

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Bid Form Package

Contract Number: 201948801



2018 Traffic Signal Construction

Master On-Call

January 11, 2019

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

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BID FORM AND SUBMITTAL PACKAGE**

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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. Designated forms must be completed and turned in at the time of Bid Opening. Bidders should refer to the Contract Documents, particularly the Instructions to Bidders, accompanying this package, in completing these forms.

FORM/ PAGE NO.	COMMENTS	COMPLETE
BF-4 – BF-5	a.) Acknowledgment signature and attestation required.	<input checked="" type="checkbox"/>
BF-6+	a.) Fill in individual bid item dollars and totals in Numerical figures only b.) Complete all blanks	<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 List of Proposed Minority /Woman Business Enterprise Bidders, Subcontractors, Suppliers, Manufacturers, or Brokers – check appropriate boxes.	<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-16	a.) If applicable, fully complete Joint Venture Affidavit	<input type="checkbox"/> N/A
BF-17 – BF-19	a.) If applicable, fully complete Joint Venture Eligibility Form (Submit 10 days prior to Bid Opening Date)	<input type="checkbox"/> N/A
BF-20	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 Control Number.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BF-21- BF-24	a.) Each bidder, as a condition of responsiveness to this solicitation, shall <u>complete and return</u> 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 subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. 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>

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT

CONTRACT NO. 201948801

2018 Traffic Signal Construction Master On-Call

BIDDER: Sturgeon Electric Company, Inc.
(Legal Name per Colorado Secretary of State)

ADDRESS: 12150 East 112th Ave
Henderson, CO 80640

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. 201948801**, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated **January 11, 2019**.

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 Public Works 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/Woman Owned Business Enterprise(s)
Commitment to Minority/Woman Business Enterprise Participation
M/WBE Letter(s) of Intent
Joint Venture Affidavit (if applicable)
Joint Venture Eligibility Form (if applicable)
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/Partial Lien Release Form
Final 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:

Name: Sturgeon Electric Company, Inc.

By: 

Jim Bushnell

Title: Vice President, CO Traffic

ATTEST:

By: 

Krysta Brewer, Assistant Secretary

[SEAL]



**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID FORM

**CONTRACT NO. 201948801
2018 Traffic Signal Construction Master On-Call**

BIDDER Sturgeon Electric Company, Inc.
(Legal Name per Colorado Secretary of State)

TO: The Manager of Public Works
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 January 11, 2019, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: **CONTRACT NO. 201948801**, 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 M/WBE Participation
Article III, Division 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/Partial Lien Release Form
Final Receipt
Change Orders (as applicable)
Federal Requirements (as applicable)
Prevailing Wage Rate Schedule(s)
Technical Specifications
Contract Drawing
Accepted Shop Drawings

Item No.	Description and Price	Estimated Quantity	Estimated Cost
202-00001	Removal of Structure at the unit price of \$ 995.00 per EACH.	24	\$ 23,880.00
202-00019	Removal of Inlet at the unit price of \$ 6,100.00 per EACH.	24	\$ 146,400.00
202-00195	Removal of Median cover at the unit price of \$ 24.00 per SQUARE YARD.	930	\$ 22,320.00
202-00200	Removal of Sidewalk at the unit price of \$ 17.15 per SQUARE YARD.	1,188	\$ 20,374.20
202-00201	Removal of Curb Head at the unit price of \$ 11.25 per LINEAR FOOT.	273	\$ 3,071.25
202-00203	Removal of Curb & Gutter at the unit price of \$ 10.25 per LINEAR FOOT.	2,245	\$ 23,011.25
202-00204	Removal of Combination Curb, Gutter & Walk at the unit price of \$ 11.25 per LINEAR FOOT.	247	\$ 2,778.75
202-00206	Removal of Concrete Curb Ramp at the unit price of \$ 23.00 per SQUARE YARD.	2,949	\$ 67,827.00
202-00210	Removal of Concrete Pavement at the unit price of \$ 24.00 per SQUARE YARD.	555	\$ 13,320.00
202-00220	Removal of Asphalt Mat at the unit price of \$ 24.00 per SQUARE YARD.	396	\$ 9,504.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
202-00810	Removal of Ground Sign at the unit price of \$ <u>200.00</u> per EACH.	32	\$ <u>6,400.00</u>
202-00821	Removal of Sign Panel at the unit price of \$ <u>75.00</u> per EACH.	96	\$ <u>7,200.00</u>
202-00828	Removal of Traffic Signal Equipment at the unit price of \$ <u>7,625.00</u> per EACH.	10	\$ <u>76,250.00</u>
203-00100	Muck Excavation at the unit price of \$ <u>66.00</u> per CUBIC YARD.	729	\$ <u>48,114.00</u>
203-01597	Potholing at the unit price of \$ <u>400.00</u> per EACH.	180	\$ <u>72,000.00</u>
203-01620	Sweeping at the unit price of \$ <u>155.00</u> per HOUR.	220	\$ <u>34,100.00</u>
203-02330	3-man Labor Crew at the unit price of \$ <u>300.00</u> per HOUR.	81	\$ <u>24,300.00</u>
208-00002	Erosion Log (12 Inch) at the unit price of \$ <u>20.00</u> per LINEAR FOOT.	300	\$ <u>6,000.00</u>
208-00035	Aggregate Bag at the unit price of \$ <u>20.00</u> per LINEAR FOOT.	300	\$ <u>6,000.00</u>
208-00045	Concrete Washout Structure at the unit price of \$ <u>1,400.00</u> per EACH.	12	\$ <u>16,800.00</u>
208-00051	Storm Drain Inlet Protection (Type 1) at the unit price of \$ <u>100.00</u> per LINEAR FOOT.	30	\$ <u>3,000.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
208-00052	Storm Drain Inlet Protection (Type 2) at the unit price of \$ 80.00 per LINEAR FOOT.	30	\$ 2,400.00
208-00103	Removal and Disposal of Sediment (Labor) at the unit price of \$ 100.00 per HOUR.	230	\$ 23,000.00
208-00105	Removal and Disposal of Sediment (Equipment) at the unit price of \$ 125.00 per HOUR.	230	\$ 28,750.00
208-00206	Erosion Control Supervisor at the unit price of \$ 415.00 per HOUR.	480	\$ 199,200.00
210-00476	Reset Microwave Vehicle Radar Detector (MVRD) at the unit price of \$ 1,300.00 per EACH.	1	\$ 1,300.00
210-00477	Reset Radio Communication Antenna (YAGI and OMNI) at the unit price of \$ 1,100.00 per EACH.	4	\$ 4,400.00
210-00810	Reset Ground Sign at the unit price of \$ 900.00 per EACH.	30	\$ 27,000.00
210-00815	Reset Sign Panel at the unit price of \$ 430.00 per EACH.	30	\$ 12,900.00
210-04010	Adjust Manhole at the unit price of \$ 375.00 per EACH.	5	\$ 1,875.00
210-04020	Modify Inlet at the unit price of \$ 665.00 per EACH.	8	\$ 5,320.00
210-04050	Adjust Valve Box at the unit price of \$ 700.00 per EACH.	12	\$ 8,400.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
211-03005	Dewatering at the unit price of \$ 2,700.00 per EACH.	3	\$ 8,100.00
212-00050	Sodding at the unit price of \$ 12.50 per SQUARE FOOT.	900	\$ 11,250.00
212-00100	Tree Protection at the unit price of \$ 1,000.00 per EACH.	18	\$ 18,000.00
212-01200	Landscape Restoration at the unit price of \$ 9.00 per SQUARE FOOT.	2,502	\$ 22,518.00
250-00010	Environmental Health and Safety Management at the unit price of \$ 3,300.00 per EACH.	3	\$ 9,900.00
304-06000	Aggregate Base Course at the unit price of \$ 50.00 per TON.	712	\$ 35,600.00
403-00720	HBP Patch at the unit price of \$ 175.00 per TON.	357	\$ 62,475.00
412-00190	Concrete Patching at the unit price of \$ 185.00 per SQUARE YARD.	33	\$ 6,105.00
412-00600	Concrete Pavement (6 Inch) at the unit price of \$ 105.00 per SQUARE YARD.	66	\$ 6,930.00
412-00800	Concrete Pavement (8 Inch) at the unit price of \$ 110.00 per SQUARE YARD.	66	\$ 7,260.00
412-01001	Intersection Valley Pan (8 Foot)(10 Inch) at the unit price of \$ 115.00 per LINEAR FOOT.	72	\$ 8,280.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
412-15061	Concrete Curb Head Replacement at the unit price of \$ 65.00 per LINEAR FOOT.	44	\$ 2,860.00
503-00036	Drilled Caisson (36 Inch) at the unit price of \$ 740.00 per LINEAR FOOT.	292	\$ 216,080.00
503-00037	Vacuumed Caisson (36 Inch) at the unit price of \$ 740.00 per LINEAR FOOT.	292	\$ 216,080.00
503-00048	Drilled Caisson (48 Inch) at the unit price of \$ 805.00 per LINEAR FOOT.	70	\$ 56,350.00
503-00200	Vacuumed Caisson (48 Inch) at the unit price of \$ 805.00 per LINEAR FOOT.	70	\$ 56,350.00
601-00000	Fast Track Portland Cement Concrete at the unit price of \$ 520.00 per CUBIC YARD.	190	\$ 98,800.00
603-01150	15 Inch Reinforced Concrete Pipe (CIP) at the unit price of \$ 1,200.00 per LINEAR FOOT.	72	\$ 86,400.00
603-01180	18 Inch Reinforced Concrete Pipe (CIP) at the unit price of \$ 1,200.00 per LINEAR FOOT.	72	\$ 86,400.00
604-16050	Type 16 Curb Inlet (Single)(4 Foot 8 Inches) at the unit price of \$ 16,100.00 per EACH.	5	\$ 80,500.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
604-16550	Type 16 Curb Inlet (Double)(8 Foot 5 Inches) at the unit price of \$ 24,850.00 per EACH.	2	\$ 49,700.00
604-19000	Type 14 Curb Inlet (6 Foot) at the unit price of \$ 26,200.00 per EACH.	5	\$ 131,000.00
604-19001	Type 14 Curb Inlet (9 Foot) at the unit price of \$ 33,450.00 per EACH.	2	\$ 66,900.00
604-30005	4 Foot DIA Manhole Slab Base (5 Foot) at the unit price of \$ 13,200.00 per EACH.	12	\$ 158,400.00
604-30010	4 Foot DIA Manhole Slab Base (10 Foot) at the unit price of \$ 25,250.00 per EACH.	2	\$ 50,500.00
607-11525	Fence (Plastic) at the unit price of \$ 8.00 per LINEAR FOOT.	690	\$ 5,520.00
608-00005	Concrete Sidewalk (Special) at the unit price of \$ 85.00 per SQUARE YARD.	114	\$ 9,690.00
608-00006	Concrete Sidewalk (6 Inch) at the unit price of \$ 80.00 per SQUARE YARD.	1,023	\$ 81,840.00
608-00010	Concrete Curb Ramp (Plastic dome) at the unit price of \$ 160.00 per SQUARE YARD.	2,100	\$ 336,000.00
608-00012	Concrete Curb Ramp (Cast Iron dome) at the unit price of \$ 165.00 per SQUARE YARD.	322	\$ 53,130.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
609-20100	Variable Height Curb Head W/Reinforcement at the unit price of \$ 60.00 per LINEAR FOOT.	45	\$ 2,700.00
609-21010	Curb & Gutter Type II, Section IB at the unit price of \$ 55.00 per LINEAR FOOT.	125	\$ 6,875.00
609-21020	Curb & Gutter Type II, Section 2B at the unit price of \$ 40.00 per LINEAR FOOT.	1,500	\$ 60,000.00
609-21023	Curb & Gutter Type IIB (Variable Height) Curb Head at the unit price of \$ 40.00 per LINEAR FOOT.	380	\$ 15,200.00
609-22021	Combination Curb, Gutter & Sidewalk (2 Foot - 8 Inch) at the unit price of \$ 65.00 per LINEAR FOOT.	38	\$ 2,470.00
609-22025	Combination Curb, Gutter & Sidewalk (3 Foot - 11 Inch) at the unit price of \$ 65.00 per LINEAR FOOT.	38	\$ 2,470.00
610-00026	Median cover Material (6 Inch Concrete)(#67 or #57 Aggregate) at the unit price of \$ 15.00 per SQUARE FOOT.	7,837	\$ 117,555.00
613-00206	2 Inch Electrical Conduits(Bored) at the unit price of \$ 30.00 per LINEAR FOOT.	3,058	\$ 91,740.00
613-00306	3 Inch Electrical Conduits(Bored) at the unit price of \$ 30.00 per LINEAR FOOT.	6,116	\$ 183,480.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
613-06000	Electric Meter Pedestal Cabinet and Base at the unit price of \$ <u>5,300.00</u> per EACH.	12	\$ <u>63,600.00</u>
613-07034	Pull Box (Type C) at the unit price of \$ <u>1,750.00</u> per EACH.	12	\$ <u>21,000.00</u>
613-07039	Pull Box (Type D) at the unit price of \$ <u>2,125.00</u> per EACH.	1	\$ <u>2,125.00</u>
613-10000	Wiring (Per Intersection) at the unit price of \$ <u>11,400.00</u> per EACH.	11	\$ <u>125,400.00</u>
613-13000	Luminaire (LED)(5300 Lumens)(55 Watt) at the unit price of \$ <u>950.00</u> per EACH.	48	\$ <u>45,600.00</u>
614-00011	Sign Panel (Class I) at the unit price of \$ <u>45.00</u> per SQUARE FOOT.	150	\$ <u>6,750.00</u>
614-00035	Sign Panel (Special) at the unit price of \$ <u>65.00</u> per SQUARE FOOT.	480	\$ <u>31,200.00</u>
614-00216	Steel Sign Post (2 x 2 Inch Tubing) at the unit price of \$ <u>55.00</u> per LINEAR FOOT.	250	\$ <u>13,750.00</u>
614-70100	Traffic Control Devices (Red Signal Enforcement) at the unit price of \$ <u>2,000.00</u> per EACH.	9	\$ <u>18,000.00</u>
614-70150	Pedestrian Signal Face (16") (Count Down) at the unit price of \$ <u>1,100.00</u> per EACH.	76	\$ <u>83,600.00</u>
614-70336	Traffic Signal Face (12-12-12) at the unit price of \$ <u>1,500.00</u> per EACH.	124	\$ <u>186,000.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-70338	Traffic Signal Face (12-12-12) Flashing Yellow at the unit price of \$ <u>1,500.00</u> per EACH.	30	\$ <u>45,000.00</u>
614-70339	Traffic Signal Face (12-12-12)(Programmable) at the unit price of \$ <u>4,600.00</u> per EACH.	6	\$ <u>27,600.00</u>
614-70448	Traffic Signal Face (12-12-12-12) Flashing Yellow at the unit price of \$ <u>1,800.00</u> per EACH.	46	\$ <u>82,800.00</u>
614-70449	Traffic Signal Face (12-12-12-12)(Programmable) at the unit price of \$ <u>7,000.00</u> per EACH.	2	\$ <u>14,000.00</u>
614-70451	Traffic Signal Face (12-12-12) HAWK at the unit price of \$ <u>1,700.00</u> per EACH.	8	\$ <u>13,600.00</u>
614-72855	Traffic Signal Controller and Cabinet at the unit price of \$ <u>24,000.00</u> per EACH.	12	\$ <u>288,000.00</u>
614-72860	Pedestrian Push Button and Instruction Sign at the unit price of \$ <u>500.00</u> per EACH.	92	\$ <u>46,000.00</u>
614-72862	Pedestrian Push Button (APS) at the unit price of \$ <u>1,900.00</u> per EACH.	8	\$ <u>15,200.00</u>
614-72863	Pedestrian Push Button Post Assembly at the unit price of \$ <u>2,200.00</u> per EACH.	4	\$ <u>8,800.00</u>
614-72866	Emergency Vehicle Traffic signal Priority Control System at the unit price of \$ <u>7,800.00</u> per EACH.	11	\$ <u>85,800.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-72885	Intersection Detection System (Camera)(FLIR) at the unit price of \$ <u>10,100.00</u> per EACH.	40	\$ <u>404,000.00</u>
614-72886	Intersection Detection System (Camera)(Video) at the unit price of \$ <u>9,800.00</u> per EACH.	4	\$ <u>39,200.00</u>
614-72890	Span Wire Cable at the unit price of \$ <u>25.00</u> per LINEAR FOOT.	400	\$ <u>10,000.00</u>
614-86800	Uninterrupted Power Supply System at the unit price of \$ <u>6,100.00</u> per EACH.	12	\$ <u>73,200.00</u>
614-87690	Ethernet Managed Field Switch at the unit price of \$ <u>4,700.00</u> per EACH.	12	\$ <u>56,400.00</u>
614	Bluetooth Traffic Management Detection System at the unit price of \$ <u>6,900.00</u> per EACH.	12	\$ <u>82,800.00</u>
614-81000	Traffic Signal-Light Pole Steel at the unit price of \$ <u>3,700.00</u> per EACH.	4	\$ <u>14,800.00</u>
614-81020	Traffic Signal-Light Pole Steel (2 Mast Arm) at the unit price of \$ <u>29,500.00</u> per EACH.	2	\$ <u>59,000.00</u>
614-81120	Traffic Signal-Light Pole Steel (1-20 Foot Mast Arm) at the unit price of \$ <u>12,300.00</u> per EACH.	2	\$ <u>24,600.00</u>
614-81125	Traffic Signal-Light Pole Steel (1-25 Foot Mast Arm) at the unit price of \$ <u>12,800.00</u> per EACH.	4	\$ <u>51,200.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-81130	Traffic Signal-Light Pole Steel (1-30 Foot Mast Arm) at the unit price of \$ <u>13,400.00</u> per EACH.	6	\$ <u>80,400.00</u>
614-81135	Traffic Signal-Light Pole Steel (1-35 Foot Mast Arm) at the unit price of \$ <u>14,000.00</u> per EACH.	6	\$ <u>84,000.00</u>
614-81140	Traffic Signal-Light Pole Steel (1-40 Foot Mast Arm) at the unit price of \$ <u>14,600.00</u> per EACH.	6	\$ <u>87,600.00</u>
614-81145	Traffic Signal-Light Pole Steel (1-45 Foot Mast Arm) at the unit price of \$ <u>16,500.00</u> per EACH.	6	\$ <u>99,000.00</u>
614-81150	Traffic Signal-Light Pole Steel (1-50 Foot Mast Arm) at the unit price of \$ <u>16,900.00</u> per EACH.	3	\$ <u>50,700.00</u>
614-81155	Traffic Signal-Light Pole Steel (1-55 Foot Mast Arm) at the unit price of \$ <u>17,400.00</u> per EACH.	4	\$ <u>69,600.00</u>
614-81160	Traffic Signal-Light Pole Steel (1-60 Foot Mast Arm) at the unit price of \$ <u>20,000.00</u> per EACH.	2	\$ <u>40,000.00</u>
614-81165	Traffic Signal-Light Pole Steel (1-65 Foot Mast Arm) at the unit price of \$ <u>21,000.00</u> per EACH.	1	\$ <u>21,000.00</u>
614-81170	Traffic Signal-Light Pole Steel (1-70 Foot Mast Arm) at the unit price of \$ <u>21,500.00</u> per EACH.	1	\$ <u>21,500.00</u>
614-84100	Traffic Signal Pedestal Pole Aluminum (10 Foot) at the unit price of \$ <u>3,100.00</u> per EACH.	4	\$ <u>12,400.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-84150	Traffic Signal Pedestal Pole Aluminum (15 Foot) at the unit price of \$ 3,200.00 per EACH.	4	\$ 12,800.00
614-85316	Traffic Signal Span Wire Pole (Steel)(16 Inch) at the unit price of \$ 17,000.00 per EACH.	4	\$ 68,000.00
614-86105	Telemetry (Field) at the unit price of \$ 4,000.00 per EACH.	12	\$ 48,000.00
614-87333	Closed Circuit Television System (Traffic Surveillance) at the unit price of \$ 5,800.00 per EACH.	12	\$ 69,600.00
623	Sprinkler system-Adjust Sprinkler at the unit price of \$ 85.00 per EACH.	432	\$ 36,720.00
623	Sprinkler system-New Sprinkler Head at the unit price of \$ 165.00 per EACH.	238	\$ 39,270.00
623	Sprinkler System-Irrigation Reconstruction at the unit price of \$ 35.00 per LINEAR FOOT.	946	\$ 33,110.00
625-00001	Construction Surveying (Hourly) at the unit price of \$ 275.00 per HOUR.	240	\$ 66,000.00
627-00005	Epoxy Pavement Marking at the unit price of \$ 370.00 per GALLON.	20	\$ 7,400.00
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol)(90 Mil) at the unit price of \$ 26.00 per SQUARE FOOT.	552	\$ 14,352.00

Item No.	Description and Price	Estimated Quantity	Estimated Cost
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-StopBar)(90 Mil) at the unit price of \$ <u>14.00</u> per SQUARE FOOT.	13,522	\$ <u>189,308.00</u>
629-01050	Monument Box at the unit price of \$ <u>375.00</u> per EACH.	12	\$ <u>4,500.00</u>
629-01065	Survey Monument at the unit price of \$ <u>650.00</u> per EACH.	120	\$ <u>78,000.00</u>
630-00003	Uniformed Traffic Control at the unit price of \$ <u>150.00</u> per HOUR.	96	\$ <u>14,400.00</u>
630-00018	Traffic control - Local at the unit price of \$ <u>2,200.00</u> per DAY.	88	\$ <u>193,600.00</u>
630-00019	Traffic control - Arterials/Collector at the unit price of \$ <u>2,800.00</u> per DAY.	176	\$ <u>492,800.00</u>
A/W 01	Mobilization at the unit price of \$ <u>300,000.00</u> per ALLOWANCE.	1	\$ <u>\$300,000.00</u>

Bid Items Total Amount (202-00001 through A/W 01 (One Hundred Twenty-Nine [129]) total bid items which includes (One [1]) Allowance) \$ 7,741,688.45

Textura ® Fee from table on Page BF-3 (based on Bid Items Total Amount) \$ 12,200.00

Bid Items Total Amount plus Textura® Fee equals Total Bid Amount \$ 7,753,888.45

Total Bid Amount

Seven Million, Seven Hundred Fifty Three Thousand, Eight Hundred and Eighty Eight Dollars and Forty Five Cents

Dollars (\$ 7,753,888.45)

If the Manager mails a written Notice of Apparent Low Bidder, addressed to the Bidder's business address stated on this Bid Form, the Undersigned Bidder shall, in accordance with the Contract Documents, be ready to, and shall, within five (5) days after the date of the Notice: (i) execute the attached form of Contract in conformity with this bid; (ii) furnish the required proofs of insurance; and (iii) furnish the required bond or bonds in the sum of the full amount of this bid, executed by a surety company acceptable to the Manager.

The Liberty Mutual Surety, a corporation of the State of Mass., is hereby offered as Surety on said bond. If such surety is not approved by the Manager, another and satisfactory surety company shall be furnished.

Enclosed with this bid is a bid guarantee, as defined in the attached Instructions to Bidders, in the amount of 5% of Amount Bid. The Undersigned Bidder agrees that the entire amount of this bid guarantee is to be paid to and become the property of the City as liquidated damages, and not as a penalty, if: (i) the bid is considered to be the best by the City; (ii) the City notifies the Undersigned Bidder that it is the Apparent Low Bidder; and (iii) the Undersigned Bidder fails to execute the Contract in the form prescribed or to furnish the required bond and proofs of insurance, within five (5) days after the date of such notification.

The following persons, firms or corporations are interested with the Undersigned Bidder in this bid:

Name: None Name: _____

Address: _____ Address: _____

If there are no such persons, firms, or corporations, please so state in the following space:

None

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
Direction Drilling	1.75%	Drilltech Direction Drilling
		7080 York St. Denver, CO 80229
Concrete, C&G, Sidewalk	11.24%	Chato's Concrete, LLC,
		8326 Quivas Way, Denver, CO. 80221
Traffic Control	7.08%	Zenitram Traffic Service, Inc.
		4284 Meadow Lark Rd, Fort Lupton, CO. 80621
Caisson Drilling	1.62%	Ludwig Drilling, Inc.
		704 Topeka Way, Castle Rock, CO. 80109
Pavement Markings	1.69%	American Striping Company
		3075 South Tejon Street Englewood, CO 80110
Curb Inlet and RCP Installation	9.07%	KECI Colorado Inc.
		5750 W. Airport Rd., Sedalia, CO. 80135

(Copy this page if additional room is required.)



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

**List of Proposed
MWBE
Bidders, Subcontractors,
Suppliers (Manufacturers) or
Brokers**

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1000
DSBO@denvergov.org

City & County of Denver Contract No.: 201048801

The undersigned Bidder proposes to utilize all listed firms. The following MWBE(s) firms listed are **CURRENTLY** certified by the City and County of Denver. Only the level of MWBE participation listed at the bid opening will count toward satisfaction of the project goal. Only bona fide commissions may be counted for Brokers. MWBE prime bidders must detail their bid information below. Please copy and attach this page to list additional MWBE.

Prime Bidder

Business Name: Sturgeon Electric Company, Inc.

Address: 12150 East 112th Ave, Henderson, CO 80640

Contact Person: Timothy McGinn

Type of Service:
Traffic Signal Installation/Electrical

Dollar Amount \$:
\$3,800,00.00

Percent of
Project 49%

Certified MWBE Prime Bidder

Business Name: N/A

Address:

Contact Person:

Type of Service:

Dollar Amount \$:

Percent of
Project

Subcontractors, Suppliers Manufacturers or Brokers (check one box)

☒ Subcontractor (✓) ☐ Supplier (✓) ☐ Manufacturer (✓) ☐ Broker (✓)

Business Name: Chato's Concrete, LLC

Address: 8326 Quivas Way Denver, CO 80221

Type of Service: Concrete, C&G, Sidewalk Installation

Contact Person:
Marlene Andrade

Dollar Amount \$:
700,000.00

Percent of
Project 9.0%

☒ Subcontractor (✓) ☐ Supplier (✓) ☐ Manufacturer (✓) ☐ Broker (✓)

Business Name: Zenitram Traffic Services

Address: 4284 Meadow Lark RD, Fort Lupton, CO 80621

Type of Service: Traffic Control Services

Contact Person:
Una Martinez

Dollar Amount \$:
450,000.00

Percent of
Project 6.0%

☐ Subcontractor (✓) ☐ Supplier (✓) ☐ Manufacturer (✓) ☐ Broker (✓)

Business Name:

Address:

Type of Service:

Contact Person:

Dollar Amount \$:

Percent of
Project

The undersigned Bidder hereby certifies that the aforementioned subcontractors and suppliers have full knowledge that their names have been offered as subcontractors and suppliers for the work, and the Bidder further certifies that the dollar amount of work to be performed by the aforementioned M/WBE(s) was furnished to the Bidder prior to the bid opening. The undersigned Bidder agrees that after the bid opening, it shall submit to the City an executed and completed W/MBE "Letter of Intent" in three working days (3) on each of its M/WBE subcontractors. The "Letter of Intent" form is contained in the Contract Documents.

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: 12150 East 112th Ave

City, State, Zip Code: Henderson, CO 80640

Telephone Number of Bidder: 303-286-8000 Fax No. 303-286-1811

Social Security or Federal Employer ID Number of Bidder: 84-0681206

Name and location of the last work of this kind herein contemplated upon which the Bidder was engaged:
City of Boulder Traffic Signal Maintenance, Boulder, CO. City of Broomfield Traffic Signal Maintenance, Broomfield, CO.

For information relative thereto, please refer to:

Name: Diane Mora

Title: Contract Administrator

Address: 201 W Colfax Avenue, Denver CO. 80202

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

Addenda Number 1 Date 01/18/2019

Addenda Number _____ Date _____

Addenda Number _____ Date _____

Dated this 14th day of February, 2019

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

CONTRACT NO: 201948801
PROJECT NAME: 2018 Traffic Signal Construction Master On-Call

ADDENDUM NO. 1 TO CONTRACT DOCUMENTS

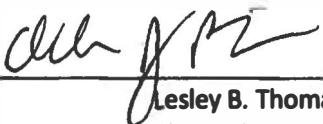
Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above-mentioned project as hereinafter described in the following attachments:

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

PRE-QUALIFICATION REQUIREMENT:

The pre-qualification requirement for this project has been revised as follows:

Each bidder must be prequalified in category 1(D)1 Traffic Signals at or above \$1,500,000.00 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 bid opening date. Applications must be submitted to the Department of Public Works, Prequalification Section, 201 W. Colfax Ave., Department 614, Denver, CO 80202. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification or call 720-865-2539 for prequalification information ONLY.


Lesley B. Thomas
City Engineer

1/18/2019
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

2/12/2019
Date

Signature of Bidder:

If an Individual: _____ doing business
as _____.

If a Partnership: _____
by: _____, General Partner.

If a Corporation: Sturgeon Electric Company, Inc.

a Mi 'chi 'ga, Corporation,
by: Jim Bushnell, Vice
its President.
Colorado Traffic

Attest:

Krysta Brewer
Assistant 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)



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1999
DSBO@denvergov.org

COMMITMENT TO MWBE PARTICIPATION

*The undersigned has satisfied the MWBE participant requirements in the following manner
(Please check the appropriate box):*

☒ The Bidder/Proposer is committed to the minimum 15 % MWBE utilization on the project, and will submit Letters of Intent (LOI) for each subcontractor/subconsultant listed in the Bid Forms as follows:
Hard Bids: Three (3) business days after the bid opening.
Request for Proposals/Qualifications: With the proposal when due.
Compliance Plans: With each task/work order

☐ The Bidder/Proposer is unable to meet the project goal of _____ % MWBE, but is committed to a minimum of _____ % MWBE utilization on the project. The Bidder/Proposer understands that they must submit a detailed statement of their good faith effort under sealed bid procedures, as a matter of responsiveness, or with initial proposals, under contract negotiation procedures; or no later than three (3) days after bid opening as a matter of responsibility as in accordance with DRMC Section 28-62 and 28-67 of Ordinance 85 to the Division of Small Business Opportunity.

☐ The Bidder/Proposer is a certified MWBE in good standing with the City and is committed to self-perform a minimum of _____ % of the work on the contract.

Bidder/Proposer (Name of Firm): Sturgeon Electric Company, Inc.

Firm's Representative (Please print): Timothy McGinn

Signature (Firm's Representative): 

Title: Estimator

Address: 12150 East 112th Avenue

City: Henderson

State: CO.

Zip: 80640

Phone: 303-286-8000

Fax: 303-286-1811

Email: tmcginn@myrgroup.com

A copy of the MWBE Certification letter must be attached to each Letter of Intent (LOI).



DENVER
OFFICE OF ECONOMIC DEVELOPMENT
CITY OF DENVER

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 West Colfax Ave. Dept. 327
Denver, CO 80202
Phone: 720-913-1999

LETTER OF INTENT (LOI)
INSTRUCTIONS FOR COMPLETION & SUBMISSION:

- All items must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LOI
- Submit the attached completed checklist with this letter
- Email to dsbo@dencolorado.gov
- FOR RFPs and RFQs: LOIs should be included with Submittal

Contract No.: 201948801

Project Name: 2018 Traffic Signal Construction Master On-Call

A. The Following Section Is To Be Completed by the Bidder/Consultant
This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE

Name of Bidder/Consultant: Sturgeon Electric Company, Inc.	Self-Performing: <input type="checkbox"/> Yes <input type="checkbox"/> No	Phone: 303-286-8000
Contact Person: Timothy McGinn	Email: tmcginn@myrgroup.com	Fax: 303-286-1811
Address: 12150 E. 112th Ave	City: Henderson	State: CO Zip: 80640

B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier
This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant

Name of Certified Firm: Chato's Concrete, LLC	Phone: 720-252-7959
Contact Person: Marlene Andrade	Email: chatosconcrete.com
Address: 8326 Quivas Way	Fax: 303-427-7156
City: Denver	State: CO Zip: 80221

Please check the designation which applies to the certified firm.

M/WBE ()	<input checked="" type="checkbox"/> SBE ()	<input checked="" type="checkbox"/> EBE ()	<input type="checkbox"/> DBE ()
--------------	--	--	-------------------------------------

Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:

A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached

Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. On unit price bids only, identify which bid line items the M/WBE/SBE/DBE's scope of work or supply corresponds to.

202-00195, 202-00200, 202-201, 202-00203, 202-00204, 202-00206, 202-00210, 202-00220, 203-00100, 304-06000

403-00720, 412-00190, 412-00600, 412-00800, 412-01001, 412-15061

☒ Subcontractor/Subconsultant () ☐ Supplier () ☐ Broker ()

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

\$ 700,000.00 9.0%

Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total subcontractor M/WBE, SBE, EBE or DBE will perform is: N/A %

If the fee amount of the work to be performed is requested, the fee amount, is: \$ N/A

Bidder/Consultant's Signature: Date: 2-14-19

Title: Operations Manager

M/WBE, SBE, EBE or DBE or Self-Performing

Firm's Signature:

Date: 2-14-19

Title: Owner/Partner

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



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 West Corfax Ave. Dept. 807
Denver CO 80202
Phone: 720-813-1296

LETTER OF INTENT (LOI)
INSTRUCTIONS FOR COMPLETION & SUBMISSION:

- All lines must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LOI
- Submit the attached completed checklist with this letter
- Email to d-sbo@denvergov.org
- FOR RFPs and RFQs LOIs should be included with Submittal

Contract No.: 201948801		Project Name: 2018 Traffic Signal Construction Master On Call	
A. The Following Section Is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE			
Name of Bidder/Consultant: Sturgeon Electric Company, Inc.		Self-Performing: <input type="checkbox"/> Yes <input type="checkbox"/> No	Phone: 303-286-8000
Contact Person: Timothy McGinn	Email: tmcginn@myrgroup.cc	Fax: 303-286-1811	
Address: 12150 E. 112th Ave.	City: Henderson	State: CO	Zip: 80640
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant			
Name of Certified Firm: Zenitram Traffic Service/Una Martinez		Phone: 720-490-5434	
Contact Person: Una Martinez	Email: UMARTINEZ@skybeam.com	Fax: 303-857-2023	
Address: 4284 Meadowlark Rd	City: Ft. Lupton	State: CO	Zip: 80621
Please check the designation which applies to the certified firm.	M/WBE (v) <input checked="" type="checkbox"/>	SBE (v) <input checked="" type="checkbox"/>	EBE (v) <input type="checkbox"/>
DBE (v) <input checked="" type="checkbox"/>			
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:			
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached			
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBE's scope of work or supply corresponds to.			
630-00003, 630-00018, 630-00019			
<input checked="" type="checkbox"/>	Subcontractor/Subconsultant (v)	<input type="checkbox"/>	Supplier (v)
<input type="checkbox"/>		<input type="checkbox"/>	Broker (v)
Bidder intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE, EBE or DBE bid amount is:			
\$ 450,000.00		6.0% %	
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total subconsultant M/WBE, SBE, EBE or DBE will perform is: %			
If the fee amount of the work to be performed is requested, the fee amount, is: \$			
Bidder/Consultant's Signature: <i>Una Martinez</i>		Date: 2-13-19	
Title: Operations Manager			
M/WBE, SBE, EBE or DBE or Self-Performing Firm's Signature: <i>Una Martinez</i>		Date: 2-14-19	
Title: Owner			
If the above named Bidder/Consultant is not determined to be the successful Bidder/Consultant, this Letter of Intent shall be null and void.			

Letter of Intent (LOI) Checklist

All lines must be completed or marked N/A for Not Applicable

Submit the attached completed checklist with this letter.

Completed ✓	
<input type="checkbox"/>	Project Number & Project Name
<input type="checkbox"/>	Section A: Name of Bidder/Consultant, Contact Person, Address, City, State, Zip, Phone, Email
<input type="checkbox"/>	Section B: Name of Certified Firm, Contact Person, Address, City, State, Zip, Phone, Email
<input type="checkbox"/>	Designation checked for MBE/WBE, SBE, EBE or DBE
<input type="checkbox"/>	Indirect Utilization: Name of subcontractor/subconsultant, supplier or broker is indicated if using the participation of a 2 nd tier subcontractor/subconsultant, supplier or broker.
<input type="checkbox"/>	Scope of work performed or item supplied by M/WBE, SBE, EBE or DBE
<input type="checkbox"/>	Line items performed, if line-item bid.
<input type="checkbox"/>	Copy of M/WBE, SBE, EBE or DBE Letter of Certification Attached
<input type="checkbox"/>	Designation checked for Subcontractor/Subconsultant, Supplier or Broker
	If project is a hard bid...
<input type="checkbox"/>	Bidder has indicated dollar amount for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
<input type="checkbox"/>	Bidder has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
	If project is an RFP/RFQ...
<input type="checkbox"/>	Consultant has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker Name & contact name for MWBE.
<input type="checkbox"/>	Fee amount if fee amount of work to be performed is requested.
<input type="checkbox"/>	Bidder/Consultant's Signature, Title & Date
<input type="checkbox"/>	M/WBE, SBE, EBE or DBE Firm's Signature, Title and Date

Select One ✓	SUBMITTED VIA... For Construction Hard Bids ONLY, Bidders are strongly urged to deliver the LOI via one of the methods below. (The preferred method is to scan/email completed forms to email address below. Delivery to any other point cannot be guaranteed timely delivery.)
<input type="checkbox"/>	Email to DSBO@denvergov.org

The complete and accurate information that is required for the Letter of Intent is based on the following sections of the Ordinance 85: Section 28-63 and Section 28-68. Failure to complete this information on the Letter of Intent (LOI) may automatically deem a bid or proposal non-responsive.



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

Joint Venture Affidavit

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1999
DSBO@denvergov.org

N/A

The Undersigned swears that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the Undersigned covenant and agree to provide the City current, complete, and accurate information regarding actual joint venture work and the payment thereof and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records, and files of the joint venture, by authorized representatives of the City or Federal funding agency, if applicable. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements.

Name of Firm:

Print Name:

Title

Signature:

Date:

Notary Public

County of

State of

My Commission Expires:

Subscribed and sworn before me this

_____ day of _____, 20_____

Notary Seal

Notary Signature: _____

Notary Commission #: _____

Address: _____

Name of Firm:

Print Name:

Title

Signature:

Date:

Notary Public

County of

State of

My Commission Expires:

Subscribed and sworn before me this

_____ day of _____, 20_____

Notary Seal

Notary Signature: _____

Notary Commission #: _____

Address: _____



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

JOINT VENTURE ELIGIBILITY FORM

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1999
DSBO@denvergov.org

N/A

Joint Venture means an association of two (2) or more business enterprises to constitute a single business enterprise to perform a City construction or professional design and construction services contract for which purpose they combine their property, capital, efforts, skills and knowledge, and in which each joint venturer is responsible for a distinct, clearly defined portion of the work of the contract, performs a commercially useful function, and whose share in the capital contribution, control, management responsibilities, risks and profits of the joint venture are equal to its ownership interest. Joint ventures must have an agreement in writing specifying the terms and conditions of the relationships between the joint venturers and their relationship and responsibility to the contract.

The Division of Small Business Opportunity (DSBO) requires the following information be provided from participants of a prospective joint venture, to assist DSBO in evaluating the proposed joint venture. This Joint Venture Eligibility form and the Joint Venture Affidavit apply if SBEs, EBEs, MBEs, WBEs or DBEs participate in this joint venture.

Please return this form, the Joint Venture Affidavit, and a copy of your Joint Venture Agreement to: Division of Small Business Opportunity, 201 West Colfax Avenue, Denver, CO 80202, at least ten (10) working days prior to bid opening or proposal.

If you have questions regarding this process, please contact DSBO at 720-913-1999.

Joint Venture Information

Name: _____ Contact Person: _____
Address: _____
City: _____ State: _____ Zip: _____ Phone: _____

Joint Venture Participants

Name: _____ Contact Person: _____
Address: _____
City: _____ State: _____ Zip: _____ Phone: _____
% Ownership: _____ Certifying Entity: _____ Type Certification & Date: (S/E/M/W or DBE)

Type of Work for which Certification was granted:

Name: _____ Contact Person: _____
Address: _____
City: _____ State: _____ Zip: _____ Phone: _____
% Ownership: _____ Certifying Entity: _____ Type Certification & Date: (S/E/M/W or DBE)

Type of Work for which Certification was granted:

General Information

SBE/EBE/MBE/WBE/DBE Initial Capital Contributions: \$ _____ %

Future capital contributions (explain requirements) (attach additional sheets if necessary):

Source of Funds for the SBE/EBE/MBE/WBE/DBE Capital Contributions:

Describe the portion of the work or elements of the business controlled by the SBE/EBE/MBE/WBE or DBE: (attach additional sheets if necessary)

N/A

Describe the portion of the work or elements of the business controlled by non-SBE/EBE/MBE/WBE or DBE: (attach additional sheets if necessary)

JOINT VENTURE ELIGIBILITY FORM

General information

Describe the SBE/EBE/MBE/WBE or DBE's involvement in the overall management of the joint venture (e.g., participation on a management committee or managing board voting rights, etc.) (attach additional sheets if necessary)

Describe the SBE/EBE/MBE/WBE or DBE's share in the profits of the joint venture:

Describe the SBE/EBE/MBE/WBE or DBE's share in the risks of the joint venture:

Describe the roles and responsibilities of each joint venture participant with respect to managing the joint venture (use additional sheets if necessary):

a. SBE/EBE/MBE/WBE or DBE joint venture participant:

b. Non-SBE/EBE/MBE/WBE or DBE joint venture participant:

Describe the roles and responsibilities of each joint venture participant with respect to operation of the joint venture (use additional sheets if necessary):

a. SBE/EBE/MBE/WBE or DBE joint venture participant:

b. Non-SBE/EBE/MBE/WBE or DBE joint venture participant:

N/A

Which firm will be responsible for accounting functions relative to the joint venture's business?			
Explain what authority each party will have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties?			
Please provide information relating to the approximate <u>number</u> of management, administrative, support and non-management employees that will be required to operate the business and indicate whether they will be employees of the S/E/MWBE/DBE, non- S/E/MWBE/DBE or joint venture:			
	Non- SBE/EBE/MWBE/DBE	SBE/EBE/MWBE/DBE	Joint Venture
Management			
Administrative			
Support			
Hourly Employees			
JOINT VENTURE ELIGIBILITY FORM			
General Information			
Please provide the name of the person who will be responsible for hiring employees for the joint venture.			
Who will they be employed by?			
Are any of the proposed joint venture employees currently employees of any of the joint venture partners?		<input type="checkbox"/>	<input checked="" type="checkbox"/> Yes (✓)
		<input type="checkbox"/>	<input checked="" type="checkbox"/> No (✓)
If yes, please list the number and positions and indicate which firm currently employs the individual(s), (use additional sheets if necessary)			
Number of employees		Position	Employed By
Attach a copy of the proposed joint venture agreement, promissory note or loan agreement (if applicable), and any and all written agreements between the joint venture partners.			
List all other business relationships between the joint venture participants, including other joint venture agreements in which the parties are jointly involved.			
If there are any significant changes in or pertaining to this submittal, the joint venture members must immediately notify the Division of Small Business Opportunity.			

COMP-FRM-015

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT Sturgeon Electric Company, Inc. as Principal,
and Liberty Mutual Insurance Company, a corporation organized and existing under
and by virtue of the laws of the State of Massachusetts, 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 accompanying bid amount 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 February 14, 2019, for the
construction of: **Contract No. 202948802, 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL**, 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 _____ day of February, 2019.

ATTEST

Secretary

Kimberly C. Kirkhead
Seal if Bidder is Corporation
(Attach Power-of-Attorney)

Sturgeon Electric Company, Inc.

Principal

By

Title

Liberty Mutual Insurance Company

Surety

By

Sheree Hsieh, Attorney-in-Fact

[SEAL]

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees. To confirm the validity of this Power of Attorney call 610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Michael M. Bill, Michael H. Bill, Edward L. Mourmighan, Cynthia L. Jenkins, Ginger J. Krahn, Brenda Johnston, Cindy Stellhorn, Sheree Hsieh, Rebecca A. Virt, Kimberly E. Kinkad, Michael J. Marsella of the city of Indianapolis, state of Indiana its true and lawful attorney-in-fact, with full power and authority hereby conferred to sign, execute and acknowledge the following surety bond:

Principal Name: Sturgeon Electric Company, Inc.

Obligee Name: City and County of Denver

Surety Bond Number: N/A

Bond Amount: Five Percent of the Amount Bid

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of December, 2017.



The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: David M. Carey

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA
COUNTY OF MONTGOMERY

ss

On this 7th day of December, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 14th day of February, 2019.



By: Renee C. Llewellyn

Renee C. Llewellyn, Assistant Secretary



Office of Economic Development
Division of Small Business Opportunity
201 W. Colfax Ave, Dept. 807
Denver, CO 80202
p: 720.913.1898
f: 720.913.1809
www.denvergov.org/dsbo

Diversity and Inclusiveness * in City Solicitations Information Request Form

Type in your response, print out, sign and date; or print out and complete manually. Please print legibly.

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: ccervera@myrgroup.com

Please include the Email address of the contact person facilitating this solicitation for the City and County of Denver: diane.mora@denvergov.org

Agency Name:

<input type="checkbox"/> Arts and Venue	<input type="checkbox"/> Purchasing Division	<input type="checkbox"/> Sheriff Department
<input type="checkbox"/> Auditor Office	<input type="checkbox"/> Human Services	<input type="checkbox"/> Technology Services
<input type="checkbox"/> Community Planning	<input type="checkbox"/> Economic Development	<input type="checkbox"/> Other
<input type="checkbox"/> Denver International Airport	<input type="checkbox"/> Parks and Recreation	
<input type="checkbox"/> Environmental Health	<input type="checkbox"/> Police Department	
<input type="checkbox"/> Fire Department	<input checked="" type="checkbox"/> Public Works	

Project Name: 2018 Traffic Signal Construction Master On-Call

BID / RFP No.: 201947029

Name of Contractor/Consultant: Sturgeon Electric Company, Inc.

What industry is your business? Electrical Contractor

Address:

12150 East 112th Ave
Henderson, CO 80640

Business Phone No.: 303-286-8000

Business Facsimile No.: 303-286-1811

OED - Executive Order No. 101
Diversity and Inclusiveness in City Solicitations Information Request Form
Rev. 12/29/2015

1. How many employees does your company employ?

- | | |
|--------------------------------|--|
| <input type="checkbox"/> 1-10 | <input type="checkbox"/> 51-100 |
| <input type="checkbox"/> 11-50 | <input checked="" type="checkbox"/> over 100 |

1.1. How many of your company's employees are:

Full-time 100% Part-Time _____

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 11.
Complete and sign the form.

If Yes, does it address:

- | | | |
|--|---|-----------------------------|
| 2.1 Employment and retention? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2.2 Procurement and supply chain activities? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2.3 Customer service? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> 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.

See Attached Supplier Diversity Program & Equal Opportunity Employment Policy

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

If Yes, how does your company regularly communicate its diversity and inclusiveness policies to employees? (select all that apply)

- | | |
|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | Employee Training |
| <input type="checkbox"/> | Pamphlets |
| <input checked="" type="checkbox"/> | Public EEO postings |
| <input type="checkbox"/> | Other |
| <input type="checkbox"/> | Not Applicable |

5. 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

6. How often do you provide training in diversity and inclusiveness principles?

- | | | |
|------------------------------------|---|--|
| <input type="checkbox"/> Monthly | <input type="checkbox"/> Annually | <input checked="" type="checkbox"/> Other <u>As Needed</u> |
| <input type="checkbox"/> Quarterly | <input type="checkbox"/> Not Applicable | |

6.1 What percentage of the total number of employees generally participate?

- | | | |
|-----------------------------------|------------------------------------|--|
| <input type="checkbox"/> 0 - 25% | <input type="checkbox"/> 51 - 75% | <input checked="" type="checkbox"/> Not Applicable |
| <input type="checkbox"/> 26 - 50% | <input type="checkbox"/> 76 - 100% | |

7. 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.

See attached Supplier Diversity Program & Equal Opportunity Employment Policy

8. Do you have a diversity and inclusiveness committee? ☐ Yes ☒ No

8.1 If Yes, how often does it meet?

- | | | |
|------------------------------------|--------------------------------------|---------------------------------------|
| <input type="checkbox"/> Monthly | <input type="checkbox"/> Annually | <input type="checkbox"/> No Committee |
| <input type="checkbox"/> Quarterly | <input type="checkbox"/> Other _____ | |

8.2 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.

None

9. Do you have a budget for diversity and inclusiveness efforts? ☐ Yes ☒ No

10. Does your company integrate diversity and inclusion competencies into executive/manager performance evaluation plans? ☒ Yes ☐ No

11. Would you like information detailing how to implement a Diversity and Inclusiveness program? ☐ Yes ☒ No

If yes, please email X0101@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

February 14, 2019
Date

Audia Wasick, Administrative Assistant
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 underserved 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



DEPARTMENT OF PUBLIC WORKS

Bid Documents Package

Contract Number: 201948801



2018 Traffic Signal Construction

Master On-Call

January 11, 2019

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

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Prevailing Wage Rate Schedule	7 pages
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DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
202-00001	Removal of Structure	24	EA
202-00019	Removal of Inlet	24	EA
202-00195	Removal of Median cover	930	SY
202-00200	Removal of Sidewalk	1,188	SY
202-00201	Removal of Curb Head	273	LF
202-00203	Removal of Curb & Gutter	2,245	LF
202-00204	Removal of Combination Curb, Gutter & Walk	247	LF
202-00206	Removal of Concrete Curb Ramp	2,949	SY
202-00210	Removal of Concrete Pavement	555	SY
202-00220	Removal of Asphalt Mat	396	SY
202-00810	Removal of Ground Sign	32	EA
202-00821	Removal of Sign Panel	96	EA
202-00828	Removal of Traffic Signal Equipment	10	EA
203-00100	Muck Excavation	729	CY
203-01597	Potholing	180	EA
203-01620	Sweeping	220	HR
203-02330	3-man Labor Crew	81	HR
208-00002	Erosion Log (12 Inch)	300	LF
208-00035	Aggregate Bag	300	LF



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
208-00045	Concrete Washout Structure	12	EA
208-00051	Storm Drain Inlet Protection (Type 1)	30	LF
208-00052	Storm Drain Inlet Protection (Type 2)	30	LF
208-00103	Removal and Disposal of Sediment (Labor)	230	HR
208-00105	Removal and Disposal of Sediment (Equipment)	230	HR
208-00206	Erosion Control Supervisor	480	HR
210-00476	Reset Microwave Vehicle Radar Detector (MVRD)	1	EA
210-00477	Reset Radio Communication Antenna (YAGI and OMNI)	4	EA
210-00810	Reset Ground Sign	30	EA
210-00815	Reset Sign Panel	30	EA
210-04010	Adjust Manhole	5	EA
210-04020	Modify Inlet	8	EA
210-04050	Adjust Valve Box	12	EA
211-03005	Dewatering	3	EA
212-00050	Sodding	900	SF
212-00100	Tree Protection	18	EA
212-01200	Landscape Restoration	2,502	SF
250-00010	Environmental Health and Safety Management	3	EA
304-06000	Aggregate Base Course	712	Ton



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
403-00720	HBP Patch	357	Ton
412-00190	Concrete Patching	33	SY
412-00600	Concrete Pavement (6 Inch)	66	SY
412-00800	Concrete Pavement (8 Inch)	66	SY
412-01001	Intersection Valley Pan (8 Foot)(10 Inch)	72	LF
412-15061	Concrete Curb Head Replacement	44	LF
503-00036	Drilled Caisson (36 Inch)	292	LF
503-00037	Vacuumed Caisson (36 Inch)	292	LF
503-00048	Drilled Caisson (48 Inch)	70	LF
503-00200	Vacuumed Caisson (48 Inch)	70	LF
601-00000	Fast Track Portland Cement Concrete	190	CY
603-01150	15 Inch Reinforced Concrete Pipe (CIP)	72	LF
603-01180	18 Inch Reinforced Concrete Pipe (CIP)	72	LF
604-16050	Type 16 Curb Inlet (Single)(4 Foot 8 Inches)	5	EA
604-16550	Type 16 Curb Inlet (Double)(8 Foot 5 Inches)	2	EA
604-19000	Type 14 Curb Inlet (6 Foot)	5	EA
604-19001	Type 14 Curb Inlet (9 Foot)	2	EA
604-30005	4 Foot DIA Manhole Slab Base (5 Foot)	12	EA
604-30010	4 Foot DIA Manhole Slab Base (10 Foot)	2	EA



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
607-11525	Fence (Plastic)	690	LF
608-00005	Concrete Sidewalk (Special)	114	SY
608-00006	Concrete Sidewalk (6 Inch)	1,023	SY
608-00010	Concrete Curb Ramp (Plastic dome)	2,100	SY
608-00012	Concrete Curb Ramp (Cast Iron dome)	322	SY
609-20100	Variable Height Curb Head W/Reinforcement	45	LF
609-21010	Curb & Gutter Type II, Section IB	125	LF
609-21020	Curb & Gutter Type II, Section 2B	1,500	LF
609-21023	Curb & Gutter Type IIB (Variable Height) Curb Head	380	LF
609-22021	Combination Curb, Gutter & Sidewalk (2 Foot - 8 Inch)	38	LF
609-22025	Combination Curb, Gutter & Sidewalk (3 Foot - 11 Inch)	38	LF
610-00026	Median cover Material (6 Inch Concrete)(#67 or #57 Aggregate)	7,837	SF
613-00206	2 Inch Electrical Conduits(Bored)	3,058	LF
613-00306	3 Inch Electrical Conduits(Bored)	6,116	LF
613-06000	Electric Meter Pedestal Cabinet and Base	12	EA
613-07034	Pull Box (Type C)	12	EA
613-07039	Pull Box (Type D)	1	EA
613-10000	Wiring (Per Intersection)	11	EA



STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
613-13000	Luminaire (LED)(5300 Lumens)(55 Watt)	48	EA
614-00011	Sign Panel (Class I)	150	SF
614-00035	Sign Panel (Special)	480	SF
614-00216	Steel Sign Post (2 x 2 Inch Tubing)	250	LF
614-70100	Traffic Control Devices (Red Signal Enforcement)	9	EA
614-70150	Pedestrian Signal Face (16") (Count Down)	76	EA
614-70336	Traffic Signal Face (12-12-12)	124	EA
614-70338	Traffic Signal Face (12-12-12) Flashing Yellow	30	EA
614-70339	Traffic Signal Face (12-12-12)(Programmable)	6	EA
614-70448	Traffic Signal Face (12-12-12-12) Flashing Yellow	46	EA
614-70449	Traffic Signal Face (12-12-12-12)(Programmable)	2	EA
614-70451	Traffic Signal Face (12-12-12) HAWK	8	EA
614-72855	Traffic Signal Controller and Cabinet	12	EA
614-72860	Pedestrian Push Button and Instruction Sign	92	EA
614-72862	Pedestrian Push Button (APS)	8	EA
614-72863	Pedestrian Push Button Post Assembly	4	EA
614-72866	Emergency Vehicle Traffic signal Priority Control System	11	EA
614-72885	Intersection Detection System (Camera)(FLIR)	40	EA



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
614-72886	Intersection Detection System (Camera)(Video)	4	EA
614-72890	Span Wire Cable	400	LF
614-86800	Uninterrupted Power Supply System	12	EA
614-87690	Ethernet Managed Field Switch	12	EA
614	Bluetooth Traffic Management Detection System	12	EA
614-81000	Traffic Signal-Light Pole Steel	4	EA
614-81020	Traffic Signal-Light Pole Steel (2 Mast Arm)	2	EA
614-81120	Traffic Signal-Light Pole Steel (1-20 Foot Mast Arm)	2	EA
614-81125	Traffic Signal-Light Pole Steel (1-25 Foot Mast Arm)	4	EA
614-81130	Traffic Signal-Light Pole Steel (1-30 Foot Mast Arm)	6	EA
614-81135	Traffic Signal-Light Pole Steel (1-35 Foot Mast Arm)	6	EA
614-81140	Traffic Signal-Light Pole Steel (1-40 Foot Mast Arm)	6	EA
614-81145	Traffic Signal-Light Pole Steel (1-45 Foot Mast Arm)	6	EA
614-81150	Traffic Signal-Light Pole Steel (1-50 Foot Mast Arm)	3	EA
614-81155	Traffic Signal-Light Pole Steel (1-55 Foot Mast Arm)	4	EA
614-81160	Traffic Signal-Light Pole Steel (1-60 Foot Mast Arm)	2	EA
614-81165	Traffic Signal-Light Pole Steel (1-65 Foot Mast Arm)	1	EA
614-81170	Traffic Signal-Light Pole Steel (1-70 Foot Mast Arm)	1	EA
614-84100	Traffic Signal Pedestal Pole Aluminum (10 Foot)	4	EA



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

Item No.	Description	Estimated	Quantity
614-84150	Traffic Signal Pedestal Pole Aluminum (15 Foot)	4	EA
614-85316	Traffic Signal Span Wire Pole (Steel)(16 Inch)	4	EA
614-86105	Telemetry (Field)	12	EA
614-87333	Closed Circuit Television System (Traffic Surveillance)	12	EA
623	Sprinkler system-Adjust Sprinkler	432	EA
623	Sprinkler system-New Sprinkler Head	238	EA
623	Sprinkler System-Irrigation Reconstruction	946	LF
625-00001	Construction Surveying (Hourly)	240	HR
627-00005	Epoxy Pavement Marking	20	GAL
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol)(90 Mil)	552	SF
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-StopBar)(90 Mil)	13,522	SF
629-01050	Monument Box	12	EA
629-01065	Survey Monument	120	EA
630-00003	Uniformed Traffic Control	96	HR
630-00018	Traffic control - Local	88	DAY
630-00019	Traffic control - Arterials/Collector	176	DAY
A/W 01	Mobilization	1 ALLOWANCE	\$300,000.00

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

NOTICE FOR INVITATION FOR BIDS
FOR CONTRACT NO. 201948801

2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

BID SCHEDULE:
11:00 a.m., Local Time
February 14, 2019

Sealed bids will be received in Room 6.G.7, 201 W. Colfax Ave., Denver, CO 80202, beginning at 10:30 a.m., no later than 11:00 a.m., on bid day. All properly delivered bids will then be publicly opened and read aloud.

Bids submitted prior to 10:30 a.m. on the specified bid opening date/time shall be presented at the Office of Contract Administration, Attention: Public Works Contract Administration, 201 W. Colfax Ave., Department 614, Denver, CO 80202.

Prior to submitting a bid, the bidder shall consult the Contractor's Bulletin Board located at 201 W. Colfax Ave., 2nd Floor, Denver, CO 80202 and/or www.work4denver.com.

GENERAL STATEMENT OF WORK:

The 2018 Traffic Signal Construction Master On-Call will be used to install new traffic signals or rebuild existing outdated traffic signals within the CCD. All work will be per current Denver Traffic standards. Scope of work includes caissons, remove/replace existing traffic signal with mast arm traffic signal poles, install 12" diameter signal indications, 16" pedestrian signal faces, pedestrian crossing stations (buttons and signs), updated controller and cabinet, Uninterrupted Power Supply (UPS), Ethernet communication equipment (switches), Bluetooth device (Traffic Management System - BlueTOAD), video detection and traffic surveillance cameras, and emergency preemption system, and traffic signs, pavement markings, and civil which include but not limited to sidewalk, curb ramps, curb and gutters, storm sewers, roadway and asphalt. Each project will be scoped, priced, and authorized separately and work will be supervised and directed by a Traffic project manager. Multiple contracts may be awarded pending the needs of the City.

ESTIMATED CONSTRUCTION COST:

The estimated cost of construction for this project is between \$4,900,000.00 and \$5,400,000.00.

TEXTURA CONSTRUCTION PAYMENT MANAGEMENT:

Bidders are required, when preparing a bid, to agree it shall use the Textura® Construction Payment Management System ("Textura") to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. All fees associated with Textura are to be paid by the awarded Contractor. Bidders shall use the pricing scale provided in Instructions to Bidders to price the Textura service appropriately. For details on the company and service, contact the Textura® Corporation at 866-TEXTURA or www.texturacorp.com.

DOCUMENTS AND BID INFORMATION AVAILABLE:

Contract Documents complete with Technical Specifications and construction drawings, if applicable will be available on the first day of publication at: www.work4denver.com to download digital Contract Documents at a cost of \$15.00 per download (eBid Document Number #6075341). Contact QuestCDN at 952-233-1632 or info@questcdn.com for assistance.

PRE-BID CONFERENCE:

A pre-bid conference will be held for this Project at 2:00 p.m., local time, on January 22, 2019. This meeting will take place at the WEBB Building, 201 W Colfax Avenue, 4th floor conference room 4.I.5., Denver, CO 80202.

DEADLINE TO SUBMIT QUESTIONS: January 29, 2019 by 2:00 p.m. local time.

PREQUALIFICATION REQUIREMENTS:

Each bidder must be prequalified as 1(D)1 Traffic Signals in the \$6,000,000.00 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 bid opening date. Applications must be submitted to the Department of Public Works, Prequalification Section, 201 W. Colfax Ave., Department 614, Denver, CO 80202. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification or call 720-865-2539 for prequalification information ONLY.

MINORITY AND WOMAN BUSINESS ENTERPRISE PARTICIPATION:

Construction, reconstruction and remodeling contracts made and entered into by the City and County of Denver are subject to Article III, Divisions 1 and 3 of Chapter 28 of the Denver Revised Municipal Code, (Sections 28-31 to 28-36 and 28-52 to 28-90 D.R.M.C) and all Minority and Woman Business Enterprise and Equal Employment Opportunity Rules and Regulations adopted by the Director of the Division of Small Business Opportunity.

Article III, Division 3 of Chapter 28 of the D.R.M.C. directs the Director of the Division of Small Business Opportunity to establish a project goal for expenditures on construction, reconstruction, and remodeling work contracted by the City and County of Denver. The specific goal for this project is:

15% Minority and Woman Business Enterprise (M/WBE) Participation

Project goals must be met with certified participants as set forth in Section 28-60, D.R.M.C. or through the demonstration of a sufficient good faith effort under Section 28-62 D.R.M.C. For compliance with good faith requirements under Section 28-62(b), **the M/WBE percentage solicitation level required for this project is 100%.**

The Director of the Division of Small Business Opportunity urges all participants in City construction, reconstruction and remodeling projects to assist in achieving these goals.

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.

As its best interest may appear, the Manager of Public Works reserves the right to reject any or all bids and to waive informalities in bids.

Publication Dates: January 11, 14, 15, 2019
Published In: The Daily Journal

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.

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

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, 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.

Each bid must be enclosed in a sealed envelope, must be addressed to the Manager and must show on the face of the envelope the full name of the bidder, the City Project Number, and descriptive title of the Project for which the bid is made.

The advertisement for Notice of Invitation for Bids will identify where and when the bid must be delivered.

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.

This Bid Form requires unit price bids for representative work items listed. The bidder shall write in the Bid Form spaces provided a unit price for each work 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. Upon completion of all spaces provided for the listed work items, the bidder shall total all of the work item "Amounts" provided by the bidder and write that total, in words and figures, in each space provided on the Bid Form.

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 Department of Public Works (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, interlineation, 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 for any work item that are deemed unbalanced or unreasonable so as to disproportionate to reasonable approximations or estimates of the work item or items that do 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 NOT USED

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 Public Works and sending or delivering it to the offices of the Division of Public Works 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 the Contractor's Bulletin Board (refer to IB-12 CONTRACTOR'S BULLETIN BOARD, for the location of the Contractor's Bulletin Board). 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 Public Works. 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-3, COMPLETING AND SIGNING BID FORMS.

IB-12 CONTRACTOR'S BULLETIN BOARD

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 Contractor's Bulletin Board. The Contractor's Bulletin Board is located on the 2nd floor at 201 W. Colfax Avenue, Denver, CO 80202.

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 posted on the Contractor's Bulletin Board and 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 BID OPENING

Bidders are invited to be present at the bid opening. Unless otherwise suspended, delayed or canceled by posted notice from the Manager, bid opening will occur at the time and place 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. The low bidders' bids will be reviewed for responsiveness to the requirements of Bid Documents and whether or not the bids contain irregularities which could give any bidder an unfair advantage.

Contract award will be made on the basis of the lowest, total, responsive, qualified bid, which bid shall include the total of all work items listed on the Bid Form. 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 the contract 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 materials 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.

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 WAGE RATE 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 request for qualifications/proposals was advertised: January 11, 2019.

Prevailing wage and fringe rates will adjust on, and only on, the anniversary of the date the Contract was fully executed. 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 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. Construction and building materials sold to contractors and subcontractors for use on structures, roads, streets, highways, and other public works owned by the City and County of Denver are exempt from state, RTD, and Cultural Facilities District sales and use taxes. However, such materials will be subject to sales and use taxes imposed by the City and County of Denver.

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 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 over \$500 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 is subject to such tax.

IB-24 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-25 MINORITY AND WOMAN BUSINESS ENTERPRISE (M/WBE) REQUIREMENTS

Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), designated as Sections 28-31 – 28-36 and 28-52 – 28-90 D.R.M.C. and referred to in these Bid Documents as the “M/WBE Ordinance” and any Rules or Regulations promulgated pursuant thereto apply to this Project and are incorporated into these Bid Documents by reference. Generally, the M/WBE Ordinance provides for the adoption of a good faith goals program, to be administered by the Division of Small Business Opportunity (DSBO), devised to provide increased bidding opportunities for Minority and Woman Business Enterprises (M/WBEs). As such, each bidder must comply with the terms and conditions of the M/WBE Ordinance in making its bid and, if awarded the Contract, in performing all Work thereunder. A bidder’s failure to comply with the M/WBE 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 M/WBE Ordinance requirements during the performance of the contract is a material breach of the contract, which may result in the in the imposition of sanctions on the Contractor, as deemed appropriate by DSBO. Copies of the M/WBE Ordinance and its accompanying Rules and Regulations are available for the use and review of bidders from DSBO. In order to comply with the bid requirements of the M/WBE Ordinance, a bidder shall either meet the established project goal or, in the alternative, demonstrate that the bidder has made sufficient good faith efforts to meet the goal in accordance with the M/WBE Ordinance.

Meeting Established Goal

In preparing a bid to meet the established Project goal, bidders should consider the following instructions relating to compliance with the M/WBE Ordinance:

1. Under the M/WBE Ordinance, the Director of DSBO (“Director”) is directed to establish project goals for expenditures on construction, reconstruction, and remodeling work performed for the City and County of Denver. The specific goal for this project is stated in the Notice of Invitation for Bids bound herein.
2. In preparing its bid, each bidder shall list on the Bid Form pages entitled "List of Proposed MWBE Bidders, Subcontractors, Suppliers, Manufacturers, Manufacturers' Representatives or Brokers" the name, address, work description/supply, committed level of participation and other required information for each M/WBE of any tier which the bidder intends to use in performing the work on this Project. **Only the M/WBEs identified and the precise levels of participation listed for each on the Bid Form page, at the time of bid opening, will be considered in determining whether the bidder has met the designated participation goal. Additional, revised or corrected participation submitted after bid opening will not be considered.** M/WBE bidders may count self-performance or joint venture activity in meeting the M/WBE project goal, but only for the scope of work performed as a commercially useful function and at a percentage level the M/WBE will be performing itself.

3. Any agreement between a bidder or proposer and an MBE or WBE in which the bidder or proposer requires that the MBE or WBE not provide subcontracting quotations to other bidders or proposers is prohibited and shall render a bidder's bid or proposer's proposal nonresponsive. D.R.M.C. 28-63(f)
4. If a bidder/proposer is participating in a joint venture with a certified M/WBE firm, complete the Joint Venture Eligibility Form and Joint Venture Affidavit contained in this bid document/RFP. Submit the aforementioned forms with the firm's Joint Venture Agreement, to the DSBO Director, **at least 10 working days prior to the proposal submittal**. The Joint Venture must be approved prior to the bid opening or proposal submittal by the DSBO Director. Approval by the DSBO Director includes determining the amount the Joint Venture will count towards meeting the project goal.
5. All M/WBEs listed on the Bid Form must be properly certified by the City on or before the date bids are opened in order to count towards meeting the designated goal. DSBO maintains an M/WBE Directory ("Directory"), which is a current listing of M/WBEs that have been certified by the City. A copy of the DSBO Directory is located at DSBO web site at <https://www.denvergov.org/dsbo>. Bidders are encouraged to use the Directory to assist in locating M/WBEs for the work and supplies required on the Project. Bidders are reminded that changes may be made to the Directory at anytime in accordance with the City's M/WBE Ordinance and procedures established to administer this program and a current copy of the Directory must always be used in preparing a bid. M/WBE certification or listing in the Directory is not a representation or warranty by the City as to the qualifications of any listed M/WBE.
6. In accordance with the provisions of the M/WBE Ordinance, DSBO will evaluate each bid to determine the responsiveness of the bid to the requirements of the M/WBE Ordinance. In determining whether a bidder's committed level of participation meets or exceeds the stated M/WBE goal, DSBO shall base its calculation of applicable amounts and percentages on the total base bid amount, not including any listed alternates, of each bid as follows:
 - a. The bid information provided by the agency will be used to determine the total base bid amount of each bid. Each bidder's total base bid amount will be multiplied by the M/WBE percentage established for the project to determine the exact dollar amount of required M/WBE participation for the Project. This amount will then be compared against the exact dollar amounts for the M/WBE committed for participation by the bidder. If the total dollar amount of participation listed meets or exceeds the established M/WBE dollar amount goal listed, then DSBO will determine that the goal has been met.
 - b. In addition, DSBO will determine the exact commitment percentage for each listed M/WBE by dividing the dollar amount listed for each M/WBE by the total base bid dollar amount submitted by the bidder. These individual percentages, when totaled for all listed M/WBE, will establish the total committed percentage level of M/WBE participation that the bidder must comply with during the life of the contract. In all cases, the committed percentage level of M/WBE participation must equal or exceed the assigned M/WBE goal for the Project.
 - c. In providing the exact dollar amount of participation for each listed M/WBE, a bidder should take care never to round up in determining whether or not the total of these amounts meets or exceeds the established percentage goal. The goal must be met or exceeded by dollar amounts and percentages in order for DSBO to determine that the bidder has met or exceeded the applicable M/WBE goal.
 - d. As previously mentioned, compliance with the M/WBE goal will be determined on the base bid alone. If a bid contains alternates, participation contained in any alternate will not count towards satisfaction of the Project goal. However, should any designated alternate be selected by the City for inclusion in the contract ultimately awarded, the M/WBE goal percentage level submitted at bid time, on the base bid, will also apply to the selected alternates and must be maintained for the life of the contract on the total contract amount, including any alternate work. Thus, even though such participation will not be considered in evaluating bids, bidders are urged to consider participation in preparing bids for designated alternates.

- e. On projects where force account or allowance bid items have been included, bidders must meet the M/WBE goal percentage based upon the total base bid, including all such items that are submitted to the City. However, when a force account or allowance is designated by the City to be either performed or purchased from a specific company, the bidder may back out the dollar amount of the force account or allowance from the total base bid and meet the M/WBE goal on the remaining reduced amount.
 - f. On bids which, at the time of bid opening, are equal to or exceed Five Million Dollars (\$5,000,000.00), including any alternates which may be selected, only sixty percent (60%) of the value of the commercially useful function performed by M/WBE suppliers shall count toward satisfaction of the Project goal. On Projects under Five Million (\$5,000,000.00) the value of the commercially useful function of M/WBE supplier(s) will count at a one hundred percent (100%) level. Manufacturer's representatives and packagers shall be counted in the same manner as brokers.
 - g. In utilizing the M/WBE participation of a Broker only the bona fide commissions earned by such Broker for its performance of a commercially useful function will count toward meeting the Project 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.
7. On or before the third (3rd) working day after bid opening, all of the Bidders are required to submit an executed "Letter of Intent" for each M/WBE listed on the Bid Form as a joint venture member, subcontractor, supplier, manufacturer, manufacturers' representative or broker of any tier. **An MBE or WBE Prime Bidder needs to submit a Letter of Intent for itself for self performed work**, and must identify their level of participation on the designated M/WBE participation page bound herein. A Letter of Intent shall be submitted only for the M/WBEs listed at the time of bid opening, since this is the only participation that will be counted toward satisfaction of the project goal. A form for the M/WBE Letter of Intent is included with the Bid Form. The M/WBE Letter of Intent is a written communication from the Bidder to the City evidencing an understanding that the Bidder has or will enter into a contractual relationship with the M/WBE or that its subcontractor(s) and supplier(s), manufacturer(s), manufacturers' representative(s) and broker(s) will do so. Each M/WBE Letter of Intent shall be accompanied by a copy of the City and County of Denver's M/WBE certification letter for each proposed M/WBE identified at bid time. Bidders are urged to carefully review these Letters before submission to the City to ensure that they are properly completed and executed by the appropriate parties.

Good Faith Effort.

In preparing a bid to demonstrate a good faith effort, bidders should consider the following instructions relating to compliance with the M/WBE Ordinance:

- 1. If the bidder or proposer has not fully met the project goal as provided in section 28-60, then it shall demonstrate that it has made good faith efforts to meet such goal. The bidder or proposer shall furnish to the director, within three (3) working days after bid opening by the City or on or before the time of the final project-specific proposal submitted to and authorized by the City pursuant to a competitive selection process, or bid selection by a private owner, a detailed statement of its good faith efforts to meet the project goal set by the director. This statement shall address each of the items in subsection (b) and any additional criteria that the director may establish by rule or regulation consistent with the purposes of this division 3. Good faith efforts must be demonstrated to be meaningful and not merely for formalistic compliance with this Division 3. The scope and intensity of the efforts will be considered in determining whether the bidder or proposer has achieved a good faith effort.
- 2. The statement of good faith efforts shall include a specific response and verification with respect to each of the following good faith effort categories, which may be further defined by rule or regulation. A bidder or proposer may include any additional information it believes may be relevant. Failure of a bidder or proposer to show good faith efforts as to any one (1) of the following categories shall render its overall good faith effort showing insufficient and its bid or proposal non-responsive:
 - a. If prebid or preselection meetings are scheduled by the City at which MBEs and WBEs may be informed of subcontracting or joint venture opportunities under a proposed contract to be bid, or procured pursuant to the competitive selection process, attendance at such prebid or preselection meetings is not mandatory; however, bidders and proposers are responsible for the information provided at these meetings.

- b. The bidder or proposer must solicit through all reasonable and available means, the interest of all MBEs and WBEs certified in the scopes of work of the contract. The bidder or proposer must solicit the interest of such MBEs and WBEs within sufficient time, prior to the bid opening or date of final project-specific proposal in the case of a competitive selection process, to allow such MBEs and WBEs to respond to the solicitation. The bidder or proposer must determine with certainty if the MBEs and WBEs are interested by demonstrating appropriate steps to follow up initial solicitations.
 - c. The bidder or proposer must select portions of the work of the contract to be performed by MBEs and WBEs in order to increase the likelihood that the project goal will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MBE and WBE participation as subcontractors or joint venturers, and for bidder or proposer self-performed work, as suppliers, manufacturers, manufacturer's representatives and brokers, all reasonably consistent with industry practice, even when the bidder or proposer would otherwise prefer to perform these work items with its own forces. The bidder or proposer must identify what portions of the contract will be self-performed and what portions of the contract will be opened to solicitation of bids, proposals and quotes from MBE and WBEs. All portions of the contract not self-performed must be solicited for MBE and WBE participation. The ability or desire of a bidder or proposer to perform the work of a contract with its own forces does not relieve the bidder or proposer of the responsibility to meet the project goal or demonstrate good faith efforts to do so.
 - d. The bidder or proposer, consistent with industry practice, must provide MBEs and WBEs at a clearly stated location with timely, adequate access to and information about the plans, specifications, and requirements of the contract, including bonding and insurance requirements, if any, to assist them in responding to a solicitation.
 - e. The bidder or proposer must negotiate in good faith with interested MBEs and WBEs and provide written documentation of such negotiation with each such MBE or WBE.
 - f. For each MBE or WBE which contacted the bidder or proposer or which the bidder or proposer contacted or attempted to subcontract or joint venture with, consistent with industry practice, the bidder or proposer must supply a statement giving the reasons why the bidder or proposer and the MBE or WBE did not succeed in negotiating a subcontracting, supplier, manufacturer, manufacturer's representative, broker or joint venture agreement, as applicable.
3. The bidder or proposer must provide verification that it rejected each non-utilized MBE and WBE because the MBE or WBE did not submit the lowest bid or it was not qualified. Such verification shall include a verified statement of the amounts of all bids received from potential or utilized subcontractors, suppliers, manufacturers, manufacturer's representatives, brokers or joint venturers on the contract, whether or not they are MBEs or WBEs. In making such a determination of not being qualified, the bidder or proposer shall be guided by the definition of qualified in section 28-54(42), but evidence of lack of qualification must be based on factors other than solely the amount of the MBE's or WBE's bid. For each MBE or WBE found not to be qualified by the bidder or proposer, the verification shall include a statement giving the bidder's or proposer's reasons for its conclusion. A bidder's or proposer's industry standing or group memberships may not be the cause of rejection of an MBE or WBE. A bidder or proposer may not reject an MBE or WBE as being unqualified without sound reasons based on a reasonably thorough investigation and assessment of the MBE's or WBE's capabilities and expertise.
 4. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining bonding, lines of credit, or insurance as required by the City or by the bidder or proposer, provided that the bidder or proposer need not provide financial assistance toward this effort.
 5. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining necessary and competitively priced equipment, supplies, materials, or related assistance or services for performance under the contract, provided that the bidder or proposer need not provide financial assistance toward this effort.
 6. The bidder or proposer must use the DSBO MBE/WBE directories to identify, recruit, and place MBEs and WBEs.

7. In determining whether a bidder or proposer has satisfied good faith efforts as to a project goal, the success or failure of other bidders or proposers on the contract in meeting such project goal may be considered.

Continuing Commitments.

In accordance with the provisions of the M/WBE Ordinance, the bidder agrees that it is committed to meeting either the M/WBE participation goal or the M/WBE participation set forth in its statement of good faith. This commitment must be expressly indicated on the "Commitment to MWBE SBE Participation" form included with the Bid Form. This commitment includes the following understandings:

1. The bidder understands it must maintain M/WBE goals throughout the performance of the Contract pursuant to the requirements set out in D.R.M.C. 28-72.
2. The bidder understands that it must establish and maintain records and submit regular reports, as required, which will allow the City to assess progress in achieving the M/WBE participation goal.
3. The bidder understands that if change orders or any other contract modifications are issued under the contract, the bidder shall have a continuing obligation to immediately inform DSBO in writing of any agreed upon increase or decrease in the scope of work of such contract, upon any of the bases discussed in Section 28-73 of the M/WBE Ordinance, regardless of whether such increase or decrease in scope of work has been reduced to writing at the time of notification.
4. The bidder understands that if change orders or other contract modifications are issued under the contract, that include an increase in scope of work of a contract for construction, reconstruction, or remodeling, whether by amendment, change order, force account or otherwise which increases the dollar value of the contract, whether or not such change is within the scope of work designated for performance by an M/WBE at the time of contract award, such change orders or contract modification shall be immediately submitted to DSBO for notification purposes. Those amendments, change orders, force accounts or other contract modifications that involve a changed scope of work that cannot be performed by existing project subcontractors or by the contractor shall be subject to a goal for M/WBEs equal to the original goal on the contract which was included in the bid. The contractor shall satisfy such goal with respect to such changed scope of work by soliciting new M/WBEs in accordance with Section 28-73 of the M/WBE Ordinance as applicable, or the contractor must show each element of modified good faith set out in Section 28-75(c) of the M/WBE Ordinance. The contractor shall supply to the director the documentation described in Section 28-75(c) of the M/WBE Ordinance with respect to the increased dollar value of the contract.

All bidders are charged with knowledge of and are solely responsible for complying with each and every provision of the M/WBE Ordinance in making a bid and, if awarded, in performing the work described in the Contract Documents. Failure to comply with these provisions could constitute cause for rejection of a bid or subject the selected contractor to sanctions set forth in the M/WBE Ordinance. These instructions are intended only to generally assist the bidder in preparing and submitting a compliant bid. Should any questions arise regarding specific circumstances, bidders must consult the M/WBE Ordinance or contact the Project's designated DSBO representative at (720) 913-1999.

IB- 26 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-27 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 Diane Mora who can be reached via email at pw.procurement@denvergov.org.

IB-28 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 subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. 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

**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 subject 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 Division of Small Business Opportunity.
- 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. "Division of Small Business Opportunity" means the City agency established pursuant to Article III, Division 1 of Chapter 28 of the Denver Revised Municipal Code.

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 (10) 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 Division of Small Business Opportunity 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 the 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.

REGULATION NO. 3 - DIRECTOR OF CONTRACT COMPLIANCE:

The Director of the Division of Small Business Opportunity shall perform the duties assigned to such official by Article III, Division 2 Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Division of Small Business Opportunity 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 Division of Small Business Opportunity; 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 Division of Small Business Opportunity 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 Division of Small Business Opportunity 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 the Notice to Proceed a sign-off will be required of the Director of the Division of Small Business Opportunity 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.

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 and 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 Denver Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen (15) 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.

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

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 of Chapter 28 of the Revised Municipal Code, and the rules, regulations, and relevant orders of the Manager and the Director.
5. The Contractor will furnish all information and reports required by Article III, Division 2 of 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 canceled, 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.
7. The Contractor will include Regulation 12, Paragraph 2 and the provisions of paragraphs (1) through (6) in every subcontract of 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 on each subcontractor or supplier. 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 of 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.

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

APPENDIX F

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.

/s/

Manager of Public Works
City and County of Denver

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

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).

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.

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

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:

- 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 the Division of Small Business Opportunity 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.
- 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 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 Division of Small Business Opportunity 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.

B. 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 of 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 of 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 of Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
3. The Division of Small Business Opportunity shall review the Contractor's employment practices during the performance of the contract. If the Division of Small Business Opportunity determines that the Contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

C. 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 of 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.

D. 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.
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.

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

CONTRACT NO. 201948801

2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

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

STURGEON ELECTRIC COMPANY, INC.
12150 E 112th Avenue
Henderson, Colorado 80640

hereinafter referred to as the "Contractor," party of the second part,

WITNESSETH, commencing on **January 11, 2019**, 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:

CONTRACT NO. 201948801 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

WHEREAS, bids pursuant to said advertisement have been received by the Manager of Public Works, 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 M/WBE Participation
Article III, Division 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/Partial Lien Release Form
Final Receipt
Change Orders (as applicable)
Federal Requirements (as applicable)
Prevailing Wage Rate Schedule(s)
Technical Specifications
Contract Drawings
Authorized Work Orders (including proposal pricing requests and attachments, pricing proposals and any clarifications or modifications)

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.

The 2018 Traffic Signal Construction Master On-Call will be use to install new traffic signals or rebuild existing outdated traffic signals within the CCD. All work will beeper current Denver Traffic standards. Scope of work include caissons, remove/replace existing traffic signal with mast arm traffic signal poles, install 12" diameter signal indications, 16" pedestrian signals faces, pedestrian crossing stations (buttons and signs), updated controller and cabinet, Uninterrupted

Power Supply (UPS), Ethernet communication equipment (switches), Bluetooth device (Traffic Management System - BlueTOAD), video detection and traffic surveillance cameras, and emergency preemption system, and traffic signs, pavement markings, and civil which include but not limited to sidewalk, curb ramps, curb and gutters, storm sewers, roadway and asphalt. Each project will be scoped, priced, and authorized separately and work will be supervised and directed by a Traffic project manager. The term of each contracts will be for THREE years from date of execution with NO extensions. Estimated value of the contract will not exceed \$5,250,000.00. Value of each Work Orders is limited to maximum of \$450,000.00 each. Multiple contracts may be awarded pending the needs of the City.

In order to establish a competitive bidding environment for bidders seeking to perform this Work, the City devised a representative scope of services comprised of work items and units which the City anticipated the successful bidder may be required to perform on the various projects to which the contractor is assigned during the term of this Contract. Each bidder provided a unit price for each representative work item, at the units provided.

The manner in which the projects will be identified and assigned will be as follows:

1. Individual projects will be identified and their specific scope of Work will be explained in detail on drawings and supplemental specifications issued to the contractor in the form of a Proposal Pricing Request.
2. The Contractor will thoroughly review the scope of Work and provide a price (in the format provided by the City) and a project schedule responsive to each Proposal Request. The bid unit prices must be used for all work that corresponds with the unit price descriptions. Work elements that are not covered by any unit prices shall be priced with using the format and cost categories for labor, material and equipment specified herein. For additional information relating to preparation of Proposal Request pricing refer to Special Contract Conditions.
3. Prior to submitting a price, the contractor shall inspect the work site and its surroundings. Although the contractor 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 contractor 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 scope of 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 scope of Work to be done cannot totally be derived from either the Drawings and Technical Specifications or from the Manager or his representatives.

Since the proposal pricing information cannot be guaranteed, the Contractor shall have assumed the risks attendant to successful performance of the scope of 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 contractor at the time of pricing.

4. Upon receipt of the Proposal Request pricing worksheet from the Contractor, negotiation of non-unit price items and agreement on the total price, schedule and any other specific requirements for the requested scope of Work, a Work Order for the specific project will be issued by the City authorizing the Work under the terms and conditions set forth therein and encumbering funds for such Work.
5. Upon receipt of a Work Order Notice to Proceed, the Contractor shall have ten (10) consecutive calendar days to commence the work.
6. During the course of the Work on each Work Order, the Contractor shall submit regular pay applications. The City shall issue payment for Work completed in accordance with the terms and conditions of the Contract Documents.
7. If additions, deletions or other modifications to the scope of Work is required or desired by the City on a particular project authorized by Work Order, a Work Order Change will be issued based on pricing prepared in the same manner as a Proposal Request and under the terms and conditions for issuance of a Change Order under the General Contract Conditions. The Work Order Change will identify any increase or decrease in the cost, change in the period of performance and any other modifications to the performance requirements for that particular Work Order.
8. Upon satisfactory completion and final acceptance of each Work Order, a Final Receipt will be issued and final payment for the Work Order will be made.
9. It is possible that more than one Work Order may be issued and under construction at the same time.

The Contractor agrees to price all Work described in any Proposal Pricing Request issued hereunder, in accordance with the unit price bids for covered items and the terms and conditions contained herein and further 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 in any Work Order issued by the City in accordance with the terms and conditions set forth herein.

3. TERMS OF PERFORMANCE

For any Proposal Pricing Request submitted to the Contractor by the City for pricing, the Contractor agrees to review and, in good faith, submit comprehensive prices for each such Request within fourteen (14) consecutive calendar days of the date of issuance of such Request. In the event the City elects, at its sole discretion, to issue a Work Order pursuant to such a Request, the Contractor agrees to undertake the performance of the specified Work within ten (10) consecutive calendar days of the issuance of a Notice to Proceed for the referenced Work Order. The Contractor agrees to satisfactorily perform and complete all Work or effort required to complete the Work described in each issued Work Order within the period of performance specified in the Work Order and Notice to Proceed, plus such extensions of time as may be granted by the Manager in accordance with the provisions of the General Contract Conditions and Special Contract Conditions incorporated herein.

4. TERMS OF PAYMENT

The City agrees to pay the Contractor for the performance of all of the Work required under each authorized Work Order in accordance with the General Contract Conditions and Special Contract Conditions. In no event, however, shall the total amount of compensation paid to the Contractor by the City exceed the maximum contract amount specified herein.

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 M/WBE REQUIREMENT

This Contract is subject to all applicable provisions of Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), designated as Sections 28-31 – 28-36 and 28-52 – 28-90 D.R.M.C. and referred to in this Contract as the “M/WBE Ordinance”. Without limiting the general applicability of the foregoing, the Contractor acknowledges its continuing duty, pursuant to Sections 28-72, 28-73 and 28-75 of the D.R.M.C., to maintain throughout the duration of this Contract, compliance with the level of minority and Woman business enterprise participation, upon which the City approved the award of this Contract to the Contractor and the Contractor further acknowledges that failure to maintain such participation commitments or otherwise comply with the requirements of the M/WBE Ordinance shall subject the Contractor to sanctions in accordance with Section 28-77 of the D.R.M.C. Nothing contained in this provision or in the M/WBE 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.

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 that 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 that 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. DISPUTE 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 28-33 D.R.M.C. for Minority/Woman 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. MAXIMUM CONTRACT AMOUNT AND TERM

The maximum Contract Amount to be paid by the City to the Contractor for all Work performed under this Contract shall in no event exceed the sum of **Seven Million Seven Hundred Fifty-Three Thousand Eight Hundred Eighty-Eight Dollars and Forty-Five Cents (\$ 7,753,888.45)** unless this Contract is modified to increase said amount by a duly authorized, written contract amendment mutually agreeable to and executed by the parties hereto. The term of this agreement shall be one (1) year from the date of execution of this Contract. Any work order issued prior to the expiration of the term shall be performed to completion, even if such performance extends beyond the expiration date and the term of the contract shall be extended to accommodate completion of all outstanding work orders. Additionally, the contract may be extended by a mutually agreeable contract amendment initiated at the sole discretion of the City. Each project will be assigned and authorized separately and no authorized Project cost will exceed **Four Hundred Fifty Thousand Dollars and No Cents (\$450,000.00).**

17. 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.

Contract Control Number:

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:

By_____

By_____

By_____



IN WITNESS WHEREOF, the parties have executed this agreement and affixed their seals at Denver, Colorado as of the day first above written.

Contract Control Number: 201948801

Vendor Name: STURGEON ELECTRIC COMPANY, INC.

By: [Signature]

Name: [Signature]
(please print)

Title: Group Vice President
(please print)

ATTEST: [if required]

By: [Signature]

Name: Diane Lynch
(please print)

Title: Compliance Specialist
(please print)



**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

General Contract Conditions

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CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
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 Management Division

– *Standard Detail Drawings*

– *Public Works Wastewater Capital Projects Management Standard Construction Specifications*

Colorado Department of Transportation:

Standard Specifications for Road and Bridge Construction
(Sections 200 through 700 of the 2011 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 2015 Series, City and County of Denver Amendments 2016)

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 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-3 ENGINEERING DIVISION / CITY ENGINEER

The Engineering Division is a unit of the Department of Public Works and is supervised by the City Engineer, who is subordinate to the Manager of Public Works. 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 for Transportation are deleted and replaced with references to the Engineering Division and City Engineer, respectively.

SC-4 WASTEWATER MANAGEMENT DIVISION

The Wastewater Management Division is a unit of the Department of Public Works and is supervised by the Deputy Manager of Public Works for Wastewater Management, who is subordinate to the Manager of Public Works. This Division is responsible for the operation and maintenance of the City's wastewater facilities.

SC-5 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 (the "Director") 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 Director the authority necessary to undertake those responsibilities under this Contract. The Director shall have supervisory responsibility over the Project Manager. Additionally, Contractor questions concerning the Plans and Technical Specifications shall be directed to:

Denver Department of Public Works

City Project Manager
John Yu

Telephone
(720) 865-3176

SC-6 LIQUIDATED DAMAGES

The Contract Time, as that term is defined under the General Conditions, shall be separately set out in each Work Order. Should the Contractor fail to complete all Work within the Contract Time allocated under that Work Order, the Contractor shall become liable to the City and County of Denver for liquidated damages on that Project, and not as a penalty, at the rate of \$0.00 for each Day that the Contractor exceeds the completion date in the executed work order, all in accordance with provisions of General Contract Condition 602, LIQUIDATED DAMAGES; ADMINISTRATIVE COSTS; ACTUAL DAMAGES, unless a greater or lesser amount is provided for in the authorized Work Order.

If the Contractor fails to commence work within ten (10) consecutive calendar days of the date of issuance of a Notice to Proceed for a referenced Work Order, the Contractor shall become liable to the City and County of Denver for liquidated damages, and not as a penalty, at the liquidated damages rate specified in the fully executed Work Order, for each consecutive calendar day after the expiration of the initial ten (10) day period after issuance of a Notice to Proceed that the Contractor fails to commence work on a fully executed Work Order issued by the City, all in accordance with provisions of General Contract Condition 602.

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-7 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-8 RESERVED

SC-9 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 for this Project to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura®. 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>
Public Works	John Yu	(720) 865-3176

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 shall also submit to the Auditor and other appropriate officials of the City in a timely fashion, information required by General Contract Condition 1004, REPORTING WAGES PAID.
4. Applications for Payment must be accompanied by completed Partial or Final Claim Release Form, as appropriate, from EACH subcontractor and supplier, **AND** the Contractors' Certification of Payment Form (CCP), unless an exception is approved pursuant to General contract condition 907.

The forms, Final/Partial 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.

DEPARTMENT OF PUBLIC WORKS

FINAL/PARTIAL RELEASE AND CERTIFICATE OF PAYMENT
(SUBCONTRACTOR/SUPPLIER)

(PROJECT NO. and NAME)

(NAME OF CONTRACTOR)

(NAME OF SUBCONTRACTOR/SUPPLIER)

Check Applicable Box:
☐ MBE ☐ WBE

Date: _____, 20____.

Subcontract #: _____.

Subcontract Value: \$ _____.

Last 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 Last 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 _____)

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

Notary Public/Commissioner of Oaths
My Commission Expires _____

(Name of Subcontractor)

By: _____

Title: _____

Instructions for Completing the Contractor/Consultant Certification of Payment Form

Note: The attached Contractor/Consultant Certification of Payment form must be completed by the Contractor/ Subconsultant and all subcontractors/subconsultant or suppliers used on the project at **any tier** and submitted with each pay application. The Contractor/Consultant is responsible for the accuracy of all information provided and is required to have each subcontractor/subconsultant or supplier fill out the appropriate forms. Please be sure to complete all information requested at the top of the form, including the name of the person who prepared this form.

If you reproduce this form, you must continue to list each of the originally listed firms, as well as any additional firms used during the performance period of the contract work or task order.

If you have any questions, please call the Compliance Unit of DSBO at 720.913.1999.

Instructions for Completing the Contractor/Consultant Certification of Payment Form, per Column

Contractor/Subcontractor or Subconsultant/Supplier Name: In the space provided, list all subcontractors/ subconsultants and suppliers used on the project. For all M/W/S/E/DBEs use the exact name listed in the DSBO Directory.

M/W/S/E/DBE/NON: For each name listed, indicate whether the entity is a certified M/W/S/E/DBE.

Column A: Provide the contract amount, as listed at bid time, for the Contractor/Consultant and each subcontractor/subconsultant or supplier.

Column B: Provide the percentage portion of each listed subcontractor/subconsultant or supplier contract amount (Column A) compared to the total original contract amount in (I).

Column C: Provide the original contract amount (Column A) for each subcontractor/subconsultant or supplier plus any awarded alternate and/or change order amounts applicable. If an alternate/change order does not apply to the listed firm, re-enter the original contract amount (Column A).

Column D: Provide the percent portion of each listed subcontractor/subconsultant or supplier contract amount (Column C) compare to the current total contract amount in (II).

Column E: Provide the amount requested for work performed or materials supplied by each listed subcontractor/subconsultant or supplier for this pay application. The sum of the items in this column should equal the estimated amount requested for this pay application.

Column F: Provide the amount paid to each subcontractor/subconsultant or supplier on the previous pay application. Enter the previous pay application number in the column heading. The sum of the items listed in this column should equal the warrant amount paid to the Contractor/Consultant on the previous pay application. The amounts paid to the subcontractor/subcontractor or suppliers should be the actual amount of each check issued.

Column G: Provide the net paid to date for the Contractor/Subconsultant and each listed subcontractor/subconsultant or supplier.

Column H: Provide the percent portion of the net paid to date (Column G) for the Contractor/Subconsultant and each listed subcontractor/subconsultant or supplier of the current total contract amount in (II).

SC-10 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

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-11 CONSTRUCTION INSPECTION BY THE CITY

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

1701 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-12 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-13 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-14 WAIVER OF: PART 8 OF ARTICLE 20 OF TITLE 13, COLORADO REVISED STATUTES

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

SC-15 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 does not bill City staff 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-16 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 and Auto 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) **Technology Errors & Omissions:** Contractor shall maintain Technology Errors and Omissions insurance including network security, privacy liability and product failure coverage with limits of \$1,000,000 per occurrence and \$1,000,000 policy aggregate.

(10) **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-17 GREENPRINT DENVER

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-12.

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

This form can be found at:

<http://www.denvergov.org/constructioncontracts/Home/ContractorResources/tabid/443154/Default.aspx>

ON-CALL SPECIFIC SPECIAL CONDITIONS:

SC-18 PERFORMANCE OF WORK, AS DIRECTED BY THE CITY

Titles 1 and 3 of the General Contract Conditions shall generally apply to this Contract as supplemented by the following:

As described elsewhere in the Contract documents, this Contract contemplates performance of services Work by the Contractor on a variety of, as yet to be identified, City construction and demolition Projects on an “as needed” or “on call” bases. Under the terms of this Contract, the City, in its sole discretion, will determine the extent and nature and also specific terms and conditions of each Work scope it requires the Contractor to. Nothing contained herein, however, shall be construed by the Contractor as promise or guarantee of any minimum amount of Work or compensation hereunder.

In the event the City elects to direct the Contractor to perform hereunder, the process by which both a specific Work scope and specific performance terms or conditions will be established prior to commencement of such work shall be as follows:

1. The City will identify a Work scope for the Contractor to perform and will issue to the Contractor a Proposal Pricing Request (in the format provided herein) containing, at a minimum, a detailed Work description, drawings, plans, specifications, the specific terms and conditions under which such Work must be performed and other pertinent materials.
2. In accordance with the terms and conditions of this Contract, the Contractor will review each Request and provide a price (in the Proposal Request Pricing Worksheet format provided herein) and a project schedule responsive to each Proposal Pricing Request. In preparing its price, the Contractor shall include all bid unit prices for any Work that corresponds with any unit price description. Work elements that are not covered by any unit prices shall be priced using the format and cost categories for labor, material and equipment specified herein.
3. Upon receipt of the completed and fully executed Proposal Request Pricing Worksheet from the Contractor, negotiation of non-unit price items and agreement on the total price, schedule and any other specific requirements for the requested scope of Work, a Work Order (in the format provided for herein) for the Work will be issued by the City authorizing the Work under the terms and conditions set forth Work Order and attachments and encumbering funds for the performance of such Work.
4. Upon receipt of the fully executed Work Order and a Work Order Notice to Proceed (in the format provided for herein), the Contractor shall have ten (10) consecutive calendar days to commence the Work.
5. During the course of performance of the Work authorized by each Work Order, the Contractor shall submit regular pay applications, in accordance with provisions of these Special Contract Conditions. The City shall issue payment for all satisfactorily completed Work authorized by Work Order, in accordance with the terms and conditions of the Contract Documents.
6. If additions, deletions or other modifications to the authorized Work scope or other terms or conditions are required or desired in the sole discretion of the City under a particular Work Order, a Work Order Change will be issued based on pricing prepared in the same manner as a Proposal Pricing Request and under the terms and conditions for issuance of a Change Order under the General Contract Conditions. The Work Order Change will identify any increase or decrease in the cost, change in the period of performance and any other modifications to the performance requirements for that particular Work Order.
7. Upon satisfactory completion, notice of Substantial Completion and Final Completion of the Work authorized and performed under each Work Order, Work Order Close-Out will occur, a Final Receipt for that Work Order will be issued, and final payment for the Work Order will be made.
8. Under this Contract, more than one Work Order may be issued and performed by the Contractor at the same time.

Given that under this Contract, the Contractor is committed to make available to the City and, as from time to time directed by the City under the process described, furnish all labor, tools, supplies, equipment, materials and everything necessary for and required to do, perform and complete all of the Work described in any Work Order issued in accordance with the terms and conditions set forth herein, certain provisions, terms and conditions included in the General Contract Conditions either will not apply or will apply on a Work Order by Work Order basis rather than an overall Contract basis.

As such, the term Work, as used in the Contract Documents shall mean the Contractor's equipment and physical plant, labor, management, administration, supervision, materials and supplies, and all other things needed to assemble, manufacture, complete or perform the various components into finished improvements pursuant to any Work Order issued pursuant to the Contract Documents. Unless otherwise specified or clearly inapplicable from the context of a given provision, each and every General Contract Condition contained or referenced in the Contract Documents shall apply to and control all Work performed hereunder.

SC-19 PERFORMANCE AND PAYMENT BOND

Title 15 of the General Contract Conditions shall generally apply to this Contract as supplemented by the following:

A Performance and Payment Bond, in the form included in these Contract Documents, shall be furnished covering all Work performed hereunder. An initial bond in the amount of **Fifty Thousand Dollars and No Cents (\$50,000.00)** shall be provided at the time of Contract execution. In the event the dollar amount of Work authorized under all work orders exceeds this amount the Contractor shall provide properly executed bond Change Riders, also in the form included in these Contract Documents immediately after this provision, totaling the amount of all authorized work orders.

SC-20 PROPOSAL REQUEST PRICING

Title 9 of the General Contract Conditions shall generally apply to this Contract as supplemented by the following:

- A. In order to initiate Work hereunder, the City must prepare and issue a Proposal Pricing Request, in the form included in these Contract Documents. For each Proposal Pricing Request submitted to the Contractor for pricing, the Contractor shall price the request and submit a completed Proposal Request Pricing Worksheet, in the form included in these Contract Documents immediately after this provision and complying with the terms and conditions set forth on the form, to the Project Manager, with all supporting materials, within fourteen (14) consecutive calendar days of the date of issuance of such Proposal Pricing Request. The Contractor shall price each request and prepare the appropriate documentation in accordance with the requirements stated herein.
- B. **Unit Prices** – In pricing a Request, the bid unit prices shall be fully compensation for the Work identified in the unit price description and corresponding specification section, as well as, all costs associated with field and office supervision required, and general and home office markups, overhead and any other direct or indirect costs of the Work not specifically excluded. The only costs that may be excluded from a bid unit prices must be applied to all Work that corresponds to the unit price description in the Bid Form;
- C. **Work Not Covered by Bid Unit Prices** – In pricing the remaining Work in a Request, the Contractor shall provide itemized and sufficient supporting data, including calculations, measurements, cost records, production rates, equipment types and capacity, labor costs by craft and other information which the City may reasonably require in order for the City to evaluate the Contractor's pricing for Work not covered by unit prices for any Proposal Request and Work Order Change pricing.

Direct labor costs shall include only the cost associated with the workers who actually perform the Work (including fringe benefits and the Contractor's actual cost for Worker's Compensation, Social Security and Payroll taxes). The costs of supervision, management and field or office overhead costs shall not be included or calculated as direct labor cost. For shop or plant components of the Work, the direct labor cost shall include only those workers who work directly on the item being manufactured or the actual operators of the equipment being used to handle the items being manufactured.

Material costs shall include the direct costs of materials, supplies and equipment incorporated in or consumed by the Work. The costs shall be based on buying the material, supplies and equipment other than small tools, or equipment rental rates without markup or operator, as listed in the appropriate rental rate book currently in use by the Colorado Department of Transportation.

Equipment costs shall be the actual cost to the Contractor of owned and/or rented equipment other than small tools, or equipment rental rates without markup or operator, as listed in the appropriate rental rate book currently in use by the Colorado Department of Transportation.

- D. **Markup for Overhead and Profit** – The Contractor, subcontractor or sub-subcontractor who actually performs the Work shall be entitled to a markup of 15% on the actual costs identified in item B, only, above. Bonds, insurance and sales tax shall be added **after** markup.

A supervising subcontractor, if any, shall not be entitled to a markup on the actual price charged to the subcontractor by the sub-subcontractor.

The Contractor shall be entitled to a 7% markup on the actual price for the subcontractor's work.

These percentage markups shall be considered to include field and office supervisors and assistants including all clerical and general office help; review and coordination; estimating; expediting; watchmen; small tools; incidental job burdens including office equipment and supplies, temporary toilets, telephone, fax and conformance to OSHA requirements; and general home office expenses. These percentage mark ups shall be applied one time only for each Proposal Request and shall not pyramid in any way.

- E. Bonds, Insurance, Permits and Taxes shall be reimbursed at the actual cost associated with all required bond riders, insurance, permits, licenses, and sales, use or other taxes related to the Work.
- F. If it is later determined that the pricing was not correct due to inaccurate or incomplete pricing data by the Contractor or any subcontractor or supplier, the price shall be reduced accordingly and the Work Order cost modified by a Work Order Change.

SC-21 WORK ORDERS

With respect to Each Work Order Issued hereunder, the General Contract Conditions shall generally apply to this Contract as supplemented by the following:

Upon review of any Proposal Request Pricing Worksheet completed by the Contractor pursuant to a City Proposal Request, the City may, at its sole discretion, reject the pricing submittal or may direct that the Work described in the Proposal Request and priced by the Contractor be completed by issuance of a Work Order, in the form included in these Contract Documents to the Contractor. The City reserves the right to issue such a Work Order, at the price and under the terms of the Contractor's pricing submittal, at any time before the expiration of 120 consecutive calendar days from the date the pricing submittal was received by the City. If no Work Order is issued and the pricing submittal is not rejected within this period, the Contractor's pricing submittal shall be deemed rejected by the City.

SC-22 WORK ORDER NOTICE TO PROCEED

GC-302 of the General Contract Conditions shall generally apply to this Contract as supplemented by the following:

A Work Order Notice to Proceed, in the form included in these Contract Documents for that particular Work Order, will be issued by the Director at such time as the Work Order is executed by the Contractor and all designated City officials, and the Contractor has submitted a Payment and Performance bond or Bond Change Rider for the Work described in the Proposal Request, in accordance with SC-20, PERFORMANCE AND PAYMENT BOND, and which are satisfactory to the City Attorney. Until a Work Order Notice to Proceed is issued, the City shall have no obligation to compensate the Contractor for Work performed.

The Contractor shall commence the Work in accordance with that particular Work Order within ten (10) consecutive calendar days of the date of the Work Order Notice to Proceed, and the Contractor shall prosecute the Work to be accomplished under the Work Order at such time and place as the Work Order directs and shall fully complete in every detail all specified Work in accordance with the terms and conditions of the Work Order and the provisions of these General Contract Conditions and Special Contract Conditions, within the period of performance specified in the Work Order, plus such extensions of time as may be granted by the Manager in accordance with the provisions of this Contract.

SC-23 PROGRESS PAYMENTS FOR WORK ORDERS

Title 9 of the General Contract Conditions shall apply to this Contract as supplemented by the following:

With respect to any Work Order issued hereunder, the terms and conditions of Title 9 shall apply to each Work Order as if such Work Order were a separate Contract. In addition, progress payments for the performance of any Work shall be based on completed Work estimates supported wither by lien releases or properly completed Contractor's Certifications of Payment, in the format included in these Contract Documents, and subject to the following requirements:

1. Each estimate of Work completed for each Work Order shall contain a list of subcontractor and material invoices for all subcontractors and suppliers and shall be based on the approved schedule of values certified by the Project Engineer/Manager or the Consulting Architect or Engineer, as appropriate. Each submittal estimate must specify the percent of the Work complete.
2. Each estimate of Work completed for each Work Order shall specifically identify those M/WBE Subcontractors or Suppliers that the Contractor is utilizing on the Project pursuant to the requirements of Article III, Division 1 of Chapter 28, of the D.R.M.C.
3. Each estimate of Work for each Work Order completed shall be accompanied by either duplicate sets of verified Contractor's Certifications of Payment, in the form included in these Contract Documents, or by verified Partial Release of Contractor forms from each subcontractor and supplier, also in the form included in these Contract Documents. Each estimate of Work for each Work Order completed shall also be accompanied by:
 - a. A written schedule of values, which set out the quantities and costs for the Project; and
 - b. The Project Engineer/Manager's, or as applicable, Consulting Architect/Engineer's estimated statement of the percentage of Work completed for each line item of cost for which the Contractor seeks payment. The Contractor shall also submit to the Auditor and other appropriate officials of the City, in a timely fashion, all information required by the General Contract Conditions.
4. Each estimate of the percentage of Work completed shall constitute a representation by the Contractor to the City that the Work has progressed to the point indicated; that the quality of the Work covered by the estimate is in accordance with the Contract Documents; that each obligation covered by the estimate (except as otherwise noted) and the payments required will be used to discharge such obligation unless previously discharged; and that the Contractor is entitled to payment in the amount requested. The Project Engineer/Manager or the Consulting Architect/Engineer, as appropriate, with the assistance of input from the Project Manager, in the event that such has been retained, will also verify and certify the estimate prior to acceptance by the City.
5. By submitting an application for payment, the Contractor further warrants that:

- a. Title to Work covered by each submitted estimate of Work completed will pass to the City by incorporation into the completed Work;
 - b. Work covered by previous estimates of Work completed is free and clear of liens, claims, security interests or encumbrances, hereinafter referred to as "liens, " except for any interest created by retainage; and
 - c. No Work covered by any estimate of Work completed will have been acquired by the Contractor, or any other person or entity performing Work at the Work site or furnishing materials or equipment for the Project and that no Work covered by any estimate is subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the contractor or such other person or entity.
6. Approval of an estimate of Work completed or actual payment by the City shall not foreclose the right of the City to examine the books and records of the Contractor to determine the correctness and accuracy of any estimate item.
 7. The terms and conditions regarding retainage contained in General Contract Condition 908 shall apply separately to payments made under each and every Work Order issued hereunder. Moreover, applications for a reduction in retainage must be accompanied by Partial Release of Liens form from each subcontractor or supplier, in the form included in these Contract Documents immediately after this provision via the Textura® system.
 8. Pursuant to General Contract Condition 907, the final estimate for payment shall also be accompanied by Final Release of Liens form from each subcontractor and supplier, in the form included in these Contract Documents.
 9. Receipt of Contractor's Certification of Payment or Partial Release of Liens form by the City hereunder shall not act to impair the City's obligations imposed by C.R.S. 38-26-107 or successor statute.
 10. If the Contractor disputes a subcontractor or supplier entitled to a portion of the previous month's payment, the Contractor need not submit a Contractor's Certificate of Payment or Partial Release of Liens form from such subcontractor and/or supplier. However, in lieu of such submittal, the Contractor shall submit to the City a copy of a written communication from the Contractor to such subcontractor and/or supplier explaining the Contractor's determination not to render payment to such subcontractor or supplier, together with proof of service of such written communication upon such subcontractor or supplier.

SC-24 WORK ORDER CHANGES

Title 11 of the General Contract Conditions shall apply to this Contract, on a Work Order by Work Order basis, as supplemented by the following:

In accordance with all terms and conditions provided for standard change orders under Title 11 of the General Contract Conditions, the City may issue Work Order Changes providing for deletions, additions and modifications to the Work under a duly issued Work Order. Work Order Changes must be issued on the Work Order Change Form, in the form included in these Contract Documents.

SC-25 WORK ORDER CLOSE-OUT

Titles 19 and 20 of the General Contract Conditions shall apply to this Contract, on a Work Order by Work Order basis, as supplemented by the following:

Upon Substantial Completion of all Work performed under each Work Order in accordance with the Contract Documents, final close-out for that Work Order shall be made in accordance with the terms and conditions of Title 20 of the General Contract Conditions.

SC-26 CONTRACT CLOSE-OUT

Upon written notification from the City to the Contractor that no further Work Orders will be issued hereunder and the completion of final close-out for any previously issued Work Orders in accordance with SC-19 WORK ORDER CLOSE-OUT, the Contract shall proceed to final close-out. The Contractor agrees to comply with all applicable Contract close-out procedures and requirements set forth in Section 01010 of the Contract Specifications. In addition, the Contractor agrees to execute and deliver to the City a Final Receipt in the forms previously referenced and to provide to the City a consent of surety covering all Work performed hereunder. Until such time as all Contract close-out procedures are completed and each contract close-out requirement is satisfied, the City shall retain from amounts due the Contractor, in addition to any other withholdings provided for hereunder, a sum not greater than one percent (1%) of the maximum contract amount specified herein.

SC-27 OTHER ON-CALL CONSTRUCTION SERVICES CONTRACTS

In the event the City elects to bid other Construction Services Contracts during the performance period specified herein, the parties specifically agree that the Contractor will not submit a bid or enter into a contract for such Contracts until such time as the City issues to the Contractor written notification that not further Work Orders will be issued hereunder, as provided for in SC-19 CONTRACT CLOSE-OUT.

SC-28 ON-CALL SPECIFIC CONTRACT FORMS

The following listed and attached "Contract Forms" shall be detached and utilized in accordance with the Contract Documents. *(forms located at the end of this section, behind title sheet labeled "SC-28 On-Call Specific Contract Forms")*

1. Change Rider 1 Page
2. Proposal Request..... 1 Page
3. Proposal Request Pricing Worksheet..... 1 Page
4. Unit Price Sheets for Proposal Request 1 Page
5. Contractor Worksheet for Proposal Requests 1 Page
6. Work Order 1 Pages
7. Work Order Change 1 Pages

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

PERFORMANCE AND PAYMENT BOND

Bond No. 014212183

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned STURGEON ELECTRIC COMPANY, INC., 12150 E 112th Avenue Henderson, Colorado 80640, a corporation organized and existing under and by virtue of the laws of the State of Michigan, hereafter referred to as the "Contractor", and Liberty Mutual Insurance Company, a corporation organized and existing under and by virtue of the laws of the State of Massachusetts, 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 Fifty Thousand Dollars and Zero Cents (\$50,000.00), 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. 201948801 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL**, 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

22nd day of May, 20 19.

Attest:

[Signature]
Secretary

[Signature]

Sturgeon Electric Company, Inc.

Contractor

By: [Signature]
President Scott Greenhalge
Liberty Mutual Insurance Company

Surety

By: [Signature]
Attorney-In-Fact Sheree Hsieh

(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

By: [Signature]
Assistant City Attorney

APPROVED FOR THE CITY AND COUNTY OF
DENVER

By: [Signature]
MAYOR

By: [Signature]
MANAGER OF PUBLIC WORKS

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees. To confirm the validity of this Power of Attorney call 610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Michael M. Bill, Michael H. Bill, Edward L. Mounighan, Cynthia L. Jenkins, Ginger J. Krahn, Brenda Johnston, Cindy Stelhorn, Sheree Hsieh, Rebecca A. Virt, Kimberly E. Kinkead, Michael J. Marsella of the city of Indianapolis, state of Indiana its true and lawful attorney-in-fact, with full power and authority hereby conferred to sign, execute and acknowledge the following surety bond:

Principal Name: Sturgeon Electric Company, Inc.
Obligee Name: City and County of Denver
Surety Bond Number: 014212183 Bond Amount: \$50,000.00

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of December, 2017.



The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: David M. Carey
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA
COUNTY OF MONTGOMERY

SS

On this 7th day of December, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 22nd day of May, 2019.



By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary



O 317 805 7500 F 317 805 7515

A 571 MONON BLVD., SUITE 400, CARMEL, IN 46032

W MJINSURANCE.COM

**PERFORMANCE AND PAYMENT BOND
SURETY AUTHORIZATION**

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

May 13, 2019

RE: Sturgeon Electric Company, Inc.
Contract No.: 201948801
Project Name: 2018 Traffic Signal Construction Master On-Call
Contract Amount: \$7,753,888.45
Performance and Payment Bond No. 014212183

Dear Assistant City Attorney:

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through Liberty Mutual Insurance Company.

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

If you should have any questions or concerns, please don't hesitate to give me a call at 317 805-7500.

Sincerely,

Sheree Hsieh,
Attorney-in-Fact for Liberty Mutual Insurance Company





CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

6/18/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Arthur J. Gallagher Risk Management Services, Inc. 2850 Golf Road Rolling Meadows IL 60008	CONTACT NAME: Shannon Lentz PHONE (A/C, No, Ext): 630-285-4418 E-MAIL ADDRESS: shannon_lentz@ajg.com FAX (A/C, No): 630-285-3922
INSURED Sturgeon Electric Company, Inc. 12150 E. 112th Avenue Henderson, CO 80640	INSURER(S) AFFORDING COVERAGE INSURER A: Zurich American Insurance Company INSURER B: AGCS Marine Insurance Company INSURER C: American Zurich Insurance Company INSURER D: Indian Harbor Insurance Company INSURER E: Underwriters at Lloyd's London INSURER F:
MYRGROU-01	NAIC # 16535 22837 40142 36940 15792

COVERAGES**CERTIFICATE NUMBER:** 1799293045**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	Y		GLO837415424	9/30/2018	9/30/2019	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$100,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000 \$
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			BAP837415522	9/30/2018	9/30/2019	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
C A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	WC837415222 (A/O/S) WC837415322 (MA/WI)	9/30/2018 9/30/2018	9/30/2019 9/30/2019	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000
B D E	Property Floater Professional Liability Technology E&O			MXI93069373 CEO744676202 1111782	9/30/2018 9/30/2018 9/30/2018	9/30/2019 9/30/2019 9/30/2019	See Below Each Occ/Gen'l Agg Limit \$3,500,000 \$2,000,000 \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Policy #MXI93069373 - Property Floater - Covered Property - Materials of Others in the Care, Custody and Control of Named Insured
Description of Job: 201948801 2018 Traffic Signal Construction Master On-Call

As required by written contract, the City and County of Denver, its Elected and Appointed Officials, Employees and Volunteers are included as Additional Insured.

CERTIFICATE HOLDER**CANCELLATION**

City and County of Denver, Department of Public Works
Attn: Diana Mora
1600 West 12th Avenue
Denver CO 80204-3412

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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**PERFORMANCE AND PAYMENT BOND
SURETY AUTHORIZATION
(SAMPLE)**

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

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

RE: (Company name)

Contract No: 201948801
Project Name: 2018 Traffic Signal Construction Master On-Call
Contract Amount:
Performance and Payment Bond No.:

Dear Assistant City Attorney,

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through _____ insurance company, on _____, 20__.

We hereby authorize the City and County of Denver, Department of Public Works, 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 _____.

Thank you.

Sincerely,

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV

NOTICE OF APPARENT LOW BIDDER
(SAMPLE)

Current Date

To:

Gentlemen:

The MANAGER OF PUBLIC WORKS has considered the Bids submitted on February 14, 2019 for work to be done and materials to be furnished in and for:

PROJECT No. 201948801 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

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 execution of the Contract Documents and your furnishing the items specified below, the total cost thereof (Contract Amount Written), (Contract Amount Numeric).

It will be necessary for you to appear forthwith at the office of the Department of Public Works, Finance and 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 Public Works, Finance and Administration, within the time limit set forth in the Bid Proposal.

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; or any other coverage required by the contract; and
- b. One original plus four copies of the 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 Public Works, 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 Contract Compliance at (720-913-1700).

**NOTICE OF APPARENT LOW BIDDER
(SAMPLE)**

PROJECT NO. 201948801

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 _____

Manager of Public Works

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV



Current Date

**NOTICE TO PROCEED
(SAMPLE)**

Name
Company
Street
City/State/Zip

CONTRACT NO. 201948801, 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

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 201948801, as set forth in detail in the contract documents for the City and County of Denver.

With a contract time of _____ 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,

Lesley B. Thomas
City Engineer

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV



Certificate of Contract Release
(SAMPLE)

Date

Name

Company

Street

City/State/Zip

RE: Certificate of Contract Release for

201948801, 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

Received this date of 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 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.

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 is the last or final payment.

Contractor's Signature

Date Signed

If there are any questions, please contact me by telephone at (720) 913-XXXX. Please return this document via facsimile at (720) 913-1805 and mail to original to the above address.

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV

SC-28

On-Call Specific Contract Forms



EXAMPLE

CHANGE RIDER

For Bond No. _____ on behalf of _____
 _____ dated _____, _____, and in favor of the City and County of
 Denver.

The surety hereby gives its consent to the incorporation of the obligations and requirements set forth in Work
 Order No. 201948801, Proposal Request No. ____, Contract Control No. _____, **2018**
TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL, and under Bond No. _____, a
 copy of the penal sum of this bond shall be increased by _____
 _____ dollars and _____ cents (\$_____), lawful money of the
 United States of America.

Provided, however, that the aggregate liability of the surety for any losses occurring prior to the
 effective date of this change shall not exceed \$_____, unless modified by subsequent
 Change Riders. In no event shall the surety's liability be cumulative.

Except as modified herein, Bond No. _____, dated _____, _____, is
 affirmed and ratified in each and every particular.

Executed this _____ day of _____, 20__.

(Contractor)

(Surety)

Approved for the City and County of Denver

By: _____

CONTRACT NO. 201948801 – 2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL

CITY & COUNTY OF DENVER, PROJECT MANAGMENT OFFICE
**DEPARTMENT OF PUBLIC WORKS, 201 W. COLFAX AVE., DEPT. 509 •DENVER, CO,
80202•(720) 913-XXXX, FAX (720) 913-XXXX**

CONTRACTOR: _____ PROPOSAL REQUEST NO. _____ :
PROJECT ID #: _____ DATE: _____
WORK ORDER NAME: _____
CONTRACT NO. _____ PROJECT
NAME _____

Submit an itemized quotation for the work described below. Include all costs, time necessary to perform the described work, and the MBE & WBE participation (percentage of work) on the Proposal Request Pricing Worksheet.

This is not a change order, field order or a notice to proceed with the work described.

Description:

Note: All work shall be performed under Contract No. 201948801 dated _____, 20__.
Liquidated Damages for this Project will be \$____ per day.)

Proposal Request Pricing Worksheet to be returned by _____, 20__.

Attachments:

ISSUED BY: _____
PUBLIC WORKS/TRANSPORTATION/PROJECT MANAGEMENT OFFICE

cc:

DEPARTMENT OF PUBLIC WORKS 201 W. COLFAX AVE.; DEPT. 509-DENVER, CO 80202-(720)913-4511, FAX (720)913-4544

DEPARTMENT OF PUBLIC WORKS-201 W. COLFAX AVE., DEPT. 509-DENVER, CO 80202-(720) 913-4511, FAX (720) 913-4543

EXAMPLE

Date:

Provide Unit Price Sheets for Proposal Requests, identifying applicable unit prices

[illegible]

SUBCONTRACTORS - Provide Subcontractor Worksheets for each subcontractor.

SUBCONTRACTORS - Provide Subcontractor Worksheets for each subcontractor.		TOTALS
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23	SUBTOTAL FOR SUBCONTRACTORS	\$ -

	GENERAL CONTRACTOR	UNIT COST	QUANTITY	TOTALS
24				
25				
26				
27				
28				
29				
30				
31				
32				
33	SUBTOTAL			\$ -
34		-		
35				
36				
37				
38	Unit Price Total			\$ -
39	Subcontractor Total			\$ -
40	Subtotal			\$ -
41				
42	Total Proposal			\$ -

\$ -

CALENDAR DAYS

PERCENTAGE

DATE:

SUBCONTRACTOR WORKSHEET FOR PROPOSAL REQUESTS

MASTER CONTRACT NO.

Project Name

CITY & COUNTY OF DENVER

CITY ENGINEERING, PROJECT MANAGEMENT OFFICE

DEPARTMENT OF PUBLIC WORKS-201 W. COLFAX AVE., DEPT. 509-DENVER, CO 80202- (720) 913-4511, FAX (720) 913-

EXAMPLE

CONTRACTOR:

DATE: _____

MASTER CONTRACT NO.

PROPOSAL REQUEST NO.: _____

PROJECT NAME:

SUBCONTRACTOR NAME:

	WORK ITEMS		UNIT PRICE	QUANTITY	TOTALS
1					
2					
3					
4					
5					
6					\$ -
7					\$ -
8					\$ -
9					\$ -
10					\$ -
12					\$ -
13					\$ -
14					\$ -
15	SUBTOTAL	-			\$ -
16					
17					
18	SUBTOTAL				\$ -
19					
20	TOTAL				\$ -

\$ -

EXAMPLE



On-Call Construction Work Order

Department of Public Works
Engineering – Capital Project Management
201 W. Colfax Avenue, Dept 506, Denver, CO 80202
p: 720-913-4501 f: 720-913-4544
www.denvergov.org/Capital_Projects_Center

Contractor: _____ Business Unit: _____
Vendor ID: _____ Project No.: _____
Master Contract/Contract: _____ Project Name: _____
Work Order No.: _____ Project Manager: _____
Fund/Org/Acct: _____ Alfresco Number: _____

It is hereby mutually agreed that when this WORK ORDER has been signed by the contracting parties, the following described work order shall be executed by the contractor without changing the terms of the Contract except as herein stipulated and agreed:

The sum, as indicated above, constitutes full and complete consideration, payment and satisfaction to the Contractor for the above described scope of work, and the Contractor hereby agrees to make no further claims, demands, or requests of any kind whatsoever for further moneys, extensions of time or other consideration for the above described scope of work to the Contract.

THE CONTRACTOR AGREES to furnish all material and labor and perform all work required to complete the above described work in accordance with requirements for similar work covered by the Work Order, except as otherwise stipulated herein, for the following considerations:

The Sum of \$ _____

Work Order Duration time _____ Calendar Days

Completion Date: _____

Accepted for Contractor by _____ Title _____ Date _____

WORK ORDER NO. COST SUMMARY	
(By Project Manager)	
Original Work Order Amount	\$
Previous Work Order Additions	\$
SUB-TOTAL	\$
Previous Work Order Change Deductions	\$
Net prior to this Work Order Change	\$
This Work Order Change – Add <Deduct>	\$
REVISED TOTAL WORK ORDER AMOUNT	\$
COST SUMMARY FOR CONTRACT NO.	
Total of all Work Orders Issued	\$0.00
Previous Additions/ Deductions	\$0
Net Prior to this Change	\$0.00
This Change – <input type="checkbox"/> Add or <input checked="" type="checkbox"/> Delete	\$0.00
Revised Contract Amount	\$0.00
Maximum Contract Amount	\$500,000.00
Amount Available	\$500,000.00

Approved – City Attorney (if applicable)	Date
Approved – Manager of Public Works	Date
Approved – Director, CPM	Date
Approved – Using Agency (If non PW)	Date
Approved – Project Supervisor	Date

NOTE: No person shall authorize or perform any of the above work until the work order has all signatures and has been distributed. Distribution: Prevailing Wage: AUDPWPayRequest@denvergov.org; DSBO@ci.denver.co.us; Project Manager e-mail, Using Agency and pw.contracts@denvergov.org. (for pre-encumbrance).

EXAMPLE



On-Call Construction Work Order Change

Department of Public Works
Engineering

201 W. Colfax Avenue, Dept 506, Denver, CO 80202

p: 720-913-4501 f: 720-913-4544

www.denvergov.org/publicworks

Contractor: _____ Business Unit: _____
Vendor ID No. _____ Project No. _____
Master Contract/Contract # _____ Project Name: _____
Work Order No: _____ Project Manager _____
Change Order No.: _____ Fund/Org _____
Subclass/Program _____

It is hereby mutually agreed that when this CHANGE ORDER has been signed by the contracting parties, the following described changes shall be executed by the contractor without changing the terms of the Contract except as herein stipulated and agreed:

The additional sum, as indicated above, constitutes full and complete consideration, payment and satisfaction to the Contractor for the above described changes to the Contract, and the Contractor hereby agrees to make no further claims demands, or requests of any kind whatsoever for further moneys, extensions of time or other consideration for the above described changes to the Contract.

THE CONTRACTOR AGREES to furnish all material and labor and perform all work required to complete the above described changes in accordance with requirements for similar work covered by the Contract, except as otherwise stipulated herein, for the following considerations:

☐ Add or ☐ Subtract to the Contract the Sum of _____

Adjust the Contract completion by _____ Calendar Days

New Completion Date: _____

Accepted for Contractor by _____ Title _____ Date _____

WORK ORDER NO. COST SUMMARY	
(By Project Manager)	
Original Work Order Amount	\$
Previous Work Order Additions	\$
SUB-TOTAL	\$
Previous Work Order Change Deductions	\$
Net prior to this Work Order Change	\$
This Work Order Change – Add <Deduct>	\$
REVISED TOTAL WORK ORDER AMOUNT	\$
COST SUMMARY FOR CONTRACT NO.	
Total of all Work Orders Issued	\$
Previous Additions/ Deductions	\$
Net Prior to this Change	\$
This Change – <input type="checkbox"/> Add or <input checked="" type="checkbox"/> Delete	\$
Revised Contract Amount	\$
Maximum Contract Amount	\$500,000.00
Amount Available	\$500,000.00

Approved – City Attorney (If Bond rider)	Date
Acknowledged by Director – DSBO	Date
Approved – Manager of Public Works	Date
Approved – Director, CPM	Date
Approved – Project Supervisor	Date
Approved – Project Manager	Date

NOTE: No person shall authorize or perform any of the above work until the change order has all signatures and has been distributed. Distribution: Prevaling Wage: AUDPWPayRequest@denvergov.org; Auditor: Aud_Import@denvergov.org; DSBO: DSBO@ci.denver.co.us; Project Manager e-mail, Using Agency.

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DEPARTMENT OF PUBLIC WORKS

Addenda

Contract Number: 201948801



2018 Traffic Signal Construction

Master On-Call

January 11, 2019

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

CONTRACT NO: 201948801
PROJECT NAME: 2018 Traffic Signal Construction Master On-Call

ADDENDUM NO. 1 TO CONTRACT DOCUMENTS

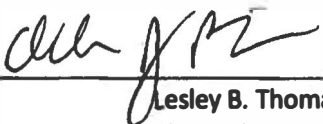
Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above-mentioned project as hereinafter described in the following attachments:

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

PRE-QUALIFICATION REQUIREMENT:

The pre-qualification requirement for this project has been revised as follows:

Each bidder must be prequalified in category 1(D)1 Traffic Signals at or above \$1,500,000.00 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 bid opening date. Applications must be submitted to the Department of Public Works, Prequalification Section, 201 W. Colfax Ave., Department 614, Denver, CO 80202. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification or call 720-865-2539 for prequalification information ONLY.


Lesley B. Thomas
City Engineer

1/18/2019
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

2/12/2019
Date

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DEPARTMENT OF PUBLIC WORKS

Prevailing Wage Rates

Contract Number: 201948801



2018 Traffic Signal Construction

Master On-Call

January 11, 2019



TO: All Users of the City and County of Denver Prevailing Wage Schedules
FROM: Susan Keller, HR Technician II, Classification & Compensation
DATE: January 7, 2019
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 4, 2019** 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. CO190009
Superseded General Decision No. CO20180019
Modification No. 0
Publication Date: 01/04/2019
(7 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.

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: CO190009 01/04/2019 CO9

Superseded General Decision Number: CO20180019

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 \$10.60 for calendar year 2019 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 \$10.60 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 2019. 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	01/04/2019

* CARP9901-008 05/01/2018

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 25.50	9.47

ELEC0068-016 03/01/2011		

	Rates	Fringes
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 05/01/2017

	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.).....	\$ 27.60	10.10
(3)-Loader (under 6 cu. yd.) Denver County.....	\$ 27.60	10.10
(3)-Motor Grader (blade- rough) Douglas County.....	\$ 27.60	10.10
(4)-Crane (50 tons and under), Scraper (single bowl, under 40 cu. yd).....	\$ 27.75	10.10
(4)-Loader (over 6 cu. yd) Denver County.....	\$ 27.75	10.10
(5)-Drill Rig Caisson (Watson 2500 similar or larger), Crane (51-90 tons), Scraper (40 cu.yd and over),.....	\$ 27.92	10.10
(5)-Motor Grader (blade- finish) Douglas County.....	\$ 27.92	10.10
(6)-Crane (91-140 tons).....	\$ 28.55	10.10

 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
Mechanic.....	\$ 26.48	3.50
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 4/11/2017)**

Classification		Base	Fringe
Ironworker (Ornamental)		\$26.05	\$12.00
Laborer	Removal of Asbestos	\$21.03	\$8.55
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

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



DEPARTMENT OF PUBLIC WORKS

Technical Specifications

Contract Number: 2019**48801**



2018 Traffic Signal Construction

Master On-Call

January 11, 2019

**CITY AND COUNTY OF DENVER
PUBLIC WORKS – TRANSPORTATION
2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL
CCD PRO TRACKING NO. PWTES2018-139**

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

STANDARD CONSTRUCTION SPECIFICATIONS

The Standard Specifications for Construction for this Project shall consist of the applicable sections and subsections, numbered Section 200 through Section 700, of the 2017 "Colorado Department of Transportation Standard Specifications for Road and Bridge Construction."

The Colorado Department of Transportation General Provisions consists of Sections 100 through 109 of the above-mentioned specifications. With the exception of General Provision Sections 101, 105, 106, 107 and 108, all other General Provisions are not applicable to this Project and are hereby deleted. In place of the deleted sections, the City and County of Denver “Standard Specifications for Construction, General Contract Conditions,” 2011 Edition, shall apply to this contract. Supplements or amendments to the Standard Specifications for Construction, General Contract Conditions are listed in the Special Contract Conditions.

The following Project Special Provisions take precedence over Specifications or Plans and supplement or amend the referenced” Standard Specifications for Road and Bridge Construction” adopted in 2017 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.

STANDARD CONSTRUCTION DETAILS

It is the intent of the City to use applicable details from the Colorado Department of Transportation M&S Standards, the City of Denver’s Wastewater Management Division Standard Details, and the Denver Water Department’s Standard Drawings, most recent editions. Drainage related appurtenances shall follow the City and County of Denver (CCD), Department of Public Works document titled “Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications”. This document can be found at the following web address: www.denvergov.org

The Colorado Department of Transportation (CDOT) Special Provisions, Standard Special Provisions are to be used for the project. Use CDOT Project Special Provisions that revise the above described documents, and prevail over above described documents.

**CITY AND COUNTY OF DENVER
PUBLIC WORKS – TRANSPORTATION
2018 TRAFFIC SIGNAL CONSTRUCTION MASTER ON-CALL
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The Colorado Department of Transportation’s Standard Specifications for Road and Bridge Construction, dated 2017, controls construction of this project. The following Special Provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and Plans.

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**CITY AND COUNTY OF DENVER
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CDOT STANDARD SPECIAL PROVISIONS

Description	Date	No. of Pages
Revision of Section 208 – Erosion Control	(July 3, 2017)	1
Revision of Section 250 – Environmental Health & Safety Management	(July 3, 2011)	1

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COMMENCEMENT AND COMPLETION OF WORK

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Subsection 108.03 shall include the following:

The Contractor's progress schedule may be a Bar Chart Schedule.

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

1. Notice to Proceed
2. Mobilization(s)
3. Erosion Control
4. Removals
5. Curb and Gutter, Median Cover Material, Curb Ramps
6. Sidewalk
7. Storm Sewer
8. Hot Mix Asphalt
9. Construction Traffic Control
10. Landscape Restoration

**REVISION OF SECTION 101
DEFINITION AND TERMS**

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

Technical Specifications related to construction materials and methods for the Work under this Contract shall consist of the *State Department of Highways, Division of Highways, State of Colorado, Standard Specifications for Road and Bridge Construction* dated 2011.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meaning within the scope of this Contract. A summary of redefinitions follows:

- | | |
|--------------------------|--|
| Subsection 101.28 | “Department” shall mean the City and County of Denver, Colorado. |
| Subsection 101.29 | “Engineer” shall mean the Director of Public Works, Denver, Colorado, or designated representative. |
| Subsection 101.39 | “Laboratory” shall mean City and County of Denver, Colorado or their designated representative. |
| Subsection 101.51 | “Project Engineer” shall mean the Director of Public Works, Denver, Colorado, or designated representative. |
| Subsection 101.76 | “State” shall mean City and County of Denver, Colorado (where applicable). |

**REVISION OF SECTION 105
COOPERATION OF THE CONTRACTOR**

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

Subsection 105.10 shall include the following:

All work orders on this On-Call shall be initiated by an RFP from the City and County of Denver. Once a RFP is submitted to the Contractor from the City and County of Denver, the Contractor shall have 10 business days to reply with a scope and fee for the RFP.

Other construction agencies may be working in the vicinity of the project. The Contractor shall conduct the work so as not to interfere with or hinder the progress or completion of the work being performed by other agencies or contractors. All Traffic control conflicts that arise between the needs of the various construction contractors and other agencies shall be brought to the attention of the Engineer. The Engineer will decide the method of resolution.

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

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

Add subsection 107.061 immediately following subsection 107.06 as follows:

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

- (1) Overhead girder erection
- (2) Overhead structure construction or repair
- (3) temporary works: falsework, shoring that exceeds 5 feet in height, cofferdams, and temporary bridges
- (4) Work requiring the use of cranes or other lifting equipment

The Contractor shall submit, for record purposes only, an initial detailed construction plan that addresses safe construction of each of the safety critical elements. An erection 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) Additional actions that will be taken to ensure that the work will be performed safely.
- (6) 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
- (7) 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
- (8) The construction plan shall address how the Contractor will handle contingencies such as:
 - D. Unplanned events (storms, traffic accidents, etc.)
 - E. Structural elements that don't fit or line up
 - F. Work that cannot be completed in time for the roadway to be reopened to traffic
 - G. Replacement of workers who don't perform the work safely
 - H. Equipment failure
 - I. Other potential difficulties inherent in the type of work being performed
- (9) 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.

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

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 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 related to construction plans for the safety critical elements, and Temporary Works. 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 stamped 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.

Nothing in the section shall be construed to relieve the Contractor from ultimate liability for unsafe or negligent acts or to be a waiver of the Colorado Governmental Immunity Act on behalf of the City and County of Denver

**REVISION OF SECTION 107
WORKER SAFETY**

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

Subsection 107.06 shall include the following:

Contractors shall comply with the CCD Noise Control Ordinance for all construction activities scheduled to occur between the hours of 9:00 p.m. to 7:00 a.m. Monday – Friday and 5:00 p.m. and 8:00 a.m. Saturday through Sunday if noise levels are expected to exceed 50 dBA in residential areas or 60 dBA in commercial areas. Nighttime construction activities exceeding noise levels during these restricted hours may not be initiated without first obtaining this permit variance from CCD.

Under any circumstances where nighttime construction activities will take place between the restrictive hours listed above where noise levels will exceed the noise impact thresholds, the contractor is required to apply for a construction noise variance no less than one month before the startup date for construction. Note: the CCD board only meets the 2nd Thursday of every month.

Applications shall be submitted through the Denver Department of Environmental Health (DEH) at a cost of \$25.00 for application processing.

The contractor is responsible for fulfilling the requirements set forth by the CCD and is responsible for obtaining the permit variance prior to the construction startup date. All exemption requests and permitting requirements will not be paid for separately, but will be included in the work. Copies of the final application approval shall be provided to CDOT R6 Noise Specialist (Jordan Rudel) for recording and documentation purposes demonstrating compliance with the local agencies regulations.

If the Contractor is ordered to cease operations due to violations of a noise ordinance as a result of equipment back up alarms, the Contractor shall take whatever actions are necessary to comply with the ordinance and continue work on the project. This includes the option of using an observer in lieu of using the equipment's back up alarms as allowed by 29 CFR 1926.601(b) (4) (II) of the OSHA Safety and Health Standards. Should the Contractor fail to mitigate the noise ordinance violation, the Contractor shall be deemed to have waived any right to a claim as a result of work suspension or being required to perform the work at times not specified in the Contract.

If the Contractor uses an observer in lieu of back up alarms, the Contractor shall follow all of the OSHA requirements regarding the use of observers.

All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

**REVISION OF SECTION 107
PROTECTION OF EXISTING VEGETATION**

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

Subsection 107.12 shall include the following:

The Contractor shall save all existing vegetation (including trees, shrubs, ground covers, grasses, wetlands & riparian) in this area, except for that vegetation, which must be removed to accommodate construction of the project, per the plans. Specific areas of vegetation to be protected shall be as directed by the Engineer and shall be protected by using orange construction fencing, wire fencing with metal posts or silt fence. Fencing for trees shall be installed at the drip line of the tree or as approved by the Engineer. Equipment shall not be installed or stockpile material within 15 feet of existing trees to remain.

The Contractor shall perform all the work in such a manner that the least environmental damage will result. All questionable areas or items shall be brought to the attention of the Engineer for approval prior to removal or any damaging activity.

The Contractor shall promptly report any vegetation damaged or scarred during construction to the Engineer for assessment of damages. Damaged or destroyed fenced vegetation, shall be replaced at the expense of the Contractor. Vegetation of replaceable size shall be replaced at the Contractor's expense. When trees, shrubs beyond replaceable size or wetlands have been damaged or destroyed, the Contractor shall be liable for the appraised value based upon the official current publications. For trees and shrubs use the International Society of Arboriculture, Guide for Plant Appraisals. The Contractor shall pay any fines or jail time should a wetland be damaged, at no cost to the project. The value of disturbed vegetation shall be calculated according to the following formula:

$$(\text{Vegetation size}) \times (\text{Species}) \times (\text{Location}) \times (\text{Condition}) \times (\text{Arborist or Wetland Specialist}) = \text{Vegetation value}$$

A consulting Arborist retained by the Department will determine the value of the trees and shrubs. A consulting Wetland Specialist shall determine the value of the wetland or wetland species. This value will be deducted from any money due to the Contractor.

The determination as to whether a plant is of replacement size or beyond will be made by the City's Landscape Architect or Wetland Specialist. Contact Jim Myers at CCD Forestry Department.

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 repaired to the Engineer's satisfaction 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.

**REVISION OF SECTION 108
PROSECUTION AND PROGRESS**

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Subsection 108.03 shall include the following:

The Contractor shall establish daily working hours for the project and submit them to the Engineer for approval along with the Progress Schedule. All work performed by the Contractor or any of the Contractor's agents during a working day shall be accomplished within these pre- established working hours. Daily working hours shall not exceed 10 consecutive hours for each 24 hour working day. Neither the Contractor nor any of the Contractor's agents shall work at times outside of the daily working hours without prior approval by the Engineer. Requests for changes in working hours shall be submitted to the Engineer in writing at least 48 hours before the proposed change in working hours would take effect.

REVISION OF SECTION 201 CLEARING AND GRUBBING

Section 201 of the Standard Specifications is hereby revised to include:

Subsection 201.02, paragraph 2 shall be deleted and replaced with the following:

Removals shall be completed to the proposed subgrade elevation for the work, or as designated by the Engineer.

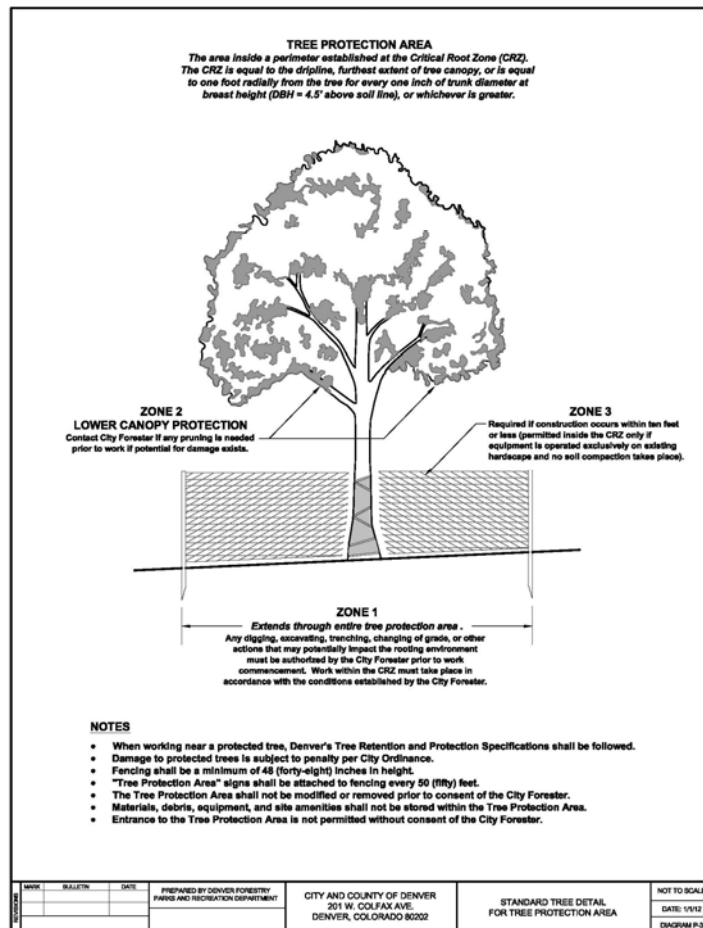
Removal of trees with less than a 4 inch diameter, when measured 24 inches or less above the existing grade, will not be measured and paid for separately. These tree removals will be included in the clearing and grubbing work.

Subsection 201.02, paragraph 8 shall be deleted and replaced with the following:

All tree trimming will be performed by the City and County of Denver through the City Forester's Office. Contact Jim Myers two (2) days prior.

Subsection 201.02 is hereby revised to include:

All trees designated to remain shall be protected in accordance with Denver's Standard Detail for Tree Protection Area – see detail.



**REVISION OF SECTION 201
CLEARING AND GRUBBING**

Subsection 201.03 is hereby revised to include:

Clearing and grubbing will not be measured and paid for separately but shall be included in the cost of the work.

Tree protection will be measured and pay for by the number of tree protections successfully installed in accordance with the City and County of Denver's Tree Protection Detail. Tree protection will be pay for in accordance to Revision Section 212 – Tree Protection.

**REVISION OF SECTION 202
REMOVAL OF STRUCTURES, ASPHALT MAT AND OBSTRUCTIONS**

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

Subsection 202.02 shall be revised to include the following:

The Engineer will mark the limits of removals in the field. Removals in the vicinity of trees to remain shall conform to applicable provisions of the Denver Forestry's Tree Protection specification.

Subsection 202.03 is hereby replaced as follows:

All salvable material shown on the plans shall be removed, without unnecessary damage, in sections or pieces that may be readily transported, and delivered by the Contractor to the location noted on the plans, or as directed by the Engineer. The Contractor shall be held responsible for the safekeeping of all salvable materials during the period of the Contract until they are delivered to the City. The Contractor shall make good or replace at his own expense any such materials damaged, stolen or otherwise lost prior to receipt by the City. All salvable materials, as designated on the plans, shall remain the property of the City.

Subsection 202.07 is hereby replaced as follows:

All concrete pavement, sidewalks, structures, curbs, gutters, asphalt pavement, etc., designated for removal, shall be broken into pieces and disposed of outside the limits of the project, unless otherwise designated on the plans, or as directed by the Engineer.

Old concrete construction which abuts new construction, edges of pavement, sidewalks, curbs, etc., to be left in place shall be saw cut to true line with a vertical face.

Where old asphalt construction abuts new construction, edges of asphalt pavement, patching, etc., asphalt to be left in place shall be wheel cut or sawcut to a neat vertical face with minimal jagged edges to the satisfaction of the Engineer. The Engineer, at his discretion, may require asphalt to be sawcut.

Removal of stone curb shall include the complete removal of the curb head and concrete foundation. No payment will be made for sprinkler relocation, utility relocation, etc., beyond the limits of construction as shown on the plans. Stone curb designated for salvage shall be carefully removed to prevent damage and delivered to the location indicated in the plans or specifications, or as directed by the Engineer.

Subsection 202.09 shall be revised to include the following:

Removal of asphalt mat from gutters shall be accomplished by planing, and/or scraping. If the existing gutter is to remain, the gutter shall be cleaned by sandblasting until the pan is completely clean of residue. Gutters which are excessively (greater than one-quarter inch in depth) planed or damaged shall be removed and replaced by the Contractor at his expense. If gutter is designated for removal, no separate payment shall be made for asphalt removal.

Subsection 202.11 shall be revised to include the following:

Removal of concrete paving, crosspans, curb ramps, driveways will be measured by area in square yards, regardless of thickness, and pay for removal of sidewalk.

**REVISION OF SECTION 202
REMOVAL OF STRUCTURES, ASPHALT MAT AND OBSTRUCTIONS**

Removal of asphalt mat will be measured by square yard. If the existing asphalt mat is over 9" thick, the unit price will be increased in proportion to the additional thickness (18" asphalt mat will be paid at twice the unit price). If the asphalt mat is greater than 4" and is over concrete pavement, both asphalt removal and concrete pavement removal will be paid. If the asphalt mat is less than 4" and is over concrete pavement, only concrete pavement removal will be paid.

Removal of asphalt mat (planing or milling) will be measured by the square yard, regardless of thickness.

Removal of trolley tracks will be measured by centerline lineal track foot, and shall include the removal of rails, ties, connections, cobblestones and concrete runners.

Removal of asphalt mat from concrete gutter and other concrete designated to remain shall be measured by the square yard. Removal of asphalt mat from gutter shall include sandblasting and compressed air cleaning as part of that pay item.

Remove Siphon will be measured as a lump sum for each siphon and shall include: removing the connector pipe, two (2) inlets, grates and frames, any related materials, concrete, metal, sealant, debris, excavation and suitable backfill placed and compacted, all materials, labor equipment, hauling and disposal needed to complete this item.

Subsection 202.12 is hereby deleted and replaced as follows:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule. Payment shall be full compensation for sawcutting, scraping, sandblasting, removing, hauling and disposal of such items, excavation and subsequent backfill (with moisture/density control per the Revision of Subsection 203.07) to proposed subgrade elevation. The price shall also include salvageable materials removed, their custody, preservation, storage, haul and disposal as provided herein.

Payment will be made under:

Pay Item

Removal of Structure
Removal of Inlet
Removal of Median Material
Removal of Sidewalk
Removal of Curb Head
Removal of Curb and Gutter
Removal of Combination Curb, Gutter & Walk
Removal of Concrete Pavement
Removal of Asphalt Mat

Pay Unit

Each
Each
Square Yard
Square Yard
Linear Foot
Linear Foot
Linear Foot
Square Yard
Square Yard

When the Contract does not include pay items for Removal of Structures and Obstructions, the removal will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 202
REMOVAL OF PAVEMENT MARKING**

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

In subsection 202.11, delete the second paragraph and add the following:

Removal of pavement marking will not be measured but shall be included in the work. Sandblasting of pavement that is to be covered with pavement marking material will not be measured and paid for separately but shall be included in the cost of the work.

**REVISION OF SECTION 202
REMOVAL OF TRAFFIC SIGNAL EQUIPMENT**

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

Subsection 202.03 shall include the following:

The Contractor shall safeguard any salvageable materials designated by Denver Public Works – Transportation (Denver Traffic), and shall be responsible for the expense of repairing or replacing damaged or missing material until it is delivered to the City and County of Denver Traffic Maintenance Yard at 5440 Roslyn Street.

Designation of salvageable equipment and times for delivery of such items shall be coordinated with Denver Traffic (contact Chris Lillie at 720-865-4066).

Signal operations shall be maintained at each of the project intersections throughout construction.

Subsection 202.04 shall include the following:

Removal of the traffic signal equipment shall include signal poles (without luminaire), pedestal poles, footings, span wire cable, traffic signal controller and cabinet, pedestrian push button, cabinet footings, all attachment hardware, and all incidental equipment, except as noted on the plans. All existing foundations and pull boxes shall be removed and back-filled. All wiring shall be removed from existing conduit and the conduit shall be abandoned in place.

Xcel Energy shall remove all signal poles with luminaire attached. Xcel Energy will remove only the signal pole and luminaire, and the Contractor shall remove the remainder of the traffic signal equipment, as noted in the plans. The Contractor shall coordinate with Xcel Energy for these removals.

All “Light Emitting Diode” (LED) signal lenses in existing signal faces shall be removed prior to the removal of the signal face. These LED lenses shall be protected from damage and delivered to 5440 Roslyn Street, Denver. This work shall be included in the cost of Removal of Traffic Signal Equipment and will not be paid for separately.

Times for delivery to the maintenance yard shall be coordinated with Denver Traffic at (720) 865-4000.

Subsection 202.12 shall include the following:

Pay Item

Removal of Traffic Signal Equipment (Per Intersection)

Pay Unit

Each

Removal of Traffic Signal Equipment shall be per each intersection. Payment includes all labor, equipment, and materials necessary to complete the work.

**REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT**

Section 203 of the Standard Specifications is hereby revised as follows:

Subsection 203.04 shall include the following:

The Contractor shall protect and promptly dewater and recondition all excavations from water regardless of source.

Subsection 203.05 (c), first paragraph, shall include the following:

Approved backfill material shall be Aggregate Base Course (Class 6) or other material approved by the Engineer.

Subsection 203.07 shall include the following:

Unless otherwise indicated on the plans, the density requirements for embankment material shall be:

Clay soils – 95% of the maximum density determined in accordance with AASHTO T-99

Granular soils – 90% of the maximum density determined in accordance with AASHTO T-180

Proof rolling of the subgrade shall be required. Proof rolling shall be done after specified compaction has been obtained. Proof rolling shall be conducted with a double tandem ten wheel end-dump truck, loaded to a minimum gross weight of 45,000 pounds, or other equipment as approved by the Engineer. Areas found to be weak and those areas which failed shall be ripped, scarified, dried or wetted as necessary and recompacted to the requirements for density and moisture at the Contractor's expense.

Where unsuitable material is encountered below proposed subgrade, the Engineer may require the Contractor to remove the unsuitable materials as muck excavation and backfill to the finished grade with Class 6 aggregate base course, or other approved material. The Engineer may designate as unsuitable those soils that are detrimental to the finished roadway. All unsuitable material shall be disposed of as directed.

Subsection 203.12 shall include the following:

Muck excavation and Dewatering, as designated by the Engineer, will be measured in the field and paid for at the contract unit price for each of the pay items listed below. Dewatering will be designated as bid item 211-03005.

Subsection 203.13 is revised as follows:

Proof rolling, blading, wetting, drying, dozing, hauling and disposal will not be measured and paid for separately but shall be included in the cost of the work.

When the contract does not include pay items for Unclassified Excavation and Embankment Material, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT**

Subsection 203.14 is hereby deleted and replaced as follows:

The accepted quantities will be paid for at the contract unit price for each of the pay items. Payment shall be full compensation for all work including labor and material necessary to complete the work. The price shall also include storage, haul and disposal as provided herein.

Payment will be made under:

Pay Item

Muck Excavation

Dewatering

Pay Unit

Cubic Yard

Each

**REVISION OF SECTION 203
POTHOLING**

Section 203 of the Standard Specification is hereby revised for this project as follows:

Subsection 203.05(g) Excavation shall include the following:

The work shall include One Pothole per utility per conduit crossing or as approved by the Engineer.

All surface material disturbed by potholing shall be restored in kind in accordance with the provisions of the most recent release of the *Standards and Details for the City and County of Denver*.

- All potholes must be core drilled.
- All potholes must be backfilled using only one of the following methods:
 - Wet Sand
 - Flowfill
 - Flashfill
 - The Contractor may submit a written request to use a material not specified above (squeegee, pea gravel, and native material will not be allowed)
- Potholes in an asphalt street must be patched back using hot bituminous asphalt, minimum 9-inch in depth.
- Potholes in a concrete street must be patched back with fast curing high strength concrete no less than 8000 psi in 28 days and a 3000 psi in 60 minutes.
- Full concrete panel replacement is required when a third pothole is core drilled in the same panel. The contractor that cut the last pothole (i.e. 3rd) will be required to replace the panel.
- Any pothole in a sidewalk will require a full panel replacement.
- Any pothole in the curb and gutter or any drainage way will require at a minimum, a half panel replacement.

Delete Subsection 203.13(e) and replace with the following:

(e) Potholing. Potholing will be measured by each. All other related work, including removal of existing pavement, backfilling, shoring and labor will not be measured and paid for separately, but shall be included in the work.

Subsection 203.14 of the Standard Specifications shall be modified as follows:

Payment will be made under:

Pay Item
Potholing

Pay Unit
Each

**REVISION OF SECTION 203
SWEEPING**

Section 208 of the Standard Specification is hereby revised for this project as follows:

Subsection 203.01 shall include the following:

This work is for sweeping paved surfaces during construction as part of the project Best Management Practices (BMP).

Subsection 203.04 shall include the following:

Paved surfaces adjacent to the construction site shall be swept by the close of business day and during the day as needed when sediment and other materials are tracked or discharged onto them. Sweeping shall be completed with a pickup broom or equipment capable of collecting sediment. Sweeping with a kick broom will not be allowed. Street sweepers using water while sweeping is preferred in order to minimize dust. Flushing off paved surfaces with water is prohibited.

Subsection 203.13 shall include the following:

Sweeping, when used as a BMP as shown in the Contract, will be measured by the number of hours that a pickup broom or equipment capable of collecting sediment, authorized by the Engineer, is used to remove sediment from the roadway or other paved surfaces. Each week the Contractor shall submit to the Engineer a statement detailing the type of sweeping equipment used and the number of hours it was used to pick up sediment. Operator will not be measured and paid for separately, but shall be included in the work.

Subsection 203.14 of the Standard Specifications shall be modified as follows:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Sweeping	Hour

Payment for Sweeping shall be full compensation for all work necessary to complete this item.

**REVISION OF SECTION 203
LABORER (THREE MAN CREW)**

Section 203 of the Standard Specifications is hereby revised as follows:

Subsection 203.01 shall include the following:

This work consists of a laborer (three man crew) for all work encountered during construction including but not limited to ditches, dikes, channels, rock excavation necessary for the construction of the project.

Subsection 203.04 shall include the following:

Laborer (three man crew) shall be designated and approved by the Engineer.

Subsection 203.13 is revised as follows:

Laborer (three man crew) will be measured by the hour and as specified by the Engineer.

Payment under Laborer (Three Man Crew) shall be full compensation for all materials and time of labor required to complete the various work as designated by the Engineer.

Subsection 203.14 is hereby deleted and replaced as follows:

The accepted quantities will be paid for at the contract unit price for the pay item listed below that appear in the bid schedule. Payment shall be for full compensation of all work.

Payment will be made under:

Pay Item

Laborer (Three Man Crew)

Pay Unit

Hour

REVISION OF SECTION 208 EROSION CONTROL

Section 208 of the Standard Construction Specifications is hereby removed in its entirety and replaced with the following:

PART I: 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 Public Works 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, 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.

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 final 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 Public Works Project Controls 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 Public Works.

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>

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 Public Works. 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 or Landscape Architect, 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.

REVISION OF SECTION 208 EROSION CONTROL

PART II: 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.

PART III: MATERIALS

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.

PART IV: 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. All provisions of the following Parts V-VIII of this Section are hereby deleted and shall not be made part of the Project. 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 unless otherwise specified in the section.

“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.

REVISION OF SECTION 208 EROSION CONTROL

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 and CDOT 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 CCD or CDOT MS4, State Waters, waterways, wetlands, and or other public or private properties, resulting from work done as part of this Project.

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 Public Works.

1. 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.
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 WMD approval)

**REVISION OF SECTION 208
EROSION CONTROL**

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.
6. **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 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. **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.
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 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 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 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)

**REVISION OF SECTION 208
EROSION CONTROL**

PART V: 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.

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.

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**REVISION OF SECTION 208
EROSION CONTROL**

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.
- 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 and waste.
 - (viii) Location of temporary and 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

**REVISION OF SECTION 208
EROSION CONTROL**

- (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.

All inspection and maintenance activities or other repairs shall be documented. The SWMP and documentation shall be kept on the Project site at all times.

- 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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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 MODIFICATION:** 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.

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".

REVISION OF SECTION 208 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.

PART VI: 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.

PART V: BASIS OF PAYMENT

Erosion Control items as specified in Part V shall be paid in accordance with Section 208. All other erosion control items, including to furnish, install, maintain, replace (if not due to contractor negligence), remove, and dispose of BMPs specified in the Contract shall not be paid for separately, but shall be included in the work.

Erosion Log and Aggregate Bag will be measured by each linear foot that is installed and accepted. Payment 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 work.

Storm Drainage Inlet Protection will be measured and pay for separately in accordance with Section 208 of the Storm Drain Inlet Protection of this specification.

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REVISION OF SECTION 208
EROSION CONTROL

All other work required as set forth in this Revised Section 208 – Erosion Control including all materials, equipment and labor, to permit, set-up, maintain, document, remove and clean-up all erosion control BMP's as per current City of Denver Stormwater Management Plans /(SWMP) requirements will not be paid separately; all costs incurred by the Contractor to meet the requirements of this Section regarding Erosion Control unless provide for in the Bid shall be included in the related appurtenance.

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 included in the cost of the adjacent concrete repair work 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.

Pay Item

Erosion Log (12 Inch)
Aggregate Bag
Concrete Washout Structure
Removal and Disposal of Sediment (Labor)
Removal and Disposal of Sediment (Equipment)
Erosion Control Supervisor

Pay Unit

Linear Foot
Linear Foot
Each
Hour
Hour
Hour

**REVISION OF SECTION 208
STORM DRAIN INLET PROTECTION**

Section 208 of the Standard Specifications is hereby revised for this project as follows:

Subsection 208.05(j) Construction of BMPs shall include the following:

Storm drainage inlet protection shall be placed at the nearest downstream inlet or any inlets immediately adjacent to any construction excavation or areas that require concrete work. The inlet protection shall be sewn geotextile fabric unit enclosing a porous structure in the form of a cylindrical tube placed in front of and extending beyond the inlet opening on both sides. The inlet protection shall be a Beaver Dam style as manufactured by Dandy Products Inc. (1-800-591-2284) (www.dandyproducts.com) or approved equal.

Storm Drain protection shall remain in place throughout the entire project time to ensure protection of each individual construction site.

The Contractor shall review the sites which have completed construction to ensure that the inlet protection is achieving the proper protection and remediate all issues for the entire project time.

Subsection 208.12 shall include the following:

Payment 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 project.

Pay Item

Storm Drain Inlet Protection (Type I)

Storm Drain Inlet Protection (Type II)

Pay Unit

Each

Each

**REVISION OF SECTION 209
WATERING AND DUST PALLIATIVES**

Section 209 of the Standard Specifications is hereby revised for this project as follows:

Subsection 209.07 paragraph 1 shall be deleted and replaced with the following:

Water for moisture-density control, landscaping, pre-wetting, and for dust palliatives will not be measured and paid for separately but shall be included in the cost of the work.

**REVISION OF SECTION 210
RESET MICROWAVE VEHICLE RADAR DETECTOR (MVRD)**

Section 210 of the Standard Specifications is hereby revised for this project as follows:

Subsection 210.01 is hereby revised to include the following:

This work consists of resetting microwave and transponder for Transit Signal Priority system. This work shall be to reset the existing microwave vehicle radar detector to new the new traffic signal pole as shown on the plans.

Subsection 210.02 is hereby revised to include the following:

Resetting of the microwave and transponder is to be done in accordance with the plans. It is the Contractor's responsibility to document the condition of this equipment prior to its removal. This includes but is not limited to photographs, videotapes and measurements. Any existing damage or condition that may be disputable after the equipment is relocated should be brought to the Engineers' attention prior to removal. If necessary, new material shall be used at the direction of the Engineer.

The Contractor shall coordinate with the Engineer, 48 hours prior to resetting this equipment.

Subsection 210.12 is hereby revised as follows:

Reset Microwave Vehicle Radar Detector (MVRD) will be measured as an each for one unit (microwave and transponder)

Subsection 210.13 is hereby revised to as follows:

Payment will be made under:

Pay Item

Reset Microwave Vehicle Radar Detector (MVRD)

Pay Unit

Each

Payment shall be full compensation for all work and materials necessary to complete this item including, but not limited to documentation of existing equipment, stockpiling of equipment and fasteners, as required.

**REVISION OF SECTION 210
RESET RADIO COMMUNICATION ANTENNA (YAGI AND OMNI)**

Section 210 of the Standard Specifications is hereby revised for this project as follows:

Subsection 210.01 is hereby revised to include the following:

This work consists of resetting radio communication antenna (YAGI and OMNI) for traffic communications. This work shall be to reset the existing radio communication antenna to the new traffic signal pole as shown on the plans.

Subsection 210.02 is hereby revised to include the following:

Resetting of the radio communication antenna is to be done in accordance with the plans. It is the Contractor's responsibility to document the condition of this equipment prior to its removal. This includes but is not limited to photographs, videotapes and measurements. Any existing damage or condition that may be disputable after the equipment is relocated should be brought to the Engineers attention prior to removal. If necessary, new material shall be used at the direction of the Engineer.

The Contractor shall coordinate with the Engineer, 48 hours prior to resetting this equipment.

Subsection 210.12 is hereby revised as follows:

Reset Radio Communication Antenna (YAGI and OMNI) will be measured as an each for one unit.

Subsection 210.13 is hereby revised to as follows:

Payment will be made under:

Pav Item

Reset Radio Communication Antenna (YAGI and OMNI)

Pav Unit

Each

Payment shall be full compensation for all work and materials necessary to complete this item including, but not limited to documentation of existing equipment, stockpiling of equipment and fasteners, as required.

REVISION OF SECTION 210 RESET STRUCTURES

Section 210 of the Standard Specifications is hereby revised as follows:

Subsection 210.01 is hereby revised to include the following:

This work shall also consist of restoring existing landscaping that is disturbed during construction to its original or improved condition. This item applies to all landscaping within the limits of construction. Materials used to restore landscaping shall be replaced "in-kind" unless otherwise approved by the Engineer.

Subsection 210.02 shall include the following:

“Restore Landscaping, In Kind” shall include restoring all landscaping that is disturbed within the limits of construction. This includes landscape concrete and asphalt pavers, landscape rock, flowers, shrubs and landscape timbers. The Contractor shall be required to maintain the landscaping planting in accordance with Section 214.

Subsection 210.09 shall include the following:

Signs and traffic signals shall be reset in accordance with the City and County of Denver Transportation Engineering requirements at locations indicated on the plans. It will be the Contractor's responsibility to supply and install any new materials needed to restore the signs and traffic signals to service at the new location.

Subsection 210.10 shall include the following:

Manholes, water meters and valves shall be adjusted in accordance with the applicable standards of the Utility Owner. The Contractor will be responsible for determining the proper Utility Owner and coordinating these adjustments.

Survey range boxes shall be adjusted as directed by the Engineer.

Reset Inlet Grate will include for each existing single inlet all materials, equipment and labor, to remove and dispose of the existing castings and provide and place new castings with mounting hardware, grout and up to 1 course of standard brick riser as per Wastewater Standard Details DRWG NO. S-716 and all other labor, equipment, materials and hauling and disposals necessary to complete the work.

Restoration of landscaping beyond limits outlined on the plans and/or as marked in the field by the Engineer will not be paid for.

Subsection 210.12 shall include the follows:

The quantity to be measured where items are reset, adjusted or restored on a "square foot" basis shall be the actual number of square feet of the items completed and accepted.

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**REVISION OF SECTION 210
RESET STRUCTURES**

Subsection 210.13 shall be revised to include the follows:

<u>Pay Item</u>	<u>Pay Unit</u>
Reset Ground Sign	Each
Adjust Manhole	Each
Modify Inlet	Each
Adjust Valve Box	Each

When the contract does not include pay items for Reset Structures, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 212
SEEDING, FERTILIZER AND SODDING**

Section 212 of the Standard Specifications is hereby revised as follows:

Subsection 212.01 shall include the following:

Work performed in areas under the jurisdiction of Denver Parks and Recreation Department shall conform to the standards of that Department.

Subsection 212.04 shall include the following:

At the direction of the Engineer seeding will be accepted in lieu of sodding.

Subsection 212.08 is hereby revised to include the following:

Sodding beyond the limits outlined on the plans and/or as marked in the field by the Engineer will not be paid for.

Payment will be made under:

Pay Item
Sodding

Pay Unit
Square Foot

When the contract does not include pay items for Seeding, Fertilizer and Sodding, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 212
TREE PROTECTION**

Section 212 of the Standard Specifications is hereby revised as follows:

Subsection 212.01 shall include the following:

This work is for the installation of tree projections as shown in the plans or as directed by the Engineer. The work performed shall be in accordance with Denver Parks and Recreation Department's standards and specifications.

Subsection 212.07 shall include the following:

Tree protection will be measured as each and pay for by the number of tree protections successfully installed that are in accordance with the City and County of Denver's Tree Protection Detail.

Subsection 212.08 is hereby revised to include the following:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below. Payment shall be full compensation for all material and labor to successfully install the tree protection.

Payment will be made under:

Pay Item

Tree Protection

Pay Unit

Each

**REVISION OF SECTION 212
LANDSCAPE RESTORATION**

Section 212 of the Standard Specifications is hereby revised for this project as follows:

Subsection 212.01 shall include the following:

Disturbance of existing landscaping shall be minimized wherever possible. The Contractor shall notify the Engineer or Project Manager of any potential disturbance before beginning of work.

Landscape restoration shall consist of the repair and/or replacement of all landscape materials that may be damaged through the actions of the Contractor or his agents. This work may include but is not limited to sod, fencing, plantings, sprinkler systems and decorative features.

Sod shall be measured and paid for in accordance with Revision of Section 212 - Seeding, Fertilizer and Sodding, and sprinkler system repair shall be measured and paid for in accordance with Revision of Section 623 - Sprinkler System. All other landscape repair and/or replacement of landscape materials shall be included in the cost of landscape restoration.

Subsection 212.07 shall include the following:

Landscape Restoration will be measured by actual number of square feet restored and accepted by the Engineer.

Subsection 212.08 shall include the following:

Pay Item

Landscape Restoration

Pay Unit

Square Foot

**REVISION OF SECTION 250
ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT**

Section 250 of the Standard Specifications is hereby revised for this project as follows:

Subsection 250.01 shall include the following:

Excavation and drilling activities associated with the proposed project may encounter soil and groundwater that may have been impacted by petroleum products or previous releases of hazardous substances. Workers shall be alert during excavations for any visual or olfactory signs of contamination. If soil and/or groundwater contamination is encountered, work will stop immediately and the procedures outlined in the project's material management plan and Section 250 of Standard Specifications for Road and Bridge Construction shall be followed. The Contractor shall be responsible for the required workers' health and safety.

If contaminated groundwater is encountered, all groundwater brought to the surface shall not be directly discharged (or allowed to run off) into a storm sewer, wetlands, ditch, or any waters of the State. The water shall be contained in tanks or drums and properly disposed in accordance with all local, state and federal regulations.

Subsection 250.03 shall include the following:

The Contractor shall follow a material management plan (MMP) to ensure hazardous materials and contaminated groundwater is handled properly. The MMP will be prepared by PW Transportation and Denver Environmental Quality.

The Contractor shall be responsible for the required worker health and safety and the public in accordance with all applicable local, state and federal regulations. If contaminated soil and/or groundwater are encountered, the Contractor's Health and Safety Officer and/or Monitoring Technician shall be called out to the site to supervise subsurface activities to ensure the safety of workers, as detailed in the CDOT Standard Specification 250 -Environmental, Health and Safety Management and this 250 Standard Specification revision. Denver Environmental Quality will also be contacted.

For proper handling of asbestos-contaminated soil, if any, the Contractor will follow all applicable Solid and Hazardous Waste Regulations and the procedures listed in the project's material management plan (MMP). Asbestos contaminated soil removal must be performed by a Certified Asbestos Inspector (CABI) to determine what, if any, controls must be instituted to allow future activity in the excavation area.

Subsection 250.09 shall include the following:

All work including monitoring, sampling, handling, material disposal and analytical costs (if necessary) will be paid using Environmental Health and Safety Management (Each).

Subsection 250.10 shall include the following:

Payment will be made under:

Pay Item

Environmental Health and Safety Management

Pay Unit

Each

**REVISION OF SECTION 304
AGGREGATE BASE COURSE**

Section 304 of the Standard Specifications is hereby revised as follows:

Subsection 304.06 is revised as follows:

All material within the street section shall be compacted to 95% of maximum density as determined in accordance with AASHTO T-99; all areas outside the street section shall be compacted to 90% of the maximum density determined in accordance with AASHTO T-180. It is the Contractor's responsibility to provide Quality Control density testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Subsection 304.08 is hereby revised as follows:

Payment will be made under:

Pay Item

Aggregate Base Course (Class 6)(Complete In-Place)

Pay Unit

Ton

When the contract does not include pay items for Aggregate Base Course, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 306
RECONDITIONING**

Section 306 of the Standard Specifications is hereby revised as follows:

Subsection 306.01 shall be revised to include the following:

All existing subgrade on alleys and streets from back of curb to back of curb shall be reconditioned.

Subsection 306.02 shall be revised to include:

Unless otherwise indicated on the plans, the density requirements for reconditioning shall be:

Clay Soils - 95% of the maximum density determined in accordance with AASHTO T-99

Granular Soils - 90% of the maximum density determined in accordance with AASHTO T-180

It is the Contractor's responsibility to provide Quality Control density testing and provide test results in a testing frequency, method and compile comprehensive reports as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Subsection 306.04 is revised as follows:

Reconditioning will not be measured and paid for separately but shall be included in the work.

**REVISION OF SECTION 401/403
PLANT MIX PAVEMENTS**

Sections 401 and 403 of the Standard Specifications for Road and Bridge Construction are hereby deleted and replaced with the Comprehensive Specifications for the Metropolitan Government Pavement Engineers Council (MGPEC), included herein. Section 9.16 of the MGPEC Specifications is hereby deleted and replaced as follows:

HMAP patching or overlay shall be paid by the ton by batch ticket. Tack Coat will not be measured and paid for separately but shall be included in the cost of the work.

It is the Contractor's responsibility to provide Quality Control density testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Payment will be made under:

Pay Item

HBP Patch/Overlay

Pay Unit

Ton

When the contract does not include pay items for Plant Mix Pavements, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 412
PORTLAND CEMENT CONCRETE PAVEMENT**

Section 412 of the Standard Specifications is hereby revised as follows:

Subsection 412.01 shall be revised to include the following:

This work shall also include driveway, crossspan, valley pan, bus pad and alley paving. All work shall be in accordance with the latest edition of the City and County of Denver's Transportation Standards and Details for Engineering Division.

Subsection 412.03 shall be revised to include the following:

Mix designs must be submitted for approval by the Engineer and shall be designed for the opening times required by the Traffic Control Plan. Such mix designs shall be submitted in a timely manner so as not to delay the scheduled commencement of the project, taking into account time for testing of the mix by the Contractor's laboratory. It is the Contractor's responsibility to provide Quality Control concrete strength testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Subsection 412.04 shall be deleted and replaced with Subsection 601.05, with the following revisions:

Calcium chloride (up to 1 percent by weight of cement) or Type C or E accelerators may be used under the following conditions:

- a. The median daily temperature is less than 55 degrees (Average of previous three days).
- b. The date of placement is between September 30th and May 30th.
- c. The concrete temperature may not exceed 80 degrees F prior to placement.

Difficulties encountered as a result of use of accelerators, the costs of associated delays, and corrective action costs shall be borne by the Contractor.

When High Early Strength is requested by the engineer for the convenience of the City, field strength of 2500 psi shall be achieved in 24 hours or less. An additional charge per cubic yard will be negotiated and paid for high early concrete when directed to be used by the Project Manager. If high early concrete is placed by the contractor without the request of the City the entire additional cost will be borne by the contractor. When directed by the Project Manager, a maturity meter (James Instrument Model No. 3006) shall be used to monitor on-site maturity of pavement concrete. The Contractor shall establish a maturity versus strength relationship for the concrete mixture being used. This correlation may be achieved by casting and curing cylinders on site, monitoring temperature and maturity of cylinders and paving concrete versus time, and testing cylinders at time intervals to establish the correlation.

Subsection 601.05, Paragraph 5, Item (2), referencing use of fly ash, shall be deleted. Subsection 412.10 shall be revised to include the following:

The Contractor is required to submit a detailed breakdown of paving equipment, vibratory devices, finishing tools, and provisions for protection from or avoidance of damage from weather impacts. This information shall be submitted for approval by the Engineer prior to commencing any construction activities.

**REVISION OF SECTION 412
PORTLAND CEMENT CONCRETE PAVEMENT**

Subsection 412.12 shall be revised to include the following:

The Contractor shall insure that new concrete items built under this contract drain properly and, as such, there are no areas of standing water on new concrete items.

The Contractor shall protect all new concrete items built under this Contract against defacement, or other injury, from any cause. If said damage cannot be adequately repaired to the satisfaction of the Engineer, the Contractor shall remove and replace the unacceptable items at Contractor's expense.

Subsection 412.13(a) 1, shall be deleted and replaced with the following:

Longitudinal Construction Joints Keyways in longitudinal construction joints are optional. Deformed steel tie bars of specified length, size, spacing, and material shall be placed perpendicular to the longitudinal joints by an approved method. When adjacent lanes of pavement are constructed separately, Grade 40 (not Grade 60) tie bars may be bent at right angles against the form of the first lane constructed and straightened into final position before the concrete of the adjacent lane is placed. If epoxy-coated steel tie bars are bent and then straightened into final position, at the Engineer's discretion the bars shall be repainted with epoxy coating prior to placement of the adjacent concrete. The tie bars shall be inserted into the plastic state concrete between the auger and the vibrators. Other methods of the bar placement may be acceptable if the Contractor can demonstrate satisfactory performance of his alternate method. Proposals of alternate methods or additional costs associated with other methods shall be at the Contractor's expense.

Subsection 412.13(b), delete the first sentence and replace it with the following:

Weakened plane joints shall be formed by sawing to the depth specified on the drawings, in accordance with the requirements of this subsection or as otherwise approved by the Engineer, except as follows: When required to adhere to the City Noise Control Ordinance, joints shall be formed initially by deep tooling or "soft-cut" methods, followed by sawing at the first available time within the ordinance.

Subsection 412.13(b) 2, delete the first and second paragraphs and replace with the following:

Transverse weakened plane joints shall be formed by sawing a groove in hardened concrete in accordance with plan details.

The Contractor shall cut the transverse and longitudinal joints to the width and depth required. The cut shall be made with a power driven saw. Any damage to the concrete pavement such as spalling or fracturing shall be repaired by the Contractor as directed by the Engineer at no cost to the project. The joints shall be immediately flushed with water to remove any sawing residue from the joint and pavement surface.

If concrete approaches or any widening beyond the width of the initial pass is constructed subsequent to the driving lanes, transverse weakened plane joints shall immediately be formed in the approaches extending from any joints in the driving lanes.

**REVISION OF SECTION 412
PORTLAND CEMENT CONCRETE PAVEMENT**

Subsection 412.13(b) 2, shall be revised to include the following:

The time schedule for sawing weakened plane joints shall be as follows: Every second joint shall be sawed 2 to 12 hours after pavement placement, provided the concrete has sufficiently set so as to preclude the dislodging of aggregate particles by the saw. Unless otherwise directed by the Engineer, the exact time of sawing shall be determined by the Contractor and will be dependent on weather conditions, ambient temperature, mix characteristics and other factors that may affect the setting time of the concrete. Every effort shall be made to saw early enough to control or limit random cracking. The intermediate joints shall be sawed prior to opening to traffic, but in no case longer than 48 hours after placement of the concrete.

The Contractor shall adhere to the City Noise Control Ordinance. In the event that the need for saw cutting is anticipated during restricted time periods, a "soft-cut" saw shall be used before restricted hours, or deep tooling of joints shall be performed on plastic concrete, followed by saw cutting of the concrete as soon as possible during unrestricted hours. At the discretion of the Engineer, saw cutting will be prohibited between 10:00 p.m. and 7:00 a.m.

Subsection 412.18 shall be deleted and replaced with the following:

412.18 Sealing Joints.

This work shall consist of sawing, cleaning and sealing Portland cement concrete pavement joints for new pavements.

Cleaning, repairing and proper curing of any spalls, fractures, breaks or voids in the concrete surface of the joints shall be accomplished at least 4 days prior to installing the backer rod material or joint sealant. Joint sealing or resealing shall be performed only when the ambient and pavement temperatures are 50 degrees F or higher, unless otherwise approved by the Engineer. The pavement surface and joints shall be dry and the sealant shall not be placed unless the weather conditions are dry. The sealant shall be placed a minimum of 4 days after joints are washed clean.

The Contractor shall thoroughly clean the joint and adjacent pavement for a width of not less than one inch on each side of the joint of all scale, dirt, dust, residue, or any foreign material that will impair bonding of the joint sealant. Immediately prior to the placement of backer rod material and the sealant, the joints shall be cleansed using a minimum of 100 psi compressed air.

Work shall be stopped when and if it is found that there oil or moisture in the compressed air. Work shall not resume until suitable adjustments are made. The Contractor is to check for such oil or moisture at the start of every work cycle and periodically during the cycle using an Engineer approved method. The backer rod shall be placed in such a manner that the grade for the proper depth of the sealant material is maintained. Under no conditions shall the Contractor place the backer rod material or the sealant if there is dust, moisture, oil or any foreign material on that portion of the concrete that is to receive the backer rod material or joint sealant.

**REVISION OF SECTION 412
PORTLAND CEMENT CONCRETE PAVEMENT**

A copy of the manufacturer's recommendations pertaining to the heating and application of the sealant shall be submitted to the Engineer prior to the beginning of work, and these recommendations shall be adhered to by the Contractor, with such exceptions as this specification may require.

The sealant material shall be hot applied into the joint using equipment and techniques recommended by the joint sealant manufacturer. The surface of the finished joint seal shall have a flat level surface that is 3/16+/-1/16 inch below the surface of the concrete pavement. Sealant not placed within these tolerances will not be measured and paid for, and the Contractor shall remove the joint sealant material and clean and reseal these joints in accordance with the criteria outlined in the special provision at no additional cost to the project. If, in the opinion of the Engineer, the Contractor shows an inconsistency in his ability to fill the joints to the required dimensions, the Contractor shall cease his operations until such time as he can comply with the required criteria in a consistent manner.

In addition, the Engineer may elect to check for bonding or adherence to the sides of the joint. Material shall conform to Subsection 705.01(a).

The joint material must withstand a 20 pound pull force applied perpendicular to the joint as indicated in "COLORADO PROCEDURE 67-90".

Subsection 412.22 shall be deleted and replaced with the following:

The pavement shall be cleaned and opened to traffic in accordance with the time requirements shown on the plans or in the specifications.

Pavement shall not be opened until it has reached a compressive strength of 2500 psi in-place, regardless of the curing time required by the Traffic Control Plan. The TCP may necessitate the required compressive strength to be attained within 72 hours or less.

Subsection 412.24 shall be revised to include the following:

Payment under Concrete Pavement shall be full compensation for all materials and labor required to complete the various pavement sections, including expansion joints, areas of thickened edges, driveways, bus pads and alley paving.

New curb and gutter that is adjacent to new concrete pavement will not be measured and paid for separately but included in the square yard measurement for concrete pavement. Measurement and payment will be to back of curb except where curb ramp limits overlap.

Pay Item

Concrete Pavement (6 Inch)
Concrete Pavement (8 Inch)
Intersection Valley Pan (8 Foot)(10 Inches)

Pay Unit

Square Foot
Square Foot
Linear Foot

When the contract does not include pay items for Portland Cement Concrete Pavement, these items will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 412
CONCRETE PATCHING AND CURB HEAD REPLACEMENT**

Section 412 of the Standard Specifications is hereby revised as follows:

Subsection 412.01 shall be revised to include the following:

This work consists of patching and curb head replacement on existing concrete pavement.

Subsection 412.02 shall be revised to include the following:

Materials of the work shall be as follows:

A.	Bond Strength: ASTM C-882	1 Day 7 Days	1500 psi 2500 psi
B.	Length Change:	28 Days Dry 28 Days Wet	-0.05% +0.05%
C.	Compressive Strength: ASTM C-109	2 Hours 1 Day 7 Days	2500 psi 5000 psi 7000 psi

Concrete patching material must be a one component system that requires an exact addition of water. They must meet the following performance requirements at maximum water. Aggregate shall consist of 3/8" clean, washed and dried gravel or crushed stone of reasonably uniform quality throughout.

Five Star Highway Patch by U.S. Grout Corporation and HD-50 Heavy Duty Concrete Patch by Dayton Superior Corporation are approved concrete patching material.

Subsection 412.08 shall be revised to include the following:

Preparation of Concrete Surface:

Remove all grease, oil, dirt, curing compounds, laitance and other deleterious materials from the concrete. Roughen the surfaces by sand blasting and provide a near vertical face on the edges of existing concrete to ensure bond. Loose or broken concrete shall be removed. If any existing rebar reinforcing is exposed, it shall be sandblasted. All surfaces shall be thoroughly saturated, and free standing excess water shall be removed with clean compressed air before applying the structural repair material. Minimum depth of patching is 2 inches.

Subsection 412.10 shall be revised to include the following:

Placing Concrete Patch Material:

Carefully read and understand the manufacturer's instructions as printed on the container. The mixing operation should be close to the repair area. A mortar mixer is recommended. For small quantities, an electric drill and paddle mixer is recommended. The mixing order for mortar type mixer shall be as follows:

1. Clean water shall be placed in the mixer at the rate specified on the container instructions. Water content is critical; do not deviate from the amount specified.

**REVISION OF SECTION 412
CONCRETE PATCHING AND CURB HEAD REPLACEMENT**

2. When temperatures exceed 90°F, a prepackaged set retarder shall be used as recommended by the manufacturer. Add retarder to mixing water, maximizing dispersion in the mix.
3. For pours with greatest depth exceeding 3", 3/8 3/4 inch clean washed pea gravel shall be added to the mix at a rate not to exceed 25 lbs. per 50 lb. pail.
4. Add the repair material. This sequence is important in order to produce a consistent mix and to reduce mixing time. Allow approximately 3 minutes mixing time.
5. When pouring large volumes of material, special consideration should be given to maintaining a continuous flow of material producing a wet leading edge. More than one mixer may be necessary to deliver enough material to insure no cold joints.

Place the mixed material into the prepared area, starting from one side of the repair and working to the other side. Do not place the repair material in lifts. Work the material firmly into the bottom and sides of the repair. Screed the material to the desired level. Close up edges of the repair with a trowel. Finish the material to the desired texture. Do not re-temper the material. Clean the mixer and tools periodically with water to prevent build-up, especially in hot temperatures. As soon as the material sets, all exposed surfaces must be thoroughly saturated for 30 minutes.

Concrete Curb Head Replacement:

Concrete curb head that was paved with the concrete pavement shall be constructed as follows:

1. Remove broken curb head and concrete pieces from sound concrete.
2. Place no. 4 deformed bars, 18" O.C. by drilling. Place no. 4 horizontal bars across vertical bars per detail, attached herein.
3. Prior to pouring new curb head, sand blast existing concrete pavement at curb head location or use other cleaning method as approved by the Engineer.
4. Saturate sand blasted area and remove standing water immediately prior to replacing concrete.
5. Consolidate concrete by use of high frequency internal vibrators.
6. Provide 1/8" open joint in curb head at existing contraction joints in concrete pavement.

Subsection 412.23 shall be revised to include the following:

Concrete patching will be measured by the square yard at the depth specified or as required by the Engineer. Curb head replacement will be measured by the lineal foot along the front of the curb head.

**REVISION OF SECTION 412
CONCRETE PATCHING AND CURB HEAD REPLACEMENT**

Subsection 412.24 shall be revised to include the following:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Pay Item

Concrete Patching

Concrete Curb Head Replacement

Pay Unit

Square Yard

Linear Feet

All work necessary and incidental to the concrete patching and curb head replacement will not be measured and paid for separately but shall be included in the work.

**REVISION OF SECTION 503
DRILLED AND VACUUMED CAISSON**

Section 503 of the Standard Specifications is hereby revised for this project as follows:

Section 503.01 is hereby revised to include the following:

This work consisted of constructing the Traffic Signal Pole Foundations using either a drill or vacuum method at the locations as shown on the plans and as directed by the Engineer. The placing of reinforcing steel and concrete in the excavated holes must in accordance with these specifications and in conformity with the lines and grades on the plans or established.

Traffic Signal Pole Foundations shall conform to the requirements of the City and County of Denver's Standard Details for Signal Pole Foundations (Detail 16.1.8).

Section 503.03, delete the first paragraph and replace with the following:

Caisson excavations performed with a vacuum pothole machine will be to prevent drilling through existing utilities. The locations where vacuum method is employed shall be per the approved plans or at the discretion of the Engineer.

Section 503.08 is hereby revised to include the following:

Drilled or Vacuumed Caissons (36 Inch and 48 Inch) will be measured by the linear foot from the elevation shown on the plans to the bottom of the hole excavated.

Section 503.09 is hereby revised to include the following:

Pay Item

Drilled Caisson (36 Inch)
Vacuumed Caisson (36 Inch)
Drilled Caisson (48 Inch)
Vacuumed Caisson (48 Inch)

Pay Unit

Linear Foot
Linear Foot
Linear Foot
Linear Foot

The unit price of drilled or vacuumed caissons (36 Inch and 48 Inch) shall be full compensation for making all excavations; hauling and disposal of excavated material; performing all necessary pumping; furnishing and placing required concrete and anchor bolts and reinforcement steel, including the reinforcement projecting above the tops of the caissons necessary for splicing; all backfilling; removing casings; and for furnishing all tools, labor, equipment, and incidentals necessary to complete the work. No extra payment will be made for casing left in place.

**REVISION OF SECTION 601
STRUCTURAL CONCRETE**

Section 601 of the Standard Specifications is hereby revised as follows:

Table 601-1, footnote (7) shall be revised to include the following:

When No. 67 or No. 57 coarse aggregate is used as the largest aggregate in the mix, the required air content shall be 5% to 8%.

Subsection 601.05, Paragraph 5, Item (2), referencing the use of fly ash, shall be deleted.

Subsection 601.06, Item 7, is modified as follows:

(7) Supplier's Mix I.D. number

Subsection 601.07, (d) is deleted. Self-contained mobile mixers will not be allowed.

It is the Contractor's responsibility to provide Quality Control concrete strength testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 601
STRUCTURAL CONCRETE (FAST TRACK)**

Section 601 of the Standard Specifications is hereby revised to include the following:

This work consists of furnishing and placing Fast Track portland cement concrete in accordance with Section 601 of the 2017 Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction. The Contractor shall place the Fast Track portland cement concrete at locations as shown in the plans or as directed by the Engineer.

Subsection 601.19 shall include the following:

Fast Track portland cement concrete will be measured by the cubic yard.

Subsection 601.20 shall be revised to include the following:

The accepted quantities will be paid for as an additional payment to the cost to placing concrete items including by not limited to concrete pavement, valley pan, concrete patching, or as specified by the Engineer for the use of Fast Track portland cement concrete. The added payment will be paid at the contract unit price listed below.

Pay Item

Fast Track Portland Cement Concrete

Pay Unit

Cubic Yard

All work necessary and incidental for the use of Fast Track portland cement concrete placement will not be measured and paid for separately but shall be included in the work.

**REVISION OF SECTION 603
CULVERTS AND SEWER**

Section 603 of the Standard Specifications is hereby revised for this project as follows:

Section 603.02 is hereby revised to include the following:

All Reinforced Concrete Pipe provided for this project shall be Class III Pipe (reinforced) unless stated differently on the plans.

Contractor shall use rubber gaskets for the installation of Reinforced Concrete Pipe. The rubber gasketed joints shall conform to the requirements of ASTM C 443M (ASTM C 443) and shall be flexible and able to withstand expansion, contraction, and settlement.

All rubber gaskets shall be stored in as cool a place as practicable, preferably at 70 degrees Fahrenheit or less.

Where required, the work shall include the construction of sanitary sewer encasements as directed by the Engineer.

Section 603.03 through 603.11 shall be replaced with the following:

Subsections 603.03 through 603.11 shall be replaced with the City and County of Denver (CCD), Department of Public Works document titled "Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications". This document can be found at the following web address:

<http://denvergov.org/tabid/436483/Default.aspx>

Where trenching shoring is required, the Contractor shall ensure that the shoring method and design will support all adjacent traffic loads.

Section 5.0.3.2 of the CCD document titled, "Backfilling Methods" is hereby revised to include the following: All backfill within the roadway section shall be method B.

Section 603.12 is hereby revised to include the following:

Pay Item

15-Inch Reinforced Concrete Pipe
18-Inch Reinforced Concrete Pipe

Pay Unit

Linear Foot
Linear Foot

Structure excavation and backfill for Reinforced Concrete Pipe (Complete in Place) will not be measured and paid for separately, but shall be included in the work.

Additionally, formliners, form ties, weep holes, and all other items necessary for construction not identified in the Bid Schedule shall be subsidiary to the work.

The cost of sanitary sewer encasements shall not be paid for separately, but shall be included in the work.

REVISION OF SECTION 604 MANHOLES AND INLETS

Section 604 of the Standard Specifications is hereby revised for this project as follows:

Subsections 604.02 through 604.06 shall be replaced with the City and County of Denver (CCD), Department of Public Works document titled “Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications”. This document can be found at the following web address: <http://denvergov.org/tabid/436483/Default.aspx>. Delete all references in this document to measurement and payment and item numbers referencing CCD’s Standard Construction Specifications.

Subsection 604.04(b) shall include the following:

Precast manholes are allowed. The contractor will take the responsibility that all rims match the proposed grades. In the event that field conditions are not as anticipated, required modifications to all precast structures shall be at the contractor’s expense.

Subsection 604.06 shall include the following:

The use of precast inlets and manholes may require an increase in the structure size denoted on the plans. The cost associated with an increase in structure size due to the use of precast structures will be at the contractor’s expense.

Subsection 604.07 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Type 16 Curb Inlet (Single)(4 Foot 8 Inches)	Each
Type 16 Curb Inlet (Double)(8 Foot 5 Inches)	Each
Type 14 Curb Inlet (6 Foot)	Each
Type 14 Curb Inlet (9 Foot)	Each
4’ I.D. Manhole Slab Base (5 Foot)	Each
4’ I.D. Manhole Slab Base (10 Foot)	Each

Structure Excavation and Backfill will not be measured separately but shall be included in the work.

Pay Items Type 16 Curb Inlet, Type 14 Curb Inlet, and 4’ I.D. Manhole shall conform to City and County of Denver, Department of Public Works, Wastewater Management Division, Standard Details 2010. This document can be found at the following web address: <http://denvergov.org/tabid/436483/Default.aspx>.

**REVISION OF SECTION 608
CONCRETE SIDEWALK (SPECIAL)**

Section 608 of the Standard Specifications is hereby revised for this project as follows:

Subsection 608.01 shall include the following:

This work consists of the construction of sidewalks which include reinforcing steel as shown in the plans and as approved by the Engineer.

Subsection 608.03 shall include the following:

Concrete Sidewalk (Special) shall consist of 6" of Class S35 concrete or approved equal. Minimum requirements shall include water to cementitious material ratio of 0.40 and required field compressive strength of 5000psi at 28 days.

Reinforcing steel for Concrete Sidewalk (Special) shall be as shown in the plans and in accordance with Section 602. All reinforcing steel used on this project shall be black.

Subsection 608.05 shall include the following:

Reinforcing steel will not be measured and paid separately but shall be considered included in the unit price for this item.

Subsection 608.06 shall be revised to include the following:

Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 201, Clearing and Grubbing or Section 202, Removal of Structures and Obstructions.

It is the Contractor's responsibility to provide Quality Control concrete strength testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Payment will be made under:

Pay Item

Concrete Sidewalk (Special)

Pay Unit

Square Yard

Payment shall be full compensation for labor and materials including, but not limited to, prep work, reconditioning, forms, grading, bed course, backfill, curing compound, control and expansion joint, sealant, and finishing as required to complete these items. Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 202.

**REVISION OF SECTION 608
SIDEWALKS, CURB RAMPS AND BIKEWAYS**

Section 608 of the Standard Specifications is hereby revised for this project as follows:

Subsection 608.01 shall be deleted in its entirety and replaced with the following:

Concrete Sidewalk construction shall conform to the requirements of the City and County of Denver's Standard Details for Curb/Gutter and Sidewalk (Detail 5.2 through 5.4).

Concrete Curb Ramp construction shall conform to the requirements of the City and County of Denver's Standard Details for Curb Ramps (Detail 7.0 through 7.7). Construction of concrete ADA curb ramps to include the installation of detectable warnings.

Concrete Driveway construction shall conform to the requirements of the City and County of Denver's Standard Detail for Standard Commercial Driveway (Detail 6.0 through 6.2).

Subsection 608.02, delete in its entirety and replace as follows:

Materials shall meet the requirements specified in the following subsections:

Joint Fillers 705.01

Concrete for sidewalks, curb ramps, and driveways shall be Class "P", broom finish with natural color as specified in subsections 601.02 and 601.03, except that No. 67 coarse aggregate shall be used.

Concrete for bike lane curb ramps will be colored. The concrete color shall be Davis Color # 860 (Dark Gray).

Detectable warnings shall be the composite dome (Armor-Tile Tactile Systems) for 5' wide curb ramps or the cast-iron dome for the 6' and wider curb ramps. Installation of the detectable warnings on ADA curb ramps shall be in strict accordance with the manufacturer's recommendations.

Alternate materials may be used, if pre-approved by the Engineer. The Contractor shall submit a sample of the product, the name of the selected supplier, and documentation that the product meets all contrast requirements and will be fully compatible with the curb ramp surface to the Engineer for approval prior to the start of work.

Concrete shall be cured with a non-pigmented "clear" curing compound.

All concrete used for sidewalks, curb ramps, and driveways shall be reinforced with polypropylene fibers. Polypropylene fibers shall be FIBERMESH or FORTA FIBRE. Length of fibers shall be as recommended by the manufacturer. Add 1.5 pounds FIBERMESH or FORTA FIBRE per cubic yard of concrete. The fiber additive utilized in the concrete mix shall be that supplied by the Fibermesh Company, 4019 Industry Drive, Chattanooga, TN, 37416, (800) 635-2308, or approved equal. The Contractor shall submit five (5) copies of fibrous concrete reinforcement product data for use by the Engineer.

Concrete will be subject to inspection and tests as required to assure compliance with quality requirements.

The use of calcium chloride, as permitted under Revision of Section 412, subsection 412.04, is prohibited in colored concrete.

**REVISION OF SECTION 608
SIDEWALKS, CURB RAMPS AND BIKEWAYS**

Subsection 608.03(a) shall include the following:

Delete the third sentence and add:

Where excavation to the finished grade elevation results in subgrade of unsuitable soil, the Engineer may designate the unsuitable material to be removed and replaced with approved material. Removal of unsuitable material shall be paid for as Muck Excavation in accordance with Revision of Section 203.05(c), and backfilled with Class 6 Aggregate Base Course, or other material approved by the Engineer.

Subsection 608.03(d) shall be revised to include the following:

Finishing shall occur only after the disappearance of bleed water. The addition of superficial water to the surface of the concrete to assist in finishing operations will not be permitted. Sprinkling of pigment onto the fresh surface will not be permitted.

Subsection 608.03(e) shall be revised to include the following:

For Bikeways, control joints shall be zipstrip or sawcut to a minimum depth of $\frac{1}{4}$ of the total slab thickness and no greater than $\frac{1}{4}$ inch wide. Control joints shall be spaced at 10 feet on center or as noted on the plans. Any damage to the concrete such as spalling, dislodging of aggregate particles, or cracking will be repaired by the Contractor at no additional cost to the Project. If said damage cannot be adequately repaired to the satisfaction of the Engineer, the Contractor shall remove and replace the damaged concrete at no additional cost to the Project.

Subsection 608.03(f) shall be revised to include the following:

The Contractor shall insure that new concrete items built under this contract drain properly and, as such, there are no areas of standing water on new concrete items.

The Contractor shall protect all new concrete items built under this Contract against defacement, or other injury, from any cause. If said damage cannot be adequately repaired to the satisfaction of the Engineer, the Contractor shall remove and replace the unacceptable items at Contractor's expense.

Subsection 608.06 shall be revised to include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Concrete Sidewalk	Square Yard
Concrete Curb Ramp (Composite Dome)	Square Yard
Concrete Curb Ramp (Cast Iron Dome)	Square Yard

Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 201, Clearing and Grubbing or Section 202, Removal of Structures and Obstructions.

**REVISION OF SECTION 608
SIDEWALKS, CURB RAMPS AND BIKEWAYS**

Detectable warnings on new curb ramps, including all labor and materials necessary for fabrication, transport and installation, will not be measured and paid separately, but shall be considered included in the work.

It is the Contractor's responsibility to provide Quality Control concrete strength testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

Payment shall be full compensation for labor and materials including, but not limited to prep work, reconditioning, forms, grading, bed course, backfill, curing compound, control and expansion joint and sealant as required to complete these Pay Items.

Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 202, Removal of Structures, Asphalt Mat and Obstructions.

**REVISION OF SECTION OF 609
CURB AND GUTTER**

Section 609 of the Standard Specification is hereby revised as follows:

Subsection 609.01 (f) shall be revised to include the following:

Combination Curb, Gutter, and Sidewalk
Variable Height Curb Head
Curb and Gutter, Variable Height Curb Head

Subsection 609.02 shall be revised as follows:

In the first paragraph, reference to Section 703.07, Bed Course Material, shall be deleted.

Paragraph 2 shall be deleted and replaced with the following:

- Concrete shall conform to the requirements for Class “P” concrete as specified in subsections 601.02 and 601.03. When curb machines are used, the Contractor will be permitted to use AASHTO M 43 Size 57 or 67 aggregate in lieu of the coarse aggregate specified in Table 601-1, and a lesser slump will be permitted.

Subsection 609.03(a) shall be revised as follows:

Excavation: Excavation shall conform to the requirements of the Revision of Section 608, Subsection 608.03(a).

Subsection 609.03(c) shall be revised to include the following:

The Contractor shall protect all new concrete items built under this Contract against defacement, or other injury, from any cause. If said damage cannot be adequately repaired to the satisfaction of the Engineer, the Contractor shall remove and replace the unacceptable items at Contractor’s expense.

Subsection 609.03(d) shall be revised to include the following:

For construction of curb and gutter adjacent to existing concrete pavement, the joint pattern shall match that of the concrete pavement. The joint pattern shall be approved by the Engineer prior to construction.

Subsection 609.03(i) shall be revised to include the following:

The Contractor shall insure that new concrete items built under this contract drain properly and, as such, there are no areas of standing water on new concrete items.

It is the Contractor’s responsibility to provide Quality Control concrete strength testing and provide test results in a testing frequency, method and report as per Pre-construction submittal approved by the City Project Manager. Quality Control testing, reports and submittals will not be paid for separately but shall be included in the work.

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**REVISION OF SECTION OF 609
CURB AND GUTTER**

Subsection 609.07 shall be revised to include the following:

Payment will be made under:

Pay Item

Variable Height Curb Head w/Reinforcement
Curb and Gutter Type 2 (Section I-B)
Curb and Gutter Type 2 (Section II-B)
Curb and Gutter, Variable Height Curb Head
Combination Curb, Gutter and Sidewalk ('-")

Pay Unit

Linear Foot
Linear Foot
Linear Foot
Linear Foot
Linear Foot

Payment shall be full compensation for labor and materials including, but not limited to, reconditioning, grading, backfill, curing compound, control and expansion joint and sealant as required completing these Pay Items.

Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 202, Removal of Structures and Obstructions.

**REVISION OF SECTION 610
MEDIAN COVER MATERIAL**

Section 610 of the Standard Specifications shall be revised for this project as follows:

Subsection 610.02 shall include the following:

Aggregate for concrete median cover material shall be #67 or #57.

Subsection 610.03 shall include the following:

Landscape weed barrier fabric shall be installed in accordance with Subsection 420.08.

Subsection 610.05 shall include the following:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below.

Payment will be made under:

Pay Item

Median Cover Material (6" Concrete)(#67 or #57 Aggregate)

Pay Unit

Square Foot

**REVISION OF SECTION 613
ELECTRICAL CONDUCTOR IDENTIFICATION**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Subsection 613.08 shall include the following:

All electrical conductors shall be tagged as follows:

Electrical conductor cable tags shall be located below the termination in the base of the streetlight, in the pull box, in the pedestal, and at the point of termination to existing facilities of the Local Utility Company supplying electrical service. The tags shall be attached with a cable tie. The information written on the tag shall include the direction and approximate length of cable, feeds running from where and to, etc.

Each incoming conductor shall be individually color coded with one (1) tape mark, while outgoing conductors shall have two (2) tape marks.

Example:

-----	-----
FEEDS TO PULL BOX	FEEDS FROM XFMR
50' NORTH & 75' WEST	250' SOUTH & EAST
THEN TO HIGHWAY SIGN	200' WEST
-----	-----

Uniform tags are available in a Tag Kit. *The Tag Kit consists of: 100 tags, 3-part yellow with 1 hole, 100 black nylon ties and 1 black Sharpie pen.

Manufacturers

Uticom Systems Inc.

Catalog Numbers

U5025Y1 Or approved equal

Subsection 613.11 shall include the following:

Electrical conductor tagging will not be paid for separately, but shall be included in the cost of wiring.

**REVISION OF SECTION 613
ELECTRICAL CONDUIT – GENERAL**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Add the following to subsection 613.07:

This work is for the installation electrical conduits. These conduits (laterals) shall be to connect the already installed traffic signal conduits to the traffic signal controller cabinets, electric meters, and traffic signal poles. The conduit installation shall be in accordance with this specification:

All conduit bends, including factory-installed bends, shall not have a bend radius less than six times the inside diameter of the conduit.

The excavations required for the installation of conduit or cable shall be performed in such a manner as to avoid unnecessary damage to streets, sidewalks, landscaping, sprinkler systems and other improvements. Trenches shall not be excavated wider than necessary for the installation of the electrical appurtenances. Excavation shall not be performed until immediately before installation of conduits. The material from the excavation shall be placed in a position not to cause damage or obstruction to vehicular or pedestrian traffic or interfere with surface drainage.

Trenches shall be made with a rock-wheel or other machine capable of cutting a narrow trench (4") so as to allow traffic to pass over prior to back filling. The machine shall be equipped with shields to direct the spoil downward and away from passing vehicles, workmen and pedestrians.

Off-street trenches shall be back-filled with the same material that was removed and shall be compacted and shaped to match the surrounding surface. On-street trenches within ALL roadway areas shall be back-filled with CDOT approved Structure Backfill (Flow-Fill) and capped with 9" minimum of Hot Mix Asphalt Pavement (Patching) in accordance with Section 403 and City and County of Denver Street Cut Regulations if applicable. If surrounding pavement depth is greater than 9 inches, the HMA (Patching) depth shall match the existing pavement.

All surface materials including sprinkler systems, landscaping, shrubs, sod grass, and native growth vegetation which is disturbed by trenching and back-filling operation shall be restored in kind equal to or exceeding the original conditions.

All conduit runs that will not have a copper conductor installed shall have a #12 AWG stranded copper conductor placed inside for locating purposes. Locating conductor and tape will not be measured and paid separately, but shall be included in the unit price for conduit.

Conduit shall always enter a pull box, hand-hole, or any other type structure from the direction of the run only.

All conduits shall be fully compatible with fiber optic cable. Plastic conduit shall be Schedule 80 in the diameters shown on the plans and shall be compliant with Bellcore TW-NWT-000356 requirements. Each conduit shall be equipped with a pull tape and each bore shall have a copper tracer wire of at least 12 gauge.

Plastic PVC conduit shall be certified by the manufacturer as meeting ANSI/UL 6 and 651. The manufacturer shall be ISO 9000 compliant.

**REVISION OF SECTION 613
ELECTRICAL CONDUIT – GENERAL**

All conduit bends, including factory-installed bends, shall not have a bend radius less than six times the inside diameter of the conduit.

Conduit plugs for sealing conduit shall also be supplied and installed in all open conduit ends as soon as the conduit is installed. Plugs shall be durable, fabricated from no metallic parts, be of the split design to allow removal and reinstallation around in-place cables and be easily removable and reusable. Plugs shall be capable of being installed by hand without any tools and shall provide a water and air tight seal of at least 100 psi and shall cause no damage to the cable when installed.

At some locations (as illustrated on the Plans or in these specifications, or as directed by the Engineer), new conduits shall be installed in an existing pull box. At these locations, the Contractor shall carefully excavate around the pull box and install the new conduit in the pull box in a manner that meets the requirements of this Special Provision. The Contractor shall not damage the existing pull box. If the existing pull boxes or concrete collars are cracked or damaged during conduit installation, the Contractor shall be required to replace either or both conforming to the requirements of the contract at no additional cost.

Subsection 613.10 shall include the following:

Electrical Conduit will be measured by the linear feet of conduit installed in accordance with these Special Provisions, the Project Standards or as directed by the Engineer. Electrical Conduit will include groundwork, sweeps, pull cord, copper tracer wire, adapters, fittings, splice couplings, conduit plugs (for conduits both with and without fiber optic cable), equipment, labor, and all other items necessary to complete the work.

Subsection 613.11 shall include the following:

Pay Item

2" Electrical Conduit
3" Electrical Conduit

Pay Unit

Lineal Foot
Lineal Foot

**REVISION OF SECTION 613
ELECTRIC METER PEDESTAL CABINET AND BASE**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Subsection 613.07 shall include the following:

New traffic signal installations require an Electric Meter Pedestal Cabinet and Base for the new traffic signal. Xcel Energy will furnish only the electric meter. The Contractor shall furnish the electric meter pedestal cabinet, and shall install the pedestal cabinet and base, by a licensed electrician (journeyman), at the locations as show on the plan and in accordance with the City and County of Denver's standard – sheets 16.1.19 and 16.1.20.

Subsection 613.10 shall include the following:

Electric Meter Pedestal Cabinet and Base will be measured and installed in accordance with these Special Provisions, the Project Standards or as directed by the City. The Electric Meter Pedestal Cabinet and Base installation will include groundwork, sweeps, pull cord, copper tracer wire, adapters, fittings, splice couplings, conduit plugs, equipment, labor, and all other items necessary to complete the work.

Contractor shall submit material specifications to the Engineer for prior approval.

Subsection 613.11 shall include the following:

Pav Item

Electric Meter Pedestal Cabinet and Base

Pav Unit

Each

**REVISION OF SECTION 613
PULL BOXES – GENERAL**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Subsection 613.07 shall include the following:

Electrical pull box shall be the type A pull box. The covers of the type A pull box shall have the word “ELECTRIC” physically impressed (not painted) on top. Traffic signal pull box shall be the type B pull box. The covers of the type B pull box shall have the word “TRAFFIC” physically impressed (not painted) on top. Communication pull boxes shall be the either type C (24x36x24) or type D (30x48x18) pull boxes. The covers of the type C and D pull boxes shall have the words “TRAFFIC COMM” physically impressed (not painted) on top. The covers shall be attached to the pull box body by screw-in bolts and shall have two lift slots to aid in the removal of the lid.

All concrete collars, footings, and location marker supports shall be Portland Cement Concrete Class B and shall be in accordance with Section 601.

Pull boxes that are to be in traveled ways shall be outfitted with traffic bearing lids rated for HS 20- 44 loads. The pull boxes shall have a special concrete footing extending 8 inches around the outside and 6 inches around the inside of the pull box bottom, as shown in the plans. Pull boxes installed in dirt or landscape areas shall have a 12 inch wide by 6 inch thick concrete collar placed around the top in lieu of the concrete footing, as shown in the plans.

When the plans call for a fiber optic cable location marker to be installed at the pull box location, the concrete foundation support for the location marker shall be placed monolithically with the concrete collar.

Pull Box (Surface Mounted) shall be metal type with a hinged front door and have at least a NEMA 3R rating. The hinged door shall be provided with both a weather tight seal and a key lock mechanism. Surface mounted pull boxes shall be of the dimensions shown in the plans, and shall be mounted on or embedded into hard surfaces such as bridge decks, concrete barriers, retaining walls, or buildings, as shown on the plans. Surface mounted pull boxes shall be attached using 3/8-inch epoxy anchors or other methods, as approved by the Engineer. Surface mounted pull boxes shall not be used for ground installations.

Subsection 613.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Pull Box (Type C)	Each
Pull Box (Type D)	Each

Type C and type D pull boxes shall include the removal of any existing pull boxes, installation of the new pull boxes, modification of conduit ends, restoration of disturbed surface materials, and all other work necessary to complete the installation. All work necessary for the removal and installation of pull boxes will not be measured and paid for separately but shall be included in the cost the work.

Type C and type D pull boxes will be paid for on the basis of the number of pull boxes installed.

All other pull boxes required to complete the work will not be measured and paid separately but shall be included in the work of the conduit installation.

**REVISION OF SECTION 613
LIGHTING (LUMINAIRE)(LED 5300 LUMENS)**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Subsection 613.02 shall include the following:

The Contractor shall furnish and install LED Street Light Luminaire at locations as shown on the plans. The LED Street Light Luminaire shall be compatible or interchangeable with standard LED Street Light Luminaire as stocked by the City and County of Denver.

The current LED Street Light Luminaire that are compatible with that stocked by the City and County of Denver is as follows:

<u>Manufacturer</u>	<u>Catalog Numbers</u>
E-Lite Star	ESU-CA012M03042S-525CCD1-1

The luminaire shall also include a photo cell (S-T P124-1.5-PTW or equal) and the luminaire finish shall be in Federal Green.

The Contractor shall submit a lighting materials list to the City and Denver for approval prior to ordering. Contact Chris Lillie at 720-865-4066.

Subsection 613.08 shall include the following:

At least one grounding electrode shall be installed adjacent to each light standard. Wiring shall be a 120/240 volt or 120/208 volt, 3-wire system with individual luminaire wired for 120 volts.

Subsection 613.11 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Luminaire (LED)(5300 Lumens)	Each

Luminaire shall be measured and paid by the number of luminaire installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional system to the satisfaction of the Engineer.

**REVISION OF SECTION 614
TRAFFIC CONTROL DEVICES (RED SIGNAL ENFORCEMENT)**

Section 614 of the Standard Specifications is hereby revised as follows:

Subsection 614.01(a) shall include the following:

This work is for the installation of Red Signal Enforcement traffic control devices. The Contractor shall furnish and install the Red Signal Enforcement traffic control devices at locations as shown on the plans or as directed by the Engineer.

The Red Signal Enforcement traffic control devices shall be compatible or interchangeable with standard Red Signal Enforcement traffic control devices as stocked by the City and County of Denver.

The current Red Signal Enforcement traffic control device that is compatible with that stocked by the City and County of Denver is as follows:

<u>Manufacturer</u>	<u>Model</u>
McCain	Enforcer

Prior to ordering the Red Signal Enforcement traffic control devices, the Contractor shall submit material specifications to the City and County of Denver Traffic Engineering Services for approval.

Subsection 614.13 shall include the following:

Red Signal Enforcement traffic control devices shall be measured by the number of units installed and accepted. All labor and materials required to complete the work is considered included in the unit price for this item.

Subsection 614.14 shall include the following:

Payment will be made under:

<u>Pav Item</u>	<u>Pav Unit</u>
Traffic Control Devices (Red Signal Enforcement)	Each

**REVISION OF SECTION 614
CONCRETE FOOTING (TRAFFIC SIGNAL POLE)**

Section 614 of the Standard Specifications is hereby revised to include the following:

Subsection 614.01 shall include the following:

This work consists of installing concrete footing (foundations) for traffic signal pedestal pole; traffic signal imbedded steel poles (span wire poles); and traffic signal street light poles (no mast arms). Locations of the concrete footing (foundations) are shown on the plans or as directed by the Engineer.

Subsection 614.08 (g) shall include the following:

Concrete Footing (Pedestal Pole) shall conform to the requirements of the City and County of Denver's Traffic Signal Standard Detail sheet no. 16.1.13 and detail nos. 4 and 5.

Concrete Footing (Imbedded Steel Pole) for span wire traffic signal poles shall conform to the requirements of the City and County of Denver's Traffic Signal Standard Detail sheet no. 16.1.14 and detail no. 6.

Concrete Footing (Traffic Street Light Pole – no mast arm) shall conform to the requirements of the City and County of Denver's Traffic Signal Standard Detail sheet no. 16.1.15, Foundations for XCEL Facilities, and detail no. 9.

Subsection 614.13 shall include the following:

Concrete Footings for Pedestal Poles, Imbedded Steel Poles, and Traffic Street Light Poles will not be measured and pay for separately but shall be included in the cost of Pedestal Poles, Imbedded Steel Poles, and Traffic Signal Light Poles installation.

**REVISION OF SECTION 614
LED PEDESTRIAN SIGNAL HEADS (COUNT DOWN)**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work includes the installation of LED Pedestrian Signal Faces with countdown timers as shown in the Contract.

Subsection 614.08 (h) shall include the following:

Pedestrian signal faces with count down timers shall meet the following requirements:

- i. The dimensions of the signal housing and the LED symbols, as well as moisture and dust resistance requirements shall be in accordance with the current ITE PTCSI Standards.
- ii. Signal housing shall be aluminum, painted in Federal Green and “clam-shell” mounted.
- iii. The signal shall have user-selectable modes for countdown for walk cycle only, pedestrian cycle only, or both walk and pedestrian clearance.
- iv. The countdown module shall have an internal conflict monitor to prevent any possible conflicts between the Hand/Person signal indications and the time display. The display shall not countdown during a Solid Hand indication.
- v. LED symbols shall be solid icons and shall provide uniform light dispersion such that the “pixel” effect is minimized. Lettered or outline symbol styles will not be permitted.
- vi. The Man/Hand configuration shall provide clear and distinct lamination where either symbol is in use.
- vii. The LED module shall be rated for use in an ambient operating temperature range of - 40° F to 165° F.
- viii. The signal shall meet NEMA Standard TS2 for voltage surge protection, and shall have an automatic reset in case of a power outage.

Subsection 614.13 shall include the following:

LED Pedestrian Signal Heads (Count down) will be measured by the actual number of units that are installed and accepted.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Pedestrian Signal Heads (Count Down)

Pay Unit

Each

REVISION OF SECTION OF 614 TRAFFIC CONTROL DEVICES

Section 614 of the Standard Specification is hereby revised as follows:

Subsection 614.08 (h) shall include the following:

“Light Emitting Diode” (LED) signal lenses shall be installed in all Red, Yellow, Green, signal displays. The LED signal lenses for the 12” and 8” circular balls and 12” circular arrows are hereby added to the Standard Specifications and shall comply with the following specifications:

Manufacturer Requirements and Approvals:

- The manufacturer supplying product to this specification shall have a minimum of 13 years of experience in the manufacture of LED Traffic Signals with High Flux LEDs used in the North American market.
- Manufacturers supplying products to this specification must be a registered participant and have the unique long life module part numbers being provided certified and listed on the Intertek-ETL LED Traffic Signal Modules Certification Program approved products website prior to bid opening.
- Manufacturers supplying products to this specification shall manufacture and assemble product on an Intertek ETL audited line located in the USA.
- Unique part number shall be listed on manufacturers label proving difference between standard modules and long life modules.
- If requested, documentation shall be provided by manufacturer demonstrating the changes made to their standard product that allows for ITE specification compliance over 15 year warranty period.

Physical & Mechanical Requirements: General

- Tinted or Non-Tinted Lens. Unless designated otherwise in the below table the standard lens color shall be tinted with a color meeting the colors required in paragraph 4.2 of the ITE specification. The products shall be available with non-tinted lenses as an option.
- The LED module shall utilize high flux LEDs rated at 1 watt or higher and have an incandescent, non-pixelated appearance when illuminated. The use of low power LEDs, for example 5 mm LEDs, is not permissible in the design and production of long life arrow products.
- The external lens shall have a smooth outer surface to prevent the build up of dirt/dust and shall be designed to minimize the potential for sun phantom signals.
- All LEDs utilized to illuminate circular signal modules, shall be LEDs that have been manufactured utilizing materials that have industry acceptance as being suitable for uses in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.
- The thermal management system used in the traffic ball must be self-contained and internal to the traffic module. At no time shall the thermal management system used for the power supply or LEDs form any part of the external surface of the LED module.
- All plastic components shall be molded and assembled in the USA. This includes: back housing, spreading lens and front lens. Certificate of manufacturing location must be available and supplied at time of bid requested.
- All lenses shall be hard coated in the USA. Certificate of manufacturing location must be available and supplied at time of bid requested. All reflectors shall be metalized in the USA. Certificate of manufacturing location must be available and supplied at time of bid requested.

REVISION OF SECTION OF 614 TRAFFIC CONTROL DEVICES

Module Identification

- In addition to the required ITE labeling all modules must be labeled with the ETL Verified label shown in Figure 1. This label designates the compliance and listing with the Intertek-ETL Traffic Signal Certification Program.

Electrical: General

- The following color scheme shall be used for all modules AC power leads: White for Common, Red for the Red ball signal, Yellow for the Yellow ball signal, and Brown for the Green ball signal.
- The AC power leads shall exit the module via a rubber grommetted strain relief, and shall be terminated with insulated female quick connect terminals with spade/tab adapters. The leads shall be separate at the point at which they leave the module.
- All external wiring utilized in the LED traffic signal module shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the module.
- LED Module and power supply shall be design to remain ITE compliant over a 15 year life.
- To minimize the temperature exposure of the power supply all power supplies should be located at the bottom of the module when the arrow is facing left.
- For additional protection from moisture, all power supplies shall be conformal coated for additional protection.

Transient Voltage Protection

- In addition to the transient test requirements defined in the Design Qualification Testing section of ITE Vehicle Traffic Control Signal Heads (VTCSH) specification all power supplies used in the circular signals supplied to this specification shall be capable of passing an additional ring-wave surge testing in accordance with the IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and less) AC Power Circuits, ANSI/IEEE C62.41.2-2002, 6KV, 100 kHz ring-wave with an output impedance of 30 ohms. The short circuit current shall be 200 Amps.

Power

- Typical wattages at 25 o C for the 12” circular arrow LED traffic Signal Modules shall be: Red - 8 watts, Yellow - 13 watts, and Green - 8 watts.
- Typical wattages at 25o C for the 12” circular ball LED traffic Signal Modules shall be: Red - 7 watts, Yellow - 11 watts, and Green - 7 watts. Typical wattages at 25o C for the 8” circular ball LED traffic Signal Modules shall not exceed: Red - 8 watts, Yellow - 10 watts, and Green - 8 watts.

Quality Assurance General

- Upon Request, the supplier must provide an Intertek-ETL test report for the base model being supplied to this specification.
- The base products must be listed in the Intertek Directory of LED Traffic Signal Modules Certified Products listing at the time of bid. Upon request the supplier must provide a copy of the listing in the bid package.

**REVISION OF SECTION OF 614
TRAFFIC CONTROL DEVICES**

Warranty Requirements:

Warranty

- Manufacturers shall provide a detailed written warranty issued by the factory of module origin with the following minimum provisions:
- Modules shall, at the manufacturer's option, be repaired or replaced if the module fails to function as intended due to workmanship or material defects within the first 15 years from the date of delivery.
- Modules shall, at the manufacturer's option, be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within the first 15 years of the date of delivery.
- Upon request, the LED lamp module manufacturer shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim.
- A current corporate annual report duly-certified by an independent auditing firm, containing financial statements illustrating sufficient cash-on-hand and net worth to satisfy a worst- case, catastrophic warranty claim is an example of suitable documentation.
- The documentation shall clearly disclose:
 - The country in which the factory of module origin is located
 - The name of the company or organization that owns the factory of module origin including any and all of its parent companies and/or organizations, and their respective country of corporate citizenship
- For firms with business and/or corporate citizenship in the United States of less than fifteen years, the process by which the end-users/owners of the modules will be able to obtain worst-case, catastrophic warranty service in the event of bankruptcy or cessation-of-operations by the firm supplying the modules within North America, or in the event of bankruptcy or cessation-of-operations by the owner of the factory of origin, shall be clearly disclosed.

Subsection 614.14 shall include the following:

LED signal lenses shall be included in the cost of the item for Traffic Signal Face and will not be paid for separately.

**REVISION OF SECTION 614
TRAFFIC SIGNAL FACE (PROGRAMMABLE)**

Section 614 of the Standard Specifications is hereby revised as follows:

Subsection 614.01(a) shall include the following:

This work shall be for the installation of the three-section (12-12-12) or four-section (12-12-12-12) Traffic Signal Face Programmable traffic control device. The Contractor shall furnish and install the programmable traffic control devices at locations as shown on the plans or as directed by the Engineer.

The programmable traffic control devices shall be compatible or interchangeable with the standard programmable traffic control devices as stocked by the City and County of Denver.

The current programmable traffic control device that is compatible with that stocked by the City and County of Denver is the type manufactured by McCain.

Prior to ordering the programmable control devices, the Contractor shall submit material specifications to the City and County of Denver transportation for approval.

Subsection 614.13 shall include the following:

Programmable traffic control devices shall be measured by the number of units installed and accepted. All labor and materials required to complete the work is considered included in the unit price for this item.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Traffic Signal Face (12-12-12)(Programmable)
Traffic Signal Face (12-12-12-12)(Programmable)

Pay Unit

Each
Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL FACE (HAWK)**

Section 614 of the Standard Specifications is hereby revised as follows:

Subsection 614.01(a) shall include the following:

This work shall be for the installation of the three-section (12-12-12) High-Intensity Activated crossWalk (HAWK) beacon traffic control device. The Contractor shall furnish and install the HAWK traffic control devices at locations as shown on the plans or as directed by the Engineer.

Prior to ordering the programmable control devices, the Contractor shall submit material specifications to the City and County of Denver transportation for approval.

Subsection 614.13 shall include the following:

HAWK traffic control devices shall be measured by the number of units installed and accepted. All labor and materials required to complete the work is considered included in the unit price for this item.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Traffic Signal Face (12-12-12)(HAWK)

Pay Unit

Each

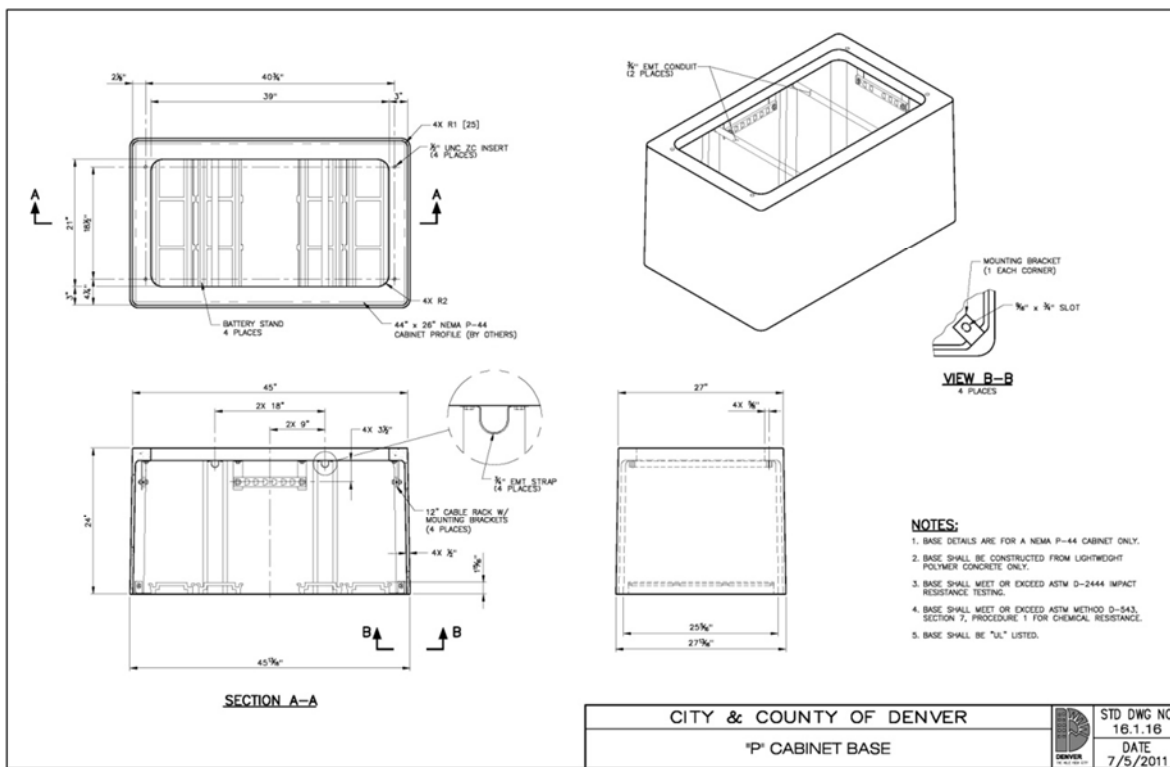
REVISION OF SECTION 614 TRAFFIC SIGNAL CABINET BASE

Section 614 of the Standard Specifications is hereby revised for this project as follows.

Subsection 614.01 shall include the following:

This work is of the installation of a composite Traffic Signal Controller Cabinet Base in accordance with City & County of Denver standards. The Contractor shall furnish and install the base that will fit the City and County of Denver's P-size traffic signal controller cabinet at the locations as shown on the plan.

Dimensions of the cabinet base (City & County of Denver Traffic Engineering Services STD DWG NO. 16.1.16) are as shown in the following drawing:



Subsection 614.10 shall include the following:

Prior to starting cabinet base installation, Contractor shall obtain field verification of the location of the cabinet from the Engineer.

Cabinet base installation shall include all labor and materials to completely install a new P- size cabinet base as directed in the plans. The item shall include all excavation, conduit installation and modification work, backfill and restoration of adjacent surface area.

**REVISION OF SECTION 614
TRAFFIC SIGNAL CABINET BASE**

Subsection 614.13 shall include the following:

Installation of the traffic signal cabinet base shall not be measured and paid for separately, but shall be included in the cost for installation of the Traffic Signal Controller and Cabinet.

Subsection 614.14 shall include the following:

Installation of the traffic signal cabinet base will not be measured and paid for separately, but shall be included in the cost of the Traffic Signal Controller and Cabinet.

**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER AND CABINET**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work shall consist of furnishing, assembling, programming, and installing a completed Traffic Signal Controller and Cabinet assembly. The Cabinet assembly shall be assembled in accordance with the City and County of Standards and Specifications, and the completed Traffic Signal Controller and Cabinet shall include but not limited to the traffic signal controller, malfunction management unit (MMU), vehicle detector amplifiers, other ancillary hardware, and traffic signal cabinet base as per City and County of Denver standards. The Contractor shall install the completed Traffic Signal Controller and Cabinet assembly at the locations as shown in the plans.

Delete Subsection 614.08 (b), and replace with the following:

Traffic Signal Controllers – General

This specification sets forth the minimum requirements for a shelf-mountable, two through sixteen phases, fully-actuated, digital, solid-state traffic controller. The controller shall meet, as a minimum, all applicable sections of the NEMA Standards Publication for TS2 and NTCIP 1202 and ATC standard 6.10. Where differences occur, this specification shall govern. Controller versions shall be capable to comply with the ATC 5.2b and proposed 6.10 standard for a NEMA TS2 Types 1 and 2. Type 2 versions of the controller shall be capable of operating as a Type 1 controller. The controller shall meet or exceed the specifications of the Econolite model Cobalt ATC fully actuated controller (<http://www.econolite.com/wp-content/uploads/sites/9/2016/10/controllers-cobalt-datasheet.pdf>), or an equivalent approved by the City and County of Denver, PW – Transportation Design.

Delete Subsection 614.08 (c) and replace with the following:

All new cabinets shall be the latest P-type cabinets as per the City & County of Denver Traffic Signal Standards. Each cabinet shall be installed on a newly installed traffic signal controller cabinet base unless otherwise specified on the plan.

Controller cabinet assemblies shall include an integrated uninterrupted power supply (UPS) units, an Ethernet Field Switch, and a malfunction management unit (MMU) that comply with the City and County of Denver standards (see UPS, Ethernet Field Switch, and MMU specifications).

Subsection 614.09 shall include the following:

The Contractor shall assemble the traffic signal controller, cabinet, and other auxiliary hardware in accordance with the City and County of Denver PW – Transportation Traffic Operations criteria, and program the traffic signal controller per the approved traffic signal timing work order. All traffic signal timing (controller programming) shall be bench tested with a minimum of 72-hours burn time to verify successful operation prior to installation. The Contractor shall coordinate all testing and installation procedures with the City and County of Denver's PW Transportation – Traffic Operations staff. The Contractor shall contact Chris Lillie at (720) 865-4066 for all testing and installation requirements. The controller shall be installed in accordance with the details shown in the plans and in accordance with manufacturer's recommendations.

**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER AND CABINET**

Subsection 614.10 shall include the following:

The Contractor shall demonstrate successful traffic signal operations at all new controller and cabinet locations to the satisfaction of the Engineer or Engineer's designee prior to acceptance of this item. The Contractor shall contact the Engineer or Engineer's designee 3 days before turning on signal. Work shall include all required programming of controllers and establishing or re-establishing all required wiring connections. Phasing and timing information at each location shall be furnished to the Contractor by the City & County of Denver.

All new wiring shall conform to City & County of Denver and International Municipal Signal Association (IMSA) specifications.

Subsection 614.13 shall include the following:

The unit price for the installation of traffic signal controller and cabinet shall include all labor, materials, ancillary hardware, traffic signal cabinet base, wiring and wiring re-connection (including Xcel Energy power feed) required to provide and install a complete system and successful operation of the item. Connection of the controller to the fiber optic interconnect system shall be paid for separately under item 614 "Telemetry (Field)".

Removal and disposal of existing cabinets shall be in accordance with Revision of Section 202 – Removal of Traffic Signal Equipment.

Subsection 614.14 shall include the following:

Pay Item

Traffic Signal Controller and Cabinet

Pay Unit

Each

REVISION OF SECTION 614
MALFUNCTION MANAGEMENT UNIT (MMU)

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work shall consist of furnishing and installing a Malfunction Management Unit (MMU) in new traffic signal controller cabinets.

Subsection 614.08 shall include the following:

This special provision sets forth the minimum requirements for a shelf-mountable, sixteen channel, solid-state MMU. The MMU shall meet, as a minimum, all applicable sections of NEMA Standards Publication No. TS2-1992.

An independent testing laboratory shall verify the MMU will perform all defined functions under the conditions set forth in Section 2 of the NEMA Standard (Environmental Standards and Test Procedures). Where differences occur, this special provision shall govern.

1. Enclosure

The MMU shall be compact so as to fit in limited cabinet space. It shall be installable on a shelf that is at least 177 mm deep. Overall dimensions, including mating connectors and harness, shall not exceed 267 x 115 x 280 mm (H x D x W). The enclosure shall be constructed of sheet aluminum with a minimum thickness of 1.6 mm, and shall be finished with a durable protective coating. Model, serial number and program information shall be permanently displayed on the rear surface.

2. Electronics

A microprocessor shall be used for all timing and control functions. Continuing operation of the microprocessor shall be verified by an independent monitor circuit, which shall force the OUTPUT RELAY to the de-energized "fault" state and indicate an error message if a pulse is not received from the microprocessor within a defined period.

In the interest of reliability, only the PROM memory device for the microprocessor firmware shall be socket mounted. The PROM memory socket shall be a precision screw machine type socket with a gold contact finish providing a reliable gas tight seal. Low insertion force sockets or sockets with "wiper" type contacts shall not be acceptable.

A built-in, high-efficiency power supply shall generate all required internal voltages. All voltages shall be regulated and shall be monitored with control signals. Failure of the internal power supply to provide proper operating voltages shall force the OUTPUT RELAY to the de-energized "fault" state and indicate an error message. A front panel mounted fuse shall be provided for the 120 VAC input.

User-programmed configuration settings shall be stored in an electronically erasable programmable read-only memory (EEPROM) or via front panel DIP switches. Designs using a battery to maintain configuration data shall not be acceptable.

All 120 VAC field terminal inputs shall provide an input impedance of at least 150k ohms and be terminated with a resistor having a power dissipation rating of 0.5 Watts or greater. Each 120 VAC field terminal input shall be sensed by a separate precision voltage comparator device.

REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

All electrical components used in the MMU shall be rated by the component manufacturer to operate over the full NEMA temperature range of -30 degrees to +74 degrees Celsius.

Printed circuit boards shall meet the requirements of the NEMA Standard plus the following requirements to enhance reliability: 1] All plated-through holes and exposed circuit traces shall be plated with solder; 2] Both sides of the printed circuit board shall be covered with solder mask material; 3] The circuit reference designation for all components and the polarity of all capacitors and diodes shall be clearly marked adjacent to the component. Pin #1 for all integrated circuit packages shall be designated on both sides of all printed circuit boards; 4] All electrical mating surfaces shall be gold-plated; 5] All printed circuit board assemblies shall be coated on both sides with a clear, moisture-proof and fungus-proof sealant.

3. Front Panel and Connectors

All displays, configuration switches, and connectors shall be mounted on the front panel of the MMU. All MMU configuration inputs beyond those required by the NEMA Standard shall be provided by front panel mounted DIP switches and shall be clearly labeled. Configuration DIP switches shall be provided for the following functions: 1] Field Check / Dual Enables 1-16; 2] Green/Yellow-Dual Indication Enable; 3] BND Test Disable; 4] External Watchdog Enable.

The connectors on the MMU shall have a metallic shell and shall be attached to the chassis internally. They shall be manufactured to meet MIL-C-26482 specifications. The connectors shall be mounted on the front of the unit in accordance with the following: Connector A shall mate with an MS 3116 22-55 SZ, and Connector B shall mate with an MS 3116 16-26 S. In the interest of reliability and repairability, printed circuit board mounted MS connectors shall not be acceptable. Internal MS harness wire shall be a minimum of AWG #22, 19 strands.

All indicator lights shall be water-clear, T-1 package, Red Super Bright type LED's. Indicators shall be provided for the following items: 1] Channel Status 1-16; 2] Conflict; 3] Red Fail; 4] CVM / External watchdog; 5] 24V-2; 6] 24V-1; 7] Clearance Fail; 8] Port 1 Fail; 9] Diagnostic / Program Card; 10] Field Check Fail; 11] Dual Indication; 12] Type 12 Mode; 13] Power; 14] Port 1 Receive; 15] Port 1 Transmit.

4. Operating Modes

The MMU shall operate in both the Type 12 mode and Type 16 mode as required by the NEMA Standard.

5. Monitoring Functions

The following monitoring functions shall be provided in addition to those required by NEMA Standard Section 4.

- 5.1 Dual Indication Monitoring. Sixteen switches labeled FIELD CHECK/DUAL ENABLES shall be provided on the MMU front panel to enable Dual Indication Monitoring on a per channel basis. The Dual Indication Monitor function shall provide two modes of operation, Dual Indication fault and Green/Yellow-Dual Indication Fault. When voltages on two inputs of a channel are sensed as active for more than 1000 msec, the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the DUAL INDICATION indicator.

**REVISION OF SECTION 614
MALFUNCTION MANAGEMENT UNIT (MMU)**

The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. When voltages on two inputs of a channel are sensed as active for less than 700 msec, the MMU shall not transfer the OUTPUT relay contacts to the Fault position.

When operating in the Type 16 mode with Port 1 communications enabled, Bit #68 (Spare Bit #2) of the Type #129 response frame shall be set to indicate a Dual Indication Fault has been detected.

Dual Indication Monitoring shall be disabled when RED ENABLE input is inactive. When operating in Type 16 mode with Port 1 communications enabled, Dual Indication Monitoring shall also be disabled if the LOAD SWITCH FLASH bit is set to "1" in the Type #0 message from the Controller.

- 5.2 Dual Indication Monitor. Dual Indication Monitoring shall detect simultaneous input combinations of active Green (Walk), Yellow, or Red (Don't Walk) field signal inputs on the same channel.

In Type 12 mode this monitoring function detects simultaneous input combinations of active Green and Yellow, Green and Red, Yellow and Red, Walk and Yellow, or Walk and Red field signal inputs on the same channel.

- 5.3 Green Yellow-Dual Indication Monitor. Green Yellow-Dual Indication Monitoring shall detect simultaneous inputs of active Green and Yellow field signal inputs on the same channel. It will be used to monitor channels which have an unused Red field signal input tied to AC LINE such as a five section signal head. Green Yellow-Dual Indication Monitoring shall be enabled by a front panel option switch. When the Green Yellow-Dual Indication Monitoring option is enabled, all channels which have the front panel FIELD CHECK/DUAL ENABLE switches OFF shall be individually monitored for simultaneous active Green and Yellow field signal inputs. All channels which have the front panel FIELD CHECK / DUAL ENABLE switches ON (i.e. enabled for Dual Indication Monitoring) shall function as described in Dual Indication Monitoring.
- 5.4 Field Check Monitoring. Sixteen switches labeled FIELD CHECK / DUAL ENABLES shall be provided on the MMU front panel to enable Field Check Monitoring on a per channel basis. The Field Check Monitor function shall provide two modes of operation; Field Check Fault and Field Check Status. Field Check Monitoring shall be disabled when the RED ENABLE input is not active. When operating in the Type 16 mode with Port 1 communications enabled, Field Check Monitoring shall also be disabled if the LOAD SWITCH FLASH bit is set to "1" in the Type #0 message from the Controller Unit. The Field Check Monitoring function shall be disabled in the Type 12 mode.
- 5.5 Field Check Monitor. In Field Check Fault mode, when the field signal input states sensed as active or inactive by the MMU do not correspond with the data provided by the Controller Unit in the Type #0 message for 10 consecutive messages, the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the FIELD CHECK FAIL indicator.

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The Channel Status Display shall indicate the channels on which the Field Check fault was detected. Bit #67 (Spare Bit #1) of the Type #129 response frame shall be set to indicate a Field Check fault has been detected. MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input.

- 5.6 Field Check Status. Field Check Status mode shall work in combination with the other fault monitoring functions of the MMU. When Conflict, Red Fail, Clearance Fail, or Dual Indication Fail triggers the MMU, the Channel Status Display and Fault Status Display shall correspond to that detected fault. If Field Check errors were detected while the fault was being timed, the FIELD CHECK FAIL indicator shall illuminate and double pulse once every 2 seconds. Channels on which Field Check errors were detected shall double pulse at the same time as the FIELD CHECK FAIL indicator. Bit #67 (Spare Bit #1) of the Type #129 response frame shall also be set to indicate Field Check errors are detected.
- 5.7 BND Error Detection Monitoring. The BND Error Detection function shall be designed to detect and respond to irregular field input wave-forms such as: irregularity blinking (flickering); having constant extraneous noise; being dimmed in-validly under Controller Unit software control. Detection of a BND Error shall place the MMU into the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the BND FAIL indicator. The Channel Status display shall indicate the channels on which the fault occurred. When operating in the Type 16 mode with Port 1 communications enabled, Bit #69 (Spare Bit #3) of the Type #129 response frame shall be set to indicate a BND Error Detection fault has been detected. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the BND Fail fault state of the monitor.
- 5.8 External Watchdog Monitor. The MMU shall provide the capability to monitor an optional external logic level output from a Controller Unit or other external cabinet circuitry. If the MMU does not receive a change in state on the EXTERNAL WATCHDOG input for 1500 msec (+/- 100 msec), the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the CVM/WATCHDOG indicator.
- The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the CVM/WATCHDOG fault state of the monitor. When operating in the Type 16 mode with Port 1 communications enabled, Bit #70 (Spare Bit #4) of the Type #129 response frame shall be set to indicate an External Watchdog fault has been detected.
- 5.9 Type Fault Monitor. The MMU shall verify at power-up that the Type 12 or Type 16 operating mode as determined by the TYPE SELECT input is consistent with the mode set by the last external reset. Detection of a Type fault shall place the MMU into fault mode, transfer OUTPUT relay contacts to the Fault position, illuminate DIAGNOSTIC indicator, and flash TYPE 12 indicator at a 2Hz rate. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the Type Fault state of the monitor.

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MALFUNCTION MANAGEMENT UNIT (MMU)**

6. Display Functions

The following display functions shall be provided in addition to those required by the NEMA Standard Section 4.

- 6.1 Yellow Plus Red Clearance Interval Display. The MMU Channel Status display shall indicate with a steadily illuminated LED indicator, those channels that had the short Yellow plus Red interval (i.e. those channels that did not meet the minimum Yellow Change plus Red Clearance Interval). The conflicting channel(s) sensed as active Green causing the Minimum Yellow Change plus Red Clearance Fault shall also be indicated with a single pulsed LED indicator.
- 6.2 Field Check Status Display. The FIELD CHECK FAIL indicator shall illuminate when a Field Check Fault is detected. The Channel Status display shall show the channels on which the Field Check fault occurred. If Field Check errors occurred during a Conflict Fault, Red Fail, Clearance Fail, or Dual Indication Fail the FIELD CHECK FAIL indicator shall illuminate and double pulse every 2 seconds. The channels on which the Field Check Status was detected during the fault shall double pulse on the Channel Status Display at the same time as the FIELD CHECK FAIL indicator.

7. Display Indicators

The following display indicators shall be provided in addition to those required by the NEMA Standard Section 4.

- 7.1 Type 12 Mode Indicator. TYPE 12 indicator shall illuminate when the MMU is programmed for Type 12 operation. If a Type Fault is detected the DIAGNOSTIC/PGM CARD indicator shall illuminate and the TYPE 12 indicator shall flash at a rate of 2Hz.
- 7.2 BND Fail Indicator. BND FAIL indicator shall illuminate when a BND Fault is detected. The Channel Status display shall show the channels which were detected as BND FAIL.
- 7.3 Dual Indication Indicator. DUAL INDICATION indicator shall illuminate when a DUAL INDICATION Fault is detected. The Channel Status display shall show the channels which were detected as DUAL INDICATION.
- 7.4 Power Indicator. POWER indicator shall flash at a rate of 2Hz when the AC LINE voltage is below the drop-out level. It shall illuminate steadily when the AC LINE voltage returns above the restore level.
- 7.5 Port 1 Receive Indicator. The RECEIVE indicator shall illuminate for a 33 msec pulse each time a Port 1 message is correctly received from the Controller Unit.
- 7.6 Port 1 Transmit Indicator. The TRANSMIT indicator shall illuminate whenever the MMU has the Port 1 transmitter enabled.
- 7.7 Program Card Indicator. The DIAGNOSTIC/PGM CARD indicator shall flash at a 2Hz rate if the Programming Card is absent or not seated properly in its mating connector.

**REVISION OF SECTION 614
MALFUNCTION MANAGEMENT UNIT (MMU)**

8. Additional Features

MMU shall include automatic and operator-initiated diagnostics. Automatic diagnostics verify memory and microprocessor operation each time power is reapplied to the unit. After power is applied, diagnostics continually verify operation of essential MMU elements including at a minimum: PROM, EEPROM, communications, internal power supply, and the microprocessor. All operator initiated diagnostics shall allow the operator to verify proper operation of all indicator lights, PROM, EEPROM, RAM and microprocessor.

Subsection 614.13 shall include the following:

MMU's will not be measured and paid separately but shall be considered included in the unit price for Traffic Signal Controller Cabinets.

**REVISION OF SECTION OF 614
PEDESTRIAN PUSH BUTTON AND INSTRUCTION SIGN**

Section 614 of the Standard Specification is hereby revised for this project as follows:

Subsection 614.08 (f) shall include the following:

1-1 : Push button assemblies shall be of the direct push button solid state contact type and shall not have any levers, handles or toggle switches externally or internally. The pushbutton shall be of tamperproof and all weather construction. The pushbutton shall have a protective shroud that is an integral part of the cover and it shall encircle the pushbutton actuator to deter vandalism. The assembly shall be made weatherproof and shockproof by means of synthetic rubber gaskets between the cover and the enclosure and between the plunger and the cover so that it shall be impossible to receive an electrical shock under any weather conditions. The front cover plate shall be secured with stainless steel vandal resistant screws. The push button shall operate on logic ground.

1-2 : The solid state switch shall be entirely insulated from the housing and operating button. The pushbutton shall consist of a 2 inch 303 stainless steel metal plunger and an oil and gasoline resistant Piezo driven solid state switch, all encased in a high impact thermoplastic enclosure with four (4) stainless steel mounting screws. The solid state switch shall be normally open and shall be closed with a minimum of pressure on the button ($3lb \pm 1lb$), restoring immediately to the normally open position when the pressure is released.

The aluminum housing shall be the flat back frame type with adjustable mounting staves that will readily enable it to be mounted on any size traffic signal pole or push button standard. The housing shall have a ½ inch access hole in the rear for wiring. The housing shall have a bottom threaded conduit entrance hole and shall be provided with a threaded plug so that access is only possible from the rear of the housing. The plug shall not be removable with ordinary tools. The housing shall be painted Dark Olive/Federal Green baked enamel matching to Federal Standard 595A color #14056.

The frame shall have a cast aluminum attachment to allow the mounting of a 9" X 12" pedestrian instruction sign. By removal of 4 screws the frame shall convert to allow the mounting of a 5" X 7 ¾" pedestrian instruction sign. Pedestrian

Instruction Sign:

2-1 : Pedestrian instruction signs shall conform to the latest version of the M.U.T.C.D., published by the U.S. Department of Transportation Federal Highway Administration.

2-2 : Pedestrian instruction signs shall be Type R10-3a, Type R10-3b, Type R10-3c, R10-3d, and R10-3e as specified in the contract documents (or bid documents).

Pedestrian instruction signs shall be constructed in accordance with the applicable provisions of the current CCD Standard Specifications. Pedestrian instruction sign need not be reflectorized.

The sign shall be fabricated with 0.063 aluminum. The signs shall be mounted using four 5/16" mounting holes 4" X 6 ¾" for the 5" X 7 ¾" sign and 7" X 10" for the 9" x 12" sign. The pedestrian instruction signs shall have rounded corners ¾" radius for the 5" X 7 ¾" sign and 1 ½" radius for the 9" X 12" sign.

**REVISION OF SECTION OF 614
PEDESTRIAN PUSH BUTTON AND INSTRUCTION SIGN**

Subsection 614.13 shall include the following:

Pedestrian Push Button and Instruction Sign shall be measured by the number of units installed and accepted.

Subsection 614.14 shall include the following:

Pay Item

Pedestrian Push Button and Instruction Sign

Pay Unit

Each

**REVISION OF SECTION OF 614
PEDESTRIAN PUSH BUTTON (APS)**

Section 614 of the Standard Specification is hereby revised for this project as follows:

Subsection 614.08 (f) shall include the following:

The Contractor shall furnish and install Accessible Pedestrian Signals (APS) pedestrian push buttons at locations as shown on the plans. The APS shall be compatible or interchangeable with standard APS stocked by the City and County of Denver.

The current APS that are compatible with that stocked by the City and County of Denver is as follows:

<u>Manufacturer</u>	<u>Catalog Numbers</u>
Campbell	Guardian
Polara	EX Communicator Navigator EN2/EN4

The Contractor shall submit APS material submittal to the City and Denver for approval prior to ordering. Contact Chris Lillie at 720-865-4066.

Subsection 614.13 shall include the following:

APS pedestrian push button shall be measured by the number of units installed and accepted.

Subsection 614.14 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Pedestrian Push Button (APS)	Each

APS pedestrian push button shall be measured and paid by the number of units installed and accepted. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional system to the satisfaction of the Engineer.

**REVISION OF SECTION 614
PEDESTRIAN PUSH BUTTON POST ASSEMBLY**

Section 614 of the Standard Specifications is hereby revised for this project as follows

Subsection 614.08 (g) shall include the following:

Pedestrian Push Button Post Assembly shall conform to the requirements of the City and County of Denver's Standard Detail 7, Standard drawing No. 16.1.14 dated 1/12/12. Pedestrian Push Buttons and Signs shall be handled through other items.

Subsection 614.13 shall include the following:

Pedestrian Push Button Post Assembly shall be measured by the number of units installed and shall include post, foundation and all work necessary to complete the item.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Pedestrian Push Button Post Assembly

Pay Unit

Each

**REVISION OF SECTION 614
EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.08 shall include the following:

System Description:

The emergency vehicle traffic signal priority control system shall enable designated vehicles to remotely cause the traffic signal controller to advance to and/or hold a desired traffic signal display by using existing controller functions. The control shall be activated at a minimum distance of 548.6M (1,800 feet) along an unobstructed "line of sight" path. The control shall not terminate until the vehicle is within 12.2M (40 feet) of the detector or at the intersection.

The system shall consist of the following components:

- A. Vehicle Emitter which shall be mounted on the emergency vehicle and shall transmit optical energy signals only in the forward direction. If the municipality presently uses optical pre-emption, the emitters shall be of the same manufacture currently used by the City and County of Denver Fire Department.
- B. Phase Selector (minimum 2 channels) which shall cause the signal controller to advance to and/or hold the desired traffic signal display for the emergency vehicle. A pre-emption system chassis shall house two phase selectors.
- C. Optical Detector which shall be mounted on or near a traffic signal and shall receive the optical energy signals generated by the Vehicle Emitter.
 - a. Detector (Type A), 1 Direction, 1 Channel
 - b. Detector (Type B), 2 Direction, 1 Channel
 - c. Detector (Type C), 2 Direction, 2 Channel
- D. D. Detector Cable (Optical).

System Operations:

- A. The operating sequence shall be initiated when the optical detector receives the required optical energy signal from the Emitter.
- B. The phase selector shall cause the traffic signal controller to advance to and/or hold the desired traffic signal display for the emergency vehicle.
- C. The phase selector shall cause the controller to advance to and/or hold the desired traffic signal display even if the optical energy signals cease before the desired display is obtained.
- D. The phase selector shall allow the traffic signal controller to resume normal operation within ten seconds after optical energy signals cease if the optical energy signals cease after the desired traffic signal display is obtained.
- E. The phase selector shall not respond to optical energy signals from an emergency vehicle if it is already processing optical energy signals from another emergency vehicle.

**REVISION OF SECTION 614
EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

System Components:

A. Vehicle Emitter:

The emitter assembly consists of an emitter and power supply and an emitter control switch assembly. The emitter assembly is mounted on a vehicle and produces a flashing optical signal when in operation. The following shall apply to the vehicle emitter:

1. Shall operate on ten to fifteen volts DC input voltage, but shall not be damaged by input voltage surges up to twenty-five volts DC.
2. Shall be controlled by a single on/off switch that requires no other adjustments by the operator. The on/off condition shall be indicated by a light located adjacent to the switch.
3. Shall be automatically disabled or de-activated by one or a combination of the following: seat switch, emergency brake switch, door switch, and transmission safety switch.
4. Shall operate over an ambient temperature range of minus 34O C to plus 60O C. (minus 30O F. to plus 140O F.)
5. Shall operate in 0 to 95 % humidity.
6. Shall be a pulsed optical energy source with a controlled repetition rate.
7. Shall not generate voltage transients on the battery input line which exceed battery voltage by more than four volts.
8. Shall produce optical energy in a cone of not more than 90 degrees horizontal and not more than 30 degrees vertical. The detectors and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.

B. Optical Detector:

The optical detector receives the high intensity optical pulses produced by the emitter. These optical energy pulses are transformed by the detector into appropriate electrical signals which are transmitted to the phase selector. The optical detector is mounted at or near the intersection in a location which permits an unobstructed line of sight to vehicular approaches. The units may be mounted on signal span wires, mast arms or other appropriate structures. The following shall apply to the optical detector:

1. Shall produce optical energy in a cone of not more than 90 degrees horizontal and not more than 30 degrees vertical. The detectors and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.
2. Shall be of solid state construction.

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EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM

3. Shall operate over an ambient temperature range of minus 34O C to plus 60O C.
(minus 30O F. to plus 140O F.)
4. Shall have internal circuitry potted in a semi-flexible compound to ensure moisture resistance.
5. Shall operate in 0 to 95 % humidity.
6. Shall have a cone of detection of not more than 13 degrees. The detector and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.

C. Phase Selector:

The phase selector supplies power to and receives electrical signals from the optical detector. When detector signals are recognized as a valid call, the phase selector causes the signal controller to advance to and/or hold the desired traffic signal display. This is accomplished by activating the pre-empt input to the controller.

The phase selector is capable of assigning priority traffic movement to one of two channels on a first-come, first-serve basis. Each channel is connected to select a particular traffic movement from those normally available within the controller. Once a call is recognized, "commit to green" circuitry in the phase selector functions so that the desired green indication will be obtained even if optical communication is lost. After serving a priority traffic demand, the phase selector will release the controller to follow normal sequence operation. The following shall apply to the phase selector:

1. Shall include an internal power supply to supply power to the optical detectors.
2. Shall have minimum two-channel operation with the capability of interfacing with an additional phase selector for expansion of channels of operation.
3. Shall have adjustable detector range controls for each channel of operation, from 12M (40 feet) to 548M (1800 feet).
4. Shall have solid state indicator lights for power on and channel called.
5. Shall operate over an ambient temperature range of minus 34O C to plus 60O C
(minus 30O F. to plus 140OF.)
6. Shall operate in 0 to 95 % humidity.

D. Detector Cable (Optical):

The following shall apply to the detector cable:

1. 3-Conductor cable with shield and ground wire.
2. AWG #20 (7x28) stranded.
3. Individually tinned copper strands.

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EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

4. Conductor insulation: 600 volt, 75 deg. C (167O F.).
5. 1 Conductor-yellow; 1 Conductor-blue; 1 Conductor-orange.
6. Aluminized Mylar shield tape or equivalent.
7. AWG #20 (7x28) stranded uninsulated drain wire
8. DC resistance not to exceed 11.0 ohms per 305M (1000 feet).
9. Capacitance from one conductor to other two conductors and shield not to exceed 157pf/M (48pf /ft.).
10. Jacket: 600 volts, 80 deg. C (176O F.), minimum average wall thickness - 1.14mm (.045").
11. Finished O.D.: 7.62mm (0.3") max.

System Interface:

System shall be capable of operating in a computerized traffic management system when appropriate interfacing is provided by the computer supplier.

General:

The Contractor shall furnish the manufacturer the phasing diagrams indicating controller sequence and timing.

The Contractor shall secure from the manufacturer a guarantee for the equipment for a period of sixty (60) months, which time shall commence from the date of delivery. Manufacturer shall certify upon request that all materials furnished will conform to this specification. The manufacturer or his designated representative shall be responsible for determining and setting all required range and emitter intensity for the emergency vehicle operation.

Construction Methods:

All equipment except the vehicle emitter assembly shall be installed and wired in a neat and orderly manner in conformance with the manufacturers' instructions. The vehicle emitter assembly shall be delivered to a designated City representative.

Installation of the vehicle emitter assembly shall be the responsibility of the City and County of Denver Fire Department.

Traffic signals owned and maintained by the State that have optical pre-emption equipment owned and maintained by the town shall have an Auxiliary Equipment Cabinet (AEC) attached to the controller cabinet. The optical pre-emption equipment shall be housed in the AEC. Traffic signals owned and maintained by the town do not require an AEC to house the pre-emption equipment.

Detector cables shall be continuous with no splices between the optical detector and the AEC.

Detector locations shown on the plan are for illustration purposes only. Exact location shall be determined by the contractor or the designated representative for the best possible line of sight.

- Controller “D” harness and adapter.
- Pre-emption termination panel with terminal block and relay bases.
- Pre-emption disconnect switch, mounted on the emergency switch panel (on inside of cabinet door).
- Pre-emption test buttons, mounted on the pre-emption termination panel.

All connections from the phase selector to the “D” harness and to the cabinet wiring shall be made at the termination panel. The termination panel shall have AC+ Lights, AC-, and a switched logic ground. The switched logic ground feeds all the pre-empt inputs to the phase selector. When switched off by the pre-emption disconnect switch, the traffic controller shall not be affected by pre-empt calls from the optical pre-emption system. A minimum of two test buttons shall be provided.

If there are more than two pre-empt runs, a button for each shall be installed. A chart or print out indicating the program steps and settings shall be provided along with the revised cabinet wiring diagrams.

Test the Pre-emption System According to the following Guidelines:

1. Notify the system owner/user, such as the Municipal Fire Chief or City Traffic Engineer, of the scheduled inspection
2. Request a fire department representative and an emergency vehicle, which has an emitter to conduct the test. If not available, the contractor shall provide an emitter.
3. In the presence of the Engineer and the municipal representative, test each pre-empted approach with the emergency vehicle. Test the following items of the system:
 - a. Confirm that the emitter activates the phase selector and the phase selector activates the correct pre-emption input to the controller.
 - b. Confirm adequate range. The traffic signal must be pre-empted to green sufficiently in advance of the emergency vehicle arrival. The vehicle emitter shall initiate pre-emption at a minimum distance of 548.6M (1800 feet).
 - c. Confirm there are no false calls. Keep the emitter active as the emergency vehicle passes through the intersection. No other optical detectors shall sense the strobe.
4. Document the test. Provide the Engineer and, upon request, the municipality copies of the test results.

If a malfunction is found or the system needs adjustment (such as range, emitter intensity, or detector location), schedule a follow-up test. Repeat the above steps for all approaches that did not pass.

All adjustments such as emitter intensity, phase selector range, sensitivity, detector placement, shall be made at the intersection by the contractor so that the optical pre-emption operates correctly with other major manufacturers' equipment currently owned by the town.

**REVISION OF SECTION 614
EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

Subsection 614.13 shall include the following:

Emergency Vehicle Traffic Signal Priority Control System units shall include a four-channel card and the number of detectors as shown on the plans. Emergency Vehicle Traffic Signal Priority Control System shall be measured and paid by the number of intersections at which the system is installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully functioning system to the satisfaction of the Engineer.

Subsection 614.14 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Emergency Vehicle Traffic Signal Priority Control System	Each

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work is for the installation of a fully-functional FLIR vehicle detection camera system. The Contractor shall furnish and install the FLIR vehicle detection camera system at the locations as shown in the plans or as directed by the Engineer.

Subsection 614.08 shall include the following:

Detection Camera:

The detection camera shall consist of a thermal camera, thermal lens, and enclosure; and shall meet the following specifications:

- ***Thermal Camera & Lens***
The detection camera shall be a 320 x 240 (minimum) and 10 frames per second (minimum) thermal camera that fits into the camera enclosure specified herein. The lens shall be a fixed thermal lens. Digital zooming is allowed.
- ***Camera Enclosure***
The camera enclosure shall consist of a dustproof and waterproof outdoor camera housing designed specifically to fit the thermal camera and thermal lens specified herein. The enclosure shall have a sun shield to prevent direct and indirect sunlight entering the lens. A thermostatically controlled heater for window defogging and defrosting is allowed.
- ***Power***
The detection camera shall be powered by a 120/240VAC, 50/60Hz power source or by a 24VDC ($\pm 10\%$) power source.
- ***Reliability***
The interface card shall be designed and manufactured to have a MTBF (Mean Time Between Failure) prediction figure of greater than or equal to 10 years continuous operation.
- ***Certifications & Environmental***
The detection camera shall meet the following Certifications and Environmental specifications:

<i>Certifications</i>	Comply with Electromagnetic Compatibility - 2004/108/EG
<i>Weatherproof</i>	Comply with FCC Part 15, Class A
<i>Operating</i>	IP66 ingress protection standards (minimum)
<i>Temperature</i>	-34°C to +74°C (-29°F to +165°F) (minimum)
<i>Relative Humidity</i>	Up to 100% non-condensing
<i>Shock & vibration</i>	NEMA II
- ***Mounting Brackets***
A versatile mounting bracket shall be supplied to mount the camera enclosure, specified herein, to a horizontal luminaire or vertical traffic signal pole. All mounts shall be secured with stainless steel mounting straps or bolts. The mounts, including the mass and size of the detection camera, shall be designed to withstand a wind load of 120km/h (or 75mph) with a 30-second gust factor.

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)**

- ***Camera to Controller Cabinet Cable***

Cable needed to power the detection camera specified herein, transmit thermal video and data information to the controller cabinet shall be provided and meet the specifications of the thermal video imaging detection system manufacturer.

Thermal Video Processor:

A thermal video processor shall be included in the detection camera, specified herein, or in the interface card, specified herein; and shall meet the following specifications:

- ***Functionality***

The thermal video processor shall provide the following functionality:

<i>Detector Display</i>	Capable of displaying bike detection regions on the thermal video image with associated outputs with output status shown on the screen
<i>Detector Placement</i>	By using a portable PC with graphical user interface software or web server
<i>Detector Function</i>	Capable of detecting within the view of the connected detection camera the presence of bicycles in user defined bicycle detection regions
<i>Detector Type</i>	Configurable as presence, count, delay, extension, or pulse mode of either arrival or departure of bicycles. The detector shall be capable of detecting pedestrians and small motorcycles too.
<i>Detector Modification</i>	All detectors and parameters shall be able to be changed without interrupting detection. When one detector is modified, all existing detectors shall continue to operate, including the one that is being modified. When the new detector position is confirmed, the new detector shall have no learning phase and shall be operating while the one being modified ceases to operate
<i>Detector Failure State</i>	Provide a constant call on each active detection channel, in the event of unacceptable interference or loss of the thermal video signal
<i>Regions per Video Output</i>	Up to 4 (minimum)
<i>Detector Delay & Extension</i>	Defined between 0.1-99 seconds and pulse mode between 0-500ms in 10ms increments.
<i>Direction Sensitivity</i>	Able to make a detector directional sensitive

Camera Interface/Surge Suppression Panel

When the thermal video processor is in the detection camera, a UV resistant signal cable with 3 wires (maximum) of wire diameter AWG18 (minimum) shall be provided to power the detection camera, transmits detection information to the interface card specified herein, and provides remote communication specified herein. The cable distance between detection camera and interface card is 300m or 1,000ft (maximum).

REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)

When the thermal video processor is in the interface card with coax thermal video cables being used between the detection camera and the interface card, a surge suppression panel shall be provided that powers the detection camera with high-voltage transient protection and power isolation, and suppresses electrical spikes on the thermal video coax cable.

The camera interface/surge suppression panel shall meet the following specifications:

- ***Certifications and Environmental***

The interface card shall meet the following Certifications and Environmental specifications:

<i>Certifications</i>	Comply with Electromagnetic Compatibility - 2004/108/EG
<i>Weatherproof</i>	Comply with FCC Part 15, Class A
<i>Operating Temperature</i>	IP66 ingress protection standards (minimum)
<i>Relative Humidity</i>	-34°C to +74°C (-29°F to +165°F) (minimum)
<i>Shock & vibration</i>	0-95% non-condensing (minimum)
	NEMA II

Interface Card:

Input/output main and expansion cards shall be supplied that are designed to convert real-time detection signals from the video processor, specified herein, into contact closure signals to the traffic light controller; and to relay traffic signal phase status to the video processor, specified herein. The interface card shall meet the following specifications:

- ***Functionality***

The interface card shall provide the following functionality:

<i>Cabinet/Controller Compatibility</i>	US: EDGE card for TS-1 cabinet and 2070 TS-1 and TS-2 controllers Rest of World: EURO card for various standard controllers
<i>Status Indicators</i>	Visual for state of each detection output, visual state of power status (ON/OFF), visual state of camera status (operational/not operational)
<i>Identification</i>	Individually addressable with serial number, MAC address, IP-address, subnet mask and default gateway
<i>Program Retention</i>	Continue to operate in accordance with previous program after recovering from communication system or power failure
<i>Time Synchronization</i>	Manually or NTP time source
<i>Detector Failure State</i>	Provide a constant call on each active detection channel, in the event of unacceptable interference or loss of the thermal video signal
<i>Regions per Video Output</i>	Up to 4 (minimum)
<i>Detector Delay & Extension</i>	Defined between 0.1-99 seconds and pulse mode between 0-500ms in 10ms increments.
<i>Direction Sensitivity</i>	Able to make a detector directional sensitive

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)**

- **Communication**

The interface card shall meet the following specifications:

Controller Interface Output	Contact closure via interface backplane, providing up to four channels of vehicle detection with no front panel connectors being used
ETHERNET	RJ45 port for hard-wired system set-up and monitoring
USB	USB 2.0 (minimum) on front panel for connecting a USB dongle to allow wireless set-up and monitoring via portable PC, tablet and/or smart phone 4°C to +74°C (-29°F to +165°F) (minimum)

- **Remote Communications**

Remote communications to allow remote management specified herein shall be provided via the interface card and shall meet the following specifications:

- a) **Functionality**

Remote communications shall provide the following functionality:

Cabinet/Controller Compatibility	US: TS-1 cabinet and 2070 TS-1 and TS-2 controllers when Rest of World: EURO card for various standard controllers
Thermal Video Compression	MJPEG, MPEG-4 (ISO 14496-2) and/or H.264 (ISO/IEC MPEG-4 AVC)
Thermal Video Frame Rate	Constant and variable 10 frames per second (minimum)
Thermal Video Bandwidth	Between 32 kbps and 4 Mbps (minimum)
Status Indicators	Ethernet link/activity
Identification	Individually addressable with serial number, MAC address, IP-address, subnet mask and default gateway
Program Retention	Continue to operate in accordance with previous program after recovering from communication system or power failure

- b) **Communication**

The remote communications shall meet the following specifications:

Ethernet Port	One 10/100Base-T front-panel RJ45 port (minimum)
Thermal Video Input	Via front panel connector

- **Power**

The interface card shall meet the following power specifications:

Input Voltage	24VDC \pm 10% (via cabinet detector rack backplane)
Power Consumption	10W (maximum)

- **Physical Properties**

The interface card shall meet the following physical properties specifications:

Size	US: Fits directly into NEMA TS-1 cabinet detector rack or fits on DIN-rail Rest of world: Fits directly in EURO half/full 19" rack or fits on DIN-rail
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REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)

- **Reliability**
The interface card shall be designed and manufactured to have a MTBF (Mean Time Between Failure) prediction figure of greater than or equal to 10 years continuous operation.
- **Certifications and Environmental**
The input/output main and expansion cards shall meet the following Certifications and Environmental specifications:

<i>Certifications</i>	Comply with FCC Part; 15 NEMA TS 2-2003 v02.06
<i>Operating Temperature</i>	-37°C to 74°C (-35°F to 165°F) (minimum)
<i>Humidity</i>	0 – 95% non-condensing

Remote Management System

Remote management system shall be provided to monitor, control, and troubleshoot the thermal video imaging detection devices remotely via the Ethernet communication system. The vendor shall provide all software that will be loaded and configured by staff on furnished server hardware that is connected to the thermal video imaging detection devices via the Ethernet communication system. Remote management shall meet the following minimum requirements:

- **Diagnostic & Health Monitoring**

<i>Management Status</i>	Provide real-time status display of services required to access, troubleshoot, and archive data from the thermal video imaging detection system network connected devices
<i>Network Device View</i>	Provide view of all thermal video imaging detection system network connected devices
<i>Operation Log</i>	Support retrieving, displaying, and saving operational messages, warnings, and errors

- **Remote Management & Maintenance**

<i>Video Viewing/Recording</i>	Support viewing and recording streaming video including detector overlay
<i>Device Management</i>	Support creating, editing, downloading, and uploading detector configurations
<i>Remote Firmware Updates</i>	Support updating firmware of any device from a remote location
<i>Remote Backup/Restore</i>	Support backup/restore device configuration from remote location
<i>Access Permissions</i>	Support password implementation
<i>Clock Synchronization</i>	Support the Network Time Protocol (NTP) to synchronize the internal clocks of the thermal video imaging detection system network connected devices a minimum of once a day

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(FLIR)**

Subsection 614.13 shall include the following:

Intersection detection system (Camera)(FLIR) shall be measured and paid by the number of cameras installed and accepted at each intersection. The item shall include all labor, materials, and ancillary hardware required to provide a fully functional camera system to the satisfaction of the Project Manager.

Subsection 614.14 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Intersection Detection System (Camera)(FLIR)	Each

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(VIDEO)**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work consists of furnishing and installing a fully-functional video detection system at the intersection as specified on the plans.

Subsection 614.08 shall include the following:

System Hardware:

The machine vision system hardware shall consist of three components: 1) a color, 22x zoom, MVP sensor, 2) a modular cabinet interface unit, 3) a communication interface panel. Additionally, an optional personal computer (PC) shall host the server and client applications that are used to program and monitor the system components. The real-time performance shall be observed by viewing the video output from the sensor with overlaid flashing detectors to indicate the current detection state (on/off). The MVP sensor shall optionally store cumulative traffic statistics internally in non-volatile memory for later retrieval and analysis.

The MVP shall communicate to the modular cabinet interface unit via the communications interface panel and the software applications using the industry standard TCP/IP network protocol. The MVP shall have a built-in, Ethernet-ready, Internet Protocol (IP) address and shall be addressable with no plug in devices or converters required. The MVP shall provide standard MPEG-4 streaming digital video. Achievable frame rates shall vary from 5 to 30 frames/sec as a function of video quality and available bandwidth.

The modular cabinet interface unit shall communicate directly with up to eight (8) MVP sensors and shall comply with the form factor and electrical characteristics to plug directly into a NEMA type C or D detector rack providing up to thirty-two (32) inputs and sixty-four (64) outputs or a 170 input file rack providing up to sixteen (16) contact closure inputs and twenty-four (24) contact closure outputs to a traffic signal controller.

The communication interface panel shall provide four (4) sets of three (3) electrical terminations for three-wire power cables for up to eight (8) MVP sensors that may be mounted on a pole or mast arm with a traffic signal cabinet or junction box. The communication interface panel shall provide high-energy transient protection to electrically protect the modular cabinet interface unit and connected MVP sensors. The communications interface panel shall provide single-point Ethernet connectivity via RJ45 connector for communication to and between the modular cabinet interface module and the MVP sensors.

System Software:

The MVP sensor embedded software shall incorporate multiple applications that perform a variety of diagnostic, installation, fault tolerant operations, data communications, digital video streaming, and vehicle detection processing. The detection shall be reliable, consistent, and perform under all weather, lighting, and traffic congestion levels. An embedded web server shall permit standard internet browsers to connect and perform basic configuration, maintenance, and video streaming services.

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(VIDEO)**

There shall be a suite of client applications that reside on the host client / server PC. The applications shall execute under Microsoft Windows 2000 or XP. Available client applications shall include:

- A. Master network browser: Learn a network of connected modular cabinet interface units and MVP sensors, display basic information, and launch applications software to perform operations within that system of sensors.
- B. Configuration setup: Create and modify detector configurations to be executed on the MVP sensor and the modular cabinet interface unit.
- C. Operation log: Retrieve, display, and save field hardware run-time operation logs of special events that have occurred.
- D. Software install: Reconfigure one or more MVP sensors with a newer release of embedded system software.
- E. Streaming video player: Play and record streaming video with flashing detector overlay.
- F. Data retrieval: Fetch once or poll for traffic data and alarms and store on PC storage media.
- G. Communications server: Provide fault-tolerant, real-time TCP/IP communications to / from all devices and client applications with full logging capability for systems integration.

MVP Sensor:

The MVP sensor shall be an integrated imaging color CCD array with zoom lens optics, high-speed, dual-core image processing hardware bundled into a sealed enclosure. The CCD array shall be directly controlled by the dual-core processor, thus providing high-quality video for detection that has virtually no noise to degrade detection performance. It shall be possible to zoom the lens as required for setup and operation. It shall provide JPEG video compression as well as standard MPEG-4 digital streaming video with flashing detector overlay. The MVP shall provide direct real-time iris and shutter speed control. The MVP image sensor shall be equipped with an integrated 22x zoom lens that can be changed using either configuration computer software. The digital streaming video output and all data communications shall be transmitted over the three-wire power cable.

Power: The MVP sensor shall operate on 110/220 VAC, 50/60Hz at a maximum of 25 watts. The camera and processor electronics shall consume a maximum of 10 watts and the remaining 15 watts shall support an enclosure heater.

Detection Zone Programming: Placement of detection zones shall be by means of a PC with a Windows XP or Vista operating system, a keyboard, and a mouse. The PC monitor shall be able to show the detection zones superimposed on images of traffic scenes.

The detection zones shall be created by using a mouse to draw detection zones on the PC monitor. Using the mouse and keyboard it shall be possible to place, size, and orient detection zones to provide optimal road coverage for vehicle detection. It shall be possible to download detector configurations from the PC to the MVP sensor and cabinet interface module, to retrieve the detector configuration that is currently running in the MVP sensor, and to back up detector configurations by saving them to the PC fixed disks or other removable storage media.

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(VIDEO)**

The supervisor computer's mouse and keyboard shall be used to edit previously defined detector configurations to permit adjustment of the detection zone size and placement, to add detectors for additional traffic applications, or to reprogram the MVP sensor for different traffic applications or changes in installation site geometry or traffic rerouting.

Optimal Detection: The video detection system shall optimally detect vehicle passage and presence when the MVP sensor is mounted 30 feet (10 m) or higher above the roadway, when the image sensor is adjacent to the desired coverage area, and when the distance to the farthest detection zone locations are not greater than ten (10) times the mounting height of the MVP. The recommended deployment geometry for optimal detection also requires that there be an unobstructed view of each traveled lane where detection is required. Although optimal detection may be obtained when the MVP is mounted directly above the traveled lanes, the MVP shall not be required to be directly over the roadway. The MVP shall be able to view either approaching or receding traffic or both in the same field of view. The preferred MVP sensor orientation shall be to view approaching traffic since there are more high contrast features on vehicles as viewed from the front rather than the rear. The MVP sensor placed at a mounting height that minimizes vehicle image occlusion shall be able to simultaneously monitor a maximum of six (6) traffic lanes when mounted at the road-side or up to eight (8) traffic lanes when mounted in the center with four lanes on each side.

Count Detection Performance: Using an installed camera that meets the optimal viewing specifications described above for count station traffic applications, the system will be able to accurately count vehicles with at least 98% accuracy under normal operating conditions (day and night), and at least 93% accuracy under artifact conditions.

Artifact conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The volume count will be accumulated for the entire roadway (all traveled lanes), and accumulated over time intervals that contain a minimum of one hundred (100) vehicles to ensure statistical significance.

Demand Presence Detection Performance: Using an installed camera that meets the optimal viewing specifications described above for intersection control traffic applications, the system will be able to accurately provide demand presence detection.

The demand presence accuracy will be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists. The probability of not detecting a vehicle for demand presence will be less than 1% error under all operating conditions. In the presence of artifact conditions, the MVP will minimize extraneous (false) protected movement calls to less than 7%.

To ensure statistical significance, the demand presence accuracy and error will be calculated over time intervals that contain a minimum of one hundred, protected turning movements.

These performance specifications will be achieved with a minimum of 2 presence detectors coupled with a single detector function (Type-9) to provide adequate road coverage to sample the random arrival pattern of vehicles at the stop line.

The calculation of the demand presence error will not include turning movements where vehicles do not pass through the presence detectors, or where they stop short or stop beyond the combined detection zones.

REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)(VIDEO)

Speed Detection Performance: The MVP will accurately measure average (arithmetic mean) speed of multiple vehicles with more than 97% accuracy under all operating conditions for approaching and receding traffic.

The average speed measurement will include a minimum of 100 vehicles in the sample to ensure statistical significance. Optimal speed detection performance requires the camera location to follow the specifications described above for count station traffic applications with the exception that the camera must be higher than 13 m (40) feet.

The MVP will accurately measure individual vehicle speeds with more than 94% accuracy under all operating conditions for vehicles approaching the camera (viewing the front end of vehicles), and more than 90% accuracy for vehicles receding from the camera (viewing the rear end of vehicles).

These specifications will apply to vehicles that travel through both the count and speed detector pair and will not include partial detection situations created by lane-changing maneuvers.

To ensure statistical significance, the average speed accuracy and error will be calculated over time intervals that contain a minimum of one hundred vehicles.

Using a MVP sensor installed within the optimal viewing specifications described above or count station traffic applications

Modular Cabinet Interface Unit

The modular cabinet interface unit shall provide the hardware and software means for up to eight (8) MVP sensors to communicate real-time detection states and alarms to a local traffic signal controller. It shall comply with the electrical and protocol specifications of the detector rack standards. The card shall have 1500 Vrms isolation between rack logic ground and street wiring.

The modular cabinet interface unit shall be a simple interface card that plugs directly into a 170 input file rack or a NEMA type C or D detector rack. The modular cabinet interface unit shall occupy only 2 slots of the detector rack. The modular cabinet interface unit shall accept up to sixteen (16) phase inputs and shall provide up to twenty-four (24) detector outputs.

Communications Interface Panel

The communications interface panel shall support up to eight MVPs. The communications interface panel shall accept 110/220 VAC, 50/60 Hz power and provide predefined wire termination blocks for MVP power connections, a Broadband-over-Power-Line (BPL) transceiver to support up to 10MB/s inter device communications, electrical surge protectors to isolate the modular cabinet interface unit and MVP sensors, and an interface connector to cable directly to the modular cabinet interface unit.

The interface panel shall provide power for up to eight (8) MVP sensors, taking local line voltage 110/220 VAC, 50/60 Hz and producing 110/220 VAC, 50/60 Hz, at about 30 watts to each MVP sensor. Two ½-amp SLO-BLO fuses shall protect the communications interface panel.

**REVISION OF SECTION 614
INTERSECTION DETECTION SYSTEM (CAMERA)(VIDEO)**

System Installation & Training

The supplier of the video detection system may supervise the installation and testing of the video detection system and computer equipment as required by the contracting agency.

Training is available to personnel of the contracting agency in the operation, set up, and maintenance of the video detection system. The MVP sensor and its support hardware / software is a sophisticated leading-edge technology system. Proper instruction from certified instructors is recommended to ensure that the end user has complete competency in system operation. The User's Guide is not an adequate substitute for practical classroom training and formal certification by an approved agency.

Warranty, Service, & Support

For a minimum of three (3) years, the supplier shall warrant the video detection system. An option for additional year(s) warranty for up to 6 years shall be available. Ongoing software support by the supplier shall include software updates of the MVP sensor, modular cabinet interface unit, and supervisor computer applications. These updates shall be provided free of charge during the warranty period. The supplier shall maintain a program for technical support and software updates following expiration of the warranty period. This program shall be available to the contracting agency in the form of a separate agreement for continuing support.

Subsection 614.13 shall include the following:

Intersection Detection System (Camera)(Video) shall be measured and paid by the number of intersections at which the system is installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional system to the satisfaction of the Engineer.

Subsection 614.14 shall include the following:

Pay Item

Intersection Detection System (Camera)(Video)

Pay Unit

Each

**REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.08 shall include the following:

The Double Conversion Uninterrupted Power Supply System (UPS) is a fully integrated system within the new controller cabinet and shall provide emergency battery power to the traffic signal controller. This work consists of the installation of an UPS in the CCD controller cabinets. The Contractor shall furnish and install the UPS within the Traffic Signal Cabinet as an integral part of the Traffic Signal Controller and Cabinet Assembly. The UPS shall conform to the following specifications:

Operation:

The UPS system shall be capable of producing a fully regenerated, conditioned, pure sine wave AC. The online operational mode shall be continuous to all loads. It shall incorporate a high frequency Pulse-Width Modulated technology and shall use an input rectifier, charger, battery and inverter in a single board configuration. The UPS double conversion UPS shall provide a clean, pure AC sine-wave output at all times with a voltage input variation of 85VAC to 145VAC while providing 120VAC to the connected load at all times. The UPS shall be capable of operating in the voltage range of 85VAC to 135VAC without using the batteries and always provide a regulated output to the protected loads.

The Input rectifier shall be rated at 2.5 times the output rating of the inverter.

The Inverter circuit shall be in continuous operation at all times (constant duty). The inverter shall be rated for 100% duty cycle and simultaneously fed from the rectifier and battery to eliminate any switching to battery or transitions during power fluctuations or power interruption. The inverter's output shall be pure clean sine wave with an efficiency of up to 85%.

The constant duty operation shall be rated in total watts. This will enable the traffic UPS to support any combination of signal heads whether Incandescent, LED or Neon, by any manufacturer, regardless of power-factor.

The UPS shall be capable of operating from a generator source without the need for over-sizing the UPS system. During operation from a generator source, the UPS shall operate in a normal fashion and provide filtered and regulated power with or without automatic input/output frequency synchronization. Upon excessive generator frequency drift, the UPS shall compensate through regeneration and supplying both continuous frequency and voltage regulation to the protected load.

The UPS shall be capable of glitch ride through capabilities and provide a seamless output to the connected load during this anomaly without the use of the batteries.

The UPS shall be capable of providing an overload output rating of 120% for 60 seconds, 150% for 10 seconds to any combinations of signal types whether Incandescent, LED or Neon during inrush or overload conditions.

The UPS shall have an internal static bypass that will transfer to line power if over load exceeds 150% for more than 5 sec. This bypass will maintain the load until this overload has cleared.

REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

The UPS shall have a separate Neutral detecting circuit that shall monitor loss of utility neutral and completely disconnect any input source to the UPS system.

The UPS shall have an input back feed relay operating in series with the Neutral monitoring circuit.

Upon loss of utility power, the UPS inverter shall continue to provide seamless pure sine-wave AC from the batteries without switching, transfer or changing its' operating status. The UPS will use the battery mode in '0' ms. This will insure that the UPS provides pure sine wave power under all conditions, at all times without interruption.

The UPS will continue to provide generated AC from the inverter until the batteries are depleted.

When the batteries have been depleted, the UPS will ensure upon the return of Utility Power that the UPS will restart automatically and provide regenerated AC to the protected equipment and allow the equipment to resume normal operation.

The UPS shall be capable of operating in a full regenerated, power-conditioning mode with depleted batteries or failed batteries. The regenerative power conditioning will ensure that there will be regulated and conditioned pure AC power to the equipment. This regenerative mode will provide extended brown-output protection with wide input line regulation, noise filtering and surge protection.

The UPS shall operate in an uninterruptible regenerative on-line mode during flash or normal signal operation.

The UPS shall be rated at Unity Power Factor. The output VA and Watts rating shall be equal on the output at all times.

The UPS shall be capable of COLD starting without AC present and provide AC power to the load.

The UPS shall be capable of self diagnostics during start up or with the use of the front panel TEST button.

The UPS case shall be constructed from .064 aluminum and carbon steel.

The UPS input and output connections shall be Anderson Power Pole quick lock connector to eliminate exposed terminals or connections.

The UPS to bypass interconnect harness shall be reversible with matching Anderson Power connectors that will prevent risk of shock, or damage to the connected equipment.

The UPS shall be capable of Hot-Swapping the batteries or battery bank, without shutting down the UPS.

The UPS shall be capable of being Hot-Swapped during normal operation when used with the external Hot Swap Bypass. The UPS may also be shut-off with the Hot Swap Bypass in place without loss of AC to the loads.

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REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM

The UPS shall be capable of providing a replaceable relay card with relay output contacts for AC fail, Inverter ON, Low Battery, Battery Fail, Bypass and Alarms.

The UPS relay card may be replaced with an SNMP card for SNMP communications and information.

The UPS shall provide a programmable Dry Relay output for flash.

The contacts shall be provided in N/O and N/C positions. The delay timer shall be a maximum of 10 hours.

The timer shall be front panel mounted.

The Timer dial shall be 4.7 inches in circumference.

The timer shall have a scale in increments of 1s to 10seconds. This scale can be changed to indicate 1 minute, to 10 minutes or a maximum scale of 1 hour to 10 hours.

The scale shall be controlled by two (2) separate dip switches on the timer face.

The timer shall indicate using a flashing RED LED that the timing function is operating. The timer shall use a steady RED LED to indicate that the timing is now completed

The timer shall count in a down mode to '0' from the preset time indicated on the scale.

The LED indicators shall provide status for AC line, UPS Battery Mode, Charging, Low Battery, Fault, Bypass, Percentage of Load and Battery Charge.

The Event counter and Hour meter may be reset to '0' using separated buttons.

The UPS shall have a battery charger rated at 200 watts @ 36VDC with an optional of 400 watts.

This charger shall be completely separate from the rectifier/inverter included with the main UPS board.

The UPS chargers may be used in a parallel configuration for increased charger ratings.

The UPS uses a redundant internal 1 amp charger that will continue to charge the batteries if the separate board charger fails.

The UPS may be used with redundancy in mind with the use of the Dual Hot Swap Option.

That will provide a secondary UPS source in less than 20ms. The Secondary UPS may be connected to the alternate input of the Hot Swap Bypass

The Flash programming shall be a simple and field programmable without the use of an external connected device such as a laptop or computer.

The Hot swap Bypass shall allow the UPS to be removed or installed at any time during normal load operation.

The UPS shall include standard graphical real time software and connection cable.

The UPS shall be capable of sending programmable system alarms to the Econolite "icons" Traffic Management System.

**REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM**

Physical Description:

The UPS shall consist of 3 major components - the Main board Rectifier/Inverter, charger and control board.

The Main Board shall consist of a True-Sine-Wave constant duty high frequency inverter utilizing High-Frequency Pulse-Width Modulated technology.

The Input Rectifier shall be rated for the total wattage output rating of the UPS including the 150% overload and the charger rating. The inverter shall be a high efficiency constant duty design with and efficiency of 83%. The inverter shall include its' own static bypass which provides an alternate AC path during overload and or Inverter alarm conditions.

The heat-sink shall be a continuous aluminum extrusion design with plenum directed airflow cooling. The 12VDC dual stage cooling fans shall be variable speed controlled by the logic board.

The charger portion shall be a 3 stage Hysterisis .5 amp, 36 or 72VDC charger with temperature compensation. The supplementary charger is a parallel design rated for 200, 500 and 1000 watts.

The Electronic Control board shall monitor the Rectifier and Inverter functions. It shall also provide the overall control of all the UPS functions and or operational capabilities.

Mounting Configuration:

The UPS shall be shelf mounted or rack mounted per the documents. Shelves and cabinets shall be supplied by others. Where rack mounting is required, the 170 style mounting method shall be 19" rack mount. Rack mounting ears shall be removable.

A separate stand alone NEMA Traffic cabinet may be supplied if required in the plans and specifications. 4 rubber feet shall be installed on the bottom of the unit for shelf mounting.

Battery System:

The batteries shall be comprised of a quantity of three (3), high temperature, deep cycle (45AH) batteries which have been proven under extreme temperature conditions. The battery system or configuration shall consist of one string. Each string shall be 36 VDC. The batteries shall be provided with the appropriate interconnect cables. The battery cables shall have a minimum conductor size rating of #10.

The battery cable shall consist of a quick release Anderson connector rated at 25 amps. For the purpose of safety, the connector shall have recessed pins and keyed interlock to prevent reversal of connection or separation.

**REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM**

Battery construction shall be of a polycarbonate high temperature design combined with high, pure lead content with internal resistance of .0028 ohms and a high impact poly case construction, to withstand high vibration and shock. The connections shall be of stainless steel 3/8 stud, with 3/8 stainless nut and locking washer. Removable lifting handle shall be standard.

The batteries shall also meet the following characteristics:

Nominal voltage:	12VDC
Capacity@ 25C:	45AH
Approx weight:	13.5Kg
Internal Resistance:	9.5 mOhms
Dimensions:	197mm x 165mm x 170mm (7.76 x 6.50 x 6.69)
Capacity (10hr rate):	75c-112% 65c-108% 55c-105% 25c-100% 0c- 85% -15c- 65%
Self Discharge:	3 months 91% capacity remaining 6 months 82% capacity remaining 12 months 65% capacity remaining
Operating Temperature:	-15c to +75C
Float Voltage:	13.5 to 13.80
Cyclic charging voltage:	14.5 to 14.90
Maximum charge current:	12A
Terminal material:	Copper
Maximum discharge current:	400A (5 sec)

The system must be 36 volt DC maximum (no exception).

Electrical Specifications:

The unit shall meet the following electrical specifications:

Design:	Double Conversion true on line.
Nominal input:	110, 115 & 120v AC single phase dip switch selectable.
Input Voltage Range:	80v to 140v AC
Input frequency:	50/60hz (47 to 63)
Efficiency:	83 %
Input configuration:	3 wire with ground
Input Protection:	15 amp re-settable breaker (on UPS 700)
Input Current:	10.4 amps (includes charger) (on UPS 700)

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UNINTERRUPTED POWER SUPPLY SYSTEM**

Power Rating Continuous:	700 watts, 1400watts, 2100 watts
Output Current:	@ 700 watts 5.8 amps / 11.6 @1400/ 17.7@2100
Output regulation:	+/- 3% with 100% resistive load Output regulation w/low
battery: +/- 3% with	100% resistive load Output Voltage: 120v AC
Output Wave Form:	Pure sine wave
Harmonic Distortion:	3% Linear Load; 5% Non Linear Load
Dynamic Response:	+/- 5% RMS for 100% step load change 1 ms recovery time
Overload Capability:	120% for 60 sec 150% watts for 10 sec
Charger:	200 watt 36VDC UPS 700, 72VDC on UPS 1400 Parallel 400, 1000 and 2000 watt.
Surge:	ANSI-C62.41
Fault Clearing:	Current Limit and automatic to bypass
Short Circuit protection:	Output Breaker / Fuse, then shut down Load
Power Factor:	.6 leading to .6 lagging
Output Connection:	Anderson Power Pole Connector 6 pin keyed.
DC Connection:	Anderson 50 amp Keyed Recessed connector
Recognition:	UL Recognized & IEE 587 / C62.41 on main UPS board

Mechanical:

The UPS shall meet the following physical dimensions:

For 700 W UPS:

Size:	6.00" H x 10.5" D x 15.15" W
Weight:	18 lbs

The enclosure shall be constructed of 0.064 Carbon steel and aluminum. The enclosure shall be painted with powder coat paint with a minimum of 1.5 mil thickness.

Environmental:

The UPS shall meet or exceed NEMA temperature standards from -40c to + 74c.

Communications, Control & Diagnostics

LED indicators shall be provided for line monitoring, battery mode, charging, low battery, fault / bypass load level, battery level and ground fault. Manual test functions shall be available for alarm function, low battery, battery fail, bypass and overload. An RS 232 port with communication software shall be provided for real time UPS operational status in place of a relay status card when required.

**REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM**

The relay status card shall have the following I/O via contact closure:

1. Bypass ON
2. AC fail or out of tolerance.
3. AC normal or in tolerance.
4. Inverter is operating (ON)
5. Battery low
6. Battery failed or bad
7. UPS general alarm
8. Ground (logic)
9. Apply 6 to +25VDC
10. between pin 9 and 10, will shut the UPS down Options:

The UPS must be able to accept the following future options

- SNMP/WEB monitoring.
- 24/7 Adjustable perpetual timer.
- Generator input option for hot swap bypass switch.
- Rack mount hot swap bypass switch.

In place of the relay card, an SNMP card can be installed that shall support TCP/IP, UDP, SNMP, and HTTP protocols and shall provide the SNMP MIB for UPS monitoring and UPS status. Remote access to UPS real time information including unit identification, data logging and UPS status in real time shall also be provided on a by unit basis. It shall be possible to use Microsoft Internet Explorer for remote viewing of the following:

1. UPS load
2. Battery Charger status
3. UPS operation Normal/Alarm
4. Input Voltage
5. Output Voltage
6. Battery Voltage
7. UPS Temperature
8. UPS information logging
9. Remote UPS battery testing.
10. Send output email if UPS status has changed
11. Built in reset with panel mounted led indicators for SNMP status.

The SNMP card shall have the following status LEDs:

LED(1)	Green LED: Status receiving
Yellow:	Data Transmitting
LED(2)	Green: SNMP connecting
Yellow:	SNM P functioning

REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

The optional 24/7 timer shall be integral to the UPS. It shall include a DB9 connector to provide the connection and programming to the timer. This timer shall be programmable for any number of flash delays related to the time of day. It allows the complete flexibility of flash delay or skipping the flash during that particular event related to traffic flow and even holidays. The time shall have the follow features:

1. 7 days, 24 hrs Flash delay timing.
2. Perpetual Clock.
3. Maximum of 31 setting per day.
4. Timing resolution to the minute.
5. 4 Possible commands per event.
6. Real-time operation, editing functions will not interrupt the unit's functions.
7. J-Tag port for instant preload of complete 7-day schedule file.
8. SPDT 10 amp 240VAC /24VDC ratings.
9. Input Voltage 110 to 240VAC or 24VDC unregulated supply.
10. Plus! Capable of scheduling for holidays or specific year/dates.
11. Capable of operating at 2400 baud micro-modem for direct phone connection
12. Capable of operating at 1200 to 230,000 baud rate on a serial port.
13. Capable of log retention

An optional generator input shall be available for the UPS. Reliability:

Calculated MTBF shall be 120,000 hours based on component ratings. When bypass switch is installed, system MTBF shall increase to 160,000 hours.

Hot Swap Bypass Switch:

A hot bypass switch shall be provided and wired to function within the UPS system. The bypass switch shall have the following characteristics:

Bypass Rating:	30 amps maximum
Bypass Transfer:	Automatically to line in 20ms, '0' crossing at full load
Control:	Rocker On/Off switch indicating 'Auto' and Bypass
Relays:	AC internal Load relay at 'Zero Crossing' with parallel Function DC relay for interlocking and protection failsafe mode to N/C for AC power direct to load when failure occurs or in Bypass position.
Protection:	Internal Snubber circuit for spike attenuation during transfer at 'Zero' crossing. Internal fuse required.
Connections:	Flush mounted Anderson Power connector. With locked and keyed.
Indicators:	LED for Line Available, Bypass, Ups On Line, UPS Available.
Dimensions:	7.5 x 5 x 2.5
Weight:	1.4 lbs

**REVISION OF SECTION 614
UNINTERRUPTED POWER SUPPLY SYSTEM**

Warranty:

A standard (2) two year manufacturer warranty shall be provided for all electronic components. All batteries shall carry a one year warranty.

Subsection 614.13 shall include the following:

The unit price for the furnish and install of the Uninterrupted Power Supply System shall be for a complete system and successful operation of the item. The UPS installation will be tested in accordance with this specification or as directed by the Engineer. The UPS system shall be measured and paid by the number of units installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully functioning system to the satisfaction of the Engineer.

Subsection 614.14 shall include the following:

Pay Item

Uninterrupted Power Supply System

Pay Unit

Each

**REVISION OF SECTION 614
ETHERNET MANAGED FIELD SWITCH**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work consists of the installation of an Ethernet Managed Field Switch in the CCD controller cabinets. The Contractor shall furnish and install the switch within the Traffic Signal Cabinet as an integral part of the Traffic Signal Controller and Cabinet Assembly.

Subsection 614.08 shall include the following:

The Ethernet Managed Field Switch installation is hereby added to the Special Provision and the Ethernet Switch shall comply with the following specifications:

General System Requirements –The Ethernet Managed Field Switch shall be one that is currently stock by the City and County of Denver or approved equal. The current Ethernet Managed Field Switch that is stocked by the City and County of Denver is the Hirschmann Managed Fast/Gigabit Industrial Ethernet Switch and comprises of the following parts:

- (1) Quantity 1- “OpenRAIL Switch Power - Managed Fast/Gigabit Industrial Ethernet Switch, Fanless Design, Power over Ethernet (PoE+) Support with up to 24 Ports and 120 Watt, 24x 10/100 Mbit/s Ethernet Ports, 4x 10/100/1000 Mbit/s Ethernet Ports, 4x FE/GE Combo Ports”

The OpenRAIL Switch Power currently stock by the City and County of Denver is the HIRSCHMANN RSPE32-24044O7T99-TPPZ999HHSE2AXX.X.XX

- (2) Quantity 4 - “SFP Fiberoptic Gigabit Ethernet Transceiver, Extended Temperature Range, 1 x 1000BASE-LX with LC Connector, SFP-GIG-LX/LC EEC”

The Gigabit Ethernet Transceiver currently stock by the City and County of Denver is the HIRSCHMANN 942 196-002

- (3) Quantity 2 - “Empty Module Slot Cover, RSPM”

The Empty Module Slot Cover currently stock by the City and County of Denver to be used for the HIRSCHMANN RSPE32-24044O7T99-TPPZ999HHSE2AXX.X.XX OpenRAIL Switch Power is the HIRSCHMANN 942131001 RSPM-COVER

- (4) Quantity 1 - 48VDC Rail Power Supply”

The 48VDC Rail Power Supply currently stock by the City and County of Denver to be used with the HIRSCHMANN RSPE32-24044O7T99-TPPZ999HHSE2AXX.X. OpenRail Switch Power is the BELDEN 942 200-001, “RPS 260/PoE EEC.

Test Requirements - Contractor shall supply one unit of Ethernet Managed Field Switch to the Engineer for specification compliance testing and approval. If the product passes the compliance test and evaluation, the Contractor will be notified to complete the order. If the product does not pass the specification compliance testing and approval evaluation by CCD-PW Transportation and Mobility, the unit will be returned to the Contractor. The Contractor shall supply other units until satisfactory test results are achieved

**REVISION OF SECTION 614
ETHERNET MANAGED FIELD SWITCH**

Subsection 614.13 shall include the following:

Each individual Ethernet Managed Field Switch package shall contain one Ethernet Managed Field Switch, set of mounting bracket(s), Installation and User guides, and Product Registration Card.

The unit price for the furnish and install of the Ethernet Managed Field Switch shall be for a complete system installed and accepted. The Ethernet Switch installation will be tested in accordance with this specification or as directed by the Engineer. Installation shall include all wiring for hook-up, related labor, material, ancillary hardware, and all necessary documentation of testing.

Subsection 614.14 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Ethernet Managed Field Switch	Each

**REVISION OF SECTION 614
BLUETOOTH TRAFFIC MANAGEMENT DETECTION SYSTEM**

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work is for the installation of a Bluetooth Traffic Management Detection System. The Contractor shall furnish and install the Bluetooth Traffic Management Detection System at locations as shown in the plans or as directed by the Engineer.

Subsection 614.08 (I) shall include the following:

The Bluetooth Traffic Management Detection System equipment shall be the TrafficCast BlueTOAD Spectra system and shall consist of the Bluetooth Field Data Collection Unit and Antenna. The Bluetooth equipment installation shall include CAT5 cable pull.

Subsection 614.13 shall include the following:

Bluetooth Traffic Management Detection System shall be measured and pay for by the actual number of units that are installed and accepted. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional system to the satisfaction of the Engineer.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Bluetooth Traffic Management Detection System

Pay Unit

Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL POLES – GENERAL**

Section 614 of the Standard Specifications is hereby revised as follows:

Subsection 614.08 (g) shall include the following:

This work is for the installation of the mast arm traffic signal poles, traffic signal light poles (no mast arm), traffic signal span wire poles (imbedded steel poles), and traffic signal pedestal poles. The Contractor shall furnish and install the traffic signal poles at locations as shown on the plans. All traffic signal poles shall be painted dark olive green in conformance with Federal Specification No. 14056.

The mast arm traffic signal poles and the traffic signal light poles (no mast arms) will be the type manufactured by Valmont in accordance with the latest City and County of Denver's Traffic Standards and Specifications.

General specifications of the, mast arm traffic signal poles, traffic signal light poles (no mast arms), traffic signal imbedded steel poles, and traffic signal pedestal poles are as follows:

TRAFFIC SIGNAL POLES: All traffic signal poles (imbedded poles, mast arm traffic signal poles, traffic signal light poles - no mast arms) shall conform to latest City and County of Denver's Traffic Standard Details 16.1.3 and 16.1.9 to 16.1.12.

Traffic Signal Pedestal Poles shall conform to the requirements of the City and County of Denver's Traffic Signal Standard Detail 16.1.13.

The Contractor shall also furnish and install a 5300 Lumens LED luminaire at all traffic signal poles as shown on the plans or as directed by the Engineer. The LED luminaire shall be in accordance with the City and County of Denver's specifications and Sections 613 - LIGHTING (LUMINAIRE)(LED 5300 LUMENS). The luminaire shall be installed on the traffic signal poles with a 10-foot luminaire arm as per the City and County of Denver's Traffic Standard Details 16.1.3, and 16.1.9 to 16.1.12.

FINISH: All traffic signal poles and mast arms – except for the imbedded steel poles and the aluminum pedestal poles – shall be finish in accordance with the Valmont F540 finish process or equal (hot dipped galvanized, epoxy primer and powder coated).

PAINTING: All traffic signal mast arm poles shall be powder coated in accordance with the following specifications:

General:

Super Durable Powder Coating: The super durable powder coating shall consist of a Urethane or Triglycidylisocyanurate (TGIC) Polyester Powder, and provide a minimum of 3 times the gloss retention, color retention and ultraviolet light (UV) resistance as standard powder coatings. Color shall be dark olive green, in conformance with Federal Specification No. 14056.

Surface Preparation:

The exterior steel surface shall be blast cleaned to Steel Structures Painting Council Surface Preparation Specification No. 6 (SSPC-SP6) requirements utilizing cast steel abrasives conforming to the Society of Automotive Engineers (SAE) Recommended Practice J827. The blast method is a recirculating, closed cycle centrifugal wheel system with abrasive conforming to SAE Shot Number S280.

**REVISION OF SECTION 614
TRAFFIC SIGNAL POLES – GENERAL**

Interior Color:

Interior surfaces (pole shafts only) at the base end for a length of approximately 2.0' shall be mechanically cleaned and coated with a zinc rich epoxy powder. The coating shall be electrostatically applied and cured in a gas fired convection oven by heating the steel substrate to a minimum of 350 degrees Fahrenheit and a maximum of 400 degrees Fahrenheit.

Exterior Coating:

All exterior surfaces shall be coated with Urethane or TriglycidylIsocyanurate (TGIC) Polyester Powder to a minimum film thickness of 2.0 mils (0.002"). The coating shall be electrostatically applied and cured in a gas fired convection oven by heating the steel substrate to a minimum of 350 degrees Fahrenheit and a maximum of 400 degrees Fahrenheit. The thermosetting powder resin shall provide both intercoat as well as substrate fusion adhesion that meets 5A or 5B classifications of ASTM D3359.

Packaging:

Prior to shipment, small poles shall be wrapped in 0.188" thick Ultraviolet inhibiting plastic backed foam. Larger poles shall be cradled in a 1.0" rubberized foam base.

Handling and Shipment:

Poles shall be handled in a manner that will preserve the overall appearance and prevent damage to the coating. The use of chains or cables for loading, unloading, or installing is prohibited. Only ¾ inch diameter or larger nonabrasive nylon rope or equivalent nylon belting will be used. Adequate hold-downs and appropriate blocking shall be utilized for shipping to prevent load movement and damage to the outer coating in transit. No handling should be allowed until "dry through" condition has been achieved with the coating.

Extra care will be taken not to damage the coating. Upon arrival of the poles at the delivery point, neither chains nor cables will be used to either unloading or installation of poles.

Procedure for Field Touch-Up:

The pole manufacturer will furnish extra paint, both primer and color coat, to satisfy the needs of field touch-up requirements, in the event of minor physical damage to the coating from handling or transit. Damaged area must be clean and dry before repair application. Field touch-up will be at the direction of the pole manufacturer or their authorized representative.

Subsection 614.14 shall include the following:

Pay Item

Traffic Signal Light Pole Steel (No Mast Arm)
Traffic Signal Light Pole Steel (2 Mast Arms)
Traffic Signal Light Pole Steel (1-xx Foot Mast Arm)
Traffic Signal Pedestal Pole Aluminum (10 Foot)
Traffic Signal Pedestal Pole Aluminum (15 Foot)
Traffic Signal Span Wire Pole (Imbedded Steel Pole)

Pay Unit

Each
Each
Each
Each
Each
Each

REVISION OF SECTION 614 TELEMETRY (FIELD)

Section 614 of the Standard Specifications is hereby revised for this project as follows.

Subsection 614.01 shall include the following:

This work consists of fan-out and termination of fiber optic (interconnect) cable at each controller cabinet locations as identified in the plans. This work also includes providing and installing all necessary fiber optic lateral cables and telemetry equipment including but not limited to optical splice closures, field patch panels, splice organizers, cables, pigtails/jumpers and labels.

Color-coded fibers and buffer tubes shall be used throughout the entire project. At the terminal points the jackets shall be stripped and the ends taped. Gel filled compound shall be removed using filled cable cleaner.

At every cabinet or optical closure, only the fibers identified in the plans to be spliced and/or connected to a patch panel or other internal device are required to be landed. All cut and unconnected fibers shall be sealed in a manner recommended by the fiber optic cable manufacturer and coiled neatly in a splice organizer.

The same color-coded pairs of fibers and/or wires shall be used throughout the entire project unless shown as otherwise in the plans. Gel filling compound shall be removed using filled cable cleaner.

Subsection 614.08 shall include the following:

Fiber Optic Patch Pigtail:

The fiber optic pigtail cables shall consist of MM fibers housed individually in protective jackets. Both ends of the cable shall be connected. Fiber optic patch cord cable shall be suitable for operation over a temperature range of -30 degrees to +60 degrees Celsius. Fiber optic patch cord cables shall be of length suitably long to be connected between the interconnect panel and the communications equipment (i.e. fiber optic transceivers). Patch cord couplings shall be compatible with termination points. Appropriate strain relief in the cabinet (through cable ties) shall be installed at a minimum of three locations. Sufficient slack shall be left to allow relocation of the equipment anywhere in the cabinet. The attenuation of a fiber optic patch cord cable after installation, not including the connector loss, shall not exceed 0.1 dB measured at 850 nm and 1300 nm.

Connectors:

The connector shall have a ceramic ferrule with a nickel-plated nut and body. The connector shall be an AT&T ST style compatible field mounted connector. The connector shall be compatible with a physical contact (PC) finish. All connectors shall be polished to a PC finish such that the return loss per mated pair of connectors is less than -25 dB. The return loss when the connector is mated with previously installed connectors shall be less than -18 dB.

The connector insertion loss shall not be greater than 0.20 dB (typical). The connector loss shall not vary more than 0.20 dB after 1000 repeated matings. Tensile strength shall withstand an axial load of 20 lb. with less than 0.20 dB change.

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REVISION OF SECTION 614
TELEMETRY (FIELD)

Index matching fluids or gels shall not be used. The connectors shall be compatible with the optical fiber surrounding jacket and shall be installed on one end of the optical fiber in accordance with the manufacturer's recommended materials, equipment and practices. The connector shall be suitable for the intended environment and shall meet the following environmental conditions:

Operating Temperature: -40° to +80° C

Storage Temperature: -40° to +85° C

The connector loss shall not vary more than 0.20 dB over the operating temperature range. Connectors shall be protected by a suitably installed waterproof protection cap.

Miscellaneous Cabling:

Fiber optic patch cords shall be fiber optic jumper cable, duplex, ceramic ferrule, MM 62.5 nm, adaptable to AT&T ST style connectors, 2 meters in length, ITT Canon Model 161001-4020 or approved equal. Cable from fiber optic modem to Port 3 controller harness shall be 25-pin cable Model 44982G4 or approved equal. The Contractor shall deliver transceivers to the City's Traffic Signal Shop. Contact Joe Strauss (720) 865-4062 for coordination.

Optical Splice Closures:

Coyote Runt or Coyote Pup Type closures shall be provided for splicing lateral fiber optic cables to the main (backbone) fiber cable in all pull box locations that are identified in the plans. All closures shall include 1-Inch future port kit (part no. 8003408, Pre-Formed Line Products). The Coyote Runt Closure shall be used at locations with 3 fiber optic cables. In locations requiring more than 3 cables, a Coyote Pup Closure shall be installed.

Subsection 614.13 shall include the following:

Telemetry (Field) shall be measured by the total number of cabinets at which the interconnect cable is fanned out, terminated, connected, patch panels and fiber-optic interfaces installed. All labor and materials required to perform panel installations, provide in-cabinet strain relief, fan-out, cable termination and connection to the controller is considered included in the unit price for this item.

This item, therefore, includes the following:

1. All required in-cabinet cable ties and strain relief (including ancillary hardware and labor to complete);
2. All required fan-out kits, kit tools, ancillary hardware and labor to accomplish the fan-out at the cabinet;
3. All required laterals, pigtails and harness cables;
4. All required interconnect centers and fiber optic interface panels in individual controller cabinets as shown in the plans;
 - All required termination enclosures (including specified features), connectors, adapters, jumpers, pigtails, patch cord cables, ancillary hardware and labor required to accomplish the cabinet termination;
 - All required optical splice closures;
 - All other labor and material necessary to complete the item

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REVISION OF SECTION 614
TELEMETRY (FIELD)

All labor and materials necessary to complete this item shall be considered included in the unit price and will not be paid separately.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item

Telemetry (Field)

Pay Unit

Each

**REVISION OF SECTION 614
CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC MONITORING)**

Section 614 of the Standard Specifications is hereby revised to include the following:

Subsection 614.01 shall include the following:

This work consists of the installation of a closed-circuit television camera at the locations shown on the plans.

Subsection 614.08 shall include the following:

(m) Closed Circuit Television Camera (Traffic Monitoring)

Closed circuit television camera shall be the Panasonic WV-X6531NS.

The following accessories shall be provided for each IP camera:

Panasonic PAPM4 Pole Mount Bracket

Panasonic PWM20G Gooseneck Black

Transformer Altronix T2428100 24 VAC.

Veracity VOR-OS Outsource Midspan 15/20W POE 802.3AF Injector – 1 port

Subsection 614.10 shall include the following:

The closed-circuit television camera shall be installed in accordance with the details shown in the plans and in accordance with manufacturer's recommendations. The Contractor shall deliver the camera and accessories to the City and County of Denver's Traffic Operations Department at 5440 Roslyn, Denver, Colorado at least 4 weeks prior to installation for the camera calibration and set up. The Contractor shall pick up the camera and shall install it at the proper location. The Contractor shall make arrangements for a City and County of Denver Traffic Operations' representative to be on-site to ensure proper installation.

Subsection 614.13 shall include the following:

Closed circuit television cameras will be measured by the actual number of closed circuit television cameras that are installed and accepted. All accessories shall not be measured separately.

Subsection 614.14 shall include the following:

Pay Item

Closed Circuit Television Camera (Traffic Monitoring)

Pay Unit

Each

Payment will be full compensation for all labor, materials, accessories, and equipment required to complete the work.

**REVISION OF SECTION 623
IRRIGATION SYSTEM**

Section 623 of the Standard Specifications is revised as follows:

Subsection 623.01 is revised to include the following:

Irrigation systems within twelve inches (12”) of the reconstruction areas which are damaged as a result of the reconstruction activity will be repaired and paid for. Irrigation systems beyond this limit which are damaged by the Contractor will be repaired by the Contractor at no expense to the City.

Subsection 623.02 is revised to include the following:

Materials required to be replaced shall be of like kind to those removed. If like kind materials are unavailable, the Contractor may substitute comparable materials of comparable quality, if approved by the Engineer. Materials used in areas under the jurisdiction of the Denver Parks Department shall comply with the current specifications of that department.

Subsection 623.28 is revised to include the following:

Pipes and fittings will be measured by the lineal foot, regardless of type, size or manufacturer and shall be paid under “Sprinkler System – Irrigation Reconstruction.”

New Sprinkler heads will be measured per each, regardless of type, size or manufacturer, and shall be paid under “Sprinkler System – Sprinkler Head.”

Sprinkler heads to be adjusted will be measured per each regardless of type, size or manufacturer, and shall be paid under “Sprinkler System – Adjust Sprinkler Head.”

Subsection 623.29 is revised to include the following:

Pay Item

Sprinkler System – Adjust Sprinkler Head
Sprinkler System – New Sprinkler Head
Sprinkler System – Irrigation Reconstruction

Pay Unit

Each
Each
Linear Foot

REVISION OF SECTION 625 CONSTRUCTION SURVEYING

Section 625 of the standard specifications is hereby revised as follows:

Delete section 625 and replace with the following:

DESCRIPTION

625.01 This work consists of the construction surveying, calculating, and staking, including ROW limits, necessary for the construction of all elements of the project. The work shall be done under the supervision of a Professional Land Surveyor (PLS) who is licensed in the State of Colorado. Locating, preserving, referencing, installing and restoring land monuments such as Primary Control monuments from which the Right of Way or any land boundary will be calculated, described or monumented, Public Land Survey System (PLSS) monuments, General Land Office (GLO) monuments, Bureau of Land Management (BLM) monuments, Mineral Survey (MS) monuments, Right of Way (ROW) monuments, property boundary monuments and offsets, Range Points, benchmarks, easement monuments, and other monuments that are required by law or regulation to be established by a PLS, and the determination of any land boundary, shall be done under the supervision of a Professional Land Surveyor (PLS) who is licensed in the State of Colorado.

MATERIALS AND EQUIPMENT

625.02 The Contractor shall furnish all personnel, survey equipment, safety equipment, materials, and traffic control necessary to perform the required construction surveying and staking. All surveying equipment, including Electronic Distance Meters (EDM), total stations, theodolites, levels, rods, tapes, tripods, tribrachs, and Global Positioning System (GPS) receivers and equipment.

If any survey equipment is found to be functioning outside the manufacturer's specified tolerance, certification from an approved repair facility showing that the instruments have been repaired, properly adjusted, or both if necessary shall be included in the survey records and submitted to the City Surveyor's Office before being used.

CONSTRUCTION REQUIREMENTS

625.03 The Contractor shall check and verify all established Primary horizontal and vertical control points.

All survey records generated shall be the property of the City and shall be available to the City Surveyor's Office for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance.

Electronic formats may be acceptable, please coordinate with the City Surveyor's Office. Copies of any new Monument Records filed by the PLS with the State Board of Registration shall be submitted to the City Surveyor prior to filing.

625.04 Contractor Surveying. The Contractor's PLS shall perform all construction surveying and staking that is necessary for construction of the project.

REVISION OF SECTION 625 CONSTRUCTION SURVEYING

625.05 Staking. It is the responsibility of the Contractor's PLS to adhere to industry standards and acceptable practices in regard to staking. Any restaking will be the responsibility of the Contractor's PLS at no cost to the City.

625.06 Accuracy and Tolerances. It is the responsibility of the Contractor's PLS to adhere to industry standards and applicable standards with regard to horizontal and vertical accuracy tolerances.

625.07 Responsibility and Inspection. Supervision and coordination of construction surveying and staking is the Contractor's responsibility. The City Surveyor's Office or Engineer may inspect the Contractor's surveying; however, such inspection will not relieve the Contractor of any responsibility for accuracy or completeness of work. All Contractor surveying inaccuracies, errors, or omissions shall be corrected at the Contractor's expense.

625.08 Reset Monuments and Stakes. Survey monuments, benchmarks, and other significant stakes that are damaged, destroyed, or made inaccessible by the progress of construction shall be replaced, transferred or reestablished at the Contractor's expense.

Locating, preserving, referencing, installing and restoring land monuments as described in 625.01, shall be done in accordance with Section 629, under the supervision of a PLS who is experienced and competent in Right of Way and boundary surveying and licensed in the State of Colorado.

629.09 Changes. All changes in lines and grades required by field conditions and all discrepancies in grades, alignment, location or dimensions detected by the Contractor shall be immediately submitted to the Engineer in writing. No changes in given data or plans will be allowed unless approved by the Engineer in writing. All changes shall be documented by the contractor.

629.10 Pay Quantities Measurements. The Engineer will perform all interim and final measurements deemed necessary by the City to determine contract pay quantities. The Contractor shall establish and maintain Control points and stationing as required for these measurements.

629.11 Survey Records. Survey records shall be completed as the work is done. Field survey notes for construction surveying and checking by the Contractor shall be recorded in survey records in conformance with industry standards and acceptable practices.

All survey records generated shall be the property of the City and shall be available to the City Surveyor's Office or the Engineer for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance. All survey records shall be stamped with the seal of, and signed by, the responsible PLS.

Electronic submittal of survey records may be acceptable, please coordinate with the City Surveyor's Office.

METHOD OF MEASUREMENT

625.12 Construction surveying will be measured and pay for by hours completed.

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**REVISION OF SECTION 625
CONSTRUCTION SURVEYING**

BASIS OF PAYMENT

625.13 Payment for construction surveying will be pay for by hours. Payment will be full compensation for all surveying work necessary to complete the project to include all resetting of stakes, marks, monuments and preparing survey documentation as required.

Traffic control for construction surveying will be paid for in accordance with Section 630.

When the contract does not include pay items for Construction Surveying, this item will not be paid for separately but shall be included in the work.

Payment will be made under:

Pay Item

Construction Survey

Pay Unit

Hour

**REVISION OF SECTION 627
PAVEMENT MARKING**

Section 627 of the Standard Specifications is revised as follows:

Subsection 627.01 is revised to include the following:

The Contractor is responsible for installation and removal of temporary pavement marking. The Contractor shall coordinate the work of the striping, including traffic control devices and flaggers.

Subsection 627.03 is revised to include the following:

The Contractor shall replace permanent pavement markings damaged or removed as a result of the work. Pavement marking material shall be new material of the same type which existed prior to the work commencing.

Subsection 627.11 is revised as follows:

Installation and removal of temporary pavement marking will not be measured and paid for separately, but shall be included in the cost of item 412.

Replacing permanent paving marking damaged or removed as a result of the work will not be measured and paid for separately.

REVISION OF SECTION 629 SURVEY MONUMENTATION

Section 629 of the Standard Specifications is hereby deleted and replaced with the following:

DESCRIPTION

629.01 This work consists of locating, preserving, referencing, installing and restoring the following types of land monuments by a Colorado-licensed Professional Land Surveyor (PLS). The following types of monuments, if required, shall be considered included: Primary Control monuments from which Right of Way (ROW) or any land boundary will be calculated, described or monumented; Public Land Survey System (PLSS) monuments; General Land Office (GLO) monuments; Bureau of Land Management (BLM) monuments; Mineral Survey (MS) monuments; ROW monuments; property boundary monuments; and offsets, City of Denver range points, benchmarks, easement monuments, and other monuments that are required by law or regulation to be established by a PLS, along with installing or adjusting Monument Boxes.

The production of additional documentation may be required by the City Surveyor's Office. All such work included in this section shall be performed under the supervision of a Colorado- licensed PLS.

MATERIALS AND EQUIPMENT

629.02 The Contractor shall furnish all personnel, survey equipment, safety equipment, materials and traffic control necessary to perform the required Monumentation and related surveying.

CONSTRUCTION REQUIREMENTS

629.03 A construction survey conference shall be held with the City Surveyor's Office prior to performing any surveying work under this section. The Contractor's Surveyor (PLS) and party Chief shall attend. A construction survey checklist shall be completed and signed by the City Surveyor's Office and the Contractor.

The Contractor shall check and verify all established primary horizontal and vertical control points.

All survey records generated shall be the property of the City & County of Denver and shall be available to the City Surveyor's Office for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance.

Electronic formats may be acceptable; please coordinate with the City Surveyor's Office.

Copies of any new Monument Records filed by the PLS with the State Board of Registration shall be submitted to the City Surveyor prior to filing.

629.04 Locating Monuments – This work consists of field locating all survey Monumentation as discussed in 629.01 which is in place within the project limits. A diligent search of construction zones and project limits shall be performed by the PLS.

629.05 Preserving and Referencing Monuments – All monuments as described in 629.01 shall be preserved, referenced and reset by a PLS within the project limits.

**REVISION OF SECTION 629
SURVEY MONUMENTATION**

629.05 Installing Monuments – All monuments described in 629.01 shall be preserved throughout construction. If any monuments as described in 629.01 are to be disturbed or removed during construction, it will be the responsibility of the Contractor's PLS to reset all monuments to current City & County of Denver standards. Appropriate documentation will be required for all reset monuments.

629.07 Monument Box – If required, this work shall consist of installing or adjusting monument boxes to current City or CDOT requirements including the CCD Range Point boxes.

METHOD OF MEASUREMENT

Survey monuments, monument boxes and adjustment of monument boxes will be measured by the actual number of the various types installed and accepted by the Engineer. Measurement for locating survey monuments, preserving and referencing monuments will not be measured and paid for separately.

BASIS OF PAYMENT

629.09 - The accepted items and quantities will be paid for at the contract unit price per each. Approval of the Engineer is required prior to undertaking any work identified as part of this Section.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Monument Boxes	Each
Survey Monument	Each

Prior to payment, all survey records and documentation must be submitted and accepted by the City Surveyor's Office.

The construction survey checklist, equipment calibrations and survey records will not be paid for separately but shall be included in the work. The locating of monuments, and preserving and referencing monuments will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 630
UNIFORMED TRAFFIC CONTROL**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.09 shall include the following:

Uniformed Officers - The Contractor shall employ off-duty police officers to provide traffic control and traffic enforcement throughout the project as required by the Project Manager. Authorization must be made by the Project Manager in advance of working arrangements for Uniformed Traffic Control. Arrangements for officers shall be made at least 2 weeks in advance by contacting the following police agency:

Denver Police Department (Special Events Unit)

Phone Number: (720) 913-6034

Subsection 630.17 shall include the following:

The quantity to be measured for Uniformed Traffic Control will be the total number of hours that Uniformed Traffic Control is actually used as authorized.

Subsection 630.18 shall include the following:

The accepted number of hours of Uniformed Traffic Control will be paid for at the contract unit price per hour.

Payment will be made under:

Pay Item

Uniformed Traffic Control

Pay Unit

Hour

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Section 630 of the Standard Specifications is hereby revised as follows:

Subsection 630.01 shall be revised to include the following:

The Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for review and approval of the Project Engineer. The MHT shall be developed according to this section and the construction plans.

Subsection 630.02 General shall include the following:

The flagger's STOP/SLOW sign paddle shall be 18 inches with letters six inches high.

Subsection 630.05 Traffic Cones shall include the following:

Steel drum channelizing devices shall not be used for traffic control

Subsection 630.06 Channelizing Device (fixed) shall include the following:

Non-metallic drums or tubular markers may be substituted for vertical panel channelizing devices.

Subsection 630.10(a), shall include the following:

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 methods of handling traffic shall be approved, in writing, by the Project Engineer following approval of the Traffic Engineering Services Department.

Approval of the proposed MHT does not relieve the Contractor of liability specifically assigned to him under the contract. The Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, and obstructions.

The contractor shall notify the Project Engineer by Thursday at 3:00 P.M. which streets they intend to work on the following week. This notification will be made for all phases of construction.

Subsection 630.10(a)(1) shall be added as follows:

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.10(a).

The components of the Traffic Control Plan (TCP) for this project are included in the following:

- Subsection 104.04 and Section 630 of the Standard Specifications.
- Tabulation of Traffic Engineering Items included in the plans for this project.
- Latest revised Standard Plan S-630-1, Traffic Controls for Highway Construction and Standard Plan S-630-2.

Special Traffic Control Plan requirements for this project are as follows:

1. During the construction of this project, traffic shall use the present traveled roadway.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

2. Work that interferes with traffic on will only be permitted during the following hours:
 - The Contractor shall perform all the work on the roadway between the hours of 8:30 AM and 3:30 PM or as approved by the Project Engineer. Weekend and nighttime work will be allowed with the prior written approval of the Project Engineer. During this time, only one lane can closed on each approach.
 - Work will not be permitted that directly or indirectly interferes with the flow of traffic between the hours of 5:30 AM and 8:30 AM Monday through Friday; between the hours of 3:30 PM to 6:30 PM Monday through Thursday; and after 2:00 PM on Fridays unless otherwise authorized by the Project Engineer.
 - No work on Holidays
 - Contractor shall not close lanes during special events.
 - Contractor shall coordinate lane closures with adjacent projects.
 - Contractor shall maintain business access during business hours.
 - The Contractor shall coordinate all of the work on the roadway during any special event with the City and County of Denver.
3. The Contractor shall install construction traffic control devices where they do not block or impede other existing traffic control devices or sidewalks for pedestrians, disabled persons or bicyclists. The Contractor is restricted from storing any materials, construction traffic control devices, signs, etc. in any median area or park area.
4. 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 slope, and delineated at 35 foot intervals immediately after removal operations to safeguard the traveling public.
5. Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.
6. The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Equipment to be used at night shall also be equipped with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.
7. The Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, and hike/bike paths at all times unless otherwise directed by the Engineer. Parking areas temporarily disturbed by construction activities shall be restored to a useable condition during non-working hours. Such temporary parking shall utilize an all weather surface. The Contractor shall develop an Access Maintenance Plan in coordination with, and based on the requirements of, the affected property owners and tenants, and submit it to the Engineer for approval prior to commencement of work. This plan shall detail all barricades, ramps, signs, and temporary means of access required by the property owners or tenants. Prior to commencing any work which affects access to a property, the Access Maintenance Plan for that property must be submitted and approved by the Engineer.
8. The Access Maintenance Plan shall be coordinated with all affected owners and tenants. The Access Maintenance Plan shall include documentation of this coordination, including the approval signature of each affected owner or tenant.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Should the Contractor be unable to obtain approval and signatures, documentation of the efforts made to obtain said approval and signatures must be submitted.

All access shall be maintained on surfaces equal to or better than those existing 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 surfaces.

7. The 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. All temporary access shall be a minimum of 5 feet wide and meet Americans with Disabilities Act (ADA) requirements. Acceptable all weather surfacing shall be concrete or asphalt surface, or as approved by the Engineer. Delineation of pedestrian access through the work area shall be accomplished using temporary plastic fencing.
10. The costs of maintaining access will not be paid for separately, unless otherwise provided, but shall be included in the work. Utilization of materials to be incorporated into the work may be permitted. However, any degradation or other contamination or destruction shall be corrected at the Contractor's expense prior to acceptance.
11. During non-construction periods (evenings, weekends, holidays, etc.) all work shall be adequately protected to insure the safety of vehicular and pedestrian traffic, as detailed in the Contractor's MHT. Excavations or holes shall be filled in or fenced when unattended.
12. Whenever the Contractor removes, obliterates, or overlays any pavement markings, he /she shall replace them on a daily basis prior to opening the affected areas to traffic. All temporary pavement markings shall fully comply with the Standard Specifications and Special Provisions.
13. The Contractor shall not have construction equipment or materials in the lanes open to traffic any time unless directed by the Engineer.
14. All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access, or the flow of traffic. Landscaped areas, public park areas, and roadway shoulders shall be kept clear of parking and storage of all personal and construction equipment except where approved by the Engineer.
15. The Contractor shall not place tack coat on any surface to be paved where traffic will be forced to travel upon fresh bituminous materials.
16. The 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 Regional Transportation District, RTD / 1560 Broadway, Suite 700, Denver, CO 80202 shall be contacted two business days prior to start of construction.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

17. The Contractor shall be required to maintain temporary drives at any existing establishment that has singular access off of the roadways, unless otherwise approved in writing by the property owner.
18. No work that interferes with traffic will be allowed on holidays or any day of a three-day or four-day weekend that includes a holiday. Holidays on which this restriction applies consist of those holidays recognized by the State of Colorado as listed in subsection 101.36
19. All lane closures shall be subject to the approval of the Engineer. Request for each closure shall be made 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 being utilized in continuum for the intended purpose for which they were set up.
20. During no-working hours, the roadways shall be restored to a safe travel conditions for the free flow of traffic. Any maintenance required restoring the roadways to this condition, including the pavement patching and grading, shall be done prior to opening the areas to traffic or completing work for the day.
21. The Contractor shall clean the roadway of all construction debris before opening it to traffic.
22. All flagging stations used at night shall be illuminated with floodlights. Street, highway lights and "high mast lighting" may be used for flagging station illumination when approved by the Engineer. Floodlights shall be located and directed so as not to interfere with the sight of any motorists, and the cost to be included in the work.
23. Prior to removal and resetting of any sign the Contractor and Engineer shall prepare an inventory. Any signs damaged due to the Contractor's operations shall be replaced in kind or repaired by the Contractor at no additional cost to the project.
24. Unless noted otherwise, all costs incidental to the foregoing requirements shall be included in the original contract prices for the project, including any additional traffic control items required for haul routes into the project.

Subsection 630.10 (10) shall be added as follows:

Number of hours for uniformed traffic control shall be tabulated for submittal.

Subsection 630.10 (11) shall be added as follows:

Contractor shall obtain all required access and construction permits from the City & County of Denver prior to initiating work along City right of way.

All lane closures require an arrow board to be installed.

All streets that will be reduced in the number of travel lanes should have variable message boards installed for a minimum of 3 days after the striping change to inform drivers of the lane reduction.

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REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL

Subsection 630.15 is hereby deleted and replaced with the following:

The Contractor shall furnish all other personnel – including flaggers, traffic control inspector, and traffic control supervisor - and other materials necessary to perform the Construction Zone Traffic Control as required and these quantities will not be measured but will be included in the cost of Traffic Control Management.

Temporary pavement markings for traffic control will not be measured and paid for separately, but shall be included in the work.

Subsection 630.16 is hereby deleted and replaced with the following:

All traffic control shall comply with the requirements of the FHWA MUTCD Part 6 (2009 edition) – Temporary Traffic Control.

Subsection 630.18 shall include the following:

Payment for construction zone traffic control will be measured and pay for by the days and the type of traffic control – Local or Arterial/Collector. Payment will be full compensation for all traffic control work necessary to complete the project including the installation and removal of temporary striping.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Traffic Control – Local	Day
Traffic Control – Arterial/Collector	Day

All costs incidental to maintenance of access will not be paid for separately, but shall be included in the work.

All costs incidental to the foregoing requirements shall be included in the original Contract prices for the project.

**REVISION OF SECTION 705
JOINT, WATERPROOFING AND BEARING MATERIALS**

Section 705 of the Standard specifications is hereby revised for this project as follows:

Subsection 705.01(a) shall be revised to include the following:

Sealant shall be heated only for the time limit recommended by the manufacturer. Also, the sealant shall not be reheated more times than recommended by the manufacturer.

Subsection 705.01 shall be revised to include the following:

(c) Hot Joint Sealants, Concrete Pavement. Hot-poured joint sealer material for concrete slab joints shall conform to the requirements of ASTM D 1190 or ASTM D 3405 and to the following:

Mortar blocks for the bond test shall be as described in ASTM D 1191 Coal tar base material is not acceptable.

The shipping containers shall be marked by the manufacturer with the name of the material, the name and brand of the manufacturer, the weight, the batch number and the safe heating temperature.

The materials shall be stored in accordance with manufacturer's recommendations, but they shall not be exposed to ambient temperatures in excess of 125 degrees F, or stored in direct sunlight.

The sealer material shall be melted in a heating kettle, or tank, constructed as a double boiler, with a space between the inner and outer shells filled with oil, asphalt, or other material for heat transfer and for positive temperature control.

The heating and melting unit shall be equipped so that the heat may be adjusted to provide control of the temperature of the heating medium used for melting the sealer material. The sealer material shall not be subjected to temperatures in excess of 450 degrees F at any stage or time during the melting operation.

ALLOWANCE ITEMS

DESCRIPTION

This Special Provision contains the City and County of Denver's estimate for Allowance 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.

BASIS OF PAYMENT

Payment will be made in accordance with Subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

<u>Item No.</u>	<u>Allowance Item</u>	<u>Quantity</u>	<u>Estimated Amount</u>
A/W 01	Mobilization	1	\$300,000.00

Allowance descriptions:

A/W 01: Work order mobilization will not be measured but will be paid for as a percentage of the total construction bid items on each work order. Each work order mobilization charges are paid as a Lump Sum allowed and the mobilization percentage shall be in accordance with following schedule:

Mobilization Fee Schedule:

Work Order Value	Mob Percentage (%)	Work Order Value	Mob Percentage (%)	Work Order Value	Mob Percentage (%)
Less than \$25,000.00	7.83%	\$150,000.00 to \$174,999.99	6.07%	\$300,000.00 to \$324,999.99	4.70%
\$25,000.00 to \$49,999.99	7.50%	\$175,000.00 to \$199,999.99	5.81%	\$325,000.00 to \$349,999.99	4.50%
\$50,000.00 to \$74,999.99	7.19%	\$200,000.00 to \$224,999.99	5.57%	\$350,000.00 to \$374,999.99	4.32%
\$75,000.00 to \$99,999.00	6.89%	\$225,000.00 to \$249,999.99	5.34%	\$375,000.00 to \$399,999.99	4.14%
\$100,000.00 to \$124,999.99	6.61%	\$250,000.00 to \$274,999.99	5.12%	\$400,000.00 to \$424,999.99	3.97%
\$125,000.00 to \$149,999.99	6.33%	\$275,000.00 to \$299,999.99	4.90%	\$425,000.00 or greater	3.80%

Each work orders' total mobilization payments shall not exceed the total mobilization charges allowed from this Section. No extra payments will be made for, regardless of the fact that the Contractor may have for any reason, shutting down the work on the project or moved equipment away from the project and then back again.

The "total construction bid items" used to determine the mobilization cost as listed in A/W 01 above shall be defined as only the construction bid items excluding any mobilization and traffic control cost.

Two payments will be made for the mobilization pay item. 50% of the total mobilization on each work order will be paid at the completion of mobilization for each task order. The remaining 50% of the mobilization amount on each task order will be paid at the completion of the work order when the equipment has been demobilized.

**DENVER (ONLY) NOISE ORDINANCE – PERMIT
VARIANCE APPLICATION 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? (CDOT can provide details to contractor)
- Are there limiting factors preventing this work from being conducted during the day? (CDOT 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 (CDOT 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 Affects 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 (CDOT can provide details to contractor from Roadway Construction Noise Model)
- Detail existing ambient sound levels (L90, Leq, Lmax) 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? (CDOT can provide details to contractor)
- Are there adverse health effects other than noise to be concerned with as a result of the proposed work? (CDOT can provide details to contractor)

6(d) (3) Maintain Harmony with the Spirit and Purpose of the Ordinance:

(CDOT can provide details to contractor for sec 6(d) (3))

- 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 (CDOT 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, CDOT 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.

- 1) **Construction Activity Allowable Noise Levels:** Unless the accommodations described in below are provided, construction noise levels shall not exceed:
 - a. an hourly Leq of 75 dBA, or 5 dBA greater than an ambient hourly Leq measuring more than 75 dBA, or
 - b. an Lmax 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 Leq of 75 dB(A) or an Lmax 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 of time, 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 available contact persons (for additional information or questions), contact numbers for complaints, and any other relevant parameters or programs. 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 utilize 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 sufficient 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
 - i. Manufacturer's specifications for appropriate meter use shall be followed.
 - ii. 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.
 - iii. 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 Leq. Monitoring shall be required for the following activity groups, but not be limited to:
 - i. Joint Repair
 - ii. Milling Operations
 - iii. Rubble load-out
 - iv. Paving operations

- c. Monitoring shall meet the following requirements:
 - i. Each construction activity shall be monitored a minimum of two days for Lmax and hourly Leq levels to establish an activity baseline for each activity when initially undertaken, and to establish the expected worst case situation (outside lane).
 - ii. Noise monitoring shall be provided in response to all noise complaints.
 - iii. 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 CDOT, (contractor) and DEH, shall be provided for noise monitoring that is conducted:
 - i. Manufacturer names, model numbers, and serial numbers of each SLM and acoustical calibrator used.
 - ii. Software manufacturer, program and version.
 - iii. Dates of annual certified calibration of SLM, microphone and acoustical calibrator.
 - iv. Pre- and post- monitoring calibration data for the Sound Level Meter.
 - v. Date and specific location (address if appropriate) of monitoring.
 - vi. Start time and end time of monitoring
 - vii. Ambient weather conditions including temperature, relative humidity, wind speed and cloud cover.
 - viii. Signature of technician collecting the data
 - ix. List of each hourly Leq for the monitoring period, with associated Lmax levels.
 - x. 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, CDOT and (contractor). A response, in a reasonable form requested by the caller, summarizing the investigation and any corrective actions taken by CDOT and (contractor) shall be provided to the caller. Written copies of complaints received and responses by (contractor) shall be provided weekly to DEH and CDOT.

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.