodes, tying existing steel reinforcing mats for electrical continuity, and testing for electrical continuity in concrete repair locations as shown on the plans or as directed by the Engineer.

MATERIALS

Galvanic anodes shall be one of the following:

- (1) “Galvashield XP2” as manufactured by Vector Corrosion Technologies,
1330 Bellaire Street
Broomfield, CO 80020
303-465-5806
- (2) “MasterProtect 8105 CP” as supplied by BASF Corporation,
889 Valley Park Drive,
Shakopee, MN 55379
800-433-9517
- (3) “Sentinel Silver” as manufactured by Euclid Chemical
19218 Redwood Rd.
Cleveland, OH 44110
800-321-7628
- (4) “Galvashield XP+” as supplied by Sika Corporation
201 Polito Ave.
Lyndhurst, NJ 07071
248-577-0980

Galvanic anodes shall be pre-manufactured and consist of a minimum of 100 grams of zinc conforming to ASTM B6 Special High Grade, cast around a pair of steel tie wires conforming to bright annealed ASTM A82.

At least 10 working days prior to the start of repair work, the Contractor shall submit documentation of the anode manufacturer’s approval of the patching materials compatibility with their anode system and any special treatment requirements and installation instructions. The Contractor shall contact the manufacturer of the anodes to gain a full understanding of any special treatments that will be required and the process to properly install the anodes. The concrete patching material shall be as shown on the plans or as approved by the Engineer. Any grout used for grout beds or encapsulation of anodes shall have compressive strength equivalent to the original deck concrete per as-built drawings.

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REVISION OF SECTION 601 GALVANIC ANODES

CONSTRUCTION REQUIREMENTS

Anodes shall be installed the same day as preparation and cleaning of steel reinforcement to bright metal at the anode tie wire connection. The anode units, in cementitious patching material, shall be pre-wet to achieve a saturated surface dry condition, and the repair shall be completed while the anodes are in this condition.

Anodes used with patching material having resistivity greater than 15,000 Ohm-Centimeters (Ohm-cm) or not meeting compatibility requirements shall be specially treated and installed in accordance with manufacturer recommendations.

Galvanic anodes shall be installed in accordance with manufacturer's recommendations. Anodes shall be placed in each patch, 18 to 24 inches apart on the perimeter, based on rebar spacing. A minimum of one anode shall be placed in each patch and may be placed in the middle of the patching material area if the spacing requirement cannot be met. Each anode shall have a minimum 1.5 inch top cover to the surface of the new concrete deck patch and a 1 inch minimum side and bottom clear cover.

Galvanic anodes shall be secured with anode tie wires as close as possible to the patch edge while achieving minimum cover requirements. The tie wires shall be wrapped around the cleaned reinforcing steel and twisted tight to allow little or no free movement.

Prior to placing new concrete, galvanic anodes shall be installed in accordance with the manufacturer's recommendations and inspected for proper connection and continuity to reinforcing steel.

(a) Electrical Connection and Continuity.

Electrical connection and continuity between anode tie wire and reinforcing steel shall be confirmed by measuring DC resistance (ohm) or potential with a multi-meter. Electrical connection and continuity is acceptable if the DC resistance measured with a multimeter is less than 1 ohm or the DC potential is less than 1 mV.

All intersections of reinforcing steel shall provide electrical continuity. The Contractor shall confirm continuity of at least three intersections per repair area on each structure or as directed by the Engineer. Intersections with visible separation or lack of continuity shall be cleaned and/or tied with bare steel tie wire to achieve continuity. Additional continuity testing will be required as directed by the Engineer. Electrical continuity within a repair area is acceptable if the DC resistance measured with a multimeter is less than 1 ohm or the potential is less than 1 mV.

The Contractor shall furnish the Department with a multimeter to independently check the electrical connection. The multimeter shall become the property of the Department.

METHOD OF MEASUREMENT

Galvanic Anodes will be measured as the actual quantity installed and accepted. The Contractor may stockpile material at their own risk. All unused galvanic anodes shall remain property of the Contractor. The City will not purchase leftover materials or pay any restocking fees.

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**REVISION OF SECTION 601
GALVANIC ANODES**

The accepted quantities of Galvanic Anodes will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Galvanic Anodes	Each

Payment for Galvanic Anodes will be full compensation for all labor, equipment, materials, and incidentals required to complete the item.

Electrical continuity tie wiring and testing will not be measured and paid for separately, but shall be included in the work.

The multimeter will not be measured and paid for separately, but shall be included in the work.

If additional anodes are required during construction, the additional anodes will be paid for at the original Contract unit price.

Any special treatment or installation of the anodes that is required by anode supplier due to the type of patching material used, including but not limited to, grout beds between substrate and anode, or grout encapsulation of the anodes, will not be measured and paid for separately, but shall be included in the work.

**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

Section 602 is hereby revised for this project to include the following:

DESCRIPTION

602.01 This work consists of furnishing and installing a Fiber Reinforced Polymer (FRP) composite system on existing bridge elements to strengthen their ultimate flexural, shear and/or axial capacity. The work also includes preparing the existing concrete surface for the FRP system and applying a surface finish to the final composite surface. The Contractor shall install the FRP composite system with all components provided through a single system provider. The work will primarily be conducted within railroad property. Coordination is required according to Section 631 of the project special provisions.

The design and analysis is to be prepared by the Contractor's or material supplier's engineer based on the FRP product chosen. The design parameters are:

- Design shall be in accordance with:
 - 1) AASHTO LRFD Guide Specifications for Design of Bonded FRP Systems for Repair and Strengthening of Concrete Bridge Elements, 1st Edition (2012).
 - 2) ACI 440.2R-08 Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures, and
 - 3) AASHTO 8th Edition LRFD Bridge Design Specifications with current interims.

For the design, the LRFD Guide Specifications shall govern over the ACI 440.2R-08 Guide.

- Use the plan specified design loads with appropriate design factors for the shear and flexural designs. Loads specified in the plans are Live Loads.
- Use one of the pre-approved FRP products as shown in 602.02 (Materials).
- For Shear Strengthening, use vertical strips with a width of 4 inches minimum to 12 inches maximum. The maximum effective usable composite strain of the FRP for both anchored and unanchored U-Wrap shall be no greater than 0.004 inch/inch.
- For Flexural Strengthening, the maximum usable composite strain at the FRP/concrete interface shall be no greater than 0.005 inch/inch.
- Termination points of the Flexural FRP reinforcement layers shall be tapered. The outermost layer shall be terminated no less than 12 inches beyond the Zone limits shown in the plans. Each successive layer shall be terminated a minimum of 12 inches beyond the previous layer.

The FRP manufacturer shall demonstrate that the above performance criteria are met using the manufacturer's published guaranteed mechanical tensile properties without application of any environmental reduction coefficients. The properties of the FRP system must be characterized as a composite, recognizing not just the material properties of the individual fibers, but also the efficiency of the fiber-resin system, fabric architecture and method used to create the composite. The properties of the FRP system must be based on the testing of laminate samples with known fiber content. The ultimate tensile strength shall be the mean tensile strength of a sample of test specimens minus three times the

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

standard deviation ($f_{fu}^* = \overline{f_{fu}} - 3\sigma$) and, similarly, the ultimate rupture strain shall be $\varepsilon_{fu}^* = \overline{\varepsilon_{fu}} - 3\sigma$. The tensile modulus shall be calculated as the chord modulus of 0.0043 strain, in accordance with ASTM D 3039. A minimum number of 20 replicate test specimens shall be used to determine the ultimate tensile properties.

QUALIFICATION OF CONTRACTOR

The Contractor shall submit documentation that confirms he has been trained in accordance with the installation procedures developed by the system manufacturer and has completed a minimum of five projects of similar scope within the past five years.

MATERIALS

602.02 Fiber reinforced polymer (FRP) composites system shall consist of dry, uni-directional, reinforced-fiber woven sheets installed with a polymer saturating resin using a wet lay-up technique. The FRP system shall conform to one of the following systems as produced by one of the corresponding manufacturers:

System 1

<u>Product</u>	<u>Manufacturer</u>
Tyfo SCH 41 composite with Tyfo S epoxy	Fyfe Company, LLC 8380 Miralani Drive San Diego, CA 92126 (858) 642 0694 www.fyfeco.com

System 2

<u>Product</u>	<u>Manufacturer</u>
MBrace CF 130 or 160 composite with MBrace primer, putty, and saturant	BASF Building Systems 889 Valley Park Drive Shakopee, MN 55379 (800) 433 9517 www.buildingsystems.basf.com

System 3

<u>Product</u>	<u>Manufacturer</u>
REPLARK 30/L700S-LS with L700S-LS epoxy	Mitsubishi Chemical, USA One North Lexington Ave, White Plains, NY 10601 (914) 286-03600

System 4

<u>Product</u>	<u>Manufacturer</u>
UT70-30/L700S-LS with L700S-LS epoxy	Toray Carbon Fibers America, Inc. 700 Parker Square, Suite 275 Flower Mound, TX 75028 (972) 899 2930 www.toray.com

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

System 5

Product	Manufacturer
CSS-CUCF11/22/44 with CSS-EP/ES Epoxy	Simpson Strong-Tie (800)-999-5099 www.strongtie.com/RPS

System 6

Product	Manufacturer
SikaWrap Hex 103C with Sikadur 300/Hex300 epoxy	Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071 (201)-933-8800 www.sikausa.com

System 7

Product	Manufacturer
RenewWrap ESR with RenewWrap ESR Saturant	Milliken Infrastructure Solutions, LLC (855) 655-6750 infrastructure.milliken.com

FRP composites for the corresponding system shall conform to the requirements in Table 602-1:

**Table 602-1
FIBER REINFORCED POLYMER COMPOSITE PROPERTIES**

Property	ASTM*	System 1	System 2	System 3	System 4	System 5	System 6	System 7
Min. Dry Ult. Tensile Strength, primary fiber direction, ksi	D 3039	580	555	500	545	670	550	700
Min. Ult. Elongation, percent	D 3039	1.70	1.48	1.35	1.56	1.90	1.50	1.10
Minimum Tensile Modulus of primary fibers, based on dry fiber thickness, ksi	D 3039	33,400	29,200	31,200	28,800	37,000	34,000	33,400
Min. Fiber Volume percent	D 3171	20	20	20	20	20	20	20
Min. Glass Transition Temperature, F	D 3418 or D 4065	140	140	140	140	140	140	145
Short Beam Shear ksi	D 2344	4.4	6.9	6.4	6.9	-	6.3	-
Dry Fiber Thickness per layer, inch		0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065
* Subject to the approval of the Engineer, other non-ASTM test methods, such as those published by Suppliers of Advanced Composite Materials Association (SACMA) or the manufacturer's published Quality Control Procedures may be used when equivalency and suitability have been documented.								
Fiber sheets shall be composed of unidirectional polyacrylonitrile (PAN) based continuous sheet carbon fiber.								

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REVISION OF SECTION 602 REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)

The Contractor shall submit a Manufacturer's Certificate of Compliance to the Engineer, in accordance with Section 106.12, confirming that the composite fabric for the system chosen for this project conforms to the material properties specified above.

Repair mortar and putty, epoxy resin primer, adhesive, top coat, and finish paint coating shall be as recommended by the FRP manufacturer and as specified in the FRP Retrofit Plan as approved by the Engineer.

Finish paint coat shall be acrylic based. Color of the finish coat shall be approved by the Engineer and shall match as closely as possible the color of the existing concrete pier cap.

CONSTRUCTION REQUIREMENTS

Submittals. The Contractor shall submit an FRP Retrofit Plan in the form of Shop Drawings to the Engineer for approval in accordance with Section 105.02. The FRP retrofit plan shall include, but not be limited to, the following:

- (1) Identification of the FRP composite system, product, and manufacturer selected for use in this project from the list in Table 602-1 of these Special Provisions. Only one FRP composite system, product, and manufacturer shall be used for each bridge in this project.
- (2) Identification of the FRP composite system manufacturer's technical representative(s) assigned to be present at the project site, along with documentation of the training in the installation of FRP composite materials completed by these technical representatives.
- (3) Identification of the Contractor's personnel responsible for conducting the Quality Control inspections.
- (4) A sample copy of the Daily Installation Data Log.
- (5) Identification of the independent laboratory, with location and contact information, responsible for performing the Contractor's Quality Control and Job Control testing.
- (6) Shop drawings, with supporting design calculations, for the FRP Strengthening of Pier 5, including, but not limited to, the following:
 - i. FRP composite system details (plies, wraps, fiber or winding thickness, fiber volume, fiber orientation, composite thickness, etc.) required for the FRP composite system and product selected to provide the minimum additional factored shear and moment resistances specified in the Plans for the bridge.
 - ii. Dry sheet details.
 - iii. Details of joints and ends of fiber construction.
 - iv. Details of transitions in composite thickness.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

- v. Method and equipment to be used to achieve an approximate one inch radius rounding at all concrete corners.
 - vi. Resin mix ratio by weight and by volume.
 - vii. Pot life of mixed components at manufacturer specified environmental conditions.
 - viii. Resin gel time at manufacturer specified environmental conditions.
- (7) Material safety data sheets (MSDS) for all materials used to complete the FRP composite system.
- (8) Material technical data sheets, and supplemental sheets as required, for all materials used to complete the FRP composite system, including information on, but not limited to, the following:
- i. Material storage and handling requirements.
 - ii. Shelf life of all materials.
 - iii. Equipment required for surface preparation, mixing of the FRP composite system components, application of the FRP composite system components, curing of the applied and installed FRP composite system, and coating of the applied and installed FRP composite system.
 - iv. Equipment to be used to remove spalled or unsound concrete.
 - v. Step by step description of the process required for surface preparation, mixing of components, application of components, curing of the applied and installed system, and coating the applied and installed system.
 - vi. Environmental restrictions and conditions (temperature, humidity, etc.) required to be present during mixing, application and curing of the FRP composite system.
 - vii. Containment, collection, and disposal procedures for all debris and waste generated by surface preparation and the process of installing the FRP composite system assuming all waste is captured and disposed of at an approved off-site location.
- (9) Methods and equipment used to fabricate or core the Job Control and Check Test samples taken for Contractor Quality Control Testing.
- (10) Materials and equipment used to provide an enclosure and to environmentally control the enclosed volume, if the Contractor elects to enclose the work area(s).
- (11) Traffic Control Plan.
- (12) Color of final surface finish. (Finished surface shall closely match the existing concrete pier cap).

The Contractor shall not begin FRP retrofit work at the site until receiving the Engineer's approval of the FRP Retrofit Plan.

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REVISION OF SECTION 602 REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)

FRP-Preconstruction Conference. An FRP-preconstruction conference shall be held, at least five working days prior to the Contractor's beginning the FRP retrofit work at the site, to discuss safety methods, repair procedures, materials, personnel and equipment to be used. Those in attendance shall include:

- (1) (Representing the Contractor) The superintendent, on site supervisor, and all crew members in charge of the FRP retrofit work, and the FRP composite manufacturer's technical representative; and
- (2) (Representing the Contracting Agency) The Project Engineer and key inspection personnel.

If the Contractor's key personnel change between any work operations, an additional conference may be held.

Quality Control Program. The Contractor shall conduct a quality control program that includes, but is not limited, to the following:

- (1) Inspection of all materials to assure conformity with contract requirements, and to assure that all materials are undamaged and conform to Section 106.01.
- (2) Inspection of all surface preparation prior to FRP composite system installation.
- (3) Inspection and monitoring of the automatic proportioning and mixing equipment used to proportion and mix the epoxy resin.
- (4) Inspection of work in progress to assure compliance with the manufacturer's recommendations.
- (5) Inspection of all work completed including sounding all repairs to check for debonding and correction of all defective work. All costs in connection with corrections to defective work shall be at no additional expense to the Owner.
- (6) Maintenance of a Daily Inspection Data Log.
- (7) Presence at the work site of an FRP composite system manufacturer's technical representative. The FRP composite system manufacturer's technical representative shall be present at the preconstruction conference, shall be present at the work site for at least the first full day of FRP composite fabric installation, and shall be readily available for contact to resolve project specific technical issues for the full duration of the project when not present at the work site.

Storage and Handling. Storage and handling of all components of the FRP composite system shall conform to Sections 106.08 and 106.09 and the FRP retrofit plan as approved by the Engineer.

All materials shall be used and installed before the shelf life expiration date. All materials for which the shelf life date has been reached and surpassed shall be removed from the project site.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

General Preparation for Application.

- (a) *Environmental Conditions.* Unless otherwise specified by the FRP composite manufacturer in the FRP retrofit plan as approved by the Engineer, the ambient and epoxy temperature, relative humidity, and concrete surface temperature at the time of FRP composite application shall be as follows:

Ambient Temperature Range:	45 degrees F to 90 degrees F
Epoxy Resin Temperature Range:	45degrees F to 90 degrees F
Relative Humidity:	Less than 90 percent
Concrete Surface Temperature:	Greater than 5 degrees F above the dew point

Subject to the approval of the Engineer, the Contractor may erect enclosures around the area receiving the FRP composite system and provide a heating system in order to facilitate application, curing and coating of the FRP composite system under a controlled contained environment. The materials and equipment used to provide the enclosure, to control the contained volume, and provide heat, shall be submitted to the Engineer for approval. Combustible materials shall not be stored in the enclosure without supervision. Provide forced air heaters with airflow separated from combustion chamber.

- (b) *Concrete Surface.* The concrete surface receiving the FRP composite system shall be completely dry and free of dust and debris, including dust and debris created by surface preparation activities.

Concrete Soundness. The tensile strength of the prepared concrete surfaces shall be verified by conducting a pull-off adhesion test in accordance with ICRI Guideline 03739 and have a minimum concrete substrate tensile strength of 200 psi. A minimum of one test per 1,000 square feet of surface of installed FRP shall be conducted at a locations determined by the Engineer.

Surface Preparation. The concrete surface to receive the FRP system shall be prepared to a minimum concrete surface profile (CSP) 3 in accordance with ACI 546R, ICRI Guideline 03730 and the manufacturer's recommendations. Concrete surfaces specified to receive the FRP composite system shall be sound concrete free from fins, sharp edges and protrusions that, in the opinion of the Engineer will cause damage to the FRP fibers or that will cause voids between the FRP wrap and the concrete. Voids shall be defined as volumes greater than 1/2 inch in diameter by 1/8 inch deep.

Spalled or unsound concrete within the area specified to receive the FRP composite system shall be removed, in accordance with the FRP retrofit plan as approved by the Engineer, prior to performing any other surface preparation activities.

Existing uneven surfaces within the application area, including voids, shall be filled with epoxy or epoxy-based filler compatible with the FRP composite system. Flat surfaces of pier cap shall be filled straight from corner to corner or made slightly convex.

Concrete corners shall be broken by light grinding or another method specified in the FRP retrofit plan as approved by the Engineer to achieve an approximate one inch radius rounding.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

Epoxy Injection of Cracks. Existing cracks in the pier cap shall be pressure injected with epoxy in accordance with Project Special Provision 519.

Applying Resin Primer. Following surface preparation, primer shall be prepared and applied in accordance with the manufacturer's recommendations. The primer shall be compatible with the FRP composite system, product and manufacturer selected.

Applying the Fabric, Resin Overcoat, and Curing. Components of the epoxy resin shall be proportioned, mixed, and applied in accordance with the manufacturer's recommendations as specified in the FRP Retrofit Plan as approved by the Engineer. If the system manufacturer requires automatic proportioning and mixing equipment, the Contractor's Quality Control Program shall include provisions for monitoring the accuracy of the automatic proportioning and mixing.

The fabric composite shall be applied to the resin primed surface within one hour after the resin primer has been mixed.

The epoxy resin and the fabric composite shall be measured, combined, and applied uniformly onto the resin primed surface at the rates specified in the FRP retrofit plan as approved by the Engineer.

The fabric composite shall be applied to the surface by wrapping, using methods that produce a uniform constant tensile force that is distributed across the entire width of the fabric.

Successive layers of the fabric composite shall be applied before the gelation of the previous layer of epoxy, to ensure complete bond between the layers. If the epoxy gels prior to the application of the subsequent layer, a seven day cure, followed by light abrasive blasting, cleaning with fresh water, and drying, is required prior to restarting application of layers.

The primary fibers of the fabric composite shall not deviate more than 1/2 inch from a line measured parallel to the horizontal or vertical direction of fibers in each lift.

The epoxy application rate for each layer of fabric composite shall be such as to ensure complete saturation of the fabric. Gaps between adjoining fabric layers shall be filled with epoxy. Undulations in the surfaces of the fabric composite as applied to the surface shall not exceed 1/4 inch per foot in any direction. The cured composite shall have uniform thickness and density, and bond between layers.

Fiber sheets may be lap spliced in the direction of fibers in accordance with the manufacturer's recommendations. When lap splicing in the direction of fibers, the length of lap splice shall be such that the full tensile strength of the carbon fiber sheets is maintained across the splice. The minimum lap splice length shall be six inches.

Entrapped air beneath each layer of fabric composite shall be released or rolled out before the epoxy sets, and each individual fabric layer and ending of composite shall be firmly bedded and adhered to the preceding layer or substrate.

The Contractor shall premix and apply saturating resin overcoat in accordance with the manufacturer's application instructions.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

The finished FRP composite application shall be cured in accordance with the manufacturer's application instructions. The installed FRP shall be protected from rain, dust, sand and other deleterious material during curing. The external FRP shall not be disturbed for a minimum of 24 hours.

Contractor Quality Control Operations and Repair of Deficient Work.

- (a) *Daily Installation Data Log.* The Contractor's Quality Control personnel shall maintain a daily installation data log. The log shall document materials traceability and process records for each FRP composite application location, and shall include, but not be limited to, the following:
- (1) Pier cap identification with bridge number, pier cap number, and construction and installation requirements with accompanying FRP Retrofit Plan working drawing details as approved by the Engineer, or references thereto.
 - (2) Materials information including product description, date of manufacture, and lot or batch identification.
 - (3) Fabrication, inspection, and verification data for the manufacturing and construction operations, including, but not limited to, the following:
 - (i) List of materials and quantities used during each shift.
 - (ii) Wrap counts.
 - (iii) Composite thickness measurements.
 - (iv) Installation time per pier cap/location.
 - (v) Ambient temperature and relative humidity readings at the beginning, middle, and end of each FRP installation shift.
 - (vi) Curing process including full documentation of time and temperature relationship during the curing period through to final cure.
 - (vii) Temperature and thickness measurements of the finish epoxy coating applied after curing.

The Contractor shall keep the Daily Installation Data Log available for review by the Engineer upon the Engineer's request, and shall submit the daily installation data log to the Engineer at the completion of construction and installation operations for each day's production.

Contractor Quality Control Testing. The Contractor shall take fabric composite test samples and test cores of production composite casing for quality control testing at the Independent Testing Laboratory. Unless otherwise approved by the Engineer, the Contractor shall take all fabric composite test samples and test cores in the presence of the Engineer.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

The Contractor shall utilize an Independent Testing Laboratory to perform a minimum of two random field pull-off tests (ASTM D7522) for each day of FRP application. The Contractor shall repair the areas damaged by the pull-off tests by applying an additional layer of FRP over the test area, or by filling with a system compatible resin and finishing smooth. If the random pull-off tests fail to meet the established criteria, the section shall be repaired or replaced at the Contractor's expense.

The Independent Testing Laboratory shall prepare sample panels in accordance with ASTM 3039. Panels shall be 12" x 12". Two sample laminate panels shall be constructed for every 1,000 square feet of finished FRP surface installed. A minimum of two sample laminate panels shall be made for each day of FRP application. The Contractor's Independent Testing Laboratory shall prepare test specimens and perform tensile tests, in accordance with ASTM 3039, for one of each pair of sample laminate test panels. The second panel shall be held in reserve in case test results on the first panel do not meet the specified performance criteria. A copy of the results of all testing completed by the Independent Testing Laboratory shall be submitted to the Engineer within 30 calendar days of the submittal of the samples to the laboratory. If the sample test sections do not meet the established criteria for this test, the 1,000-square foot section represented by the test shall be repaired or replaced at the Contractor's expense.

All samples shall be placed in labeled and sealed polyethylene bags prior to shipment to the Independent Testing Laboratory. The label shall identify, at a minimum, the bridge, pier cap/location and date of coring.

Contractor Quality Control Inspection and Repair of Deficient Work. The Contractor shall inspect the completed work against the following criteria:

- (1) The completed work shall be inspected for defects consisting of external abrasions or blemishes, delamination, voids, external cracks, chips, cuts, loose fibers, foreign inclusions, depressible raised areas, fabric wrinkles, and damage from weather, humidity and moisture.
- (2) Each layer shall have full contact with the concrete surface or subsequent layers, subject to the following replacement and repair requirements:
 - i. All defects or voids with a dimension greater than 1-1/2 inches, defect areas greater than one square inch, and defect areas with any dimension greater than one inch within one foot of another defect area of similar or larger size, shall be repaired or replaced as specified by the Engineer.
- (3) Surfaces of horizontal joints shall be flush with adjacent surfaces.
- (4) Undulations and sags that do not conform to previously specified tolerances shall be repaired or replaced as specified by the Engineer.
- (5) Within either the full pier cap length, or any 10 feet of pier cap length, whichever is smaller, composite pier caps with a total number of 10 or more defects of any size shall be repaired or replaced as specified by the Engineer.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

- i. All defects found by the Contractor's quality control inspection and those found by Owner inspection, and all defective materials indicated by quality control test results not conforming to specified material and installation requirements, shall be repaired or removed and replaced in accordance with Section 105.17. All repairs shall be completed and cured, and shall have been inspected and approved by the Engineer, prior to preparing the surfaces for painting.

Finish Coating. Protective coating shall be provided to match the appearance of existing concrete and shall be applied in accordance with the Manufacturer's recommendations.

METHOD OF MEASUREMENT

602.07 The quantities of FRP reinforcement will not be measured, but shall be the quantities shown on the plans, completed and accepted. MKFT equals the required minimum composite strengthening capacity, in thousands of KIPS, times the length in feet.

BASIS OF PAYMENT

602.08 The FRP system will be paid at the unit price bid as follows:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Reinforcing (Fiber Reinforced Polymer)(Surface)	MKFT

Payment for Reinforcing (Fiber Reinforced Polymer)(Surface) will be full compensation for all labor, equipment, materials, and all incidentals necessary to provide the FRP Reinforcement system, including design and detailing of the FRP system; development of the FRP Retrofit Plan; development and implementation of the Quality Control Plan; preparation of the existing bridge surface; tensile strength testing of the prepared concrete surface; installation, curing, and protection of the FRP system; application of the final surface finish coat; containment and removal of debris; project cleanup; and all other materials, equipment, and labor necessary to install a complete FRP system.

All costs associated with providing a manufacturer's technical representative will not be measured and paid for separately, but shall be included in the work.

All costs associated with sampling and testing by the Independent Testing Laboratory will not be measured and paid for separately, but shall be included in the work.

Payment for scaffolding, work platforms, and other means of access to the work will not be measured and paid for separately, but shall be included in the work.

Repair of spalls in the existing substrate will be measured and paid for under Section 601.

Epoxy injection of existing cracks will be paid for under Section 519.

Removal and resetting of existing conduit and lighting will be paid for under Allowance Account as directed by the Engineer.

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**REVISION OF SECTION 602
REINFORCING (FIBER REINFORCED POLYMER) (SURFACE)**

Railroad coordination will be paid for under Section 631.

Additional capacity provided by the Contractor's design that is in excess of the minimum specified in the plans will not be measured or paid for.

Composite material used for lap splices and anchorage/development beyond the capacity Zone limits shown in the plans will not be measured or paid for, but shall be included in the work.

**REVISION OF SECTION 606
BRIDGE RAIL (SPECIAL)**

Section 606 of the Standard Specifications is hereby revised for this project as follows:

Subsection 606.01 shall include the following:

This work consists of replacement of damaged portions of the existing aluminum bridge rail to the limits shown in the plans or as directed by the Engineer.

Subsection 606.02 shall include the following:

Railing and rail splices shall be aluminum extruded tube meeting ASTM B-221, Alloy 606-T6.

Post shall be permanent mold cast aluminum ASTM B-108, Alloy A444-T4.

Subsection 606.03 shall include the following:

Posts and rails shall be installed at the line and grade of the existing bridge rail.

Subsection 606.05 shall include the following:

Bridge Rail (Special) will be measured by the linear foot of whole rail (single tube) segment replaced and accepted. Posts will be included in the quantities of rail and not measured separately.

Subsection 606.06 shall include the following:

Payment will be made under:

Pay Item

Bridge Rail (Special)

Pay Unit

Linear Foot

Payment for Bridge Rail (Special) will be full compensation for all labor, materials, tools, equipment and incidentals required to perform the work.

REVISION OF SECTION 621 OCS TEMPORARY PROTECTIVE STRUCTURE

Section 621 is hereby added to the Standard Specifications as follows:

DESCRIPTION

This work consists of the design, fabrication, installation, maintenance, removal, and disposal of a temporary protective (or track protection) structure for the Overhead Contact System (OCS) over the Regional Transportation District (RTD) tracks. All work shall be in accordance with the Contract Plans and these Specifications.

MATERIALS

The Contractor shall use timber, steel, aluminum, concrete and/or other approved material based on the Contractor's design and RTD's requirements. All materials shall meet the requirements of the Standard Specifications and approved by the Engineer. RTD and/or Denver Transit Operators (DTO) shall approve all materials used in the structure. Approval shall be in writing or shop drawing approval.

DESIGN REQUIREMENTS

The design shall be based on the following codes as applicable:

- 1) RTD Commuter Rail Design Criteria and other criteria and guidelines as applicable
- 2) AASHTO LRFD Bridge Design Specifications, 8th Edition with current interims
- 3) AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition with current interims
- 4) AASHTO Construction Handbook for Bridge Temporary Works, 2nd Editions with current interims
- 5) ACI 318, latest edition
- 6) AISC Steel Construction Manual, latest edition

The protective structure may be founded outside of the limits of the track or supported by the bridge. If supported by the bridge, the design shall include design calculations verifying the capacity of the existing structure to support the temporary structure. The design calculations shall verify the capacity of all elements within the load path (girders, deck, pier cap, pier columns, pier caissons, abutments, and abutment piles as applicable).

The protective structure may be incorporated into the formwork and/or falsework required for the project. If part of the formwork and/or falsework, a separate track protection system is required during construction of repairs to Pier 8 such as a curb or kral that protects the track from debris or other damage. The separate system shall be placed outside the temporary envelope and shall be moveable unless otherwise required by RTD/DTO. A separate track protection system will not be measured and paid for separately, but shall be included in the work.

If founded outside the limits of the track, the design shall include calculations verifying all RTD and DTO facilities are not impacted in any way.

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REVISION OF SECTION 621 OCS TEMPORARY PROTECTIVE STRUCTURE

CONSTRUCTION REQUIREMENTS

The protective structure shall extend outside of the minimum clearance envelope required by RTD and DTO (a minimum of 30-feet in width). The temporary protective structure shall extend a minimum of 5 feet (perpendicular to the bridge) beyond the edge of deck.

The protective structure, if supported by the bridge, shall be constructed above the bottom of the existing girders. Anchoring into the existing structure, especially the girders, shall be avoided, if possible. The Engineer shall approve anchoring, if not avoidable, prior to any construction. Determination of need of anchoring is at the sole discretion of the Engineer.

The protective structure shall be constructed prior to any work is performed on the bridge structure above the RTD/DTO tracks that may cause debris, materials, or equipment to foul the RTD/DTO tracks, including but not limited to deck repairs, spall repairs, pier repairs, expansion joint repairs, and railing repairs.

If power shutdowns of the OCS or if the train schedule is impacted in any way, they should be performed and coordinated with RTD and DTO. See RTD/DTO Coordination Special Provision for additional information.

The Contractor shall stay 25-feet away from RTD/DTO tracks unless the Contractor has obtained a RTD and DTO access agreement. See RTD/DTO Coordination Special Provision for additional information.

The Contractor shall stay 25-feet clear of the electrified components of the RTD/DTO system. If access is required within this clearance, the Contractor shall submit a work plan/method statement to RTD/DTO that outlines the operations impacts and protection for construction activities. See RTD/DTO Coordination Special Provision for additional information.

Examples of potential temporary protective structure systems intended by this specification (but do not guarantee approval by RTD/DTO): work platform supported by the bottom flanges of the girders for interior bays, standard overhang falsework/formwork/work platform with safety rail supported by standard overhang brackets for deck overhangs, or separate 3-sided structure below bridge and around tracks.

The Contractor shall limit the number of full track closures and power shutdowns of the RTD/DTO tracks to limit costs to the City and RTD/DTO. The temporary protective structure shall be designed, constructed, and installed in such a manner as to only require full track closures and power shutdowns during installation, construction, and removal of the temporary protective structure. Once installed, power shutdowns and full track closures shall not be required to complete the work if possible while maintaining a safe working environment and maintaining public safety.

METHOD OF MEASUREMENT

The OCS Temporary Protective Structure will not be measured, but shall be the quantity as shown in the plans.

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**REVISION OF SECTION 621
OCS TEMPORARY PROTECTIVE STRUCTURE**

BASIS OF PAYMENT

The OCS Temporary Protective Structure will be paid at the unit price bid as follows:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Overhead Contact System (OCS) Temporary Protective Structure	Linear Foot

Payment for OCS Temporary Protective Structure will be full compensation for all labor, equipment, materials, and incidentals required to complete the item including design, fabrication, handling, shipping, installation, RTD/DTO approval and submittals, maintenance, removal, and disposal of the structure.

Power shutdowns will be paid for by Force Account. See Force and Allowance Account Special Provision.

Coordination with RTD will be paid for by Item 632 RTD/DTO Coordination

**REVISION OF SECTION 625
CONSTRUCTION SURVEYING**

Section 625 of the Standard Specifications is hereby revised for this project as follows:

Subsection 625.01 shall include the following:

The Contractor shall perform all construction surveying and staking necessary for construction of the project. Construction surveying and staking shall be based on Horizontal and Vertical Control. The Contractor is responsible for obtaining Horizontal and Vertical Control monuments established by the City and/or CDOT, as applicable, and if needed for the work. The cost for obtaining monuments and coordination with the City and CDOT is included in the work.

**REVISION OF SECTION 626
PUBLIC INFORMATION MANAGEMENT (TIER III)**

Section 626 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of providing Public Information Management throughout the duration of the project. The contractor shall submit the Public Information Management deliverables to the Project Engineer for approval. Prior to approval by the Engineer, the City Communications Manager (CCM) will also review deliverables.

Anticipated communications issues on this project include:

- (1) Daytime Single Lane Closures across bridge
- (2) Pedestrian Access across bridge

CONSTRUCTION REQUIREMENTS

- (a) *Public Information Manager (PIM)*. The Contractor shall designate a PIM who shall be responsible for all activities associated with Public Information Management for this project. Within ten days following the date of the Notice to Proceed, the Contractor shall submit the name, contact information, and resume qualifications of the PIM and the Backup PIM for approval by the Engineer. The CCM will also review the PIM's and Backup PIM's resume. The PIM shall be identified, approved, and able to perform all requirements in this Section at least 14 days before the start of work. If this is not feasible, the Contractor is responsible for the project start-up deliverables and the individual preparing the deliverables shall meet the minimum qualifications of the PIM. The PIM shall have a minimum of five years of professional experience in public/media relations, marketing, or other related field and good verbal and written communication skills. Administrative/business office experience is not considered experience in a related field. The PIM shall not be the Project Superintendent, but may be a Contractor staff member with limited other duties.
- (b) *Activities of the PIM*. From the Notice to Proceed through the Final Acceptance of the project, the PIM shall be responsible for the following:
 - (1) *Project Checklist*. The PIM or Backup PIM shall complete and update a Project Checklist on a monthly basis or as requested by the Engineer. The checklist will assist the PIM and the City with tracking required activities and deliverables.
 - (2) *On-Call*. The PIM shall be available or on-call each day there is work on the project and shall be available upon the Engineer's request outside of normal working hours.
 - (3) *Public Information Office*. The Contractor shall establish a public information office equipped with a telephone, a local telephone number with voicemail, a computer, and an email address. The public information office may be located within the project office, off-site, or within the PIM's office. The telephone line will be the Project Hotline and shall be included on the Project Information signs. The voicemail greeting shall be updated at least weekly. The greeting shall include the project's completion date, forthcoming activities for the update period, and allow the caller to leave a voice message. The PIM shall answer calls, check voicemail and email messages, and respond to messages throughout each day that construction operations are in effect. The PIM, and when necessary the

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**REVISION OF SECTION 626
PUBLIC INFORMATION MANAGEMENT (TIER III)**

Engineer, shall respond to all inquiries with a phone call, a voice message, or an email within one work day. The PIM shall document the name, contact information, either a phone number or email address, and the action taken. Within two days of receiving the message, the PIM or Backup PIM shall enter message details and follow-up action into Dialog.

(4) *Lane Closure Reporting.*

(i) *Weekly Lane Closures.* The PIM shall submit a Lane Closure Report each Thursday, for the following week's activities (Sunday through Friday), to the Engineer and City Communications Manager. The PIM shall develop Traffic Advisories that include lane closure and update information. The PIM or Backup PIM shall notify the Engineer and the CCM one week in advance of all planned "no work" periods. The Engineer will approve the Lane Closure and Updates by each Friday at 3:00 P.M..

(ii) *Real-Time Lane Closure Changes.* The PIM or Backup PIM shall notify the Engineer at least 24 hours in advance for changes to an approved Lane Closure.

(5) *Public Information Collateral.* The PIM shall develop a variety of Public Information Collateral to share project information with the public as necessary for major project milestones such as long-term closures or impactful construction activities. Collateral includes the following:

(i) *Photographs and Video Recordings.* The PIM shall take photographs and video recordings on regular intervals and submit them to the Engineer and the City Communications Manager. A cell phone camera is permitted. Photographs and video recordings may capture traffic control, paving, slope repair, erosion control, bridge deck, and rail work activities. Photographs and video recordings may also include other key areas of work as identified by the Contractor or the Engineer and will be used in Public Information Collateral. The Contractor shall submit a minimum of two digital photographs or video recordings each month to the Engineer. Each photograph and video recording shall include project number, project code, date, time, location and station or milepost, and name of person taking the picture or video recording.

(ii) *Web Page Updates.* The PIM shall work with the City to develop the latest project information for the internet web page content. When applicable, the updates shall contain all appropriate web page links to and from other sites. The PIM shall provide updated information at least weekly. CCD will update the web page.

(iii) *Project Fliers.* The Contractor or PIM shall develop Project Fliers and shall include CCD's logo, and at the Engineer's discretion may include the project logo.

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**REVISION OF SECTION 626
PUBLIC INFORMATION MANAGEMENT (TIER III)**

At least 14 days prior to delivering Project Fliers, the Contractor or PIM shall prepare and submit a draft of the flier to the Engineer. The Engineer's review will not exceed seven days. Fliers shall be approved by the Engineer before distribution. Fliers shall be delivered in person, by mail, and by email. The list of recipients shall be developed via <http://uspseverydoordirectmail.com>, the use of a mailing list from county GIS mapping, or other approved method. An email containing the flier shall also be sent to stakeholders identified in the Stakeholder List. The CCM will post the Project Fliers on social media.

This project requires Project Fliers at the following milestones:

1. Initial Project Flier

Initial Project Flier. At least seven days prior to the start of work, the PIM shall deliver one approved flier per property owner and tenant within 2 miles of the project limits. The Initial Project Flier shall provide the project start and end dates, project location, description of work, traffic impacts, scheduled work hours and work days, the Project Hotline, email address, web address, project map, photo of project area, and a construction safety message as defined by the Department. The estimated number of printed fliers is 30.

- (iv) *Media Relations*. The PIM shall develop media releases. The releases shall include detour maps or other visual aids. The PIM shall develop media releases based on major construction milestones such as project start, lane shifts, a traffic switch, closures, and on other occasions as directed by CCD. At least 14 days prior to the construction milestone, the PIM shall submit a draft to the Engineer for approval. The Engineer's review will not exceed seven days. The media release, shall be approved by the Engineer before distribution. CCD will distribute media releases.

At least 14 days prior to the start of work, the Contractor or PIM shall submit for approval by the Engineer a media release summarizing the project scope, construction phasing, potential construction activities that impact traffic, the project end date, and a summary of project benefits.

CCD will address all media inquiries and media requests. The PIM or Backup PIM shall immediately notify the Engineer of any on-site situations involving the media. When the media contacts the PIM or Contractor staff, the PIM shall provide the CCM's contact information.

- (v) *Maps and Graphics*. The PIM shall develop maps, detour maps and graphics for use in Public Information Collateral.
- (6) *Public Information Plan*. The PIM shall submit a Public Information Plan (PIP) within ten days of the Pre-construction Conference for approval by the Engineer. The PIP shall be specific to the project. The Plan shall include the public information strategies for community and business relations, government affairs and media relations, the stakeholder list, identification of public information issues, proposed outreach, and approach to crisis communications using the Public Information Collateral. The PIP shall be updated as necessary and as directed by the Engineer.
- (7) *Project Meetings*. The PIM shall participate in the weekly project meetings. The PIM shall discuss communication issues, and provide a status on the items in this specification.

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**REVISION OF SECTION 626
PUBLIC INFORMATION MANAGEMENT (TIER III)**

- (8) *Language Assistance for LEP Persons.* The City is required to provide access to Limited English Proficient (LEP) persons. LEP persons are individuals for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English. Examples of language assistance include translation of meeting notices and interpretation services at meetings. The PIM shall work with the City to provide interpretation services upon request by an LEP person. When the project is located in a community that has greater than five percent LEP persons, Public Information Collateral shall be translated for those individuals. The PIM shall document all measures taken to communicate with LEP persons and record all requests for language assistance.
- (c) *Response Protocol to the City and the Public.* The PIM shall follow Table 626-1 in responding to correspondence from stakeholders and the public:

**Table 626-1
RESPONSE PROTOCOL**

TYPE OF COMMUNICATION	TIMING OF RESPONSE
Project Hotline calls and voice messages	Answer calls and check messages throughout each work day. Respond the same day or within 24 hours. Enter details into Dialog within two days.
Email messages	Respond the same day. For high volume situations, respond within two work days. Enter details into Dialog within two days.
Calls from City Staff	Respond as soon as possible, and within 24 hours.
Web page Inquiries	Respond the same day. For high volume situations, respond within two work days.

- (d) *Deliverable Protocol.* The PIM shall conform to the Project Checklist.
- (e) *Public Information Management Contact Sheet.* The PIM shall complete and update a Public Information Management (PIM) Contact Sheet with the names and contact information of the individuals pertinent to Public Information for approval by the Engineer. At a minimum the Contact Sheet will include the City Project Manager, the Project Engineer, City Communications Manager, City Website Administrator, City Dialog Administrator, City Traffic Management Center, PIM, Contractor Superintendent, and Traffic Control Supervisor. The PIP shall include the PIM Contact Sheet.
- (f) *Stakeholder List.* The PIM shall submit a Stakeholder List as part of the PIP. The Stakeholder List shall include stakeholder's information including, stakeholder group, contact name, telephone number, email, and notes on communication needs for the project and project impacts.

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**REVISION OF SECTION 626
PUBLIC INFORMATION MANAGEMENT (TIER III)**

METHOD OF MEASUREMENT

Public Information Management will be measured as the number of days elapsed from the project Notice to Proceed date up to the Final Acceptance date.

Failure to provide acceptable Public Information Management will result in withholding of payment for the days affected.

BASIS OF PAYMENT

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Public Information Management (Tier III)	Day

Payment for Public Information Management will be full compensation for all work, materials and equipment to provide public information throughout the project in accordance with this specification.

If the Contractor fails to complete construction within the approved contract time, payment will not be made for Public Information Management for the period of time after expiration of the approved contract time. These items shall be provided at the Contractor's expense.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Section 630 of the CDOT Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

The key elements of the Contractor's Traffic Control Plan (TCP) and Method of Handling Traffic (MHT) are outlined in Subsection 630.09.

Components of the TCP for this project are included in the following documents in descending order of precedence:

1. These Special Provisions and Sections 104.04 and 630 of the Standard Specifications;
2. Standard Plan S-630-1, Traffic Controls for Highway Construction;
3. Manual on Uniform Traffic Control Devices (MUTCD) (2009 Edition); and
4. Guide for Work Area Traffic Control, American Traffic Safety Services Association (ATSSA).

Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) or Traffic Control Plans (TCP) for review and approval of the Engineer. MHT and/or TCP shall be developed in accordance with this section and the construction plans.

MHT and/or TCP construction traffic control shall be as required by, in descending order of precedence: 1] the MUTCD; 2] the ATSSA Guide, 3] the plans and specifications for this project; 4] CDOT Standard Specifications (2019 Edition); and 5] CDOT Standard Plans (2019 Edition) as applicable.

Subsection 630.05 shall include the following:

Steel drum channelizing devices shall not be used for traffic control

Subsection 630.07 shall include the following:

Non-metallic drums or tubular markers may be substituted for vertical panel channelizing devices.

Subsection 630.09 shall include the following:

STOP/SLOW sign paddles for flaggers shall be 18 inches with letters six inches high.

Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

All on-site contractor personnel including superintendents are required to wear appropriate colored, reflective safety vests.

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**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Subsection 630.10 is hereby revised to include the following:

MHT and TCP

Submission of MHT and/or TCP to the Engineer is required for this project as per the Standard Specifications. Discrete and separate MHT and/or TCP submittals are required for each of the proposed phases of work. When a different MHT is required for a subsequent construction phase, it must be submitted at least two weeks prior to starting that phase. All proposed MHT shall be approved, in writing, by the Engineer following approval of the Denver Traffic Engineer or his/her designee.

Approval of the proposed MHT does not relieve Contractor of liability specifically assigned to it under the contract. Contractor shall erect and maintain warning lights, signs, barricades, and enough safeguards around all excavations, embankments, and obstructions to protect the work zone and the traveling public.

Failure of Contractor to submit detailed, comprehensive, clearly legible TCP and/or MHT will constitute grounds for rejection of TCP and/or MHT without extensive elaboration or comment from the City.

Contractor shall notify the Engineer on or before Thursday at 3:00pm which streets and specific blocks it intends to work on the following week. Such notification will be made for all phases of construction throughout the contract.

MHT submittals shall include a tabulation of the expected hours required for uniformed traffic control.

The Contractor shall submit required MHT, and all appropriate Traffic Control Supervisor and Flagger documentation to the Engineer for approval prior to setting any traffic control devices.

If the Contractor requires a temporary full closure of any city street, all such requests are subject to the approval of the Engineer. Each full closure request shall be made at least two weeks in advance of the time the full closure is to be implemented.

All proposed lane closures are subject to the approval of the Engineer. Requests for such lane closures shall be submitted with appropriate MHT at least 24 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless utilized in continuum for the duration of each working period. Contractor shall make all reasonable efforts to fashion its lane closure proposal to close a minimum number of lanes at any given time.

Certifications

The contractor's superintendent and all others serving in similar supervisory capacity shall have completed two-day Traffic Control Supervisor training as offered by the CCA. The one-day ATSSA Traffic Control Technician (TCT) training along with the two-day ATSSA Traffic Control Supervisor training will serve as an alternate. If the alternate is chosen, the Contractor shall provide written evidence that 80% score was achieved in both two training classes. The certifications of completion or certifications of achievement for all appropriate staff shall be submitted to the Engineer at the preconstruction conference.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All flaggers used on this project shall be certified.

Permitting and Coordination

Contractor shall obtain all required access and construction permits from the City prior to initiating work within and along City rights of way. Contractor's project superintendent shall always have copies of applicable permits in-hand while on site.

Contractor shall maintain frequent communication with the Engineer regarding all aspects of the daily and weekly work schedule.

Contractor shall coordinate and cooperate fully with the City & County of Denver, utility owners and other contractors; to assure adequate and proper traffic control is always provided. The Contractor shall coordinate and cooperate fully with any others providing traffic control for other operations near the work to ensure that work or traffic control devices do not interfere with the free flow of traffic except as allowed by the approved MHT.

Subsection 630.13 shall include the following:

Bus Stops

Contractor shall be required to make arrangements with the Regional Transportation District (RTD) prior to closing any existing bus stops within the project limits. Temporary stops will be required as directed by the Engineer and as required by RTD.

For bus stop/route conflicts, RTD shall be contacted at least two business days prior to the start of construction in and adjacent to the bus stop in question. Contact name at RTD shall be obtained through the Engineer.

General Requirements

During construction of this project, traffic shall always use the present traveled roadway unless otherwise directed or authorized by the Engineer.

Contractor shall always provide normal movements for vehicular and pedestrian traffic, unless otherwise authorized or directed by the Engineer.

Contractor shall not have construction equipment or materials in the lanes open to traffic at any time unless otherwise approved by the Engineer. All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access or the flow of traffic. Personal vehicles and construction equipment parking is prohibited in all private parking lots without payment or the respective property owner's permission.

Vertical cuts or fills greater than 1 inch resulting from construction operations adjacent to traffic lanes or within the clear zone shall be temporarily sloped at a 6:1 or flatter grade and delineated at 35 foot (or more dense) intervals immediately after cutting or filling operations to help safeguard the traveling public.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.

Excavations or holes shall be backfilled or fenced when unattended and follow all applicable OSHA requirements. During non-construction periods (weekends, holidays, etc.), all work shall be adequately protected to provide for the safety of vehicular, bicycle and pedestrian traffic, as detailed in the contractor's approved TCP and/or MHT.

Location, Positioning and Maintenance of Equipment and Devices

Contractor shall not have construction equipment or materials in the lanes open to traffic any time, unless approved by the Project Manager.

Contractor shall install construction traffic control devices in locations where they do not block or impede other existing traffic control devices; or sidewalks for pedestrians, disabled persons or bicyclists.

Construction signing shall be removed unless work is in progress or construction equipment has been left on the job site.

All portable signs shall be removed from the roadway at the end of each work shift.

When storing portable signs or supports within the project they shall be removed beyond the clear zone and shall not be visible to traffic. All storage areas shall be approved. The minimum clear zone distance shall be 18 feet, measured from the edge of the traveled way. If the signs cannot be stored at least 18 feet from the traveled way, they shall be removed. Signs shall not be stored on paved surfaces.

All advanced construction signing shall be installed prior to any construction activity and remain in place for all work periods.

Resetting construction signs during construction as required by the work is considered incidental to the project and will not be paid separately.

Masking of existing or temporary signs as may be required by the work is considered incidental to the project and will not be paid for separately.

All personal / employee vehicle and construction equipment parking is prohibited when it conflicts with safety, access, or the flow of traffic.

Traffic control devices used on this project shall always be kept clean and in good working order. The Engineer shall make the ultimate determination regarding the explicit definition of "good working order."

Existing signs, traffic signals, or other City-owned traffic control devices damaged due to Contractor's operations shall be replaced in-kind or repaired by the Contractor at no additional cost to the project.

Road Work Ahead advance signs shall be reset as required to match the location of the work zone.

Night flagging is not allowed on this project. Should an emergency or special construction condition arise requiring night work and flagging is consequently required, proper illumination of all flagging stations must be provided in accordance with the MUTCD. All night work must be approved by the Engineer.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All construction traffic control devices including signs installed under this project shall be installed as depicted in the MUTCD and CDOT M & S Standards.

At locations where such traffic is normally allowed, Contractor shall maintain continuous access through the project for pedestrians, bicyclists and disabled persons. When the existing access route is disrupted by construction or construction-related activities, a temporary access shall be provided. All pedestrian access shall be delineated through the work zone using proper channelizing devices.

During non-construction periods (weekends, holidays, etc.) all work shall be adequately protected to ensure the safety of vehicular, pedestrian and bicycle traffic, as detailed in the Contractor's MHT. Excavations, drop-offs or holes shall be backfilled, fenced or barrier-separated when unattended and follow all applicable OSHA requirements.

Costs of removing, resetting or reinstalling construction traffic control devices shall be considered included in the work and will not be measured and paid for separately.

Access

Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, hike/bike paths and major building entrances always unless otherwise approved by the Engineer.

Parking areas temporarily disturbed by construction activities shall be restored to a usable condition during non-working hours. Such temporary parking shall utilize an all-weather surface. The Contractor shall develop an Access Maintenance Plan (AMP) in coordination with, and based on the requirements of, the affected property owners and tenants, and submit same to the Engineer for approval prior to commencement of work. The plan shall detail all barricades, ramps, signs, and temporary means of access required by the property owners or tenants. Prior to commencing any work that affects property access, the AMP for that property shall be submitted to, and approved by, the Engineer.

The AMP shall be coordinated with all affected owners and tenants. The AMP shall include documentation of this coordination, including the approval signatures of the affected owner or tenant.

The owner's signature (or owner's representative or Home Owners Association representative) signature shall be considered enough approval for temporary access changes for multiple unit apartment or condominium buildings. Should the Contractor be unable to obtain approval and signatures, documentation of the effort made to obtain said approval and signatures must be submitted.

All access shall be maintained on surfaces equal to or exceeding those in place at the time the access is first disturbed. For short periods of time only as allowed by the Engineer, access may be maintained on an aggregate base course surface.

Contractor shall maintain continuous access throughout the project for pedestrians, bicyclists and disabled persons. When the existing access route is disturbed by construction, a temporary all-weather access shall be provided.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All temporary access shall be a minimum of 5' wide and meet Americans with Disabilities Act (ADA) requirements. Acceptable all-weather surfacing shall be concrete or asphalt construction or as approved by the Engineer. Delineation of pedestrian access through the work zone shall be accomplished using temporary plastic fencing.

Access to individual properties shall be maintained always unless otherwise approved by the Engineer. The sole exception to this requirement is that the City will permit full closures of access to all alleyways, walkways, driveways, and hike/bike paths *directly adjacent* to an active work zone for a maximum of one (1) week. If the Contractor wishes to exercise this exception, a request for same shall be submitted to the Engineer for review and approval including proposed method for Public Notice per City requirements. If access restrictions are approved by the Engineer, the Contractor shall coordinate with all owners and/or tenants affected by alley and/or access closures two weeks prior to closure.

Access to driveways shall be maintained always during construction. The Contractor shall coordinate driveway work with the property owner.

Appropriate signage shall be provided alerting all motorists leaving driveways that enter a work zone as to which direction the through lane is traveling and what access restrictions exist, if any.

Costs incurred by the Contractor to maintain vehicular and pedestrian access will not be paid for separately.

Noise Control

Exempted hours for construction in the City & County of Denver are 7:00am to 9:00pm Monday through Friday and 8:00am to 5:00pm on Saturdays and Sundays per Sections 36-6(B)(7) and 36-7(5)A, B and C of Denver's Noise Ordinance, Chapter 36 "Noise Control", Denver Revised Municipal Code (DRMC).

If there is an anticipated need to work outside of the exempted hours of construction:

1. The Contractor will need to make a request for a nighttime noise variance as allowed for in Section 36-7(5)C of the DRMC, and
2. The variance process needs to be started a minimum of two to three months prior to the desired start of any work needing to occur outside the exempted hours.

Any noise variance questions should be directed to Paul Riedsel, City Department of Environmental Health, Denver Community Noise Program (T: 720-865-5410; Fax: 720-865-5532) a minimum of three months prior to the start of the project. See also the applicable Project Special Provision.

Restricted and Allowable Work - General

The project includes restrictions to work times and days that affect traffic during peak traffic times, weekdays, nighttime hours, holidays, holiday evenings, holiday weekends, and other circumstances as described herein. Wherever other laws, ordinances, regulations or orders are more restrictive, they shall take precedence over these requirements.

Night-time work will not be allowed on this project. All night work requires the prior approval of the Engineer as well as an approved variance to the Noise Ordinance.

Weekend work shall be allowed as directed or authorized by the Engineer. Requests for weekend work shall be submitted to the Engineer by no later than close of business on Wednesday preceding the weekend during which the Contractor desires to work.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Weekday work occurring on the roadway shall generally occur between 8:30am and 3:30pm as approved by the Engineer. Project-related work outside the indicated hours is permitted with the prior approval of the Engineer. If the City permit authorizes work outside the hours indicated herein, the language on the permit shall control. The contractor may be allowed to work weekdays prior to 8:30am and after 3:30pm Monday through Friday if: 1] the work is accomplished during daylight hours; 2] the work takes place off the roadway and does not interfere with the flow of traffic; and 3] the given activity has been approved by the Engineer. Weekday work will not be permitted that directly or indirectly interferes with traffic flow between the hours of 5:30am and 8:30am Monday through Friday; between the hours of 3:30pm to 6:30pm Monday through Thursday; and after 2:00pm on Fridays unless otherwise authorized by the Engineer.

The contractor can work on multiple work areas, streets, blocks or intersections simultaneously if that work schedule is so approved by the Engineer.

Wherever other laws, ordinances, regulations or orders are more restrictive, they shall take precedence over these requirements.

Holidays

Work that interferes with traffic on any day of a holiday; or 3-day or 4-day holiday weekend shall generally not be permitted. Holidays shall be as defined in Subsection 101.33 of the Standard Specifications. Section 108.07 of the Standard Specifications places additional restrictions on work occurring on weekends, holidays and extended holiday weekends. Work after 12:00 noon on the day preceding such a holiday weekend is similarly included in the restricted times. Exceptions to these requirements must be approved by the Engineer.

Special Events and Other Considerations

The City may place restrictions on allowable work periods during specific heavily traveled periods to account for athletic events such as Colorado Rockies baseball games and other events such as "A Taste of Colorado." The Engineer will notify the Contractor of any such restrictions during normal coordination for this project. Any proposed work on the roadway during all City-defined special events shall be coordinated with the Engineer.

Temporary Traffic Signals

If temporary signals are required, Contractor shall use 12" indications for all temporary signal faces and temporary signal heads shall be operated through the existing controller. If required, prior to initiating construction, Contractor shall submit a plan of the proposed installation to the Engineer for approval by the Denver T&M Division. Contractor will not be allowed to use existing mast arm poles to support temporary span wire unless explicitly permitted by the Denver T&M Division.

Subsection 630.15 is hereby deleted and replaced with the following:

Contractor shall furnish all personnel and materials necessary to perform the Construction Zone Traffic Control as required by the approved MHT. Except as noted within this Project Special Provision, these quantities will not be measured.

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**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

The accepted number of hours of Uniformed Traffic Control will be paid at the contract unit price per hour.

Construction traffic control devices (including but not limited to flagging, signs, barricades, traffic control management, traffic control inspection, drums, temporary concrete barrier, traffic cones and so on) will not be measured and paid for separately but shall be included in the lump sum per day payment for Construction Traffic Control. No reimbursement for individual pay items will be made. Contractor shall be responsible for all labor and materials required to establish construction traffic control in accordance with the MUTCD.

The lump sum payment includes all labor and materials needed to provide construction traffic control throughout the project including but not limited to furnishing, erecting, maintaining, resetting, repairing, moving, removing, cleaning and disposing of the construction traffic control devices.

All costs related to and incidental to the foregoing requirements shall be included in the original contract prices and will not be measured and paid for separately.

Placement and removal of temporary pavement markings for traffic control during applicable construction phases will not be measured and paid for separately but shall be included in the work.

Temporary reset of existing traffic signal controller cabinets, signal heads and other equipment as may be required to facilitate construction shall be considered included in the lump sum cost for Removal of Traffic Signal Equipment and will not be measured and paid separately.

Subsection 630.15 is hereby deleted and replaced with the following:

Payment for Construction Zone Traffic Control shall include all devices; Traffic Control Supervisor and all required Traffic Control Inspection; temporary Changeable Message Signs as specified, detours, addition and/or adjustments to traffic signal heads or span wire configurations as needed to support phased construction traffic control, placement and removal of temporary pavement markings and signs, and all other personnel and resources necessary to complete the work.

All MHT, TCP and AMP preparation and submittal is considered included in the lump sum price. All rental, purchase, installation, maintenance (including cleaning), resetting and removal of all equipment, signs and other devices is considered included. All labor costs including inspectors, flaggers, Traffic Control Supervisors, Traffic control Inspection, and Traffic Control management are considered included. Costs of electrical power, including batteries, for all devices, temporary lighting or temporary signals are considered included.

Payment will be made on a percentage basis of the Lump Sum bid corresponding to the percentage of work complete as determined by the Engineer.

Payment for the temporary traffic signal (if required) shall be by the number of locations and shall include furnish of all equipment, installation, maintaining the temporary operation for the required duration, removal of temporary equipment and surface restoration as directed by the Engineer. Costs of providing temporary signal layouts for approval are included in the unit cost.

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**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Subsection 630.16 is hereby revised to include the following:

Pay Item

Traffic Control (Special)

Pay Unit

Lump Sum

**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work shall consist of furnishing, operating, and maintaining portable message sign panels, to be on the project site at least two weeks prior to the start of active roadway construction.

Subsection 630.03 shall include the following:

Portable message sign panels shall be furnished as a device, fully self-contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The panel shall display a minimum of three – eight-character lines. The panel shall be a dot-matrix type LED legend or approved alternate, on a flat black background. LED signs shall have a pre-default message that activates before power failure.

The sign shall have its own separate power source with independent back-up battery power. The sign shall be capable of 360 degrees horizontal rotation and be able to be elevated to a height of at least five feet above the ground surface as measured to the bottom of the sign. The sign should be visible from one-half mile under both day and night conditions. The message should be legible from a minimum of 650 feet. The sign shall automatically adjust its light source to meet legibility requirements during the hours of darkness. The sign enclosure shall be watertight and provide a clear polycarbonate front cover.

Each sign shall include an operating and parts manual, wiring diagrams, and troubleshooting guide. Message signs that are diesel generator powered shall be provided with a 20-gallon minimum capacity fuel tank. Solar powered message signs shall be capable of operating continuously for ten days without sun. All instrumentation and controls shall be contained in a lockable enclosure. The sign shall be capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Flip disk legends shall have fluorescent ultraviolet black-light bulbs.

In addition to the onboard solar/generator power operation with battery back-up, each sign shall be capable of operating via hard-wire, 100-110 VAC external power source. All electrical wiring including connectors and switch controls needed to allow all sign functions required by the specification shall be provided with each sign.

The portable message sign shall be capable of maintaining all required operations under Colorado mountain/winter weather conditions. Each sign shall be furnished with an attached license plate and mounting bracket. Each sign shall be wired with a 7-prong male electric plug for the brake light warning system. NAPA Part TC 6215 Trailer Connection or equivalent will be suitable to meet the requirements of this specification.

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**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

Subsection 630.15 shall include the following:

Portable message sign panels will be not be measured and paid separately but shall be considered included in the lump sum cost for Construction Traffic Control. Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message signs shall be the responsibility of the Contractor and will not be measured and paid separately.

REVISION OF SECTION 631 RAILROAD COORDINATION

Section 631 is hereby added to the Standard Specifications as follows:

DESCRIPTION

This work consists of coordination with the Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UPRR) for construction activities on, within, over, or affecting BNSF and/or UPRR property including tracks, communication lines, electric lines, and other facilities.

The Contractor shall complete all coordination, submittals and work in accordance with the latest edition of the UPRR/BNSF *Guidelines for Railroad Grade Separation Projects*, UPRR *Guidelines for Preparation of a Bridge Demolition and Removal Plan for Structures Over Railroad*, and the American Railway Engineering and Maintenance of Way Association (AREMA) recommendations or as directed in writing by the Engineer or BNSF/UPRR designated Representative.

The Contractor shall cooperate with BNSF and UPRR during construction of the repairs to the 48th Avenue Viaduct structure (BNSF: MP 2.35, Line Segment 0476, Front Range Subdivision, Powder River Division; UPRR: MP 2.28, Moffat Tunnel Subdivision). BNSF/UPRR will cooperate with the Contractor so that work may be conducted in an efficient manner, and will cooperate with the Contractor in enabling use of BNSF's and UPRR's right-of-way in performing the work.

WORK PLAN/SUBMITTALS

The Contractor shall submit a work plan with phasing to the BNSF and UPRR for approval. The work plan shall include a description of all means and methods necessary to complete the work within the railroad right-of-way including but not limited to equipment location, access location, shoring, falsework, formwork, debris containment and removal, track protection, pier repair, deck repair, and right-of-entry. All electrically conductive materials used for shoring, falsework, formwork, and debris containment shall be grounded. The Contractor shall anticipate a review period of the work plan of 30 calendar days or more by the railroad and shall anticipate more than one review by the railroads.

If the Contractor's work plan requires closure of any track at any time or impacts existing horizontal or vertical clearances within the temporary clearance envelope for more than 4 hours, the work plan shall be submitted 60 calendar days prior. The Contractor shall anticipate the review period may be longer than 60 days and the railroad will likely require more than one review.

RIGHT-OF-ENTRY AGREEMENT

The Contractor shall be responsible for obtaining a Contractor's Right-of-Entry (ROE) Agreement from BNSF and UPRR prior to entering BNSF and UPRR property and commencing the work on railroad property. The Contractor will be responsible for coordinating daily activities with the BNSF and UPRR Railroad Flagger.

When the Contractor's Right-of-Entry is fully executed with the BNSF and UPRR, the BNSF and UPRR will provide a contact person(s) to the Contractor including their phone number and address. This information is typically included in the ROE Agreement.

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REVISION OF SECTION 631 RAILROAD COORDINATION

RAILROAD SAFETY TRAINING

The Contractor shall obtain all required BNSF and UPRR On-Track Safety Training before entering the BNSF Railway and UPRR right-of-way. All employees of the Contractor and its Subcontractors who will be working on railroad property shall be approved through the website <http://www.e-VERIFILE.com> at their railroad subsidiary <http://www.e-RAILSAFE.com>. The Contractor will be responsible for all training, testing, and background checks that will be required. In addition, the Contractor and its Subcontractors shall complete the annual railroad specific enhanced safety training associated with the e-RailSafe card. Upon successful completion of these steps, individuals will be issued a photo identification (ID) card.

While on railroad property, all individuals must have this photo ID card and a government-issued photo ID (such as a driver's license, state ID card, or passport). This e-RailSafe card is valid for 2 years. Contractor and subcontractor employees must have their e-RailSafe card displayed in a clear plastic pocket on the front of their orange safety vest.

All employees of the Contractor, its Subcontractors, agents, or invitees who will be working on BNSF property shall complete the Railway's Engineering Contractor Safety Orientation, which can be accessed at www.bnsfcontractor.com. The training will issue a card certifying completion and shall be in possession at all times while on BNSF property. The Contractor must renew annually.

All employees of the Contractor, its Subcontractors, agents, or invitees who will be working on UPRR property shall complete the FRA Roadway Workers' Protection (RWP) Training, which can be accessed at www.railroadeducation.com, and Contractor Orientation Safety Training, which can be accessed at www.contractororientation.com. The trainings will issue a card certifying completion and shall be in possession at all times while on UPRR property. The Contractor must renew annually.

No employee of the Contractor, its subcontractors, agents or invitees shall enter BNSF or UPRR right-of-way without first having attended the required training. The Contractor shall ensure that each and every employee, subcontractors, agents, or invitees possesses a card certifying completion of the training(s) before entering railroad property.

RAILROAD FLAGGING

No construction activities on the BNSF and UPRR property shall be performed without the presence of at least one BNSF and/or UPRR Railroad flagger at all times. Railroad flagging will be paid by the Contractor and reimbursed by the City. See Force and Allowance Account Special Provision for additional information.

The Contractor shall request flaggers a minimum of 30 calendar days prior.

RAILROAD PROPERTY ACCESS AND CROSSING

Railroad property shall only be accessed from facility entrance locations. Access to BNSF and UPRR property through RTD/DTO property is prohibited.

All crossing of railroad tracks with equipment, materials, and personnel shall occur at existing crossings.

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**REVISION OF SECTION 631
RAILROAD COORDINATION**

CONSTRUCTION STAGING AREA

The Contractor shall be responsible for coordinating all necessary construction staging activities, outside of BNSF, UPRR and RTD/DTO property, in order to perform the work within the BNSF and UPRR properties.

RAILROAD INSURANCE

The Contractor shall obtain all necessary insurance for construction in BNSF and UPRR property. The required insurance shall be kept in full force and effect during the performance of work and thereafter until the Contractor removes all tools, equipment, and material from BNSF's and UPRR's property and cleans the premises in a manner reasonably satisfactory to BNSF and UPRR. The insurance may include railroad liability of \$5,000,000/incident and \$10,000,000/aggregate and general liability of \$2,000,000/incident and \$6,000,000/aggregate.

RAILROAD CLEARANCES

The Contractor shall abide by the horizontal and vertical clearances shown in the plans during construction. Construction activities will be permitted within 25-feet, horizontally measured at right angles, from centerline of nearest track, only if absolutely necessary and with approval of BNSF and UPRR. Construction activities for this project will be within the permitted distance and will require approval from BNSF and UPRR. The construction activities must allow the tracks to stay operational.

Any proposed infringement on the specified minimum clearances due to the Contractor's operations shall be submitted to BNSF and UPRR at least 30 days (except 60 days as noted above) in advance of the work and shall not be undertaken until approved in writing by the railroad(s). No extra compensation will be allowed in the event the Contractor's work is delayed pending railroad approval.

RAILROAD REQUIREMENTS

The Contractor shall take protective measures as necessary to keep BNSF and UPRR facilities, including track ballast, free of sand, debris, and other foreign objects and materials resulting from his operations. The Contractor shall perform all its work in compliance with all applicable BNSF, UPRR and Federal Railroad Administration (FRA) rules and regulations. The Contractor shall arrange and conduct its work in such manner and at such times as shall not endanger or interfere with the safe operation of the tracks and property of BNSF/UPRR and the traffic moving on such tracks, or the wires, signals and other property of BNSF/UPRR, its tenants or licensees, at or in the vicinity of the Work. BNSF and/or UPRR shall be reimbursed by the Contractor or the City for train delay cost and lost revenue claims due to any delay or interruption of train operations resulting from Contractor's construction or other activities.

Track protection, in the form of work platforms, falsework, and/or formwork, shall be provided and constructed by the Contractor prior to any construction above or within 25 feet of centerline of track. Details of track protection shall be included in the Contractor's work plan and shall be approved by the railroads and the Engineer.

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**REVISION OF SECTION 631
RAILROAD COORDINATION**

Track protection, in the form of curbs or krail or other approved method, shall be provided and constructed by the Contractor prior to any construction within 25 feet of centerline of track. Details of track protection shall be included in the Contractor's work plan and shall be approved by the railroads and the Engineer. Track protection within the temporary construction envelope, if approved by the railroad, shall be moveable to allow train passage as required by the railroad.

Track protection is required for all work equipment (including rubber tired equipment) operating within 25-feet from nearest rail.

All track protection shall be installed prior to any construction within 25 feet of centerline of track and shall be removed after construction is complete.

Notify the railroad company(ies) at least thirty (30) business days prior to the start of work on Railroad property to enable the railroad company(ies) to furnish railroad flagging or other protective services as might be necessary to ensure the railroad company operations.

Discharge, release or spill on BNSF or UPRR right-of-way of any hazardous substance in excess of a reportable quantity or any hazardous waste is prohibited and the Contractor shall immediately notify the BNSF and UPRR of any discharge, release or spill. The Contractor shall not allow BNSF's and/or UPRR's right-of-way to become a treatment or storage facility as those terms are defined in the Resource Conservation and Recovery Act or any state analogue.

The Contractor, upon completion of the work covered by the contract documents, shall promptly remove from BNSF and UPRR right-of-way all tools, equipment, implements and other materials, whether brought upon the property by the Contractor or any subcontractor, employee or agent of the Contractor or of any subcontractor, and shall cause BNSF and UPRR right-of-way to be left in a condition acceptable to the BNSF and UPRR.

BNSF and UPRR reserves the right to stop any Contractor operations on railroad property that, at the railroad company determination, could or is creating an eminent hazard to railroad property or operations by an oral directive followed by a written notice. After stopping any activity or operation, the railroad company is to notify the Engineer and Contractor in writing of required modifications to activities or operations along with recommended protective services that will be provided by the railroad company to allow construction on railroad property to continue.

All personnel protective equipment used on BNSF and UPRR right-of-way shall meet applicable OSHA and ANSI specifications. BNSF and UPRR personnel protective equipment requirements are:

- 1) Eye protection, including permanently affixed side shields that meets American National Standard for occupational and educational eye and face protection, Z87.1, latest revision. No yellow lenses allowed. Additional eye protection shall be provided to meet specific job situations such as welding and grinding.
- 2) Hard hats conforming to ANSI national standard Z89.1. Designer hard hats are unacceptable (e.g. cowboy hats). It is recommended that all hard-hats be affixed with the entity's name and/or logo.
- 3) Safety shoes: hardened toe, above-the-ankle lace-up with a defined heel. All safety toe footwear must meet ANSI Z41.1, Standard Class #75. No open toe shoe (like sandals), thin soled (like tennis or walking shoes), or shoes with high heels are to be worn.

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REVISION OF SECTION 631 RAILROAD COORDINATION

- 4) High visibility retro-reflective orange vests or orange outer wear that includes reflective striping, both conforming to ANSI Class II are required.
- 5) Hearing protection that affords protection from noise levels that may be occurring on the Project.
- 6) Fall protection and respirators shall be worn as required by State and Federal regulations.

BNSF and UPRR are required to report certain injuries as a part of compliance with FRA reporting requirements. Any personal injury sustained by an employee of the Contractor, subcontractor or Contractor's invitees while on BNSF or UPRR property shall be reported immediately to the railroad(s).

The Contractor is encouraged to review BNSF and UPRR Contractor requirements on their website prior to bidding on the project and again prior to beginning construction. An example of railroad requirements is available on the BNSF website at <https://www.bnsf.com/bnsf-resources/pdf/in-the-community/exhibit-c-contractor-rqmt-2014.pdf>. This specification and the City do not relieve the Contractor from any requirements of the Railroad(s).

RAILROAD OPERATIONS

The Contractor shall be advised that trains and/or equipment are expected on any track, at any time, in either direction. The number of trains operated daily at this structure by BNSF and UPRR is approximately 20, with an approximate speed of 10 MPH. The BNSF and UPRR does not operate train traffic in this location on a set schedule.

All railroad tracks within and adjacent to the Project site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. The Contractor shall coordinate and schedule his work so that construction activities do not interfere with railroad operations.

Work windows for track closures for this project shall be coordinated with the City, BNSF, and UPRR. Based on coordination with the railroads, work windows for track closures are limited to 4 hours and may be limited to 2 to 3 days per week. Use of flaggers without track closures is recommended where possible.

SITE INSPECTIONS

In addition to the office reviews of construction submittals, site inspections may be performed by BNSF and/or UPRR representatives at significant points during construction, including existing structure demolition, installation of falsework/formwork, and installation of FRP.

Site inspection is not limited to the events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by BNSF and/or UPRR. The construction schedule shall include the above listed items and shall be updated as necessary, but at least monthly and shall be provided to BNSF and UPRR so that site visits may be scheduled.

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**REVISION OF SECTION 631
RAILROAD COORDINATION**

METHOD OF MEASUREMENT

Railroad coordination will be measured by the hour to complete the work.

BASIS OF PAYMENT

The accepted quantity of Railroad Coordination will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Railroad Coordination	Hour

Payment for Railroad Coordination will be full compensation for all labor, materials, tools, equipment, and incidentals required to perform the work.

Track protection will not be measured and paid for separately, but shall be included in the cost of the project.

Flagging costs, Railroad Fees, Railroad Orientation Course costs, and Railroad Inspector Coordination costs will be reimbursed by Force Account and is not included in the cost of Railroad Coordination. See Force and Allowance Account Special Provision for additional information.

**REVISION OF SECTION 632
RTD/DTO COORDINATION**

Section 632 is hereby added to the Standard Specifications as follows:

DESCRIPTION

This work consists of coordination with the Regional Transportation District (RTD) and Denver Transit Operators (DTO) for construction activities on, within, over, or affecting RTD and DTO property including tracks, communication lines, electric lines, and other facilities.

The Contractor shall follow all the requirements related to RTD for construction activities on or affecting RTD and DTO facilities, property, and traffic operations related to bus and train services. The contact for RTD and DTO will be listed on the RTD and DTO Contractors Right-of-Entry (ROE) Agreement. A ROE is required from **both** RTD and DTO for this project. RTD's ROE is required to be submitted and approved prior to submitting to DTO.

The RTD and DTO contacts necessary for this contract include:

Contact	Agency/Position	Email	Phone
Ken Fleck	RTD Team Lead/Structural Engineer	Ken.fleck@RTD-Denver.com	303-299-2870
Michelle Sims	RTD Supervisor, Bus Stop Program	Michelle.Sims@RTD-Denver.com	303-299-6563
Lindsey Smith	RTD Assistant Supervisor, Bus Stop Program	Lindsey.Smith@RTD-Denver.com	303-299-6561
Tim Lucero	RTD General Superintendent, Street Operations	Timothy.Lucero@RTD-Denver.com	303-299-6928
Daniel Lamorie	RTD Assistant General Superintendent, Street Operations	Daniel.Lamorie@RTD-Denver.com	303-299-6676
Marisela Quiroz	RTD Lead Street Supervisor	Marisela.Quiroz@RTD-Denver.com	303-299-6570
Derek Rice	RTD Lead Street Supervisor	Derek.Rice@RTD-Denver.com	303-299-6259
Greg Wing	RTD Lead Street Supervisor	Greg.Wing@RTD-Denver.com	303-299-6578
Len Grant	RTD Lead Street Supervisor	Leonard.Grant@rtd-denver.com	303-299-6578
Jaime Urenda	RTD Lead Dispatcher	Jaime.Urenda@rtd-denver.com	303-299-3135
David Sesack	RTD Lead Dispatcher	David.Sesack@RTD-Denver.com	303-299-3128
Bill Beins	RTD Lead Dispatcher	William.Beins@rtd-denver.com	303-299-3122
Fabian Testa	RTD Project Engineer	fabian.testa@rtd-dnever.com	303-299-2375
Kelly Abaray	RTD – Engineering Program Manager - DTO	kelly.abaray@rtd-denver.com	720-460-5859
Patrick Stanley	RTD	patrick.stanley@rtd-denver.com	303-299-2906
Steven Hope	RTD	steven.hope@rtd-denver.com	719-369-3677
Michael Millage	RTD	michael.millage@rtd-denver.com	303-299-2897
Kirk Strand	RTD	Kirk.strand@rtd-denver.com	
Allen Miller	RTD	Allen.miller@rtd-denver.com	
Charles Culig	RTD	Charles.culig@rtd-denver.com	
Paul Deeley	RTD	Paul.deeley@rtd-denver.com	
General Oversight	RTD	crtoversightgroup@rtd-denver.com	

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REVISION OF SECTION 632 RTD/DTO COORDINATION

WORK PLAN/SUBMITTALS

The Contractor shall submit a work plan with phasing to the RTD and DTO for approval. The work plan shall include a description of all means and methods necessary to complete the work within the railroad right-of-way including but not limited to equipment location, access location, shoring, falsework, formwork, debris containment and removal, OCS Temporary Protective Structure, pier repair, deck repair, and right-of-entry. The work plan shall also include information required to phase construct, if applicable, and any temporary measures needed to allow phased construction. All electrically conductive materials used for shoring, falsework, formwork, and debris containment shall be grounded. The work plan shall show details of grounding including attachments and locations of key components.

A separate work plan, or a portion of the main work plan, shall be submitted to the RTD and DTO for approval if the Contractor requires access to within 25-feet from electrified components. This work plan shall specifically address the operations impacts to and protection of the electrified components including operation impacts to RTD's system/train service. Additionally, it should address protection of the construction activities and workers/equipment from the electrified components.

The Contractor shall reference and follow all requirements as outlined in the RTD Commuter Rail Design Criteria manual published by RTD.

COORDINATION

The Contractor shall be responsible for coordinating daily activities with the appropriate people from the contact list above including the RTD Commuter Rail Operations Manager and/or the RTD Flagger, as well as the provided bus service contact. Coordination with Denver Transit Operators (DTO) at track.usage@rtdcrail.com and the contacts listed above.

RIGHT-OF-ENTRY AGREEMENT

The Contractor shall be responsible for obtaining a Contractor's Right-of-Entry (ROE) Agreement from RTD and DTO prior to entering RTD/DTO property and commencing the work on railroad property. The Contractor shall submit the RTD Commuter Rail Right-of-Way Access Request/Permit. For additional information on RTD ROE agreements, see the following website: <https://www.rtd-denver.com/business-center/construction-engineering/right-of-way-agreements-and-permits#row>

DTO will require a separate Right-of-Entry permit and can be submitted after approval of the RTD permit is approved.

The Contractor will be responsible for coordinating daily activities with the RTD or DTO Railroad Flagger.

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REVISION OF SECTION 632 RTD/DTO COORDINATION

RESTRICTIONS

The Contractor shall make every attempt to time work over the B-Line and G-Line with any RTD-generated shutdown. These dates can be requested from the Engineer at the beginning of the project. Any additional shutdowns on the B-Line or G-Line must be completed between 9:00 PM and 2:30 AM. If the Contractor requires an additional shutdown, it must be requested at least 30 calendar days in advance of the work, with detailed support as to why shutdown must take place outside of the provided hours. This shutdown must be approved by both the Engineer and RTD, and all costs related to this shutdown must be documented and paid for under the Force Account RTD Rail Shutdowns.

Shutdowns will not be approved by the City and RTD/DTO during anticipated high travel times such as dates around major travel Holidays (i.e. Thanksgiving, Christmas, etc.) and major events in the Denver metropolitan area (Broncos Games, Rockies Games, Marathons, major conferences, etc.).

RTD SAFETY TRAINING

The Contractor shall obtain all required RTD and DTO On-Track Safety Training before entering the RTD/DTO right-of-way. No employee of the Contractor, its subcontractors, agents or invitees shall enter RTD/DTO right-of-way without first having attended the required training. The Contractor shall ensure that each and every employee, subcontractors, agents, or invitees possesses a card certifying completion of the training before entering railroad property.

RTD RAILROAD FLAGGING

No construction activities on the RTD/DTO property shall be performed without the presence of at least one RTD and/or DTO Railroad flagger at all times. Railroad flagging will be paid by the Contractor and reimbursed by the City. Flagging is required for all work within 25 feet of RTD tracks. See Force and Allowance Account Special Provision for additional information.

RTD PROPERTY ACCESS AND CROSSING

Railroad property shall only be accessed from facility entrance locations. Access to RTD/DTO property through BNSF property is prohibited.

All crossing of railroad tracks with equipment, materials, and personnel shall occur at existing crossings.

CONSTRUCTION STAGING AREA

The Contractor shall be responsible for coordinating all necessary construction staging activities, outside of BNSF, UPRR and RTD/DTO property, in order to perform the work within the RTD/DTO property.

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REVISION OF SECTION 632 RTD/DTO COORDINATION

RTD INSURANCE

The Contractor shall obtain all necessary insurance for construction in RTD/DTO property. The required insurance shall be kept in full force and effect during the performance of work and thereafter until the Contractor removes all tools, equipment, and material from RTD/DTO property and cleans the premises in a manner reasonably satisfactory to RTD and DTO. The insurance may include comprehensive general and automobile liability of \$2,000,000.

RTD/DTO OPERATIONS

The Contractor shall be advised that trains and/or equipment are expected on any track, at any time, in either direction.

All railroad tracks within and adjacent to the Project site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. The Contractor shall coordinate and schedule his work so that construction activities do not interfere with railroad operations.

The RTD Commuter Rail Maintenance Facility and facility spur track are within the project limits. The facility services all trains for the A-line, B-line, and G-line and trains may be accessing the facility at any time and in any direction. All trains are required by Federal law to access this facility prior to entering service and immediately after exiting service.

Work windows for full track closures for this project shall be coordinated with the City, RTD and DTO. Based on coordination with RTD, track closures in this area will be very limited and work windows very restrictive. The temporary protective structure shall protect the tracks from construction in such a manner as to limit the required number and duration of full track closures. See the OCS Temporary Protective Structure special provision for additional information.

SITE INSPECTIONS

In addition to the office reviews of construction submittals, site inspections may be performed by RTD and/or DTO representatives at significant points during construction, including existing structure demolition, installation of falsework/formwork, and installation of OCS Protective Structure.

Site inspection is not limited to the events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by RTD and/or DTO. The construction schedule shall include the above listed items and shall be updated as necessary, but at least monthly and shall be provided to RTD and DTO so that site visits may be scheduled.

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**REVISION OF SECTION 632
RTD/DTO COORDINATION**

METHOD OF MEASUREMENT

RTD/DTO Coordination will be measured by the hour to complete the work.

BASIS OF PAYMENT

The accepted quantity of RTD/DTO Coordination will be paid for at the contract unit price.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
RTD/DTO Coordination	Hour

Payment for RTD/DTO Coordination will be full compensation for all labor, materials, tools, equipment, and incidentals required to perform the work.

Track Protection for RTD/DTO will be measured and paid for under Item 621 OCS Temporary Protective Structure. See Special Provision Item 621 OCS Temporary Protective Structure for additional information.

Flagging costs, RTD/DTO Fees, RTD/DTO Orientation Course costs, RTD/DTO Inspector Coordination, RTD Rail Shutdowns, and Bus Bridges will be reimbursed by Force Account and is not included in the cost of RTD/DTO Coordination. See Force and Allowance Account Special Provision for additional information.

FORCE AND ALLOWANCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the City and County of Denver's estimate for force and allowance account items included in the Contract. The estimated amounts will be added to the total bid to determine the amount of the performance and payment bonds. Force and Allowance Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with the provision of general condition Title 11. Payment will constitute full compensation for all work necessary to complete the item.

Force and/or Allowance account work valued at \$5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

<u>Item No.</u>	<u>Force Account Item</u>	<u>Quantity</u>	<u>Estimated Amount</u>
F/A 01	Railroad Coordination Fees	F/A	\$15,000
F/A 02	Railroad Contractor Orientation Course	F/A	\$7,500
F/A 03	Railroad Inspector Coordinator	F/A	\$50,000
F/A 04	Railroad Flagging	F/A	\$100,000
F/A 05	RTD Rail Shutdowns	F/A	\$930,000
A/A 06	Erosion Control	A/A	\$3,000
A/A 07	Environmental Health and Safety Management	A/A	\$5,000
A/A 08	Lighting/Electrical System Repairs	A/A	\$7,500

Force and Allowance Account descriptions include:

- F/A 01** **Railroad Coordination Fees** – This force account is for all cost charges from BNSF, UPRR, RTD, and DTO for right-of-entry fees and submittal fees. Additional costs for accelerated (Tier I or II Rush Handling, for example) due to Contractor caused delays shall be at the Contractor's expense and not included in this force account.
- F/A 02** **Railroad Contractor Orientation Course** – This force account is for all cost charges from BNSF, UPRR, RTD, and DTO for Contractor Orientation Course fees.
- F/A 03** **Railroad Inspector Coordinator** – This force account is for all cost charges from BNSF, UPRR, RTD, and DTO for railroad inspector coordinator.
- F/A 04** **Railroad Flagging** – This force account is for all cost charges from BNSF, UPRR, RTD, and DTO for railroad flagging fees.
- F/A 05** **RTD Rail Shutdowns** – This force account is for all costs associated with power shutdowns of the OCS of RTD/DTO tracks. This work includes bus bridges, overhead power shutdown, generator temporary power, special inspection, and flaggers (if additional flagger(s) are needed for shutdown in addition to what is normally required for the contract).

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FORCE AND ALLOWANCE ACCOUNT ITEMS

- A/A 06** **Erosion Control** – This work consists of stormwater BMPs authorized and approved by the Engineer. This Allowance Account is to pay for all necessary work and materials for erosion control items not identified in the plans and at the Engineer’s direction. Payment will be made based on time and materials used to perform the work. All items shall be pre-approved by the Engineer prior to installation or they will be at no cost to the project.
- A/A 07** **Environmental Health and Safety Management** – This work is described in Section 250 – Environmental, Health, and Safety Management of the Standard Specifications.
- A/A 08** **Lighting/Electrical System Repairs** – This work consists of repairs to the lighting/electrical system as authorized and approved by the Engineer. Potential repairs include replacement of deteriorated junction boxes, conduit, and electric line. If removal of concrete is required to perform the repairs, it will be measured and paid as concrete spall repairs. Any costs associated with power shutdowns will be included in the allowance account.

UTILITIES

UTILITY COMPANY ADDRESS	CONTACT NAME EMAIL	TELEPHONE
Xcel Energy – Electric and Gas 1123 W. 3 rd Ave. Denver, CO 80223	Craig Q. Miller Craig.Q.Miller@xcelenergy.com	303-571-3372
Zayo Group 1805 29 th St., Suite 2050 Boulder, CO 80301	James Black Jamesr.black@zayo.com	719-216-8505

CONTRACTOR SHALL PERFORM THE WORK LISTED BELOW:

Contractor shall protect-in-place all utilities within the project limits. Utilities other than those listed above exist within the project area, however no utility impacts are anticipated with this project scope.

GENERAL:

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at phone no. 811 or 1-800-922-1987, to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. Utility service laterals shall also be located prior to beginning excavation or grading.

For railroad properties, contact the appropriate hotline: UPRR SAFT Group "Call Before You Dig" Hotline = 1-800-336-9192; BNSF "Call Before You Dig" Hotline = 1-800-533-2891 or other contacts as directed by the railroads or the Engineer.

The locations of utility facilities as shown on the plan sheets were obtained from the best available information. No warranty is made for the adequacy or accuracy of subsurface information provided. The Contractor shall cooperate with the utility owners in their relocation operations as provided in subsection 105.11 of the Standard Specifications for Road and Bridge Construction. No guarantee is made that utility conflicts will be resolved prior to construction activities and any delays resulting from utility relocation work shall be dealt with in accordance with subsection 108.08 of the Standard Specifications for Road and Bridge Construction as amended.

All costs incidental to the foregoing requirements will not be paid for separately, but shall be included in the work.

DENVER NOISE ORDINANCE PERMIT VARIANCE TEMPLATE

Date

Subject: **Request for Variance to Noise Ordinance**

Location: [where work is to be performed]

Dear Ms. VanDerLoop,

- Name of company/organization seeking the variance
- What is being proposed, where it will occur, expected duration of project
- Brief history regarding proposed project
- Description of the community in the vicinity of the proposed project area

6 (a) Type and Timing of Claim:

- Specific description of proposed project (figures are helpful)
- Why does work need to be conducted at night? (The City can provide details to contractor)
- Are there limiting factors preventing this work from being conducted during the day? (The City can provide details to contractor)
- Requested variance duration; start and end dates
- Proposed work hours
- Types/categories of equipment being used for the project (if known, a detailed list should be provided as an appendix)
- Is this variance request contingent on other regulatory approvals/permits? (construction, demo, remediation)

6 (b) Date of Payment:

- [The Company's] date of payment is the date shown of this letter/request.

6 (c) Objections to Manager's Determinations:

- Specific items applicant may be in disagreement with concerning Department's recommendations or requirements

6 (d) (1) Hardship if Variance is Not Granted:

- Public safety concerns (The City can provide details to contractor)
- Logistical concerns
- Time constraints with a detailed explanation as to why they are necessary
- Cost considerations (specifics desirable)
- Document and evaluate possible alternatives

6 (d) (2) No Adverse Effects to Public Health:

- List expected noise levels to be generated (1) at the site where work is being performed, and (2) at the nearest sensitive receptor (The City can provide details to contractor from Roadway Construction Noise Model)
- Detail existing ambient sound levels (L_{90} , L_{eq} , L_{max}) for the same areas (at least 1 night of pre-work monitoring; 9 p.m. to 7 a.m.; two nights (one weekday, one weekend) if work will occur on weekdays and weekends)
- How do the proposed levels compare with existing EPA or other guidance? (City can provide details to contractor)
- Are there adverse health effects other than noise to be concerned with as a result of the proposed work? (The City can provide details to contractor)

6(d) (3) Maintain Harmony with the Spirit and Purpose of the Ordinance:

(City can provide details to contractor for sec 6(d) (3))

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DENVER NOISE ORDINANCE PERMIT VARIANCE TEMPLATE

- Is the scope of work considerate of present and future community concerns?
- How does the scope of work seek to minimize impacts to the community?
- Have noise mitigation techniques been included and/or considered?
- Has a noise monitoring plan been considered or proposed?
- How will community outreach be conducted prior to the start of work?
- Has a community response plan been developed to deal with any future complaints? (contact name and number of on-site representative)

6 (e) Project Location and Haul Routes:

- Figures are preferable (City can provide details to contractor)

6 (f) Petitioner Information

[Company Name and Address]

[Contact Person/Project Manager info]

6 (g) Petitioner's Signature

Sincerely,

[Name and Title]

Note: In addition to this template, the City can provide an example of a previously written (City and County of Denver) variance application at the contractor's request.

The following field work summary of requirements will be the sole responsibility of the contractor for maintaining compliance with the Denver (only) Permit Variance agreements once granted by the Department of Environmental Health (DEH).

- 1) *Construction Activity Allowable Noise Levels:* Unless the accommodations described in below are provided, construction noise levels shall not exceed:
 - a. an hourly L_{eq} of 75 dBA, or 5 dBA greater than an ambient hourly L_{eq} measuring more than 75 dBA, or
 - b. an L_{max} of 86 dBA during the hours of 9:00 p.m. to 7:00 a.m. (Nighttime Hours)
- 2) *Hotel accommodations within eligibility zones:* (Contractor) shall make hotel accommodations available for persons residing within eligibility zones where Nighttime construction noise levels exceed allowable noise levels. The eligibility zone shall be determined by a sound study conducted by the (contractor) and approved by DEH prior to a seven-day notification period. During nighttime construction, (contractor) shall conduct noise monitoring to verify the sound study results and shall expand and may restrict the eligibility zone to the areas where the actual noise levels exceed an hourly L_{eq} of 75 dB(A) or L_{max} of 86 dB(A). (Contractor) shall consider any special circumstances brought to their attention regarding individuals in the eligibility zone who cannot utilize hotel vouchers and who may be at risk during this period, e.g., residents of 24-hour health care facilities. (Contractor) shall make their best effort to accommodate the needs of such individuals during Construction Activity.
- 3) *Notifications:* Not less than seven days prior to commencement of construction during Nighttime Hours, (contractor) shall notify individual households located within a 1000-foot radius of the construction, as well as representatives of each affected Registered Neighborhood Organizations. Notice shall be in writing or by direct personal contact from (contractor) representative, and shall include the expected start time, expected duration, character of work activity planned, names and telephone numbers of contact persons (for additional information or questions), contact numbers for complaints, and any other relevant parameters or programs.

DENVER NOISE ORDINANCE PERMIT VARIANCE TEMPLATE

Households within the eligibility zone shall receive notice regarding their eligibility for hotel vouchers at the same time or earlier.

- 4) *Mitigation Requirements/Activity Restraints*: When construction is conducted during Nighttime Hours and such activity emits noise levels that exceed ambient noise levels at residential properties, (contractor) shall use best reasonable management practices to mitigate construction noise impacts to the adjacent property owners. Best reasonable management practices include the following:
- a. Using reasonable best efforts to complete the construction as quickly as possible.
 - b. Minimizing nighttime construction duration near residential areas whenever possible.
 - c. Re-routing of truck traffic away from residential streets when possible.
 - d. Conducting truck loading, unloading and hauling operations so that noise levels are kept to a minimum
 - e. Configuring equipment on the site to minimize back-up alarm noise, where practical and feasible (for example, by using circular movement of trucks).
 - f. Shielding jackhammers, saws, and pavement breakers through use of an existing sound barrier wall or temporary barrier where practicable
 - g. Maintaining all equipment to meet manufacturer's specifications.
 - h. Informing employees, contractors and subcontractors performing construction of the general requirements of this variance and exercising best efforts to ensure that such employees, contractors and subcontractors follow best management practices in mitigating construction noise.
- 5) *Monitoring*: (Contractor) shall perform monitoring enough to demonstrate compliance with the requirements of the noise variance and to demonstrate to the community the noise levels that are present.
- a. Noise measurements shall be collected using ANSI guidelines for community noise monitoring
 1. Manufacturer's specifications for appropriate meter use shall be followed.
 2. All noise measurements shall be made using the A-weighted scale (dB(A)) and a slow response. Fast response measurements may be used to measure impact noise levels.
 3. Noise measurements shall be made at the nearest residential property line, unless physically impractical.
 - b. All nighttime construction activity shall be initially monitored. Monitoring shall include spot measurements, as appropriate and hourly L_{eq} . Monitoring shall be required for the following activity groups, but not be limited to:
 1. Joint Repair
 2. Milling Operations
 3. Rubble load-out
 4. Paving operations
 - c. Monitoring shall meet the following requirements:
 1. Each construction activity shall be monitored a minimum of two days for L_{max} and hourly L_{eq} levels to establish an activity baseline for each activity when initially undertaken, and to establish the expected worst-case situation (outside lane).
 2. Noise monitoring shall be provided in response to all noise complaints.
 3. All noise monitoring data and documentation shall be provided to DEH at least weekly when applicable, and such data shall be available to the public from DEH. DEH and their designated representatives may inspect collected data more frequently.
 - d. The following documentation, in a manner and form mutually agreed upon by CCD, (contractor) and DEH, shall be provided for noise monitoring that is conducted:
 1. Manufacturer names, model numbers, and serial numbers of each SLM and acoustical calibrator used.
 2. Software manufacturer, program and version.
 3. Dates of annual certified calibration of SLM, microphone and acoustical calibrator.
 4. Pre- and post- monitoring calibration data for the Sound Level Meter.
 5. Date and specific location (address if appropriate) of monitoring.

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DENVER NOISE ORDINANCE PERMIT VARIANCE TEMPLATE

6. Start time and end time of monitoring
 7. Ambient weather conditions including temperature, relative humidity, wind speed and cloud cover.
 8. Signature of technician collecting the data
 9. List of each hourly L_{eq} for the monitoring period, with associated L_{max} levels.
 10. All measurements associated with any unusual noise events that occurred, cause of such event if known, correction of such event (if any), and adjusted and unadjusted measurements.
- 6) *Complaint Notification and Response:* (Contractor) shall ensure that methods are available to receive, address, and respond to concerns raised by people in the community, through:
- a. Assuring that a field representative is available to respond to complaints regarding construction noise levels and provide monitoring. The field representative shall be empowered to shut down construction activity, authorize correction or remediation of sources of excess noise, and authorize resumption of construction activity as necessary to maintain compliance with allowable noise levels.
 - b. Providing telephone access to a field representative during hours of project activities to receive complaints or comments from the public for the duration of the project. All complaints immediately shall be recorded, investigated and addressed as appropriate by the field representative and reported to DEH in a manner mutually agreed by DEH, the Engineer and (contractor). A response, in a reasonable form requested by the caller, summarizing the investigation and any corrective actions taken by Engineer and (contractor) shall be provided to the caller. Written copies of complaints received and responses by (contractor) shall be provided weekly to DEH and the Engineer.

All application requirements and chapter 36 ordinance requirements regarding night time construction noise activities must be coordinated by the contractor with the City/County Denver. The contractor is fully responsible for the timely submittal of the variance application and fulfilling the requirements set forth by the City/County of Denver to allow construction activities during p.m. hours under the granted variance.

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF TRANSPORTATION &
INFRASTRUCTURE

Plans/Drawings

Contract Number: 202056263

48th Avenue Viaduct Rehabilitation

October 14, 2020

CITY AND COUNTY OF DENVER DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

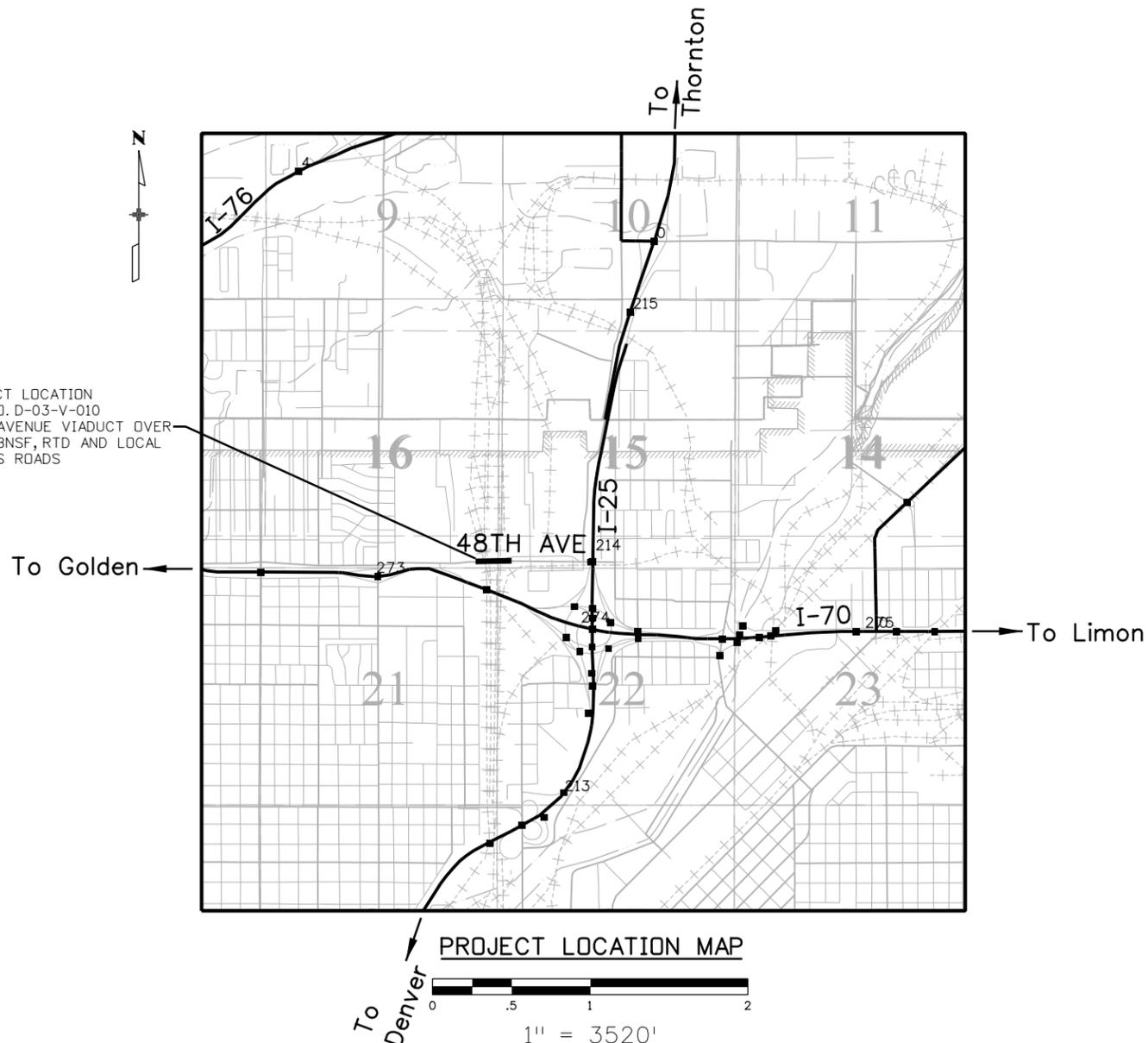
HIGHWAY CONSTRUCTION BID PLANS OF PROPOSED
48TH AVENUE VIADUCT REHABILITATION
DENVER CONTRACT CONTROL NO. 201843741
PROJECT MASTER NO. 2020-PROJMSTR-0000445
CONTRACT NUMBER: OC201631684

TABULATION OF STRUCTURES			
STRUCTURE NO.	FEATURE CARRIED	FEATURE CROSSED	MP (HWY NO.)
D-03-V-010	48 th Avenue	UPRR, BNSF, RTD, Local Access	N/A

SHEET NO.	INDEX OF SHEETS
1	Title Sheet
2	Standard Plans List
3-4	General Notes
5	Summary of Approximate Quantities
6-31	Bridge Sheets
32-38	Stormwater Management Plan
39	Guardrail Layout
40-42	Utility Plans
43-48	Construction Phasing
49	Ownership Map

AD
JULY 2020

PROJECT LOCATION
STR. NO. D-03-V-010
48TH AVENUE VIADUCT OVER
UPRR, BNSF, RTD AND LOCAL
ACCESS ROADS



CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION
& INFRASTRUCTURE

APPROVED BY:	
<i>Debra B. Thomas</i>	9/21/2020
EXECUTIVE DIRECTOR OF DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE	DATE
<i>Debra B. Thomas</i>	9/21/2020
CITY ENGINEER	DATE
<i>James S. Remy</i>	09/11/2020
DIRECTOR OF ENGINEERING CAPITAL PROJECTS	DATE
<i>Eig</i>	9/11/2020
CITY TRAFFIC ENGINEER	DATE



Print Date: 7/20/2020		Sheet Revisions	DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE	As Constructed	Contract Information	Project No./Code
File Name: 48thVia_TitleSht01.dgn		Date: Comments Init.	DENVER THE MILE HIGH CITY	No Revisions:	Contractor:	201843741
Horiz. Scale: 1:3520 Vert. Scale: As Noted			201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	Revised:	Resident Engineer:	
City Project Manager: Kevin Rens				Void:	Project Engineer:	
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.0969	0000				PROJECT STARTED: / / ACCEPTED: / /	Sheet Number 1
					Comments:	

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CITY AND COUNTY OF DENVER DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

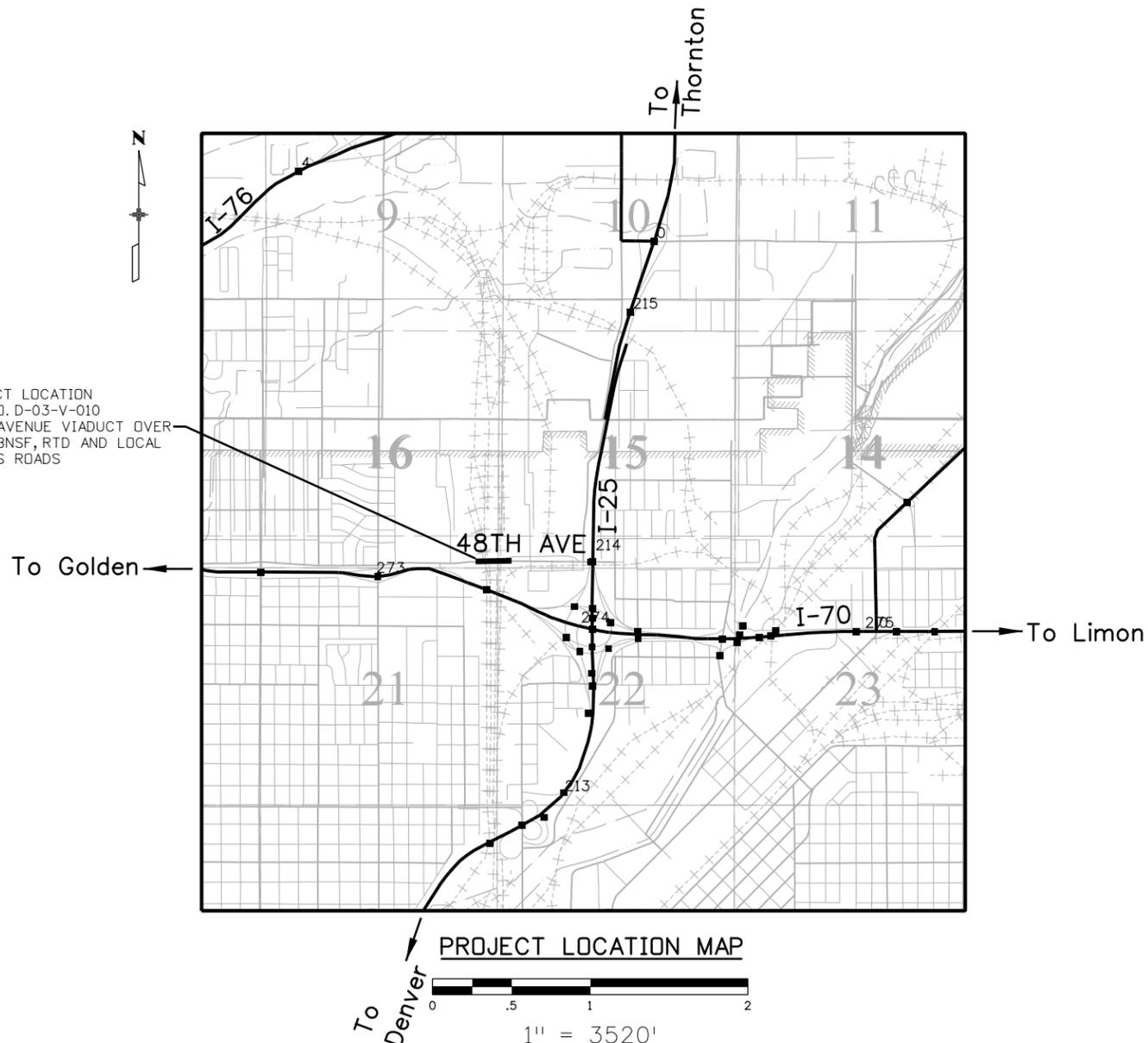
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PROJECT LOCATION
STR. NO. D-03-V-010
48TH AVENUE VIADUCT OVER
UPRR, BNSF, RTD AND LOCAL
ACCESS ROADS



CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION
& INFRASTRUCTURE

APPROVED BY:	
EXECUTIVE DIRECTOR OF DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE	DATE
CITY ENGINEER	DATE
DIRECTOR OF ENGINEERING CAPITAL PROJECTS	DATE
CITY TRAFFIC ENGINEER	DATE



Print Date: 7/20/2020
File Name: 48thVia_TitleSht01.dgn
Horiz. Scale: 1:3520 Vert. Scale: As Noted
City Project Manager: Kevin Rens
DAVID EVANS AND ASSOCIATES INC. <small>1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.0969</small>

Sheet Revisions		
Date:	Comments	Init.

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

As Constructed
No Revisions:
Revised:
Void:

Contract Information
Contractor:
Resident Engineer:
Project Engineer:
PROJECT STARTED: / / ACCEPTED: / /
Comments:

Project No./Code
201843741
Sheet Number 1

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PLAN NUMBER	M STANDARD TITLE	PAGE NUMBER
<input type="checkbox"/> M-100-1	STANDARD SYMBOLS (3 SHEETS).....	1-3
<input checked="" type="checkbox"/> M-100-2	ACRONYMS AND ABBREVIATIONS (4 SHEETS).....	4-7
<input type="checkbox"/> M-203-1	APPROACH ROADS.....	8
<input type="checkbox"/> M-203-2	DITCH TYPES.....	9
<input type="checkbox"/> M-203-11	SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	10-12
<input type="checkbox"/> M-203-12	SUPERELEVATION STREETS (2 SHEETS).....	13-14
<input type="checkbox"/> M-206-1	EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	15-16
<input type="checkbox"/> M-206-2	EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)....	17-18
<input checked="" type="checkbox"/> M-208-1	TEMPORARY EROSION CONTROL (11 SHEETS).....	19-29
<input type="checkbox"/> M-210-1	MAILBOX SUPPORTS (2 SHEETS).....	30-31
<input type="checkbox"/> M-214-1	NURSERY STOCK DETAILS.....	32
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COLORADO
DEPARTMENT OF TRANSPORTATION
M&S STANDARDS PLANS LIST
 July 31, 2019
 Revised on July 13, 2020

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED
 AND REVISED, APPLY TO THIS PROJECT WHEN USED
 BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

THE M&S STANDARD PLANS USED TO DESIGN THIS PROJECT ARE
 INDICATED BY A MARKED BOX , AND WILL BE ATTACHED TO THE
 PLANS. ALL THE OTHER M&S STANDARD PLANS ARE STILL ELIGIBLE
 FOR CONSTRUCTION IF APPROVED BY THE ENGINEER.

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Print Date: 7/20/2020	Sheet Revisions				As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION STANDARD PLANS LIST			Project No./Code 201843741	
File Name: 48thVia_M-S Std Plans.dgn	Date:	Comments	Init.			Designer: C. Keraga	Structure Numbers	D-03-V-010		
Horiz. Scale: 1:1				201 WEST COLFAX AVENUE	Denver, CO 80202		Detailer: M. Schrilla	Sheet Subset: STD PLANS	Subset Sheets: MS01 of 1	Sheet Number 2
City Project Manager: Kevin Rens				DENVER	PHONE: (720) 913-4501					
				THE MILE HIGH CITY	FAX: (720) 913-4544					

GENERAL NOTES

General

1. The Contractor shall be responsible for all aspects of safety including but not limited to excavation, trenching, shoring, traffic control, and security.
2. The Contractor should remove materials and equipment from the roadway and sidewalk work areas at the close of daily operations. The traffic control plan (TCP) must include protective measures where materials and equipment may be stored in the roadway and sidewalk work areas, and the Contractor shall ensure five feet of pedestrian clearance on sidewalks. The Contractor shall not stockpile material in the clear zone of the traveled way.
3. The Contractor is responsible for obtaining all project permits associated with construction. The Contractor is responsible for being aware of, notifying, coordinating, and scheduling all inspections required for final approvals and project acceptance. All work, including correction work, is subject to notification and inspection requirements.
4. If any of the Contractor's operations destroy or damage any property, public or private, the Contractor shall promptly repair or replace such property, to the satisfaction of the Project Manager, before the City will accept or pay for the work performed under the contract. If the Contractor fails to repair or replace such property, the City, at the sole discretion of the manager, may undertake such repair or replacement and deduct the cost of the same from amounts payable to the Contractor under the contract.
5. The Contractor shall be responsible for recording as-built information on a set of record drawings kept on the construction site and available to the City Inspector at all times. Upon completion of the work, the Contractor shall submit record drawings, in an AutoCAD compatible format, to the City. The production of these documents will not be paid for separately, but shall be included in the cost of the work.
6. All work shall conform to current City and County of Denver standards and specifications and Colorado Department of Transportation standards and specifications, as appropriate to each element of the work. The City reserves the right to accept or reject any materials and workmanship that does not conform to the latest edition of these specifications or halt construction until the conflict is resolved.
7. Prior to the commencement of construction, all storm drain inlets, laterals, mains, and other storm runoff appurtenances within the project limits shall be cleared of sediment and debris in accordance with Denver Wastewater Management Division standards. After construction, the Contractor shall remove any sediment or debris from the storm sewer system at no cost to the City. This will not be measured and paid for separately, but shall be included in the work.
8. Prior to final acceptance, all disturbed portions of roadway shall be cleaned up and restored to their original condition, subject to City approval.
9. No work shall be permitted on weekends, nights, or holidays without prior authorization as outlined in the traffic control plan specification. The City may restrict work in the project area during adverse weather conditions or during periods of unusually high traffic volume.
10. No cleated or tracked equipment may work in or move over paved surfaces without mats.
11. ROW fences shall be protected in place. Removal and replacement to facilitate construction is not allowed.
12. Protection and replacement of street improvements are the responsibility of the Contractor until these improvements are fully completed and accepted by the City.
13. All elevations shown are NAVD88, unless otherwise noted.

Project Plans, Specifications, Permits

1. All material, equipment, installation, and construction shall be in accordance with the latest edition of the following standard references (latest editions) as applicable:
 - a. City and County of Denver, Standards and Details for Engineering Division
 - b. Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications
 - c. Department of Public Works Standard Specifications for Construction general contract conditions
 - d. Wastewater Management Division Standard Details
 - e. Traffic Standard Drawings and Traffic Engineering Services Project Specials
 - f. Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction and Standard Plans, (M&S standards)
 - g. Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices (MUTCD) for streets and highways and the Colorado supplement thereto
 - h. American Association of State and Highway Transportation Officials (AASHTO) Roadside Design Guide

The Contractor shall have onsite at all times one copy of the approved plans, one copy of the appropriate standards and specifications, and copies of any permits and extension agreements needed for the job.

If during the construction process conditions are encountered which could indicate a situation that is not identified on the plans or specifications, the Contractor shall contact the City Project Manager immediately.

Landscaping

1. The Contractor shall not spray, cut, or trim trees or other landscaping within the project area unless such work is otherwise specified in writing or clearly indicated on the approved plans.

Erosion Control

1. The project is exempt from obtaining a CASDP permit. See Stormwater Management Plans for additional information.

Pavement

1. A tack coat is required prior to the placement of subsequent lifts of HMA.
2. Where new construction is to abut existing pavement, the existing pavement shall be removed to a neat vertical line to create a clean construction joint.
3. Patch asphalt pavement as necessary to join new gutters with existing pavement.
4. The new pavement shall not be subject to smoothness incentive pavement but shall be subject to evaluation of roughness by straightedge in accordance with Subsection 105.07(A)2.
5. For plan quantities of HMA materials, the following rates of application were used: Hot Mix Asphalt at 110 lbs. per sq. yd. per 1 inch thickness.

Earthwork and Excavations

1. The Contractor shall limit construction activities to those areas within the limits of disturbance and toes of slope as shown on the plans and cross sections. Any disturbance beyond these limits shall be restored to original conditions at the expense of the Contractor.
2. Water shall be used as a dust palliative where required. Cost for dust palliative shall not be measured and paid for separately but shall be considered incidental to the work.
3. Moisture density control shall be applied full depth for all embankments.
4. During each phase of construction, the Contractor shall shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water. Areas and facilities subjected to flooding, regardless of the source of water, shall be promptly dewatered and restored at no additional cost to the City.
5. All work shall be properly backfilled prior to the end of the workday. No open holes are allowed overnight unless approved by Engineer.
6. Where consistent with safety and space considerations, excavated material is to be placed on the uphill side of trenches.
7. Material removed from any portion of the roadway prism must be replaced in like kind with equal or better compaction. No segregation of materials will be permitted.

Concrete

1. If concrete replacement is necessary, the entire affected slab or panel must be replaced.
2. The Contractor shall select and use a boxout at catch basins, manholes, and other roadway appurtenances of similar and larger size. See CCD Std Dwg No. 11.5.
3. Sidewalk shall be Class P concrete. The use of ¾ in (#67) top size aggregate is allowed. All Class P concrete shall have a minimum air entrainment of 4.5% applied to CDOT specifications.
4. Bender boards (two inch minimum thickness) shall be used on all curves of less than 75 foot radius.
5. Curb and gutter angle breaks shall be smoothed with a 2 ft radius unless otherwise shown on the plans.
6. Provide a 2 ft curb and gutter transition at each end of inlets.
7. The Contractor shall install ½-in expansion joint material between the curb, curb and gutter, and the sidewalk, and around inlet structures or blockouts or as directed by the Project Manager.
8. Curb ramps shall be constructed using truncated domes as shown in the City and County of Denver Standard Details. Truncated domes and grooves shall not be paid separately but will be included in the cost of the concrete curb ramp.
9. Concrete Class D and Concrete (Patching) exposed to winter de-icer (moment slab, bridge rail, spall repairs in curb, etc.) shall contain 20% Class C or Class F Fly Ash or 30% SCM and meet all of the requirements of the CDOT specifications and/or special provisions. Mixes containing Class C flyash may only be used for Class 0 soil Sulfate Exposure if calcium oxychloride is determined to be less than 15 grams CaOXY per 100 grams cementitious paste determined in accordance with AASHTO 365 procedures.

Traffic

1. The Contractor is responsible for providing and maintaining adequate traffic control throughout the project, including proper traffic control devices and personnel. A traffic control plan (TCP) is subject to City approval prior to commencing work on roadway. A copy of all approved TCPs must be available on site during work. Traffic control is to be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).
2. All pavement markings must be installed according to manufacturer's specifications.
3. Coordinate all traffic signal equipment relocations with Public Works' Traffic Engineering Services (TES).
4. For additional notes and information on traffic control, see plans and special provision.

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Print Date: 7/20/2020		Sheet Revisions	DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE	As Constructed	48TH AVE VIADUCT REHABILITATION GENERAL NOTES	Project No./Code
File Name: 48thVia_GeneralNotes.dgn		Date: Comments Init.	DENVER THE MILE HIGH CITY	No Revisions:		201843741
Horiz. Scale: 1:1 Vert. Scale: As Noted	000		201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	Revised:	Designer: C. Keraga Structure D-03-V-010	
City Project Manager: Kevin Rens	000			Void:	Detailer: M. Schrilla Numbers	
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.9969	000				Sheet Subset: GENERAL Subset Sheets: GN01 of 2	Sheet Number 3

GENERAL NOTES

Environmental

1. During excavation or any soil disturbing activity, Colorado regulations require all exposed construction and demolition debris (including ash) be assessed for asbestos contamination. It is the Contractor's/Sub-contractor's responsibility for providing the onsite personnel (certified asbestos building inspector) capable of this requirement. Any amount of debris found to be contaminated with asbestos may be classified as regulated asbestos contaminated soil (racs) and must be managed, documented, and disposed of in accordance with the City and County of Denver's racs standard operating procedure (see link below) and the Colorado solid waste regulations (6 CCR 1007-2, part 1). Onsite management of racs requires immediate notification of trained field personnel at the state health department, and implementation of measures to prevent cross contamination to the public. For additional information, please call the Denver Department of Public Health & the Environment (DDPHE) at (720)865-5452.
2. Contractor shall take reasonable measures to prevent particulate matter from becoming airborne and to prevent the visible discharge of fugitive particulate emissions beyond the property line from which the emissions originate. The measures taken must be effective at all times on the site, including periods of inactivity such as evenings, weekends, and holidays as well as any other period of inactivity.
3. During any soil disturbing activities, if unknown/unidentified underground storage tanks, drums, odorous soil, stained soil, asbestos-cement pipe (transite), building debris, or waste materials are encountered, Contractor shall immediately stop work in the area of the discovery until Denver Department of Public Health and Environment (DDPHE) makes a determination of how to proceed. Contractor shall immediately notify DDPHE of the discovery at (303)495-8376.
4. Excess soil from a CCD project may be reused at another CCD property or a third party site only if the criteria established in the DDPHE October 5, 2017, memorandum titled "Guidance for Reuse of Soil on City Projects" are met and the soil is free of odors, staining, and debris. View the re-use guidelines. The guidance is located on our website under the "about" tab for environmental review and assessment: <https://www.denvergov.org/content/denvergov/en/environmental-health/environmental-quality/land-use-and-planning.html>
5. Fill material or soil to be imported and placed on CCD-owned property or placed on real property to be transferred to the CCD must be free of known contamination (observed and documented, or previously documented) and be acceptable for unrestricted residential use. Contact Dave Erickson (720 865 5433) for clarification if needed.
6. The Contractor shall direct non-recyclable, non-hazardous wastes from CCD owned or controlled property or facilities to the Denver Arapahoe Disposal Site (DADS) landfill for disposal, following the requirements and procedural guidance per CCD Executive Order 115. Laboratory analytical results will be required prior to DADS acceptance for soil and possibly other materials. Early testing is recommended; DDPHE can assist. Contact DDPHE at 720 865 5448 with questions.
7. All noise caused by construction of, or resulting from, completed projects, must comply with Denver's noise ordinance, D.R.M.C. Chapter 36 "Noise Control." Exempted hours for construction in the City and County of Denver are from 7 A.M. to 9 P.M. Monday through Friday and 8 A.M. to 5 P.M. on Saturdays and Sundays. If there is need to work outside of the exempted hours: 1) The Contractor must request a variance, and 2) the variance process needs to be started a minimum of three months prior to the desired start date. Any questions should be directed to Paul Riedesel, DDPHE Community Noise Program, 720-865-5410.

Drainage

1. Contractors performing work on any wastewater facility or appurtenance must be properly licensed and have a licensed plumber or drainlayer on site during the work.
2. Access must be maintained for all sewer manholes during construction. Minimum access to each manhole is a 20-foot wide lane from the nearest public right of way, centered at the manhole, including a 10-foot radius around the manhole and 22 feet of vertical clearance.
3. The current edition of the Wastewater Division Standard Details shall apply to all work and will be the edition current as of the advertisement date. The Contractor must be in possession of the Standard Details at the pre-construction conference and a copy must remain on the job site at all times during construction. Wastewater Management Division Standard Details can be obtained at www.denvergov.org.
4. "Red-lined" drawings and prints are to be maintained by the Contractor and submitted to City Construction Project Manager at the completion of the project. Any and all field changes made during construction must be noted. The drawings will state "RED LINES" in large block letters. The red-lined drawings must be received and accepted by the City Construction Project Manager prior to final acceptance and settlement.
5. Prior to construction it shall be the responsibility of the General Contractor to verify the inverts, depths or bottom of existing structure elevations within the project scope. Verification shall be included in the Bid Item 625 Construction Surveying.
6. All sewer manholes must be maintained and accessible during construction.

Removals, Existing Items, Saw Cutting

1. All items to be removed and not reset shall become the property of the Contractor and shall be removed from the site and disposed of properly.
2. Where it is required to remove existing concrete or asphalt, cutting shall be done to a neat work line to full depth using a saw, cutting wheel, or other method approved by the Project Manager. This will not be paid separately but shall be included in the work.
3. Removal of existing curb and gutter, sidewalk, driveways, curb cuts, and other concrete items that are attached or adjacent to other concrete items shall be removed to the nearest joint, as needed to avoid damaging the remaining concrete items. The Contractor shall be responsible for damage to adjacent sidewalk during curb and gutter removal and shall replace damaged sections at no additional cost to the project.
4. The Contractor is required to reset, adjust, or replace any public utilities, landscaping, sprinkler systems, signs, sidewalks, etc. that are impacted by construction and are not designated to be impacted or removed.

Utilities

1. The type, size, location, and number of all known underground utilities are approximate when shown on the drawings, unless otherwise noted. It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities along the route of the work before commencing new construction. Responsibilities for the relocation of utility lines are as noted in the project special provisions. The Contractor shall cooperate with companies trying to coordinate the relocation effort. Lines not relocated shall be protected by the Contractor in place. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at 1-800-922-1987 at least 2 working days prior to beginning excavation or grading.
2. The Contractor shall be responsible for protecting utilities during construction and shall hold the City and its engineers harmless for damages arising from the Contractor's failure to adequately protect existing utilities. Damaged utilities shall be repaired by and at the expense of the Contractor.
3. The Contractor is required to reset, adjust, or replace any utilities that are impacted by construction but are designated to remain within the project limits.
4. Locations for potholing shall be as approved by the Project Manager.

Miscellaneous

It is estimated that the following quantities will be required for this project and/or directed by the Engineer:

203	Potholing	Hour	20
203	Sweeping	Hour	40
240	Wildlife Biologist	Hour	40
240	Removal of Nests	Hour	15
250	Environmental Health and Safety Management	LS	1
250	Health and Safety Officer	Hour	30
607	Fence (Plastic)	Linear Foot	30
620	Sanitary Facility	Each	2
625	Construction Surveying	LS	1
626	Mobilization	LS	1
626	Public Information Management (Tier III)	Day	150

Surveying

The Contractor shall perform all construction surveying and staking necessary for construction of the project. Construction surveying and staking shall be based on available horizontal and vertical control. The Contractor is responsible for obtaining horizontal and vertical control monuments established by the Department if needed for the work. The cost for obtaining monuments and coordination with the City and County of Denver and performing the work is included in Item 625 Construction Surveying for



48TH AVE VIADUCT OVER BNSF/UPRR/RTD/DTO
 BSNF: FRONT RANGE SUBDIVISION, LINE SEGMENT 0476, M.P. 2.35
 UPRR: MOFFAT TUNNEL SUBDIVISION, M.P. 2.28
 DENVER, DENVER COUNTY, COLORADO
 PROJECT COORDINATES: N 39.784024, E -104.997018

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File Name: 48thVia_GeneralNotes.dgn	Date: Comments Init.	DENVER THE MILE HIGH CITY	No Revisions:	201843741	
Horiz. Scale: 1:1 Vert. Scale: As Noted		201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	Revised:	Designer: C. Keraga Structure D-03-V-010	
City Project Manager: Kevin Rens			Void:	Detailer: M. Schrilla Numbers	
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.346.0969				Sheet Subset: GENERAL Subset Sheets: GN02 of 2	Sheet Number 4

CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY		STRUCTURES		TRAFFIC		PROJECT TOTAL	
			PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
201-00005	REMOVAL OF DEBRIS	LS			1				1	
202-00010	REMOVAL OF TREE	EACH			4				4	
202-00026	REMOVAL OF SLOPE AND DITCH PAVING	SY			80				80	
202-00200	REMOVAL OF SIDEWALK	SY			23				23	
202-00203	REMOVAL OF CURB AND GUTTER	LF			34				34	
202-00246	REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)	SY			3,658				3,658	
202-00420	REMOVAL OF PEDESTRIAN RAIL	LF			40				40	
202-00426	REMOVAL OF BRIDGE RAILING (SPECIAL)	LF			50				50	
202-00453	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2)	SY			178				178	
202-00460	REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 3)	SY			107				107	
202-00495	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	LS			1				1	
202-00500	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	EACH			4				4	
202-00503	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	SY			45				45	
202-00504	REMOVAL OF EXPANSION DEVICE	LF			69				69	
202-00505	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	SF			746				746	
202-04010	CLEAN INLET	EACH			2				2	
203-01597	POTHOLING	HOUR	20						20	
203-01620	SWEEPING	HOUR	40						40	
208-00020	SILT FENCE	LF	835						835	
208-00035	AGGREGATE BAG	LF	56						56	
208-00054	STORM DRAIN INLET PROTECTION (TYPE II)	EACH	9						9	
210-00410	MODIFY BRIDGE EXPANSION DEVICE	EACH			20				20	
240-00000	WILDLIFE BIOLOGIST	HOUR	40						40	
240-00010	REMOVAL OF NESTS	HOUR	15						15	
250-00010	ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT	LS	1						1	
250-00110	HEALTH AND SAFETY OFFICER	HOUR	30						30	
403-34751	HOT MIX ASPHALT (GRADNG SX) (75) (PG 54-28)	TON			444				444	
408-01100	JOINT SEALANT	LF			106				106	
507-00000	CONCRETE SLOPE AND DITCH PAVING	CY			9				9	
513-00600	BRIDGE DRAIN	EACH			4				4	
515-00120	WATERPROOFING (MEMBRANE)	SY			3,658				3,658	
515-00400	CONCRETE SEALER	SY			1,567				1,567	
518-00106	WATERSTOP (6 INCH)	LF			9				9	
518-01004	BRIDGE EXPANSION DEVICE (0-4 INCH)	LF			69				69	
519-01000	EPOXY RESIN (INJECTION)	LF			30				30	
601-03040	CONCRETE CLASS D (BRIDGE)	CY			25				25	
601-03057	CONCRETE CLASS DR	CY			47				47	
601-06100	CONCRETE (PATCHING)	CY			6				6	
601-06102	CONCRETE (PATCHING)	CF			265				265	
601-51005	GALVANIC ANODES	EACH			1,960				1,960	
602-00000	REINFORCING STEEL	LB			2,126				2,126	
602-00020	REINFORCING STEEL (EPOXY COATED)	LB			3,257				3,257	
602-00030	REINFORCING (FIBER REINFORCED POLYMER)(SURFACE)	MKFT			34				34	
606-00302	GUARDRAIL TYPE 3 (31 INCH MIDWEST GUARDRAIL SYSTEM)	LF	25						25	
606-01380	TRANSITION TYPE 3H	EACH	1						1	
606-01390	END ANCHORAGE TYPE 3K	EACH	1						1	
606-10200	BRIDGE RAIL (SPECIAL)	LF			50				50	
607-11525	FENCE (PLASTIC)	LF	30						30	
620-00020	SANITARY FACILITY	EACH	2						2	
621-00530	OVERHEAD CONTACT SYSTEM (OCS) TEMPORARY PROTECTIVE STRUCTURE	LF			148				148	
625-00000	CONSTRUCTION SURVEYING	LS	1						1	
626-00000	MOBILIZATION	LS	1						1	
626-01113	PUBLIC INFORMATION MANAGEMENT (TIER III)	DAY	150						150	
627-00008	MODIFIED EPOXY PAVEMENT MARKING	GAL					9		9	
630-00016	TRAFFIC CONTROL (SPECIAL) LS	LS					1		1	
631-00000	RAILROAD COORDINATION	HOUR	100						100	
632-10000	RTD/DTO COORDINATION	HOUR	80						80	
700-70038	F/A RAILROAD COORDINATION FEES	F/A	1						1	
700-70039	F/A RAILROAD CONTRACTOR ORIENTATION COURSE	F/A	1						1	
700-70041	F/A RAILROAD INSPECTOR COORDINATOR	F/A	1						1	
700-70042	F/A RAILROAD FLAGGING	F/A	1						1	
700-70043	F/A RTD RAIL SHUTDOWNS	F/A	1						1	
700-70380	A/A EROSION CONTROL	A/A	1						1	
700-70589	A/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	A/A	1						1	
700-70600	A/A LIGHTING/ELECTRICAL SYSTEM REPAIRS	A/A	1						1	

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Print Date: 7/21/2020
 File Name: 48thVia_AprxQtys.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens



DAVID EVANS AND ASSOCIATES INC.
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 Denver Colorado 80202
 Phone: 720.346.0969

Sheet Revisions		
Date:	Comments	Init.



DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
 201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

As Constructed	No Revisions:
Revised:	
Void:	

48TH AVE VIADUCT REHABILITATION
 SUMMARY OF APPROXIMATE QUANTITIES

Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman		
Sheet Subset:	SAQ	Subset Sheets:	SQ01 of 1

Project No./Code
 201843741

Sheet Number
 5

GENERAL NOTES

All work shall be done in accordance with the Colorado Department of Transportation 2019 Standard Specifications for Road and Bridge Construction and as noted in the drawings.

The following table gives the minimum staggered lap splice length for black reinforcing bars placed in accordance with Subsection 602.06. These splice lengths shall be increased by 25% for bars spaced at less than 6" on center or less than 3" of lateral cover.

Bar size	#4	#5	#6	#7	#8	#9	#10	#11
Splice length for Concrete Class D/DR	1'-1"	1'-4"	1'-7"	1'-11"	2'-6"	3'-1"	3'-11"	4'-10"

All provisions for bridge deck concrete shall also apply to approach slab concrete.

All reinforcing steel shall be non-epoxy coated unless noted otherwise.

Ⓢ denotes epoxy coated reinforcing steel.

Grade 60 reinforcing steel is required.

Expansion joint material shall meet AASHTO Specification M213.

The Contractor shall be responsible for the stability of the structure during all phases of construction.

The Contractor shall be responsible for the stability of the structure during all construction activities. Any damage to the existing structure shall be repaired and paid for by the Contractor. The Contractor shall submit a method statement to the Project Engineer for review and approval prior to making repairs. Repairs that affect load paths or require the sizing of members shall be signed and sealed by a Professional Engineer registered in the state of Colorado and with relevant experience. The cost of this work shall be at the Contractor's expense.

Falsework and formwork may be required.

All falsework shall conform to the requirements of Subsection 601.11 of the 2019 CDDT Standard Specification for Road and Bridge Construction.

Unless otherwise noted, dimensions contained in these plans are calculated from the "As Constructed Plans". These dimensions may be adjusted to meet the existing structure. The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.

All longitudinal and transverse dimensions are measured horizontally and include no correction for grade.

The entire bridge deck per phase shall be sounded for delamination according to ASTM D4580. All unsound concrete shall be marked and removed as directed by the Engineer. Cost for sounding shall be included in the work.

Deck rehabilitation quantities are approximate. Final locations will be determined by the Engineer. Payment will be for the actual area repaired and material used as approved by the Engineer. Rehabilitation quantities in addition to plan quantities will be measured and paid for at the unit price for the appropriate bid item.

The Contractor may stockpile deck repair material at their own risk. All unused material shall remain property of the Contractor. The City will not purchase leftover materials or pay any restocking fees.

After removal of concrete, all exposed rebar shall be cleaned of all loose concrete, by chipping and/or sandblasting, this shall be included in the cost of the work. Galvanic anodes shall be installed in accordance with the plans and specifications. Sandblasting shall not be performed if epoxy reinforcing is present.

As directed by the Engineer, deteriorated or corroded rebar exposed during the concrete or HMA removal shall be replaced by the Contractor and paid for as Item 602, "Reinforcing Steel". Reinforcement damaged during the deck removal operations shall be replaced in kind at the Contractor's expense.

All saw water, coring waste, concrete washout and any other construction debris shall be collected and disposed of off site in accordance with all applicable Federal, State, and Local Regulations at no additional cost to the project. Under no circumstances shall such material be allowed to enter any natural or manmade water way or storm drain.

The Contractor shall protect all pedestrians, traveling public, trains, and tracks from any falling debris during the construction work. Any debris which falls on path, roadways, or tracks shall be removed immediately. This work will not be measured and paid for separately, but shall be included in the work.

The Contractor is responsible for making his own determination as to the type and location of utilities as may be necessary to avoid damage thereto. The Contractor shall contact the Utility Notification Center of Colorado at 811 (1-800-922-1987) at least three business days (two full business days in advance not including the day of notification) prior to any excavation or other earthwork.

Unless otherwise noted on the plans, the proposed overlay shall be placed to the grade and cross slope of the existing deck.

Manufacturer's representatives will be required on-site during installation of expansion devices. See Project Special Provisions.

Lane dimensions are based on bridge inspection sketches. Final striping shall match existing striping configuration.

Sawcutting will not be measured and paid for separately, but shall be included in the work.

The Contractor shall phase construct the bridge repairs and coordinate phasing of the roadway. The Contractor shall limit work to only the amount that can be performed during the lane closures meeting the requirements specified in the plans and specifications. See the Traffic Control plans and Construction Zone Traffic Control special provision for additional information.

Coordination will be required with UPRR, BNSF, and RTD/DTO. See Sheet B02 and Special Provisions for additional information.

DESIGN DATA

AASHTO Standard Specifications for Highway Bridges, Sixteenth Edition, 1996 with 1997 interims, for bar splice table.

AASHTO LRFD Bridge Design Specifications, Eighth Edition, November 2017 with current interims.

Reinforced Concrete:

Concrete Class D (Bridge) ■:	f'c = 4,500 psi
Concrete Class DR:	f'c = 4,500 psi
Concrete (Patching) ■:	See Special Provision
Reinforcing Steel:	fy = 60,000 psi
Reinforcing Wire (ASTM A82/A82M):	fy = 70,000 psi

Structural Steel/Aluminum:

Aluminum posts (ASTM B-108, Alloy A444-T4):	fy=20,000 psi
Aluminum tubing (ASTM B-221, Alloy 606-T6):	fy=35,000 psi
Miscellaneous metals (ASTM A36):	fy=36,000 psi

All FRP material shall meet the requirements of the Special Provisions.

■ Concrete Class D and Concrete (Patching) exposed to winter de-icer (moment slab, bridge rail, spall repairs in curb, etc.) shall contain 20% Class C or Class F Fly Ash or 30% SCM and meet all of the requirements of the CDDT specifications and/or special provisions.

ABBREVIATIONS

BF = Back Face	CDDT = Colorado Department of Transportation
CML = Consolidated Mainline	CRT = Commuter Rail Track
DTO = Denver Transit Operators	E = Expansion Bearing
F = Fixed Bearing	FF = Front Face
RDW = Right-of-Way	
See CDDT Standard Plan M-100-2 for Standard Abbreviations.	

BRIDGE DESCRIPTION:

- 48th Avenue over UPRR/BNSF/RTD/Access Road
- 3 Unit Concrete Prestressed Girder Continuous Bridge
- 4 Spans (100'-8", 100'-0", 100'-0", 110'-0") Cont.,
- 3 Spans (100'-0", 110'-0", 110'-0") Cont.,
- 4 Spans (110'-0", 100'-0", 100'-0", 100'-8") Cont.

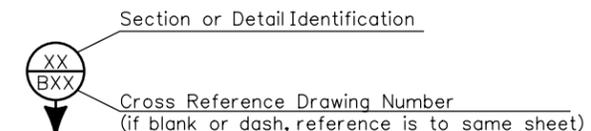
37'-6" Out-to-Out, 90° 00' 00" Skew on tangent (radial substructure on curve)
 1'-6" Curb with Bridge Rail (Aluminum)
 6'-6" Sidewalk on North Side

INDEX OF DRAWINGS

B01	GENERAL INFORMATION (1 OF 2)
B02	GENERAL INFORMATION (2 OF 2)
B03	SUMMARY OF QUANTITIES
B04	GENERAL LAYOUT (1 OF 2)
B05	GENERAL LAYOUT (2 OF 2)
B06	TYPICAL SECTION
B07	CONCRETE DECK REPAIR DETAILS
B08	EXPANSION DEVICE REMOVAL AND REPLACEMENT DETAILS
B09	BRIDGE EXPANSION DEVICE (0-4 INCH) (1 OF 2)
B10	BRIDGE EXPANSION DEVICE (0-4 INCH) (2 OF 2)
B11	ABUTMENT 1 AND 12 REPAIRS (1 OF 2)
B12	ABUTMENT 1 AND 12 REPAIRS (2 OF 2)
B13	TYPICAL PIER REPAIRS
B14	PIER 5 REPAIRS
B15	PIER 5 FRP DETAILS
B16	PIER 8 REPAIRS
B17	SUPERSTRUCTURE REPAIR PLAN
B18	SUPERSTRUCTURE REPAIRS (1 OF 2)
B19	SUPERSTRUCTURE REPAIRS (2 OF 2)
B20	DECK DRAIN REMOVALS
B21	DECK DRAIN DETAILS
B22	BRIDGE RAIL REPAIR DETAILS
B23	MOMENT SLAB DETAILS (1 OF 2)
B24	MOMENT SLAB DETAILS (2 OF 2)
B25	MISCELLANEOUS DETAILS
B26	SLOPE PAVING REPAIR DETAILS

BRIDGE WORK DESCRIPTION:

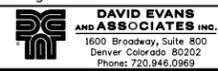
1. Remove existing HMA on bridge and approach slabs to bare concrete to limits shown in plans. (See Sheets B04-B05).
2. Sound deck and perform deck repairs as directed by the Engineer (See Sheet B07).
3. Remove existing expansion joints at Pier 5 and 8 and install new expansion joints (See Sheets B08-B10).
4. Replace deck drains at Piers 2 and 10 (4 locations) (See Sheets B20-B21).
5. Repair sidewalk curb spalls and bridge rail curbs spalls (See Sheets B17-B19).
6. Install new Waterproofing (Membrane).
7. Place new HMA to limits shown. (See Sheets B04-B05).
8. Install Joint Sealant at Abut 1, Abut 12, and end of Approach Slabs (See Sheet B24).
9. Install Concrete sealer on sidewalk and curb to limits shown (See Sheet B18).
10. Clean deck drains (clean inlet, 2 locations) at Pier 7.
11. Repair deck overhang spalls (See Sheets B17-B19).
12. Repair substructure spalls (See Sheets B11-B16).
13. Install FRP Strengthening (See Sheet B15).
14. Repair girder spalls (See Sheets B17-B19).
15. Repair damaged Bridge Rail (See Sheet B22).
16. Remove and replace damaged slope paving as directed by Engineer. Remove foliage as required. (See Sheet B25)
17. Install moment slab and guardrail at NW corner of bridge (See Sheets B23-B24).



Know what's below. Call before you dig.

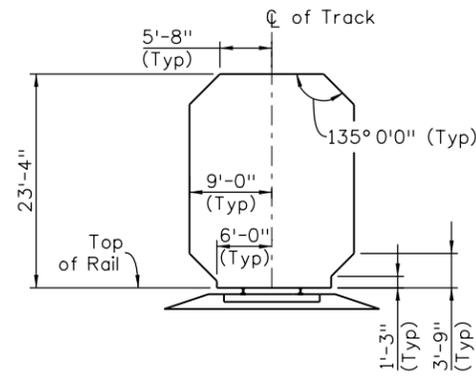
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Print Date: 7/20/2020		Sheet Revisions				DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION GENERAL INFORMATION (1 OF 2)			Project No./Code 201843741
File Name: 48thVia_BRDGenNotes_01.dgn		Date:	Comments	Init.							
Horiz. Scale: 1:1		Vert. Scale: As Noted							Detailer: R. Artman		
City Project Manager: Kevin Rens									Sheet Subset: BRIDGE	Subset Sheets: B01 of 26	Sheet Number 6

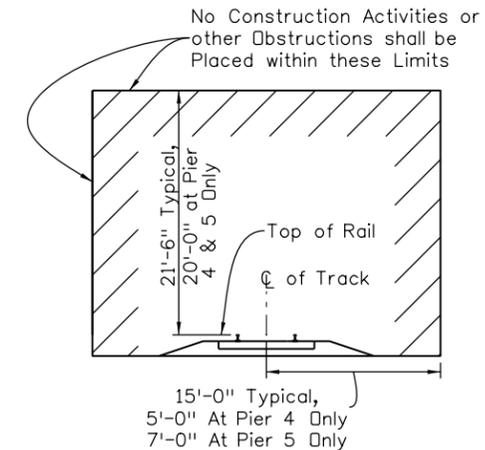


CONSTRUCTION NOTES

- Any shoring system that impacts the Railroad's operation and/or supports the Railroad's embankment shall be designed and constructed per railroad guidelines for temporary shoring.
- All demolition within the Railroad's right-of-way and/or demolition that may impact the Railroad's tracks or operations shall comply with the Railroad's demolition requirements.
- Erection over the Railroad's track shall be planned such that it enables the track(s) to remain open to traffic per railroad requirements.
- The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the railroad prior to construction.
- The proposed Rehabilitation project shall not change the quantity and/or characteristics of the flow in the railroad ditches and/or drainage structures.
- The contractor must submit a proposed method of erosion and sediment control and have the method approved by the railroad prior to beginning any grading on the project site.
- For railroad coordination please refer to the railroad's coordination requirements as part of the special provisions of the project.
- Temporary construction clearances, including falsework clearances, shall comply with the minimum construction clearance envelope.
- All permanent clearances shall be verified before project closeout.
- Track Protection is required for all railroad tracks during any construction activity that includes the potential for debris or equipment from falling on tracks. Track Protection shall be submitted to the railroad(s) for approval prior to performing any construction activity that may impact track(s). See Railroad Coordination Special Provision and RTD/DTO Special Provision.



UPRR/RTD PERMANENT CLEARANCE ENVELOPE
(Normal to Railroad)



MINIMUM TEMPORARY CONSTRUCTION CLEARANCE ENVELOPE
(Normal to Railroad)

BNSF/UPRR NOTES

- Refer to Project Special Provision 631 Railroad Coordination for additional information.
- BNSF - Call Before You Dig # 1-800-533-2891

REGIONAL TRANSPORTATION DISTRICT (RTD) NOTES

- Refer to Project Special Provision 632 RTD/DTO Coordination for additional information.
- Contractor shall contact Denver Transit Operators (DTO) by email at track.usag@rtdcraill.com 30-days prior to construction to obtain the most up-to-date permit request forms and to initiate a request for an access permit.
- Contractor shall complete all applicable commuter rail safety training, which DTO shall provide at Contractors cost. Contractor shall provide proof of current safety training, prior to the pre-entry meeting, for any work on, adjacent to, or across RTD CRT ROW. Proof of current safety training must be readily available while working on site.
- Contractor shall notify RTD's Utility Engineering/Construction Team (303-299-2811) and DTO's Rail Ops (720-460-5803) a full 30 days prior to construction and shall arrange to attend a monthly 3rd party rail construction meeting with RTD and DTO currently held at 3pm on the first Wednesday of each month at the commuter rail maintenance facility.
- Contractor shall attend RTDC-DTO's track usage rail construction meeting at least one week prior to the start of construction at a time and date established by DTO. Contractor may not begin any work without an RTDC-DTO access permit. RTDC-DTO will not issue a permit without an executed utility agreement in place.
- Contractor shall not begin any work on or across RTD ROW/Tracks until RTD has issued and executed utility agreement.
- Contractor shall notify RTD's utility engineering/construction team (303-299-2811) and RTDC-DTO's rail ops (720-460-5803) a full two (2) weeks prior to construction and shall coordinate a utility pre-construction meeting with RTD and RTDC-DTO, and arrange for an RTD representative to be on-site during construction. The utility pre-construction meeting shall occur within a week of the start of construction.
- Contractor may not begin work until RTD and RTDC-DTO has issued a Pre-Construction Resolution Record (PCRR). A PCRR will be completed, signed, and issued by RTDC-DTO's representative during the utility pre-construction meeting and must be kept on-site at all times during construction.
- Traffic control plans are required if work has the potential of impacting RTD commuter rail operations or automobile traffic near RTDC railroad crossings. Traffic control plans must be submitted to RTD for approval prior to construction.
- Contractor shall notify RTDC-DTO OCC (Operations Control Center) dispatch prior to entering the RTD Right-Of-Way (ROW) in order to activate the permit, and immediately after clearing the site in order to deactivate the permit. Call (720-460-5808) for work along the B-Line and G-Line.
- An RTDC-DTO EIC (Employee in Charge) / flagger is required to be on-site anytime Contractor workers or equipment are within 10 feet of the nearest running rail. If RTDC-DTO deems necessary an RTD-DTO EIC/flagger may also be required at other times during construction. The EIC/Flagger must be scheduled at least one week prior to the start of work and shall be coordinated at the pre-entry meeting and shall be provided at the Contractor's expense. If there are other adjacent railroads (BNSF, UP, etc.) a separate EIC/flagger must be arranged thru those railroads. The RTDC-DTO EIC/flagger will not flag for other railroads.
- RTD and RTDC-DTO assumes no responsibility for utility locations shown on these construction drawings. It is the Contractors responsibility to field verify the location of all utilities prior to the commencement of any construction.

REGIONAL TRANSPORTATION DISTRICT (RTD) NOTES CONT'D

- Contractor shall provide for constant monitoring of rail elevations during construction either by the use of survey targets placed on the rail or other methods approved by RTDC-DTO. Contractor shall submit daily monitoring reports to RTDC-DTO. Any variations in rail elevation must be reported to the designated RTD-DTO EIC/flagger and to the RTDC-DTO Chief Engineer immediately for evaluation of track safety. If an RTD-DTO EIC/flagger is not present on site and the Chief Engineer is unreachable, the OCC Supervisor should be contacted immediately instead at (720-460-5809).
- As-built documentation: Contractor shall survey and submit the completed horizontal plan and vertical profile as-builts to RTD and RTDC-DTO within 30 calendar days of the completion of construction within RTD right-of-way. The plan and profile as-builts must contain the following information:
 - Pre and post construction and survey of top of RTD tracks to show no movement of tracks due to construction: at a minimum, the Contractor shall survey each rail under the bridge and 10' each side of the existing bridge. Top of rail surveys must be completed immediately prior to and immediately following construction.
 - All survey data shall be tied to RTD control points.
 - Contractor shall supply RTD with a copy of the surveyor's field notes to support the before and after survey data and final utility installation data.
 - RTD utility agreement number.
 - As-builts must be stamped, signed, and dated by a licensed surveyor or engineer.
- Contractor must have the following documents on-site during construction at all times:
 - RTD's executed utility agreement,
 - RTDC-DTO's approved commuter rail access permit,
 - RTDC-DTO's railroad safety training certificates,
 - PE stamped/signed for construction plans/profiles approved by RTD,
 - RTD RR crossing application data sheet,
 - RTD's signed pre-construction resolution record.
- No in-field changes are allowed to any part of this design without written approval from RTD and RTDC-DTO prior to construction of the change.



48TH AVE VIADUCT OVER BNSF/UPRR/RTD/DTO
BNSF: FRONT RANGE SUBDIVISION, LINE SEGMENT 0476, M.P. 2.35
UPRR: MOFFAT TUNNEL SUBDIVISION, M.P. 2.28
DENVER, DENVER COUNTY, COLORADO
PROJECT COORDINATES: N 39.784024, E -104.997018

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
NNN	11/13	ROA	11/13	Quantities By	DEO
Checked By	ARK	Checked By	ARK	Checked By	CSK

Print Date: 7/20/2020
 File Name: 48thVia_BRDGenNotes_02.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

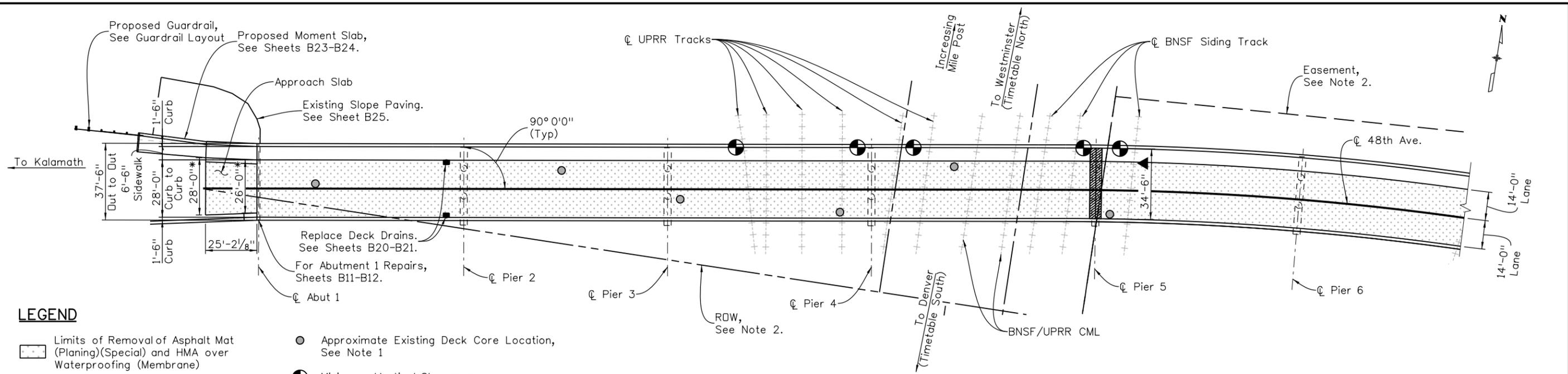
As Constructed	No Revisions:
Revised:	
Void:	

48TH AVE VIADUCT REHABILITATION GENERAL INFORMATION (2 OF 2)

Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman		
Sheet Subset:	BRIDGE	Subset Sheets:	B02 of 26

Project No./Code	201843741
Sheet Number	7

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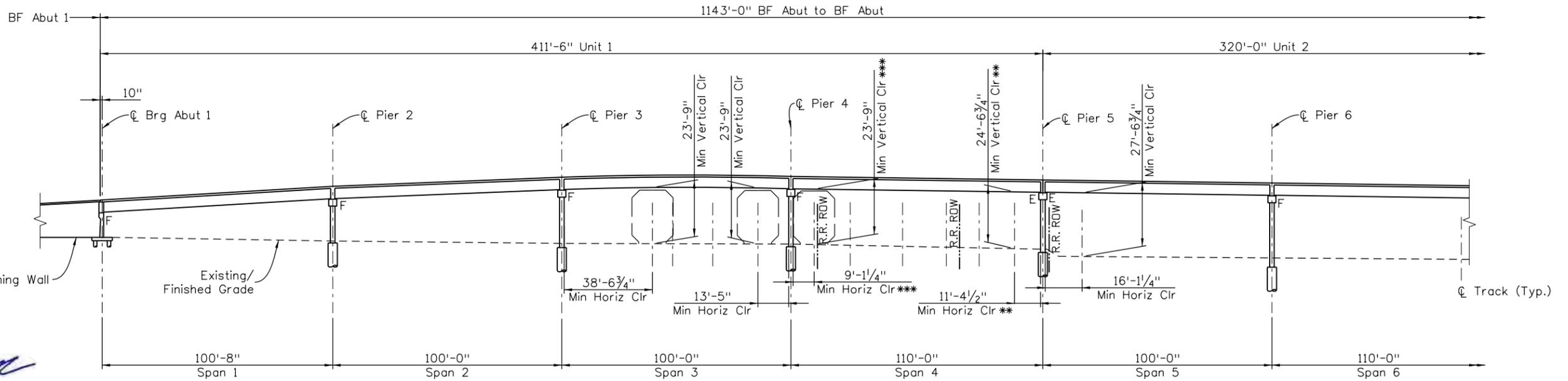
- Limits of Removal of Asphalt Mat (Planing)(Special) and HMA over Waterproofing (Membrane)
- Approximate Existing Deck Core Location, See Note 1
- Minimum Vertical Clearance
- Limits of Joint Sealant
- Limits of Removal of Expansion Joint
- Limits of Removal of Expansion Device and Bridge Expansion Device (0-4 Inch)

NOTES:

1. At existing deck core locations, Perform Class 3 Deck Repair as directed by the Engineer. See Sheet B07.
2. For Existing ROW and Easement Information, See Ownership Map Sheet DM-1.
3. For Existing Utility Information, See Existing Utility Plans Sheets UT1-UT3.
4. For Superstructure Repair Locations and Limits, See Sheet B17.

48TH AVE VIADUCT OVER BNSF/UPRR/RTD/DTO
 BSNF: FRONT RANGE SUBDIVISION, LINE SEGMENT 0476, M.P. 2.35
 UPRR: MOFFAT TUNNEL SUBDIVISION, M.P. 2.28
 DENVER, DENVER COUNTY, COLORADO
 PROJECT COORDINATES: N 39.784024, E -104.997018

PLAN



SECTION

(Taken along 48th Ave.)

*** At south east corner of pier cap 4, existing and final permanent clearance: Vertical Clr = 21'-0", Horizontal Clr = 6'-0"
 ** At north west corner of pier cap 5, existing and final permanent clearance: Vertical Clr = 21'-6", Horizontal Clr = 8'-0"



Print Date: 7/20/2020
 File Name: 48thVia_GenLay_01.dgn
 Horiz. Scale: 1:50 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

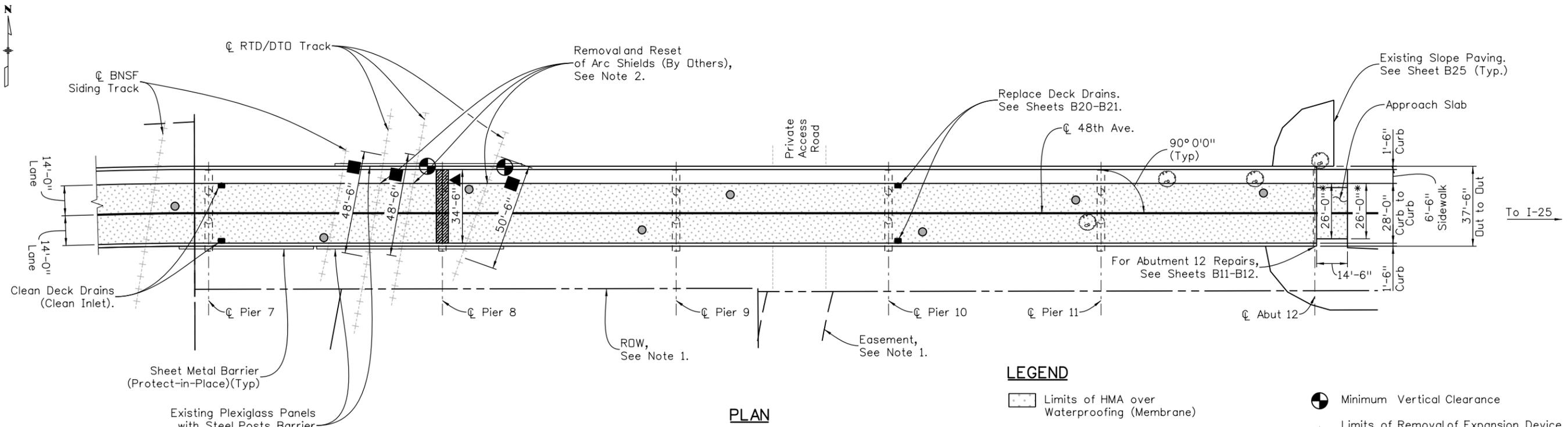
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
 201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

As Constructed
 No Revisions:
 Revised:
 Void:

48TH AVE VIADUCT REHABILITATION GENERAL LAYOUT (1 OF 2)
 Designer: C. Keraga
 Detailer: R. Artman
 Sheet Subset: BRIDGE
 Structure Numbers: D-03-V-010
 Subset Sheets: B04 of 26

Project No./Code
 201843741
Sheet Number
 9

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PLAN

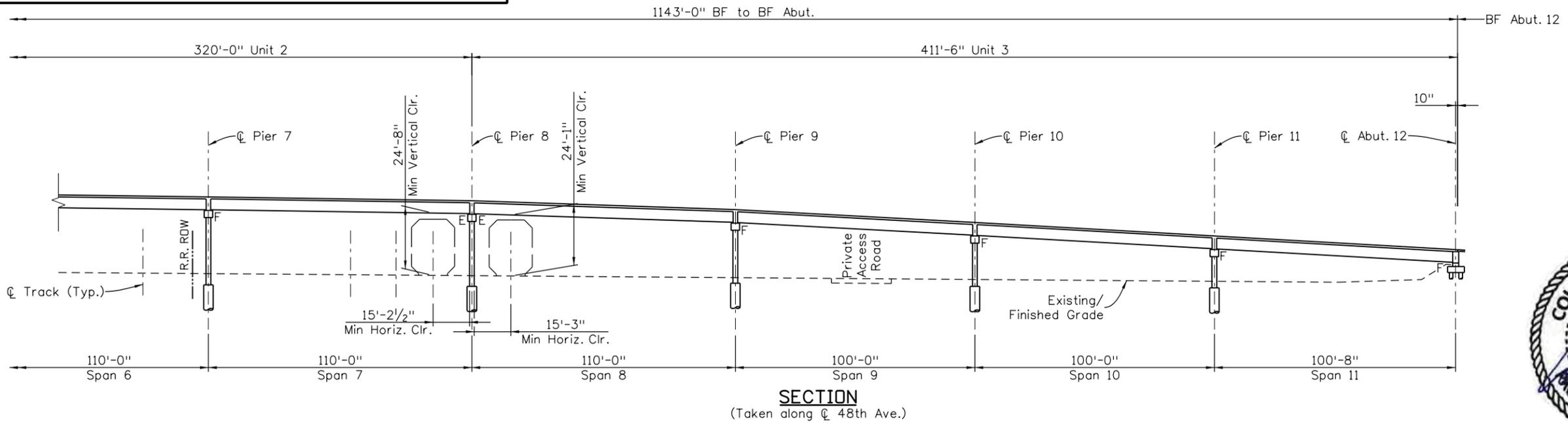
48TH AVE VIADUCT OVER BNSF/UPRR/RTD/DTO
BNSF: FRONT RANGE SUBDIVISION, LINE SEGMENT 0476, M.P. 2.35
UPRR: MOFFAT TUNNEL SUBDIVISION, M.P. 2.28
DENVER, DENVER COUNTY, COLORADO
PROJECT COORDINATES: N 39.784024, E -104.997018

NOTES:

- See Notes on Sheet B04.
- Arc Shields to be removed and reset by others based on coordination between RTD and the Contractor. See RTD/DTO Coordination Special Provision for additional information.

LEGEND

- [Pattern] Limits of HMA over Waterproofing (Membrane)
- [Pattern] Limits of Removal of Expansion Joint
- [Symbol] Approximate Existing Deck Core Location
- [Symbol] Removal of Tree (Below Bridge)
- [Symbol] Minimum Vertical Clearance
- [Symbol] Limits of Removal of Expansion Device and Bridge Expansion Device (0-4 Inch)
- [Symbol] Limits of Overhead Contact System (OCS) Temporary Protective System (See Special Provision for Bid Item 621 OCS Temporary Protective Structure)



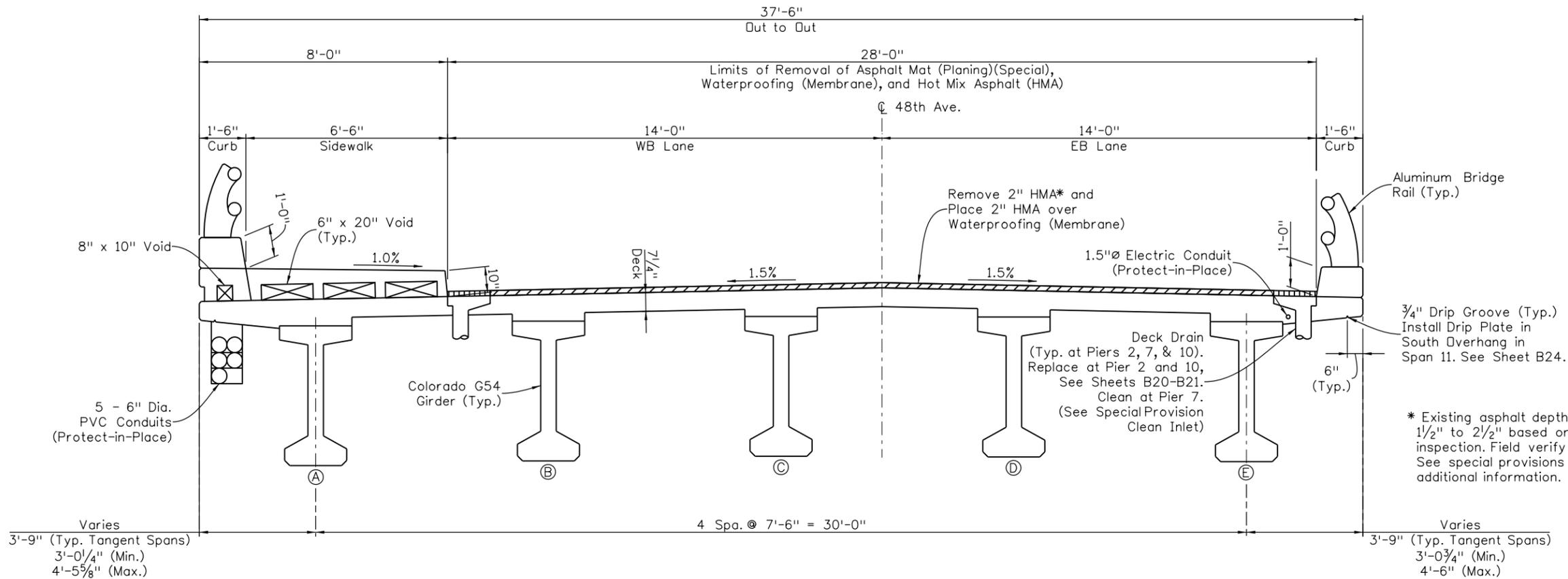
SECTION

(Taken along 48th Ave.)



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File Name: 48thVia_GenLay_02.dgn	Date:	Comments:	Init.:					201843741	
Horiz. Scale: 1:50				<p>DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.0969</p>	Designer: C. Keraga Detailer: R. Artman Sheet Subset: BRIDGE	Structure Numbers: D-03-V-010 Subset Sheets: B05 of 26	Sheet Number 10		
City Project Manager: Kevin Rens									

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TYPICAL SECTION
(Looking East)

NOTES:

- For Existing Utility Information, See Existing Utility Plans Sheets UT1-UT3.
- For Superstructure Repair Locations and Limits, See Sheets B17 and B18.

48TH AVE VIADUCT OVER BNSF/UPRR/RTD/DTO
 BSNF: FRONT RANGE SUBDIVISION, LINE SEGMENT 0476, M.P. 2.35
 UPRR: MOFFAT TUNNEL SUBDIVISION, M.P. 2.28
 DENVER, DENVER COUNTY, COLORADO
 PROJECT COORDINATES: N 39.784024, E -104.997018



Print Date: 7/20/2020
File Name: 48thVia_TypSect_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
City Project Manager: Kevin Rens

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Date:	Comments	Init.

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Void:

48TH AVE VIADUCT REHABILITATION TYPICAL SECTION			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B06 of 26
Sheet Subset:	BRIDGE		

Project No./Code	201843741
Sheet Number	11

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LEGEND

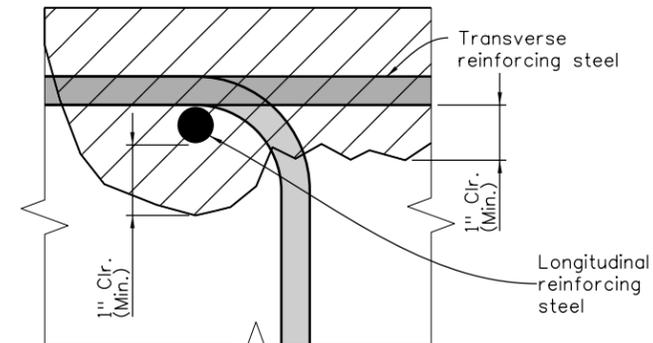
Class 2 Removal: From top of deck to sound concrete, but not less than 1" clear below the top mat of reinforcing steel. If the bottom mat of reinforcing steel is exposed, then Class 3 removal shall be performed at these locations.

Class 3 Removal: From top to bottom of deck, full depth removal.

Patch Material: Concrete Class DR.

HMA HMA design and thickness as designated in the plans.

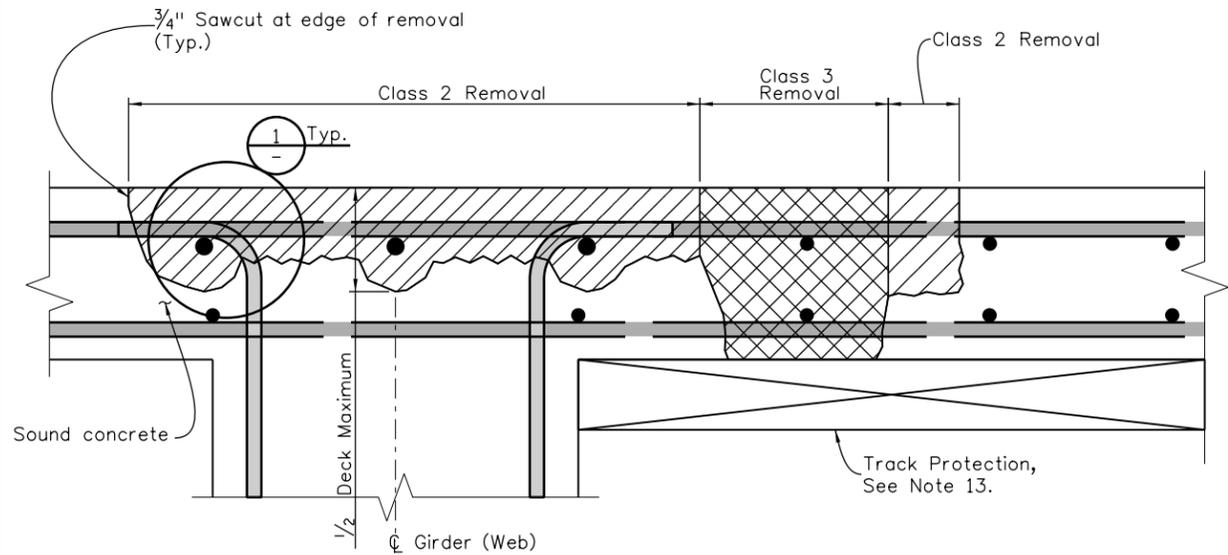
Grout Beds: Required if the clear distance between anodes and existing concrete substrate is less than 1". Grout encapsulation of anodes may be required for certain patching materials. See Revision of Section 601 Galvanic Anodes.



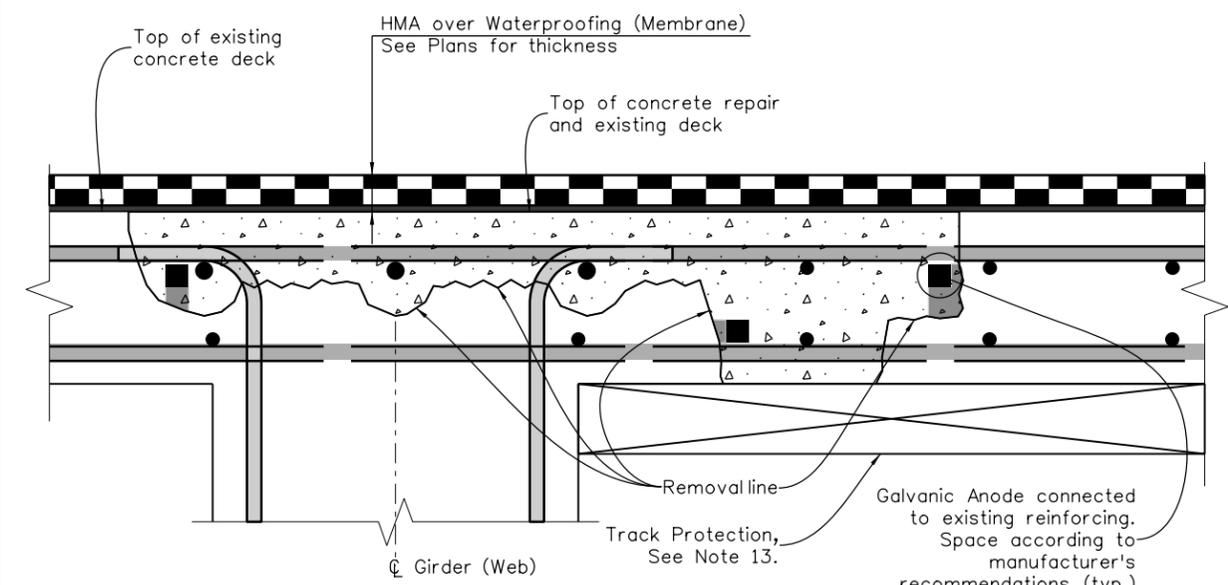
DETAIL 1

NOTES

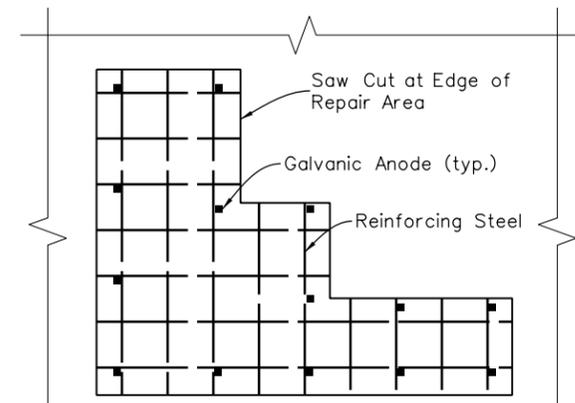
1. These details reflect the scope and the nature of the work. They are not intended to represent the actual structure.
2. The applicable classes of removal shall be as designated by the summary of quantities in the plans.
3. Plan quantities are estimates. Actual concrete removal and replacement shall be as needed to reach sound concrete or as directed by the Engineer.
4. Removal operations shall be coordinated with the Engineer and performed in a manner as required to ensure the structural integrity of the bridge.
5. If Class 3 removal is performed immediately adjacent to, and on both sides of a Cast in Place concrete girder simultaneously within the middle half of a span, that girder shall be shored from the ground at the third points of that span.
6. If Class 2 or 3 removal is performed on both sides of a Cast in Place concrete girder simultaneously within the quarter of a span on either side of the pier, that girder shall be shored at the third point each side of that pier. This note is not intended to require shoring for "pothole" type repairs of limited extent where at least one half of the longitudinal deck reinforcing is anchored on both sides of the removal area.
7. If falsework is required, the falsework load capacity required to support the girders shall be determined by the Contractor and approved by the Engineer unless specified otherwise on the plans.
8. Care shall be taken in removing concrete from around structural steel elements and reinforcing steel to prevent damage to the steel.
9. All damaged or corroded non-epoxy coated reinforcing steel requires new non-epoxy coated reinforcing steel to be added per Revision of Section 202 Removal of Portions of Present Structure. All exposed non-epoxy coated reinforcing steel shall be cleaned with hand tools, straightened and sandblasted prior to placing concrete.
10. Galvanic Anode Corrosion protection is required on all areas of exposed non-epoxy or corroded epoxy coated reinforcing prior to placing Concrete. Galvanic Anodes shall be installed per manufacturer's recommendations in accordance with Revision of Section 601 Galvanic Anodes.
11. Patched deck may be opened to traffic as soon as new concrete has attained required strength.
12. HMA and Waterproofing membrane shall not be placed until the new concrete has cured for five full days, or has a moisture meter reading of 5 percent or less based on a moisture meter approved by the Engineer.
13. Track Protection will be required over Railroad tracks during deck repair construction. Track Protection shall be installed prior to beginning removals and shall be approved by the railroad(s) prior installation.



REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 & 3)



CONCRETE REPLACEMENT



CORROSION PROTECTION



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Print Date: 7/20/2020	0000
File Name: 48thVia_ConcDeckRepair_01.dgn	
Horiz. Scale: 1:1 Vert. Scale: As Noted	
City Project Manager: Kevin Rens	

Sheet Revisions		
Date:	Comments	Init.

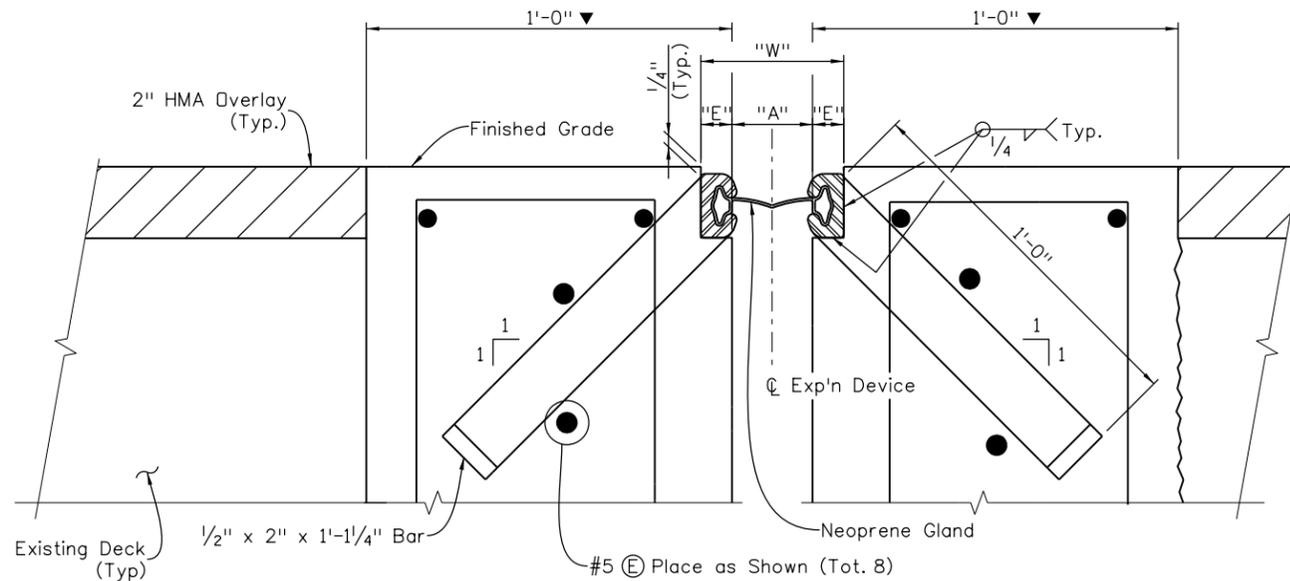
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

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DENVER, CO 80202
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FAX: (720) 913-4544

As Constructed
No Revisions:
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Void:

48TH AVE VIADUCT REHABILITATION CONCRETE DECK REPAIR DETAILS			
Designer: C. Keraga	Structure Numbers: D-03-V-010		
Detailer: R. Artman			
Sheet Subset: BRIDGE	Subset Sheets: B07 of 26		

Project No./Code
201843741
Sheet Number 12



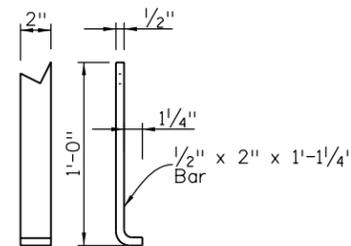
**SECTION THRU STRIP SEAL
BRIDGE EXPANSION DEVICE**

Section Taken Perpendicular to ϕ Expansion Device
Existing reinforcement not shown for clarity, see Sheet B08

**ACCEPTABLE EXPANSION
DEVICE ALTERNATES**

D.S. Brown A2R400-SSA2
WABO SE400 Type A
E-poxy Industries
S400-A Strip Seal
R.J. Watson Silicoflex SF 400

Air Temp (°F)	"A" (in.)	"W" (in.)
-30	4.00	6.50
0	3.36	5.86
30	2.66	5.16
60	1.96	4.46
90	1.26	3.76
120	0.55	3.05

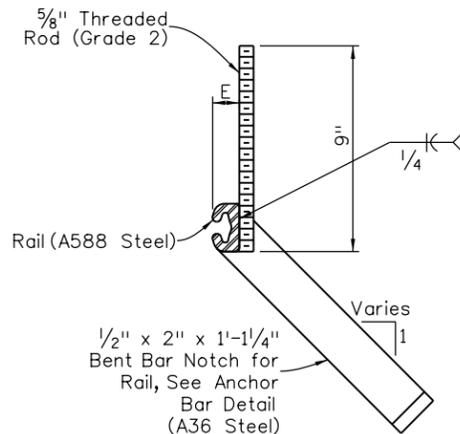
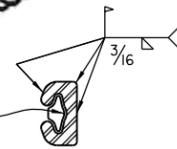


TYPICAL ANCHOR BAR DETAIL

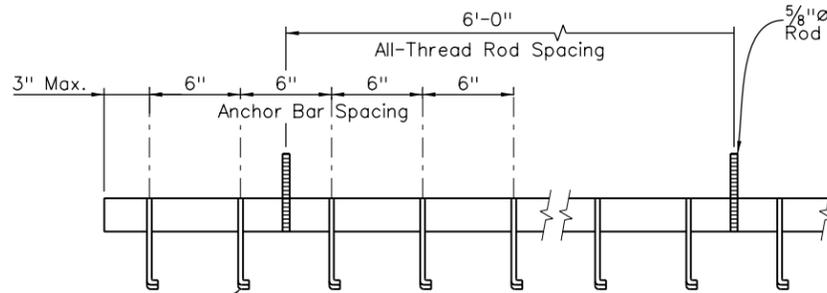


Welding Not Allowed in Interior of Rail that Contacts Rubber Gland

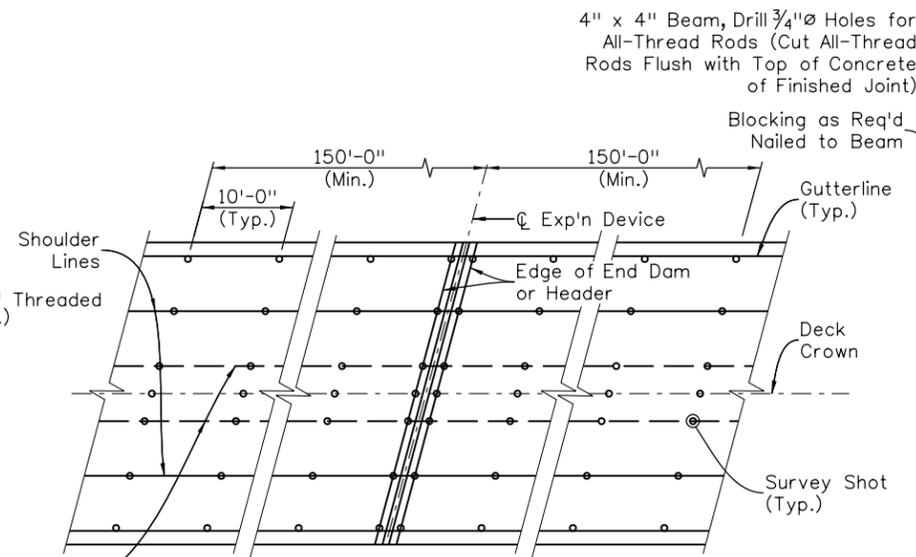
RAIL FIELD SPLICE DETAIL



ANCHORAGE DETAIL



ANCHOR BAR SPACING



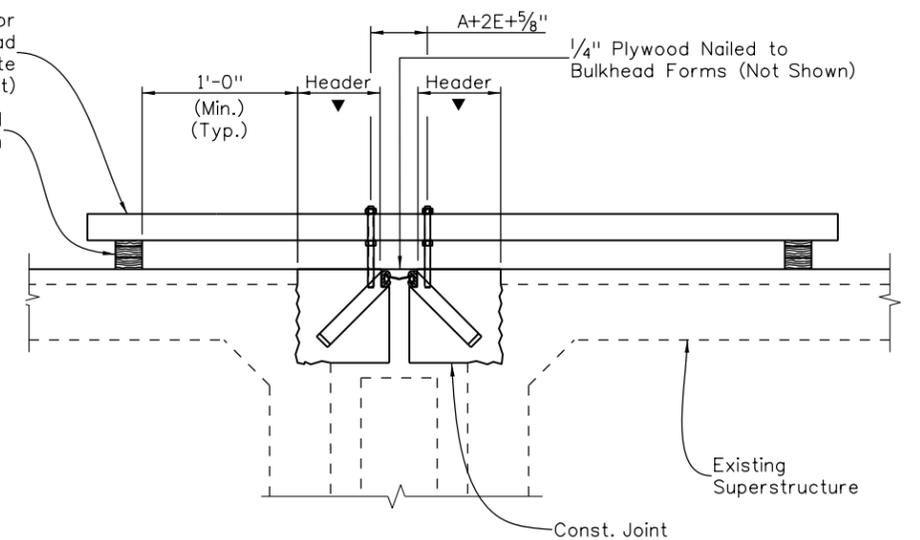
SURVEY PLAN

(N.T.S.) (See Note 2)

NOTES:

- The expansion device concrete shall be installed on grade, parallel to the slope and grade of the deck. Rail shall be installed 1/4" below grade unless noted otherwise in the plans.
- The Contractor shall take elevations for the existing and proposed expansion devices as shown in the Survey Plan. The Contractor's Engineer shall determine from the existing elevations the best fit grade lines for smoothness of the proposed expansion device and submit to the Engineer for his approval. The Contractor's costs for securing this information will not be measured and paid for separately but shall be included in the cost of bid Item 625, Construction Surveying (Included in the Roadway Quantities).
- After the concrete has attained initial set, the attachments used to hold the expansion device assembly in its proper position shall be removed.
- "W" and "E" dimensions are dependent upon the particular expansion device supplied, and shall be shown on the shop drawings. "E" assumed equal to 1.25".
- Refer to Table for "A" dimensions; interpolate as needed.
- The neoprene gland shall be installed in one piece in accordance with Section 518 of the Standard Specifications.
- A representative of the Manufacturer shall be on site to provide guidance during installation of the anchorage and rails, and installation of the neoprene gland.
- See Section 518.09 in the Standard Specifications for water tight integrity testing requirements.
- All steel elements of the bridge expansion device, including cover plates, shall be hot dip galvanized after fabrication as per Section 509.11 of the Standard Specifications. Threaded rods do not require galvanizing above rail.
- Provide expansion support bracket as shown at 6'-0" intervals.
- Modifications to support brackets shall be shown on shop drawing submittal. Construction sequence shall be shown on shop drawing submittal.
- "A" shall be 1/2" minimum for gland installation.
- New reinforcement will be paid for in Item 602 Reinforcing Steel (Epoxy Coated).

Concrete shall be placed after expansion device has been adjusted to proper grade.



MINIMUM SUPPORT BRACKET REQUIREMENTS

Print Date: 7/20/2020
File Name: 48thVia_ExpDev_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
City Project Manager: Kevin Rens

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Date:	Comments	Init.

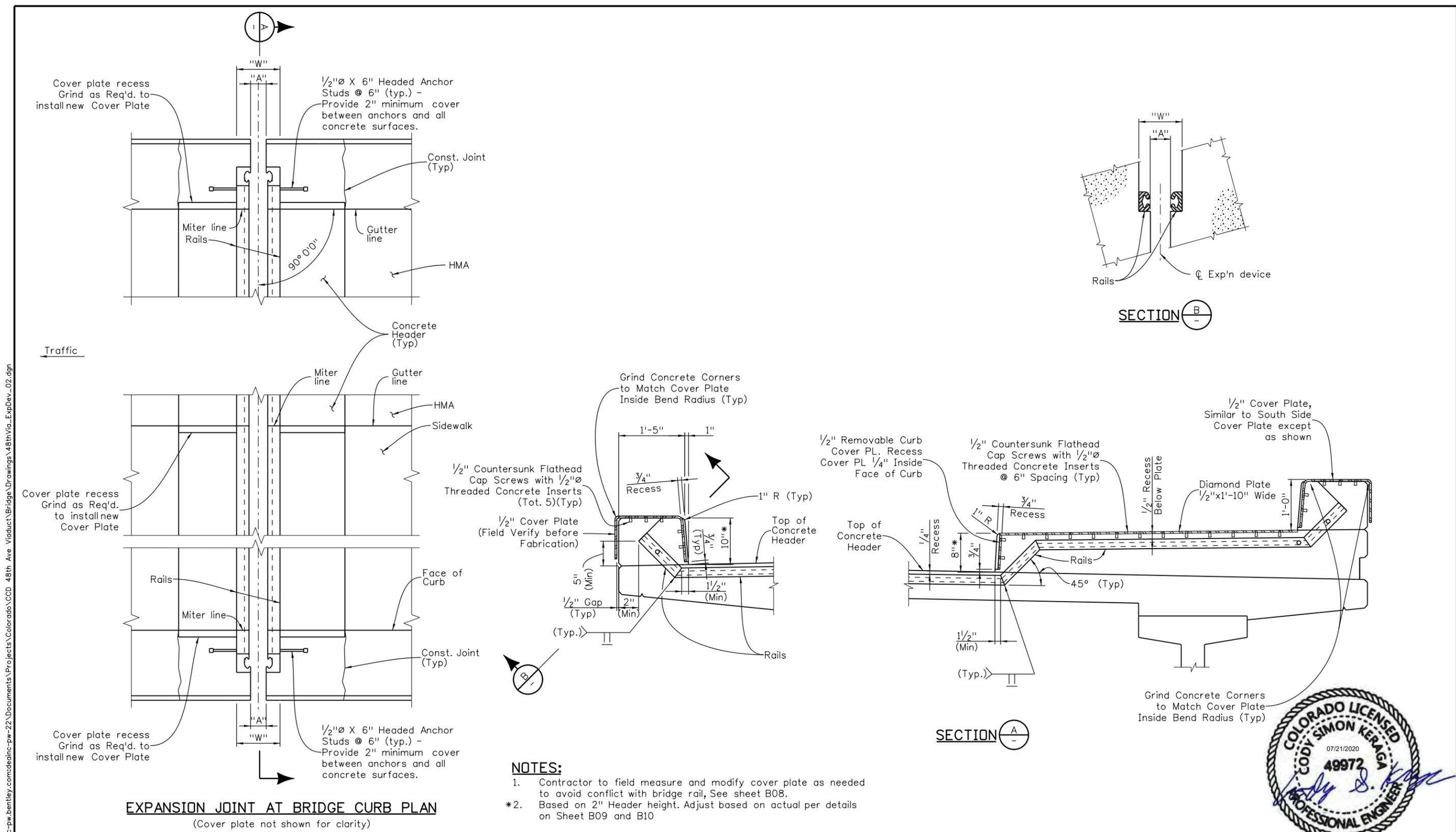
**DEPARTMENT OF TRANSPORTATION
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201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

As Constructed
No Revisions:
Revised:
Void:

**48TH AVE VIADUCT REHABILITATION
BRIDGE EXPANSION DEVICE
(0-4 INCH) (1 OF 2)**
Designer: C. Keraga
Detailer: R. Artman
Sheet Subset: BRIDGE
Structure Numbers: D-03-V-010
Subset Sheets: B09 of 26

Project No./Code
201843741
Sheet Number **14**

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EXPANSION JOINT AT BRIDGE CURB PLAN
(Cover plate not shown for clarity)

- NOTES:**
- Contractor to field measure and modify cover plate as needed to avoid conflict with bridge rail, See sheet B08.
 - Based on 2" Header height. Adjust based on actual per details on Sheet B09 and B10



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 File Name: 48thVia_ExpDev_02.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

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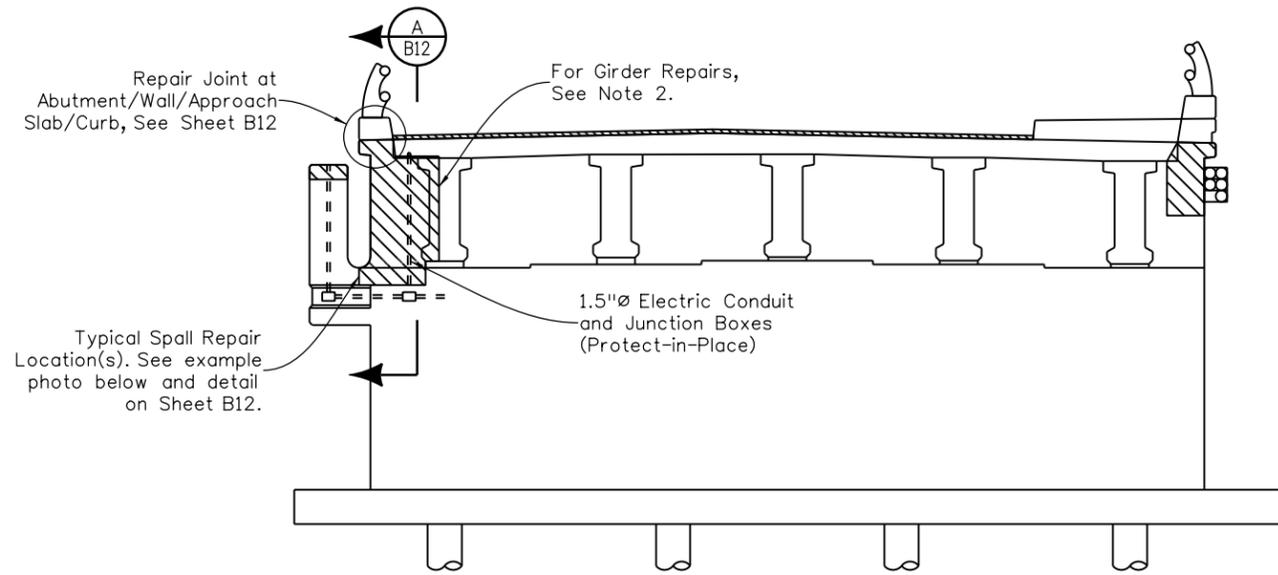
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 Revised:
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48TH AVE VIADUCT REHABILITATION BRIDGE EXPANSION DEVICE (0-4 INCH) (2 of 2)

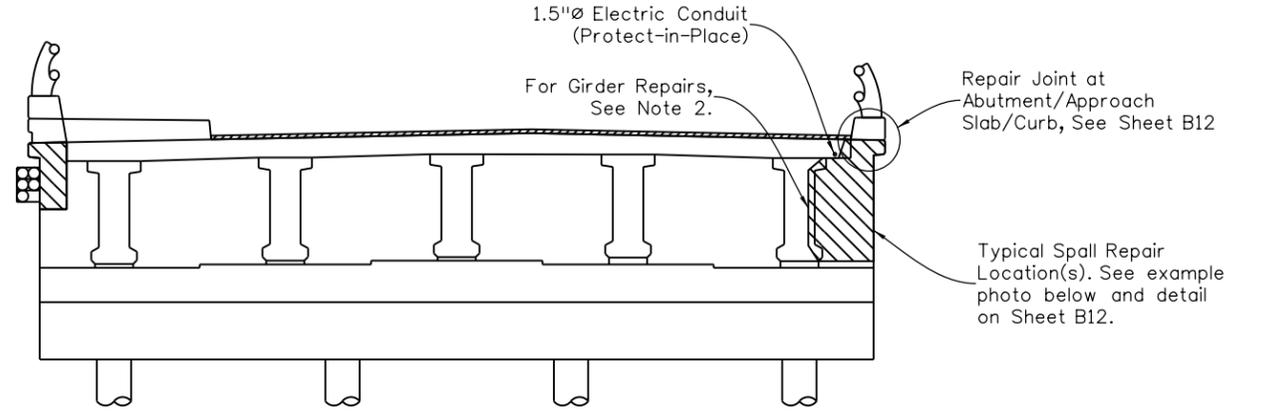
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman		
Sheet Subset:	BRIDGE	Subset Sheets:	B10 of 26

Project No./Code
 201843741
Sheet Number 15

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ABUTMENT 1 ELEVATION
(Looking West)



ABUTMENT 12 ELEVATION
(Looking East)

NOTES:

1. See Sheet B12 for additional details and notes.
2. For Girder Repair Details, See Sheet B19.
3. For Estimated Spall Repair Area per Abutment, See table this sheet.

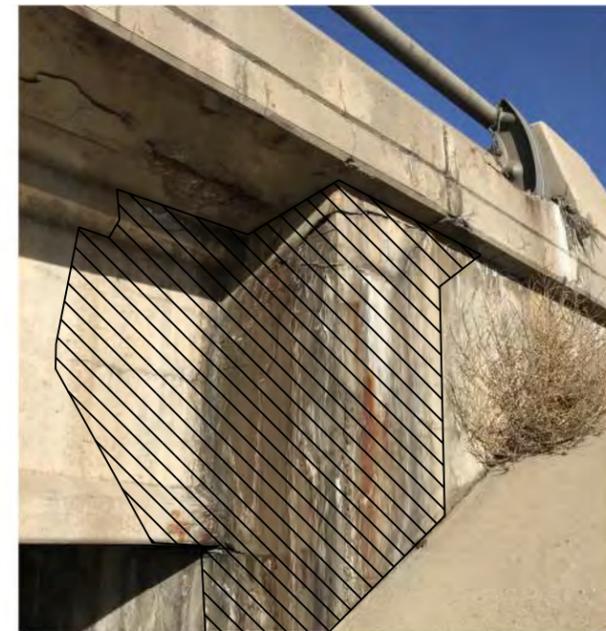
LEGEND:

Approximate Area of Repair (See Repair Note 5 on Sheet B12).

ESTIMATED SPALL REPAIR AREA PER ABUTMENT	
ABUT	AREA (SF)
1	40
12	50



ABUTMENT 1 - ABUTMENT AND GIRDER SPALLS



ABUTMENT 12 - ABUTMENT, GIRDER AND WINGWALL SPALLS



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 File Name: 48thVia_AbutRepair_01.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens



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48TH AVE VIADUCT REHABILITATION ABUTMENT 1 AND 12 REPAIRS (1 OF 2)

Designer: C. Keraga
 Detailer: R. Artman
 Sheet Subset: BRIDGE

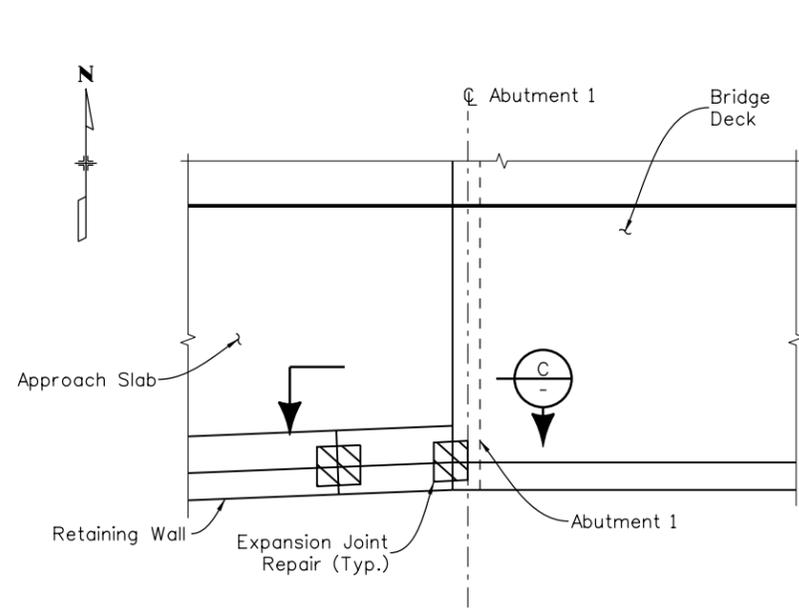
Structure Numbers: D-03-V-010
 Subset Sheets: B11 of 26

Project No./Code

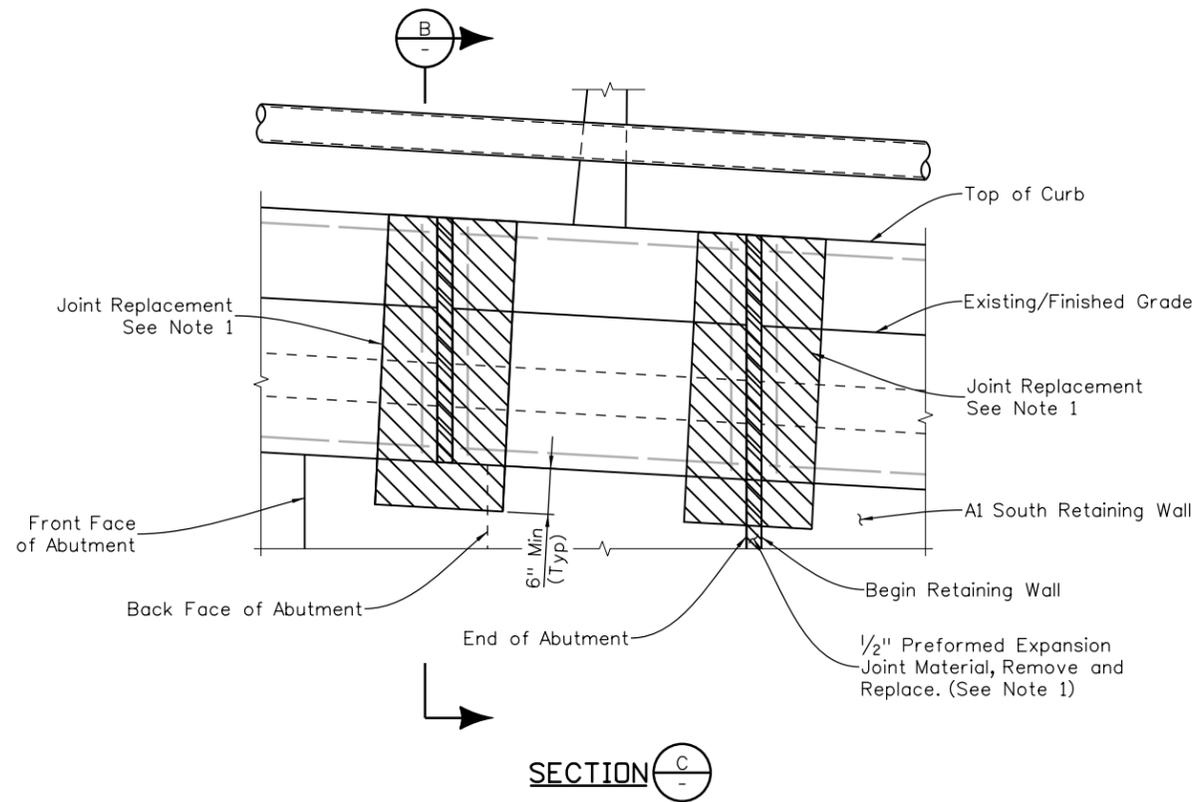
201843741

Sheet Number 16

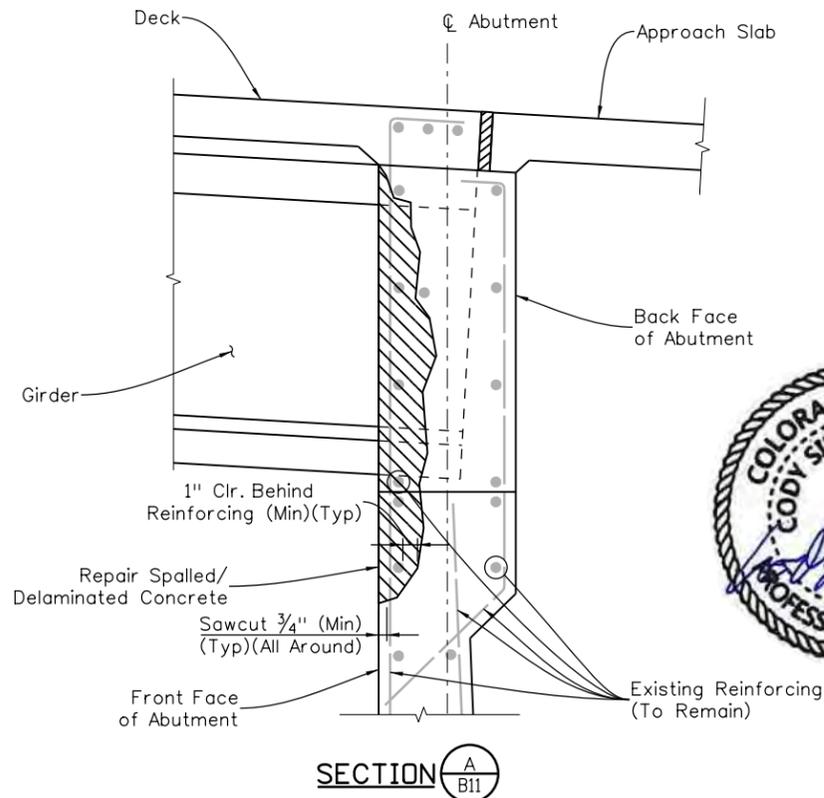
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ABUTMENT/WALL/CURB EXPANSION JOINT REPAIR PLAN
(Abutment 1 Southwest Corner Shown)

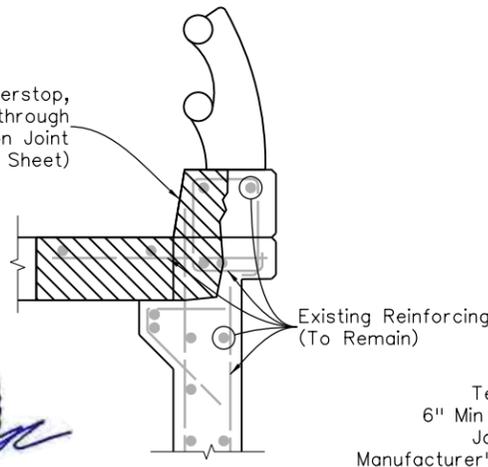


SECTION C

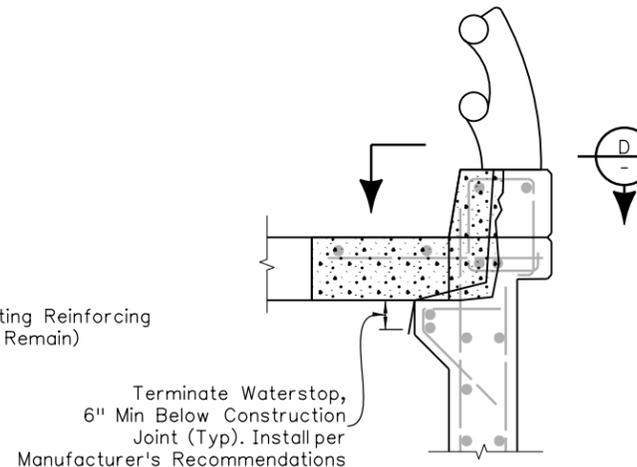


SECTION A

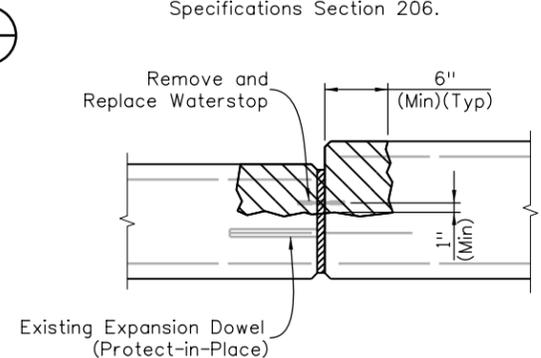
Replace Waterstop, See Section through Expansion Joint (This Sheet)



SECTION B
REMOVALS



SECTION B
CONSTRUCTION



SECTION D
SECTION THRU EXPANSION JOINT

REPAIR NOTES:

1. Save and protect existing reinforcing.
2. Sawcut the edges of the repair area $\frac{3}{4}$ " minimum depth. Reduce saw depth as required to avoid damage to existing reinforcing.
3. Remove concrete in repair area to sound concrete, but do not remove less than the minimum limits shown or as directed by the Engineer.
4. Removals shall extend a minimum of 1" behind all reinforcing steel.
5. Repair of spalled/delaminated concrete shall be paid for as Removal of Portions of Present Structure (SF) and Concrete Patching (CF)

LEGEND:

- Approximate Area of Repair (See Repair Note 5).
- Concrete (Patching)(CF)

NOTES:

1. Replace Waterstop and joint material at joints between Abutment and Wall within the curb to the limits shown. Repair at Abutment/Approach Slab joint and at Abutment/Wall joint on South side of Bridge. Total of 3 locations.
2. Excavation and backfill required for waterstop replacement will not be measured and paid for separately, but shall be included in the work. Replace excavated material with Class 1 Structure Backfill according to CDDT Standard Specifications Section 206.

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City Project Manager: Kevin Rens	

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Date:	Comments	Init.

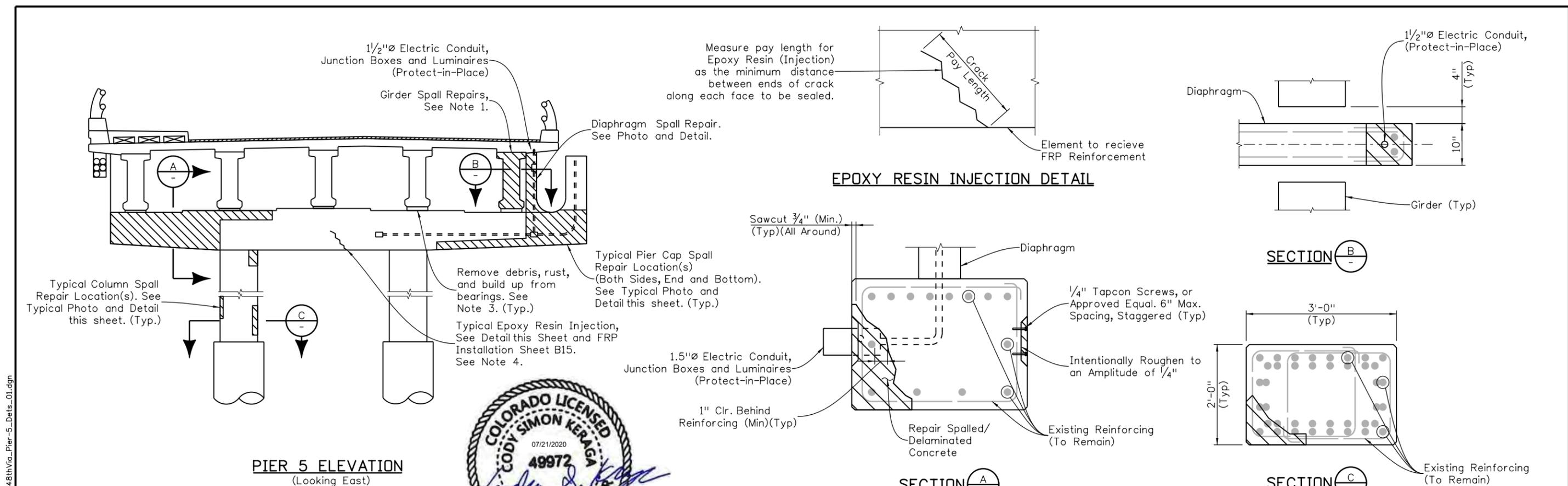
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

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As Constructed
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48TH AVE VIADUCT REHABILITATION ABUTMENT 1 AND 12 REPAIRS (2 OF 2)			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B12 of 26
Sheet Subset:	BRIDGE		

Project No./Code	201843741
Sheet Number	17



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LEGEND:
 Approximate Area of Repair (See Repair Note 5).



PIER 5 - NORTH END OF CAP SPALL



COLUMN 5A - TOP SPALL



PIER 5 - SOUTH END OF DIAPHRAGM SPALL

NOTES:

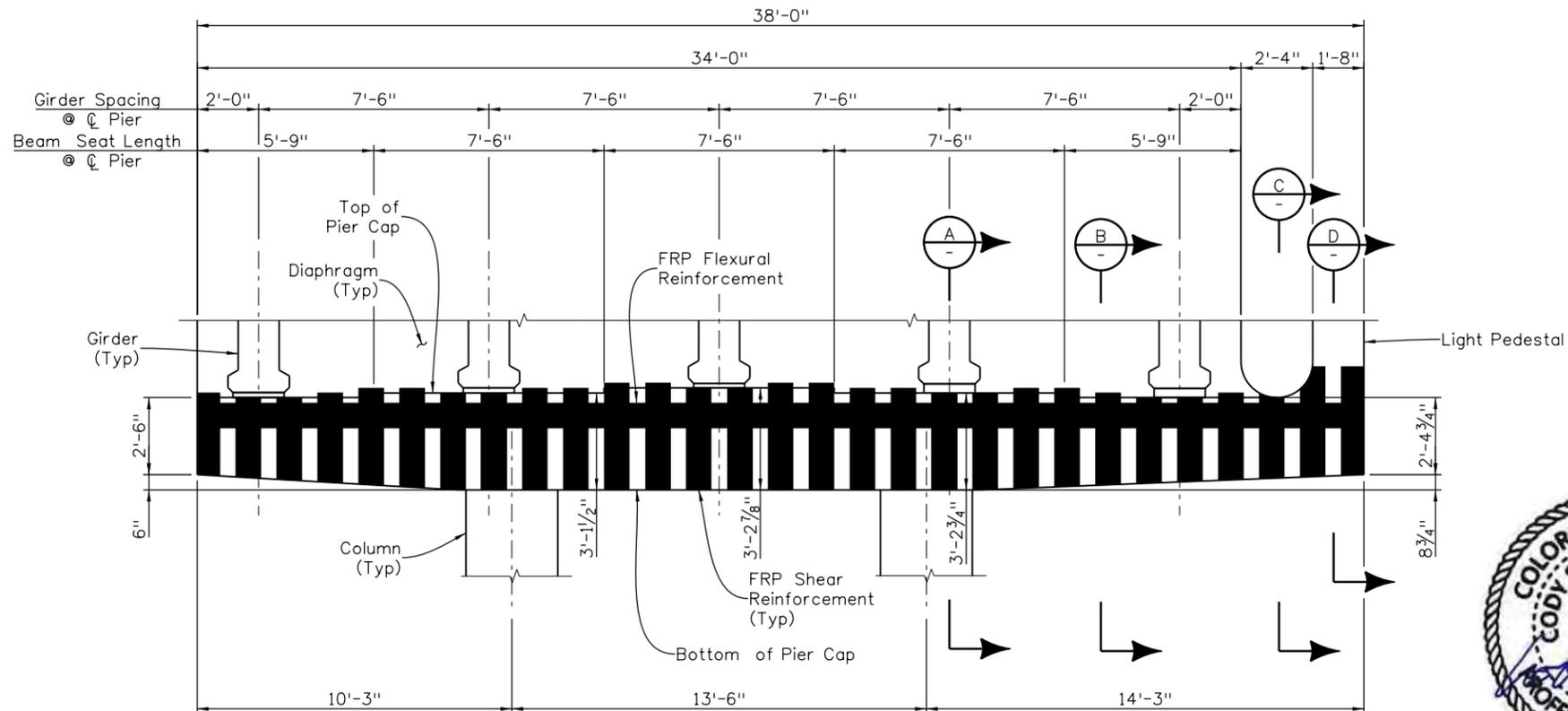
- For Girder Repair Details, See Sheet B19.
- Estimated Spall Repair Area at Pier 5 = 215 SF.
- Clean debris, rust, and build up from bearing. See Item 210 Modify Bridge Expansion Device Special Provision for additional information.
- Epoxy Resin Injection shall be injected into cracks on the sides and bottom of the pier cap prior to installing FRP. See Special Provisions for additional information.
- After spall and crack repairs are complete, install FRP per details on Sheet B15 and Special Provisions.
- Track Protection shall be required during construction at Pier 5. See railroad coordination special provision for additional information.

REPAIR NOTES:

- Save and protect existing reinforcing.
- Sawcut the edges of the repair area $\frac{3}{4}$ " minimum depth. Reduce saw depth as required to avoid damage to existing reinforcing.
- Remove concrete in repair area to sound concrete, but do not remove less than the minimum limits shown or as directed by the Engineer.
- Removals shall extend a minimum of 1" behind all reinforcing steel.
- Repair of spalled/delaminated concrete shall be paid for as Removal of Portions of Present Structure (SF) and Concrete Patching (CF).

Print Date: 7/20/2020		Sheet Revisions Date: Comments Init. _____ _____ _____			DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION PIER 5 REPAIRS			Project No./Code 201843741
File Name: 48thVia_Pier-5_Dets_01.dgn										
Horiz. Scale: 1:1 Vert. Scale: As Noted					Sheet Subset: BRIDGE Subset Sheets: B14 of 26					
City Project Manager: Kevin Rens										
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.346.0969										

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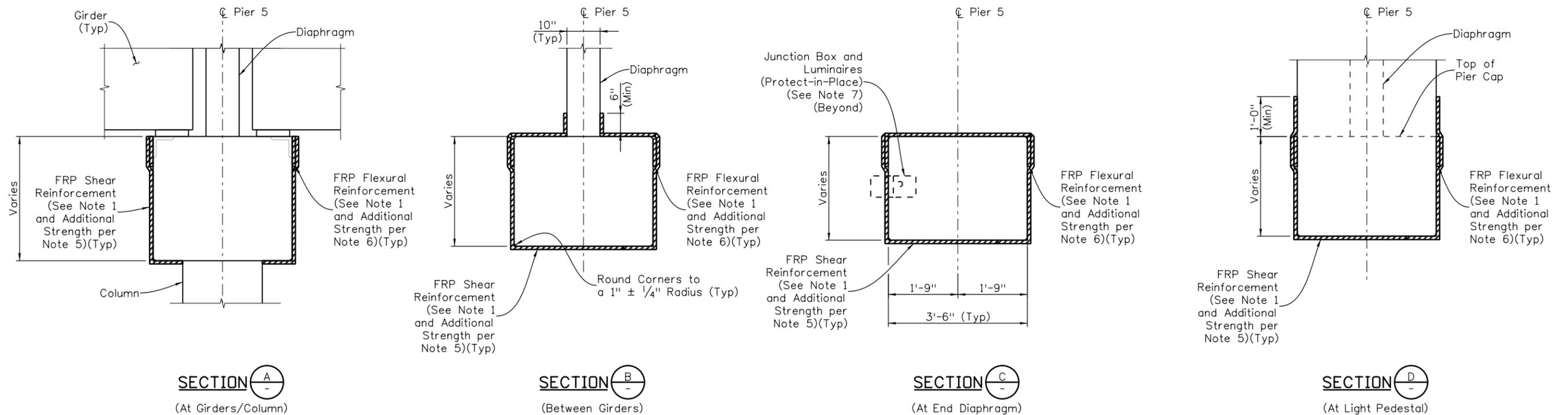


PIER 5 ELEVATION
(Looking East)



NOTES:

1. All FRP strip width, number of layers, and spacing shall be determined by the Contractor.
2. Prior to FRP installation:
 - A) Contractor shall perform concrete spall repairs per Sheet B14 and the special provisions.
 - B) The existing concrete soundness shall be verified using a pull-off adhesion test of 200 psi according to ASTM 4541.
 - C) The surface shall be prepared using an approved abrasive or water-blasting technique. All deformations, holes or voids shall be filled with a compatible epoxy putty/paste or as directed by the Engineer. Existing corners to receive FRP shall be rounded with a radius = $1'' \pm \frac{1}{4}''$.
 - D) Following the surface preparation, all existing cracks that are 0.016 inches and wider shall be pressure injected with epoxy in accordance with ACI 224.1R-07, Project Special Provisions, Details on Sheet B14, and as directed by Engineer.
3. FRP system primers, resins and ply material shall be mixed, installed and cured in accordance with the Project Special Provisions and approved manufacturer's recommendations.
4. After installation of FRP, concrete elements strengthened by FRP composite material shall receive a final surface finish matching the texture and color of the existing concrete along the full length of the members.
5. Additional Design Shear Strength Required ($\phi_{frp} V_{frp}$) = 255 kips/ft.
6. Additional Design Flexure Strength Required = 350 (kip-ft). Per AASHTO LRFD FRP Specifications (2012), $M_{frp} = T_{frp} (h-k2c)$ in Eq. 3.4.1.1-1
7. Contractor to coordinate lighting at pier 5 with Engineer. This work shall not be measured and paid for separately, but shall be included in Bid Item 602 Reinforcing (Fiber Reinforced Polymer)(Surface).



Print Date: 7/20/2020
 File Name: 48thVia_Pier-5_FRPDets_01.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

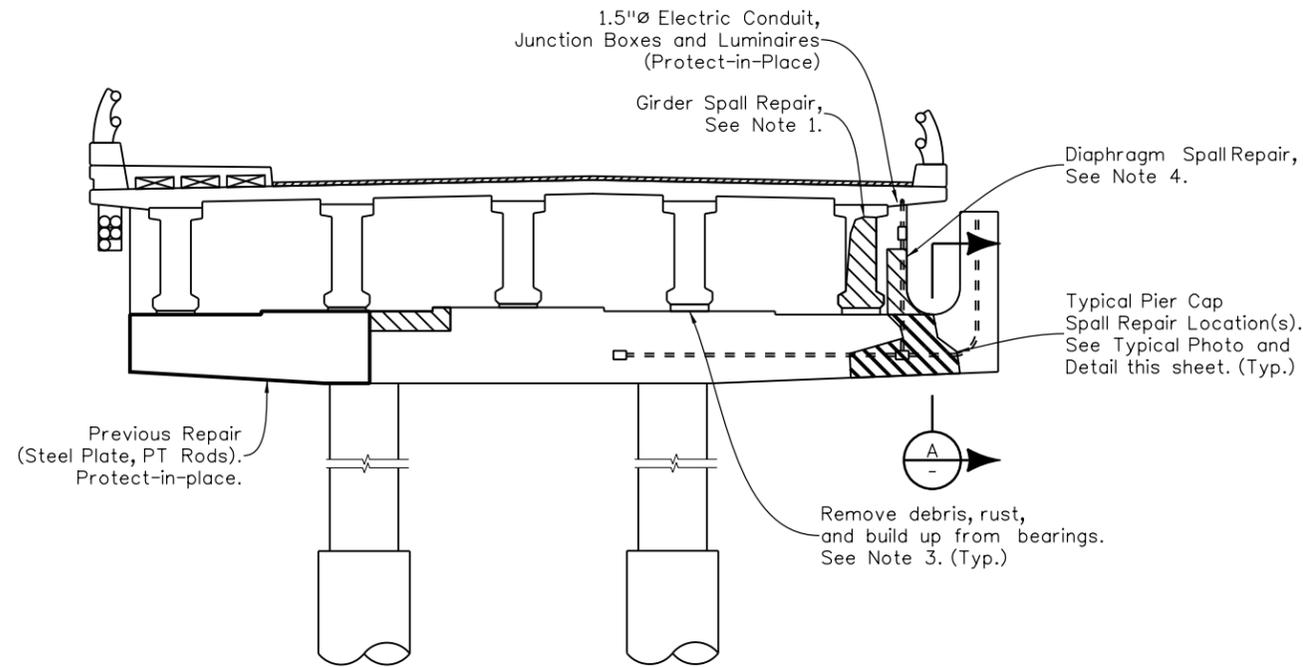
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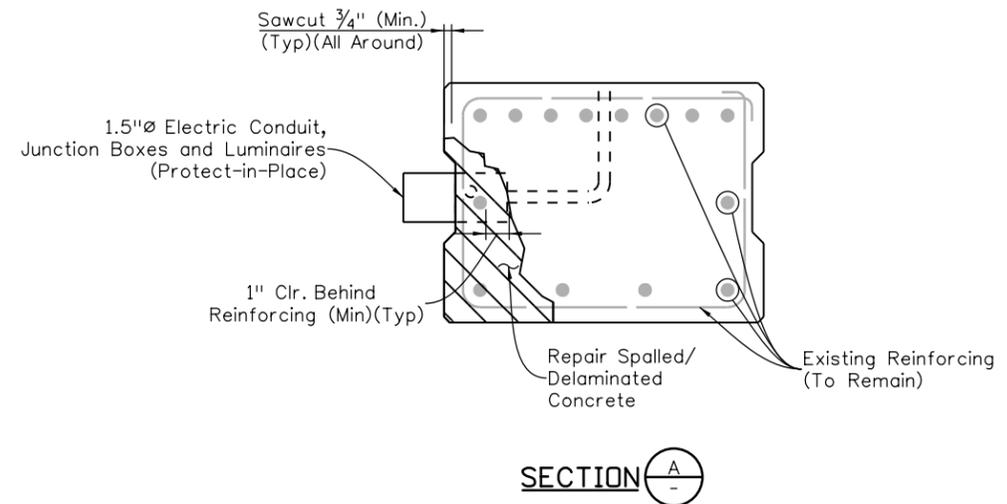
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48TH AVE VIADUCT REHABILITATION PIER 5 FRP DETAILS			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B15 of 26

Project No./Code
201843741
Sheet Number
20



PIER 8 ELEVATION
(Looking East)



LEGEND:

Approximate Area of Repair (See Repair Note 5).

NOTES:

- For Girder Repair Details, See Sheet B19.
- Estimated Spall Repair Area at Pier 8 = 10 SF.
- Clean debris, rust, and build up from bearing. See Item 210 Modify Bridge Expansion Device Special Provision for additional information.
- For Diaphragm Repair Details, See Sheet B14.
- Track Protection shall be required during construction at Pier 8. See RTD/DTO coordination special provision for additional information.

REPAIR NOTES:

- Save and protect existing reinforcing.
- Sawcut the edges of the repair area $\frac{3}{4}$ " minimum depth. Reduce saw depth as required to avoid damage to existing reinforcing.
- Remove concrete in repair area to sound concrete, but do not remove less than the minimum limits shown or as directed by the Engineer.
- Removals shall extend a minimum of 1" behind all reinforcing steel.
- Repair of spalled/delaminated concrete shall be paid for as Removal of Portions of Present Structure (SF) and Concrete Patching (CF).



Girder Spall Repair, See Note 1.

PIER 8 - DIAPHRAGM AND GIRDER SPALLS



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 File Name: 48thVia_Pier-8_Dets_01.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens



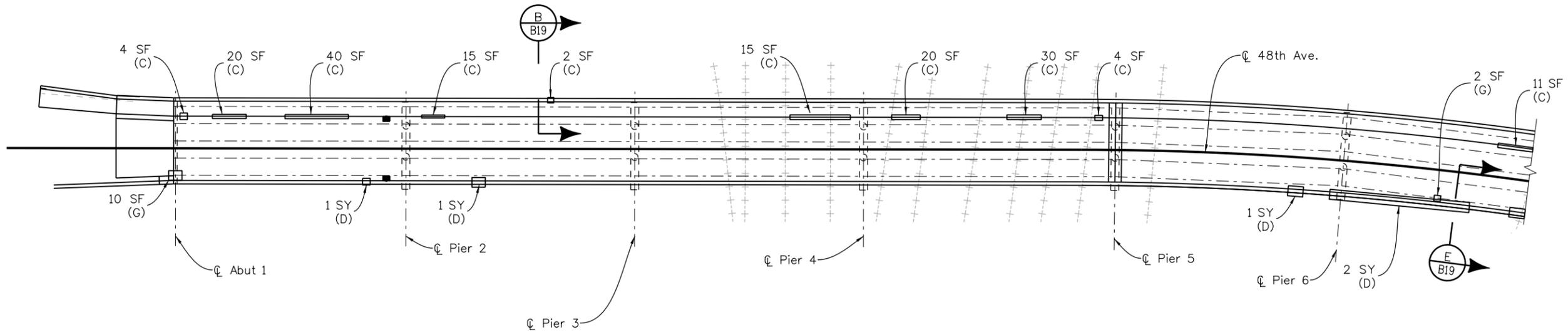
Sheet Revisions		
Date:	Comments	Init.

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	PIER 8 REPAIRS		
No Revisions:	Designer: C. Keraga	Structure Numbers: D-03-V-010	Sheet Number 21
Revised:	Detailer: R. Artman	Subset Sheets: B16 of 26	
Void:	Sheet Subset: BRIDGE		

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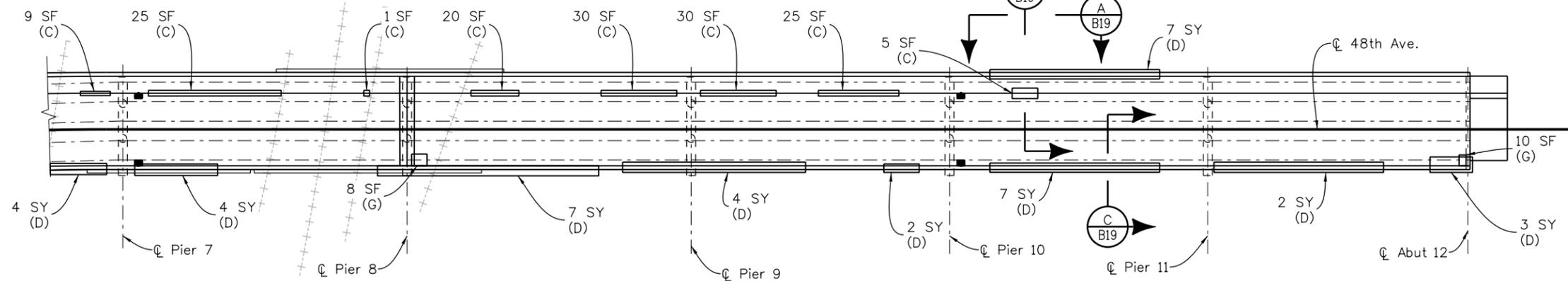
NOTES:

These locations represent the limits of Removal of Portions of Present Structure (SF/SY) estimated area (SF/SY).

LEGEND:

Approximate Area of Repair

- (C) - Curb/Sidewalk
- (G) - Girder
- (D) - Deck Overhang



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Print Date: 7/20/2020
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Horiz. Scale: 1:50 Vert. Scale: As Noted
City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

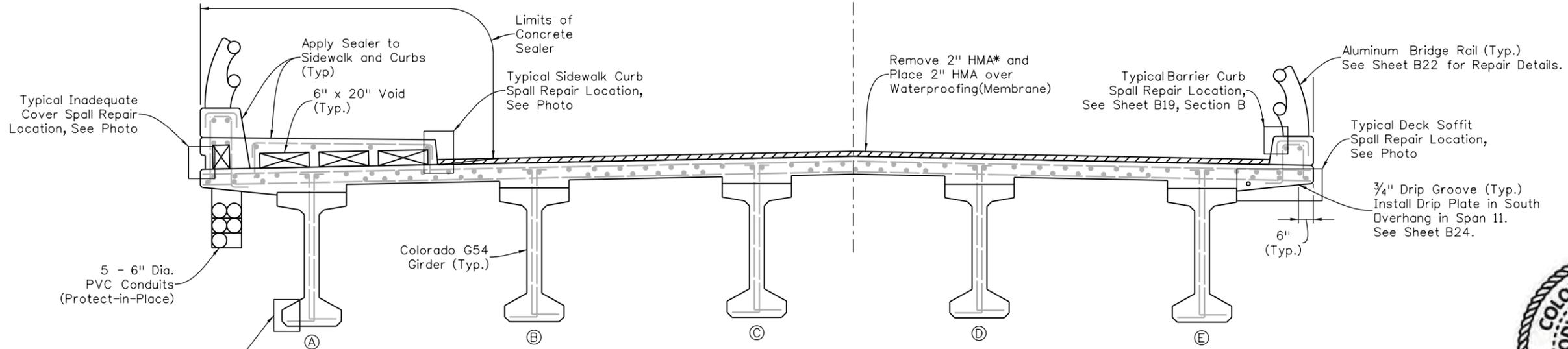
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

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Revised:
Void:

48TH AVE VIADUCT REHABILITATION SUPERSTRUCTURE REPAIR PLAN			
Designer: C. Keraga	Structure Numbers	D-03-V-010	
Detailer: R. Artman			
Sheet Subset: BRIDGE	Subset Sheets: B17 of 26		

Project No./Code
201843741
Sheet Number 22



TYPICAL SECTION
(Looking East)

* Existing asphalt depth varies from 1 1/2" to 2 1/2" based on October 2018 inspection. Field verify prior to milling. See special provisions for additional information.



LEGEND:

Approximate Area of Repair



TYPICAL INADEQUATE COVER AT NORTH FASCIA (SPAN 10) SPALL REPAIR



TYPICAL SIDEWALK CURB SPALL



DAMAGED GIRDER, SOUTH EXTERIOR GIRDER, SPAN 6



TYPICAL DECK SOFFIT SPALL

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 File Name: 48thVia_SuperStrcDets_01.dgn
 Horiz. Scale: 1:1 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

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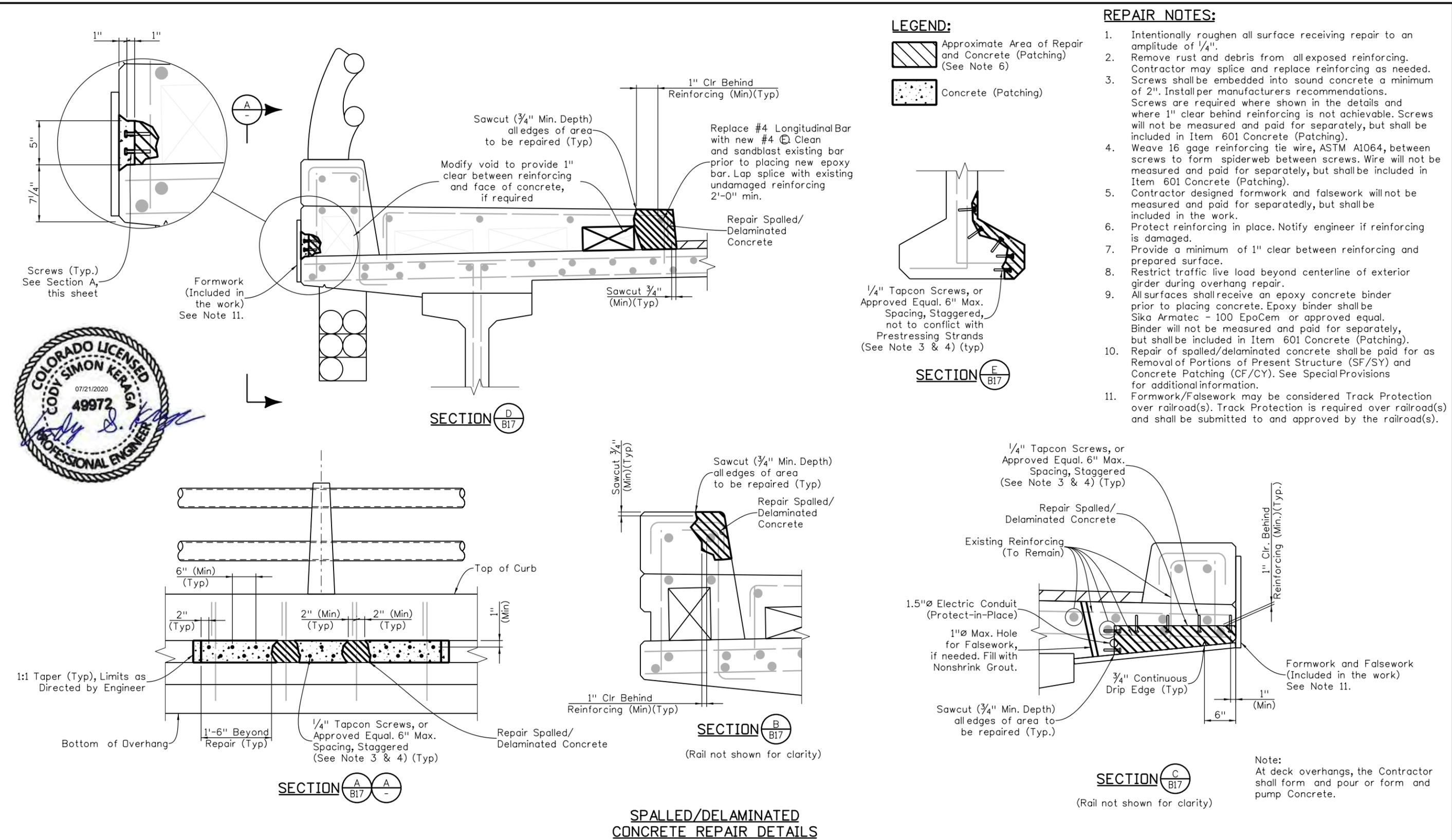
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Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B18 of 26

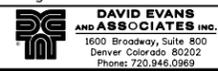
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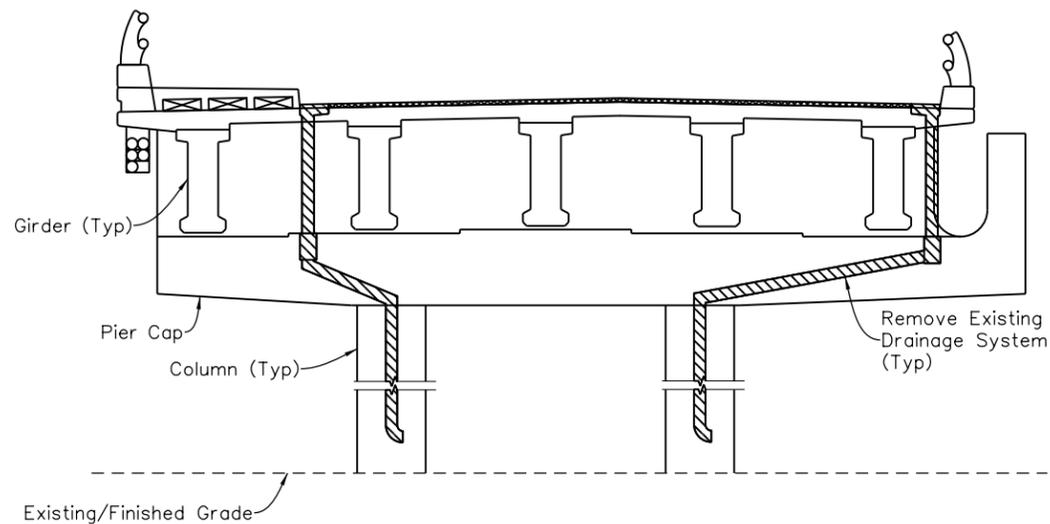
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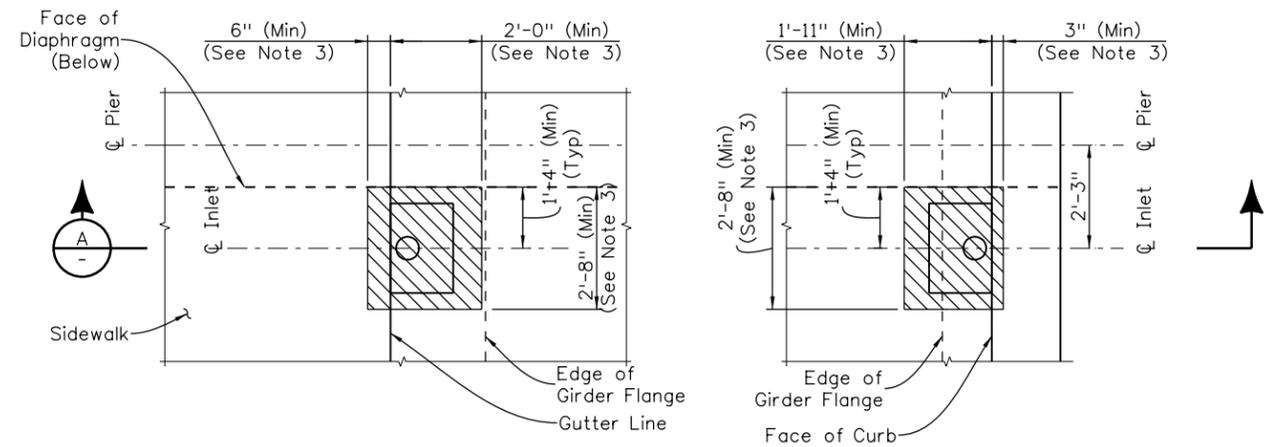
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Horiz. Scale: 1:1				DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	Structure: D-03-V-010 Numbers:			Sheet Number 24		
City Project Manager: Kevin Rens					Subset Sheets: B19 of 26					





DRAIN ELEVATION



DRAIN PLAN

LEGEND:

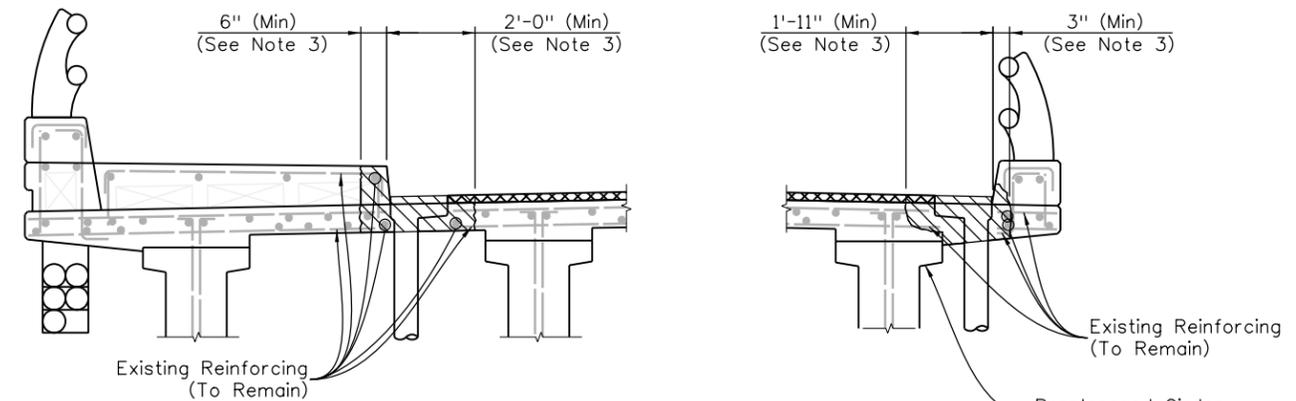
Approximate Limits of Removal

NOTES:

1. Protect drains in place at Pier 7. Clean and remove debris throughout the entire drain system, as directed by Engineer. See Special Provision for additional information. Clean Drain shall be paid for as Bid Item 202 Clean Inlet.
2. Removal of Drainage system includes all work to remove the entire system including inlets, pipe, boxes, brackets, concrete, and reinforcing. See Special Provisions for additional information. Drainage system removal shall be paid for as Bid Item 202 Removal of Portions of Present Structure (EA).

REMOVAL NOTES:

1. Save and protect existing reinforcing.
2. Sawcut the edges of the repair area $\frac{3}{4}$ " minimum depth. Reduce saw depth as required to avoid damage to existing reinforcing.
3. Remove concrete in drain area to sound concrete, but do not remove less than the minimum limits shown or as directed by the Engineer.
4. Limits of Deck/Sidewalk/Curb removal shall be large enough to remove the existing inlet and to place a minimum of 2 inches of concrete around the proposed inlet.
5. Removal shall extend a minimum of 1" behind all reinforcing steel.



SECTION A-A



Print Date: 7/20/2020	
File Name: 48thVia_DeckDrain_Dets_01.dgn	
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City Project Manager: Kevin Rens	

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Date:	Comments	Init.

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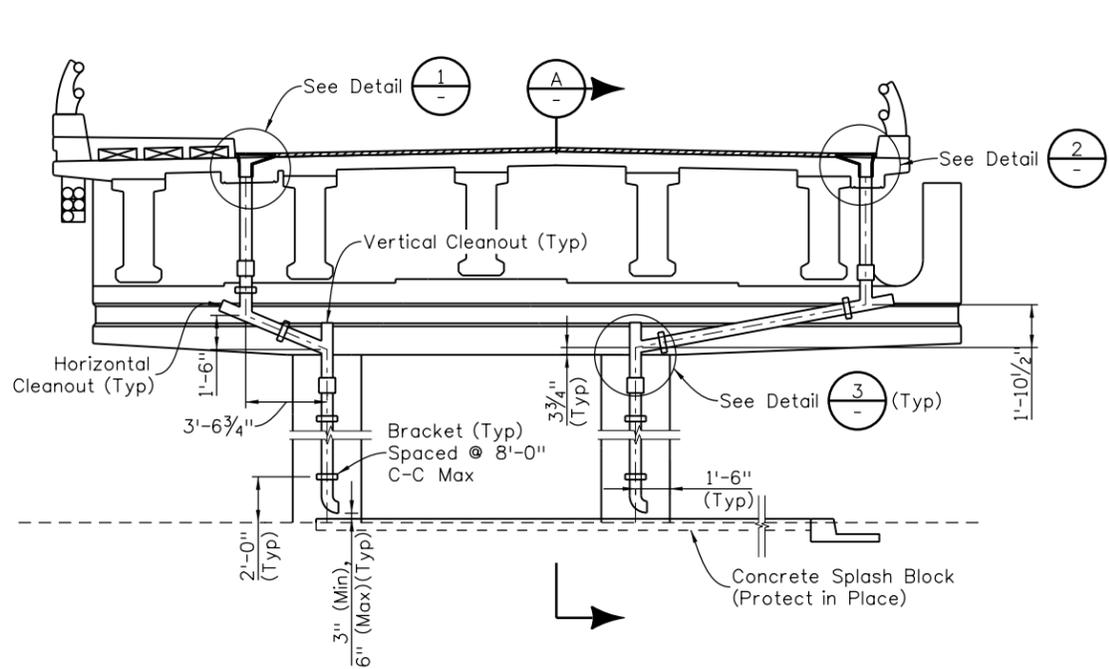
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Revised:
Void:

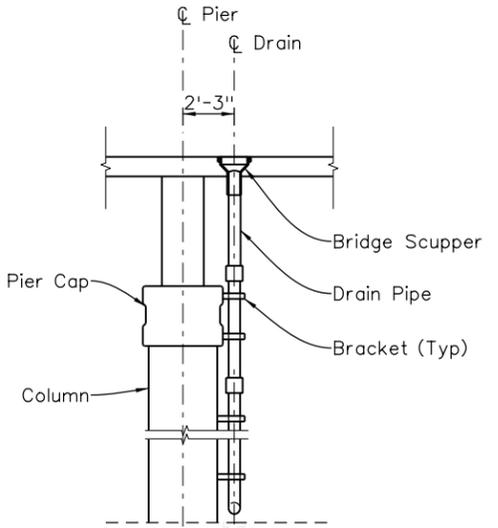
48TH AVE VIADUCT REHABILITATION DECK DRAIN REMOVALS			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B20 of 26

Project No./Code
201843741
Sheet Number
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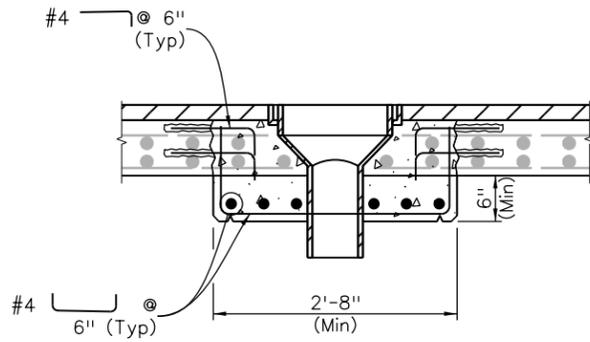
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PIER 2 ELEVATION
(Pier 10 Similar)



SECTION A

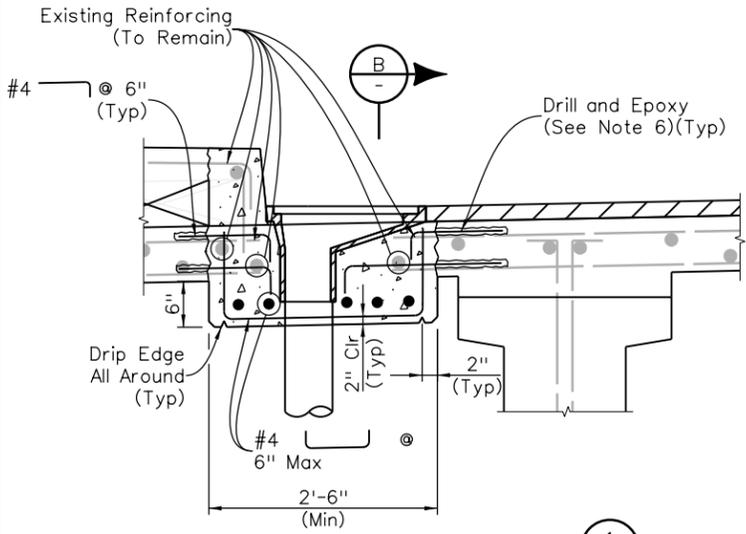


SECTION B

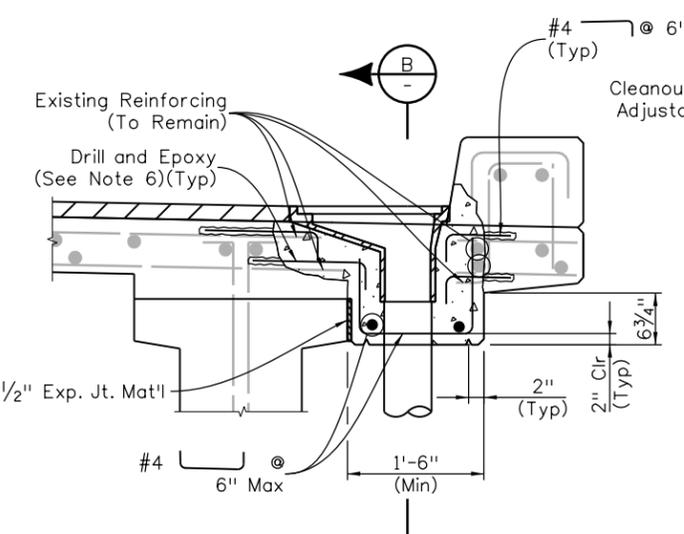
- NOTES:**
- All steel components excluding cast iron grates shall be galvanized after fabrication.
 - Provide 3/4"x 5 1/2" zinc-plated wedge anchors, embed 3 1/2" min., Simpson Strongtie or approved equal.
 - Repair galvanized coating as directed by Engineer according to ASTM A780
 - All drain pipe is 6" diameter standard galvanized steel.
 - Replace bridge drains at Pier 2 and 10 with Neenah R-3952 or approved equal.
 - Drill and epoxy grout reinforcing into existing concrete 6" min. For installation, refer to epoxy grout Manufacturer's recommendations
 - Chamfer exposed corners 3/4" min.
 - Drain installation, including but not limited to bridge drains, pipe, supports, and embeds, shall be paid for as Bid Item 513 Bridge Drain. See Special Provision for additional information.
 - Concrete shall be Concrete Class DR.
 - Contractor to field verify drain geometry before fabrication.
 - Field splice details and locations to be determined by the Contractor and approved in the shop drawings by the Engineer.

LEGEND:

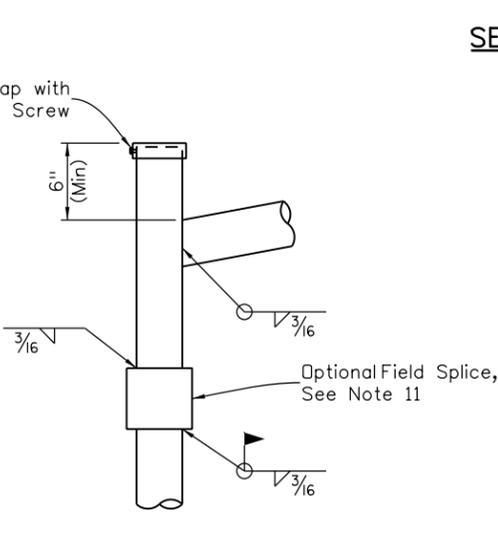
Concrete Class DR



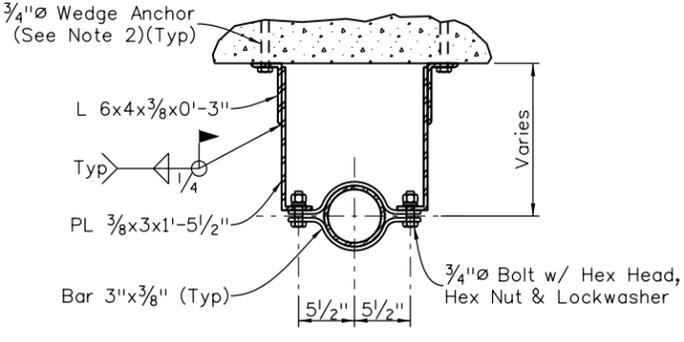
DETAIL 1



DETAIL 2
(Rail not shown for clarity)



DETAIL 3



BRACKET DETAIL

Print Date: 7/20/2020
 File Name: 48thVia_DeckDrain_Dets_02.dgn
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48TH AVE VIADUCT REHABILITATION DECK DRAIN DETAILS
 Designer: C. Keraga
 Detailer: R. Artman
 Sheet Subset: BRIDGE

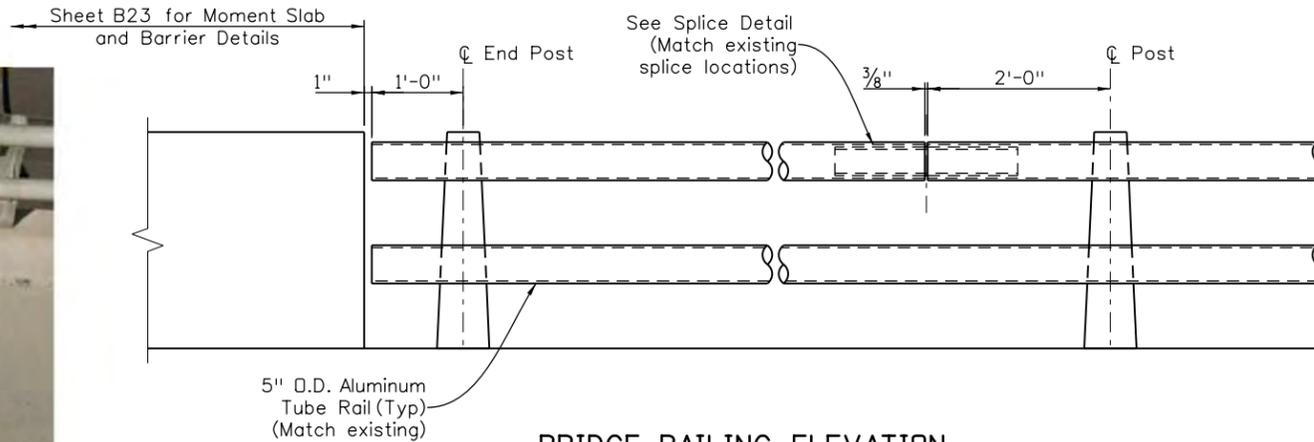
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 Structure Numbers
 D-03-V-010
 Subset Sheets: B21 of 26
 Sheet Number 26

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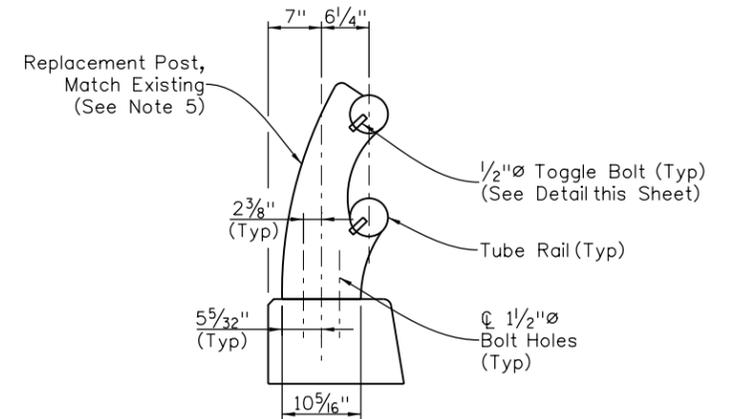


TYPICAL RAIL POST DAMAGE

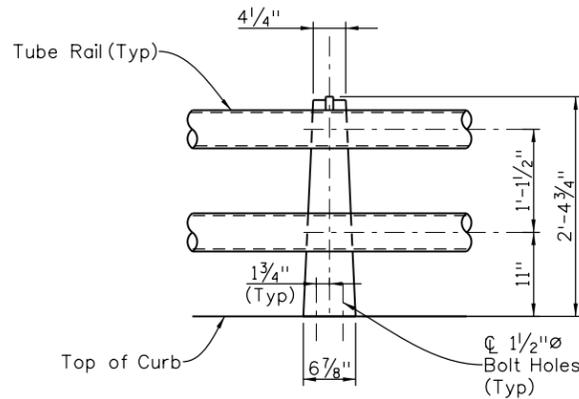
Remove and Replace Post, near North Side of Pier 4



BRIDGE RAILING ELEVATION
(Looking North)



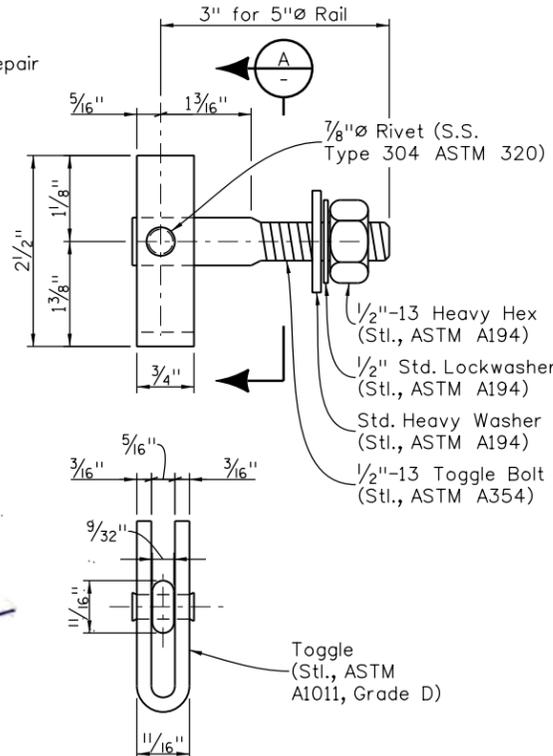
POST SECTION



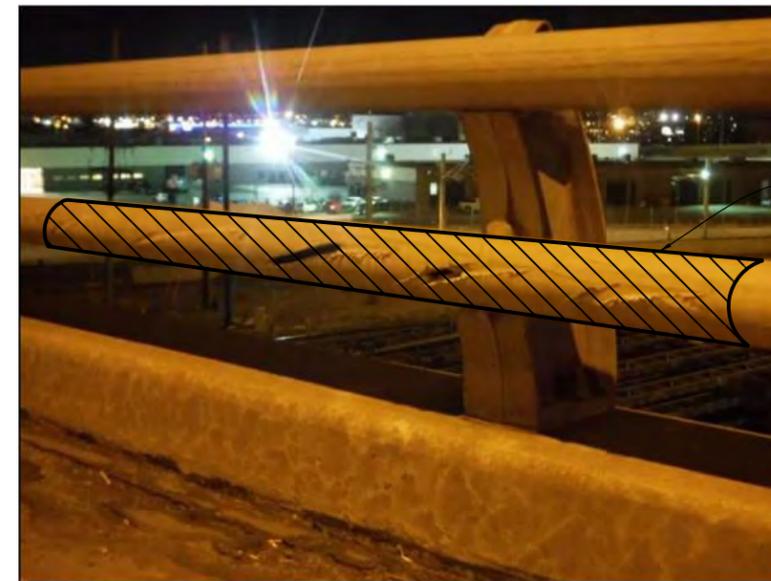
POST ELEVATION
(See Note 5)

LEGEND:

Approximate Area of Repair (See Note 7)



SECTION A-A
TOGGLE BOLT DETAILS

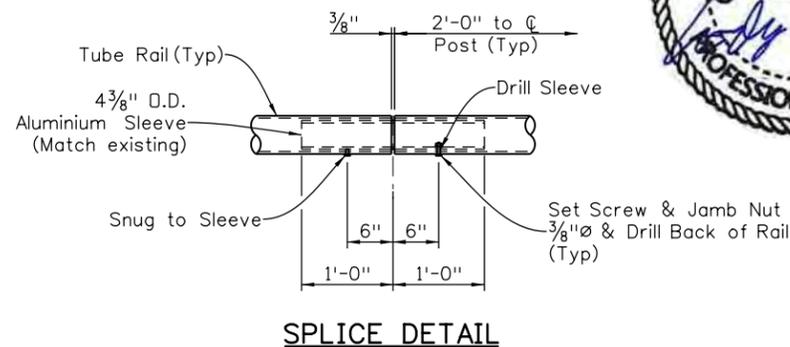


TYPICAL RAIL DAMAGE

Replace Whole Rail Length to Match Existing Conditions. Local Splicing for Damaged Section is not Permitted.

NOTES:

1. Provide aluminum shims as required for alignment of posts. Posts shall be perpendicular to the grade of the deck.
2. Post shall be permanent mold cast aluminum ASTM B-108, Alloy A444-T4
3. Railing and rail splices shall be aluminum extruded tube ASTM B-221, Alloy 606-T6
4. Aluminum surfaces in contact with concrete shall be separated with preformed fabric pads (t=1/8"). Aluminum caulking compound, Fed. Spec. TT-C-589, Grade I may be used as an alternate.
5. The post furnished may deviate slightly from the configuration shown, except for height, and rail location in order that an available commercial casting may be used.
6. All exposed surfaces of post and rail shall have a field applied No. 60 grit sandblasted finish.
7. Based on 2018 Inspection, it is estimated that 1 post requires replacement and 50 linear feet of horizontal tubes requires replacement. Actual replacement of posts and tubes shall be as directed by the Engineer. See Special Provision for additional information.



SPLICE DETAIL



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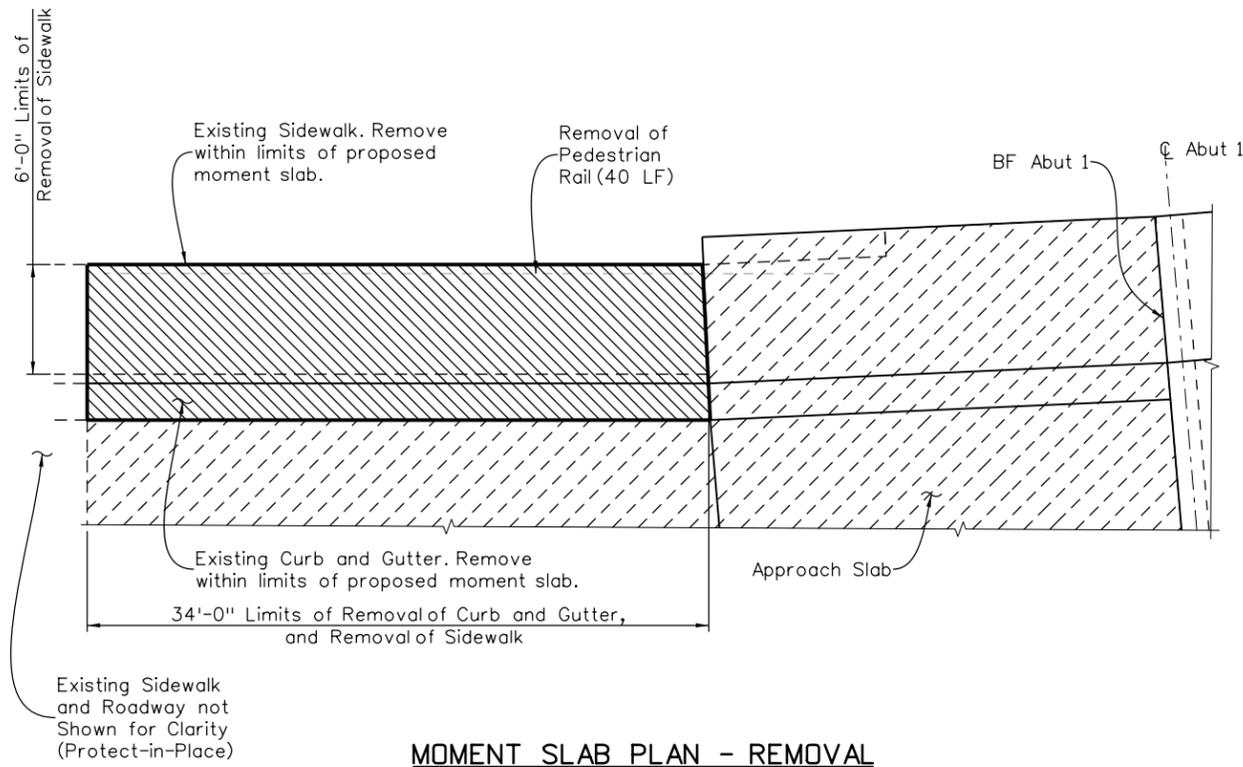
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PHONE: (720) 913-4501
FAX: (720) 913-4544

As Constructed	No Revisions:
Revised:	
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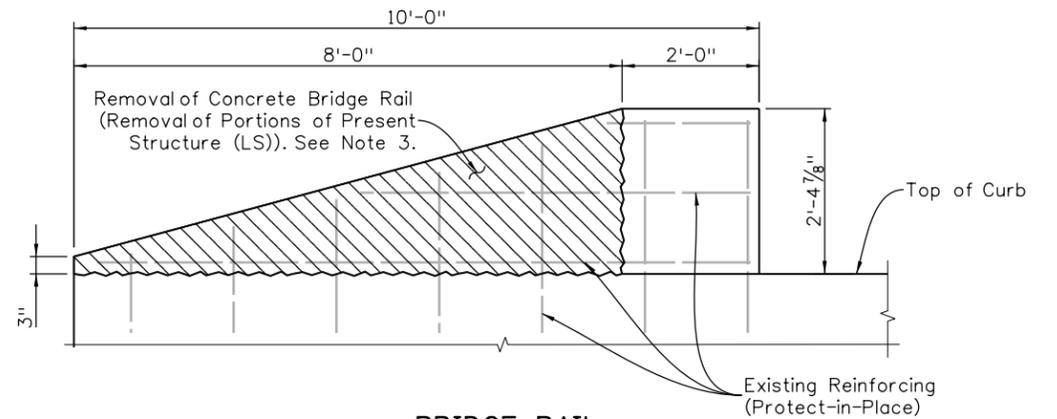
48TH AVE VIADUCT REHABILITATION BRIDGE RAIL REPAIR DETAILS			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Sheet Subset:	BRIDGE
Subset Sheets:	B22 of 26		

Project No./Code	201843741
Sheet Number	27

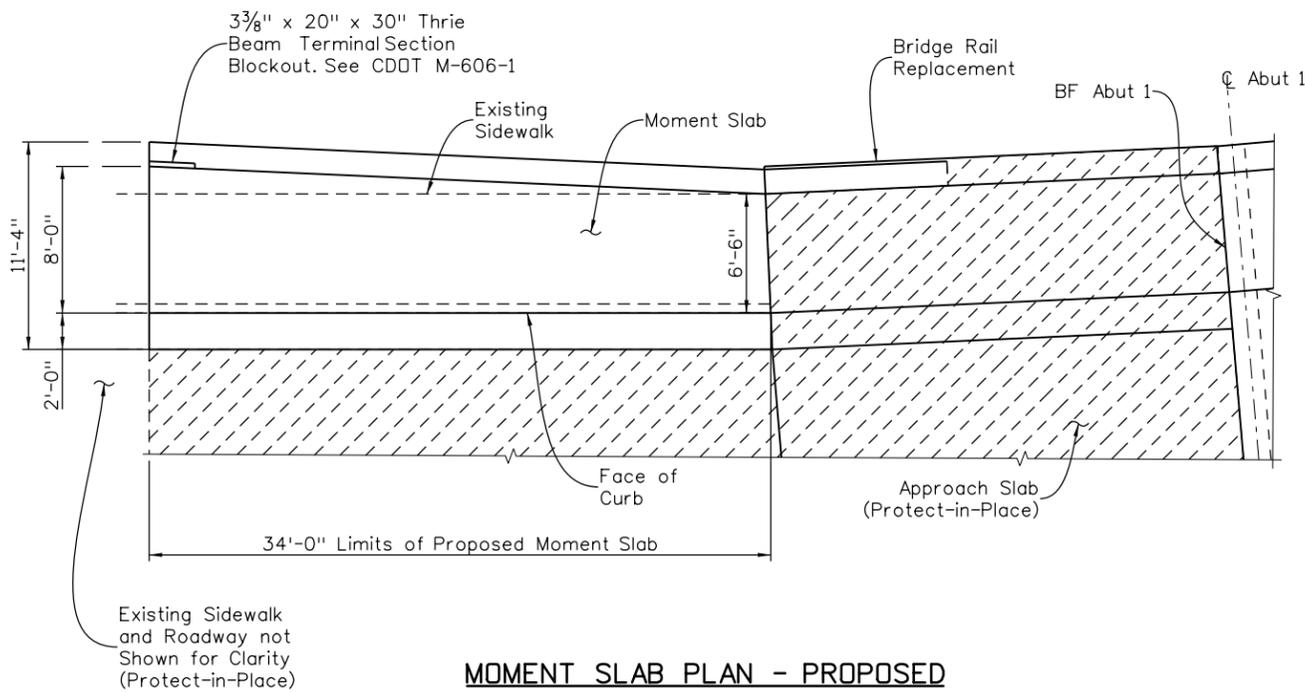
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MOMENT SLAB PLAN - REMOVAL



**BRIDGE RAIL
REMOVAL DETAIL - ELEVATION**



MOMENT SLAB PLAN - PROPOSED

LEGEND:

- Existing Structure/Pavement
- Limits of Removal (See Note 3)

NOTES:

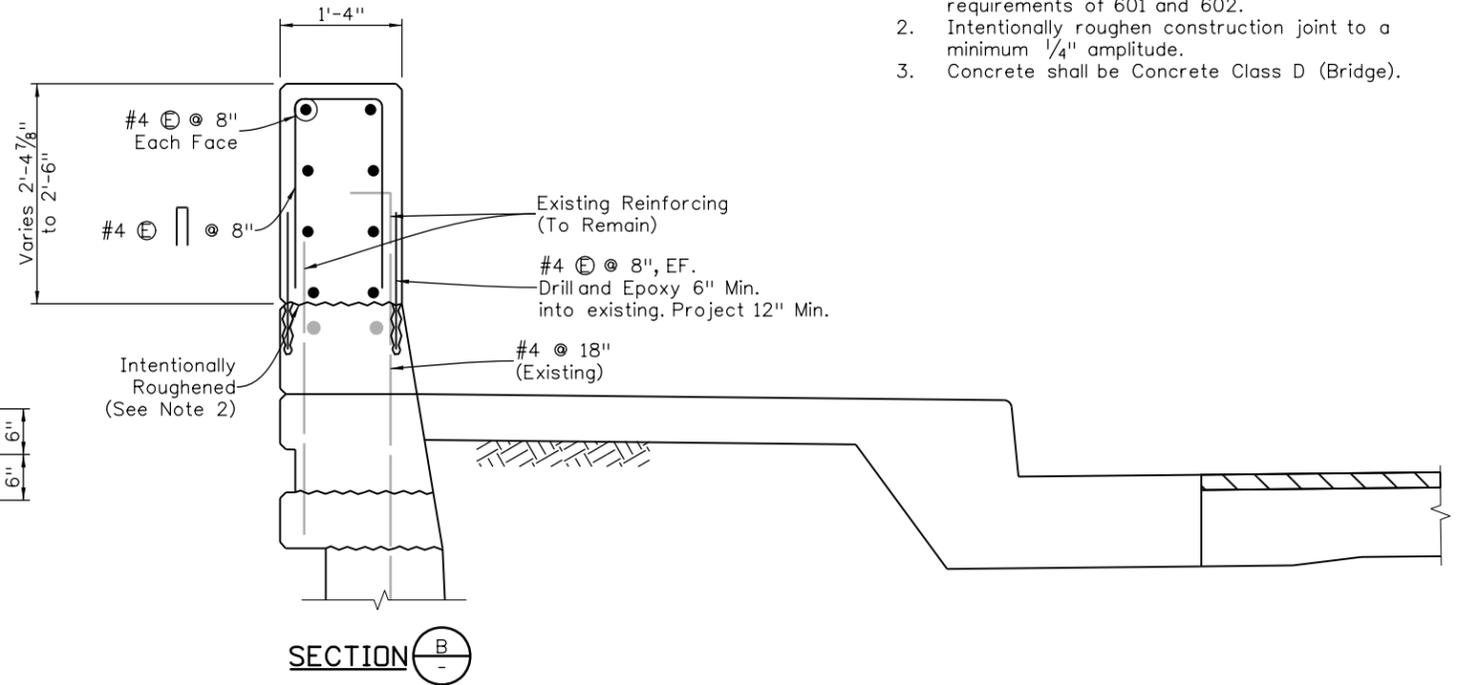
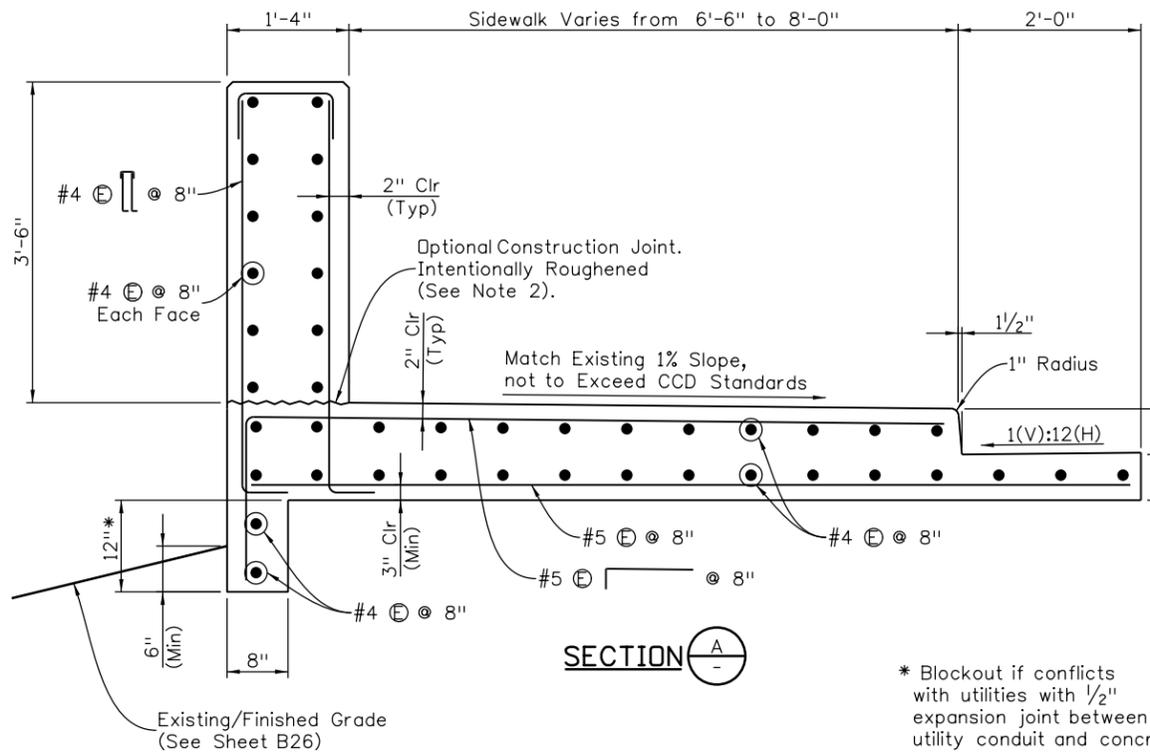
1. Concrete and reinforcing steel shall conform to the requirements of 601 and 602.
2. Intentionally roughen construction joint to a minimum 1/4" amplitude.
3. Removal of Bridge Rail will be removal of all concrete within the limits shown. See Special Provision for Bid Item 202 Removal of Portions of Present Structure (Lump Sum).
4. See Special Provision for Bid Item 202 Removal of curb and gutter.
5. See Special Provision for Bid Item 202 Removal of Sidewalk.
6. Concrete shall be Concrete Class D (Bridge).

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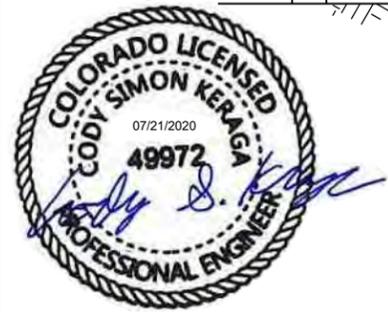
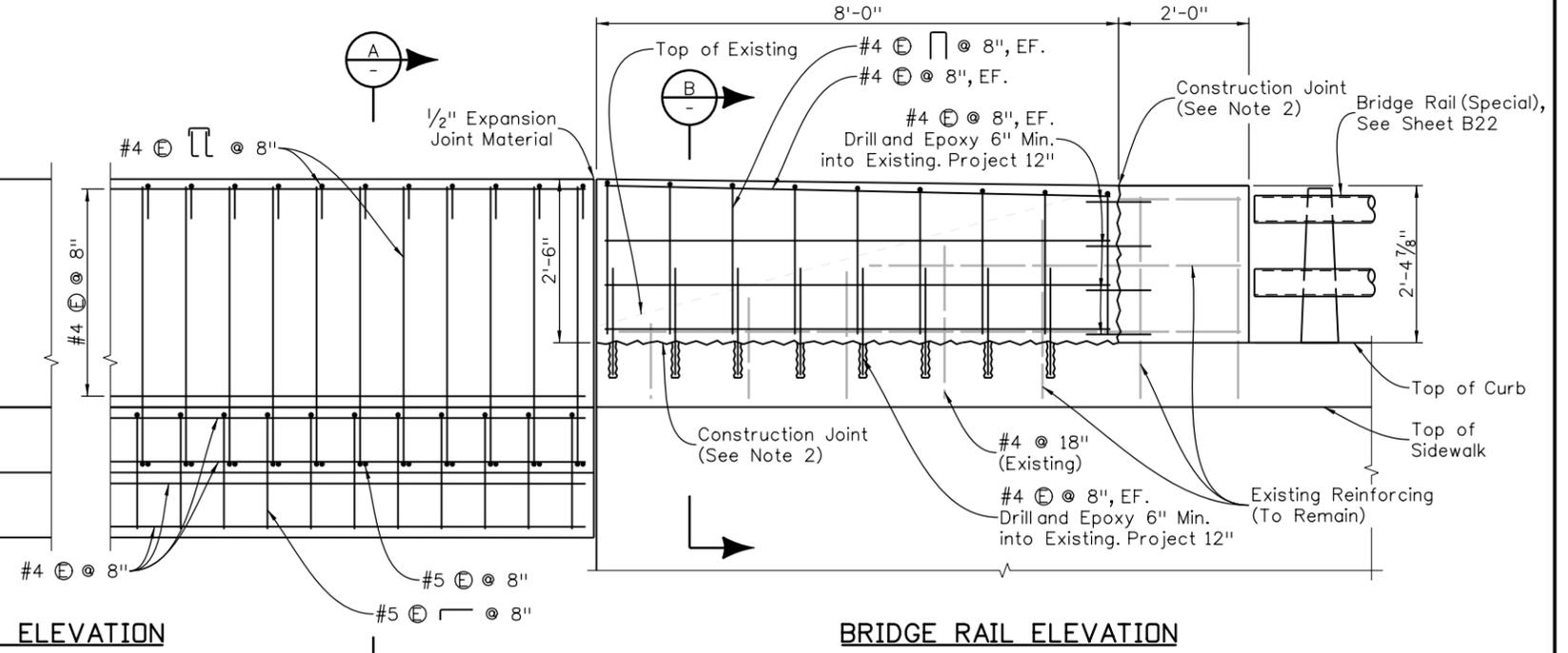
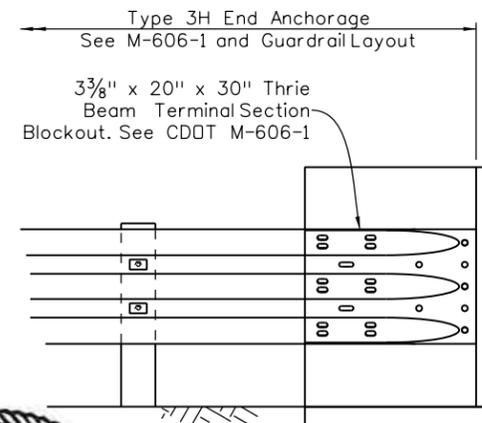


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Horiz. Scale: 1:1 Vert. Scale: As Noted			Revised:	Detailer: R. Artman	D-03-V-010
City Project Manager: Kevin Rens			Void:	Sheet Subset: BRIDGE	Subset Sheets: B23 of 26
DAVID EVANS AND ASSOCIATES INC. <small>1600 Broadway, Suite 800 Denver, Colorado 80202 Phone: 720.346.0969</small>	DENVER <small>THE MILE HIGH CITY</small>			Sheet Number 28	

- NOTES:**
- Concrete and reinforcing steel shall conform to the requirements of 601 and 602.
 - Intentionally roughen construction joint to a minimum 1/4" amplitude.
 - Concrete shall be Concrete Class D (Bridge).



* Blockout if conflicts with utilities with 1/2" expansion joint between utility conduit and concrete.



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File Name: 48thVia_MomentSlab_Dets_02.dgn	
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City Project Manager: Kevin Rens	

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Date:	Comments	Init.

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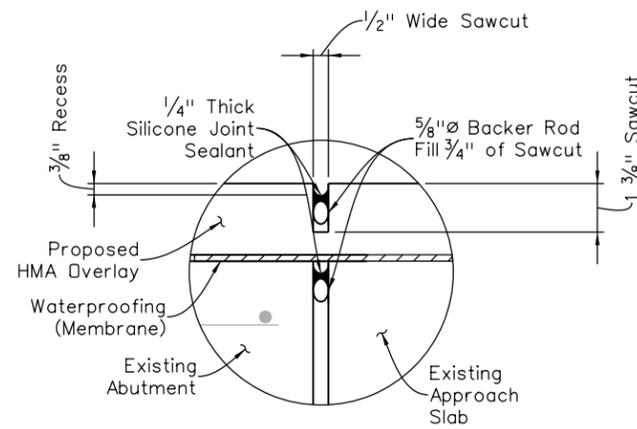
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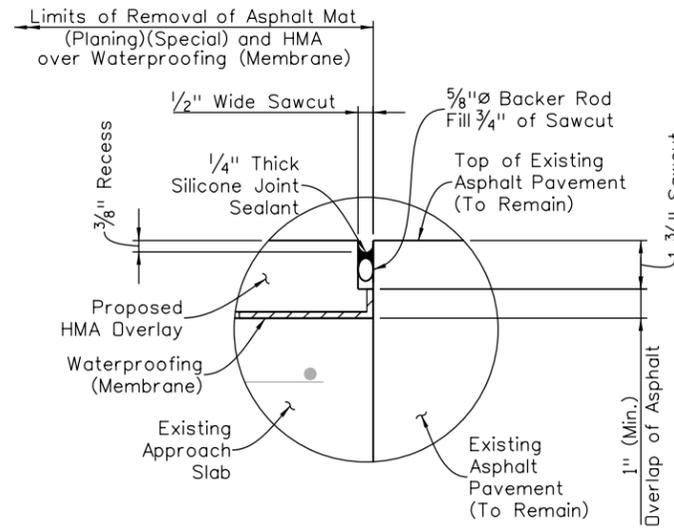
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Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B24 of 26
Sheet Subset:	BRIDGE		

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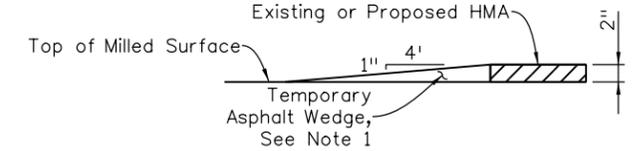
**ABUTMENT/ APPROACH SLAB
JOINT SEALANT DETAIL**



**END OF APPROACH SLAB
JOINT SEALANT DETAIL**

NOTES:

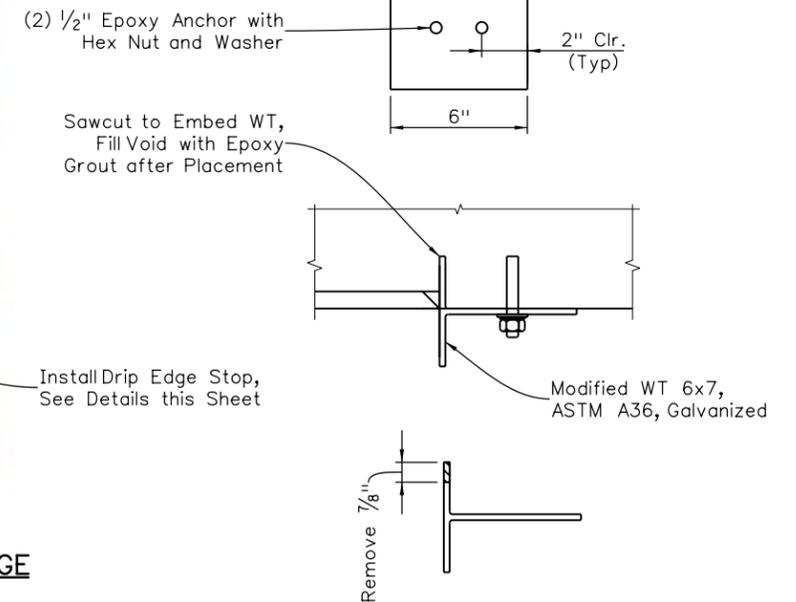
1. Temporary Asphalt Wedges will be measured and paid for as Bid Item 403 Hot Mix Asphalt.



**TEMPORARY ASPHALT
WEDGE DETAIL
(NTS)**



ABUTMENT 12 - DEFICIENT DRIP EDGE



DRIP EDGE STOP DETAILS

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File Name: 48thVia_MiscDets_01.dgn	
Horiz. Scale: 1:1 Vert. Scale: As Noted	
City Project Manager: Kevin Rens	

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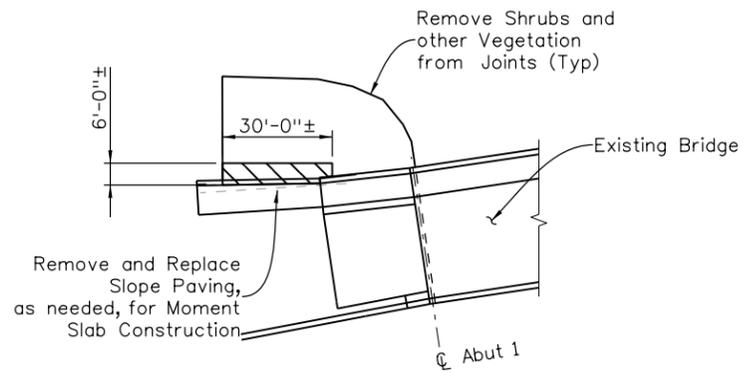
**DEPARTMENT OF TRANSPORTATION
& INFRASTRUCTURE**

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DENVER, CO 80202
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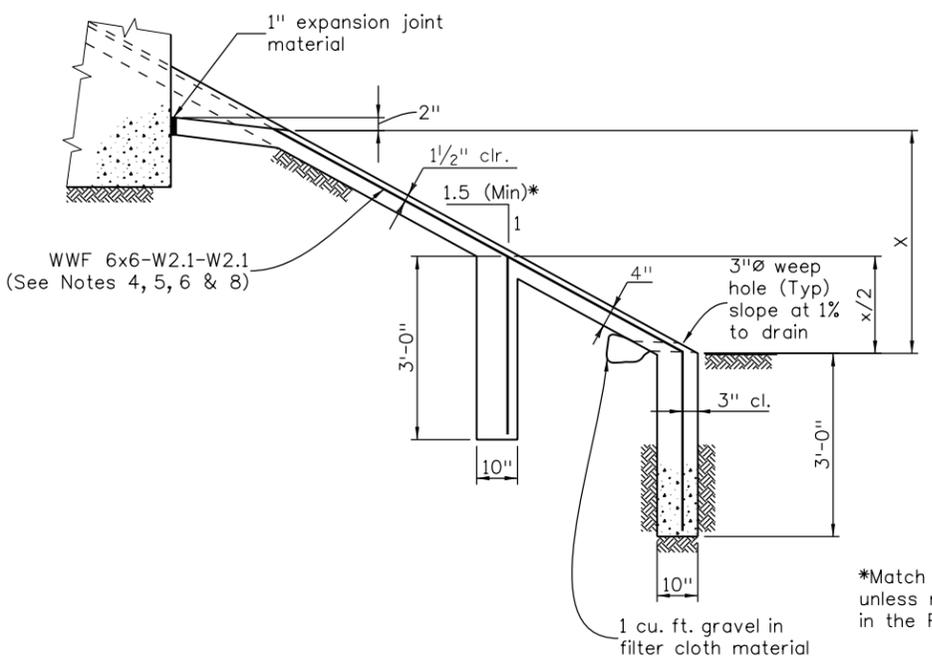
As Constructed
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Void:

48TH AVE VIADUCT REHABILITATION MISCELLANEOUS DETAILS			
Designer:	C. Keraga	Structure Numbers	D-03-V-010
Detailer:	R. Artman	Subset Sheets:	B25 of 26
Sheet Subset:	BRIDGE		

Project No./Code
201843741
Sheet Number
30



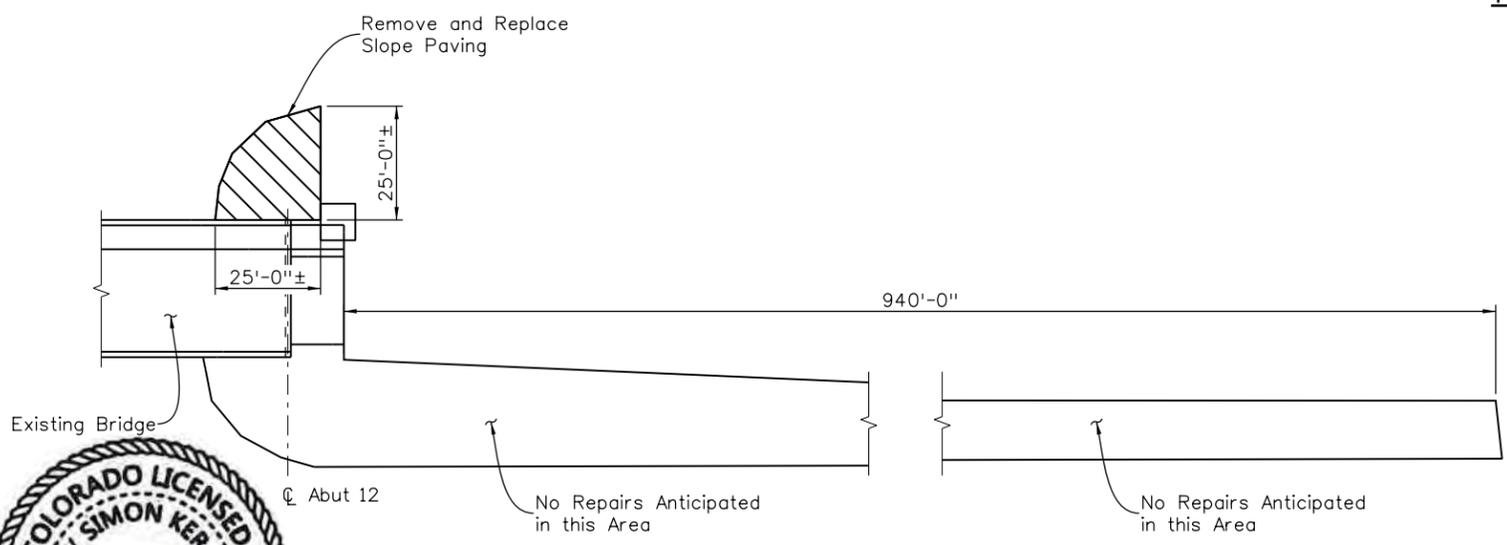
SLOPE PAVING ABUTMENT 1



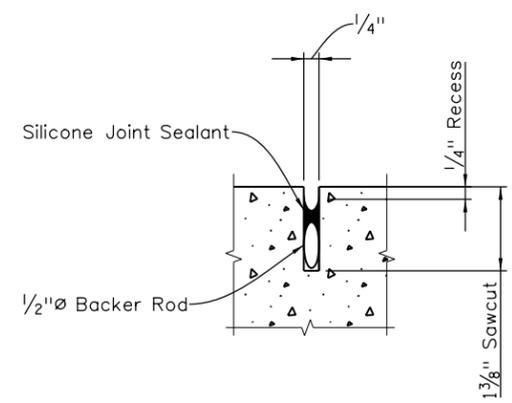
TYPICAL SECTION THRU SLOPE PAVING

- NOTES:**
- Expose sufficient reinforcing from existing slab to facilitate lap splice.
 - Wire fabric shall be 2" from the end of joints and shall lap 8" at splices.
 - Wire fabric shall conform to AASHTO M55 Specifications
 - 4.0 lbs. of Macro Fiber Reinforcement meeting ASTM C1116, per cubic yard of concrete, may be substituted for the WWF in this slope paving. If this substitution is made, 4 continuous #5 reinforcing bar shall be added equally spaced in the cutoff and toe walls. The fiber shall be added to the concrete mix in such a fashion that the fibers are uniformly dispersed in the concrete without visible balls or clumps in either the finished slope paving or in the plastic concrete delivered from the concrete truck.
 - Where slope or berm butts against structural concrete, separate with 1" expansion joint material unless shown otherwise.
 - Expansion joint material, welded wire fabric, reinforcing, concrete, gravel, and filter cloth will not be paid for separately, but shall be included in Item 507 Concrete slope and ditch paving.
 - Structure excavation for concrete slope and ditch paving shall be limited to the actual volume occupied by the slope paving concrete. Repair subgrade as directed by engineer.
 - All work associated with slope paving repair shall be included in Bid Item 507 Concrete Slope and Ditch Paving and Bid Item 202 Removal of slope and ditch paving

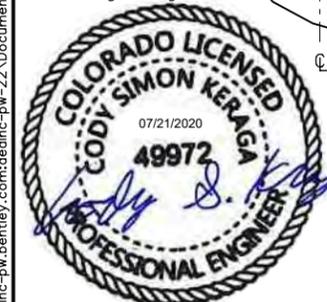
- LEGEND:**
- Approximate Area of Repair of Slope Paving (See Note 8)



SLOPE PAVING ABUTMENT 12



SEAL AT CONSTRUCTION JOINT



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File Name: 48thVia_SlopePavDets_01.dgn		Date:	Comments	Init.		No Revisions:			201843741		
Horiz. Scale: 1:1 Vert. Scale: As Noted						Revised:	Designer: C. Keraga	Structure Numbers	D-03-V-010		
City Project Manager: Kevin Rens						Void:	Detailer: R. Artman	Subset Sheets:	B26 of 26	Sheet Number 31	
<p>DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.346.0969</p>											

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The Owner, Site Developer, Contractor and/or their authorized agents shall ensure that all potential pollutants generated during demolition or construction work associated with this Project be prevented from discharge to stormwater conveyance systems in the vicinity of this Project Site in accordance with the following:

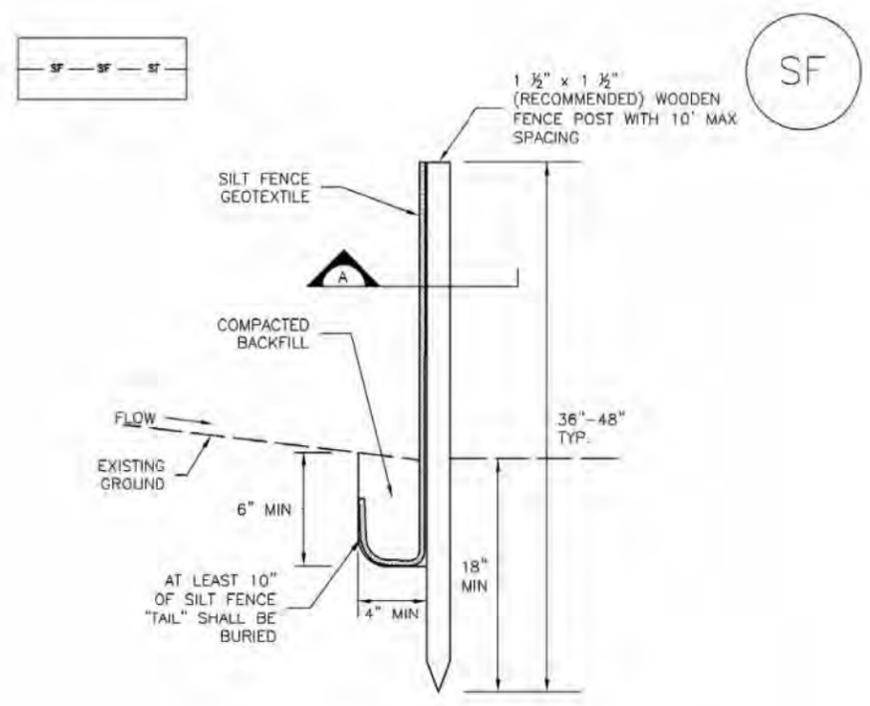
1. The Owner, Site Developer, Contractor and/or their authorized agents shall prevent sediment, debris and all other pollutants from entering the storm sewer system during all demolition, excavation, trenching, boring, grading, or other construction operations that are part of this Project. The Owner, Site Developer, Contractor and/or their authorized agents shall be held responsible for remediation of any adverse impacts to the Municipal Separate Storm Sewer System, receiving waters, waterways, wetlands, and or other public or private properties, resulting from work done as part of this Project.
2. The Owner, Site Developer, Contractor and/or their authorized agents shall remove all sediment, mud, construction debris, or other potential pollutants that may have been discharged to, or accumulate in the flow lines storm drainage appurtenances, and public rights of ways of the City and County of Denver as a result of construction activities associated with this Project. All removals shall be conducted in a timely manner.
3. The Owner, Site Developer, Contractor and/or their authorized agents shall insure that all loads of cut and fill material imported to or exported from this site shall be properly covered to prevent loss of the material during transport on public rights of way. (Sec.49-552; Revised Municipal Code)
4. The use of rebar to anchor best management practices, other than portable toilets, is prohibited.
5. The Owner, Site Developer, Contractor and/or their authorized agents shall implement the following Best Management Practices (BMPs) on site during construction:
 - i. **VEHICLE TRACKING CONTROL:** This BMP is required at all access points for ingress/egress from off-site impervious surfaces to construction site pervious areas that are used by vehicular traffic or construction equipment.
 - ii. **INLET PROTECTION:** This BMP is required on all existing or proposed storm sewer inlets in the vicinity of the construction site that may receive site runoff. The BMP must be appropriate to the type of storm inlet and appropriate for the ground surface at the inlet.
 - iii. **INTERIM SITE STABILIZATION:** This BMP is required to provide a measure for preventing the discharge of sediment from construction sites where overlot grading or other site disturbance has occurred. This BMP is particularly necessary on sites where construction activities/disturbance will be limited to small areas of the Project site. Soil stabilization measures shall be implemented within fourteen (14) days following completion of grading activities. Acceptable BMPs include:
 - a) Preserving existing vegetation
 - b) Seeding and planting
 - c) Mulching
 - d) Mulching and seeding
 - e) Temporary/Permanent re-vegetation operations
 - f) Chemical soil stabilizer application (requires WMD approval)
 - iv. **WASTE MANAGEMENT/CONTAINMENT:** This BMP requires that all construction wastes, fuels, lubricants, chemical wastes, trash. Sanitary wastes, contaminated soils or debris shall be contained on site, protected from contact with precipitation or surface runoff, periodically removed from the construction site, and properly disposed of.
 - v. **SPILL PREVENTION /CONTAINMENT:** This BMP defines the measures proposed for preventing, controlling, or containing spills of fuel, lubricants, or other pollutants; and protecting potential pollutants from contact with precipitation or runoff.

- vi. **CHUTE WASHOUT CONTAINMENT:** Water used in the cleaning of cement truck delivery chutes shall be discharged into a predefined, bermed containment area on the job site. The required containment area is to be bermed so that wash water is totally contained. Wash water discharged into the containment area shall be allowed to infiltrate or evaporate. Dried cement waste is removed from the containment area and properly disposed of.
 - a) Should a predefined bermed containment area not be available due to the project size, or lack of an area with a suitable ground surface for establishing a containment area, proper disposal of ready mix washout and rinse off water at the job site shall conform to approved techniques and practices.
 - b) The direct or indirect discharge of water containing waste cement to the storm sewer system is prohibited (Sec.56-102a, c; Revised Municipal Code, City and County of Denver).
- vii. **SWEEPING:** This BMP requires that impervious surfaces which are adjacent to or contained within construction sites be swept on a daily basis or as needed during the day when sediment and other materials are tracked or discharged on to them. Either sweeping by hand or use of Street Sweepers is acceptable. Street sweepers using water while sweeping is preferred in order to minimize dust. Flushing off paved surfaces with water is prohibited.
- viii. **PERIMETER CONTROL:** This BMP requires that a construction site install a perimeter control measure along the edge of the construction Site, to prevent, or filter the discharge of surface runoff from the construction site. The type of perimeter control used shall be determined based on site conditions and location. Maintenance and repair of the control measure shall occur as needed, in a timely manner.
- ix. **STOCK PILES:** Soils that will be stockpiled for more than thirty (30) days shall be protected from wind and water erosion within fourteen (14) days of stockpile construction. Stabilization of stockpiles located within 100 feet of receiving waters, or with slopes 3 to 1 or greater shall be completed within seven (7) days following stockpile construction. Stabilization and protection of the stockpile may be accomplished by any of the following: Mulching, Temporary/Permanent Revegetation Operations, Chemical Soil Stabilizer Application (requires Denver Public Works approval), or erosion control matting/Geotextiles. If stockpiles are located within 100 feet of receiving waters, a drainage way or the site perimeter, additional sediment controls shall be required.
- x. **SAW CUTTING OPERATIONS:** "The Contractor shall protect all storm sewer facilities adjacent to any location where pavement cutting operations involving wheel cutting, saw cutting, or abrasive water jet cutting are to take place. The Contractor shall remove and properly dispose of all waste products generated by said cutting operations on a daily basis or as needed throughout the work day. The discharge of any water contaminated by waste products from cutting operations to the storm sewer system is prohibited." (Sec.56-102a, c; Revised Municipal Code, City and County of Denver)
- xi. **STRUCTURAL CONTROLS:** Development sites that are required to provide detention and water quality enhancement facilities for storm runoff need to install the detention facilities early in the construction build-out of the site. Projects that are using underground detention are required to install a pretreatment structure or sedimentation basins as a means of treating potentially polluted storm water prior to entering the detention structure. Use of these structures is required for entrapping sediment and construction debris during the active construction phase of the project. The narrative section of the Management Plan is also required to address operation and maintenance of the structural controls being used as an active construction BMP.
6. Erosion and sediment control 'Best Management Practices' shall be maintained and kept in effective operating condition for the duration of this Project. Inspection of BMPs shall be performed at least seven (7) days and after any precipitation or snowmelt event with the potential to cause surface erosion. All necessary maintenance and repair shall be completed immediately upon discovery of any deficiency or defect.



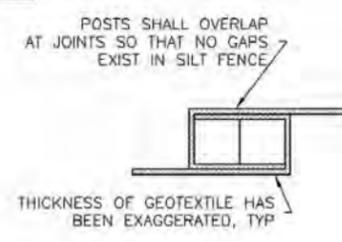
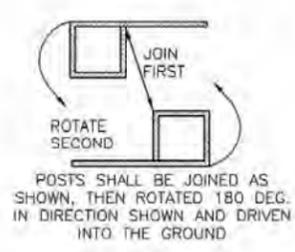
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Print Date: 2/4/2020		Sheet Revisions				As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION STORMWATER MANAGEMENT PLAN			Project No./Code 201843741
File Name: 48thVia_SWMP_Notes		Date:	Comments	Init.			GENERAL NOTES			
Horiz. Scale: 1:1 Vert. Scale: As Noted							Designer: G. Anderson	Structure	D-03-V-010	
City Project Manager: Kevin Rens							Detailer: G. Anderson	Numbers		
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.0969					Sheet Subset: SWMP	Subset Sheets: SP01 of 7	Sheet Number 32			



SF

SILT FENCE



SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



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City Project Manager: Kevin Rens
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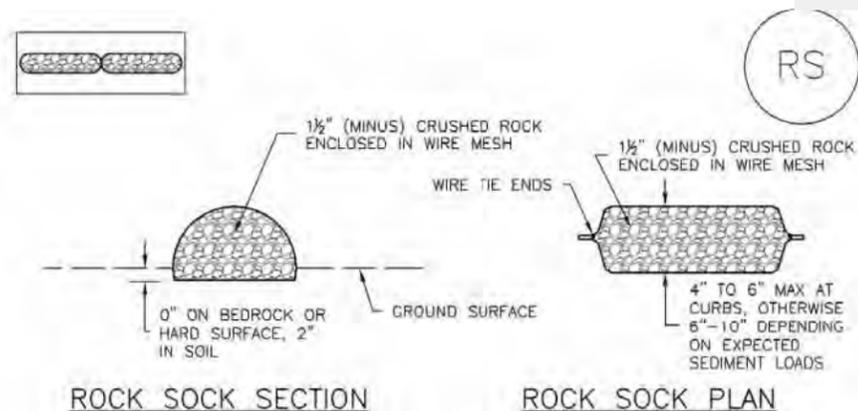
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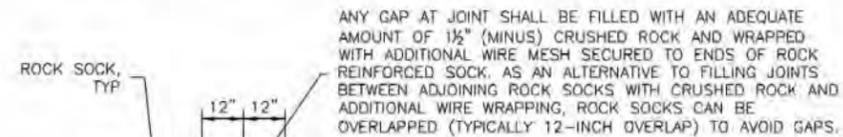
48TH AVE VIADUCT REHABILITATION STORMWATER MANAGEMENT PLAN STANDARD DETAILS			
Designer:	G. Anderson	Structure Numbers	D-03-V-010
Detailer:	G. Anderson		
Sheet Subset:	SWMP	Subset Sheets:	SP03 of 7

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ROCK SOCK SECTION

ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1 1/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
3/8"	0 - 5

MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.

ROCK SOCK INSTALLATION NOTES

- SEE PLAN VIEW FOR: -LOCATION(S) OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1 1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF 1/2". RECOMMENDED MINIMUM ROLL WIDTH OF 48"
- WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
- SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS-1. ROCK SOCK PERIMETER CONTROL

ROCK SOCK MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
- SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE ROCK SOCK.
- ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.



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 City Project Manager: Kevin Rens

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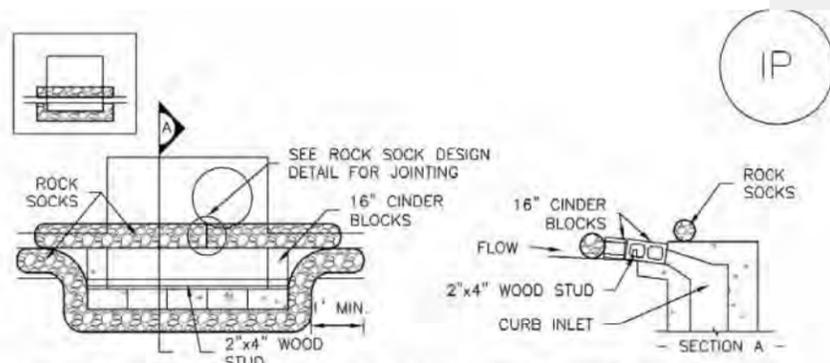
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As Constructed	48TH AVE VIADUCT REHABILITATION
No Revisions:	STORMWATER MANAGEMENT PLAN
Revised:	STANDARD DETAILS
Void:	

Designer: G. Anderson	Structure Numbers	D-03-V-010
Detailer: G. Anderson		
Sheet Subset: SWMP	Subset Sheets: SP04 of 7	

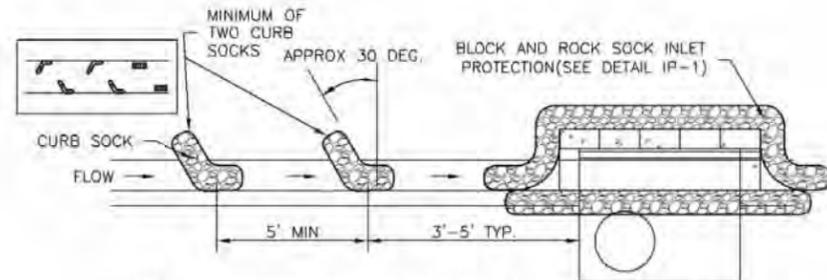
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Sheet Number	35



IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

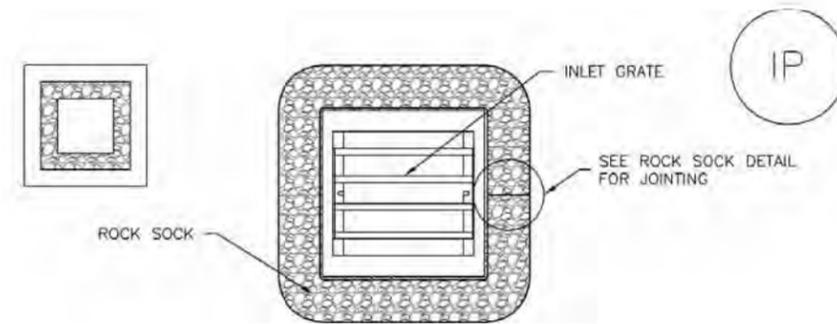
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

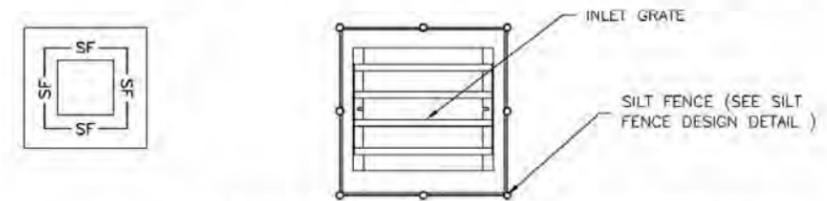
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

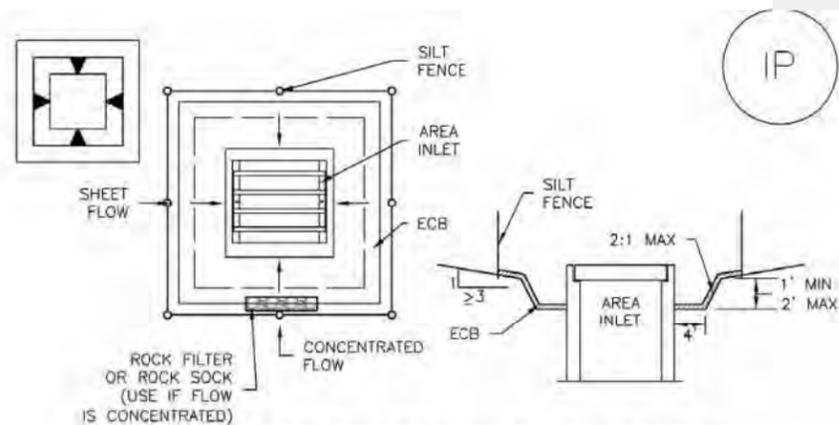
SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



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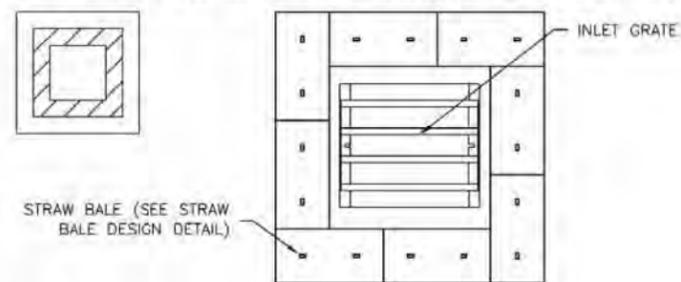
Print Date: 2/4/2020		Sheet Revisions				DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	As Constructed	48TH AVE VIADUCT REHABILITATION STORMWATER MANAGEMENT PLAN			Project No./Code 201843741
File Name: 48thVia_SWMP_Details.dgn		Date:	Comments	Init.				STANDARD DETAILS			
Horiz. Scale: 1:1 Vert. Scale: As Noted								Designer: G. Anderson	Structure Numbers	D-03-V-010	
City Project Manager: Kevin Rens								Revised:	Detailer: G. Anderson		
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.946.0969				Void:	Sheet Subset: SWMP	Subset Sheets: SP05 of 7	Sheet Number 36				



IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

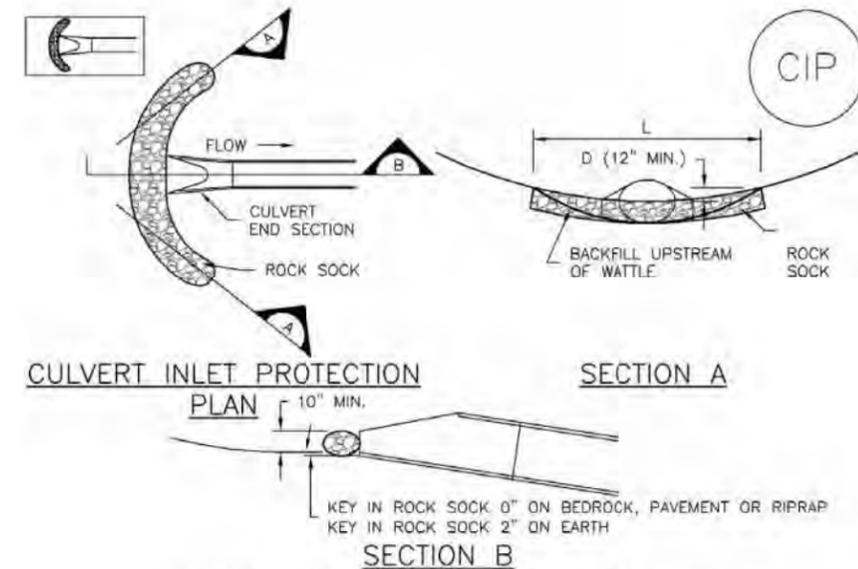
1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CIP-1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR -LOCATION OF CULVERT INLET PROTECTION.
2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

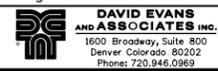
(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



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Print Date: 2/4/2020		Sheet Revisions Date: Comments Init.			DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION STORMWATER MANAGEMENT PLAN STANDARD DETAILS			Project No./Code 201843741 Sheet Number 37
File Name: 48thVia_SWMP_Details.dgn							Designer: G. Anderson Detailer: G. Anderson	Structure Numbers D-03-V-010		
Horiz. Scale: 1:1 Vert. Scale: As Noted							Sheet Subset: SWMP Subset Sheets: SP06 of 7			
City Project Manager: Kevin Rens										



GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF INLET PROTECTION.
 - TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

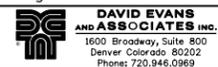
NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

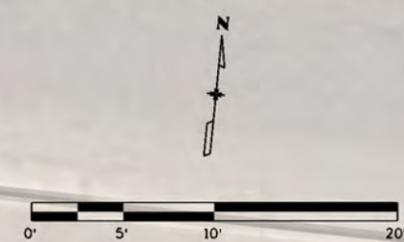
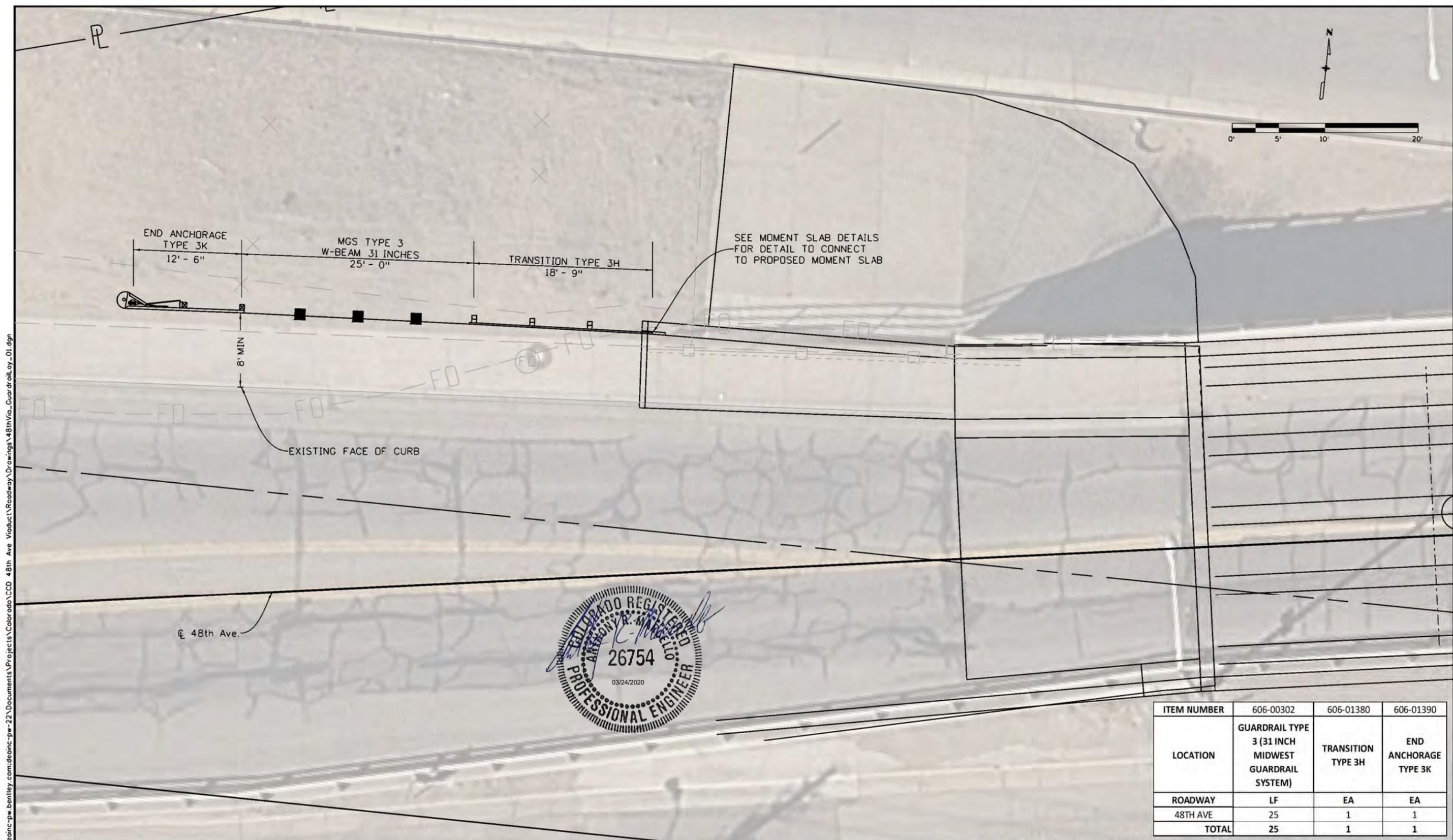
NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.



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Print Date: 2/4/2020		Sheet Revisions			<p>DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE</p> <p>201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544</p>	As Constructed		48TH AVE VIADUCT REHABILITATION STORMWATER MANAGEMENT PLAN STANDARD DETAILS		Project No./Code	
File Name: 48thVia_SWMP_Details.dgn		Date:	Comments	Init.		No Revisions:			201843741		
Horiz. Scale: 1:1 Vert. Scale: As Noted						Revised:	Designer: G. Anderson	Structure D-03-V-010			
City Project Manager: Kevin Rens						Void:	Detailer: G. Anderson	Numbers	Sheet Subset: SWMP	Subset Sheets: SP07 of 7	Sheet Number 38





ITEM NUMBER	606-00302	606-01380	606-01390
LOCATION	GUARDRAIL TYPE 3 (31 INCH MIDWEST GUARDRAIL SYSTEM)	TRANSITION TYPE 3H	END ANCHORAGE TYPE 3K
ROADWAY	LF	EA	EA
48TH AVE	25	1	1
TOTAL	25	1	1

Print Date: 3/25/2020
 File Name: 48thVia_GuardrailLay_01.dgn
 Horiz. Scale: 1:10 Vert. Scale: As Noted
 City Project Manager: Kevin Rens

Sheet Revisions		
Date:	Comments	Init.

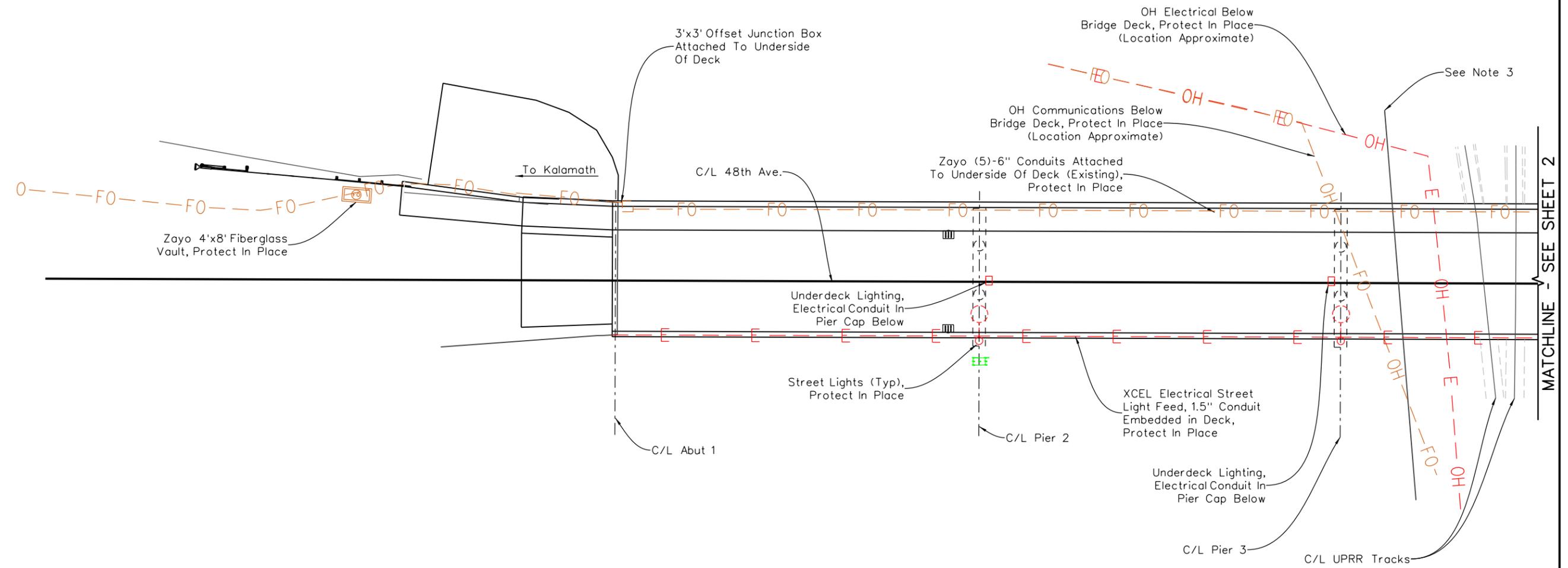
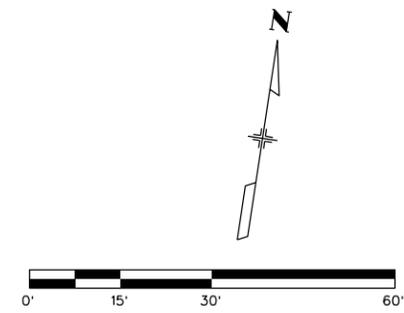
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
 201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

As Constructed
 No Revisions:
 Revised:
 Void:

48TH AVE VIADUCT REHABILITATION GUARDRAIL LAYOUT (1 OF 1)
 Designer: K. Dewey
 Detailer: R. Artrnan
 Sheet Subset: ROADWAY
 Structure Numbers: D-03-V-010
 Subset Sheets: RD1 of 1

Project No./Code
 201843741
Sheet Number 39

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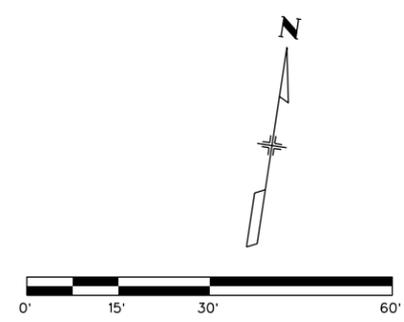
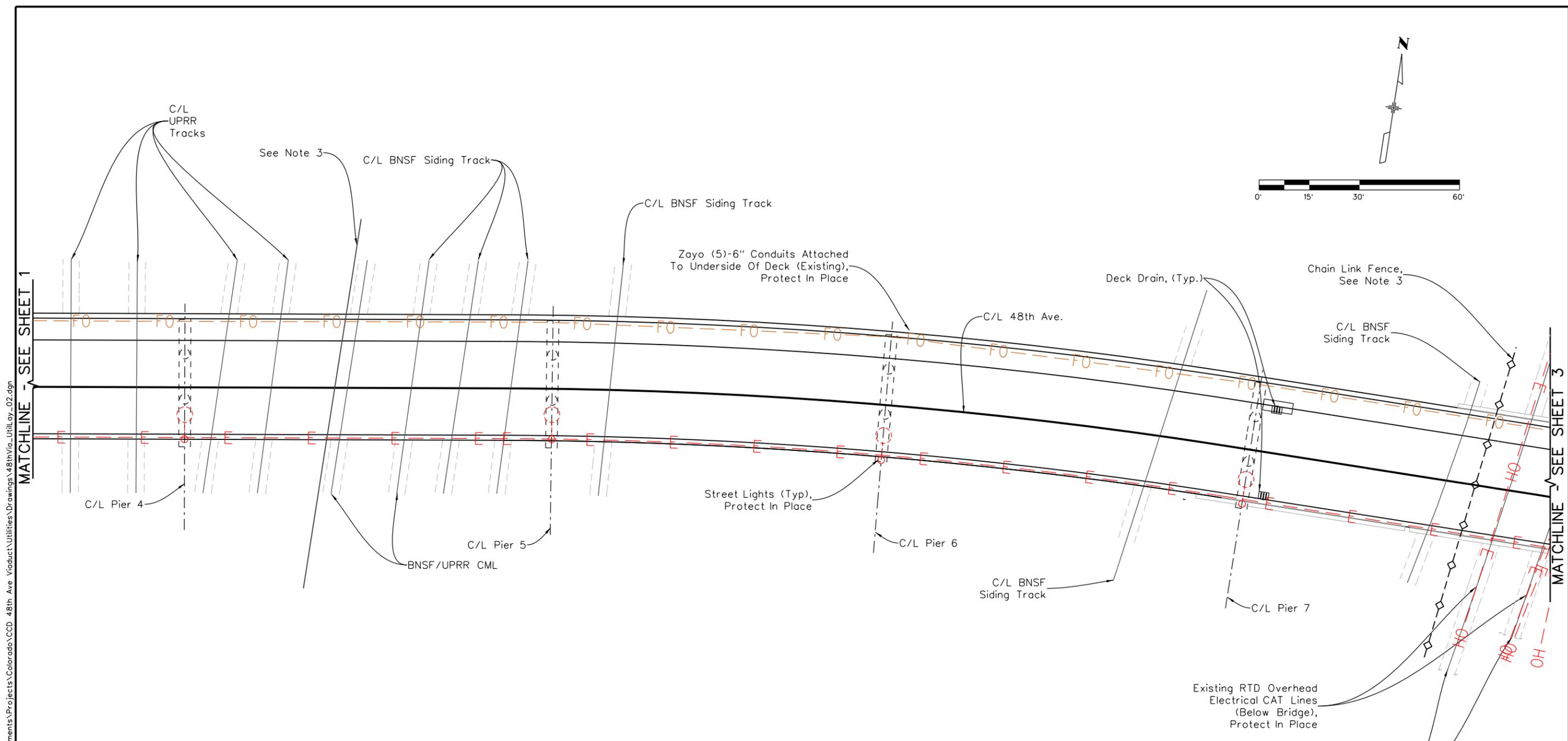
1. EXISTING UTILITY LOCATIONS AS SHOWN ARE APPROXIMATE.
2. ONLY UTILITIES ATTACHED TO THE STRUCTURE HAVE BEEN INCLUDED IN THESE DRAWINGS. CONSTRUCTION ACTIVITY OUTSIDE OF THE AREA MAY REQUIRE ADDITIONAL UTILITY INVESTIGATION.
3. REFER TO OWNERSHIP MAP FOR RAILROAD ROW.

PLAN



Print Date: 2/12/2020 File Name: 48thVia_UtilLay_01.dgn Horiz. Scale: 1:30 Vert. Scale: As Noted City Project Manager: Kevin Rens 633 17th Street, Suite 1500 Denver Colorado 80202 Phone: 303.953.0320	Sheet Revisions			DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	As Constructed No Revisions: Revised: Void:	48TH AVE VIADUCT REHABILITATION EXISTING UTILITY PLAN (1 OF 3)		Project No./Code 201843741 Sheet Number 40	
	Date:	Comments	Init.			Designer: K. Snitker	Structure Numbers		D-03-V-010
						Detailer: J. Gonzales	Sheet Subst: Utilities		Subset Sheets: UT1 of 3

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MATCHLINE - SEE SHEET 1

MATCHLINE - SEE SHEET 3

NOTES:

1. EXISTING UTILITY LOCATIONS AS SHOWN ARE APPROXIMATE.
2. ONLY UTILITIES ATTACHED TO THE STRUCTURE HAVE BEEN INCLUDED IN THESE DRAWINGS. CONSTRUCTION ACTIVITY OUTSIDE OF THE AREA MAY REQUIRE ADDITIONAL UTILITY INVESTIGATION.
3. REFER TO OWNERSHIP MAP FOR RAILROAD ROW.

PLAN



Print Date: 2/12/2020
File Name: 48thVia_UtilLay_02.dgn
Horiz. Scale: 1:30 Vert. Scale: As Noted
City Project Manager: Kevin Rens
633 17th Street, Suite 1500 Denver Colorado 80202 Phone: 303.953.0320

Sheet Revisions		
Date:	Comments	Init.

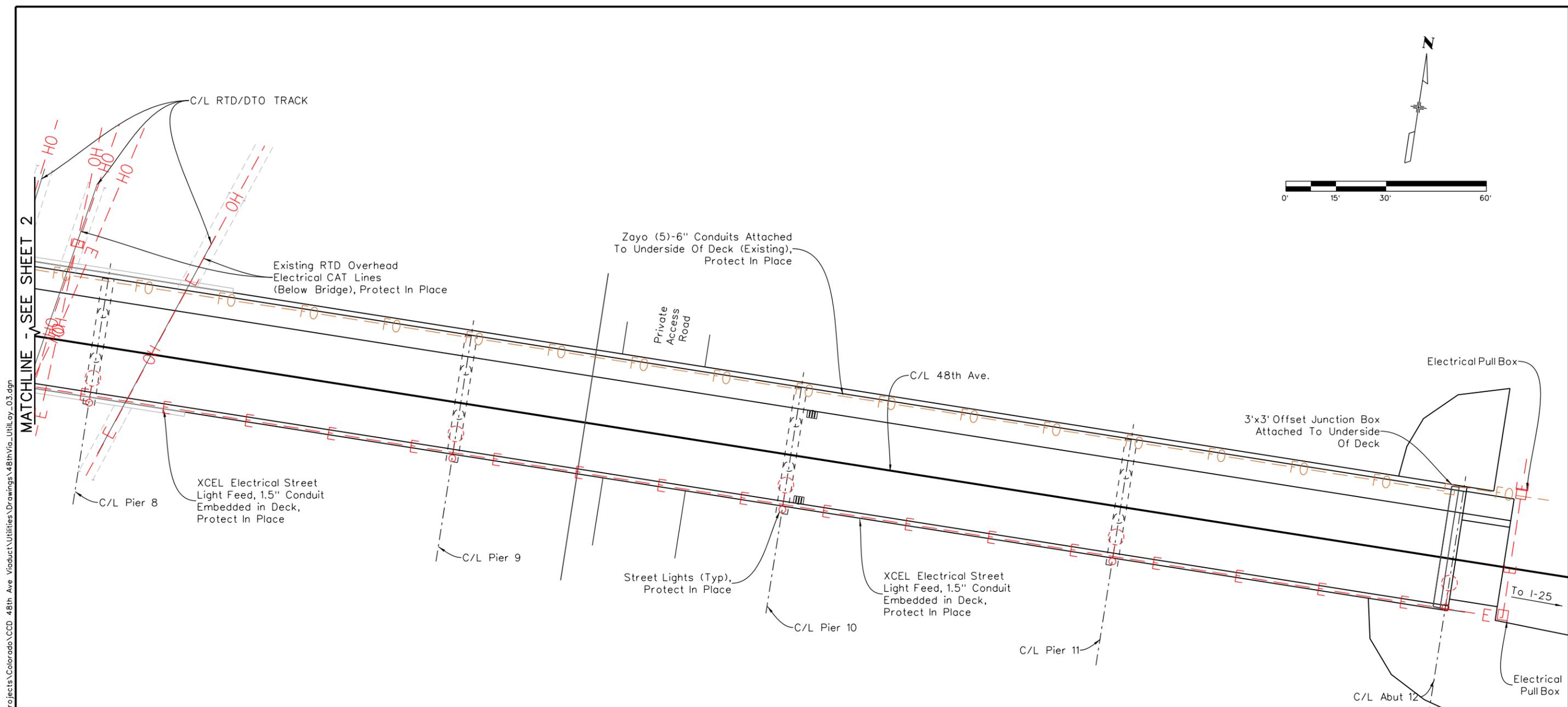
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
 201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

As Constructed
No Revisions:
Revised:
Void:

48TH AVE VIADUCT REHABILITATION EXISTING UTILITY PLAN (2 OF 3)			
Designer:	K. Snitker	Structure Numbers	D-03-V-010
Detailer:	J. Gonzales	Sheet Subset:	Utilities
Sheet Subset: Utilities		Subset Sheets:	UT2 of 3

Project No./Code
201843741
Sheet Number
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PLAN

NOTES:

1. EXISTING UTILITY LOCATIONS AS SHOWN ARE APPROXIMATE.
2. ONLY UTILITIES ATTACHED TO THE STRUCTURE HAVE BEEN INCLUDED IN THESE DRAWINGS. CONSTRUCTION ACTIVITY OUTSIDE OF THE AREA MAY REQUIRE ADDITIONAL UTILITY INVESTIGATION.
3. REFER TO OWNERSHIP MAP FOR RAILROAD ROW.



Print Date: 2/12/2020
File Name: 48thVia_UtilLay_03.dgn
Horiz. Scale: 1:30 Vert. Scale: As Noted
City Project Manager: Kevin Rens
TRIUNITY 633 17th Street, Suite 1500 Denver Colorado 80202 Phone: 303.953.0320

Sheet Revisions		
Date:	Comments	Init.

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

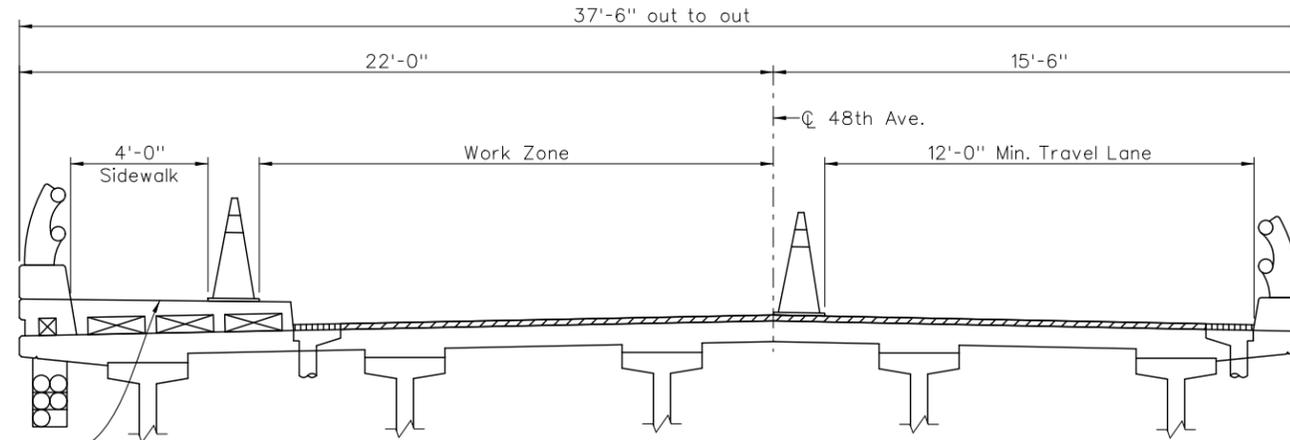
201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

As Constructed
No Revisions:
Revised:
Void:

48TH AVE VIADUCT REHABILITATION EXISTING UTILITY PLAN (3 OF 3)			
Designer: K. Snitker	Structure Numbers	D-03-V-010	
Detailer: J. Gonzales			
Sheet Subset: Utilities	Subset Sheets: UT3 of 3		

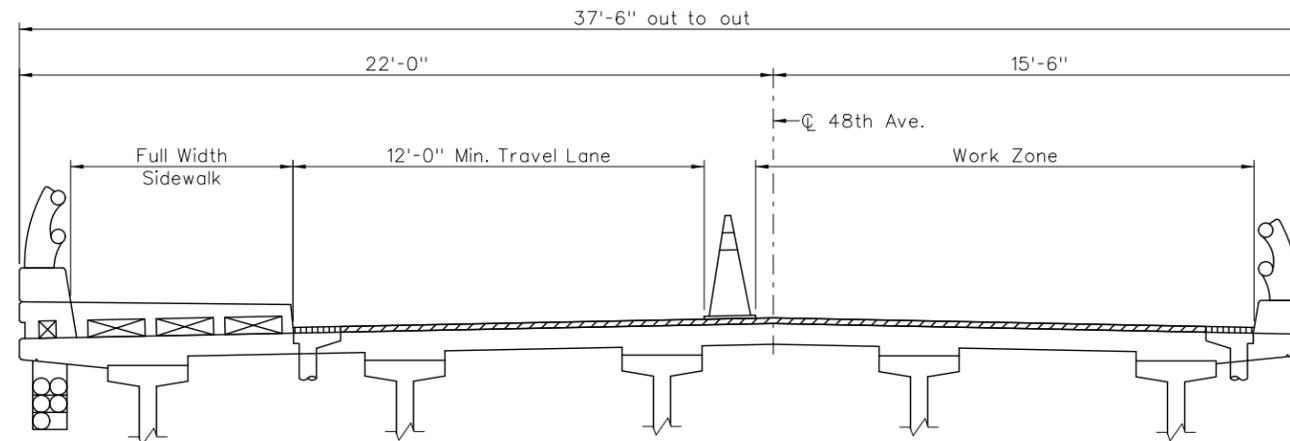
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Sheet Number 42

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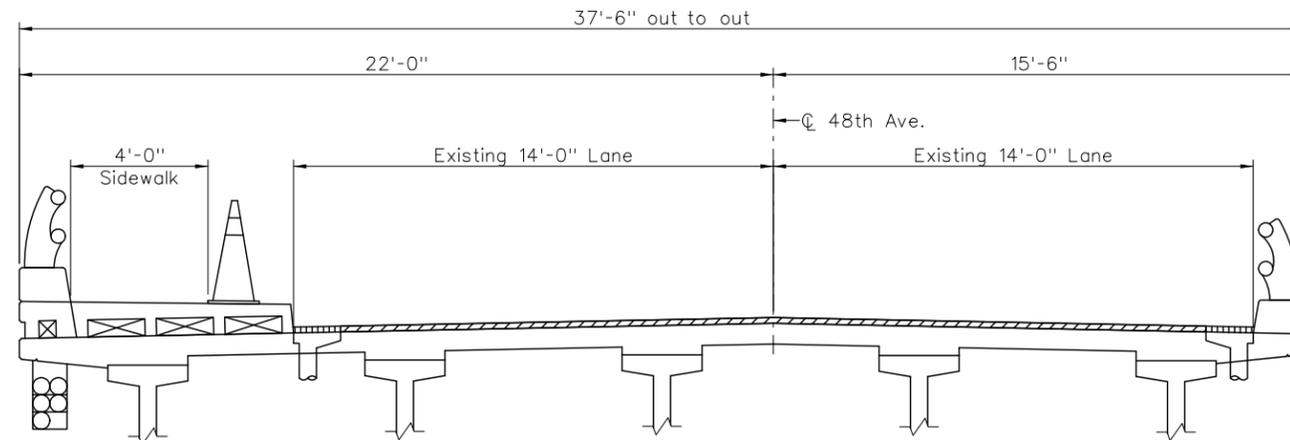


NOTE: PHASE 1 REQUIRES REPAIRS TO STREET SIDE PORTION OF SIDEWALK AREA. FULL PEDESTRIAN ACCESS SHALL BE PROVIDED ON EXISTING SIDEWALK THROUGH WORK ZONE AT ALL TIMES.

DAYTIME PHASE 1
ONE-WAY FLAGGING OPERATIONS
CONSTRUCT SIDEWALK REPAIR AND WESTBOUND LOCATIONS



DAYTIME PHASE 2
ONE-WAY FLAGGING OPERATIONS
CONSTRUCT EASTBOUND REPAIR LOCATIONS



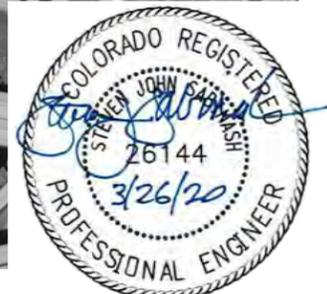
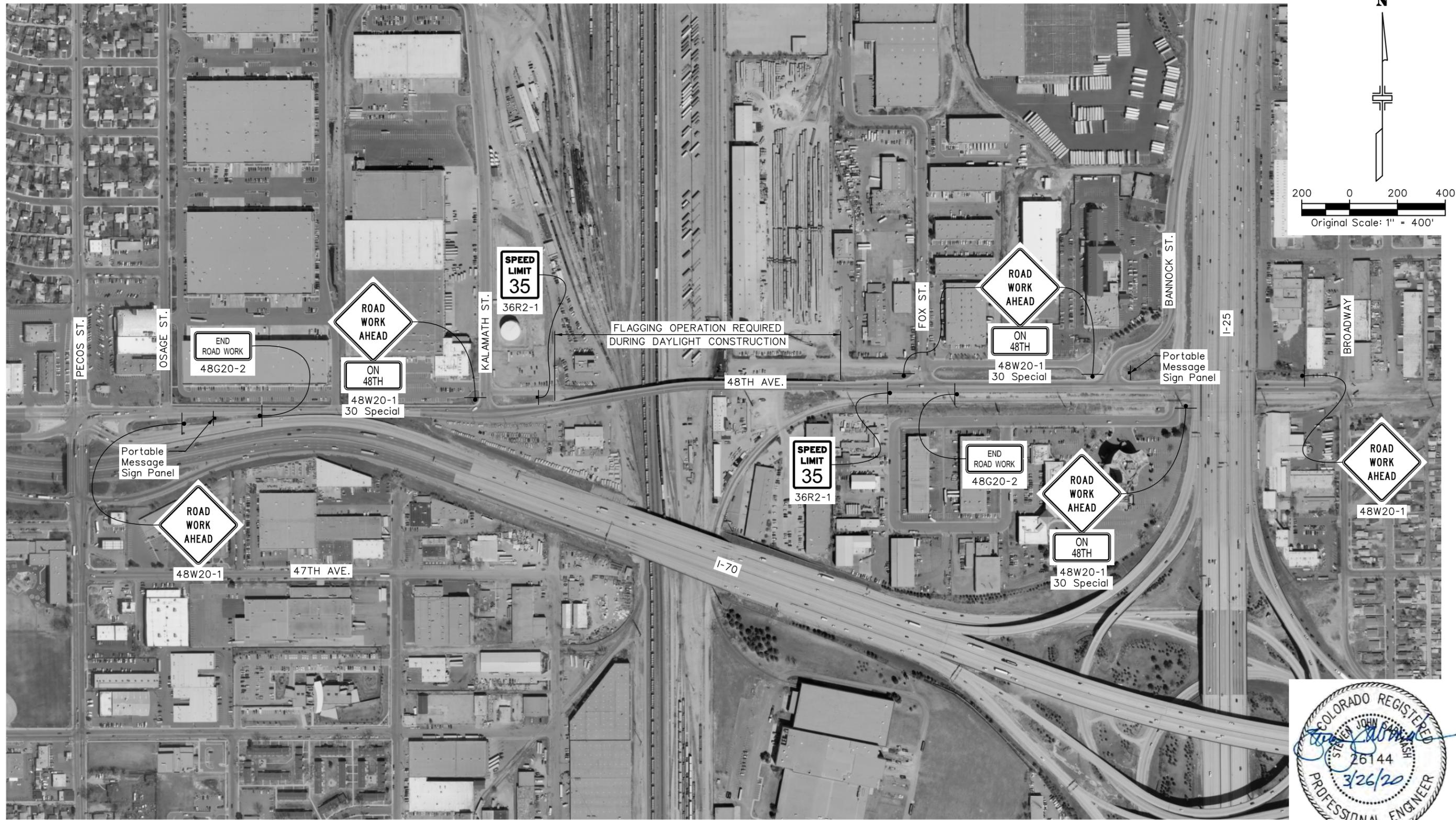
NIGHTTIME PHASE
SIDEWALK PROTECTION TO REMAIN IN PLACE.
RESUME TWO-WAY TRAFFIC

CONSTRUCTION PHASING NOTES:

1. ONLY DAYTIME WORK IS ALLOWED
2. PEDESTRIAN ACCESS MUST BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION
3. TRAFFIC CONTROL SUPERVISOR WILL FIELD ADJUST LOCATIONS AND SPACING AS NECESSARY TO ACCOMMODATE FIELD CONDITIONS. FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.
4. COORDINATE AS REQUIRED WITH RAILROAD TRAFFIC CONTROL. SEE SPECIFICATIONS.

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Print Date: 2/12/2020		Sheet Revisions			<p>DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544</p>	As Constructed	48TH AVE VIADUCT REHABILITATION CONSTRUCTION PHASING TYPICAL SECTIONS			Project No./Code
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Horiz. Scale: 1:5.33333 Vert. Scale: As Noted							Revised:	Designer: S. Sabinash	Structure Numbers	D-03-V-010
City Project Manager: Kevin Rens							Void:	Detailer: J. Mills	Subset Sheets:	TR1 of 6
<p>17877 W. 53rd Drive Golden, CO 80403 720-943-0955</p>					Sheet Subset: Traffic		Sheet Number 43			



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City Project Manager: Kevin Rens
17877 W. 53rd Drive Golden, CO 80403 720-943-0955

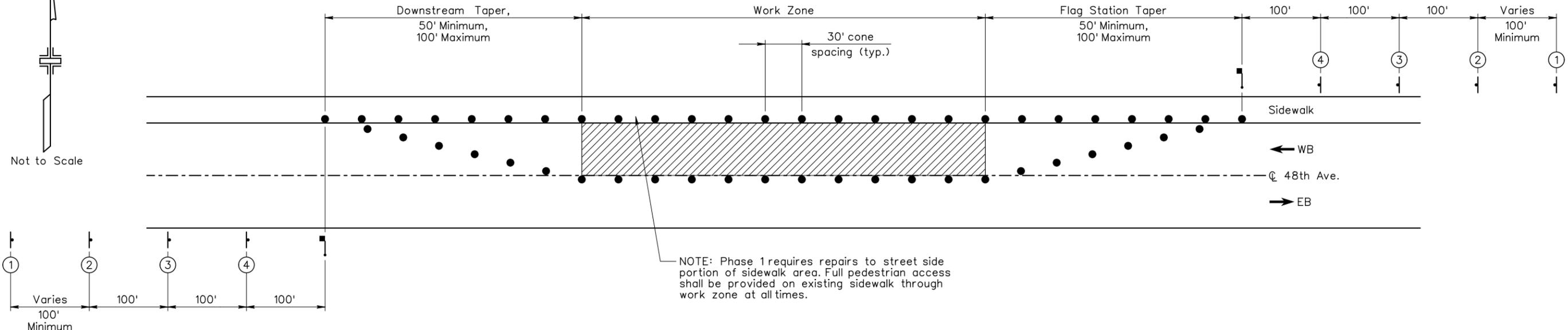
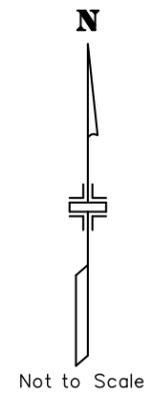
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 201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

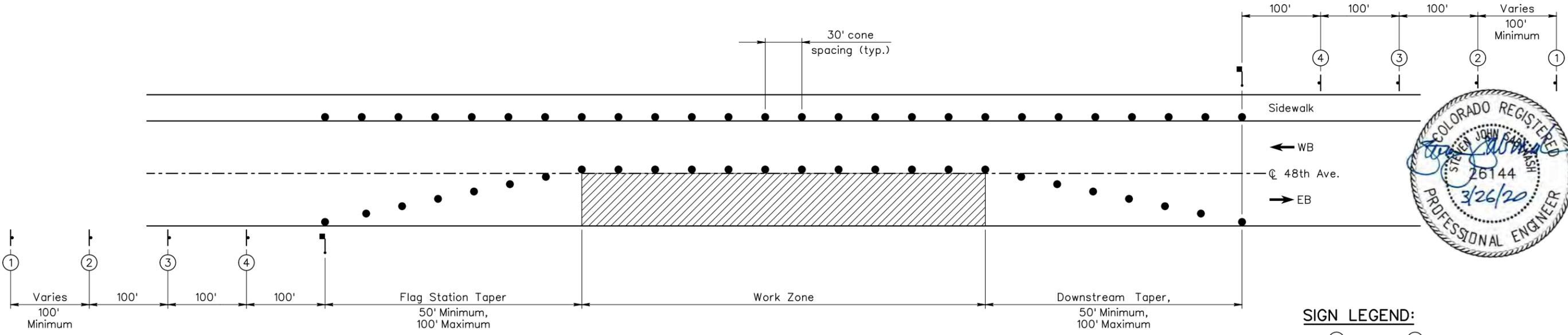
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Revised:
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48TH AVE VIADUCT REHABILITATION AREA SIGNING PLAN			
Designer:	S. Sabinash	Structure Numbers	D-03-V-010
Detailer:	J. Mills	Subset Sheets:	TR2 of 6
Sheet Subset:	Traffic		

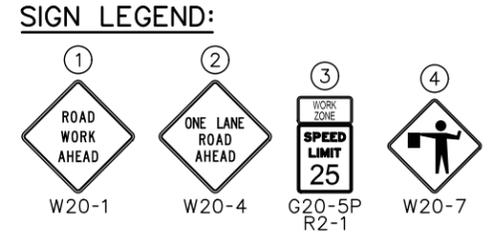
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Sheet Number	44



PHASE 1 FLAGGING OPERATION



PHASE 2 FLAGGING OPERATION



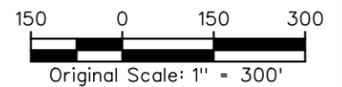
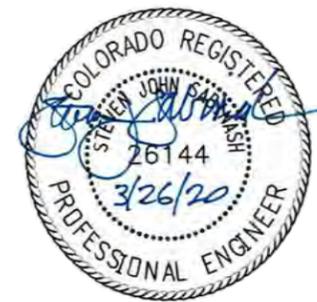
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Sheet Revisions																				
Date:	Comments	Init.																		
File Name: 39-48thVia_Traffic_flagging-plan.dgn Horiz. Scale: 1:100 City Project Manager: Kevin Rens 17877 W. 53rd Drive Golden, CO 80403 720-943-0955																				



NOTES:

1. NO CHANGES REQUIRED TO EXISTING PERMANENT SIGNING. ALL EXISTING SIGNS SHALL REMAIN.
2. INSTALL DOUBLE YELLOW LINES IN CENTER OF REHABILITATED ROADWAY SECTION. FACE-TO-FACE WIDTH IS 28' THEREFORE TWO 14' TRAVEL LANES SHALL BE PROVIDED.



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Print Date: 2/12/2020	
File Name: 41-48thVia_Traffic_signing_stripping.dgn	
Horiz. Scale: 1:300 Vert. Scale: As Noted	
City Project Manager: Kevin Rens	
17877 W. 53rd Drive Golden, CO 80403 720-943-0955	

Sheet Revisions		
Date:	Comments	Init.

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

201 WEST COLFAX AVENUE
 DENVER, CO 80202
 PHONE: (720) 913-4501
 FAX: (720) 913-4544

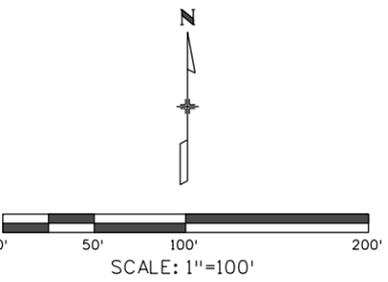
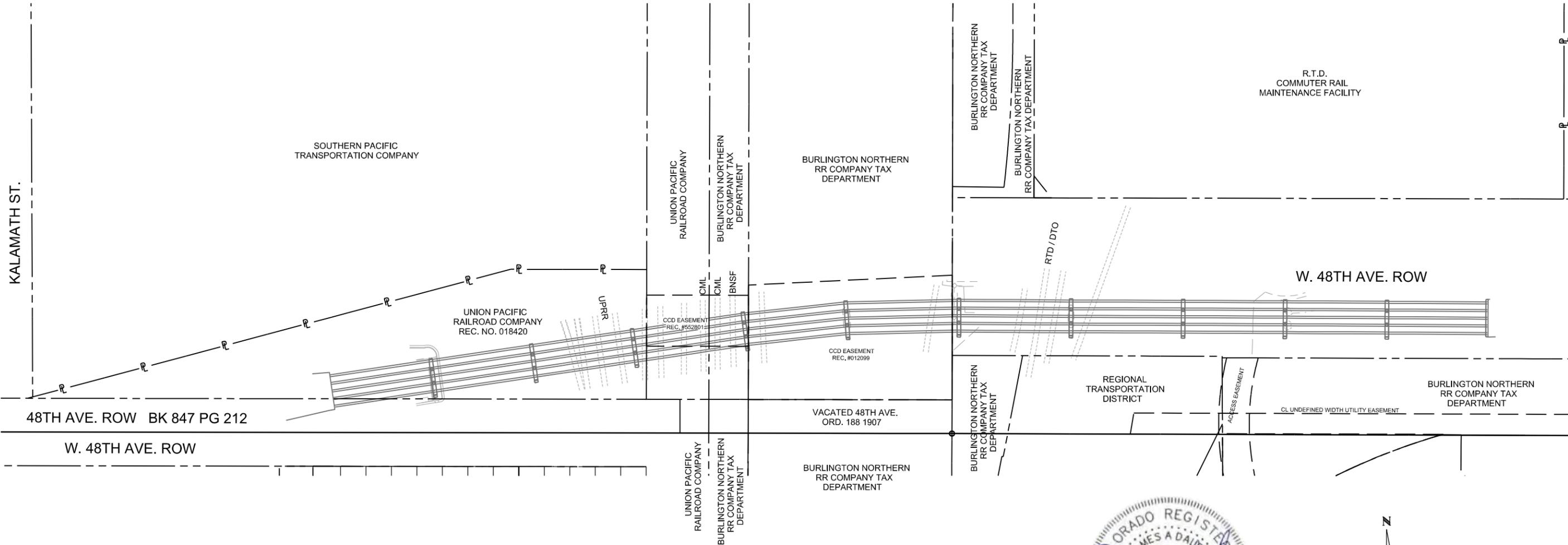
DENVER
THE MILE HIGH CITY

As Constructed
No Revisions:
Revised:
Void:

48TH AVE VIADUCT REHABILITATION SIGNING AND STRIPING PLAN			
Designer:	S. Sabinash	Structure Numbers	D-03-V-010
Detailer:	J. Mills	Subset Sheets:	TR5 of 6
Sheet Subset:	Traffic		

Project No./Code
201843741
Sheet Number
47

OWNERSHIP MAP



NOTE:
This ownership map is not a land survey plat, and is intended only to be a graphic representation of ownerships along and adjoining the project area in support of the 48th Avenue Viaduct rehabilitation project.

Print Date: 01-07-2020		Sheet Revisions	DEPARTMENT OF PUBLIC WORKS	As Constructed	48TH AVE VIADUCT REHABILITATION	Project No./Code
File Name: SV-BS-X-CCDN00000071-OwnerMap		Date: Comments Init.	201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544	No Revisions:	OWNERSHIP MAP	201843741
Horiz. Scale: 1" = 100' Vert. Scale: As Noted			DENVER THE MILE HIGH CITY	Revised:	Designer: J. Daley Structure Numbers: D-03-V-010	
City Project Manager: Kevin Rens				Void:	Detailer: J. Daley	
DAVID EVANS AND ASSOCIATES INC. 1600 Broadway, Suite 800 Denver Colorado 80202 Phone: 720.346.0969	0000				Sheet Subset: OM Subset Sheets: 1 of 1	Sheet Number 49

OFFICE OF THE SECRETARY OF STATE
OF THE STATE OF COLORADO

CERTIFICATE OF FACT OF GOOD STANDING

I, Jena Griswold, as the Secretary of State of the State of Colorado, hereby certify that, according to the records of this office,

SEMA CONSTRUCTION, INC.

is a

Corporation

formed or registered on 02/20/1991 under the law of Colorado, has complied with all applicable requirements of this office, and is in good standing with this office. This entity has been assigned entity identification number 19911010571 .

This certificate reflects facts established or disclosed by documents delivered to this office on paper through 12/15/2020 that have been posted, and by documents delivered to this office electronically through 12/16/2020 @ 09:37:20 .

I have affixed hereto the Great Seal of the State of Colorado and duly generated, executed, and issued this official certificate at Denver, Colorado on 12/16/2020 @ 09:37:20 in accordance with applicable law. This certificate is assigned Confirmation Number 12790978 .



A handwritten signature in blue ink that reads "Jena Griswold".

Secretary of State of the State of Colorado

*****End of Certificate*****

Notice: A certificate issued electronically from the Colorado Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Validate a Certificate page of the Secretary of State's Web site, <http://www.sos.state.co.us/biz/CertificateSearchCriteria.do> entering the certificate's confirmation number displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate. For more information, visit our Web site, <http://www.sos.state.co.us/> click "Businesses, trademarks, trade names" and select "Frequently Asked Questions."

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