

# CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLICWORKS

## **Contract Documents for SHE 2010 TRAFFIC SIGNAL UPGRADE**

**Contract No. 201205433**



**April 9, 2012**



**DENVER**  
THE MILE HIGH CITY

**Department of Public Works**  
Engineering Division

Capital Projects Management – Dept. 506  
Right-of-Way Services – Dept. 507  
Policy and Planning – Dept. 509  
Traffic Engineering Services – Dept. 508

201 West Colfax Avenue  
Denver, CO 80202  
www.Work4Denver.com

**NOTICE OF APPARENT LOW BIDDER**

**W.L. Contractors, Inc.**  
5920 Lamar St.  
Arvada, CO. 80003

The MANAGER OF PUBLIC WORKS has considered the Bid submitted on May 3, 2012, for work to be done and materials to be furnished in and for:

**CONTRACT NO 201205433 (SHE) 2010 TRAFFIC SIGNAL UPGRADE**

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to the approval and execution of the Contract Documents by the City in accordance with the Charter of the City and County of Denver, and to your furnishing the items specified below. The award is based on the total bid items: **202-00190 through 700-90064 (Eighty One [81]) total bid items**, the total estimated cost thereof being: **One Million Three Hundred Fifty Eight Thousand Three Hundred Twenty Nine Dollars and No Cents (\$1,358,329.00)**.

It will be necessary for you to appear forthwith at the office of the Department of Public Works, Contract Administration, 201 W. Colfax Ave., Dept 614, Denver, Colorado 80202, to receive the said Contract Documents, execute the same and return them to the Department of Public Works, Contract 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;
- b. One original plus two copies of the Power of Attorney relative to Performance and/or Payment Bond; and,

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 B1.12.2 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).



***Protecting the Present & Building the Future***  
Accountability, Innovation, Empowerment, Performance, Integrity,  
Diversity, Teamwork, Respect, Excellence, Safety

**NOTICE OF APPARENT LOW BIDDER**


PROJECT NO. 201205433

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

Dated at Denver, Colorado this 12<sup>th</sup> day of June 2012.

CITY AND COUNTY OF DENVER

By   
\_\_\_\_\_  
Jose M. Cornejo, P.E.  
Manager of Public Works

GD/joa

cc: H. Bright(CAO), Gallagher (AUD), Schellinger (Treasury/Tax Compliance), DSBO Inbox, John Yu, Merritt (PW-Aud), File.

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

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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.) Acknowledgments signature and attestation required.	<input checked="" type="checkbox"/>
BF-6 - BF 6.5	a.) Fill in individual bid item dollars and totals in Numerical figures only	<input type="checkbox"/>
	b.) Complete all blanks	<input type="checkbox"/>
BF-7	a.) Write out bid total or bid totals in words and figures in the blank form space(s) provided	<input type="checkbox"/>
BF-8	a.) List all subcontractors who are performing work on this project	<input type="checkbox"/>
BF-9 – BF-10	a.) Fully complete List of Proposed Disadvantaged Business Enterprise Bidders, Subcontractors, Suppliers, Manufacturers, or Brokers – check appropriate boxes.	<input type="checkbox"/>
BF-11	a.) Complete all blanks	<input type="checkbox"/>
	b.) If Addenda have been issued, complete bottom section.	<input type="checkbox"/>
BF-12	a.) Complete appropriate sections - signature(s) required.	<input type="checkbox"/>
	b.) If corporation, then corporate seal required.	<input type="checkbox"/>
BF-13	a.) Fully complete Commitment to DBE Participation	<input type="checkbox"/>
BF-16	a.) If applicable, fully complete Joint Venture Affidavit	<input type="checkbox"/>
BF-17 – BF-18	a.) If applicable, fully complete Joint Venture Eligibility Form	<input type="checkbox"/>

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 CE Number.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
BF-21 - BF-23	a.) Per form Instructions, fully complete the Bidder/Contractor/Vendor/Proposer Disclosure form as required by IB-24.	<input type="checkbox"/>
BF-24- BF-28	Complete all DBE forms, including: a.) Contractors Performance Capability Statement b.) Anti-Collusion Affidavit c.) Assignment of Anti-Trust Claims d.) Underutilized DBE Bid Conditions Assurance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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

**BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT**

**CONTRACT NO. 201205433**  
**FEDERAL AID PROJECT NOS. :**  
**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**BIDDER:**        WL CONTRACTORS, INC.

**ADDRESS:**    5920 LAMAR STREET  
                  ARVADA COLORADO 80003  
                  \_\_\_\_\_  
                  \_\_\_\_\_

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. 201205433, SHE 2010 TRAFFIC SIGNAL UPGRADE, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated April 9, 2012.

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 Disadvantaged Business Enterprise(s)
- Commitment to Disadvantaged Business Enterprise Participation
- DBE Letter(s) of Intent
- Joint Venture Affidavit (if applicable)
- Joint Venture Eligibility Form (if applicable)
- Bid Bond
- Bidder / Contractor / Vendor / Proposer Disclosure Form

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
- Insurance Provision

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: WL CONTRACTORS, INC.

By: *Joni Ann Skelton*

Title: PRESIDENT

**ATTEST:**

By: *[Signature]*

[SEAL]

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

**BID FORM**

CONTRACT NO. 201205433  
FEDERAL AID PROJECT NOS. :

**SHE 2010 TRAFFIC SIGNAL UPGRADE**

TO: The Manager of Public Works  
City and County of Denver  
c/o Contract Administration  
201 West Colfax, Dept. 614  
Denver, Colorado 80202

BIDDER WL CONTRACTORS, INC.

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 April 9, 2012, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: **CITY OF DENVER CONTRACT NO. 201205433, SHE 2010 TRAFFIC SIGNAL UPGRADE** 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*  
*Bid Bond*  
*Addenda (as applicable)*  
*DBE Documents*  
*Equal Employment Opportunity Provisions*  
*(Appendices A, B, E and F)*  
*Bid Form*  
*Commitment to DBE Participation*  
*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*  
*Contractors Performance Capability Statement*  
*Anti-Collusion Affidavit*  
*Assignment of Anti-Trust Claims*  
*Underutilized DBE Bid Conditions Assurance*  
*On-the-Job Training (where applicable)*  
*Required Contract Provisions Federal Aid*  
*Construction Contracts*  
*Prevailing Wage Rate Schedule(s)*  
*Technical Specifications*  
*Contract Drawings*  
*Accepted Shop Drawings*  
*Certificate of Insurance*

Item No.	Description and Price	Estimated Quantity	Estimated Cost
202-00190	<b>REMOVAL OF MEDIAN COVER</b> at the unit price of \$ <u>211.50<sup>cc</sup></u> per SQUARE YARD.	92 SY	\$ <u>19,458.<sup>cc</sup></u>
202-00019	<b>REMOVAL OF INLET</b> at the unit price of \$ <u>2,810</u> per EACH.	1 EA	\$ <u>2,810.<sup>cc</sup></u>
202-00200	<b>REMOVAL OF SIDEWALK</b> at the unit price of \$ <u>11.50</u> per SQUARE YARD.	316 SY	\$ <u>3,634.<sup>cc</sup></u>
202-00201	<b>REMOVAL OF CONCRETE CURB</b> at the unit price of \$ <u>7.75</u> per LINEAR FOOT.	20 LF	\$ <u>155.<sup>cc</sup></u>
202-00203	<b>REMOVAL OF CURB AND GUTTER</b> at the unit price of \$ <u>6.50</u> per LINEAR FOOT.	868 LF	\$ <u>5,642.<sup>cc</sup></u>
202-00206	<b>REMOVAL OF CONCRETE CURB RAMP</b> at the unit price of \$ <u>11.50</u> per SQUARE YARD.	72 SY	\$ <u>828.<sup>cc</sup></u>
202-00210	<b>REMOVAL OF CONCRETE PAVEMENT</b> at the unit price of \$ <u>15.50</u> per SQUARE YARD.	52 SY	\$ <u>806.<sup>cc</sup></u>
202-00220	<b>REMOVAL OF ASPHALT MAT</b> at the unit price of \$ <u>30.<sup>cc</sup></u> per SQUARE YARD.	243 SY	\$ <u>7,296.<sup>cc</sup></u>
202-00821	<b>REMOVAL OF SIGN PANEL</b> at the unit price of \$ <u>85.<sup>cc</sup></u> per EACH.	20 EA	\$ <u>1,700.<sup>cc</sup></u>
202-00828	<b>REMOVAL OF TRAFFIC SIGNAL EQUIPMENT</b> at the unit price of \$ <u>16,500.<sup>cc</sup></u> per LUMP SUM.	1 LS	\$ <u>16,500.<sup>cc</sup></u>
203-01597	<b>POTHOLING</b> at the unit price of \$ <u>160.<sup>cc</sup></u> per EACH.	80 EA	\$ <u>12,800.<sup>cc</sup></u>
208-00034	<b>GRAVEL BAGS</b> at the unit price of \$ <u>30.<sup>cc</sup></u> per EACH.	36 EA	\$ <u>1,296.<sup>cc</sup></u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
208-00045	<b>CONCRETE WASHOUT STRUCTURE</b> at the unit price of \$ <u>635.<sup>00</sup></u> per EACH.	5 EA	\$ <u>3,175.<sup>00</sup></u>
210-00810	<b>SIGN PANEL REMOVE AND REPLACE</b> at the unit price of \$ <u>160.<sup>00</sup></u> per EACH.	43 EA	\$ <u>6,880.<sup>00</sup></u>
210-04050	<b>ADJUST VALVE BOX</b> at the unit price of \$ <u>230.<sup>00</sup></u> per EACH.	1 EA	\$ <u>230.<sup>00</sup></u>
403-00721	<b>HOT MIX ASPHALT (PATCHING) (ASPHALT)</b> at the unit price of \$ <u>160.<sup>00</sup></u> per TON.	144 TON	\$ <u>23,040.<sup>00</sup></u>
412-00835	<b>CONCRETE PAVEMENT (8")</b> at the unit price of \$ <u>61.<sup>00</sup></u> per SQUARE YARD.	45 SY	\$ <u>2,745.<sup>00</sup></u>
503-00036	<b>DRILLED CAISSON (36 INCH)</b> at the unit price of \$ <u>3,950.<sup>00</sup></u> per EACH.	20 EA	\$ <u>79,000.<sup>00</sup></u>
503-00048	<b>DRILLED CAISSON (48 INCH)</b> at the unit price of \$ <u>5,600.<sup>00</sup></u> per EACH.	1 EA	\$ <u>5,600.<sup>00</sup></u>
603-01180	<b>18" REINFORCED CONCRETE PIPE (CIP)</b> at the unit price of \$ <u>320.<sup>00</sup></u> per LINEAR FOOT.	18 LF	\$ <u>5,760.<sup>00</sup></u>
604-16050	<b>TYPE 16 CURB INLET (SINGLE)</b> at the unit price of \$ <u>7,665.<sup>00</sup></u> per EACH.	1 EA	\$ <u>7,665.<sup>00</sup></u>
604-39005	<b>4 FT I.D. MANHOLE W/ FLAT TOP</b> at the unit price of \$ <u>6,400.<sup>00</sup></u> per EACH.	1 EA	\$ <u>6,400.<sup>00</sup></u>
608-00000	<b>CONCRETE SIDEWALK (4")</b> at the unit price of \$ <u>41.<sup>00</sup></u> per SQUARE YARD.	200 SY	\$ <u>8,200.<sup>00</sup></u>
608-00010	<b>CONCRETE CURB RAMP</b> at the unit price of \$ <u>130.<sup>00</sup></u> per SQUARE YARD.	240 SY	\$ <u>31,200.<sup>00</sup></u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
609-200010	<b>CURB TYPE 2 (SECTION B)</b> at the unit price of \$ <u>26.<sup>00</sup></u> per LINEAR FOOT.	88 LF	\$ <u>1,765.<sup>00</sup></u>
609-21010	<b>CURB AND GUTTER TYPE 2 (SECTION I-B)</b> at the unit price of \$ <u>19.<sup>00</sup></u> per LINEAR FOOT.	216 LF	\$ <u>4,104.<sup>00</sup></u>
609-21020	<b>CURB AND GUTTER TYPE 2 (SECTION II-B)</b> at the unit price of \$ <u>19.<sup>00</sup></u> per LINEAR FOOT.	830 LF	\$ <u>15,770.<sup>00</sup></u>
610-00020	<b>MEDIAN COVER MATERIAL (CONCRETE)</b> at the unit price of \$ <u>10.<sup>00</sup></u> per SQUARE FOOT.	379 SF	\$ <u>3,790.<sup>00</sup></u>
613-00206	<b>2 INCH ELECTRICAL CONDUIT (PLASTIC)</b> at the unit price of \$ <u>15.<sup>00</sup></u> per LINEAR FOOT.	1,790 LF	\$ <u>24,850.<sup>00</sup></u>
613-00306	<b>3 INCH ELECTRICAL CONDUIT (PLASTIC)</b> at the unit price of \$ <u>13.<sup>50</sup></u> per LINEAR FOOT.	3,410 LF	\$ <u>46,035.<sup>00</sup></u>
613-06000	<b>ELECTRIC METER PEDESTAL CABINET AND BASE</b> at the unit price of \$ <u>3,010.<sup>00</sup></u> per EACH.	5 EA	\$ <u>15,050.<sup>00</sup></u>
613-07000	<b>PULL BOX (SPECIAL)</b> at the unit price of \$ <u>1,100.<sup>00</sup></u> per EACH.	5 EA	\$ <u>5,500.<sup>00</sup></u>
613-10000	<b>WIRING</b> at the unit price of \$ <u>17,500.<sup>00</sup></u> per EACH.	1 LS	\$ <u>17,500.<sup>00</sup></u>
614-00011	<b>SIGN PANEL (CLASS I)</b> at the unit price of \$ <u>27.<sup>50</sup></u> per EACH.	382 EA	\$ <u>10,505.<sup>00</sup></u>
614-00216	<b>STEEL SIGN POST (2 X 2 INCH TUBING)</b> at the unit price of \$ <u>12.<sup>00</sup></u> per LINEAR FOOT.	783 LF	\$ <u>9,396.<sup>00</sup></u>



Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-70117	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN) at the unit price of \$ <u>525.<sup>00</sup></u> per EACH.	32 EA	\$ <u>16,800.<sup>00</sup></u>
614-70336	TRAFFIC SIGNAL FACE (12-12-12) at the unit price of \$ <u>700.<sup>00</sup></u> per EACH.	49 EA	\$ <u>34,300.<sup>00</sup></u>
614-70565	TRAFFIC SIGNAL FACE (12-12-12-12-12) at the unit price of \$ <u>975.<sup>00</sup></u> per EACH.	18 EA	\$ <u>17,550</u>
614-72855	TRAFFIC SIGNAL CONTROLLER AND CABINET PLUS UPS (INSTALL ONLY) at the unit price of \$ <u>1,000.<sup>00</sup></u> per EACH.	5 EA	\$ <u>5,000.<sup>00</sup></u>
614-72860	PEDESTRIAN PUSH BUTTON at the unit price of \$ <u>431.<sup>00</sup></u> per EACH.	38 EA	\$ <u>16,378.<sup>00</sup></u>
614-72866	FIRE PREEMPTION UNIT AND TIMER SYSTEM at the unit price of \$ <u>8,300.<sup>00</sup></u> per EACH.	5 EA	\$ <u>41,500.<sup>00</sup></u>
614-72895	INTERSECTION DETECTION SYSTEM (CAMERA) at the unit price of \$ <u>7,000.<sup>00</sup></u> per EACH.	19 EA	\$ <u>133,000.<sup>00</sup></u>
614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL (NO MAST ARM) at the unit price of \$ <u>6,625.<sup>00</sup></u> per EACH.	2 EA	\$ <u>13,250.<sup>00</sup></u>
614-81120	TRAFFIC SIGNAL-LIGHT POLE STEEL (20' MAST ARM POLE) at the unit price of \$ <u>14,785.<sup>00</sup></u> per EACH.	1 EA	\$ <u>14,785.<sup>00</sup></u>
614-81125	TRAFFIC SIGNAL-LIGHT POLE STEEL (25' MAST ARM POLE) at the unit price of \$ <u>14,800.<sup>00</sup></u> per EACH.	5 EA	\$ <u>74,000.<sup>00</sup></u>
614-81130	TRAFFIC SIGNAL-LIGHT POLE STEEL (30' MAST ARM POLE) at the unit price of \$ <u>14,765.<sup>00</sup></u> per EACH.	2 EA	\$ <u>29,530.<sup>00</sup></u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-81140	TRAFFIC SIGNAL-LIGHT POLE STEEL (40' MAST ARM POLE) at the unit price of \$ <u>14,854.<sup>00</sup></u> per EACH.	3 EA	\$ <u>44,562.<sup>00</sup></u>
614-81145	TRAFFIC SIGNAL-LIGHT POLE STEEL (45' MAST ARM POLE) at the unit price of \$ <u>15,435.<sup>00</sup></u> per EACH.	2 EA	\$ <u>30,870.<sup>00</sup></u>
614-81150	TRAFFIC SIGNAL-LIGHT POLE STEEL (50' MAST ARM POLE) at the unit price of \$ <u>15,500.<sup>00</sup></u> per EACH.	3 EA	\$ <u>46,500.<sup>00</sup></u>
614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (55' MAST ARM POLE) at the unit price of \$ <u>15,575.<sup>00</sup></u> per EACH.	2 EA	\$ <u>31,150.<sup>00</sup></u> 31,150
614-81160	TRAFFIC SIGNAL-LIGHT POLE STEEL (60' MAST ARM POLE) at the unit price of \$ <u>17,865.<sup>00</sup></u> per EACH.	1 EA	\$ <u>17,865.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (20' MAST ARM) at the unit price of \$ <u>3,520.<sup>00</sup></u> per EACH.	1 EA	\$ <u>3,520.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (25' MAST ARM) at the unit price of \$ <u>4,200.<sup>00</sup></u> per EACH.	5 EA	\$ <u>21,000.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (30' MAST ARM) at the unit price of \$ <u>5,075.<sup>00</sup></u> per EACH.	2 EA	\$ <u>10,150.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (40' MAST ARM) at the unit price of \$ <u>6,590.<sup>00</sup></u> per EACH.	3 EA	\$ <u>19,770.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (45' MAST ARM) at the unit price of \$ <u>8,995.<sup>00</sup></u> per EACH.	2 EA	\$ <u>17,990.<sup>00</sup></u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (50' MAST ARM) at the unit price of \$ <u>9,200.<sup>00</sup></u> per EACH.	3 EA	\$ <u>27,600.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (55' MAST ARM) at the unit price of \$ <u>10,000.<sup>00</sup></u> per EACH.	2 EA	\$ <u>20,000.<sup>00</sup></u>
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (60' MAST ARM) at the unit price of \$ <u>11,500.<sup>00</sup></u> per EACH.	1 EA	\$ <u>11,500</u>
614-84000	TRAFFIC SIGNAL PEDESTAL POLE STEEL (10') at the unit price of \$ <u>1,300.<sup>00</sup></u> per EACH.	1 EA	\$ <u>1,300.<sup>00</sup></u>
614-86105	TELEMETRY (FIELD) at the unit price of \$ <u>1,800.<sup>00</sup></u> per EACH.	5 EA	\$ <u>9,000.<sup>00</sup></u>
614-87333	CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE) at the unit price of \$ <u>3,560.<sup>00</sup></u> per EACH.	2 EA	\$ <u>7,120.<sup>00</sup></u>
625-00000	CONSTRUCTION SURVEYING at the unit price of \$ <u>9,500.<sup>00</sup></u> per LUMP SUM.	1 LS	\$ <u>9,500.<sup>00</sup></u>
626-00000	MOBILIZATION at the unit price of \$ <u>42,000.<sup>00</sup></u> per LUMP SUM.	1 LS	\$ <u>42,000.<sup>00</sup></u>
627-00005	EPOXY PAVEMENT MARKINGS (PERMANENT) at the unit price of \$ <u>250.<sup>00</sup></u> per GALLON.	32 GAL	\$ <u>8000.<sup>00</sup></u>
627-30410	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS (XWALK- STOP LINE) at the unit price of \$ <u>13.<sup>00</sup></u> per SQUARE FOOT.	4,807 SF	\$ <u>62,491.<sup>00</sup></u>
630-00000	FLAGGING at the unit price of \$ <u>35.<sup>00</sup></u> per HOUR.	600 HR	\$ <u>21,000</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
630-00003	<b>UNIFORMED TRAFFIC CONTROL</b> at the unit price of \$ <u>86.<sup>00</sup></u> per HOUR.	60 HR	\$ <u>5,160.<sup>00</sup></u>
630-00012	<b>TRAFFIC CONTROL MANAGEMENT</b> at the unit price of \$ <u>585.<sup>00</sup></u> per DAY.	80 DAY	\$ <u>44,800.<sup>00</sup></u>
630-80336	<b>BARRICADE (TYPE 3) (M-A) (TEMPORARY)</b> at the unit price of \$ <u>13.<sup>00</sup></u> per EACH.	4 EA	\$ <u>52.<sup>00</sup></u>
630-80341	<b>CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)</b> at the unit price of \$ <u>13.50</u> per EACH.	24 EA	\$ <u>324.<sup>00</sup></u>
630-80342	<b>CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)</b> at the unit price of \$ <u>13.50</u> per EACH.	8 EA	\$ <u>108.<sup>00</sup></u>
630-80358	<b>ADVANCE WARNING FLASHING OR SEQUENCING ARROW (PANEL C TYPE)</b> at the unit price of \$ <u>1,270.<sup>00</sup></u> per EACH.	2 EA	\$ <u>2,540.<sup>00</sup></u>
630-80360	<b>DRUM CHANNELIZING DEVICE</b> at the unit price of \$ <u>13.<sup>00</sup></u> per EACH.	80 EA	\$ <u>1,040.<sup>00</sup></u>
630-80380	<b>TRAFFIC CONE</b> at the unit price of \$ <u>2.<sup>00</sup></u> per EACH.	200 EA	\$ <u>400.<sup>00</sup></u>
	<b>TOTAL BID ITEMS:</b>		\$ <u>1,325,329.<sup>00</sup></u>

<b>Item No.</b>	<b>Description and Price</b>	<b>Estimated Quantity</b>	<b>Estimated Cost</b>
700-70010	<b>F/A MINOR CONTRACT REVISIONS</b> at the unit price of \$ <u>17,500.00</u> per FORCE ACCOUNT.		\$ <u>17,500.00</u>
700-70074	<b>F/A OBTAIN POWER FROM XCEL</b> at the unit price of \$ <u>7,500.00</u> per FORCE ACCOUNT.		\$ <u>7,500.00</u>
700-70310	<b>F/A LANDSCAPE RESTORATION</b> at the unit price of \$ <u>3,000.00</u> per FORCE ACCOUNT.		\$ <u>3,000.00</u>
700-70380	<b>F/A EROSION CONTROL</b> at the unit price of \$ <u>1,500.00</u> per FORCE ACCOUNT.		\$ <u>1,500.00</u>
700-70589	<b>F/A ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT</b> at the unit price of \$ <u>2,500.00</u> per FORCE ACCOUNT.		\$ <u>2,500.00</u>
700-90064	<b>F/A SURVEY MONUMENTATION</b> at the unit price of \$ <u>1,000.00</u> per FORCE ACCOUNT.		\$ <u>1,000.00</u>
	<b>TOTAL FORCE ACCOUNT</b>		\$ <u>33,000.00</u>

**Total Bid Amount of:**

One million three hundred fifty-eight thousand, three hundred  
twenty-nine  
Dollars (\$ 1,358,329.00 )

[Total bid amount equals the sum of each estimated cost for item numbers 202-00190 through 700-90064 (Eighty One [81] total bid items)]

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 in the sum of the full amount of this bid, executed by a surety company acceptable to the Manager.

The WL CONTRACTORS, INC., a corporation of the State of COLORADO 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 THE BID AMOUNT. 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: \_\_\_\_\_ 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
<u>Traffic Control</u>	<u>4.2</u>	<u>Zenitram Traffic Service 4284 Meadowlark Ft. Lupton, Co</u>
<u>Erosion Control</u>	<u>.34</u>	<u>Powell Restoration, Inc. 6105 E. 58th Ave. Commerce City, Co</u>
<u>Concrete</u>	<u>5.5</u>	<u>Chato's Concrete LLC P.O. Box 21008 Denver, Co 80221</u>
<u>Storm Drain</u>	<u>2.1</u>	<u>KECI 5750 W. Airport Rd. Sedalia, Co 80135</u>
<u>Pavement Markings</u>	<u>4.5</u>	<u>KSI 550 Topeka Way Castle Rock, Co 80109</u>
<u>Survey</u>	<u>.6</u>	<u>PSWI Land Surveyors 3545 S. Platte River Drive Sheridan, Co 80110</u>
<u> </u>	<u> </u>	<u> </u>
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(Copy this page if additional room is required.)

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

 <b>DENVER</b> <small>THE MILE HIGH CITY</small>	<b>List of Proposed                  MWBE or DBE                  Bidders, Subcontractors,                  Suppliers (Manufacturers) or Brokers</b>	Office of Economic Development Division of Small Business Opportunity Compliance Unit 201 West Colfax Avenue, Dept. 907 Denver, CO 80202 Phone: 720-913-1999 Fax: 720-913-1803 DSBO@denvergov.org
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**City and County of Denver Contract No.:** 201205433

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

Address:	Contact Person:	
Type of Service:	Dollar Amount: \$:	Percent of Project:

**MWBE or DBE Prime Bidder**

Business Name:		
Address:	Contact Person:	
Type of Service:	Dollar Amount: \$:	Percent of Project:

**Subcontractors, Suppliers Manufacturers or Brokers (check one box)**

<input type="checkbox"/> Subcontractor (v)	<input checked="" type="checkbox"/> Supplier (v)	<input type="checkbox"/> Manufacturer (v)	<input type="checkbox"/> Broker (v)
--	--	---	-------------------------------------

Business Name: <u>Zenitcom Traffic Service, Inc</u>		
Address: <u>4284 Meadowlark Rd. Ft. Lepto, 80621</u>	Type of Service: <u>Traffic Control</u>	
Contact Person: <u>Uma Martinez</u>	Dollar Amount: \$: <u>55,560.<sup>00</sup></u>	Percent of Project: <u>4.2</u>

<input type="checkbox"/> Subcontractor (v)	<input checked="" type="checkbox"/> Supplier (v)	<input type="checkbox"/> Manufacturer (v)	<input type="checkbox"/> Broker (v)
--	--	---	-------------------------------------

Business Name: <u>Chates Concrete, LLC</u>		
Address: <u>P.O. Box 21008 Denver, CO 80221</u>	Type of Service: <u>Concrete</u>	
Contact Person: <u>Martene Andrade</u>	Dollar Amount: \$: <u>73,576.<sup>00</sup></u>	Percent of Project: <u>5.5</u>

<input type="checkbox"/> Subcontractor (v)	<input checked="" type="checkbox"/> Supplier (v)	<input type="checkbox"/> Manufacturer (v)	<input type="checkbox"/> Broker (v)
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Business Name: <u>Powell Restoration, Inc.</u>		
Address: <u>6105 E. 58th Ave. Commerce City, CO</u>	Type of Service: <u>Erosion Control</u>	
Contact Person: <u>Derek Butts</u>	Dollar Amount: \$: <u>4,455.<sup>00</sup></u>	Percent of Project: <u>.34</u>



Subcontractors, Suppliers Manufacturers or Brokers (check one box)				
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount \$:	Percent of Project:
<input type="checkbox"/>	<input checked="" type="checkbox"/> Subcontractor (√)	<input type="checkbox"/>	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/>

COMP-FRM-011

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 DBE(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 DBE "Letter of Intent" in five working days (5), on each of its DBE or DBE 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 words 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: 5920 LAMAR STREET

City, State, Zip Code: ARVADA, COLORADO 80003

Telephone Number of Bidder: 303-422-7985 Fax No. 303-422-1634

Contact Name for this Project: TONI WINKLER

Social Security or Federal Employer ID Number of Bidder: 841044047

Name and location of the last work of this kind herein contemplated upon which the Bidder was engaged:

DENVER MILL LEVY 2 - VARIOUS LOCATIONS WITH THE CITY AND COUNTY OF DENVER COLORADO

For information relative thereto, please refer to:

Name: JOHN YU

Title: PROJECT MANAGER

Address: CITY OF DENVER

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

Addenda Number 1 Date APRIL 26, 2012

Addenda Number \_\_\_\_\_ Date \_\_\_\_\_

Addenda Number \_\_\_\_\_ Date \_\_\_\_\_

Dated this 2ND day of MAY, 20 12

CITY AND COUNTY OF DENVER  
DEPARTMENT OF PUBLIC WORKS

CONTRACT NO. 201205433  
PROJECT NAME: SHE 2010 TRAFFIC SIGNAL UPGRADE

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:

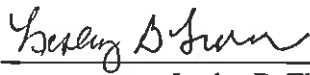
BID FORM PACKAGE

- Replace BF-6.8 with the attached BF-6.8 dated April 26, 2012
- Replace BF-7 with the attached BF-7 dated April 26, 2012

BID DOCUMENT PACKAGE


- TERMS OF PAYMENT – BDP-36  
Total bid items are Eighty-One (81) and not Seventy-Five (75)  
202-00190 through 700-90064 - Replace with the attached BDP-36 dated April 26, 2012

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

  
\_\_\_\_\_  
Lesley B. Thomas  
City Engineer

4.27.12  
\_\_\_\_\_  
Date

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

  
\_\_\_\_\_  
Contractor

ADDENDUM NO. 1

DATE: 5-2-2012

Item No.	Description and Price	Estimated Quantity	Estimated Cost
700-70010	F/A MINOR CONTRACT REVISIONS at the unit price of \$ <u>17,500.00</u> per FORCE ACCOUNT.		\$ <u>17,500.00</u>
700-70074	F/A OBTAIN POWER FROM XCEL at the unit price of \$ <u>7,500.00</u> per FORCE ACCOUNT.		\$ <u>7,500.00</u>
700-70310	F/A LANDSCAPE RESTORATION at the unit price of \$ <u>3,000.00</u> per FORCE ACCOUNT.		\$ <u>3,000.00</u>
700-70380	F/A EROSION CONTROL at the unit price of \$ <u>1,500.00</u> per FORCE ACCOUNT.		\$ <u>1,500.00</u>
700-70589	F/A ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT at the unit price of \$ <u>2,500.00</u> per FORCE ACCOUNT.		\$ <u>2,500.00</u>
700-90064	F/A SURVEY MONUMENTATION at the unit price of \$ <u>1,000.00</u> per FORCE ACCOUNT.		\$ <u>1,000.00</u>
<b>TOTAL FORCE ACCOUNT</b>			\$ <u>33,000.00</u>

**Total Bid Amount of:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Dollars (\$) \_\_\_\_\_)

[Total bid amount equals the sum of each estimated cost for item numbers 202-00190 through 700-90064 (Eighty One [81] total bid items)]

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 in the sum of the full amount of this bid, executed by a surety company acceptable to the Manager.

The \_\_\_\_\_, a corporation of the State of \_\_\_\_\_, 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 \_\_\_\_\_. 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: \_\_\_\_\_ Name: \_\_\_\_\_  
Address: \_\_\_\_\_ Address: \_\_\_\_\_

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

*Notice to Proceed*  
*Contractor's Certification of Payment Form*  
*Final/Partial Lien Release Form*  
*Certificate of Contract Release*  
*Change Orders (as applicable)*  
*Federal Requirements (as applicable)*  
*Prevailing Wage Rate Schedule(s)*  
*Technical Specifications*  
*Contract Drawings*  
*Accepted Shop Drawings*

2. **SCOPE OF WORK**

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

3. **TERMS OF PERFORMANCE**

The Contractor agrees to undertake the performance of the Work under this Contract within ten (10) days after being notified to commence work by issuance of a Notice to Proceed in substantially the form contained herein from the Manager and agrees to fully complete said Work within 210 (Two Hundred Ten Days) consecutive calendar days from the effective date of said Notice, plus such extension or extensions of time as may be granted in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

4. **TERMS OF PAYMENT**

The City agrees to pay the Contractor for the performance of all of the Work required under this Contract, and the Contractor agrees to accept as the Contractor's full and only compensation therefore, such sum or sums of money as may be proper in accordance with the price or prices set forth in the Contractor's Bid Form hereto attached and made a part hereof for bid item numbers 202-00190 through 700-90064 (Eighty One (81)) total bid items, the total estimated cost thereof being Dollars and cents (\$\_\_\_\_\_). Adjustments to said Contract Amount and payment of amounts due hereunder shall be made in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

5. **NO DISCRIMINATION IN EMPLOYMENT**

In connection with the performance of the Work under this Contract, the Contractor agrees not to refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, marital status, or physical or mental disability; and the Contractor further agrees to insert the foregoing provision in all subcontracts hereunder.

6. **DBE AND EQUAL OPPORTUNITY REQUIREMENTS**

The Contractor agrees to comply with all requirements of the City's Equal Employment Opportunity program and the Federal Disadvantaged Business Enterprise Participation program as set out in Article III, Division 2, Chapter 28 of the Denver Revised Municipal Code, and any rules, regulations and guidelines set forth thereunder for such programs. This compliance shall include the obligation to maintain throughout the term of the contract that level of DBE participation upon which the Contract was initially awarded, unless otherwise authorized by the law or any rules, regulations or guidelines.

**Signature of Bidder:**

If an Individual: \_\_\_\_\_ doing business  
as \_\_\_\_\_.

If a Partnership: \_\_\_\_\_  
by: \_\_\_\_\_, General Partner.

If a Corporation: \_\_\_\_\_ WL CONTRACTORS, INC

a COLORADO, Corporation,  
by: [Signature], its President.

Attest:  
[Signature]  
Secretary (Corporate Seal)

**If a Joint Venture, signature of all Joint Venture participants.**

Firm: N/A

Corporation ( ), Partnership ( ) or ( ) Limited Liability Company

By: \_\_\_\_\_ (If a Corporation)  
Attest: \_\_\_\_\_  
Secretary (Corporate Seal)

Firm: \_\_\_\_\_

Corporation ( ), Partnership ( ) or ( ) Limited Liability Company

By: \_\_\_\_\_ (If a Corporation)  
Attest: \_\_\_\_\_  
Secretary (Corporate Seal)

Firm: N/A

Corporation ( ), Partnership ( ) or ( ) Limited Liability Company

By: \_\_\_\_\_ (If a Corporation)  
Attest: \_\_\_\_\_  
Secretary (Corporate Seal)

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



**DENVER**  
 THE MILE HIGH CITY

**COMMITMENT TO DBE  
 PARTICIPATION**

Office of Economic Development  
 Division of Small Business Opportunity  
 Compliance Unit  
 201 West Colfax Avenue, Dept. 907  
 Denver, CO 80202  
 Phone: 720-913-1999  
 Fax: 720-913-1803  
 DSBO@denvergov.org

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

The Bidder/Proposer is committed to a minimum of 10 % DBE utilization on the project, and will submit Letters of Intent (LOI) for each subcontractor/subconsultant listed in the Bid Forms as follows:  
Hard Bids: Five (5) business days after the bid opening  
Request for Proposals: With the proposal when due

The Bidder/Proposer is unable to meet the project goal of \_\_\_\_\_ % DBE, but is committed to a minimum of \_\_\_\_\_ % DBE utilization on the project. The Bidder/Proposer understands that they must submit a detailed statement of their good faith effort in accordance with DRMC Section 28-62 and 28-67 of Ordinance 760 and must submit Letters of Intent for each DBE listed in the Bid Forms, within five (5) business days after the bid opening or at time proposal is submitted.

The Bidder/Proposer is a certified DBE 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):

WL CONTRACTORS, INC.

Firm's Representative (Please print):

Toni Ann Winkler

Signature (Firm's Representative):

*Toni Ann Winkler*

Title:

PRESIDENT

Address:

5920 LAMAR STREET

City:

ARVADA

State:

CO

Zip:

80003

Phone:

303-422-7908

Fax:

303-422-1634

Email:

toni@teamwl.com

**A copy of the DBE Certification must be attached.**





**DENVER**  
THE MILE HIGH CITY

Office of Economic Development  
Division of Small Business Opportunity  
Compliance Unit  
201 West Colfax Ave., Dept. 907  
Denver, CO 80202  
Phone: 720-913-1999 Fax: 720-913-1803

**LETTER OF INTENT (LOI)**

**INSTRUCTIONS FOR COMPLETION & SUBMISSION:**

- All lines must be completed or marked N/A for Not Applicable
- Submit the attached completed checklist with this letter
- Email to [dsbo@denvergov.org](mailto:dsbo@denvergov.org), OR
- Fax: 720-913-1803, OR
- Hand-Delivery: Office Economic Dev. 7<sup>th</sup> Fl., "DSBO Inbox"

Contract No.: 201205433		Project Name: SHE 2010 TRAFFIC SIGNAL UPGRADE			
<b>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 or DBE</b>					
Name of Bidder/Consultant:		Self-Performing: <input type="checkbox"/> Yes <input type="checkbox"/> No		Phone:	
Contact Person:		Email:		Fax:	
Address:		City:		State:	Zip:
<b>B. The Following Section is To Be Completed by the M/WBE, SBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE or DBE and Bidder/Consultant</b>					
Name of Certified Firm:				Phone:	
Contact Person:		Email:		Fax:	
Address:		City:		State:	Zip:
Please check the designation which applies to the certified firm.		<input type="checkbox"/> MBE/WBE (✓)	<input type="checkbox"/> SBE (✓)	<input type="checkbox"/> DBE (✓)	<input type="checkbox"/> Self-Performing (✓)
Indirect Utilization: If this M/WBE, SBE 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:					
<b>A Copy of the M/WBE, SBE or DBE Letter of Certification must be Attached</b>					
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE <u>On unit price bids only. identify which bid line items the M/WBE/SBE/DBEs scope of work or supply corresponds to.</u>					
<input type="checkbox"/> Subcontractor/Subconsultant (✓)		<input type="checkbox"/> Supplier (✓)		<input type="checkbox"/> Broker (✓)	
Bidder intends to utilize the aforementioned M/WBE, SBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE or DBE bid amount is:					
\$				%	
Consultant intends to utilize the aforementioned M/WBE, SBE or DBE for the Work/Supply described above. The percentage of the work of the total subconsultant M/WBE, SBE 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:				Date:	
Title:					
M/WBE, SBE or DBE or Self-Performing Firm's Signature:				Date:	
Title:					
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.*

<b>Completed ✓</b>	
<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 or DBE
<input type="checkbox"/>	Indirect Utilization: Name of subcontractor/subconsultant, supplier or broker is indicated if using the participation of a 2 <sup>nd</sup> tier subcontractor/subconsultant, supplier or broker.
<input type="checkbox"/>	Scope of work performed or item supplied by MWBE, SBE or DBE
<input type="checkbox"/>	Line items performed, if line-item bid.
<input type="checkbox"/>	Copy of MWBE, SBE or DBE Letter of Certification Attached
<input type="checkbox"/>	Designation checked for Subcontractor/Subconsultant, Supplier or Broker
	<b>If project is a hard bid...</b>
<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
	<b>If project is an RFP/RFQ...</b>
<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 or DBE Firm's Signature, Title and Date

<b>Select One ✓</b>	<b>SUBMITTED VIA... (Bidder/Consultant is strongly urged to deliver the LOI via one of the methods below. Delivery to any other point cannot be guaranteed timely delivery.)</b>
<input type="checkbox"/>	Email to DSBO@denvergov.org
<input type="checkbox"/>	Fax to 720-913-1803
<input type="checkbox"/>	Hand Delivery to Office of Economic Development, 7 <sup>th</sup> Floor, "DSBO Inbox"

The complete and accurate information that is required for the Letter of Intent is based on the following sections of the Ordinance: 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**  
THE MILE HIGH CITY

## JOINT VENTURE AFFIDAVIT

Office of Economic Development  
Division of Small Business Opportunity  
Compliance Unit  
201 West Colfax Avenue, Dept. 907  
Denver, CO 80202  
Phone: 720-913-1999  
Fax: 720-913-1803  
DSBO@denvergov.org

The Undersigned swear 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: N/A

Print Name:

Title

Signature:

Date:

### Notary Public

County of

State of

My Commission Expires:

Subscribed and sworn before me this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

Notary Signature: \_\_\_\_\_

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 Signature: \_\_\_\_\_

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 Signature: \_\_\_\_\_

Address: \_\_\_\_\_



## JOINT VENTURE ELIGIBILITY FORM

Office of Economic Development  
 Division of Small Business Opportunity  
 Compliance Unit  
 201 West Colfax Avenue, Dept. 907  
 Denver, CO 80202  
 Phone: 720-913-1999  
 Fax: 720-913-1803  
 DSBO@denvergov.org

**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, 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: N/A		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/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/M/W or DBE)	
Type of Work for which Certification was granted			

### General Information

SBE/MBE/WBE/DBE Initial Capital Contributions. \$	%
Future capital contributions (explain requirements) (attach additional sheets if necessary):	
Source of Funds for the SBE/MBE/WBE/DBE Capital Contributions.	
Describe the portion of the work or elements of the business controlled by the SBE/MBE/WBE or DBE (attach additional sheets if necessary)	
Describe the portion of the work or elements of the business controlled by non-SBE/MBE/WBE or DBE (attach additional sheets if necessary)	

**JOINT VENTURE ELIGIBILITY FORM**

**General information**

Describe the SBE/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)

N/A

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

Describe the SBE/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/MBE/WBE or DBE joint venture participant:

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

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

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 number 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 SMWBE, non-SMWBE or joint venture.

	Non-SBE/MBE/WBE/DBE	SBE/MBE/WBE/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.

N/A

**Who will they be employed by?**

Are any of the proposed joint venture employees currently employees of any of the joint venture partners?

Yes  
(v)

No  
(v)

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

COLORADO DEPARTMENT OF TRANSPORTATION – Form 605  
**CONTRACTORS PERFORMANCE CAPABILITY  
STATEMENT**

Project # 201205433

1. List names of partnerships or joint ventures  none

List decreases in the contractors fiscal or workmanship qualifications compared to the last prequalification statement submitted to CDOT. (Attach additional sheets if necessary)

a. Key personnel changes  none

b. Key equipment changes  none

c. Fiscal capability changes (legal actions, etc.)  none

d. Other changes that may affect the contractors ability to perform work  none

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE

Contractor's firm or company name

WL CONTRACTORS, INC.

By

Title

*Jonathan Stimpert*

PRESIDENT

Date

MAY 2, 2012

2<sup>nd</sup> Contractor's firm or company name (if joint venture)

N/A

By

Title

Date

**COLORADO DEPARTMENT OF TRANSPORTATION  
ANTI-COLLUSION AFFIDAVIT**

Project No.: 201205433

Location: DENVER, COLORADO

I hereby attest that I am the person responsible within my firm for the final decision as to the price(s) and amount of this bid or, if not, that I have written authorization, enclosed herewith, from that person to make the statements set out below on his or her behalf and on behalf of my firm.

I further attest that:

1. The price(s) and amount of this bid have been arrived at independently, without consultation, communication or agreement for the purpose or with the effect of restricting competition with any other firm or person who is a bidder or potential prime bidder.
- 2A. Neither the price(s) nor the amount of this bid have been disclosed to any other firm or person who is a bidder or potential prime bidder on this project, and will not be so disclosed prior to bid opening.
- 2B. Neither the prices nor the amount of the bid of any other firm or person who is a bidder or potential prime bidder on this project have been disclosed to me or my firm.
- 3A. No attempt has been made to solicit, cause or induce any firm or person who is a bidder or potential prime bidder to refrain from bidding on this project, or to submit a bid higher than the bid of this firm, or any intentionally high or non-competitive bid or other form of complementary bid.
- 3B. No agreement has been promised or solicited for any other firm or person who is a bidder or potential prime bidder on this project to submit an intentionally high, noncompetitive or other form of complementary bid on this project.
4. The bid of my firm is made in good faith and not pursuant to any consultation, communication, agreement or discussion with, or inducement or solicitation by or from any firm or person to submit any intentionally high, noncompetitive or other form of complimentary bid.
5. My firm has not offered or entered into a subcontract or agreement regarding the purchase or sale of materials or services from any firm or person, or offered, promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for an agreement or promise by any firm or person to refrain from bidding or to submit any intentionally high, noncompetitive or other form of complementary bid or agreeing or promising to do so on this project.
6. My firm has not accepted or been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value by any firm or person whether in connection with this or any other project, in consideration for my firm's submitting any intentionally high, noncompetitive or other form of complementary bid, or agreeing or promising to do so, on this project.
7. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval or submission of my firm's bid on this project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, or other conduct inconsistent with any of the statements and representations made in this affidavit.
8. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as a fraudulent concealment from the Colorado Department of Transportation, of the true facts relating to the submission of bids for this contract.

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Contractors firm or company name:

WL CONTRACTORS

By: *William Stecker*

Date: MAY 2, 2012

Title: PRESIDENT

2<sup>nd</sup> Contractors firm or company name:

N/A

By:

Date:

Title:

Sworn to before me this 2nd day of May 2012

Notary Public *Barbara Wulf*

My commission expires: Jan. 8, 2013

NOTE: THIS DOCUMENT MUST BE SIGNED IN INK.



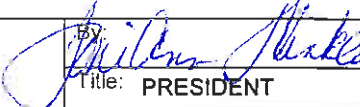
**COLORADO DEPARTMENT OF TRANSPORTATION  
ASSIGNMENT OF ANTITRUST CLAIMS**

Project No.:  
201205433

Contractor and Colorado Department of Transportation (CDOT) recognize that in actual economic practice antitrust violations ultimately impact CDOT. Therefore, for good cause and as consideration for executing this contract and for receiving payments hereunder:

1. Contractor hereby irrevocably assigns to CDOT any and all claims it may now have or which may hereafter accrues to it under federal or state antitrust laws in connection with the particular project, goods or services purchased or acquired by CDOT pursuant to this contract.
2. Contractor hereby expressly agrees:
  - a. That, upon becoming aware that a third party has commenced a civil action asserting on Contractor's behalf an antitrust claim which has been assigned to CDOT hereunder, Contractor shall immediately advise in writing:
    - (1) Such third party that the antitrust claim has been assigned to CDOT, and
    - (2) CDOT that such civil action is pending and the date on which, in accordance with subparagraph a.(1) above, Contractor notified such third party that the antitrust claim had been assigned to CDOT.
  - b. To take no action which will in any way diminish the value of the claims or rights assigned or dedicated to CDOT hereunder; and
  - c. Promptly to pay over to CDOT its proper share of any payment under an antitrust claim brought on Contractor's behalf by any third party and which claim has been assigned to CDOT hereunder.
3. Further, Contractor agrees that in the event it hires one or more subcontractors to perform any of its duties under the contract, Contractor shall require that each such subcontractor:
  - a. Irrevocably assign to CDOT (as a third party beneficiary) any and all claims that such subcontractor may have or which may thereafter accrue to the subcontractor under federal or state antitrust laws in connection with any goods or services provided by the subcontractor in carrying out the subcontractor's obligations to Contractor;
  - b. Upon becoming aware that a third party has commenced a civil action on the subcontractor's behalf asserting an antitrust claim which has been assigned to CDOT hereunder, shall immediately advise in writing:
    - (1) Such third party that the antitrust claim has been assigned to CDOT, and
    - (2) Contractor and CDOT that such civil action is pending and the date on which, in accordance with subparagraph b.(1) above, the subcontractor notified such third party that the antitrust claim had been assigned to CDOT;
  - c. Take no action which will in any way diminish the value of the claims or rights assigned or dedicated to CDOT hereunder; and
  - d. Promptly pay over to CDOT its proper share of any payment under an antitrust claim brought on the subcontractor's behalf by any third party and which claim has been assigned or dedicated to CDOT pursuant hereto.

I, acting in my capacity as officer of a bidder (bidders if a joint venture) do agree to the above assignment of antitrust claims.

Contractors firm or company name: WL CONTRACTORS, INC.	By: 		Date: MAY 2, 2012
	Title: PRESIDENT		
2 <sup>ND</sup> Contractors firm or company name: N/A	By:		Date:
	Title:		

Form 621

<b>COLORADO DEPARTMENT OF TRANSPORTATION</b> <b>BIDDERS LIST DATA and UNDERUTILIZED</b> <b>DBE (UDBE) BID CONDITIONS ASSURANCE</b>	Project #: 201205433
	Location: DENVER, COLORADO

**Prime Contractor Instructions:** This form has two sections, both must be completed and submitted with your bid. Complete Section I to list *all* subcontract quotes received (non-DBE *and* DBE). Complete Section II to report only Underutilized DBE (UDBE) participation percentages which qualify under the contract goal specification for this project. Please review CDOT Form #715 Instructions *before* completing Section II. Attach additional sheets as necessary.

**POLICY**  
 It is the policy of the Colorado Department of Transportation that underutilized disadvantaged business enterprises have equal opportunity to participate on projects financed with federal, state or local entity funds. Consistent with 49 Code of Federal Regulations (CFR) Part 26.11, the Bidders List data provided by the Contractors will provide CDOT as accurate data as possible about the universe of DBE and non-DBE firms actively seeking work on its highway construction contracts, for use in setting overall DBE goals.

**SECTION I: CDOT BIDDERS LIST INFORMATION (Non-DBEs *and* DBEs)**

- Are all subcontract bids (quotes) received by your firm for this project listed below?  Yes  No
- If No, make certain any additional subcontract bidding information is submitted to the CDOT Business Programs Office before 4:00 pm on the day after bids are opened to ensure CDOT has the best data possible for setting future DBE goals (use the same table format as below):  
 CDOT Business Programs Office  
 4201 E. Arkansas Ave., Room 200  
 Denver, Colorado 80222      FAX: 303-757-9019      EMAIL: eo@dot.state.co.us
- The most recent CDOT Bidders List will be posted online at: [www.dot.state.co.us/EEO/DBEProgramPage.htm](http://www.dot.state.co.us/EEO/DBEProgramPage.htm)

Name of firm submitting Bid/Quote	Certified DBE firm?		Work item(s) description	Firm being used?		
	Yes	No		Yes	No	Maybe
1. Zenifram T.S. Inc.	X		Traffic Control	X		
2. Ekshair Concrete	X		Concrete	X		
3. Powell Reston	X		Erosion Control	X		
4. KECS		X	Storm Drain	X		
5. KSI		X	Pavement Markings	X		
6. P.S.W.I		X	Survey	X		
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						

Name of firm submitting Bid/Quote	Certified DBE firm?		Work item(s) description	Firm being used?		
	Yes	No		Yes	No	Maybe
15.						
16.						
17.						
18.						
19.						
20.						

**SECTION II: UNDERUTILIZED DBE (UDBE) PARTICIPATION COMMITMENT**

- Total eligible Underutilized DBE (UDBE) percentage amount from Box A below: 10.00 %
- Will your company's Underutilized DBE (UDBE) participation commitment meet the contract goal?  Yes  No
- List the UDBE firms, committed work items, and eligible UDBE percentage of your bid committed to each.

UDBE Firm name	Certification #	Committed work item(s)	% Commitment toward DBE Goal*
1. Zenitram T.S.I.	CE00813	Traffic Control	4.2 %
2. Powell Restoration	8702	Erosion Control	1.34 %
3. Chato's Concrete	8395	Concrete	5.5 %
4.			. %
5.			. %

**BOX A: TOTAL ELIGIBLE UDBE PERCENTAGE AMOUNT (Round to nearest hundredth)** → 10.04 %

\* Detailed Instructions on how to calculate DBE commitment amounts are available on CDOT Form #715 and in the "Counting DBE Participation Toward Contract Goals and CDOT's annual DBE goal" section of the "DBE - Definitions and Requirements" in the *Standard Special Provisions*.

I understand that, if my company is determined to be the low bidder for the contract on this project, I must submit a completed CDOT Form #715 CERTIFICATION OF UNDERUTILIZED DBE PARTICIPATION for each firm listed in Section II of this form to the Transportation Department by 4:00 pm on the *third* work day after the day bids are opened. The actual amounts submitted on each CDOT Form #715 must equal or exceed the DBE percentage commitments documented on this form. In addition, if my company does not meet the DBE/UDBE goal for this project, I must submit a completed CDOT Form #718 DBE GOOD FAITH EFFORT DOCUMENTATION before 4:00 pm on the *day after* bids are opened. CDOT Form #715s submitted for firms not included on this form, OR for amounts exceeding those listed on this form, will be accepted but NOT counted as Good Faith Efforts. Only the efforts the contractor made *prior* to the bid opening will count as Good Faith Efforts.

I understand my obligation to abide by the Policy stated above Section I. I shall not discriminate on the basis of race, color, age, sex, national origin, or handicap in the bidding process or the performance of contracts.

**I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE IN THIS DOCUMENT ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.**

Company Name: WL CONTRACTORS, INC.	Date: 5 / 2 / 2012
Company Officer Signature: 	Title: President

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

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

**CONTRACT NO. 201205433  
SHE 2010 TRAFFIC SIGNAL UPGRADE**

**STATEMENT OF QUANTITIES**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Quantity</b>
202-00190	REMOVAL OF MEDIAN COVER	92 SY
202-00019	REMOVAL OF INLET	1 EA
202-00200	REMOVAL OF SIDEWALK	316 SY
202-00201	REMOVAL OF CONCRETE CURB	20 LF
202-00203	REMOVAL OF CURB AND GUTTER	868 LF
202-00206	REMOVAL OF CONCRETE CURB RAMP	72 SY
202-00210	REMOVAL OF CONCRETE PAVEMENT	52 SY
202-00220	REMOVAL OF ASPHALT MAT	243 SY
202-00821	REMOVAL OF SIGN PANEL	20 EA
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1 LS
203-01597	POTHOLING	80 EA
208-00034	GRAVEL BAGS	36 EA
208-00045	CONCRETE WASHOUT STRUCTURE	5 EA
210-00810	SIGN PANEL REMOVE AND REPLACE	43 EA
210-04050	ADJUST VALVE BOX	1 EA
403-00721	HOT MIX ASPHALT (PATCHING) (ASPHALT)	144 TON
412-00835	CONCRETE PAVEMENT (8")	45 SY
503-00036	DRILLED CAISSON (36 INCH)	20 EA
503-00048	DRILLED CAISSON (48 INCH)	1 EA
603-01180	18" REINFORCED CONCRETE PIPE (CIP)	18 LF
604-16050	TYPE 16 CURB INLET (SINGLE)	1 EA
604-39005	4 FT I.D. MANHOLE W/ FLAT TOP	1 EA
608-00000	CONCRETE SIDEWALK (4")	200 SY
608-00010	CONCRETE CURB RAMP	240 SY
609-200010	CURB TYPE 2 (SECTION B)	88 LF
609-21010	CURB AND GUTTER TYPE 2 (SECTION I-B)	216 LF
609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B)	830 LF
610-00020	MEDIAN COVER MATERIAL (CONCRETE)	379 SF
613-00206	2 INCH ELECTRICAL CONDUIT (PLASTIC)	1,790 LF
613-00306	3 INCH ELECTRICAL CONDUIT (PLASTIC)	3,410 LF
613-06000	ELECTRIC METER PEDESTAL CABINET AND BASE	5 EA
613-07000	PULL BOX (SPECIAL)	5 EA



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

**CONTRACT NO. 201205433  
SHE 2010 TRAFFIC SIGNAL UPGRADE**

**STATEMENT OF QUANTITIES**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Quantity</b>
613-10000	WIRING	1 LS
614-00011	SIGN PANEL (CLASS I)	382 EA
614-00216	STEEL SIGN POST (2 X 2 INCH TUBING)	783 LF
614-70117	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN)	32 EA
614-70336	TRAFFIC SIGNAL FACE (12-12-12)	49 EA
614-70565	TRAFFIC SIGNAL FACE (12-12-12-12-12)	18 EA
614-72855	TRAFFIC SIGNAL CONTROLLER AND CABINET PLUS UPS (INSTALL ONLY)	5 EA
614-72860	PEDESTRIAN PUSH BUTTON	38 EA
614-72866	FIRE PREEMPTION UNIT AND TIMER SYSTEM	5 EA
614-72895	INTERSECTION DETECTION SYSTEM (CAMERA)	19 EA
614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL (NO MAST ARM)	2 EA
614-81120	TRAFFIC SIGNAL-LIGHT POLE STEEL (20' MAST ARM POLE)	1 EA
614-81125	TRAFFIC SIGNAL-LIGHT POLE STEEL (25' MAST ARM POLE)	5 EA
614-81130	TRAFFIC SIGNAL-LIGHT POLE STEEL (30' MAST ARM POLE)	2 EA
614-81140	TRAFFIC SIGNAL-LIGHT POLE STEEL (40' MAST ARM POLE)	3 EA
614-81145	TRAFFIC SIGNAL-LIGHT POLE STEEL (45' MAST ARM POLE)	2 EA
614-81150	TRAFFIC SIGNAL-LIGHT POLE STEEL (50' MAST ARM POLE)	3 EA
614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (55' MAST ARM POLE)	2 EA
614-81160	TRAFFIC SIGNAL-LIGHT POLE STEEL (60' MAST ARM POLE)	1 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (20' MAST ARM)	1 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (25' MAST ARM)	5 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (30' MAST ARM)	2 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (40' MAST ARM)	3 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (45' MAST ARM)	2 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (50' MAST ARM)	3 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (55' MAST ARM)	2 EA
614-83000	TRAFFIC SIGNAL MAST ARM STEEL (60' MAST ARM)	1 EA
614-84000	TRAFFIC SIGNAL PEDESTAL POLE STEEL (10')	1 EA
614-86105	TELEMETRY (FIELD)	5 EA
614-87333	CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)	2 EA



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

**CONTRACT NO. 201205433  
SHE 2010 TRAFFIC SIGNAL UPGRADE**

**STATEMENT OF QUANTITIES**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Quantity</b>
625-00000	CONSTRUCTION SURVEYING	1 LS
626-00000	MOBILIZATION	1 LS
627-00005	EPOXY PAVEMENT MARKINGS (PERMANENT)	32 GAL
627-30410	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS (XWALK-STOP LINE)	4,807 SF
630-00000	FLAGGING	600 HR
630-00003	UNIFORMED TRAFFIC CONTROL	60 HR
630-00012	TRAFFIC CONTROL MANAGEMENT	80 DAY
630-80336	BARRICADE (TYPE 3) (M-A) (TEMPORARY)	4 EA
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	24 EA
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	8 EA
630-80358	ADVANCE WARNING FLASHING OR SEQUENCING ARROW (PANEL C TYPE)	2 EA
630-80360	DRUM CHANNELIZING DEVICE	80 EA
630-80380	TRAFFIC CONE	200 EA
700-70010	F/A MINOR CONTRACT REVISIONS	17,500.00
700-70074	F/A OBTAIN POWER FROM XCEL	7,500.00
700-70310	F/A LANDSCAPE RESTORATION	3,000.00
700-70380	F/A EROSION CONTROL	1,500.00
700-70589	F/A ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT	2,500.00
700-90064	F/A SURVEY MONUMENTATION	1,000.00

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

**NOTICE OF INVITATION FOR BIDS  
FEDERAL AID PROJECT NO SHE C010-105  
CITY OF DENVER CONTRACT NO. 201205433**

**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**BID SCHEDULE:  
11:00 AM, Local Time  
MAY 03, 2012**

Sealed bids will be received at the Office of Economic Development (OED) Reception Desk located on the 2<sup>nd</sup> floor at 201 West Colfax, Denver, CO 80202, beginning at 10:30 a.m., and no later than 11:00 a.m., on the bid date.

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 West Colfax Avenue, Department 614, Denver, Colorado 80202. All properly delivered bids will then be publicly opened and read aloud in Room 1.D.1 on the 1st. floor at 201 West Colfax, Denver, Colorado 80202.

Prior to submitting a bid, the bidder shall consult the Contractor's Bulletin Board located at 201 W. Colfax, 2<sup>nd</sup> Floor, Denver, Colorado, 80202 and/or [www.work4denver.com](http://www.work4denver.com).

**GENERAL STATEMENT OF WORK:**

Reconstruct and upgrade 5 existing traffic signals with the City and County of Denver. These traffic signals are located at (1) 1-70-East Bound off ramp and Colorado Blvd; (2) 1-225 South Bound off ramp and Tamarac Dr; (3) Alameda Ave and Pecos St; (4) Sheridan Blvd and Florida St; (5) Hampden Ave and Oneida St. The project scope is to remove the existing traffic signal equipment – poles, signal and pedestrian indications, controllers, cabinets, pull boxes, and associated equipment – at each of these intersections and replace them with a new traffic signal. All new signals shall be constructed in accordance with the current City and County of Denver – Traffic Engineering Services – standards. Civil upgrades and improvements such as ADA ramps and new sidewalks are also included in this project.

**ESTIMATED CONSTRUCTION COST:**

The estimated cost of construction for this project is between \$915,000.00 and \$1,239,000.00.

**DOCUMENTS AND BID INFORMATION AVAILABLE:**

Contract Documents complete with Technical Specifications and, if applicable, construction drawings will be available on the first day of publication at: [www.work4denver.com](http://www.work4denver.com). To download digital Contract Documents at a cost of \$10.00 per download, reference eBid Document Number #1985373. Contact QuestCDN at 952-233-1632 or [info@questcdn.com](mailto:info@questcdn.com) for assistance.

**PRE-BID CONFERENCE:**

A pre-bid conference will be held for this Project at 10:00 AM, local time, on APRIL 16, 2012. This meeting will take place at 201 W. Colfax Ave., Denver, CO 80202 in conference room 1.D.1.

**DEADLINE TO SUBMIT QUESTIONS:.....APRIL 25, 2012 3:00PM Local time.**

**PREQUALIFICATION REQUIREMENTS:**

Each bidder must be prequalified as a 3a TRAFFIC SIGNAL in the \$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 West Colfax Avenue, Department 506, Denver, Colorado 80202. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at [www.denvergov.org/prequalification](http://www.denvergov.org/prequalification) or call 720-865-2539 for prequalification information ONLY.



**DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION:**

Federally-funded construction, reconstruction, remodeling, and professional design services contracts made and entered into by the City and County of Denver are subject to Federal Statutes and Regulations regarding Disadvantaged Business Enterprise participation and all Disadvantaged Business Enterprises Utilization.

The Director of the Division of Small Business Opportunity is authorized to establish project goals for expenditures on construction, reconstruction and remodeling and professional design services work let by the City and County of Denver. The specific goal for this project is:

**10% Disadvantaged Business Enterprise (DBE)**

The project goal must be met with certified participants as set forth in 49 CFR Part 26. For compliance with good faith effort requirements, as set forth in Part 26, the DBE solicitation level required for this project is 100% of the City and Denver's certified DBE's and 100% of the State of Colorado's Department of Transportation (CDOT's) certified DBE's.

The Director of the Division of Small Business Opportunity urges all participants in the construction, reconstruction, remodeling, and professional design services projects not to discriminate against women and minorities or any other persons and to assist in achieving these goals.

The CDOT Form 347, Certification of EEO Compliance, is no longer required to be submitted in the bid package. This form certified that the contractor/proposed subcontractors were in compliance with the Joint Reporting Committee EEO-1 form requirements. The EEO-1 Report must still be submitted to the Joint Reporting Committee if the contractors and subcontractors meet the eligibility requirements (29CRF 1602.7); CDOT will, however, no longer require certification.

**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 City and County of Denver reserves the right to reject any or all bids and to waive informalities in bids.

Publication Dates: April 9, 10, & 11, 2012

Published In: The Daily Journal

If applicable, a shortened version of this Notice of Invitation for Bids and the Statement of Quantities can be viewed on the City and County of Denver website at:

<http://www.denvergov.org/SearchBidAdvertisements/tabid/385460/Default.aspx>

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

**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.

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

Each bidder must sign the Bid Form and give the bidder's current business address. If an individual, the signature must be of the individual offering the bid; if a partnership, the signature must be that of a general partner; and if a corporation, both the president and the secretary must sign and the seal of the corporation must be affixed. Signatures of other persons may be acceptable if the bid contains sufficient evidence, satisfactory to the City in its sole discretion, to indicate that the other persons are authorized to bind the bidder.

**IB-5 UNACCEPTABLE BIDS**

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

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

**IB-7 ONLY ONE BID ACCEPTED**

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

**IB-8 BID GUARANTEE**

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

The bid guarantee shall be in the amount of **five percent (5%)** of the total bid unless otherwise specified in the Notice of Invitation for Bids and on the form appearing in the Contract Documents in the Bid Form and Submittal Package. Failure to submit a proper bid guarantee, satisfying all of the requirements specified herein and on the form provided herein shall render the bid non-responsive and may constitute cause for rejection.

Following award and execution of the Contract by the Apparent Low Bidder, or earlier in the sole discretion of the City, bid guarantees of all but the Apparent Low Bidder will be returned. When the Apparent Low Bidder executes the Contract and delivers to the City satisfactory performance and payment bonds, required insurance documentation, and has satisfied all conditions precedent to contract execution by the City, and after approval, if any, by the Council of the City of the proposed Contract with the Apparent Low Bidder, the bid guarantee of the Apparent Low Bidder shall be returned. Such return shall be made within one hundred twenty (120) days from date bids are opened unless otherwise specified in the Special Contract Conditions.

**IB-9 SITE INSPECTION AND INVESTIGATIONS**

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

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

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

**IB-10 INCONSISTENCIES**

Any seeming inconsistencies or ambiguities between different provisions of the Contract Documents or any point which the bidder believes requires a decision or interpretation by the City must be inquired into by the bidder by addressing a formal written communication to the Manager of 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. All low bidders' bids will be reviewed for responsiveness to the requirements of the Contract Documents and whether or not the bids contain irregularities which could give any bidder an unfair advantage.

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

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

As its best interests may appear, the City and County of Denver reserves the right to waive informalities in bids, to reject any and all bids and to re-bid 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 bound sets of 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 non-responsive 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 sufficient copies of the Contract Documents by incorporating all of the documents submitted by the Apparent Low Bidder into executable copies of the Contract Documents made available pursuant to the Notice of Invitation for Bids. These copies will then be made available to the Apparent Low Bidder who shall thereafter properly sign all of the copies. 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 the 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**

In preparing any bid hereunder, the Contractor must comply with and should carefully consider 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.

At the time of the preparation of the Contract Documents, the then-current prevailing wage rates applicable to this Project shall be bound within the Contract Documents made available to potential bidders for the Project. If, more than ten (10) days prior to the actual date of bid opening, the Career Service Board determines that prevailing wages rates different from those bound in the Contract Documents are applicable to one or more of the various classes of laborers, mechanics and workers encompassed by this Project, such different prevailing wage rates shall be provided in an addendum. If different prevailing wage rates are determined by the Career Service Board ten (10) or less days prior to the actual date of bid opening, the City will determine on a case by case basis in its sole discretion whether such different prevailing wage rates are to be included in an addendum. In conjunction with such determination, the City may elect, in its sole discretion, to postpone the date of bid opening on the Project. In any event, the bidder will be held, at

the actual date of bid opening, to those prevailing wage rates incorporated into the Contract Documents and as modified by any such addenda.

These prevailing wage rates shall be considered the **minimum** City prevailing wage rates to be paid by all contractors or subcontractors for a period not to exceed one (1) year from the date of the Contract. Increases in prevailing wages subsequent to the date of the Contract for a period not to exceed one (1) year shall not be mandatory on either the contractor or subcontractors. Future increases in prevailing wages on contracts whose period of performance exceeds one (1) year shall be mandatory for the contractor and subcontractors only on the yearly anniversary date of the Contract. The **minimum** City prevailing wage rate for any such subsequent yearly period or portion thereof shall be the wage rates in effect on the yearly anniversary date of the contract which begins such subsequent period. In no event shall any increases in prevailing wages over the amounts thereof as stated in such Technical Specifications and addenda thereto result in any increased liability on the part of the City and the possibility and risk of any such increase is assumed by all contractors entering into any such contract with the City. Decreases in prevailing wages subsequent to the date of the contract for a period not to exceed one year (1) shall not be permitted. Decreases in prevailing wages on contracts whose period of performance exceeds one (1) year shall not be effective except on the yearly anniversary date of the contract.

### **IB-23 TAX REQUIREMENTS**

General. Bidders are referred to the General Contract Condition 322, 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 DISCLOSURE OF PRINCIPALS**

Pursuant to D.R.M.C. 20-69, any bid in excess of \$100,000.00 must be accompanied by a separate detachable page setting forth the following information:

- (1) The name of any officer, director, owner or principal of the business entity, including identity of any shareholder who owns or controls 5% or more of the business entity, and either 1) the names of his or her spouse, and children under eighteen years of age; or 2) a statement that he or she or his or her spouse, or children, if any, under the age of eighteen have or have not made a contribution, as defined in D.R.M.C. 15-32, or contribution in kind, as defined in D.R.M.C. 15-32, to any candidate, as defined in D.R.M.C. 15-32, during the last five years and identifying by name himself or herself or any spouse or child under the age of eighteen who has made such a contribution or contribution in-kind to a candidate.
- (2) The names of any subcontractors or suppliers whose share of the bid exceeds \$100,000.00 of the contract or formal bid amount.
- (3) The names of any unions with which the bidder has a collective bargaining agreement.

**If the total bid amount is in excess of \$500,000.00, the information required in (1) above must be provided at the time of bid submittal.** and the information required in (2) and (3) must be submitted in a

timely fashion prior to award. The list of subcontractors required by this instrument is different and separate from the bidding list required on BF-4.

**If the total bid amount is less than \$500,000.00 but more than \$100,000.00, such information must be provided prior to award of the contract.** Failure to provide the required information in a timely fashion shall render any bid to which D.R.M.C. 20-69 applies non-responsive.

While a bidder or supplier who has already disclosed such information need not provide such information with a second or subsequent bid or proposal unless such information has changed, it shall be the responsibility of each such bidder or proposer to verify that such information is still current as of the date of such subsequent bid or proposal and is in fact on file with the City Clerk.

A form which should be used for such disclosure is contained in the Special Conditions Section of the Contract Documents. The form is entitled: Bidder/Contractor/Vendor/Proposer Disclosure. Failure to provide or update the required information in a timely fashion shall render any bid to which D.R.M.C. 20-69 applies non-responsive.

#### **IB-25 DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS**

Department of Transportation (DOT) 49 CFR Part 26 ("Part 26") applies to this Project and will be incorporated into any agreement entered into by the City and contained in County of Denver Bid Documents. It is the policy of DOT and the City and County of Denver that DBEs to ensure non-discrimination in the award and administration of DOT-assisted contracts financed in whole or in part with Federal funds. Consequently, the Bidders must fully comply with the DBE requirements of Part 26 in bidding and performing hereunder.

The contractor, sub recipient or subcontractor shall not discriminate on the basis or race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deemed appropriate. Each contract signed by the contractor with a subcontractor must include this paragraph.

Part 26 provides for the adoption of a good faith goals program, to be administered by the Division of Small Business Opportunity (DSBO). As such, each bidder must comply with the terms and conditions of the Part 26 in making its bid and, if awarded the Contract, in performing all Work thereunder. A bidder's failure to comply with Part 26, any Rules or Regulations promulgated pursuant thereto, or any additional requirements contained herein may render a bid non-responsive and may constitute cause for rejection.

In order to comply with the bid requirements of Part 26, a Bidder shall either meet the established DBE Project goal or, in the alternative, demonstrate that the bidder has made sufficient good faith efforts to meet the goal. In preparing a bid to meet the established DBE Project goal, bidders should consider the following instructions relating to compliance with Part 26:

1. Under Part 26, the Director of the Division of Small Business Opportunity establishes a project goal for this project. 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 Disadvantage Business Enterprise Bidders, Sub-contractors, Suppliers, Manufacturers, or Brokers" the name, address, work description/supply, committed level of participation and other required information for each DBE of any tier which the bidder intends to use in performing the Work on this Project. Only DBEs identified and the levels of participation listed for each on this 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 in determining responsiveness.
3. All DBE firms listed on the Bid Form must be properly certified under guidelines of the Department of Transportation 49 CFR Part 26 by the City of Denver DSBO's Office or the State of Colorado Department of Transportation (CDOT's) Office in order to count towards



meeting the designated goals. Both DSBO and CDOT maintain a current listing of certified DBE firms. The DBE Directory is located at [www.dot.state.co.us/app\\_ucp/](http://www.dot.state.co.us/app_ucp/). Bidders are encouraged to utilize these directories to assist them in locating DBEs for the work/supply required on the project. The most current directories must be utilized in preparing a bid. DBE certification does not, however, constitute a representation or warranty by the City as to the qualification of any listed firm.

4. In accordance with the requirements of Part 26, DSBO will evaluate each bid to determine the responsiveness of the bid to Part 26 requirements. In determining if a Bidder's committed levels of participation meet or exceed the stated DBE goal, DSBO will 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 DBE percentage goal established for the project to determine the exact dollar amounts of required DBE participation for the Project. These amounts will then be compared against the dollar amounts for the DBE firm(s) committed for participation by the Bidder. If the total dollar amount of participation listed meets or exceeds the established DBE dollar amount goal listed, then the DSBO will determine that goals have been met.
  - b. In addition, DSBO will determine the exact commitment percentage for each listed DBE firm by dividing the dollar amount listed for each firm by the total base bid dollar amount submitted by the bidder. These individual percentages, when totaled for all listed DBEs, will establish the total committed percentage level of DBE participation that the bidder must comply with during the life of the Contract. In all cases, the committed percentage level of DBE participation must equal or exceed the assigned DBE goal for the Project.
  - c. In providing the exact dollar amount of participation for each listed DBE firm 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 both dollar amounts and percentage for DSBO to determine that the bidder has met or exceeded the applicable DBE goal.
  - d. As previously mentioned compliance with the DBE 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 goals. However, should any designated alternate be selected by the City for inclusion in the Contract ultimately awarded, the DBE 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 DBE goal percentage based upon the total base bid, including all such items that he 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 DBE goal on the remaining reduced amount.
5. In accordance with Part 26 the City and County of Denver will require the total DBE participation commitment to be achieved in accordance with the following:

DBE bidders can count themselves for self-performance toward meeting the DBE goal, but only for the scope of work and at a percentage level they will be actually performing themselves.

DBE credit will be counted only for work actually performed by the DBEs own forces.

Work actually performed by DBEs is deemed to include the cost of materials and supplies purchased and equipment leased by the DBE from non-DBE sources. Work subcontracted can only count if the subcontractor is another DBE.

The entire fee or commission charged by a DBE, if reasonable and not excessive, will be counted.

Under Joint Ventures, the total value of distinct and clearly defined portions of the work of the contract that the DBE performs with its own workforce will be counted.

Each DBE must perform a "commercially useful function" to be counted toward the goal and at least 30% of the work must be performed by a DBE of the total cost of its contract for the DBE to be presumed to be performing a "commercially useful function".

Supplies or materials can be only counted for 60% of the total cost of the materials or supplies toward meeting the DBE goal and a DBE manufacture can count 100% of the cost of the materials or supplies toward the goal. Manufactures' representatives and packagers shall be counted in the same manner as brokers.

In utilizing the DBE participation of a Broker, only the bona fide fees and commissions earned by them for their performance of a commercially useful function will count toward meeting the project goals. The Bidder must separate the bona fide brokerage fees and 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.

6. On or before the fifth (5th) working day after bid opening, all of the Bidders are required to submit an executed "DBE Letter of Intent" for each DBE listed on the Bid Form as a subcontractor, supplier, manufacturer, or broker of any tier. Each Letter of Intent shall be submitted only for the DBEs listed at the time of bid opening, since this is the only participation that will be counted toward satisfaction of the project goals. A form for the DBE Letter of Intent is included with the Bid Form. The DBE 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 DBE and/or that its subcontractor(s) and supplier(s), manufacturer(s), and broker(s) will do so. Each DBE Letter of Intent shall be accompanied by either a copy of the City and County of Denver's (DSBO) DBE certification letter or the State of Colorado's (CDOT) DBE certification letter and DBE Work Codes Sheet for each proposed DBE firm 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.

In preparing a bid to demonstrate a good faith effort, Bidders should consider the following instructions relating to compliance with Part 26:

1. If any Bidder is unable to meet the designated project DBE goal at the time the bids are opened or elects to present a good faith effort in lieu of or in addition to attempting to satisfy the designated project goals, that Bidder shall submit on or before the fifth (5th) working day after the bid opening a detailed statement, with supporting documentation, setting forth its good faith efforts made prior to bid opening. The different kinds of efforts as well as the quantity and intensity of the efforts will be considered in determining whether the Bidder has made a good faith effort. A Bidder who fails to meet the project goal and cannot show, to the Director's satisfaction, that it made a good faith effort to meet the DBE goal shall be considered non-responsive.
2. For compliance with good faith effort requirements as set forth in Part 26, the DBE solicitation level required for this project is 100% of the City and County of Denver's certified DBE's and 100% of the State of Colorado's Colorado Department of Transportation (CDOT's) certified DBE's. Therefore, both DBE certified lists must be utilized in solicitation

effort in order to meet the good faith effort requirement. The statement of good faith efforts shall include a specific response to each of the following as further defined by rule or regulation. The Bidder must identify the portions of the project that it will self-perform and the Bidder must solicit DBE participation in every category in which it will not self perform. The required level of DBE participation is set forth in the Notice of Invitation for Bids, which is also contained within the project Contract documents. A Bidder may include any additional information the Bidder believes may be relevant. Failure of a Bidder to show good faith efforts as to any one of the following categories shall render its overall good faith showing insufficient and its bid non-responsive. Item (1) through (4) of the D.R.M.C. Section 28-208, Subsection (b) are set forth below:

- a. If pre-bid meetings are scheduled by the City at which DBEs may be informed of subcontracting opportunities under a proposed contract to be bid, attendance at such pre-bid meetings is not mandatory; however, bidders are responsible for the information provided at these meetings. The good faith effort statement must reflect the bidder's knowledge of the information provided at these meetings.
- b. Written verification of the placing of an advertisement soliciting bids from DBEs for three (3) consecutive days in general or construction-related publications approved by the Director. All such advertisements must expressly advertise a given project and expressly state that DBE participation on that project is being sought; other incidental references to the project or listing of the bidder as a plan holder are not sufficient. All such advertisements shall begin at least fifteen (15) days prior to bid opening. If the City publishes notice for bids on a project less than fifteen (15) days prior to bid opening, verification of advertisements for at least four (4) consecutive days shall be provided.
- c. Verification of efforts made by the Bidder to contact, by written notice, all certified DBEs who have the capability to perform the work of the contract, that their interest in the contract is being solicited, in sufficient time to allow the DBEs to participate effectively is required. The notice shall expressly describe the potential subcontracting, supplier or broker opportunities for all applicable certification categories for the particular project.
- d. Verification that, reasonably consistent with industry practice and the Bidder's past practices on similar projects, the Bidder analyzed the needs of the project in light of such industry practice and past practice, together with the goal of facilitating DBE participation on the project, and identified portions of the work to be performed by DBEs in order to achieve the project goal.
- d. For each DBE which contacted the Bidder or which the Bidder contacted or attempted to subcontract with, consistent with industry practice, a statement giving the reasons why the Bidder and the DBE did not succeed in reaching a subcontracting, supplier, manufacturer or broker agreement.
- e. Verification that the Bidder rejected DBEs because they did not submit the lowest bid or they were not qualified. Such verification shall include a verified statement of the amounts of all bids received from potential subcontractors, suppliers, manufacturers or brokers on the project and a verified statement that the Bidder rejected DBEs because they did not submit the lowest bid from among such bids or were not qualified.
- f. Verification that the Bidder made efforts to assist DBEs in obtaining bonds, if any are required.

In accordance with Part 26 the Bidder agrees that it is committed to meeting either the DBE participation goal or the DBE participation set forth in its statement of good faith efforts. This commitment must be expressly indicated on the "Commitment to Disadvantaged Business Enterprise Participation" form included with the Bid Form. This commitment includes the following understandings:

1. The Bidder understands it must maintain the committed DBE participation goal level throughout the life of the Contract and as required in 49 CFR Section 26.53 (f) (1) & (2) which states: A prime may not terminate for convenience a DBE subcontractor (or an approved substitute DBE firm) and then perform the work of the terminated subcontract with its own forces or those of an affiliate, without prior written consent. When a DBE subcontractor is terminated, or fails to complete its work on the contract for any reason, the prime contractor is required to make good faith efforts to find other DBE subcontractor to substitute for the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to meet the contract goal.
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 toward satisfying the DBE participation goal and other affirmative action efforts.
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, 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 the 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 a DBE at the time of Contract award, then such amendment, change order or other modification shall be contemporaneously submitted to the DSBO. 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 Bidder shall be subject to goals for DBEs equal to the original goal on the Contract which were included in the bid or showing of a good faith efforts.

Prime Contractor agree to pay each subcontractor under this prime contract for satisfactory performance on a contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the City and County of Denver. The prime contractor agrees further to return retainage payments to each subcontractor within thirty (30) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for a good cause following written approval of the City and County of Denver. This clause applies both to DBE and non-DBE subcontractors.

All Bidders are charged with knowledge of and are solely responsible for complying with each requirement of Part 26 in making a bid and, if awarded, in performing the Work described in the Contract Documents. 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 49 CFR Part 26, appropriate DOT Rules and Regulations, or contact the Project's designated DSBO representative at (720) 913-1700.

**INSTRUCTIONS TO BIDDERS** - All bidders must submit an DSBO "Bidder's List Data Form" for themselves, as well as any subcontractor/supplier/manufacture/manufacture representative/broker that contacted the bidder or that the bidder contacted who provided a bid or quote, regardless if the firm is a DBE or a non-DBE firm. DSBO is required by DOT 49 CFR Part 26 Regulations to create and maintain a bidders list on DOT-assisted projects. Therefore, bidders need to provide these completed forms at the time of bid as a part of their "Bid Form & Submittal Document".

#### **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 [DenverGov.com](http://DenverGov.com) for information, both general and project specific. The Contract Administrator assigned to this project is Jo Ann Phillips, who can be reached via email at [joann.phillips@denvergov.org](mailto:joann.phillips@denvergov.org).

**IB-28 FEDERAL REQUIREMENTS**

This project is funded, in whole or in part, by federal funding made available through the Federal Highway Administration ("FHWA") and administered by the Colorado Department of Transportation ("CDOT"). As such, each bidder must review and comply with certain bid requirements (the "Federal Forms") in formulating and submitting its bid for the Project, and, if awarded a contract pursuant to this bid, must comply with certain "Federal Requirements." The required Federal Forms are included in the Bid Package at pages BF-24 through BF-28. The Federal Requirements are attached to the Bid Document Package, pages at BDP-63 through BDP-79. The Contractor shall be presumed to have considered and completed all Federal Requirements and Forms as part of its bid and shall be presumed to have carefully considered and accounted for all costs of complying with the Federal Requirements in formulating and submitting a bid hereunder.

## **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.

## APPENDIX B

### EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. 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 considerations for employment without regard to race, color, religion, sex, or national origin.
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. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor 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 Government contracts or federally assisted construction contracts in accordance with procedure authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. 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 provision, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

NOTICES TO BE POSTED PER PARAGRAPH (1) AND (3) OF THE EEO CLAUSE

**EQUAL EMPLOYMENT OPPORTUNITY IS THE LAW**

**Discrimination is Prohibited by  
the Civil Rights Act of 1964  
and by Executive Order No. 11246**

Title VII of the Civil Rights Act of 1964

*Administered by:* The Equal Employment Opportunity Commission

Prohibits discrimination because of Race, Color, Religion, sex, or National Origin by Employers with 25 or more employees, by Labor Organizations with a hiring hall of 25 or more members, by Employment Agencies, and b Joint Labor-Management Committees for Apprenticeship or Training.

ANY PERSON who believes that he or she has been discriminated against SHOULD CONTACT:

The Equal Employment Opportunity Commission (EEOC)  
2401 E Street, NW  
Washington, D.C. 20506

Executive Order No. 11256

*Administered by:* The Office of Federal Contract Compliance Programs

Prohibits discrimination because of Race, Color, Religion, Sex, or National Origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment, by all Federal Government Contractors and Subcontractors, and by Contractors Performing Work Under a Federal Assisted Construction Contract, regardless of the number of employees in either case.

ANY PERSON who believes that he or she has been discriminated against SHOULD CONTACT:

The Office of Federal Contract Compliance Programs  
U. S. Department of Labor  
Washington, D.C. 20210

## APPENDIX E

### Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246, as amended)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area are as follows:

Timetables:     Until Further Notice

Goals:

- (a) Minority Participation in Each Trade:   13.8 percent
- (b) Female Participation in Each Trade:     6.9 percent

These goals are applicable to all the contractor's construction work (whether or not it is Federal on Federally-assisted) performed in the covered area. If the contractor performs construction work in a geographic area located outside of the covered area, it shall apply the goal established for such geographic area where the work is actually performed. With regard to this second area, the contractor also is subject to the goal for both its Federally involved and non-Federally involved construction.

The contractor's compliance with the executive order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goal. The hours of minority employment and training must be substantially uniform throughout the length of the contract, and in each grade, and the contract shall make a good faith effort to employ minorities evenly on each of its projects. The transfer of minority employees or trainees from contractor to contractor or from project to project, for the sole purpose of meeting the contractor's goal, shall be a violation of the contract, the executive order, and the regulations in 41 CFR Part 60-4. Compliance with the goal will be measured against the total work hours performed.

3. The contractor shall provide written notification to the Director, OFCCP, within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employee identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographic area in which the contract is performed.
4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is the City and County of Denver, Colorado.

## STANDARD FEDERAL ASSURANCES

NOTE: As used below the term "contractor" shall mean and include the "Party of the Second Part," and the term "sponsor" shall mean the "City".

During the term of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations. The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

2. Nondiscrimination. The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, creed or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontractors, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiations made by the contractor for work to be performed under a subcontract, including procurements or materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

4. Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it may determine to be appropriate, including, but not limited to:

- a. Withholding of payments to the contractor under the contract until the contractor complies, and/or
- b. Cancellation, termination, or suspension of the contract, in whole or in part.

6. Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

**STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION  
CONTRACT SPECIFICATIONS (41 CFR 60-4.3)  
(VERSION 2, 4/23/90)**

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
  - (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
  - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
  - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
  - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained



from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by

publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint

contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

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

**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

**EQUAL OPPORTUNITY PROVISIONS (Cont'd)**

**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	GOALS FOR 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%

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.

##### **A. CONTRACTORS SUBJECT TO THESE BID CONDITIONS:**

In regard to these Bid Conditions, if the Contractor meets the goals set forth therein or can demonstrate that it has made every good faith effort to meet these goals, the Contractor shall be presumed to be in compliance with Article III, Division 2 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 Division of Small Business Opportunity 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.

##### **B. OBLIGATIONS APPLICABLE TO CONTRACTORS:**

It shall be no excuse that the union with which the Contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority or female employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, Title VI of the Civil Rights Act of 1964, as amended, and Article III, Division 2 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.

**C. GENERAL REQUIREMENTS:**

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

1. Contractors hereby agree to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who is determined not to be a "responsive" bidder for the City and County of Denver contracts pursuant to the Ordinance.
2. The Contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.
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, 201 W. Colfax, Dept. 608, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.



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

**FEDERAL AID PROJECT NO.  
CITY OF DENVER CONTRACT NO. 201205433**

**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**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

**W.L. Contractors, Inc.  
5920 Lamar St.  
Arvada, CO 80003**

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

**WITNESSETH**, Commencing on **April 9, 2012**, and for at least three (3) days the City advertised that sealed bids would be received for furnishing all labor, tools, supplies, equipment, materials, and everything necessary and required for the following:

<p><b>FEDERAL AID PROJECT NO. SHE CO-10-105 Sub Account No. 17659 CITY OF DENVER CONTRACT NO. 201205433</b></p>
---

**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  
Bid Bond  
Addenda (as applicable)  
DBE Documents  
Equal Employment Opportunity Provisions (Appendices A, B, E and F)  
Bid Form  
Commitment to DBE Participation  
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*  
*Certificate of Contract Release*  
*Change Orders (as applicable)*  
*Federal Requirements (as applicable)*  
*Prevailing Wage Rate Schedule(s)*  
*Technical Specifications*  
*Contract Drawings*  
*Accepted Shop Drawings*

**2. SCOPE OF WORK**

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

**3. TERMS OF PERFORMANCE**

The Contractor agrees to undertake the performance of the Work under this Contract within ten (10) days after being notified to commence work by issuance of a Notice to Proceed in substantially the form contained herein from the Manager and agrees to fully complete said Work within **210 (Two Hundred Ten Days)** consecutive calendar days from the effective date of said Notice, plus such extension or extensions of time as may be granted in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

**4. TERMS OF PAYMENT**

The City agrees to pay the Contractor for the performance of all of the Work required under this Contract, and the Contractor agrees to accept as the Contractor's full and only compensation therefore, such sum or sums of money as may be proper in accordance with the price or prices set forth in the Contractor's Bid Form hereto attached and made a part hereof for **bid item numbers 202-00190 through 700-90064 (Eighty One [81]) total bid items, the total estimated cost thereof being: One Million Three Hundred Fifty Eight Thousand Three Hundred Twenty Nine Dollars and No Cents (\$1,358,329.00)**. Adjustments to said Contract Amount and payment of amounts due hereunder shall be made in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

**5. NO DISCRIMINATION IN EMPLOYMENT**

In connection with the performance of the Work under this Contract, the Contractor agrees not to refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, marital status, or physical or mental disability; and the Contractor further agrees to insert the foregoing provision in all subcontracts hereunder.

**6. DBE AND EQUAL OPPORTUNITY REQUIREMENTS**

The Contractor agrees to comply with all requirements of the City's Equal Employment Opportunity program and the Federal Disadvantaged Business Enterprise Participation program as set out in Article III, Division 2, Chapter 28 of the Denver Revised Municipal Code, and any rules, regulations and guidelines set forth thereunder for such programs. This compliance shall include the obligation to maintain throughout the term of the contract that level of DBE participation upon which the Contract was initially awarded, unless otherwise authorized by the law or any rules, regulations or guidelines.

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

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

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

**10. APPROVALS**

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

**11. ASSIGNMENT**

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

**12. DISPUTES RESOLUTION PROCESS**

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

**13. CONTRACT BINDING**

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

**14. PARAGRAPH HEADINGS**

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

**15. SEVERABILITY**

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

**16. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS:**

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

**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: 201205433

Vendor Name: W.L. CONTRACTORS, INC.

By: Toni Ann Winkler

Name: Toni Ann Winkler  
(please print)

Title: President  
(please print)

ATTEST: [if required]

By: Larry Winkler

Name: Larry Winkler  
(please print)

Title: Secretary  
(please print)

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

**Construction Contract General Conditions**

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

**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,*  
(The Index for which is bound herein and commonly referred to as the "Orange Book")  
(1999 Edition) **\*\*General Contract Conditions 1801 and 1802 concerning warranties and guarantees are hereby deleted in their entirety\*\***

*Transportation Standards and Details for the Engineering Division*

*City and County of Denver Traffic Standard Drawings*

Wastewater Management Division

– *Standard Detail Drawings*

– *Storm Drainage and Sanitary Sewer Construction Detail and Technical 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 2006 Series, City and County of Denver Amendments 2006)

*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, (5<sup>th</sup> floor), Denver, CO 80202. The *Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS* is available for purchase at the Cashier, 2<sup>nd</sup> floor at 201 W. Colfax Ave., Denver, Colorado 80202. *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](http://www.fhwa.dot.gov), The FHWA website also contains purchasing information.

**SC-2 CONSTRUCTION DOCUMENTS**

The construction documents consist of Plans, Drawings and Technical Specifications as identified in the Index for Contract Drawings, the Index for Technical Specifications and any additional Plans attached hereto.

**SC-3 ENGINEERING DIVISION / CITY ENGINEER**

General Condition 206, TRANSPORTATION DIVISION, is modified as follows:

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 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 CITY DELEGATION OF AUTHORITY**

With reference to General Contract Condition 109, DEPUTY MANAGER, General Contract Condition 206, ENGINEERING DIVISION and General Contract Condition 214, 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 /Engineering Division,**

<u>Project Manager</u>	<u>Name</u>	<u>Telephone</u>
John Yu		(720) 865-3176

<u>Consultant</u>	<u>Name</u>	<u>Telephone</u>
Jacobs Engineering Group Inc.	Leonard Cheslock	(303) 820-5261

**SC-5 LIQUIDATED DAMAGES**

Should the Contractor fail to complete all Work within the Contract Time allocated under the Contract Form at Paragraph 3, TERMS OF PERFORMANCE, the Contractor shall become liable to the City and County of Denver for liquidated damages, and not as a penalty, at the rate of **\$500.00** for each Day that the Contractor exceeds the time limits herein specified, all in accordance with provisions of General Contract Condition 602, LIQUIDATED DAMAGES; ADMINISTRATIVE COSTS; ACTUAL DAMAGES.

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

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

**SC-6 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-7 PAYMENTS TO CONTRACTORS**

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 such estimate of Work completed shall specifically identify those DBE Subcontractors or Suppliers that the Contractor is utilizing on the Project pursuant to the requirements of 49 C.F.R., Part 23.
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.

In accordance with General Contract condition 907, RELEASES AND CONTRACTORS CERTIFICATION OF PAYMENT, 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. The forms, Final/Partial Release and Certificate of Payment (Subcontractor/Supplier) and the Contractor's Certification of Payment, either of which must be used are attached hereto.

**SC-8 RESERVED**

**SC-9 CONSTRUCTION INSPECTION BY THE CITY**

General Condition 1701, AUTHORITY OF INSPECTORS, is modified as follows:

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

**.2** The Building Inspection Division 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-10 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-11 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-12 DEBARRED SUBCONTRACTORS PROHIBITED**

The Contractor is prohibited from hiring any subcontractor that is currently debarred by the City in accordance with section 20-77 of the Denver Revised Municipal Code.

**SC-13 TERMINOLOGY**

Terminology used in Colorado Department of Transportation (CDOT) Standards and Specifications and City and County of Denver (CCD) Standards and Specifications may differ but shall be considered interchangeable where appropriate. Examples are Department of Public Works (CCD) and Department (CDOT), Project Manager (CCD) and Engineer (CDOT), Traffic Maintenance Plan (CCD) and Traffic Control Plan (CDOT).

**SC-14 TECHNICAL SPECIFICATIONS**

Section 106 of the CDOT Standard Specifications is hereby incorporated into this contract except where conflicts exist between Section 106 and the General Contract Conditions or Special Contract Conditions. Where conflicts exist, the General Contract Conditions or Special Contract Conditions shall govern.

**SC-15 MODIFICATION TO GENERAL CONTRACT CONDITION 405**

General Contract Condition 405 is hereby revised for this project as follows:

G.C. 405.2 shall include the following:

Shop Drawings shall be submitted in accordance with Section 105.02 of the CDOT Standard Specifications. Any work performed by the Contractor prior to receipt of approved shop drawings is at the sole risk of the Contractor.

**SC-16 MODIFICATION TO GENERAL CONTRACT CONDITION 809**

General Contract Condition 809 is hereby revised for this project as follows:

Add G.C. 809.3 as follows:

.3 Fossils may be uncovered during excavation for the project. The Colorado Department of Transportation will furnish a paleontologist to monitor project excavations. The Contractor shall notify the Engineer at least five working days prior to the start of excavation operations to allow for scheduling of the monitor. The paleontologist, Mr. Steve Wallace, can be contacted at (303) 757-9632.

If fossils are encountered, they will be evaluated and, if deemed important, removed prior to further excavation. When directed, the Contractor shall excavate the site in such manner as to preserve the fossils uncovered and shall remove them as directed by the Engineer.

**SC-17 FEDERAL REQUIREMENTS**

This Project is funded, in whole or in part, by federal funding made available through the Federal Highway Administration (“FHWA”) and administered by the Colorado Department of Transportation (“CDOT”). As such, performance under this contract is subject to certain “Federal Requirements” contained or referenced in Attachment A to this contract, attached hereto and incorporated herein by this reference. The Contractor shall thoroughly review and shall strictly comply with all Federal Requirements in performing its Work under this contract.

## SC-18 ATTORNEY'S FEES

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

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

## SC-19 CONTRACT FORMS

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

1. Performance and Payment Bond
2. Performance and Payment Bond Surety Authorization Letter (Sample)

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 20: 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 stating "Should any of the above-described policies be canceled or non-renewed before the expiration date thereof, the issuing company shall send written notice to Denver Risk Management, 201 West Colfax Avenue, Dept. 1105, Denver, Colorado 80202. Such written 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." Additionally, Contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the address above by certified mail, return receipt requested. If any policy is in excess of a deductible or self-insured retention, the City must be notified by the Contractor. Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

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

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

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

(5) **Subcontractors and Subconsultants:** All subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) shall be subject to all of the



requirements herein and shall procure and maintain the same coverages required of the Contractor. Contractor shall include all such subcontractors as additional insured under its policies (with the exception of Workers' Compensation) or shall ensure that all such subcontractors and subconsultants maintain the required coverages. Contractor agrees to provide proof of insurance for all such subcontractors and subconsultants upon request by the City.

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

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

(8) **Business Automobile Liability:** Contractor shall maintain Business Automobile

Liability with limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement

(9) **Additional Provisions:**

(a) For Commercial General Liability, the policies must provide the following:

- (i) That this Agreement is an Insured Contract under the policy;
- (ii) Defense costs in excess of policy limits;
- (iii) A severability of interests, separation of insureds or cross liability provision; 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-21 DEFENSE AND INDEMNIFICATION

General Condition 1602, INDEMNIFICATION, is modified to read in full as follows:

### DEFENSE AND INDEMNIFICATION

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

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

**SC-22 GREENPRINT DENVER REQUIREMENTS**

In accordance with the City and County of Denver Executive Order 123: Greenprint Denver Office and Sustainability Policy (dated October 27, 2007), and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program, Contractor shall, wherever possible, recycle construction and demolition waste, and install building materials that contain recycled content. Non-hazardous solid waste that is eligible for reuse or recycling is not subject to the DADS disposal requirement defined in SC-10. The Contractor shall recycle and/or reuse construction and demolition waste and implement sustainable development practices on construction projects in compliance with any Project Requirements of the Better Denver Program Sustainability Form that are included in the Contract Documents.

At the Project Pre-Construction Meeting, the Contractor shall provide a written summary of how the Contractor intends to meet any applicable Project Requirement, and the type of documentation to be provided. The Contractor shall maintain and keep current documentation of the materials recycled or reused, organized in accordance with any applicable Closeout Form for Contractors provided in the Contract Documents for the duration of the Project. A copy of the completed Closeout Form, the quantity tabulation, and all supporting documentation for materials reused or recycled shall be delivered to the Project Manager as a submittal requirement of Final Acceptance.

**SC-23 CITY AUDITOR AND MANAGER OF FINANCE**

Section 211, City Auditor, of the General Contract Conditions, 1999 Edition, is amended to read in its entirety as follows:

**211 CITY AUDITOR AND MANAGER OF FINANCE**

The City Auditor, an independent elected official, reviews certified payrolls for compliance with prevailing wage requirements before payment is made to a Contractor. The City's Manager of Finance pays the Contractor for Work approved under the Contract.

**SC-24 NO EMPLOYMENT OF ILLEGAL ALIENS TO PERFORM WORK UNDER THE AGREEMENT:**

- a. This Agreement is subject to Division 5 of Article IV of Chapter 20 of the Denver Revised Municipal Code, and any amendments (the "Certification Ordinance").
- b. The Contractor certifies that:
  - (1) At the time of its execution of this Agreement, it does not knowingly employ or contract with an illegal alien who will perform work under this Agreement.
  - (2) It will participate in the E-Verify Program, as defined in § 8-17.5-101(3.7), C.R.S., to confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement.
- c. The Contractor also agrees and represents that:
  - (1) It shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.
  - (2) It shall not enter into a contract with a subconsultant or subcontractor that fails to certify to the Contractor that it shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.
  - (3) It has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement, through participation in the E-Verify Program.
  - (4) It is prohibited from using the E-Verify Program procedures to undertake pre-employment screening of job applicants while performing its obligations under the Agreement, and that otherwise requires the Contractor to comply with any and all federal requirements related to use of the E-Verify Program including, by way of example, all program requirements related to employee notification and preservation of employee rights.

- (5) If it obtains actual knowledge that a subconsultant or subcontractor performing work under the Agreement knowingly employs or contracts with an illegal alien, it will notify such subconsultant or subcontractor and the City within three (3) days. The Contractor will also then terminate such subconsultant or subcontractor if within three (3) days after such notice the subconsultant or subcontractor does not stop employing or contracting with the illegal alien, unless during such three-day period the subconsultant or subcontractor provides information to establish that the subconsultant or subcontractor has not knowingly employed or contracted with an illegal alien.
- (6) It will comply with any reasonable request made in the course of an investigation by the Colorado Department of Labor and Employment under authority of § 8-17.5-102(5), C.R.S, or the City Auditor, under authority of D.R.M.C. 20-90.3.

**d.** The Contractor is liable for any violations as provided in the Certification Ordinance. If Contractor violates any provision of this section or the Certification Ordinance, the City may terminate this Agreement for a breach of the Agreement. If the Agreement is so terminated, the Contractor shall be liable for actual and consequential damages to the City. Any such termination of a contract due to a violation of this section or the Certification Ordinance may also, at the discretion of the City, constitute grounds for disqualifying Contractor from submitting bids or proposals for future contracts with the City.

## **SC-25 RETAINAGE**

Section 908.1, Retainage, of the General Contract Conditions, 1999 Edition, is amended to read in its entirety as follows:

### **908 Retainage**

.1 The City shall deduct and retain a total of five percent (5%) from the total amount of approved applications for payment, including Change Orders. The City may also deduct in addition to retainage as stated above, the additional amount(s) of any and all outstanding claims pursuant to CRS §38-26-107 from each approved application for payment.

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

**PERFORMANCE AND PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned W.L. Contractors, Inc., 5920 Lamar St., Arvada, CO 80003, a corporation organized and existing under and by virtue of the laws of the State of Colorado, 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 One Million Three Hundred Fifty Eight Thousand Three Hundred Twenty Nine Dollars and No Cents (\$1,358,329.00), 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. 201205433, FEDERAL PROJECT NO: , SHE 2010 TRAFFIC SIGNAL UPGRADE**, 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;

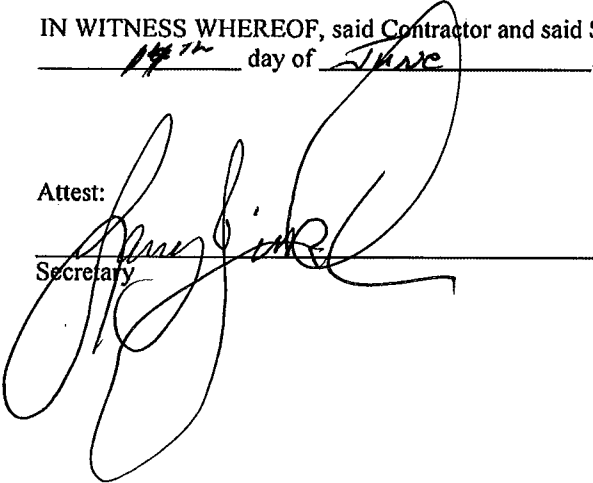
PROVIDED FURTHER, that if the said Contractor shall satisfy all claims and demands incurred by the Contractor in the performance of said Contract, and shall fully indemnify and save harmless the City from all damages, claims, demands, expense and charge of every kind (including claims of patent infringement) 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;

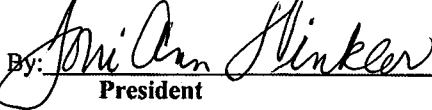
PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other supplies or materials used or consumed by said Contractor or its subcontractors in performance of the 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;

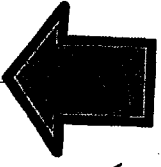
PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications 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 14<sup>th</sup> day of June, 2012.

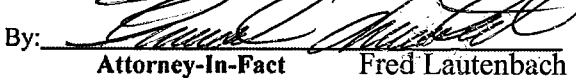
Attest:  
  
Secretary

**W.L. Contractors, Inc.**  
Contractor

By:   
President



**Liberty Mutual Insurance Company**  
Surety

By:   
Attorney-In-Fact Fred Lautenbach

(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:   
Assistant City Attorney

APPROVED FOR THE CITY AND COUNTY OF DENVER

By:   
MAYOR

By:   
MANAGER OF PUBLIC WORKS

American Fire and Casualty Company  
The Ohio Casualty Insurance Company  
West American Insurance Company

Liberty Mutual Insurance Company  
Peerless Insurance Company

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of Ohio, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, that Peerless Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, 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, **FRED R. LAUTENBACH, JENNIFER E. KOCH, SHARON L. DISTERLIC, ANDREW W. DENLINGER,**.....

all of the city of LITTLETON, state of COLORADO each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

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 6th day of April, 2012.



American Fire and Casualty Company  
The Ohio Casualty Insurance Company  
Liberty Mutual Insurance Company  
Peerless Insurance Company  
West American Insurance Company

By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 6th day of April, 2012, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, Peerless Insurance 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 Seattle, Washington, on the day and year first above written.



By: KD Riley  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, West American Insurance Company and Peerless 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 Gregory W. Davenport, Assistant Secretary to appoint such attorney-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, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, West American Insurance Company and Peerless Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which 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 \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.



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

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 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

6/14/2012

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 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).

<b>PRODUCER</b> Lautenbach Insurance Agency, LLC 5721 S. Nevada Street Littleton, CO 80120 Littleton	<b>CONTACT NAME:</b> Fred Lautenbach <b>PHONE (A/C No. Ext.):</b> (303) 798-2534 <b>E-MAIL ADDRESS:</b> fred@lautenbachinsurance.com	<b>FAX (A/C No.):</b> (303) 798-2536	
	<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
<b>INSURED</b> W.L. Contractors, Inc. 5920 Lamar Street Arvada, CO 80003	<b>INSURER A:</b> Travelers Insurance Company		
	<b>INSURER B:</b> Pinnacle Assurance		
	<b>INSURER C:</b> Colorado Casualty		
	<b>INSURER D:</b>		
	<b>INSURER E:</b>		
<b>INSURER F:</b>			

**COVERAGES**

CERTIFICATE NUMBER: Certificate 2012-2013

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 INSR	SUBR WVP	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<b>GENERAL LIABILITY</b>			DT-CO-7B904627-PHX-12	05/01/2012	05/01/2013	EACH OCCURRENCE	\$ 1,000,000
	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 300,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR						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	<b>AUTOMOBILE LIABILITY</b>			DT-810-7B904627-TIL-12	05/01/2012	05/01/2013	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
	<input checked="" type="checkbox"/> ANY AUTO						BODILY INJURY (Per person)	\$
	<input type="checkbox"/> ALL OWNED AUTOS		<input type="checkbox"/> SCHEDULED AUTOS				BODILY INJURY (Per accident)	\$
	<input checked="" type="checkbox"/> HIRED AUTOS		<input checked="" type="checkbox"/> NON-OWNED AUTOS				PROPERTY DAMAGE (Per accident)	\$
							Hired/borrowed	\$ 1,000,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB		<input checked="" type="checkbox"/> OCCUR	DTSM-CUP-7B904627-TIL-12	05/01/2012	05/01/2013	EACH OCCURRENCE	\$ 5,000,000
	<input type="checkbox"/> EXCESS LIAB		<input type="checkbox"/> CLAIMS-MADE				AGGREGATE	\$ 5,000,000
	<input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000							\$
B	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b>			2327630	01/01/2012	01/01/2013	<input checked="" type="checkbox"/> WC STATUTORY LIMITS	OTHER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
C	<b>Installation Floater</b>			01-CI-297841-3	01/01/2012	01/01/2013	Limit:	\$1,000,000
							Transit Limit:	\$10,000

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

The City and County of Denver, its elected and appointed officials, employees and volunteers are listed as Additional Insured with regards to the General Liability and Automobile Liability.

Re: Contract No. 201205433; SHE 2010 Traffic Signal Upgrade

W.L. Job No. 2151

**CERTIFICATE HOLDER****CANCELLATION**

City and County of Denver  
 Department of Public Works  
 201 West Colfax, Dept. 611  
 Denver, CO 80202

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

Fred Lautenbach/JENN



INSURANCE AGENCY, LLC

*"Service is the Difference"*

SINCE 1950

June 14, 2012

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

Re: W.L. Contractors, Inc.  
Contract No.: 201205433  
Project Name: SHE 2010 Traffic Signal Upgrade  
Contract Amount: \$1,358,329.00  
Performance and Payment Bond No.: 906001231

Dear Assistant City Attorney,

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through Liberty Mutual Insurance Company, on June 14, 2012.

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

If you have any additional questions or concerns, please don't hesitate to give me a call at 303-798-2534.

Sincerely,

Fred Lautenbach, Attorney-in-fact  
Lautenbach Insurance Agency, LLC

Cc: W.L. Contractors, Inc.  
Liberty Mutual Insurance Company







Department of Public Works  
Engineering Department

201 W. Colfax Avenue  
Denver, CO 80202  
[www.denvergov.org/PublicWorks](http://www.denvergov.org/PublicWorks)

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

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

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

RE: (Company name)

Contract No: **201205433**  
Federal Project No.  
Project Name: **SHE 2010 TRAFFIC SIGNAL UPGRADE**  
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 \_\_\_\_\_, 200\_\_.

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**  
THE MILE HIGH CITY

**Department of Public Works**  
Engineering Department

201 W. Colfax Avenue  
Denver, CO 80202  
[www.denvergov.org/PublicWorks](http://www.denvergov.org/PublicWorks)

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

Date

To:

Gentlemen:

The MANAGER OF PUBLIC WORKS has considered the Bids submitted on May 03, 2012 for work to be done and materials to be furnished in and for:

**PROJECT No. 201205433 SHE 2010 TRAFFIC SIGNAL UPGRADE**

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, Engineering Division, Project Management Office, 201 W. Colfax Ave., Dept 506, Denver, Colorado 80202, to receive the said Contract Documents, execute the same and return them to the Department of Public Works, Engineering Division, Project Management Office 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. One original plus four copies of the Power of Attorney relative to Performance and/or Payment Bond; and,
- b. One copy of listing of subcontractors showing items of work each sub-contractor will perform and the percent of total work.
- c. Accurate ACORD Certificate of Insurance

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. 201205433

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



Department of Public Works  
Engineering Department

201 W. Colfax Avenue  
Denver, CO 80202  
[www.denvergov.org/PublicWorks](http://www.denvergov.org/PublicWorks)

Current Date

(S A M P L E)

Name  
Company  
Street  
City/State/Zip

**FEDERAL AID PROJECT NO. [REDACTED]**  
**CITY OF DENVER CONTRACT NO. 201205433, SHE 2010 TRAFFIC SIGNAL UPGRADE**

### NOTICE TO PROCEED

In accordance with General Contract Condition 302 of the Standard Specifications for Construction, General Contract Conditions, 1999 Edition, you are hereby authorized and directed to proceed on **201205433 SHE 2010 TRAFFIC SIGNAL UPGRADE** with the work of constructing contract number, as set forth in detail in the contract documents for the City and County of Denver.

With a contract time of 210 (Two Hundred Ten Days) 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 322.5, to the Project Manager as soon as possible. Failure to submit these certificates will delay processing of payment applications.

Very truly yours,

Lesley B. Thomas  
City Engineer

By:



**DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION**

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

\_\_\_\_\_  
(CITY PROJECT NAME AND NUMBER)

\_\_\_\_\_  
(NAME OF CONTRACTOR)

\_\_\_\_\_  
(NAME OF SUBCONTRACTOR/SUPPLIER)

Date: \_\_\_\_\_, 20\_\_.

Subcontract #: \_\_\_\_\_.

Subcontract Value: \$ \_\_\_\_\_.

Last Progress Payment: \$ \_\_\_\_\_.

Date: \_\_\_\_\_.

Total Paid to Date: \$ \_\_\_\_\_.

Date of Last Work: \_\_\_\_\_.

Check Applicable Box:  
[ ] DBE

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 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 ) s.  
CITY OF \_\_\_\_\_)

\_\_\_\_\_  
(Name of Subcontractor)

Signed and sworn before me this  
day of \_\_\_\_\_, 20\_\_.

By: \_\_\_\_\_

\_\_\_\_\_  
Notary Public/Commissioner of Oaths  
My Commission Expires

Title: \_\_\_\_\_





## Instructions for Completing the Contractor/Consultant Certification of Payment 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  
Fax: 720-913-1803  
dsbo@denvergov.org

**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.

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/DBEs use the exact name listed in the DSBO Directory.

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

COMP-REF-031

Rev 032211 JG



Department of Public Works  
Engineering Department

201 W. Colfax Avenue  
Denver, CO 80202  
[www.denvergov.org/PublicWorks](http://www.denvergov.org/PublicWorks)

Date

Name

Company

Street

City/State/Zip

(SAMPLE)

RE: Certificate of Contract Release for

FEDERAL AID PROJECT NO. [REDACTED]

CITY OF DENVER CONTRACT NO. 201205433, SHE 2010 TRAFFIC SIGNAL UPGRADE

Certificate of Contract Release

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.





## Required Contract Provisions Federal-Aid Construction Contracts

- I. [General](#)
- II. [Nondiscrimination](#)
- III. [Nonsegregated Facilities](#)
- IV. [Payment of Predetermined Minimum Wage](#)
- V. [Statements and Payrolls](#)
- VI. [Record of Materials, Supplies, and Labor](#)
- VII. [Subletting or Assigning the Contract](#)
- VIII. [Safety: Accident Prevention](#)
- IX. [False Statements Concerning Highway Projects](#)
- X. [Implementation of Clean Air Act and Federal Water Pollution Control Act](#)
- XI. [Certification Regarding Debarment, Suspension Ineligibility, and Voluntary Exclusion](#)
- XII. [Certification Regarding Use of Contract Funds for Lobbying](#)

### Attachments

- A. [Employment Preference for Appalachian Contracts \(included in Appalachian contracts only\)](#)

#### I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
  - Section I, paragraph 2;
  - Section IV, paragraphs 1, 2, 3, 4, and 7;
  - Section V, paragraphs 1 and 2a through 2g.
5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
  - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
  - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

## II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
  - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
  - b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: 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, preapprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
  - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
  - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
  - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
  - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
  - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such

advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
- b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
- c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

**6. Training and Promotion:**

- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
  - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
- 7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
  - b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
  - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
  - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that 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 employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.
- 8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
  - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
  - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
- 9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three

years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

- a. The records kept by the contractor shall document the following:
  1. The number of minority and non-minority group members and women employed in each work classification on the project;
  2. The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
  3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
  4. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
- b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### **III. NONSEGREGATED FACILITIES**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).
- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

#### **1. General:**

- a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.
- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

**2. Classification:**

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
  1. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
  2. the additional classification is utilized in the area by the construction industry;
  3. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
  4. with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and

Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

**3. Payment of Fringe Benefits:**

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.
- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

- a. Apprentices:
  - 1. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
  - 2. The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the

classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

3. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.
4. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

1. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
2. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
3. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
4. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be



permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. **Helpers:**

1. Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**8. Violation:**

**Liability for Unpaid Wages; Liquidated Damages:** In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

**9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on

account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

## **V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

### **1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

### **2. Payrolls and Payroll Records:**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

1. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
  2. that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
  3. that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
  - f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
  - g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:
  - a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.
  - b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.
  - c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.
2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

## **VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
  - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
  - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

#### **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

#### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

**NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."*

**X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

**XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

## 1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this

clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
  - a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
  - d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility  
and Voluntary Exclusion--Lower Tier Covered Transactions:**

- 1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- 2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:



- a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

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[FHWA](#) | [Infrastructure](#) | [Program Administration](#) | [Feedback](#)



United States Department of Transportation - Federal Highway Administration – Infrastructure



# CITY AND COUNTY OF DENVER

STATE OF COLORADO



## PREVAILING WAGE RATES

Contract No. 201205433

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**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**April 9, 2012**



**DENVER**  
THE MILE HIGH CITY

**Career Service Authority**  
Denver's Human Resource Agency

201 W. Colfax, Department 412  
Denver, CO 80202  
p: 720.913.5751  
f: 720.913.5720  
[www.denvergov.org/csa](http://www.denvergov.org/csa)

TO: All Users of the City of Denver Prevailing Wage Schedules  
FROM: Meredith Creme, Associate Human Resource Professional  
DATE: Friday January 13, 2012  
SUBJECT: Latest Change to Prevailing Wage Schedules

Please be advised, prevailing wage rates for some building, heavy, and highway construction trades have not been updated by the United States Department of Labor (DOL) since March 1, 2002. The Career Service Authority 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 rates will be provided as a supplemental to the Davis-Bacon Highway rates issued by CSA.

The effective date for this publication is **Friday January 13, 2012** 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. CO120019  
Superseded General Decision No. CO20100021  
Modification No. 0  
Publication Date: 01-06-2012  
(11 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.

For questions call (720) 913-5009

Attachments as listed above.

General Decision Number: CO120019 01/06/2012 CO19

Superseded General Decision Number: CO20100021

State: Colorado

Construction Type: Highway

Counties: Denver and Douglas Counties in Colorado.

HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/06/2012

CARP9901-008 10/01/2010

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 24.00	11.28

-----  
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 05/01/2011

	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.).....		
	\$ 23.67	9.22
(3)-Loader (under 6 cu. yd.) Denver County.....		
	\$ 23.67	9.22
(3)-Motor Grader (blade-rough) Douglas County.....		
	\$ 23.67	9.22

(4)-Crane (50 tons and under), Scraper (single bowl, under 40 cu. yd).....	\$ 23.82	9.22
(4)-Loader (over 6 cu. yd) Denver County.....	\$ 23.82	9.22
(5)-Drill Rig Caisson (Watson 2500 similar or larger), Crane (51-90 tons), Scraper (40 cu.yd and over),.....	\$ 23.97	9.22
(5)-Motor Grader (blade-finish) Douglas County.....	\$ 23.97	9.22
(6)-Crane (91-140 tons).....	\$ 24.12	9.22

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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

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

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Unlisted classifications needed for work not included within  
the scope of the classifications listed may be added after  
award only as provided in the labor standards contract clauses  
(29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification  
and wage rates that have been found to be prevailing for the  
cited type(s) of construction in the area covered by the wage  
determination. The classifications are listed in alphabetical  
order of "identifiers" that indicate whether the particular  
rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with  
characters other than "SU" denotes that the union  
classification and rate have found to be prevailing for that  
classification. Example: PLUM0198-005 07/01/2011. The  
first four letters , PLUM, indicate the international union and  
the four-digit number, 0198, that follows indicates the local  
union number or district council number where applicable ,  
i.e., Plumbers Local 0198. The next number, 005 in the  
example, is an internal number used in processing the wage  
determination. The date, 07/01/2011, following these  
characters is the effective date of the most current  
negotiated rate/collective bargaining agreement which would be  
July 1, 2011 in the above example.



Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

#### Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**Career Service Authority**  
**Supplemental to the Davis-Bacon HIGHWAY Construction Projects rates**  
**(Specific to the Denver Projects)**  
**(Supp 35, Date: 01-13-2012)**

<b><u>Classification</u></b>		<b><u>Base</u></b>	<b><u>Fringe</u></b>
Millwrights		\$28.00	\$10.00
Line Construction:			
	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck Crew	\$25.74	\$8.09
Power Equipment Operators (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 Operators:			
	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
Ironworkers (Ornamental)		\$24.80	\$10.03
Laborers (Removal of Asbestos)		\$21.03	\$8.55
Plumbers		\$30.19	\$13.55
Pipefitters		\$30.45	\$12.85
Truck Drivers:			
	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

POWER EQUIPMENT OPERATOR CLASSIFICATIONS  
(TUNNELS ABOVE AND BELOW GROUND, SHAFTS, AND RAISES):

GROUP 1 - Brakeman

GROUP 2 - Motorman

GROUP 3 - Compressor

GROUP 4 - Air Tractors; Grout Machine; Gunnite Machine; Jumbo Form

GROUP 5 - Concrete Placement Pumps; Mucking Machines and Front End Loaders, Underground, Slusher; Mine Hoist Operator; Mechanic

GROUP 6 - Mechanic Welder

GROUP 7 - Mole

*NOTE: Any equipment listed below being used in tunnel work, below or above ground shall be paid not less than \$2.00 per hour above the listed wage rates.*

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1 - Air compressor, brakeman, drill operator -smaller than Watson 2500 and similar, operators of 5 or more light plants, welding machines, generators, single unit conveyor, pumps, vacuum well point system, tractor, under 70 hp with or without attachments compressors, 360 C.F.M. or less

GROUP 2 - Conveyor, handling building materials, ditch witch and similar trenching machine, forklift, haulage motor man, pugmill, portable screening plant with or without a spray bar, screening plants, with classifier, self-propelled roller, rubber-tires under 5 tons.

GROUP 3 - asphalt plant, backfiller; cableway signalman; C.M.I. and similar, concrete batching plants, concrete finish machine, concrete gang saw on concrete paving, concrete mixer, less than 1 yd., under 8 inches, distributors, bituminous surfaces dozer, drill, diamond or core, elevating graders, elevator operator, lubricating and service engineer, grout machine, gunnite machine, hoist, 1 drum, horizontal directional drill operator, hydraulic backhoes; road stabilization machine, sandblasting Machine, single unit portable crusher, with or without washer, Tie tamper, wheel mounted, trenching machine operator, winch on truck.

GROUP 4 - Cable operated power shovels, draglines, clamshells, 5 cubic yards and under, concrete mixer over 1 Cubic yard, concrete pavers 34E or similar, grade Checker, hoist, 2 drums, mechanic, mixer mobile, Portable crusher, with or without washer; tractor with sideboom, roto-M ill and similar, welder.

GROUP 5 - Cable operated power shovels, draglines, clamshells and Backhoes over 5 cubic yards, caisson drill Watson 2500 similar or larger, motor grader blade-finish, hoist 3 drum or more.

GROUP 6 - Cableway, derrick, quad nine push unit, wheel excavator, belt or elevating loader.

GROUP 7 - tower cranes all types.

TRUCK DRIVER CLASSIFICATIONS:

GROUP 1 - Greasemen, Servicemen and Ambulance Drivers, Battery Men, Shuttle Truck or Bus, Flat Rack Tandem Axle.

GROUP 2 - Fork Lift Driver, Straddle Truck Driver, Lumber Carrier, Liquid and Bulk Tankers Single Axle, Combination, Euclid Electric or Similar, Specialty and Hoisting, Truck Drivers Fuel Truck, Grease Truck, Combination Fuel and Grease.

GROUP 3 - Truck Driver Snow Plow, Truck Driver Dump or Type Jumbo and similar type equipment.

GROUP 4 - Cement Mixer Agitator Truck over 10 cubic yards to and including 15 cubic yards, Tire Man, Cab Operated Distributor Truck Driver.

GROUP 5 - Heavy Duty Diesel Mechanic, Body Man, Welders or Combination Men.

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

# CITY AND COUNTY OF DENVER

STATE OF COLORADO



## TECHNICAL SPECIFICATIONS

**Contract No. 201205433**

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**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**April 9, 2012**

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

**SHE 2010 – TRAFIC SIGNAL UPGRADE PROJECT  
CCD Project PILAR No. 2011-0226-01  
CCD Requisition No. PWC2010-6016  
CDOT Project No. SHE C0-10-105 - Sub Account No. 17659**

General Contract Conditions shall be the City and County of Denver, Department of Public Works, “Standard Specifications for Construction General Contract Conditions”, 1999 edition and hereinafter modified shall be used for this project.

**STANDARD CONSTRUCTION SPECIFICATIONS**

Standard Construction Specifications shall be the Colorado Department of Transportation “Standard Specifications for Road and Bridge Construction” adopted in 2011 and as hereinafter modified shall be used for 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 be constructed as shown in 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://www.denvergov.org/tabid/436483/Default.aspx>.

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  
DEPARTMENT OF PUBLIC WORKS  
Engineering Division**

**SHE 2010 – TRAFIC SIGNAL UPGRADE PROJECT  
CCD Project PILAR No. 2011-0226-01  
CCD Requisition No. PWC2010-6016  
CDOT Project No. SHE C0-10-105 - Sub Account No. 17659**

CDOT STANDARD SPECIAL PROVISIONS (2011)

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Revision of Sections 105, 106, 412, and 601 – Conformity to the Contract of Portland Cement Concrete Pavement and Dowell Bars for Transverse Weakened Plane Joints	(June 16, 2011)	13
Revision of Section 106 – Certificates of Compliance and Certified Test Reports	(February 3, 2011)	1
Revision of Section 107 - Responsibility for Damage Claims, Insurance Types, and Coverage Limits	(February 3, 2011)	1
Revision of Sections 107 and 208 – Water Quality Control, Under One Acre of Disturbance	(February 3, 2011)	3
Revision of Section 108 - Critical Path Method	(August 19, 2011)	1
Revision of Section 109 - Compensation for Compensable Delays	(May 5, 2011)	1
Revision of Section 109 – Fuel Cost Adjustment	(February 3, 2011)	2
Revision of Section 109 – Measurement of Quantities	(February 3, 2011)	1
Revision of Section 401 – Compaction of Hot Mix Asphalt	(February 3, 2011)	1
Revision of Section 401 – Temperature Segregation	(February 3, 2011)	1
Revision of Sections 412 – Portland Cement Concrete Pavement Finishing	(February 3, 2011)	1
Revision of Sections 412, 601, and 711 - Liquid Membrane-Forming Compounds for Curing Concrete	(May 5, 2011)	1
Revision of Sections 412 and 705 – Preformed Compression Seals	(February 3, 2011)	2
Revision of Section 601 – Concrete Batching	(February 3, 2011)	1
Revision of Section 601 – Concrete Finishing	(February 3, 2011)	2
Revision of Section 601 – Concrete Form and Falsework Removal	(July 29, 2011)	2
Revision of Section 601 – Concrete Slump Acceptance	(July 29, 2011)	1
Revision of Section 703 – Concrete Aggregate	(July 29, 2011)	1
Revision of Section 627 and 708 – Pavement Marking with Waterborne Paint and Low Voc Solvent Base Paint	(February 3, 2011)	1
Revision of Section 630 – Construction Zone Traffic Control	(February 3, 2011)	1
Revision of Section 712 – Water for Mixing or Curing Concrete	(February 3, 2011)	1
Affirmative Action Requirements – Equal Employment Opportunity	(February 3, 2011)	10
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**CITY AND COUNTY OF DENVER  
DEPARTMENT OF PUBLIC WORKS  
Engineering Division**

**SHE 2010 – TRAFIC SIGNAL UPGRADE PROJECT  
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NOTE: Reference to Standard Specifications for Road and Bridge Construction herein means CDOT 2011 Standards Specifications for Road and Bridge Construction with all applicable current standard special provisions. Refer to General Conditions, Standard Specifications for Construction for remaining construction specifications.

All submittals required for this project shall include a minimum of four copies.

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

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

**Subsection 106.05 shall include the following:**

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

**END OF SECTION REVISION**

## **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:**

Branches on trees or shrubs shall be removed as directed by the Engineer. Branches of trees extending over the roadbed shall be trimmed to give a clear height of 16 feet above the roadbed surface. All trimming shall be done in accordance with good tree surgery practices by a qualified tree service company licensed by the City and County of Denver through the City Forester's Office.

**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.

**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 not be measured separately, but will be considered as subsidiary obligation of the Contractor under the contract.

**Subsection 201.04 is hereby revised to include:**

Tree protection will not be paid for separately, but will be considered as subsidiary obligation of the Contractor under the contract.

**END OF REVISION**

**2REVISION 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 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 or Greg Salazar at 303-591-7146).

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 luminaries), 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 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 luminaries attached. Xcel Energy will remove only the signal pole and luminaries, 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 and is referred to the Project Special Revision "Utilities" herein.

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 Engineering Services at (720) 865-4000.

**Subsection 202.12 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Traffic Signal Equipment	Lump Sum

**END OF REVISION**

**REVISION OF SECTION 202  
REMOVAL OF PAVEMENT MARKINGS**

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

**Subsection 202.11, replace the second paragraph with:**

Removal of pavement marking will be measured in square feet, completed and accepted.  
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.

**END OF REVISION**

**REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT**

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

**In subsection 202.02 delete the seventh paragraph and replace with the following:**

The existing asphalt mat, which varies in thickness, shall be removed in a manner that minimizes contamination of the removed mat with underlying material. The removed mat shall become the property of the Contractor and be disposed of by any one or more of the following described methods:

1. Use in embankment construction in accordance with subsection 203.06.
2. Place material in bottom of fills as approved by the Engineer.
3. Place material in subgrade soft spots outside of the roadway prism as directed by the Engineer.
4. Recycled into the Hot Mix Asphalt.

**Subsection 202.11 shall include the following:**

The removal of the existing asphalt mat will be measured by the area, in square yards, completed to the required depth and accepted.

**Subsection 202.12 shall include the following:**

Payment will be made under:

**Pay Item**

Removal of Asphalt Mat

**Pay Unit**

Square Yard

**END OF REVISION**

**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.

**Subsection 209.08 paragraph 1 shall be deleted.**

**END OF REVISION**

**REVISION OF SECTION 304  
AGGREGATE BASE COURSE**

**Section 304 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 304.02 shall include the following:**

Materials for the base course shall be Aggregate Base Course (Class 6) as shown in subsection 703.03.

The aggregate base course (Class 6) must meet the gradation requirements of 703.03 and have a resistance value (R value) of at least 78 when tested by the Hveem Stabilometer method as tested by T-190 and Colorado Procedure CP-L 3102.

Installation and placement of aggregate base course will not be measured and paid for separately but shall be included in the cost of the work.

**END OF REVISION**



**REVISION OF SECTION 403  
HOT MIX ASPHALT**

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

**TABLE 403-1**

Property	Test Method	Value For Grading			
		S(100)		SX(100 )	Patching
Air Voids, percent at: N (initial) [for information only] N (design)	CPL 5115	3.5 – 4.5		3.5 – 4.5	3.5 – 4.5
Lab Compaction (Revolutions): N (initial) [for information only] N (design)	CPL 5115	8 100		8 100	8 100
Stability, minimum	CPL 5106	30		30	30
Aggregate Retained on the 4.75 mm (No. 4) Sieve with at least 2 Mechanically Induced fractured faces, % minimum	CP 45	60		60	60
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80		80	80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)		205 (30)	205 (30)
Grade of Asphalt Cement, Top Layer				PG 76-28	PG 76-28
Grade of Asphalt Cement, Layers below Top		PG 64-22			PG 64-22
Voids in the Mineral Aggregate (VMA) % minimum	CP 48	See Table 403-2		See Table 403-2	See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2	65-75		65-75	65-75
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50	0.6 – 1.2 0.8 – 1.6		0.6 – 1.2 0.8 – 1.6	0.6 – 1.2 0.8 – 1.6

**TABLE 403-1**

Property	Test Method	Value For Grading		
		S(100)		SX(100 )
Note:	AI MS-2 = Asphalt Institute Manual Series 2			
Note:	The current version of CPL 5115 is available from the Region Materials Engineer.			
Note:	Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.			
Note:	Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen.			
	Gradations for mixes with a nominal maximum aggregate size of ¾ inch or smaller are considered a coarse gradation if they pass below the maximum density line at the #8 screen.			

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum.

**TABLE 403-2**

Minimum Voids in the Mineral Aggregate (VMA)			
Nominal Maximum Size*, mm (inches)	***Design Air Voids **		
	3.5%	4.0%	4.5%
37.5 (1½)	11.6	11.7	11.8
25.0 (1)	12.6	12.7	12.8
19.0 (¾)	13.6	13.7	13.8
12.5 (½)	14.6	14.7	14.8
9.5 (¾)	15.6	15.7	15.8
* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air voids beyond those listed.			

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

**REVISION OF SECTION 403  
HOT MIX ASPHALT**

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading SX) (100) (PG 76-28) for the top lift. Lower lifts may utilize Hot Mix Asphalt (Grading S) (100) (PG 64-22).

A minimum of 1 percent hydrated lime by weight of the combined aggregate shall be added to the aggregate for all hot mix asphalt.

**Subsection 403.03 shall include the following:**

If liquid anti-stripping additive is added at the plant, an approved in-line blender must be used. The blender shall be in the line from the storage tank to the drier drum or pugmill. The blender shall apply sufficient mixing action to thoroughly mix the asphalt cement and anti-stripping additive.

The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

**Delete subsection 403.05 and replace with the following:**

The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton for the bituminous mixture.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Hot Mix Asphalt (Patching)(Asphalt)	Ton

Aggregate, asphalt recycling agent, additives, hydrated lime, and all other work necessary to complete each hot mix asphalt item will not be paid for separately, but shall be included in the unit price bid. When the pay item includes the PG binder grade, the asphalt cement will not be measured and paid for separately, but shall be included in the work. When the pay item does not include the PG binder grade, asphalt cement will be measured and paid for in accordance with Section 411. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

**Excavation, preparation, and tack coat of areas to be patched will not be measured and paid for separately, but shall be included in the work.**

**END OF REVISION**

**REVISION OF SECTION 603  
CULVERTS AND SEWERS**

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

**Subsection 603.01 shall 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.

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 on Broadway.

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.

**Subsection 603.12 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
18-Inch Reinforced Concrete Pipe	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.

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

**END OF REVISION**

**REVISION OF SECTION 604  
MANHOLE, INLETS AND METER VAULTS**

**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:**

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Type 16 Curb Inlet (Single)	Each
4’ I.D. Manhole w/ Flat Top (CCD Dwg. S-501.1)	Each

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

Pay Item Type 16 Curb Inlet 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://www.denvergov.org/tabid/436483/default.aspx>.

**END OF REVISION**

**REVISION OF SECTION 608  
SIDEWALKS AND CONCRETE CURB RAMPS**

**Section 608 of the Standard Specifications is hereby revised to include:**

**Subsection 608.01 shall include the following:**

Concrete Curb Ramp construction shall conform to the requirements of the City and County of Denver's Standard Details for Curb Ramps (Detail 7.4). Construction of concrete 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 6.1).

**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.

Detectable warnings on curb ramps shall be Armor-Tile Tactile Systems or approved equal.

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.

**Subsection 608.03 shall include the following:**

Detectable warnings on curb ramps shall be installed in strict accordance with the manufacturer's recommendations.

## **REVISION OF SECTION 608 SIDEWALKS AND CONCRETE CURB RAMPS**

### **Subsection 608.03(d) is hereby revised to include:**

The following sentences shall be added:

Finishing shall occur only after the disappearance of bleed water and the second paragraph of section 412.12 shall be adhered to. Sprinkling of pigment onto the fresh surface is not permitted.

### **Subsection 608.03(f) is hereby revised to include:**

The following paragraphs shall be added:

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. Any low spots in the new concrete items in excess of ¼" will require removal and replacement of such items at the Contractor's expense.

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 the Contractor's expense.

### **Subsection 608.05 shall include the following:**

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

## **CONSTRUCTION REQUIREMENTS**

Finished surfaces adjacent to the paving work shall be adequately protected from soiling, staining, and other damage.

All joints except expansion joints shall be completely filled with mortar. Mortar grout between granite pavers shall be uniform in appearance, texture, and color. After initial set of mortar, joints shall be finished by tooling with round, non-staining jointer to produce glossy-hard, polished, slightly concave joint, free of drying cracks. Upon completion of granite paving, surfaces shall be left in a clean, unsoiled condition, to be approved by the Engineer.

- (a) Adjust, Clean and Seal. Remove and replace granite pieces which are broken, chipped, stained or otherwise damaged. Remove and replace units which are misaligned or not to grade or do not match adjoining granite work. Provide new matching units, install as specified and fill joints to eliminate evidence of replacement. Repair defective and unsatisfactory joints as required to provide a neat, uniform appearance.

Exposed surfaces shall be kept free from mortar at all times. Any mortar smears shall be immediately removed with a clean sponge and clean water before latex modified mortar can set. Wash areas of granite clean of excess grout. Clean granite work after completion of work, using clean water and stiff-bristle brushes. Do not use wire brushes, acid type cleaning agents, or other

**REVISION OF SECTION 608  
SIDEWALKS AND CONCRETE CURB RAMPS**

cleaning compounds with caustic or harsh fillers. Apply penetrating sealant in strict accordance with manufacturer's recommendations.

- (b) Paving in Cold Weather. Remove any ice or snow formed on granite or concrete sub-slab by carefully applying heat until top surface is dry to touch. Remove granite work determined to be damaged by freezing conditions. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower the freezing point of mortar by use of admixtures or antifreeze agents. Do not use calcium chloride in mortar mixture or grout. During all seasons, protect partially completed granite work against weather when work is not in progress, by system approved by Engineer. Work shall not be unprotected when air temperature falls below 50 degrees F.
- (c) Protection. All completed or in progress work shall be protected at all times during construction. Use a strong impervious film or fabric to securely cover granite work.

**Subsection 608.06 is hereby revised to include:**

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Concrete Sidewalk (4 inch)	Square Yard
Concrete Curb Ramp	Square Yard

Excavation to proposed subgrade elevation will not be paid for separately but shall be included in the work associated with Section 203, Unclassified Excavation.

All work necessary and incidental to the construction of Concrete Curb Ramp, including bed course material, will not be measured and paid for separately but shall be included in the work. Payment shall be full compensation for prep work, furnishing, and placing all materials, including detectable warnings, necessary to complete the work to the dimensions shown on plans. Reconditioning, forms, finishing, jointing, backfill and curing, will be in accordance with the plans and specifications and will not be paid for separately.

**END OF REVISION**



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

**Section 609 of the Standard Specifications is hereby revised to include:**

**Subsection 609.02 is hereby revised to include:**

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 for Curb and Gutter 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. Dowels are required in the curb and gutter when size 57 or 67 aggregate is used.

**Subsection 609.03(a) is revised to include:**

Excavation.

Excavation shall conform to the requirements of the revisions to Subsection 608.03(a)- Sidewalk and Bikeways.

**Subsection 609.03(b) is revised to include:**

The contractor shall construct the work in strict conformity to line and grade stakes. Deviations in excess of 1/2" Horizontal and/or 1/4" Vertical shall be grounds for the Engineer to reject the work. Rejected work will be replaced or corrected by the contractor at no expense to the City. The Engineer will have complete authority in determining whether the work is to be corrected or replaced. If the contractor cannot adequately correct any rejected work, the contractor shall replace the work at no expense to the City.

**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) is hereby revised to include:**

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.

**REVISION OF SECTION 609  
CURB AND GUTTER**

**Subsection 609.03(f) is hereby revised to include:**

The following paragraphs shall be added:

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. Any low spots in the new concrete items in excess of ¼" will require removal and replacement of such items at the Contractor's expense.

**Subsection 609.07 is hereby revised to include:**

Payment will be made under:

**Pay Item**

Curb and Gutter Type 2 (Section II-B)

Curb and Gutter Type 2 (Section I-B)

Curb Type 2 (Section B)

**Pay Unit**

Linear Foot

Linear Foot

Linear Foot

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.

Payment shall be full compensation for labor and materials to construct to the dimensions shown on plans. Reconditioning, reinforcing steel, forms, finishing, jointing, backfill and curing, will be in accordance with these plans and specifications and will not be paid for separately.

**END OF REVISION**

**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.

<i>Manufacturers</i>	<i>Catalog Numbers</i>
Uticom Systems Inc.	U5025Y1
Panduit	
3M	
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.

**END OF REVISION**

## **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:

Directional boring is the preferred method of conduit installation.

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 #14 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 conduit shall be fully compatible with fiber optic cable. Plastic conduit shall be Schedule 80 in the diameters shown on the plans. Each conduit shall be equipped with a pull tape and each bore shall have a copper tracer wire of at least 14 gauge.

Each conduit shall be equipped with either a pull rope or pull tape, depending on the length of conduit between pull boxes.

Each conduit with a length greater than 400' between pull boxes, shall be equipped with a pull tape. The pull tape shall have a minimum tensile strength of 1250 lbs. and be of a design and manufacture that prevents cutting or burning into the conduit during cable installation.

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

Each conduit with a length of 400' or less between pull boxes shall be equipped with a pull rope or pull tape. The pull rope shall have a minimum tensile strength of 1250 lbs.

Plastic PVC conduit shall be certified by the manufacturer as meeting ANSI/UL 6 and 651. The manufacturer shall be ISO 9000 compliant.

If the contractor is unable to jack or bore the conduit at the lengths shown on the plans from pull box to pull box, all splice couplings and associated work to splice the conduit shall be included in the cost of this item. This shall include excavation down to the required depth of conduit at the splice location. Also included in the cost of this item are all landscape repairs, which will be required after excavation of conduit at all splice locations. All splice couplings shall be water and air tight and installed at a depth to match the remaining run of conduit. No elevation difference will be allowed. Splices shall be kept to a minimum and all locations shall be approved by the City. Additional pull boxes shall not be substituted for splices.

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 and installed in accordance with these Special Provisions, the Project Standards or as directed by the City. 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.

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

**Subsection 613.11 shall include the following:**

**Pay Item**

2" Electrical Conduit (Bored)

3" Electrical Conduit (Bored)

**Pay Unit**

Lineal Foot

Lineal Foot

**END OF REVISION**

## **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:**

Pull boxes Type A and Type B shall be used in all signal conduit installation. Pull boxes shall be made of fiberglass reinforced polymer concrete designed to support a minimum service load of 20,000 pounds over a 10 inch by 10 inch square. The pull box shall have a detachable cover with a skid-resistant surface and have the words “TRAFFIC” or, “ELECTRIC” cast into the surface. Painting the words shall not be accepted. The cover shall be attached to the pull box body by means of screw-in bolts and shall have two lift slots to aid in the removal of the lid. Non-standard bolts shall not be used.

All traffic communication pull boxes shall have the words “TRAFFIC COMM” physically impressed (not painted) on its top. The interconnect pull boxes or Pull Box (Special) shall be the Type C pull box. 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 613.10 shall include the following:**

Pull Boxes Type A and Type B will not be measured or paid for separately but shall be included in the cost of conduit.

**REVISION OF SECTION 613  
PULL BOXES – GENERAL**

**Subsection 613.11 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Pull Box (Special) Type C	Each

Pull Box (Special) Type C shall include the removal of any existing pull box, installation of the new Type C pull box, 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 Box (Special) will not be measured and paid for separately but shall be included in Pull Box (Special).

Pull Box (Special) will be paid for on the basis of the number of pull boxes installed.

**END OF REVISION**



**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.

**Subsection 613.11 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Electric Meter Pedestal Cabinet and Base	Each

**END OF REVISION**

**REVISION OF SECTION 613  
LIGHTING**

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

**Subsection 613.02 shall include the following:**

Highway lighting materials and equipment for installation and modifications shall be compatible or interchangeable with standard materials and equipment as stocked by XCEL.

Lighting materials and equipment that are compatible with that stocked by XCEL are as follows:

Curvilinear Luminaries on City and County of Denver traffic poles:

Manufacturer	Catalog Numbers
Gardco	CA2213120250HPSFGPPC1069 Mast Arm Fitter
Kim Lighting	CCS25A3/250HPS 120/FG-P/A-25MAF
Sterner	FTA25A103HP250S120NS-RF2

Contractor shall submit a lighting materials list to XCEL for approval prior to ordering (Steve Smith, at 303-571-3945).

**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 luminaries wired for 120 volts.

**Subsection 613.11 shall include the following:**

Luminaries HPS (250 Watt) lighting will not measure and be paid for separately, but shall be included in the cost of the Traffic Signal Poles.

**END OF REVISION**

**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-NS954 CCTV IP Camera or an equivalent IP (Ethernet) camera as approved by the City and County of Denver Traffic Engineering Services. The following accessories shall be provided for each IP camera: Panasonic PAPM3 Pole Mount Bracket; Panasonic POD9CW Dome Housing (wall mount); and Altronix T2428100 24 VAC transformer.

**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:**

<b>Pay Item</b>	<b>Pay Unit</b>
Closed Circuit Television Camera (Traffic Surveillance)	Each

Payment will be full compensation for all labor, materials, accessories, and equipment required to complete the work.

**REVISION OF SECTION 614  
CONCRETE FOOTING (TRAFFIC SIGNAL POLE)**

**Section 614 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 614.08 shall include the following:**

(m) Traffic Signal Pole Footings: Concrete foundations for all traffic signal poles and traffic signal-light poles shall conform to City and County of Denver Signal Standards and Details Latest Revision.

**Subsection 614.10 (e) shall include the following:**

Installation of concrete signal pole footings shall conform to the requirements of Section 503.

**In Subsection 614.13, delete the second sentence and replace with the following:**

Drilled caissons used as foundations for traffic signal poles will be measured by the number of individual footings installed complete in place and paid for as Concrete Footing (Traffic Signal Pole).

**Subsection 614.14 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Concrete Footing (Traffic Signal Pole)	Each

**END OF REVISION**

**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.
  - 1. Detector (Type A), 1 Direction, 1 Channel
  - 2. Detector (Type B), 2 Direction, 1 Channel
  - 3. Detector (Type C), 2 Direction, 2 Channel
- 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.

**REVISION OF SECTION 614**  
**EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

- 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.

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

**REVISION OF SECTION 614**  
**EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

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.
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 140O F.)
6. Shall operate in 0 to 95 % humidity.

**REVISION OF SECTION 614**  
**EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

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.
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.



## **REVISION OF SECTION 614 EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

### 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.

If not present in an existing traffic controller cabinet, the following items shall be installed and connected, in conformance with the current Functional Specifications for Traffic Control Equipment, "D" Cabinet Requirements (Pre-emption Type):

- 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.

**REVISION OF SECTION 614  
EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

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:
  - Confirm that the emitter activates the phase selector and the phase selector activates the correct pre-emption input to the controller.
  - 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).
  - 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.

**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:**

<b>Pay Item</b>	<b>Pay Unit</b>
Emergency Vehicle Traffic Signal Priority Control System	Each

**END OF REVISION**

## **REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)**

**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)**

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:

- 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.
- Configuration setup: Create and modify detector configurations to be executed on the MVP sensor and the modular cabinet interface unit.
- Operation log: Retrieve, display, and save field hardware run-time operation logs of special events that have occurred.
- Software install: Reconfigure one or more MVP sensors with a newer release of embedded system software.
- Streaming video player: Play and record streaming video with flashing detector overlay.
- Data retrieval: Fetch once or poll for traffic data and alarms and store on PC storage media.
- 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)**

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)**

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 interdevice 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)**

**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) shall be measured and paid by the number of cameras installed at each intersection. 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:**

<b>Pay Item</b>	<b>Pay Unit</b>
Intersection Detection System (Camera)	Each

**END OF REVISION**

**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 614.14 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Pedestrian push button instruction sign	Each

**END OF REVISION**

**REVISION OF SECTION 614  
LED PEDESTRIAN SIGNAL HEAD (COUNTDOWN)**

**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 countdown timers shall meet the following requirements:

- (1) 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.
- (2) Signal housing shall be aluminum, painted in Federal Green and “clam-shell” mounted.
- (3) The signal shall have user-selectable modes for countdown for walk cycle only, pedestrian cycle only, or both walk and pedestrian clearance.
- (4) 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.
- (5) 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.
- (6) The Man/Hand configuration shall provide clear and distinct lamination where either symbol is in use.
- (7) The LED module shall be rated for use in an ambient operating temperature range of -40° F to 165° F.
- (8) 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 Face (Countdown) will be measured by the actual number of units that are installed and accepted.

**Subsection 614.14 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Pedestrian Signal Face (16) (Countdown)	Each

**END OF REVISION**

**REVISION OF SECTION 614  
SIGN POSTS**

**Section 614 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 614.02 shall include the following:**

The sign posts for this Project shall consist of square, perforated, welded steel tubing with perforations or knockouts on all four sides to mount signs back-to-back and on adjacent sides. The tubing shall permit sections of different sizes to telescope into the next larger size to allow adjustment, reinforcement and splicing. Compatible fittings, accessories, nuts and bolts shall be used for installation.

Additionally, the sign posts shall allow installation by hand or power, sign mounting before installation, four-sided sign mounting at any height, efficient replacement of damaged sign posts, reusable materials, and FHWA-approved yielding breakaway capability in compliance with AASHTO specifications.

Sign posts shall be galvanized conforming to ASTM specification A-653 des. G-90. Corner weld shall be zinc coated after scarfing operation. Qwik-Punch die-cut posts shall be in-line galvanized per AASHTO M-120. All galvanized components shall receive a conversion coating and a clear organic polymer topcoat.

Additional requirements are as follows:

Tube Size	Wall Thickness	Area	Wt./Ft/	I	s	r
Inches	Nominal/Decimal	Sq. In.	Lbs.	In.4	In.3	In.
2 x 2	14 (.083)	.474	1.99	.296	.296	.790

I = Moment of Inertia    s = Section Modulus    r = Radius of Gyration

**Subsection 614.14 shall include the following:**

**Pay Item**  
Steel Sign Post (2x2 Inch Tubing)

**Pay Unit**  
Linear Foot

**END OF REVISION**

**REVISION OF SECTION OF 614  
TRAFFIC CONTROL DEVICES**

**Section 614 of the Standard Specification is hereby revised for this project as follows:**

**Subsection 614.08 (h) shall include the following:**

“Light Emitting Diode” (LED) signal lenses shall be installed in all Red, Yellow, Green, Walk and Don’t Walk, and Countdown signal displays. This work shall be included in the cost of the item for Traffic Signal Face and will not be paid for separately.

**END OF REVISION**

## **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 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.

## **REVISION OF SECTION 614 TELEMETRY (FIELD)**

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.

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.

**REVISION OF SECTION 614  
TELEMETRY (FIELD)**

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 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

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:

<b>Pay Item</b>	<b>Pay Unit</b>
Telemetry (Field)	Each

**END OF REVISION**

**REVISION OF SECTION 614  
ETHERNET MANAGED SWITCH (INSTALL ONLY)**

**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, to be furnished by CCD, in the CCD controller cabinets. The switch shall be compatible with the existing system.

**Subsection 614.08 shall include the following:**

An Ethernet Managed Field Switch is hereby added to the Standard Specifications and shall comply with the following specifications:

General System Requirements –The Ethernet Managed Field Switch, or equivalent with the Industrial Ethernet Managed Field Switch, shall be a Garrettcom Magnum Ethernet Managed Field Switch comprising of the following four (4) parts:

- (1) 6KQ-24VDC base unit with four 10/100 copper ports in slot A (without 24VDC power supply).
- (2) 6KQ-RJ45 module with four 10/100 copper ports in slot B.
- (3) 6KQ4-MLC module with four 100Mb 2km multi-mode LC fiber ports in slot C.
- (4) 6KQ-BLNK blank cover for 1 unused module in slot C.

The field switch must also meet the following requirements:

- May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types - 16 total ports maximum.
- Heavy duty and environmentally hardened fully enclosed metal case with advanced thermal design used as a heat sink (no fan).
- Dual LEDs for all-around status viewing.
- Wire speed filtering and forwarding across all ports - 802.3x flow control, 802.1p priority packet processing, self learning 4K-node address table, large 240KB packet buffers for 10/100 and 120KB for 1000Mb.

The unit shall be configured as a minimum:

Filtering/Forwarding Rate Performance:

- Ethernet (10Mb):14,880 pps
- Fast Ethernet (100Mb): 148,800 pps
- Gigabit Ethernet (1000Mb): 1, 488,000 pps
- Switching Processing Type: Store and Forward with IEEE 802.3x full duplex flow control, non-blocking
- Data Rate: 10Mbps, 100Mbps and 1000Mbps
- Address Table Capacity: 4K node, self-learning with address aging
- Packet buffer size: 240KB for 10/100 and 120KB for 1000Mb
- Latency: 5  $\mu$ s + packet time (100 to 100Mbps); 15  $\mu$ s + packet time (10 to 10 Mbps, and 10 to 100Mbps)



**REVISION OF SECTION 614  
ETHERNET MANAGED SWITCH (INSTALL ONLY)**

- Throughput with 12 10/100 and 2Glink max.- 4.76M pps (Transmit)
- Back plane- 2.66 GB/s per slot LEDs:
- Per Port (one set at the port, one set on swivel top on right side)
- LK: Steady ON when media link is operational
- ACT: ON with receiver port activity
- FDX/HDX: ON = Full-Duplex Mode; OFF = Half-Duplex Mode
- 100/10: ON = 100Mbps speed; OFF = 10 Mbps

Network cable connectors:

- 1000Mb fiber ports: all standard Gb SFP Transceiver types supported
- 1000Mb copper ports: 10/100/1000Mb auto-negotiating, Cat5e & 6 UTP/STP
- 100Mb Copper and PoE: Category 5 UTP/STP; 10 Mb: Cat. 3, 4, 5 UTP/STP
- 100 Mb Fiber ports connector options: multi-mode FX-MTRJ, LC, ST, SC; Single-mode 15Km LC, 20Km SC and ST, and 40 Km “long reach” single-modes SC.

Operating Environment:

- Ambient Temperature: -40° to 140° F (-40° to 60°C)

Alarm Relay Contacts:

- One NC indicating internal power, one NC software controllable

DC Power Supply:

- 24VDC Power Input nominal (range 18 to 36VDC)
- Power Consumption: 35 watts worst case (for a fully loaded fiber model); 12 watts typical (for a small 4 port copper-only model)

Vertical mounting normal:

- Suitable for wall or DIN-Rail mounting

Testing Requirements - The Contractor shall supply one unit of Ethernet Managed Switch to the Engineer for specification compliance testing and approval. If the product passes the specification compliance testing and approval 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-TEST, the test unit will be returned back to the Contractor. The Contractor shall supply other units until satisfactory test results are achieved

**Subsection 614.13 shall include the following:**

The Ethernet Managed Switch installation will not be measured but shall be included in the cost of Telemetry. All work and installation shall include all wiring for hook-up and related labor and material required for the completion of the installation.

**Subsection 614.14 shall include the following:**

Ethernet Managed Field Switch installation will not be paid for separately, but shall be included in the cost of the Telemetry (Field).

**END OF REVISION**

## **REVISION OF SECTION 614 FIBER OPTIC CABLE - GENERAL**

**Section 614 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 614.01 shall include the following:**

This work provides for the installation of fiber optic communications cable to be installed in conduit or duct as specified in the plans. All labor and materials required to fan-out, terminate, splice or otherwise connect fiber optic cables at individual controller cabinets, will be paid separately under the Telemetry (Field) pay item. The contractor shall be required to demonstrate successful signal system communications to the Engineer as a requirement of acceptance of this item.

**Subsection 614.10 shall include the following:**

All fiber-optic interconnect cable shall be furnished by the Contractor, and installed, spliced (if required and only as approved by the Engineer), terminated, connected and tested by the Contractor. The number denoted prior to the "MM" designator identifies the number of multi-mode fibers (Strands) in the cable. The number denoted prior to the "SM" designator identifies the number of single-mode fibers (Strands) in the cable.

Cable ends shall be stored in pull boxes or splice closures at locations indicated in the plans or as directed by the Engineer. Fibers to be spliced and/or connected in any manner shall be limited to those identified in the plans, and only in designated controller cabinets or splice closures. All other fibers shall be left uncut or sealed as appropriate in a manner recommended by the cable manufacturer.

Fiber optic cable shall be installed in a continuous run between all controller cabinets and splice closures as shown in the plans. Lateral cables shall be spliced only in splice closures and routed to the controllers as shown in the plans. **Under no conditions shall the fiber cable be cut out or spliced at intermediate points without the express written direction of the Engineer.**

Cable shall be installed in new conduit or existing conduit as specified in the plans. The Contractor shall be required to leave a minimum of 10 feet of cable slack in the equipment controller cabinet. The Contractor shall leave a minimum of 50 feet of cable slack in the pull box adjacent to the controller and shall leave a minimum of 50 feet of slack in all other communication pull boxes.

Cable Tags and Labels:

Fiber optic cable shall be neatly coiled and clearly tagged and labeled at each communication pull box and at all locations where the fiber is exposed. Cable tags and Labels shall be as follows:

Materials: Metal or heavy plastic identification tags with cable type and number, copper pair or optic number assignments, and destination shall be provided on both ends of all cables (except station cables) and all splice cases. All cables shall be clearly labeled with cable number (City to determine scheme) and size at each end of the cable, when it enters or leaves a conduit and at 30-foot intervals when run in accessible areas such as tunnels, manholes, ceilings, etc.

## **REVISION OF SECTION 614 FIBER OPTIC CABLE - GENERAL**

Manufacturer: Tags shall be 3M, Panduit or an approved equivalent.

Controller cabinets to be connected under this project will connect directly to the appropriate controller as shown in the plans. This connection will be paid under Telemetry (Field).

*General Requirements:* The Contractor shall provide the Engineer with two copies of the cable manufacturer's cable specifications and installation instructions for fiber optic cable in conduit. All installation shall be in accordance with these practices except as otherwise directed by the Engineer.

Additional cable costs due to damage caused by the Contractor's neglect of recommended procedures shall be Contractor's responsibility. The main cable shall be installed in continuous runs except where cable type changes or where maximum pull lengths govern. The manufacturer's recommended limits for cable pull tensions shall not be exceeded. Cable ends shall be stored in controller cabinets or pull boxes immediately adjacent to cabinets or as directed by the City.

Lateral and Branch cables shall be installed using appropriate strain relief in the cabinet (through cable ties) at a minimum of three locations.

All fiber optic cables to be installed shall be checked with an OTDR before and after installation. Documentation of fiber performance shall be provided to the City within 30 days of test. All optical fibers shall be within the manufacturer's recommended tolerances. In addition, any other acceptance testing recommended by the manufacturer shall be provided. Data shall be supplied to the City prior to completion of the project.

Fiber optic cable shall be transported to site using cable reel trailers. Care shall be taken at all times to avoid scraping, denting, twisting, or otherwise damaging the cable before, during and after installation. Damaged cable shall be replaced by the Contractor without additional compensation.

Cable shall be installed in conduit or duct in the field in accordance with the contract drawings. The conduit and duct ends shall have all rough edges smoothed to prevent scraping the cable. All existing or suspected dirt and debris within the conduit shall be cleaned with compressed air before installing cable. A manufacturer recommended lubricant shall be applied to the cable to reduce friction between the cable and duct or conduit. Where fiber optic cables are to be installed in inner duct, the Contractor shall secure each section of the conduit to prevent it from being pulled without the cables.

A cable grip shall be attached to the cables so that no direct force is applied to the optical fiber. The cable grip shall have a ball-bearing swivel to prevent the cable from twisting during pulling. Cable rollers and feeders and winch cable blocks shall be used to guide the cable freely into the duct and at maintenance hole locations. Mechanical aids and pulling cable or ropes shall be used as required. **The maximum pulling tension as defined by the cable manufacturer shall not be exceeded.** The cable shall be taken up at intermediate pulling points with an intermediate cable take-up device as approved by the Engineer to prevent over-tension on the cable. Cable pulls shall be continuous and steady between pull points and shall not be interrupted until the entire run of cable has been pulled. Personnel equipped with two-way radios shall be stationed at each

**REVISION OF SECTION 614  
FIBER OPTIC CABLE - GENERAL**

maintenance hole, cabinet, pedestal, communications box, and junction box through which the cable is to be pulled to observe and lubricate the cable. Intermediate splices between pull boxes shall not be allowed. The cable shall be securely fastened in place within pull boxes, pedestals, manholes and cabinets.

The contractor shall ensure cable length is sufficient to allow for connection between the communications equipment and the splice equipment and the splice enclosures including provision for slack, vertical runs, cable necessary for splicing, wastage and cable to allow for the removal of the splice enclosure for future splicing.

*Lateral and Branch Fiber Optic Cable:* Lateral/Branch fiber optic cable shall consist of 6 multi-mode fibers and 6 single-mode fibers. Lateral/Branch fiber optic cable shall be installed in new or existing conduit, or along existing span wire, as depicted in the plans. Cables shall be provided with appropriate strain relief in the cabinet, consisting of cable ties in at least three interior cabinet locations. Lateral and Branch fiber optic cable shall be clearly tagged and labeled as such at pull boxes and all other locations where it is exposed. At any location where the cable is brought into or out of a span wire pole, the Contractor shall install a new weather-head to accommodate the bending radius of the cable.

**Subsection 614.13 shall include the following:**

Fiber Optic Cable for the main (backbone), lateral and branch cables will not be measured separately, but shall be included in the item Telemetry (Field), and shall include all labor and materials required to install the main, lateral, branch, and start cables through conduits to all pull boxes, cabinets and closures specified in the plans. Installation of all internal field cabinet telemetry, splicing, fan-out and termination of the cable at individual controller cabinets is described and paid for under Telemetry (Field).

**Subsection 614.14 shall include the following:**

No separate measurement or payment will be made for fiber optic cable. All fiber optic cable shall be considered incidental to the Telemetry (Field) pay item.

**END OF REVISION**

## **REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE**

**Section 614 of the Standard Specifications is hereby revised for this project as follows.**

Notice:

*Every effort has been made to ensure that the information contained in this specification is complete and accurate at the time of publication; however, information contained herein is subject to change.*

Trademarks:

*ANSI® is a registered trademark of the American National Standards Institute, Inc.*

*KELLEMS® is a registered trademark of Harvey Hubbell, Inc.*

Scope:

This specification covers the general design requirements and performance standards for fiber optic cables intended primarily for use in the outside plant environment. The purpose of this document is to provide the essential requirements for All-Dielectric Single Jacket, Single Jacket / Single Armor, and Double Jacket / Single Armor Loose Tube Fiber Optic cable to be used in the City of Denver networks.

The product requirements and features described in this specification are those considered useful for ensuring proper selection and manufacturing of fiber optic outside plant cables.

In this specification, all observed or calculated values are rounded off "to the nearest unit" in the last right hand place of figures used in expressing the limiting value. The round-off method of ASTM E 29 is used.

These cables should comply with industry standards such as Telcordia Technologies GR-20 (formerly Bellcore), Electronic Industries Association (EIA), Telecommunications Industry Association (TIA), International Telecommunications Union (ITU), International Electrotechnical Commission (IEC), and American Society for Testing and Materials (ASTM).

### Optical Fiber Characteristics

High quality optical fibers should be made with pure silica-based glass to have very low loss for infrared wavelengths and to be used to carry large amounts of information for very long distances in optical communication systems.

Details of the optical fibers are not covered in this specification, but the proposed cable should contain AllWave® or TrueWave® fibers for Single-Mode applications, or Multimode fibers that comply with the specific fiber requirements supplied by the City of Denver.

### CABLE CORE CHARACTERISTIC:

1. Color Code:

The individual colors for fibers and buffer tubes in loose tube cable cores should comply with EIA/TIA-598 as given in the following table.

**REVISION OF SECTION 614  
LOOSE TUBE FIBER OPTIC CABLE**

**Table 1 – Fiber and Tube Color Code**

<i>Fiber or Tube No.</i>	<b>Color</b>
1	Blue (BL)
2	Orange (OR)
3	Green (GR)
4	Brown (BR)
5	Slate (SL)
6	White (WH)
7	Red (RD)
8	Black (BK)
9	Yellow (YL)
10	Violet (VI)
11	Rose (RS)
12	Aqua (AQ)

**2. Central Strength Member**

The central member functions as an anti-buckling element, and should be a glass/epoxy composite dielectric rod. A polyethylene overcoat may be applied to the central member to provide the proper spacing between buffer tubes during stranding.

**3. Loose Tube Cable Buffer Tubes**

Optical fibers are enclosed within buffer tubes that have a diameter several times larger than the diameter of the fibers. The optical fibers are loose within the buffer tubes allowing the fibers to move freely. The loose buffer tubes should have a 2.5 mm diameter, with a nominal wall thickness of 0.4 mm. For composite cable designs when both and multi-mode fibers are contained within the same cable, the single-mode fibers will be contained in the first buffer tubes. The multi-mode fibers will be contained in the sequenced buffer tubes following the multi-mode buffer tubes.

**Table 2 – Buffer Tubes**

<b>Fiber Count</b>	<b>Buffer Tube OD (mm)</b>	<b>Fibers per Tube</b>
1-288	2.5	12

The buffer tubes (and filler rods, if necessary) must be stranded in a reverse oscillation lay (ROL) technique around the central member to allow for easy mid-span access. The core of buffer tubes should be wrapped with two counter helically applied threads to bind together the cable core.

**4. Filler Rods**

In order to create a round cable, filler rods of the same diameter as the buffer tubes may be used to fill empty positions. Filler rods are made out of HDPE and are natural in color.

**5. Water Blocking System**

Water blocking of the core outside and around the buffer tubes must be accomplished via “dry” elements. **In addition, water-blocking inside the buffer tubes must be accomplished via “dry” elements as well.**

## **REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE**

These “dry” water blocking elements form a gel compound when in contact with water. The gel should effectively fill the interstices of the core and the inside of the tubes to prevent water penetration along the length of the cable. This dry water blocking significantly reduces cable core access time by eliminating the step of cleaning the buffer tubes and fibers upon entry. Additionally, this technology reduces the cable weight.

Dry water blocking elements should be in the form of binders, tapes, or yarns depending on where they are being applied.

### **CABLEABLE SHEATH CHARACTERISTIC:**

The sheaths described in this section are:

- All-Dielectric Single Jacket: One polyethylene jacket, no metallic elements (SJ)
- Strength Elements: Sheath strength elements are applied over the cable core to provide the cable with the required tensile strength. These elements are made of fiberglass (Aramid yarns may be used as well).
- Inner Jacket (NOT APPLICABLE TO THIS PROJECT)
- Steel Armor (NOT APPLICABLE TO THIS PROJECT)
- Outer Jacket: An outer polyethylene jacket is applied over the cable to provide overall mechanical protection. This jacket is made of MDPE (or HDPE upon request) and is usually black. If required, the jacket could have two co-extruded colored tracer stripes located 180 degrees apart to aid in cable identification. The jacket will be continuous, free from pinholes, splits, blisters, or other imperfections.
- Ripcords: For ease of jacket removal, one clearly identifiable polyester ripcord is provided under the outer jacket for SJ designs. SJ/SA designs shall have two under armor ripcords placed 180 degrees apart. DJ/SA designs shall have one ripcord under both the inner jacket and steel armor.

Cable Cross-Sections:

Single Jacket (SJ)

**REVISION OF SECTION 614  
LOOSE TUBE FIBER OPTIC CABLE**



**Figure 1 – Single Jacket**

**Table 3 – Target Cable Outer Diameters**

NUMBER OF FIBERS								
	2 - 60 (5 Pos.)	2 - 72 (6 Pos.)	73 - 96 (8 Pos.)	97 - 120 (10 Pos.)	121- 44 (12 Pos.)	145-216 (18 Pos.)	217-240 (20 Pos.)	241-288 (24 Pos.)
SHEATH TYPE	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)	Cable OD in. (mm)
SJ	0.42 (10.6)	0.43 (11.0)	0.50 (12.8)	0.57 (14.4)	0.64 (16.2)	0.66 (16.7)	0.69 (17.4)	0.76 (19.2)

**MECHANICAL, ENVIRONMENTAL AND ELECTRICAL REQUIREMENTS:**

These cables must meet the requirements of *Telcordia GR-20-CORE* with all testing performed based on *EIA/TIA-455* standards. The manufacturing company must provide proof of their quality control standards with *ISO 9001* and *TL9000* certifications. The cables should comply with the following temperature ranges:

<b>Operation:</b>	-40°C to 70°C (-40°F to 158°F)
<b>Installation:</b>	-30°C to 60°C (-22°F to 140°F)
<b>Storage/Shipping:</b>	-40°C to 75°C (-40°F to 167°F)



## REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE

### Single-Mode Fibers

Per *Telcordia GR-20*, the magnitude of the attenuation change shall be less than or equal to 0.05 dB for 90% of the test fibers and less than or equal to 0.15 dB for the remaining 10% of test fibers. Cable aging allows for 0.10 dB/km average attenuation change with a magnitude of the maximum attenuation change for each individual fiber to be less than 0.25dB/km. These attenuation values include a 0.05 dB allowance for measurement repeatability. During mechanical and environmental testing evidence of cracking, splitting or other failure of the sheath components when examined under 5X magnification would result in failure of the proposed test requirements. In addition, no fiber shall lose optical continuity because of the test.

**Table 4 – Testing for Single Mode Fibers**

Cable Test	Test Method	Requirement
Tensile Loading and Bending	EIA/TIA-455-33 IEC 794-1-E1	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
Cyclic Flexing	TIA/EIA-455-104 IEC 794-1-E6	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
Cyclic Impact	EIA/TIA-455-25 IEC 794-1-E4	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
Compressive Loading	TIA/EIA-455-41 IEC 794-1-E3	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
Twist	TIA/EIA-455-85 IEC 794-1-E7	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
Low and High Temperature Bend	EIA/TIA-455-37 IEC 794-1-E11	90% < 0.05 dB Max. Added Loss 100% < 0.15 dB Max. Added Loss
External Freezing	EIA/TIA-455-98 IEC 794-1-F6	< 0.05 dB Mean Added Loss < 0.15 dB Max. Added Loss
Temperature Cycling	EIA/TIA-455-3 IEC 794-1-F1	<input type="checkbox"/> 0.05 dB/km Mean Added Loss <input type="checkbox"/> 0.15 dB/km Max Added Loss
Cable Aging	EIA/TIA-455-3 IEC 794-1-F1	<input type="checkbox"/> 0.10 dB/km Mean Added Loss <input type="checkbox"/> 0.25 dB/km Max Added Loss
Water Penetration	EIA/TIA-455-82 IEC 794-1-F5	No flow after 24 hours from one meter length of cable

### Multimode Fibers

Per *Telcordia GR-20*, the allowable attenuation increase during the mechanical and environmental testing is 0.20 dB. Cable aging allows for the maximum attenuation change for each individual fiber to be less than 0.40dB/km.

During mechanical and environmental testing evidence of cracking, splitting or other failure of the sheath components when examined under 5X magnification would result in failure of the proposed test requirements. In addition, no fiber shall lose optical continuity because of the test.

**REVISION OF SECTION 614  
LOOSE TUBE FIBER OPTIC CABLE**

**Table 5 – Testing for Multi-Mode Fibers**

<b>Cable Test</b>	<b>Test Method</b>	<b>Requirement</b>
Tensile Loading and Bending	EIA/TIA-455-33 IEC 794-1-E1	0.20 dB Max. Mean Added Loss
Cyclic Flexing	TIA/EIA-455-104 IEC 794-1-E6	0.20 dB Max. Mean Added Loss
Cyclic Impact	EIA/TIA-455-25 IEC 794-1-E4	0.40 dB Max. Mean Added Loss
Compressive Loading	TIA/EIA-455-41 IEC 794-1-E3	0.20 dB Max. Mean Added Loss
Twist	TIA/EIA-455-85 IEC 794-1-E7	0.20 dB Max. Mean Added Loss
Low and High Temperature Bend	EIA/TIA-455-37 IEC 794-1-E11	0.40 dB Max. Mean Added Loss
External Freezing	EIA/TIA-455-98 IEC 794-1-F6	0.20 dB Max. Mean Added Loss
Temperature Cycling	EIA/TIA-455-3 IEC 794-1-F1	<input type="checkbox"/> 0.5 dB/km Max Added Loss 80 % <input type="checkbox"/> 0.25 dB/km Added Loss
Cable Aging	EIA/TIA-455-3 IEC 794-1-F1	<input type="checkbox"/> 1.0 dB/km Max Added Loss 80 % <input type="checkbox"/> 0.5 dB/km Added Loss
Water Penetration	EIA/TIA-455-82 IEC 794-1-F5	No flow after one hour from one meter length of cable

**Note:**

The tensile rating for all of the cables described should be 2.7 kN (600 lbf), with a compression rating of at least 220 N/cm under GR-20 requirements.

**CABLE MARKING**

**Printed Characters**

For standard outer jackets, printed characters shall be indent printed with white characters for black jackets, black characters for non-black jackets, or as otherwise specified.

For standard striped outer jackets, printed characters shall be indent printed with white characters for red, green, orange, yellow, blue striped cables, light-blue characters for white striped cables, or as otherwise specified by the customer.


The characters shall be of proper height and space to produce good legibility. Character heights of 2 mm should facilitate adequate readability. An occasional illegible marking is permitted if there is a legible marking on either side.

**Markings**

The cable shall be sequentially marked at one meter, or two-foot intervals depending on specific requirements issued by the City of Denver. The length marks shall not be reset to zero on any length of the cable. The actual length of cable shall be within +1, -0% of the marked length.

## **REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE**

Each length of cable shall be marked with the following legend:

"(Manufacturer Name) OPTICAL CABLE, (Product Part Number), (Month and Year of Manufacture, [ MM-YY ] ), (Telephone Symbol [  ] ), (Fiber Count [ XXX F ], where XXX is the number of optical fibers in the cable), and (Manufacturers' Serial Number) "

### Re-Markings

Only one remarking is permitted. If required, either of the following methods for remarking shall be used:

Method A: Completely remove the defective marking and remark the characters with the original color.

Method B: Leave the defective marking on the jacket and remark on a different portion of the cable jacket with yellow character print. The new number sequence shall differ from any other existing marking by at least 5000.

Any cable that contains two sets of markings shall be labeled to indicate the color and sequential numbers to be used. The labeling shall also be applied to the reel tag.

### CABLE PACKAGING

#### Reels

The manufacturer shall supply the product using their standard reel sizes, methods, apparatus, and reel wood lagging, but stenciled according to these specifications. The specifications outlined here are guidelines on what is expected with respect to packaging.

Reels are assumed to be in good working condition, firm, and be able to support the product through shipping and final installation. Reels shall be clean, dry and free of excessive dirt. All reels shall be checked for high nails, stave fit and proper stenciling.

#### Reel Labels

Each wooden reel shall be permanently marked with the following information:

- “(Manufacturer’s name)” (red paint)
- “OPTICAL CABLE” (black paint)
- An arrow and the wording “cable end” to indicate the position of the outside cable end. (red paint)
- An arrow and the wording “ROLL THIS WAY” to indicate the direction the reel should be rolled to prevent loosening of the cable. (black paint)
- Reel Number (red paint)

Cable handling stickers/cards must be attached to both flanges of every reel. Each sticker must be stapled to the flange. See Figure 4 for illustrations of the stickers to be used.

## REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE

### Reel Lagging

#### Thermal Protection

Outer layers of the reel shall be covered with a protective wrap to limit the solar heating of the cable. This helps limit the cable surface temperature so that it will not exceed 10 C (18 F) above ambient temperature under maximum solar radiation according to Telcordia GR-20 requirements. All foil wrap shall be securely fastened to the cable by at least 2 pieces of strapping tape.

#### Composite & Wood Lagging

Reels shipping domestically shall be lagged with a suitable protective wrap (can be the same thermal protection wrap) and banded with steel straps. This wrap shall cover the cable from flange to flange and provided some mechanical protection to the outer layers of cable as well as weather resistance. Reels shipping for export shall be lagged with wooden boards nailed to each flange and banded with steel straps in addition to the protective wrap around the outer layers of cable.



Figure 4 – Reel Stickers

### Other

#### Cable Ends

Each end of the cable shall have end seals, either end caps or KELLEMS® pulling grips, in order to prevent moisture ingress into the cable during shipping, storage, or installation.

## **REVISION OF SECTION 614 LOOSE TUBE FIBER OPTIC CABLE**

The top end of the cable shall be securely fastened to the inside of the reel flange to prevent the cable from becoming loose in transit or during handling. The bottom end, "test tail", shall be approximately three meters in length and easily accessible. The end shall be protected within a cable slot and be securely fastened to the outside of the reel flange with wire ties or walkout straps. Staples, nails or yarn attached to the reel during manufacturing shall be removed.

The cable slot can be partially protected to prevent the cable tail from moving outside this, however for export orders the cable slot must be completely sealed by either metallic protection rings, plywood covers, or other.

### **Cable Length Tolerance**

Cables ordered to standard factory lengths shall have an actual length within -0% and +5% of the length ordered unless otherwise specified by the customer.

### **Certified Test Data**

Each cable shall have certified test data securely fastened to the reel in a waterproof wrapping. The certified test data sheet shall include the following information:

- Cable Number
- Date
- Customer Name
- Ordered Length
- Customer Order Number
- Ship Length
- Customer Cable Code
- Customer Reel Number
- Customer's Attenuation Specification(s)
- Number of Fibers
- Cable Construction
- Fiber Transmission Data
- Bandwidth Data – only applies to Multi-Mode Fibers
- Authorized Signature

**REVISION OF SECTION 614  
LOOSE TUBE FIBER OPTIC CABLE**

Reel Tag

Each cable shall have a reel tag securely fastened to the reel in a waterproof wrapping. The Reel Tag (Cut Length Data Sheet) shall include the following information:

- Cable Number
- Date
- Customer Name
- Ordered Length
- Customer Order Number
- Ship Length
- Customer Cable Code
- Customer Reel Number
- Customer's Attenuation Specification(s)
- Number of Fibers
- Beginning and Ending Sequential Length Markings
- Gross Weight
- Net Weight
- Inspected By Signature

**END OF REVISION**

## **REVISION OF SECTION 614 TEST FIBER OPTIC CABLE**

**Section 614 of the Standard Specifications is hereby revised for this project as follows.**

**Subsection 614.08(p), Test Fiber Optic Cable, is hereby added to the Standard Specifications and shall include the following:**

This work consists of testing fiber optic cable. Testing shall include both new cable and existing cable. The test procedures involve an OTDR test and an Optical Power Meter Test.

The guidelines for fiber optic cable testing include:

Test jumpers and patch cords must be of the same fiber core size and connector type as the cable system.

The light source and OTDR must operate with the range of  $1310\pm 10$  nm or  $1550\pm 20$  nm for testing in accordance with ANSI/EIA/TIA-526-7.

The power meter and the light source must be set to the same wavelength during testing.

The power meter must be calibrated and traceable to the National Institute of Standards and Technology (NIST).

All system connectors, adapters and jumpers must be cleaned as per manufacturer's instructions before measurements are taken.

### **MATERIALS**

The following items are required to perform fiber optic cable tests:

- an OTDR;
- a test reel, if necessary;
- a light source at the appropriate wavelength;
- Optical Power Measurement Equipment; and
- Test Jumpers as specified below.
  - (a) CPR Test Jumper-1 and Test Jumper-2 shall be 1-5 meters long with connectors compatible with the light source and power meter and have the same fiber construction as the link segment being tested.

### **OPTICAL FIBER CABLE TESTING WITH O.T.D.R**

The Contractor shall perform an OTDR test of all fibers in all tubes on the reel prior to installation of the fiber. The test results shall be supplied to the Engineer prior to installation of the cable.

If the fiber is specified as "Install Only", the Contractor shall test the fiber on the reel and provide the test results to the Engineer prior to accepting the cable. After installation, if there are unused





## **REVISION OF SECTION 614 TEST FIBER OPTIC CABLE**

To ensure the traces identify the end points of the fiber under test and the fiber designation, the Contractor shall use a test reel, if required, to eliminate the “dead zone” at the start of the trace so that the start of the fiber under test can be identified on the trace. Indicate the length of the test reel for all test results.

If the fiber designation is not indicated on the trace itself, the Contractor shall provide a cross-reference table between the stored trace file name and the fiber designation.

In compliance with EIA/TIA-455-61 “Measurement of Fiber or Cable Attenuation Using an OTDR” the Contractor shall record the following information during the test procedure:

- Names of personnel conducting the test.
- Type of test equipment used (manufacturer, model, serial number, calibration date).
- Date test is being performed.
- Optical source wavelength and spectral width.
- Fiber identification.
- End point locations.
- Launch conditions
- Method of calculation for the attenuation or attenuation coefficient.
- Acceptable link attenuation.

### **OPTIC FIBER CABLE TESTING WITH OPTICAL POWER METER**

The Contractor shall conduct an Optical Power Meter Test for each fiber installed.

Fiber optic cable segments shall be tested in one direction at both the 1310 nm and 1550 nm wavelength.

In compliance with TIA/EIA-526-7 “Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant,” the following information shall be recorded during the test procedure:

- Names of personnel conducting the test.
- Type of test equipment used (manufacturer, model, serial number, calibration date).
- Date test is being performed.
- Optical source wavelength and spectral width.
- Fiber identification.
- End point locations.
- Test direction.
- Reference power measurement (when not using a power meter with a Relative Power Measurement Mode).
- Measured attenuation of the link segment.
- Acceptable link attenuation.

The minor attenuation differences due to test direction are on par with the accuracy and repeatability of the test method. Lateral segments within a building are limited to 90 meters. Therefore, attenuation differences caused by wavelength are insignificant, and as a result, single wavelength testing is sufficient.

## REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

### ACCEPTABLE ATTENUATION VALUES

Acceptable attenuation values shall be calculated for each fiber tested. These values represent the maximum acceptable test values.

*SM Fiber.* The general attenuation equation for any SM link segment is as follows:

Acceptable Link Attn. = Cable Attn. + Connector Attn. + Splice Attn.

8.3  $\mu\text{m}$  Single-mode Attenuation Coefficients:

Cable Attn.=Cable Length (km) x (0.34 [dB/km@1310 nm](#) or 0.25 [dB/km@1550 nm](#))

Connection Attn. (ST or SC connectors)=(No. of Connections x 0.39 dB)+0.42 dB.

Connection Attn. (LC connectors)=(No. of Connections x 0.14 dB)+0.24 dB.

Splice Attn. (Mechanical or Fusion)=Splices x 0.30 dB.

### TEST PROCEDURES

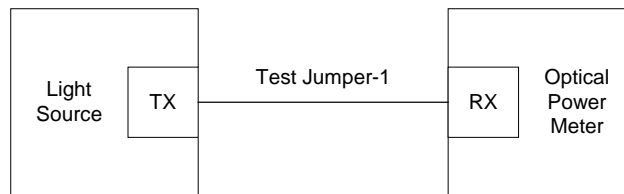
All fiber testing shall be performed on all fibers in the completed end-to-end system.

The Optical Power Meter fiber test shall be conducted as follows:

Clean the test jumper connectors and the test coupling per manufacturer's instructions.

Follow the test equipment manufacturer's initial adjustment instructions.

Connect Test Jumper-1 between the light source and the power meter. Avoid placing bends in the jumper that are less than 100 mm (4 inches) in diameter.

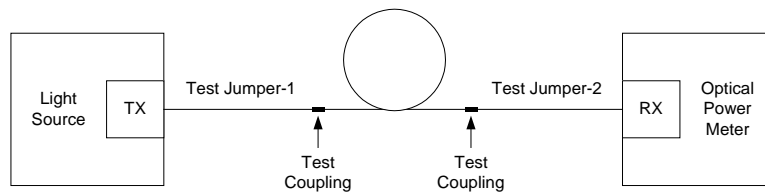


If the power meter has a Relative Power Measurement Mode, select it. If it does not, reduce the Reference Power Measurement ( $P_{ref}$ ). If the meter can display power levels in dBm, select this unit of measurement to simplify subsequent calculations.

Disconnect Test Jumper-1 from the power meter. Do NOT disconnect the test jumper from the light source.

Attach Test Jumper-1 to one end of the cable plant to be measured and Test Jumper-2 to the other end.

## REVISION OF SECTION 614 TEST FIBER OPTIC CABLE



Record the Power Measurement ( $P_{sum}$ ). If the power meter is in Relative Power Measurement Mode, the meter reading represents the true value. If the meter does not have a Relative Power Measurement Mode, perform the following calculation:

If  $P_{sum}$  and  $P_{ref}$  are in the same logarithmic units (dBm, dBu, etc.):

$$CPR (dB) = P_{sum} - P_{ref}$$

If  $P_{sum}$  and  $P_{ref}$  are in watts:

$$CPR (dB) = 10 \times \log_{10} [P_{sum}/P_{ref}]$$

### TEST ACCEPTANCE

The Contractor shall demonstrate that each Optical Power Test results in acceptable attenuation values.

The Contractor, solely at the Contractor's cost, shall remake any fusion splices that have test results exceeding acceptable attenuation values.

The Contractor, solely at the Contractor's cost, shall retest any fiber links that have been re-spliced.

The Contractor, solely at the Contractor's cost, shall bring any link not meeting the requirements of this specification into compliance.

### SUBMITTALS

The Contractor shall submit test results documentation as both a hard copy and electronic copy.

After each reel test, the Contractor shall submit one hard copy of the OTDR trace for every fiber on the reel. After installation, the Contractor shall submit one hard copy of the OTDR trace for every spliced fiber. Hard copy traces shall be organized and bound in logical order in an 8 1/2" x 11" hard cover binder.

The Contractor shall submit, after approval of the hard copy traces, electronic copies of all traces and appropriate software to allow reading the traces. The Contractor shall submit one copy of the complete contract Plans, including additional drawings issued as part of any change orders, with any deviations clearly marked in color. Deviations to be noted and shall include but not be limited to the following:

- Fiber Splice location;
- Fiber Splice configuration; and
- Termination layout.

**REVISION OF SECTION 614  
TEST FIBER OPTIC CABLE**

**Subsection 614.13 shall include the following:**

The complete end-to-end OTDR test on one fiber, including document submission, represents one OTDR test.

The complete end-to-end optical power meter test on one fiber, including document submission, represents one optical power meter test.

**Subsection 614.14 shall include the following:**

No separate measurement or payment will be made for fiber optic cable testing. All cable (system) testing shall be considered incidental to the Telemetry (Field) pay item.

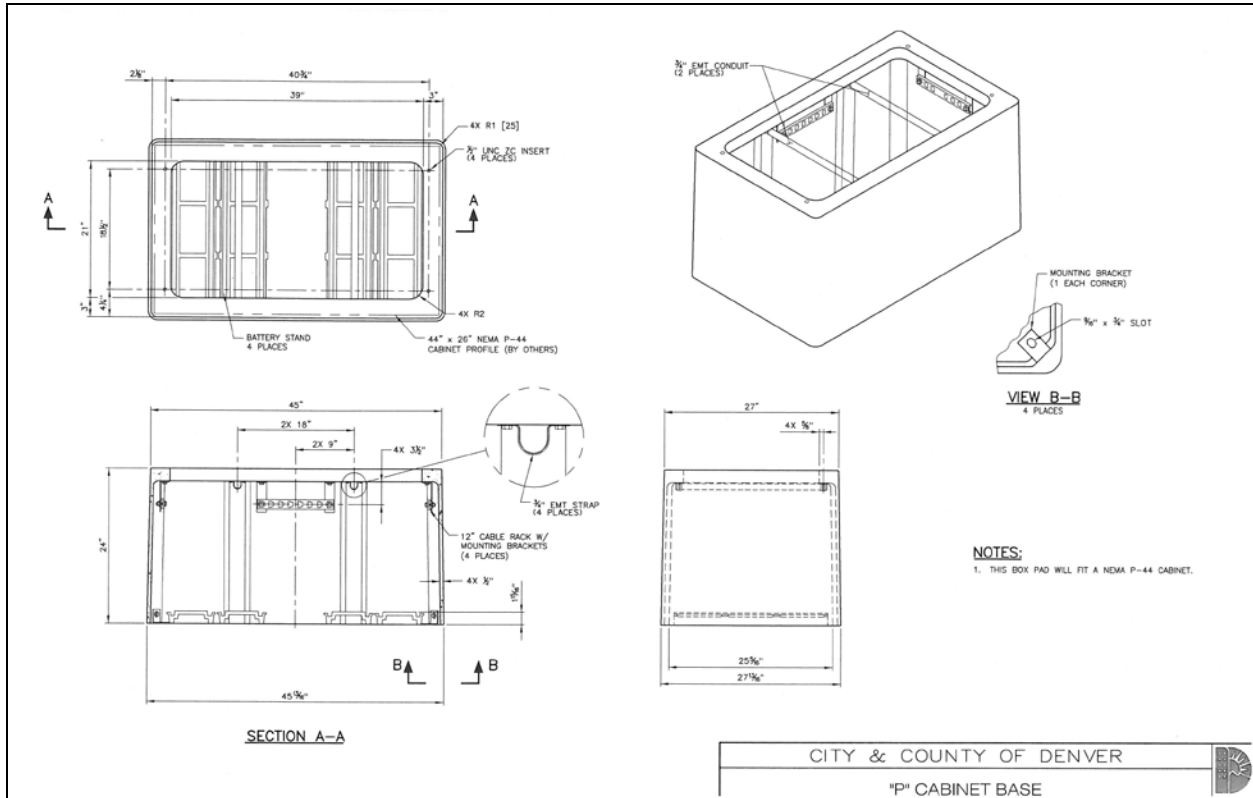
**END OF REVISION**

## REVISION OF SECTION 614 TRAFFIC SIGNAL CABINET BASE (INSTALL ONLY)

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 installing a Quazite Traffic Signal Controller Cabinet Base as shown on the plans and in accordance with the City & County of Denver standards. The base shall be furnished by the City and County of Denver and fit the P-Type Traffic Signal Controller Cabinet. Dimensions of the base are shown in the following drawing.



**Subsection 614.10 shall include the following:**

Prior to starting cabinet base installation, the contractor shall obtain field verification of the location of the base from the Engineer or Engineer's designee.

Cabinet base installation shall include all labor and materials to completely install a new P-type cabinet base for the controller cabinet as specified in the plans. This is to include all conduit installation and modification work, back-filling, and repair to all surrounding surface/area.

**REVISION OF SECTION 614  
TRAFFIC SIGNAL CABINET BASE (INSTALL ONLY)**

**Subsection 614.13 shall include the following:**

The traffic signal cabinet base and installation will not be measured and paid for separately, and shall be included in the cost of the Traffic Signal Controller and Cabinet installation.

**Subsection 614.14 shall include the following:**

Traffic signal cabinet base installation will not be paid for separately, but shall be included in the cost of the Traffic Signal Controller and Cabinet installation.

**END OF REVISION**

**REVISION OF SECTION 614  
TRAFFIC SIGNAL CONTROLLER AND CABINET (INSTALL ONLY)**

**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 complete installation of a Traffic Signal Controller and Cabinet assembly, malfunction management units (MMU), vehicle detector amplifiers, uninterrupted power supply (UPS), other ancillary hardware, and traffic signal cabinet base per City and County of Denver standards.

**Delete Subsection 614.08 (c) and replace with the following:**

All new cabinets are the P-type cabinets as per the City & County of Denver Traffic Standards. Each cabinet shall be installed on a newly installed traffic signal controller cabinet base unless otherwise specified on the plan. Contact Chris Lillie at 720-865-0466 for cabinet assembly requirements and all other necessary auxiliary hardware.

Controller cabinet assemblies shall include an integrated uninterrupted power supply (UPS) units that comply with the City and County of Denver standards (see UPS spec).

**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 controllers cabinets shall include all labor, materials, ancillary hardware, traffic signal cabinet base, wiring and wiring re-connection (including Xcel Energy power feed) required to provide successful operation of the item.

Removal and disposal of existing cabinets shall be in accordance with the Project Special Provision for the referenced item.

**Subsection 614.14 shall include the following:**

<b>Pay Item</b>	<b>Pay Unit</b>
Traffic Signal Controller and Cabinet (install only)	Each

**END OF REVISION**

**REVISION OF SECTION 614  
TRAFFIC SIGNAL POLES – GENERAL**

**Section 614 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 614.08 (g) shall include the following:**

TRAFFIC SIGNAL POLES: All traffic signal poles and mast arms shall conform to City and County of Denver Standards and the local utility company's (Xcel Energy) requirements. The traffic signal pole standards are shown below:

All traffic signal poles shall include a 10 foot long luminaries mast arm and a 250 WATT high pressure sodium curvilinear style luminaries in accordance with the current City and County of Denver Standards. Prior to order of traffic signal poles, mast arms and luminaries, contractor shall submit material specifications to the City and County of Denver Traffic Engineering Services for approval.

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 Triglycidyl Isocyanurate (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.

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 Triglycidyl Isocyanurate (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





# REVISION OF SECTION 614 TRAFFIC SIGNAL POLES – GENERAL

TABLE 2: POLE DATA																
POLE SERIES	DESIGN NUMBER	SINGLE ARM SPAN (FT)	DOUBLE MAIST ARMS		POLE TUBE				POLE BASE			ANCHOR BOLT				
			1st ARM SPAN (FT)	2nd ARM SPAN (FT)	BASE O.D. (IN)	TOP O.D. (IN)	LENGTH (FT)	THICK (IN)	SQUARE O.D. (IN)	BOLT O.D. (IN)	THICK (IN)	POLE DIA. (IN)	GA. (IN)	LENGTH (IN)	HOOK (IN)	THREAD LENGTH (IN)
DC01	1	20,25,30,35, & 40	N.A.	N.A.	15.50	10.60	35.00	.1875	21.00	20.00	1.75	2.00	1.75	84.00	6.00	8.00
DC01	2	45,50 & 55	N.A.	N.A.	17.00	12.10	35.00	.2188	23.00	22.00	2.00	2.25	2.00	84.00	6.00	10.00
DC01	3	60,65, & 70	N.A.	N.A.	19.50	14.60	35.00	.2500	26.00	25.00	2.00	2.25	2.00	84.00	6.00	10.00
DC01	4	N.A.	20 THRU 40	20 THRU 40	15.50	10.60	35.00	.2500	23.00	22.00	2.00	2.25	2.00	84.00	6.00	10.00

MAXIMUM ARM LENGTH COMBINATION FOR DUAL CONFIGURATION ARE 40'-0"/40'-0". ARM LENGTHS EXCEEDING THESE WILL REQUIRE A SPECIAL POLE DESIGN.

TABLE 3: SIGNAL ARM DATA										
MAXIMUM ARM SPAN (FT)	SIGNAL ARM TUBE			SIGNAL ARM SIMPLEX						
	FIXED END DIA. (IN)	SMALL END DIA. (IN)	GAUGE	A X B (IN)	C X D (IN)	THICKNESS (IN)	BOLT SIZE (IN)	OUSSET THICKNESS (IN)	ANGLE OF RISE IN ARM	
20.00	9.00	6.20	7	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.00°	
25.00	10.00	6.50	7	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.50°	
30.00	12.00	7.80	5	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.50°	
35.00	12.50	7.60	5	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	1.00°	
40.00	13.00	6.90	3	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	1.50°	
45.00	14.00	8.06	SEE DETAIL 10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	1.50°	
50.00	15.00	8.36	SEE DETAIL 10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	1.50°	
55.00	15.00	7.66	SEE DETAIL 10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	2.00°	
60.00	15.75	7.71	SEE DETAIL 10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.00°	
65.00	16.50	7.76	SEE DETAIL 10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.00°	
70.00	17.25	7.81	SEE DETAIL 10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.50°	

CITY & COUNTY OF DENVER  
PUBLIC WORKS  
TABLE DATA  
STD DWG NO 3

<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="4">MATERIAL DATA</th> </tr> <tr> <th>COMPONENT</th> <th>ACTM DESIGNATION</th> <th>WELT INDEX</th> <th>MIN. WELD SIZE</th> </tr> </thead> <tbody> <tr> <td>POLE SHAFT</td> <td>A500 GR. A</td> <td>50</td> <td>3/16"</td> </tr> <tr> <td>ARM SHAFT</td> <td>A500 GR. A</td> <td>50</td> <td>3/16"</td> </tr> <tr> <td>POLE BASE</td> <td>A36</td> <td>30</td> <td>3/16"</td> </tr> <tr> <td>ANCHOR BOLTS</td> <td>A307</td> <td>30</td> <td>3/4"</td> </tr> </tbody> </table>	MATERIAL DATA				COMPONENT	ACTM DESIGNATION	WELT INDEX	MIN. WELD SIZE	POLE SHAFT	A500 GR. A	50	3/16"	ARM SHAFT	A500 GR. A	50	3/16"	POLE BASE	A36	30	3/16"	ANCHOR BOLTS	A307	30	3/4"	<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>DEVICE</th> <th>DESCRIPTION</th> <th>PRELIMINARY QTY</th> <th>HIGHT (8.83)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>TOTAL 10" X 3" SIG. SIGNAL WITH BACKPLATE</td> <td>17.34</td> <td>99</td> </tr> <tr> <td>B</td> <td>SINGLE 10" PED SIGNAL</td> <td>2.25</td> <td>30</td> </tr> </tbody> </table>	DEVICE	DESCRIPTION	PRELIMINARY QTY	HIGHT (8.83)	A	TOTAL 10" X 3" SIG. SIGNAL WITH BACKPLATE	17.34	99	B	SINGLE 10" PED SIGNAL	2.25	30	<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>ARM SPAN (FT)</th> <th>FIXED END DIA. (IN)</th> <th>FREE END DIA. (IN)</th> <th>GA. (IN)</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>3.80</td> <td>2.39</td> <td>11</td> </tr> </tbody> </table>	ARM SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GA. (IN)	10	3.80	2.39	11												
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CITY & COUNTY OF DENVER  
PUBLIC WORKS  
LUMINAIRE DETAILS  
STD DWG NO 4

REVISION OF SECTION 614  
TRAFFIC SIGNAL POLES – GENERAL

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.

Delivery, Installation, and Acceptance of Poles:

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:**

<b>Pay Item</b>	<b>Pay Unit</b>
Traffic Signal-Light Pole Steel (1-XX Foot Mast Arm)	Each

**END OF REVISION**

**REVISION OF SECTION 614  
UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

**Section 614 of the Standard Specifications is hereby revised for this project as follows:**

**Subsection 614.08 shall include the following:**

The double conversion uninterruptible power supply system (UPS) shall provide emergency battery power to the traffic signal controller. 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 (INSTALL ONLY)**

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.

## **REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

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.

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.

**REVISION OF SECTION 614**  
**UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

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.

**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 an 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.

**REVISION OF SECTION 614  
UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

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.

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)



**REVISION OF SECTION 614  
UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

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)
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 (INSTALL ONLY)**

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<br>Yellow: Data Transmitting |
| LED(2) | Green: SNMP connecting<br>Yellow: SNM P functioning      |

## **REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM (INSTALL ONLY)**

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 (INSTALL ONLY)**

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:**

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:**

Traffic signal uninterrupted power supply system installation will not be paid for separately, but shall be included in the cost of the Traffic Signal Controller and Cabinet (install).

**END OF REVISION**

## **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 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 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 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.

## **REVISION OF SECTION 625 CONSTRUCTION SURVEYING**

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.

625.05 Staking. It is the responsibility of the Contractor's PLS to adhere to industry standards and acceptable practices in regards 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.

625.09 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.

625.10 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.

625.11 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.

**REVISION OF SECTION 625  
CONSTRUCTION SURVEYING**

Electronic submittal of survey records may be acceptable, please coordinate with the City Surveyor's Office.

**METHOD OF MEASUREMENT**

625.12 Construction surveying will not be measured but will be paid for on a lump sum basis.

**BASIS OF PAYMENT**

625.13 Payment for construction surveying will be the contract lump sum bid and 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.

Partial payment for construction surveying, as determined by the Engineer, will be made as the work progresses.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Construction Surveying	Lump Sum

Traffic control for construction surveying will be measured and paid for in accordance with Section 630.

**END OF REVISION**

**REVISION OF SECTION 626  
MOBILIZATION**

**Section 626 of the Standard Specifications is hereby revised to include:**

**Subsection 626.01 is hereby revised to include:**

This item also includes demobilization of equipment and supplies from this project site.

Subsection 626.02 is hereby deleted and replaced by the following:

Two payments will be made for the mobilization item. 50% of the amount bid for mobilization will be paid at the completion of mobilization. The remaining 50% of the amount bid for mobilization will be paid at the completion of the project when the equipment has been demobilized.

**Pay Item**  
Mobilization

**Pay Unit**  
Lump Sum

**END OF REVISION**



## **REVISION OF SECTION 629 SURVEY MONUMENTATION**

**Section 629 of the standard specifications is hereby revised as follows:**

**Delete section 629 and replace with the following:**

### **DESCRIPTION**

629.01 This work consists of 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, City of Denver range points, benchmarks, easement monuments, and other monuments that are required by law or regulation to be established and recorded by a Professional Land Surveyor (PLS), along with installing or adjusting Monument Boxes.

The production of additional documentation may be required by the City Surveyors' Office. All such work included in this section shall be under the supervision of a PLS who is licensed in the State of Colorado.

### **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 Check List 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 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's Office 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.

**REVISION OF SECTION 629  
SURVEY MONUMENTATION**

629.05 Preserving and Referencing Monuments. All monuments as described in 629.01 shall be preserved, reference and reset by a PLS within the project limits.

629.06 Installing Monuments. All monuments as described in 629.01 shall be preserved through construction. If any monuments as described in 629.01 are to be disturbed/removed during construction, it will be the contractor's PLS responsibility to reset all monuments to current City of Denver standards. Appropriate documentation will be required for all reset monuments.

629.07 Monument Box. This survey work shall consist of installing or adjusting monument boxes to current City or State requirements.

**METHOD OF MEASUREMENT**

629.08 Survey Monuments, Monument Boxes, and Adjust 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.

**BASIS OF PAYMENT**

629.09 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.

Prior to final 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, preserving and referencing monuments will not be paid for separately but shall be included in the work.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Survey Monument (Type)	Each
Monument Box	Each

Traffic control for monumentation and related surveying will be measured and paid for in accordance with Section 630.

**END OF REVISION**

**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 630.14 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 630.15 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:

<b>Pay Item</b>	<b>Pay Unit</b>
Uniformed Traffic Control	Hour

**END OF REVISION**

## **REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL**

**Section 630 of the Standard Specifications is hereby revised as follows:**

**Subsection 630.01 shall be modified to read:**

This work consists of furnishing, installing, moving, maintaining and removing temporary traffic signs, advance warning arrow panels, flashing beacon (portable), barricades, channelizing devices, delineators, temporary traffic signals, mobile pavement marking zones, masking and unmasking existing signs in construction zones, and concrete barriers as required by, in descending order of precedence, these plans and special specifications, Traffic Barricade Manual published by the City and County of Denver, the Standard Specifications, as augmented by the Colorado Department of Transportation M and S standards, and the Manual on Uniform Traffic Control Devices for Streets and Highways, and the Colorado Supplement thereto, in accordance with the Contract. Devices shall comply with NCHRP 350 criteria requirement. Devices temporarily not in use shall, as a minimum, be removed from the shoulder area. Moving will include devices removed from the project and later returned to use. This work also includes Traffic Control Management, flagging and pilot car operation.

**Subsection 630.02 shall include the following: Roll-up construction signs will not be allowed.**

Subsection 630.02 through 630.08 shall be as provided in the City and County of Denver Traffic Barricade manual, latest edition. Modifications to said manual are:

Section III shall include:

*Traffic Control.* Traffic control through the construction area is the responsibility of the Contractor. Before starting construction the Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for the initial phase of construction. When a different MHT is required for a subsequent construction phase, it must be submitted two weeks prior to starting that phase. All proposed MHTs shall be approved, in writing, by the Engineer. No phase of construction shall start until an acceptable MHT has been received and approved by the Engineer. The proposed methods shall include, as a minimum, the following:

- A detailed diagram that shows the location of all sign placements, including advance construction signs (if not previously approved) and speed limit signs; method, length and time duration for lane closures; purpose and location of flag persons.
- A tabulation of all traffic control devices shown in the detailed diagram including, but not limited to: construction signs, vertical panel; vertical panel with light; barricades; cones, drum channelizing devices; concrete barrier (temporary); advance warning flashing or sequencing arrow panel. Certain traffic control devices may be used for more than one operation or phase. However, all devices required for any particular phase must be detailed and tabulated for each phase. Certain traffic control devices may be used for more than one phase of construction.
- Number of flaggers and hours required.
- Number of days a Traffic Control Supervisor is required.
- Number of hours for uniformed traffic control.

## **REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL**

Approval of the proposed MHT is intended to indicate those devices for which payment is to be made. Such approval 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.

VI.B.3 therein shall include:

Non-metallic drums or tubular markers may be substituted for vertical panel channelizing devices.

VI.F shall include:

The Contractor shall, at the preconstruction conference, designate one of his employees, other than the Superintendent, to be responsible for traffic control management. This responsibility shall include management of the Contractor's signing and all other details covered by the Specifications which contribute to the convenience, safety, and orderly movement of traffic and to the comfort of the traveling public. The designated employee will have the Certification of the Traffic Control Supervisor as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) in lieu of completion of the CDOT minimum training requirements.

Traffic control management shall be maintained and inspected on a 24-hour per day basis at no additional cost to the project. The Contractor shall make arrangements so that the Traffic Control Manager or his approved representative will be available on every working day, "on call" at all times and available upon the Engineer's request at other than normal working hours. The Traffic Control Manager shall have an up-to-date copy of part VI of the MUTCD, pertaining to traffic controls for street and highway construction, as well as the City and County Traffic Barricade manual, available at all times. In addition, provisions shall be made for flaggers to assist handicapped individuals, those who live or work near the project vicinity, and others traverse through the construction zone safely, at no additional cost to the project.

VI.F.2 The third item shall read:

The flagger's STOP/SLOW sign paddle shall be 18 inches with letters six inches high. Subsections 630.09 through 630.14 of the Standard Specifications shall apply except as otherwise provided herein.

### **Subsection 630.05 TRAFFIC CONES shall include the following:**

Steel drum channelizing devices shall not be used for traffic control.

### **Subsection 630.09, second paragraph is hereby deleted and replaced with 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.

## **REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL**

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 630.09 (9) shall be added as follows:**

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.09.

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(06/24/2009), 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.
2. Work that interferes with traffic on I-70 EB off ramp, Colorado Boulevard, Alameda Avenue, Sheridan Boulevard, Hampden Avenue, I-225 SB off ramp, and Tamarac Street 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.

**REVISION OF SECTION 630  
CONSTRUCTION ZONE TRAFFIC CONTROL**

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. 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.
9. 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.

**REVISION OF SECTION 630  
CONSTRUCTION ZONE TRAFFIC CONTROL**

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.
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 101.33
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 630.15 shall be revised to include the following:**

When the contract includes Traffic Control pay items by the week:

Traffic channeling devices consisting of vertical panel, traffic cones, or drum channeling device will be measured by the unit/week. Concrete barriers will be measured by the linear foot/week. Advance warning flashing or sequencing arrow panels will be measured to the unit/week according to size. The flashing beacon (portable) will be measured as a unit/week complete in place. Sign panels will be paid for under the appropriate item unit/week.



**REVISION OF SECTION 630  
CONSTRUCTION ZONE TRAFFIC CONTROL**

A day shall be defined as the time from 12:00 midnight to 12:00 midnight. A week shall be defined as the time from Sunday at 12:00 midnight to the following Sunday at 12:00 midnight. The Traffic Control Manager shall keep a daily log of traffic control devices and personnel. The log shall list all devices and personnel deployed within the limits of construction for each day and shall be available for review by the Engineer by noon the following Monday to be eligible for payment for the previous week's work.

Construction traffic control devices, as determined by the approved MHT, will be paid for based upon the Traffic Control Manager's weekly submittal of daily logs. The number of traffic control devices paid per week shall be the maximum number of approved devices deployed on any one day during that week.

**END OF REVISION**

**REVISION OF SECTION 712  
WATER FOR MIXING OR CURING CONCRETE**

**Section 712 of the Standard Specifications is hereby revised for this project as follows:**

**Delete subsection 712.01 and replace it with the following:**

**712.01 Water.** Water used in mixing or curing concrete shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetation, or other substance injurious to the finished product. Concrete mixing water shall meet the requirements of ASTM C1602. The Contractor shall perform and submit tests to the Engineer at the frequencies listed in ASTM C1602. Potable water may be used without testing. Where the source of water is relatively shallow, the intake shall be so enclosed as to exclude silt, mud, grass, and other foreign materials.

**END OF REVISION**

## FORCE ACCOUNT ITEMS

### DESCRIPTION

This Special Provision contains the City and County of Denver’s estimate for Force Account Items included in the Contract. The estimated amounts will be added to the total bid to determine the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

### 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.

Force Account work valued at \$5,000 or less that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

<u>Item No.</u>	<u>Force Account Item</u>	<u>Quantity</u>	<u>Estimated Amount</u>
F/A 01	Minor Contract Revisions	F/A	\$12,500
F/A 02	Furnish and Install Electrical Services	F/A	\$7,500
F/A 03	Erosion Control	F/A	\$1500
F/A 04	Landscape Restoration	F/A	\$3,000
F/A 05	Environmental	F/A	\$2,500

Force Account descriptions include:

- F/A 01 Minor Contract Revisions – This work consists of minor work authorized and approved by the Engineer which is not included in the Contract drawings or specifications, and is necessary to accomplish the Scope of Work of this Contract.
- F/A 02 Furnish and Install Electrical Services - This work shall consist of all cost charges from the power service provider, and all necessary materials, labor, and coordination required to maintain existing or establish new power sources required for permanent operation of equipment as shown in the plans.
- F/A 03 Erosion Control – This work consists of any erosion control items the erosion control supervisor will need during the duration of this project. All items shall be pre-approved by the Engineer prior to installation or they will at no cost to the project.
- F/A 04 Landscape and Irrigation System Restoration – This work is for restoring existing landscape, including sod, and irrigation systems back to preconstruction condition. Sod shall match existing. The Contractor shall replace any damaged landscape, including topsoil, grass, irrigation system components, trees, shrubs, ground covers and mulch, to its original condition. Sod shall match existing. The Contractor shall coordinate with the CDOT (or owner’s) landscape maintenance personnel at least 5 working days in advance of starting work in the area. With proper and timely notification, the owner’s landscape maintenance personnel shall mark and identify the irrigation system components. This is no way all inclusive of all utilities or all of the irrigation system. No landscape shall be without watering services during the growing season. If the irrigation service is interrupted for more than three days, the Contractor shall be liable to hand/truck water and possibly all plant replacement in the affected landscape. Landscape Restoration shall be considered complete when the landscape and irrigation system is restored to its original condition and approved by the maintaining personnel. CDOT (or owner’s) landscape maintenance forces shall inspect all repair work to any irrigation components prior to burial and acceptance of said work. The owner’s landscape maintenance forces shall provide written acceptance of said work to the Engineer prior to the Engineer approving the work.
- F/A 05 Environmental – This work consists of the environmental health and safety officer and the cost of environmental mitigation if necessary.

## UTILITIES

The known utilities within the limits of the W. Florida Ave & Sheridan Blvd intersection include:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Comcast Cable 1617 Acoma Street Denver, CO 80223	Eric Carroll <a href="mailto:Eric_Carroll@cable.comcast.com">Eric_Carroll@cable.comcast.com</a>	303-603-5256
Xcel Energy-Street Lighting/Electric Distribution 1123 W. 3 <sup>rd</sup> Avenue Denver, CO 80223	Marisa Montoya <a href="mailto:Marisa.l.montoya@xcelenergy.com">Marisa.l.montoya@xcelenergy.com</a>	303-571-3720
Xcel Energy – Gas Operations 1123 West 3rd Avenue Denver, CO 80223	Michelle McKnight <a href="mailto:Michelle.t.mcknight@xcelenergy.com">Michelle.t.mcknight@xcelenergy.com</a>	303-571-3358
Century Link 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen <a href="mailto:Brandon.lundeen@CenturyLink.com">Brandon.lundeen@CenturyLink.com</a>	303-451-2582
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Vincent Gaiter <a href="mailto:Vincent.gaiter@denverwater.org">Vincent.gaiter@denverwater.org</a>	720-840-4289
Denver Wastewater Management 2000 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Sam Stevens <a href="mailto:Sam.Stevens@denvergov.org">Sam.Stevens@denvergov.org</a>	303-446-3529
Metro Wastewater Reclamation District 6450 West York Street Denver, CO 80229	Craig Simmonds <a href="mailto:Csimmonds@mwr.district.co.us">Csimmonds@mwr.district.co.us</a>	303-286-3000
Denver Traffic Engineering Services 5440 Roslyn Street Denver, CO 80216	Chris Lillie <a href="mailto:Chris.Lillie@denvergov.org">Chris.Lillie@denvergov.org</a>	720-865-4066
City of Lakewood 480 S. Allison Pkwy Lakewood, CO 802	<a href="mailto:Service.Request@lakewood.org">Service.Request@lakewood.org</a>	303-987-7900
South Sheridan Sanitation 3855 Lewiston St., #140 Aurora, CO 80011-1527	Jerry Guildner	303-381-4960 303-288-2020

## UTILITIES

The known utilities within the limits of the E. Hampden Ave & S. Oneida Way intersection include:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Comcast Cable 1617 Acoma Street Denver, CO 80223	Eric Carroll <a href="mailto:Eric_Carroll@cable.comcast.com">Eric_Carroll@cable.comcast.com</a>	303-603-5256
Xcel Energy-Street Lighting/Electric Distribution 1123 W. 3 <sup>rd</sup> Avenue Denver, CO 80223	Marisa Montoya <a href="mailto:Marisa.l.montoya@xcelenergy.com">Marisa.l.montoya@xcelenergy.com</a>	303-571-3720
Xcel Energy – Gas Operations 1123 West 3rd Avenue Denver, CO 80223	Michelle McKnight <a href="mailto:Michelle.t.mcknight@xcelenergy.com">Michelle.t.mcknight@xcelenergy.com</a>	303-571-3358
Century Link 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen <a href="mailto:Brandon.lundeen@CenturyLink.com">Brandon.lundeen@CenturyLink.com</a>	303-451-2582
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Vincent Gaiter <a href="mailto:Vincent.gaiter@denverwater.org">Vincent.gaiter@denverwater.org</a>	720-840-4289
Denver Wastewater Management 2000 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Sam Stevens <a href="mailto:Sam.Stevens@denvergov.org">Sam.Stevens@denvergov.org</a>	303-446-3529
Denver Traffic Engineering Services 5440 Roslyn Street Denver, CO 80216	Chris Lillie <a href="mailto:Chris.Lillie@denvergov.org">Chris.Lillie@denvergov.org</a>	720-865-4066
Denver Parks and Recreation 201 W. Colfax Avenue Denver, CO 80202	Attn: Utility Locates	720-865-0393
Level 3 Communications 633 17 <sup>th</sup> Street Denver, CO 80202	Tom Longan <a href="mailto:Thomas.Longan@level3.com">Thomas.Longan@level3.com</a>	303-326-7595

## UTILITIES

The known utilities within the limits of the W. Alameda Ave & S. Pecos St intersection include:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Comcast Cable 1617 Acoma Street Denver, CO 80223	Eric Carroll <a href="mailto:Eric_Carroll@cable.comcast.com">Eric_Carroll@cable.comcast.com</a>	303-603-5256
Xcel Energy-Street Lighting/Electric Distribution 1123 W. 3 <sup>rd</sup> Avenue Denver, CO 80223	Marisa Montoya <a href="mailto:Marisa.l.montoya@xcelenergy.com">Marisa.l.montoya@xcelenergy.com</a>	303-571-3720
Xcel Energy – Gas Operations 1123 West 3rd Avenue Denver, CO 80223	Michelle McKnight <a href="mailto:Michelle.t.mcknight@xcelenergy.com">Michelle.t.mcknight@xcelenergy.com</a>	303-571-3358
Century Link 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen <a href="mailto:Brandon.lundeen@CenturyLink.com">Brandon.lundeen@CenturyLink.com</a>	303-451-2582
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Vincent Gaiter <a href="mailto:Vincent.gaiter@denverwater.org">Vincent.gaiter@denverwater.org</a>	720-840-4289
Denver Wastewater Management 2000 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Sam Stevens <a href="mailto:Sam.Stevens@denvergov.org">Sam.Stevens@denvergov.org</a>	303-446-3529
Metro Wastewater Reclamation District 6450 West York Street Denver, CO 80229	Craig Simmonds <a href="mailto:Csimmonds@mwr.d.dst.co.us">Csimmonds@mwr.d.dst.co.us</a>	303-286-3000
Denver Traffic Engineering Services 5440 Roslyn Street Denver, CO 80216	Chris Lillie <a href="mailto:Chris.Lillie@denvergov.org">Chris.Lillie@denvergov.org</a>	720-865-4066
Denver Parks and Recreation 201 W. Colfax Avenue Denver, CO 80202	Attn: Utility Locates	720-865-0393
XO Communications 9706 E Easter Avenue Englewood, CO 80112	Steve Valdez: Implementation Mgr <a href="mailto:Steve.g.valdez@xo.com">Steve.g.valdez@xo.com</a>	303-539-1022 303-435-2793
Level 3 Communications 633 17 <sup>th</sup> Street Denver, CO 80202	Tom Longan <a href="mailto:Thomas.Longan@level3.com">Thomas.Longan@level3.com</a>	303-326-7595

## UTILITIES

The known utilities within the limits of the S. Tamarac & I-225 Frontage Rd intersection include:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Comcast Cable 1617 Acoma Street Denver, CO 80223	Eric Carroll <a href="mailto:Eric_Carroll@cable.comcast.com">Eric_Carroll@cable.comcast.com</a>	303-603-5256
Xcel Energy-Street Lighting/Electric Distribution 1123 W. 3 <sup>rd</sup> Avenue Denver, CO 80223	Marisa Montoya <a href="mailto:Marisa.l.montoya@xcelenergy.com">Marisa.l.montoya@xcelenergy.com</a>	303-571-3720
Xcel Energy – Gas Operations 1123 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Michelle McKnight <a href="mailto:Michelle.t.mcknight@xcelenergy.com">Michelle.t.mcknight@xcelenergy.com</a>	303-571-3358
Century Link 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen <a href="mailto:Brandon.lundeen@CenturyLink.com">Brandon.lundeen@CenturyLink.com</a>	303-451-2582
Denver Water Department 1600 West 12 <sup>th</sup> Avenue Denver, CO 80204	Vincent Gaiter <a href="mailto:Vincent.gaiter@denverwater.org">Vincent.gaiter@denverwater.org</a>	720-840-4289
Denver Wastewater Management 2000 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Sam Stevens <a href="mailto:Sam.Stevens@denvergov.org">Sam.Stevens@denvergov.org</a>	303-446-3529
Metro Wastewater Reclamation District 6450 West York Street Denver, CO 80229	Craig Simmonds <a href="mailto:Csimmonds@mwr.d.dst.co.us">Csimmonds@mwr.d.dst.co.us</a>	303-286-3000
Denver Traffic Engineering Services 5440 Roslyn Street Denver, CO 80216	Chris Lillie <a href="mailto:Chris.Lillie@denvergov.org">Chris.Lillie@denvergov.org</a>	720-865-4066
Denver Parks and Recreation 201 W. Colfax Avenue Denver, CO 80202	Attn: Utility Locates	720-865-0393
XO Communications 9706 E Easter Avenue Englewood, CO 80112	Steve Valdez: Implementation Mgr <a href="mailto:Steve.g.valdez@xo.com">Steve.g.valdez@xo.com</a>	303-539-1022 303-435-2793
Level 3 Communications 633 17 <sup>th</sup> Street Denver, CO 80202	Tom Longan <a href="mailto:Thomas.Longan@level3.com">Thomas.Longan@level3.com</a>	303-326-7595
Above net 360 Hamilton Avenue White Plains, NY 10601	Chuck Todd <a href="mailto:Ctodd@above.net">Ctodd@above.net</a>	480-252-6914
T-W Telecom 14200 E Jewell Avenue Aurora, CO 80012	Russ Oliver <a href="mailto:Russ.Oliver@twtelecom.com">Russ.Oliver@twtelecom.com</a>	303-566-6022 720-234-5777
Denver Suburban Water District 6380 S. Fiddlers Green Cir., Ste 400 Greenwood Village, CO 80111	Doug Scott <a href="mailto:Doug.Scott@sheapropties.com">Doug.Scott@sheapropties.com</a>	303-779-4550
Goldsmith Metro District 8350 E Crescent Pkwy Englewood, CO 80111	Doug Scott <a href="mailto:Doug.Scott@sheapropties.com">Doug.Scott@sheapropties.com</a>	303-779-4550

## UTILITIES

The known utilities within the limits of the I-70 & Colorado Blvd intersection include:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Comcast Cable 1617 Acoma Street Denver, CO 80223	Eric Carroll <a href="mailto:Eric_Carroll@cable.comcast.com">Eric_Carroll@cable.comcast.com</a>	303-603-5256
Xcel Energy-Street Lighting/Electric Distribution 1123 W. 3 <sup>rd</sup> Avenue Denver, CO 80223	Marisa Montoya <a href="mailto:Marisa.l.montoya@xcelenergy.com">Marisa.l.montoya@xcelenergy.com</a>	303-571-3720
Xcel Energy – Gas Operations 1123 West 3rd Avenue Denver, CO 80223	Michelle McKnight <a href="mailto:Michelle.t.mcknight@xcelenergy.com">Michelle.t.mcknight@xcelenergy.com</a>	303-571-3358
Century Link 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen <a href="mailto:Brandon.lundeen@CenturyLink.com">Brandon.lundeen@CenturyLink.com</a>	303-451-2582
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Vincent Gaiter <a href="mailto:Vincent.gaiter@denverwater.org">Vincent.gaiter@denverwater.org</a>	720-840-4289
Denver Wastewater Management 2000 West 3 <sup>rd</sup> Avenue Denver, CO 80223	Sam Stevens <a href="mailto:Sam.Stevens@denvergov.org">Sam.Stevens@denvergov.org</a>	303-446-3529
Denver Traffic Engineering Services 5440 Roslyn Street Denver, CO 80216	Chris Lillie <a href="mailto:Chris.Lillie@denvergov.org">Chris.Lillie@denvergov.org</a>	720-865-4066
Denver Parks and Recreation 201 W. Colfax Avenue Denver, CO 80202	Attn: Utility Locates	720-865-0393

In order to complete the utility work with minimum delay to the project, the work described in these plans and specifications requires full cooperation between the Contractor and the utility owners in accordance with Subsection 105.11 in conducting their respective operations, to complete the utility work with minimum delay to the project.

### **PART 1 - CONTRACTOR SHALL PERFORM THE WORK LISTED BELOW:**

Coordinate project construction with the performance by the utility owner of each utility work element listed in Part 2 below. Perform preparatory work specified in Part 2 for each utility work element. Provide an accurate construction schedule that includes all utility work elements to the owner of each impacted utility. Provide each utility owner with periodic updates to the schedule. Conduct necessary utility coordination meetings, and provide other necessary accommodations as directed by the Engineer. Notify each utility owner in writing, with a copy to the Engineer, prior to the time each utility work element is to be performed by the utility owner. Provide the notice the number of days specified in Part 2 immediately prior to the time the utility work must be begun to meet the project schedule.

Prior to excavating, the Contractor shall positively locate all potential conflicts with existing underground utilities and proposed construction, as determined by the Contractor according to proposed methods and schedule of construction. The Contractor shall modify construction plans to avoid existing underground facilities as needed, and as approved by the Engineer. Please note that UNCC marks only its members' facilities – Other facilities, such as ditches and drainage pipes may exist, and it is the Contractor's responsibility to investigate, locate and avoid such facilities.



## UTILITIES

The Contractor shall provide written notices to each utility owner, with a copy to the Engineer, immediately prior to each utility work element on the construction schedule that is expected to be coordinated with construction. The Contractor shall allow the number of work days required for each utility work element in the construction schedule. The number of days expected for construction and number of days of prior notice is specified for each utility owner.

Provide traffic control, as directed by the Engineer, for any utility work by the utility owner expected to be coordinated with construction. However, traffic control for utility work outside of typical project work hours shall be the responsibility of the utility owner.

Perform each utility work element for every utility owner listed here in Part 1. Notify each utility owner in advance of any work being done by the Contractor to its facility, so that the utility owner can coordinate its inspections for final acceptance of the work with the Engineer.

### **Denver Wastewater Management Work Elements:**

All work on Denver Wastewater Management storm and sanitary facilities shall be done in conformance with standards and specification of the City and County of Denver.

Remove the existing storm sewer inlet as shown on the plans (intersection of Alameda Avenue and Pecos St).

Construct storm sewer pipes, 4ft flat top manhole, and inlets as shown on the plans. Make connections to existing storm sewer pipes as shown on the plans.

Coordinate all required inspections with Denver Wastewater Management forces.

Notify the utility owner 5 days immediately prior to required inspections of utility work performed by the Contractor.

### **Denver Water Department Work Elements:**

All work on Denver Water Department facilities shall be performed by contractors on the current list of Denver Water Department Pre-Qualified Contractors.

Adjust valve box up to ¼" to ½" below final grade of the paved surface as shown on the plans.

Coordinate all required inspections with Denver Water Department forces.

Notify the utility owner in writing 5 days immediately prior to required inspections of utility work performed by the Contractor. Notify the utility owner in writing one week immediately prior to each utility work element expected to be coordinated with construction.

### **Xcel Energy – Street Lighting and Electric Distribution Work Elements:**

Contractor shall submit the materials list, with locations, for the proposed light standards and traffic signal poles for review and approval by Xcel Energy forces. This review is expected to take 30 calendar days to complete.

## UTILITIES

### **PART 2 - UTILITY OWNERS SHALL PERFORM THE WORK LISTED BELOW:**

Although the Denver Contractor shall provide traffic control for utility work expected to be coordinated with construction, traffic control for utility work outside of typical project work hours shall be the responsibility of the utility owner. The utility owner shall prepare and submit to the Denver Engineer a Method of Handling Traffic for utility work to be performed outside typical project work hours. The utility owner shall obtain acceptance of the Method of Handling traffic from the Denver Engineer prior to beginning the utility work to be performed outside typical project work hours.

#### **Xcel Energy – Street Lighting and Electric Distribution Work Elements:**

Xcel Energy shall relocate the existing overhead power poles as shown on the plans.

After the Contractor has completed the construction of the proposed traffic signals, with light attached, Xcel Energy forces shall connect the power source for the proposed permanent traffic signal controllers as shown on the plans. This work must be coordinated by the contractor with Xcel Energy during construction and is expected to take 1 working day at each intersection to complete.

After the Contractor has completed the construction of the proposed traffic signals and they are operational, Xcel Energy forces shall disconnect the power source to existing traffic signal controller and luminaries as shown on the plans. This work must be coordinated by the contractor with Xcel Energy and is expected to take 1 working day at each intersection to complete.

After the Contractor has completed the removal of the traffic signal heads and removed all signal equipment (including indications, signs, span wire, and all appurtenances) on the traffic signal poles, Xcel Energy forces shall remove the traffic signal poles with attached luminaries as shown on the plans. The Contractor shall remove the traffic signal foundations after Xcel forces have completed removal of the existing traffic signal poles that have attached luminaries. This work must be coordinated by the contractor with Xcel Energy during construction and is expected to take 1 working day at each intersection to complete.

Xcel Energy shall remove the existing light standards, poles, and related electrical feeds to accommodate the proposed construction. Xcel Energy shall relocate any electrical feeds that serve any lighting locations other than those shown on each intersection plan set, and shall coordinate this work with affected property owners. This work must be coordinated by the contractor with Xcel Energy and is expected to take 1 working day at each location to complete.

After the Contractor has completed earthwork within 6" of final grade, Xcel Energy forces shall adjust any previously existing electric junction boxes that are not to be abandoned, to within 1/2" of final grade of surface as shown on plans. This work must be coordinated by the contractor with Xcel Energy during construction and is expected to take 1 working day at each location to complete.

The Contractor shall provide the utility owner written notice 120 days immediately prior to the need for each utility work element. For street lighting and electric distribution elements, notification will be provided to:

Mr. Ron Johnson, Design Manager  
Xcel Energy, Design / Layout Department  
1123 W. 3rd. Avenue  
Denver, CO 80223-1351

or his designated representative.

## **UTILITIES**

### **Denver Wastewater Management Work Elements:**

Inspect utility work performed by the Contractor listed in Part 1 above.

### **Denver Water Department Work Elements:**

Inspect utility work performed by the Contractor listed in Part 1 above.

### **GENERAL:**

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at phone no. 811 or 1-800-922-1987, to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. Utility service laterals shall also be located prior to beginning excavation or grading.

The location of utility facilities as shown on the plan and profile sheets, and herein described, were obtained from the best available information.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work.

# CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLICWORKS /

## Drawings

**Contract No. 201205433**

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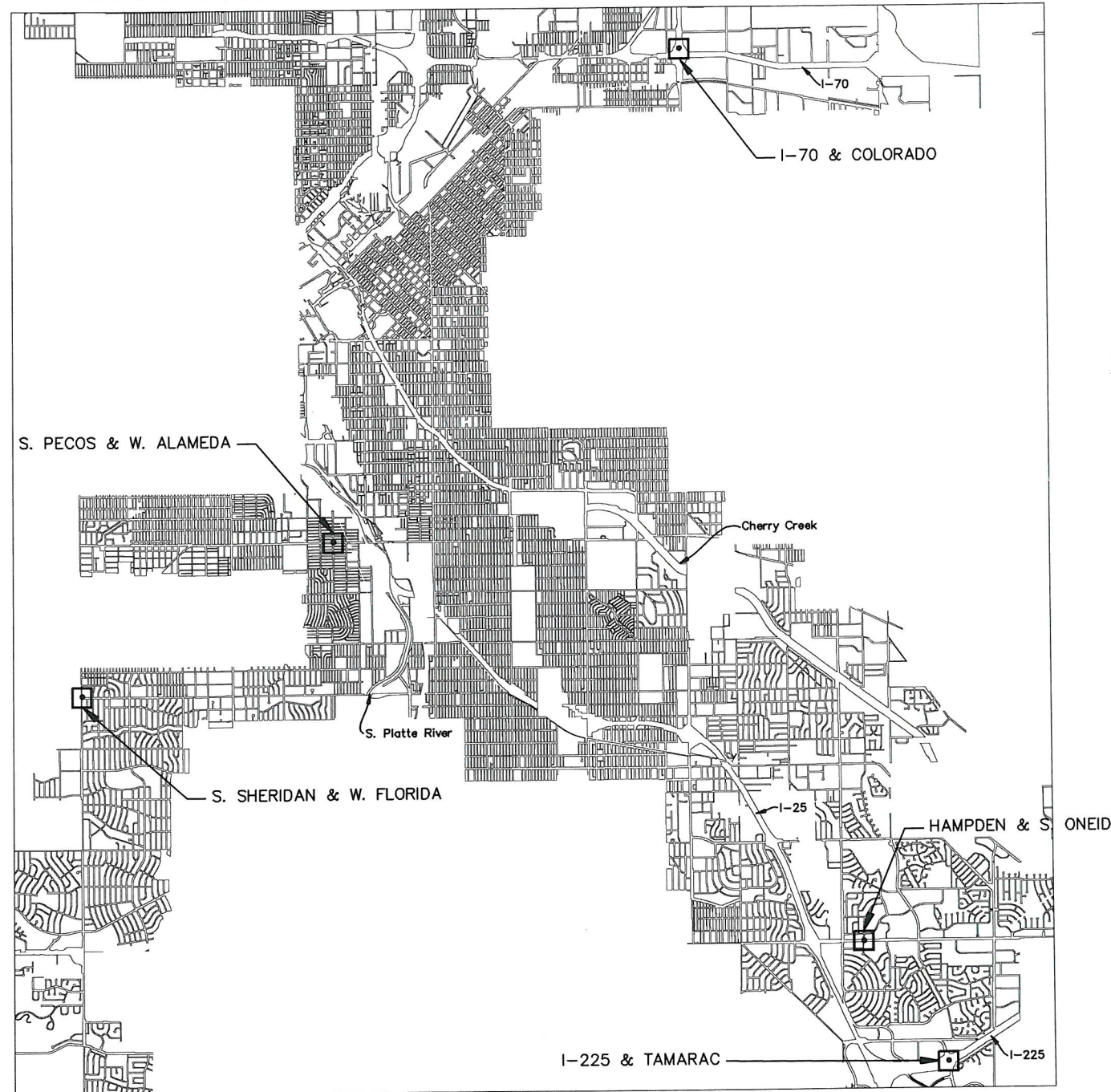
**SHE 2010 TRAFFIC SIGNAL UPGRADE**

**April 9, 2012**

# CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS


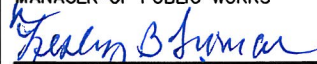



**SAFETY HAZARD ELIMINATION 2010  
TRAFFIC SIGNAL UPGRADE BID PLANS  
CITY AND COUNTY OF DENVER**

**CONTRACT NO. CE00813, CDOT SUB-CONTRACT NO. 17659**



SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STANDARD PLANS LIST
3-8	GENERAL NOTES
9-10	SURVEY CONTROL DIAGRAMS
11-15	TRAFFIC SIGNAL REMOVAL PLANS
16-20	TRAFFIC SIGNAL INSTALL PLANS
21-25	SIGNING AND STRIPING PLANS
26-30	ROADWAY PLANS
16.0-16.24	CCD-TRAFFIC SIGNAL STD DETAILS (2011)

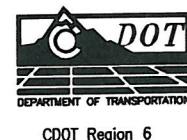
CITY AND COUNTY OF DENVER  
DEPARTMENT OF PUBLIC WORKS

APPROVED:	
	11.14.11
MANAGER OF PUBLIC WORKS	DATE
	11.14.11
CITY ENGINEER	DATE
	11/14/11
DIRECTOR OF ENGINEERING	DATE
	11/7/2011
CITY TRAFFIC ENGINEER	DATE
	11/14/11
DIRECTOR OF SMALL BUSINESS OPPORTUNITY	DATE

VICINITY MAP  
N.T.S.

3A\_TrafficSignalUpgradeBidPlans\_CCD\_SHE\_SignalsDesign\_000.dwg 11/14/2011 2:15:25 PM DWG TO PDF.plt

Computer File Information		Sheet Revisions		As Constructed		TITLE SHEET		Project No./Code	
Creation Date:	Initials:	(R-)	/ /	No Revisions:	/ /	SHE-C010-105		SHE-C010-105	
Last Modification Date:	Initials:	(R-)	/ /	Revised:	/ /	Designer: SP	Structure	17659	
Full Path:		(R-)	/ /	Void:	/ /	Detailer: AML	Numbers		
Drawing File Name:		(R-)	/ /			Sheet Subset:	Subset Sheets:	of	Sheet Number 1
Acad Ver.	Scale: As Shown	Units: English	(R-)	/ /					



**JACOBS**



PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
<input type="checkbox"/>		M-100-1 STANDARD SYMBOLS (3 SHEETS)	1-3
<input type="checkbox"/>		M-203-1 APPROACH ROADS	4
<input type="checkbox"/>		M-203-2 DITCH TYPES	5
<input type="checkbox"/>		M-203-11 SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	6-8
<input type="checkbox"/>		M-203-12 SUPERELEVATION STREETS (2 SHEETS)	9-10
<input type="checkbox"/>		M-206-1 EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	11-12
<input type="checkbox"/>		M-206-2 EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)	13-14
<input type="checkbox"/>		M-208-1 <input checked="" type="checkbox"/> TEMPORARY EROSION CONTROL (12 SHEETS) (REVISED ON AUGUST 26, 2010)	<del>15-21</del>
<input type="checkbox"/>		M-210-1 MAILBOX SUPPORTS (2 SHEETS)	22-23
<input type="checkbox"/>		M-214-1 PLANTING DETAILS	24
<input type="checkbox"/>		M-412-1 <input type="checkbox"/> CONCRETE PAVEMENT JOINTS (5 SHEETS) (REVISED ON JUNE 16, 2011)	<del>25-29</del>
<input type="checkbox"/>		M-510-1 STRUCTURAL PLATE PIPE H-20 LOADING	30
<input type="checkbox"/>		M-601-1 SINGLE CONCRETE BOX CULVERT (2 SHEETS)	31-32
<input type="checkbox"/>		M-601-2 DOUBLE CONCRETE BOX CULVERT (2 SHEETS)	33-34
<input type="checkbox"/>		M-601-3 TRIPLE CONCRETE BOX CULVERT (2 SHEETS)	35-36
<input type="checkbox"/>		M-601-10 HEADWALL FOR PIPES	37
<input type="checkbox"/>		M-601-11 TYPE "S" SADDLE HEADWALLS FOR PIPE	38
<input type="checkbox"/>		M-601-12 HEADWALLS AND PIPE OUTLET PAVING	39
<input type="checkbox"/>		M-601-20 WINGWALLS FOR PIPE OR BOX CULVERTS	40
<input type="checkbox"/>		M-603-1 <input type="checkbox"/> METAL PIPE (4 SHEETS) (REVISED ON FEBRUARY 25, 2010)	<del>41-42</del>
<input type="checkbox"/>		M-603-2 REINFORCED CONCRETE PIPE	43
<input type="checkbox"/>		M-603-3 <input type="checkbox"/> PRECAST CONCRETE BOX CULVERT (REVISED ON JULY 09, 2009)	<del>44</del>
<input type="checkbox"/>		M-603-4 <input type="checkbox"/> CORRUGATED POLYETHYLENE PIPE (AASHTO M294) (REV. ON FEB. 25, 2010)	
<input type="checkbox"/>		M-603-5 <input type="checkbox"/> POLYVINYL CHLORIDE (PVC) PIPE (AASHTO M304) (NEW ON FEB. 25, 2010)	
<input type="checkbox"/>		M-603-10 CONCRETE AND METAL END SECTIONS (2 SHEETS)	45-46
<input type="checkbox"/>		M-604-10 INLET, TYPE C	47
<input type="checkbox"/>		M-604-11 INLET, TYPE D	48
<input type="checkbox"/>		M-604-12 CURB INLET TYPE R (2 SHEETS)	49-50
<input type="checkbox"/>		M-604-13 CONCRETE INLET TYPE 13	51
<input type="checkbox"/>		M-604-20 MANHOLES (3 SHEETS)	52-54
<input type="checkbox"/>		M-604-25 VANE GRATE INLET (5 SHEETS)	55-59
<input type="checkbox"/>		M-605-1 <input type="checkbox"/> SUBSURFACE DRAINS (REVISED ON JULY 09, 2009)	<del>60</del>
<input type="checkbox"/>		M-606-1 <input type="checkbox"/> GUARDRAIL TYPE 3 W-BEAM (18 SHEETS) (REVISED ON MAY 05, 2011)	<del>61-76</del>
<input type="checkbox"/>		M-606-13 GUARDRAIL TYPE 7 F-SHAPE BARRIER (4 SHEETS)	77-80
<input type="checkbox"/>		M-606-14 PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS)	81-83

PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
<input type="checkbox"/>		M-607-1 WIRE FENCES AND GATES (3 SHEETS)	84-86
<input type="checkbox"/>		M-607-2 CHAIN LINK FENCE (3 SHEETS)	87-89
<input type="checkbox"/>		M-607-3 BARRIER FENCE	90
<input type="checkbox"/>		M-607-4 DEER FENCE AND GATES (2 SHEETS)	91-92
<input type="checkbox"/>		M-607-10 PICKET SNOW FENCE	93
<input type="checkbox"/>		M-607-15 ROAD CLOSURE GATE (9 SHEETS)	94-102
<input type="checkbox"/>		M-608-1 <input type="checkbox"/> CURB RAMPS (6 SHEETS) (REVISED ON MAY 05, 2011)	<del>103-106</del>
<input type="checkbox"/>		M-609-1 <input checked="" type="checkbox"/> CURBS, GUTTERS, AND SIDEWALKS (4 SHEETS) (REVISED ON JULY 09, 2009)	<del>107-109</del>
<input type="checkbox"/>		M-611-1 CATTLE GUARD (2 SHEETS)	110-111
<input type="checkbox"/>		M-613-1 ROADWAY LIGHTING (4 SHEETS)	112-115
<input type="checkbox"/>		M-614-1 RUMBLE STRIPS (3 SHEETS)	116-118
<input type="checkbox"/>		M-614-2 SAND BARREL ARRAYS (2 SHEETS)	119-120
<input type="checkbox"/>		M-615-1 EMBANKMENT PROTECTOR TYPE 3	121
<input type="checkbox"/>		M-615-2 EMBANKMENT PROTECTOR TYPE 5	122
<input type="checkbox"/>		M-616-1 INVERTED SIPHON	123
<input type="checkbox"/>		M-620-1 FIELD LABORATORY CLASS 1	124
<input type="checkbox"/>		M-620-2 FIELD LABORATORY CLASS 2	125
<input type="checkbox"/>		M-620-11 FIELD OFFICE CLASS 1	126
<input type="checkbox"/>		M-620-12 FIELD OFFICE CLASS 2	127
<input type="checkbox"/>		M-629-1 SURVEY MONUMENTS (2 SHEETS)	128-129

PLAN NUMBER	NEW OR REVISED	S STANDARD TITLE	PAGE NUMBER
<input type="checkbox"/>		S-612-1 DELINEATOR INSTALLATIONS (6 SHEETS) (REVISED, JULY 01, 2010)	<del>131-135</del>
<input checked="" type="checkbox"/>		S-614-1 GROUND SIGN PLACEMENT (2 SHEETS)	136-137
<input checked="" type="checkbox"/>		S-614-2 CLASS I SIGNS	138
<input type="checkbox"/>		S-614-3 CLASS II SIGNS	139
<input type="checkbox"/>		S-614-4 <input type="checkbox"/> CLASS III SIGNS (3 SHEETS) (REVISED, DECEMBER 29, 2009)	140-142
<input checked="" type="checkbox"/>		S-614-5 BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS)	143-144
<input type="checkbox"/>		S-614-6 CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS)	145-146
<input type="checkbox"/>		S-614-8 <input type="checkbox"/> TUBULAR STEEL SIGN SUPPORT DETAILS (5 SHEETS) (REVISED ON SEPT. 01, 2010)	<del>147-151</del>
<input type="checkbox"/>		S-614-10 MARKER ASSEMBLY INSTALLATIONS	152
<input type="checkbox"/>		S-614-11 MILEPOST SIGN DETAIL FOR HIGH SNOW AREAS (NEW, JUNE 22, 2009)	
<input type="checkbox"/>		S-614-12 STRUCTURE NUMBER INSTALLATION	153
<input type="checkbox"/>		S-614-14 FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS)	154-156
<input type="checkbox"/>		S-614-20 TYPICAL POLE MOUNT SIGN INSTALLATIONS	157
<input type="checkbox"/>		S-614-21 <input type="checkbox"/> CONCRETE BARRIER SIGN POST INSTALLATIONS (REVISED ON JUNE 24, 2011)	158
<input type="checkbox"/>		S-614-22 TYPICAL MULTI-SIGN INSTALLATIONS	159
<input type="checkbox"/>		S-614-40 TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (7 SHEETS)	160-166
<input type="checkbox"/>		S-614-40A ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS)	167-171
<input type="checkbox"/>		S-614-50 MONOTUBE OVERHEAD SIGNS (14 SHEETS)	172-185
<input type="checkbox"/>		S-627-1 <input checked="" type="checkbox"/> PAVEMENT MARKINGS (5 SHEETS) (REVISED ON OCTOBER 01, 2010)	<del>186-190</del>
<input type="checkbox"/>		S-630-1 <input checked="" type="checkbox"/> TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (REVISED ON FEB. 24, 2011)	<del>191-202</del>
<input checked="" type="checkbox"/>		S-630-2 BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS	203
<input type="checkbox"/>		S-630-3 <input type="checkbox"/> FLASHING BEACON (PORTABLE) DETAILS (REVISED ON JUNE 27, 2011)	204
<input type="checkbox"/>		S-630-4 <input type="checkbox"/> STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (NEW, MARCH 22, 2010)	
<input type="checkbox"/>		S-630-5 <input type="checkbox"/> PORTABLE RUMBLE STRIPS (TEMPORARY) (NEW, MAY 05, 2011)	
<input type="checkbox"/>		S-630-6 <input type="checkbox"/> EMERGENCY PULL-OFF AREA (TEMPORARY) (NEW, MAY 05, 2011)	
<input type="checkbox"/>		S-630-7 <input type="checkbox"/> ROLLING ROADBLOCKS FOR TRAFFIC CONTROL (NEW, MAY 05, 2011)	

THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

**COLORADO**  
**DEPARTMENT OF TRANSPORTATION**  
**STANDARD PLANS LIST**  
**M&S STANDARDS**  
 July 04, 2006  
 Revised on June 27, 2011

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Computer File Information		Sheet Revisions		 CDOT Region 6	 City & County of Denver	As Constructed		STANDARD PLANS LIST		Project No./Code	
Creation Date:	Initials:	<input type="checkbox"/>	/ / .			No Revisions:	/ /			SHE-C010-105	
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# GENERAL NOTES CONT.

**STORMWATER MANAGEMENT:**

**1. SITE DESCRIPTION**

**1. PROJECT SITE DESCRIPTION**

CITY AND COUNTY OF DENVER SAFETY HAZARD ELIMINATION SIGNAL UPGRADE IMPROVEMENTS AT SHERIDAN & ALAMEDA, I-225 & TAMARAC, HAMPDEN & ONEIDA, PECOS & ALAMEDA, I-70 & COLORADO

**2. RECEIVING WATER**

THERE IS NO INTERSECTION PROJECT THAT IMPACTS RECEIVING WATERS.

**2. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES**

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

**A. POTENTIAL POLLUTANT SOURCES**

1. EVALUATE, IDENTIFY AND DESCRIBE ALL POTENTIAL SOURCES OF POLLUTANTS AT THE SITE IN ACCORDANCE WITH SUBSECTION 107.25 AND PLACE ANY BMPs REQUIRED TO CONTAIN POTENTIAL POLLUTANTS.

**B. OFFSITE DRAINAGE (RUN ON WATER)**

1. PLACE BMPs TO ADDRESS RUN-ON WATER IN ACCORDANCE WITH SUBSECTION 208.03. GRAVEL BAGS ARE TO BE USED.

**C. CONSTRUCTION DEWATERING:**

1. DEWATERING IS NOT ANTICIPATED FOR THE NEW SIGNAL FOUNDATIONS. HOWEVER IF CONSTRUCTION DEWATERING IS REQUIRED THE CONTRACTOR WILL OBTAIN A DEWATERING PERMIT AS FOLLOWS. OBTAIN A DEWATERING PERMIT FROM CDPHE IF CONDITIONS OF THEIR LOW RISK GUIDANCE FOR DISCHARGES OF UNCONTAMINATED GROUNDWATER TO LAND ARE NOT MET; SEE SUBSECTION 107.25(B) 8.

**D. BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION**

THE CDOT STORMWATER GUIDELINES INCLUDING BMP CAN BE FOUND AT:  
[HTTP://WWW.COLORADODOT.INFO/PROGRAMS/ENVIRONMENTAL/WATER-QUALITY/DOCUMENTS/EROSION-STORM-QUALITY](http://www.coloradodot.info/programs/environmental/water-quality/documents/erosion-storm-quality)

**BMP NARRATIVES**

VEHICLE TRACKING CONTROL, INLET PROTECTION, CONCRETE CHUTE WASHOUT CONTAINMENT, STREET SWEEPING, AND PERIMETER CONTROL BMP ARE PLANNED FOR THESE FIVE INTERSECTION PROJECTS.

**E. VEHICLE TRACKING PAD: WILL NOT BE ALLOWED ON SITE.**

- A. PARKING OF EQUIPMENT AND VEHICLES SHALL ONLY BE ALLOWED ON PAVED SURFACES, UNLESS THE WORK REQUIRES OTHERWISE. NO TRACKING OF SEDIMENT SHALL OCCUR ONTO THE ROADWAY.
- B. BMPs SHALL BE IMPLEMENTED IN ACCORDANCE WITH SUBSECTION 208.04 TO PREVENT TRACKING.

**F. PERIMETER CONTROL**

- 1. PERIMETER CONTROL SHALL BE ESTABLISHED AS THE FIRST ITEM ON THE SWMP TO PREVENT THE POTENTIAL FOR POLLUTANTS LEAVING THE CONSTRUCTION SITE BOUNDARIES, ENTERING THE STORMWATER DRAINAGE SYSTEM (E.G. INLET PROTECTION), OR DISCHARGING TO STATE WATERS.
- 2. PERIMETER CONTROL MAY CONSIST OF GRAVEL BAGS, OR OTHER BMPs AS APPROVED.
- 3. PERIMETER CONTROL SHALL BE IN ACCORDANCE WITH SUBSECTION 208.04.

**3. DURING CONSTRUCTION**

**RESPONSIBILITIES OF THE SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR DURING CONSTRUCTION**

THE SWMP SHOULD BE CONSIDERED A "LIVING DOCUMENT" THAT IS CONTINUOUSLY REVIEWED AND MODIFIED. DURING CONSTRUCTION, THE FOLLOWING ITEMS SHALL BE ADDED, UPDATED, OR AMENDED AS NEEDED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 208

- A. **MATERIALS HANDLING AND SPILL PREVENTION** - PRIOR TO CONSTRUCTION COMMENCING THE CONTRACTOR SHALL SUBMIT A SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN, SEE SUBSECTION 208.06. MATERIALS HANDLING SHALL BE IN ACCORDANCE WITH SUBSECTION 208.06
- B. **STOCKPILE MANAGEMENT** - SHALL BE DONE IN ACCORDANCE WITH SUBSECTION 107.25 AND 208.07
- C. **CONCRETE WASHOUT** - CONCRETE WASH OUT WATER OR WASTE FROM FIELD LABORATORIES AND PAVING EQUIPMENT SHALL BE CONTAINED IN ACCORDANCE WITH SUBSECTION 208.05. A FABRICATED CONCRETE WASH OUT SHALL BE USED.
- D. **SAW CUTTING** - SHALL BE DONE IN ACCORDANCE WITH SUBSECTION 107.25, 208.04, 208.05
- E. **STREET CLEANING** - SHALL BE DONE IN ACCORDANCE WITH SUBSECTION 208.04

**4. INTERIM AND FINAL STABILIZATION**

**A. SEEDING PLAN**

SOIL PREPARATION, TOPSOIL, SEEDING (NATIVE), MULCHING (WEED-FREE), AND MULCH TACKIFIER ARE NOT EXPECTED ON THIS PROJECT. IF IT IS DETERMINED THAT SEEDING/REVEGETATION/SOD IS NECESSARY, THE CONTRACTOR SHALL CONTACT THE CDOT R6 LANDSCAPE ARCHITECT AT 303-757-9932 TO DETERMINE THE TYPES, RATES, AND APPLICATION OF SEED THAT IS NEEDED. THE COST OF SOD OR SEEDING SHALL BE INCLUDED IN THE LANDSCAPE RESTORATION FORCE ACCOUNT.

**5. TABULATION OF STORMWATER QUANTITIES**

THE SWMP QUANTITIES ARE APPROXIMATE, IT IS ANTICIPATED THAT ADDITIONAL BMPs AND BMP QUANTITIES NOT SHOWN ON THE SWMP SITE MAPS SHALL BE REQUIRED ON THE PROJECT FOR UNFORESEEN CONDITIONS AND REPLACEMENT OF ITEMS THAT ARE BEYOND THEIR USEFUL SERVICE LIFE. SEE SUBSECTION 208.03 AND 208.04 (E). QUANTITIES FOR ALL BMPs SHOWN ABOVE ARE ESTIMATED, AND HAVE BEEN INCREASED FOR UNFORESEEN PROJECT CONDITIONS.

- A. BMP SEDIMENT REMOVAL AND DISPOSAL SHALL BE NOT PAID SEPARATELY, BUT INCLUDED IN THE COST OF BMP DEVICE.
- B. LABOR HOURS REQUIRED FOR MISCELLANEOUS EROSION CONTROL WORK AS DIRECTED BY THE ENGINEER. WORK SHALL NOT BE PAID FOR SEPERATELY, BUT BE INCLUDED IN THE PRICE OF THE WORK.
- C. MAINTENANCE OF SEEDED AREAS SHALL NOT BE PAID FOR SEPARATELY, BUT BE INCLUDED IN THE PRICE OF THE WORK.

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GENERAL NOTES CONT.  
SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	I-70/ COLORADO BLVD	PECOS ST/ ALAMEDA AVE	SHERIDAN BLVD/ FLORIDA AVE	HAMPDEN AVE/ ONEIDA ST	I-225/TAMARAC ST	PROJECT TOTALS
			PLAN	PLAN	PLAN	PLAN	PLAN	
202-00190	REMOVAL OF MEDIAN COVER	SY	0	15.1	0	0	77.1	92
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	0.2	0.2	0.2	0.2	0.2	1
202-00200	REMOVAL OF SIDEWALK	SY	0	57.7	45.8	47.6	138.6	290
202-00203	REMOVAL OF CURB AND GUTTER	LF	205.5	90.1	150.8	112.2	308.8	868
202-00206	REMOVAL OF CONCRETE CURB RAMP	SY	0	16.8	22.2	32.8	0	72
202-00201	REMOVAL OF CONCRETE CURB	LF	0	0	0	19.4	0	20
202-00210	REMOVAL OF CONCRETE PAVEMENT	SY	0	0	0	0	0	52
202-00220	REMOVAL OF ASPHALT MAT	SY	49.1	60.6	37.2	10.1	85	243
202-00019	REMOVAL OF INLET	EA	0	1	0	0	0	1
202-00821	REMOVAL OF SIGN PANEL	EA	3	4	8	4	1	20
203-01597	POTHOLING	EA	16	16	16	16	16	80
208-00034	GRAVEL BAGS	LF	6	52	0	12	6	76
208-00045	CONCRETE WASHOUT STRUCTURE	EA	1	1	1	1	1	5
210-00810	SIGN PANEL REMOVE AND REPLACE	EA	19	0	3	0	19	41
210-04050	ADJUST VALVE BOX	EA	0	0	0	1	0	1
403-00721	HOT MIX ASPHALT (PATCHING) (ASPHALT)	TON	21.6	30.9	16.3	4.4	70.6	144
412-00835	CONCRETE PAVEMENT (8")	SY	0	0	0	44.7	0	45
503-00036	DRILLED CAISSON (36 INCH)	EA	5	4	4	4	3	20
503-00048	DRILLED CAISSON (48 INCH)	EA	0	0	0	0	1	1
603-01180	18" REINFORCED CONCRETE PIPE (CIP)	LF	0	18	0	0	0	18
604-39005	4 FT I.D. MANHOLE W/ FLAT TOP	EA	0	1	0	0	0	1
604-16050	TYPE 16 CURB INLET (SINGLE)	EA	0	1	0	0	0	1
608-00000	CONCRETE SIDEWALK (4")	SY	31.9	33.8	16.1	46.4	72.2	200
608-00010	CONCRETE CURB RAMP	SY	54.6	26.5	58.6	34.2	64.9	240
609-200010	CURB TYPE 2 (SECTION B)	LF	0	25.6	0	61.1	0	88
609-21010	CURB AND GUTTER TYPE 2 (SECTION I-B)	LF	0	35.1	0	0	180.3	216
609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	205.5	127.2	149	112.8	234.4	830
610-00020	MEDIAN COVER MATERIAL (CONCRETE)	SF	115.8	25.2	49.9	47.4	139.4	379
613-00206	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	400	300	350	360	380	1,790
613-00306	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	750	570	670	700	720	3,410
613-07000	PULL BOX (SPECIAL)	EA	1	1	1	1	1	5
613-10000	WIRING	LS	0.2	0.2	0.2	0.2	0.2	1
613-06000		EA	1	1	1	1	1	5
614-00011	SIGN PANEL (CLASS I)	SF	43	54	110	57	33	297
614-00012	SIGN PANEL (CLASS II)	SF	3.9	0	0	0	0	4
614-00216	STEEL SIGN POST (2-1/2 INCH ROUND NP-40)(POST)	LF	10	0	0	0	0	10
614-84000	TRAFFIC SIGNAL PEDESTAL POLE STEEL (10')	EA	1	0	0	0	0	1
614-70117	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN)	EA	0	0	0	0	0	32
614-70336	TRAFFIC SIGNAL FACE (12-12-12)	EA	16	16	10	18	11	71
614-70565	TRAFFIC SIGNAL FACE (12-12-12-12)	EA	0	0	8	0	2	10
614-72860	PEDESTRIAN PUSH BUTTON	EA	6	8	8	8	6	36

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# GENERAL NOTES CONT.

## CCD Task Order 11, Denver Intersection Utility Contacts

W. Florida ave & Sheridan Blvd			
Utility Company	Address	Contact / Email	Phone Number
Comcast Cable	1617 Acoma Street, Denver, CO 80223	Eric Carroll/Eric_Carroll@cable.comcast.com	303-603-5256
Xcel Energy@Street Lighting/Electric	1123 W. 3 <sup>rd</sup> Avenue, Denver, CO 80223	Marisa Montoya/Marisa.l.montoya@xcelenergy.com	303-571-3720
Xcel Energy – Gas Operations	1123 West 3rd Avenue, Denver, CO 80223	Michelle McKnight/Michelle.t.mcknight@xcelenergy.com	303-571-3358
Century Link	5325 Zuni Street, Suite 728, Denver, CO 80221	Brandon Lundeen/Brandon.lundeen@centurylink.com	303-451-2582
Denver Water Department	1600 West 12th Avenue, Denver, CO 80204	Vincent Gaiter/Vincent.gaiter@denverwater.org	720-840-4289
Denver Wastewater Management	2000 West 3 <sup>rd</sup> Avenue, Denver, CO 80223	Sam Stevens/Sam.Stevens@denvergov.org	303-446-3529
Metro Wastewater Reclamation	6450 York St., Denver, Co 80229	Craig Simmonds/Csimmonds@mwrddst.co.us	303-286-3000
Denver Traffic Engineering Serv.	5440 Roslyn Street, Denver, CO 80216	Chris Lillie/Chris.Lillie@denvergov.org	720-865-4066
City of Lakewood	480 S. Allison Pkwy Lakewood, Co 80226	<a href="mailto:ServiceRequest@Lakewood.org">ServiceRequest@Lakewood.org</a>	Utility office (303) 987-7900
South Sheridan Sanitation	3855 Lewiston St # 140 Aurora, CO 80011-1527	Jerry Guildner	Office (303) 381-4960 Jerry (locator) (303) 288-2020

E Hampden Ave & S Oneida Way			
Utility Company	Address	Contact / Email	Phone Number
Comcast Cable	1617 Acoma Street, Denver, CO 80223	Eric Carroll/Eric_Carroll@cable.comcast.com	303-603-5256
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Denver Traffic Engineering Serv.	5440 Roslyn Street, Denver, CO 80216	Chris Lillie/Chris.Lillie@denvergov.org	720-865-4066
Denver Parks and Recreation	201 W. Colfax Avenue, Denver, CO 80202	Attn: Utility Locates	Office (720) 865-0393
Level 3 Communications	633 17 <sup>th</sup> Street, Denver, CO 80202	Tom Longan/Thomas.Longan@level3.com	303-326-7595

W. Alameda Ave. and S Pecos St.			
Utility Company	Address	Contact / Email	Phone Number
Comcast Cable	1617 Acoma Street, Denver, CO 80223	Eric Carroll/Eric_Carroll@cable.comcast.com	303-603-5256
Xcel Energy@Street Lighting/Electric	1123 W. 3 <sup>rd</sup> Avenue, Denver, CO 80223	Marisa Montoya/Marisa.l.montoya@xcelenergy.com	303-571-3720
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Century Link	5325 Zuni Street, Suite 728, Denver, CO 80221	Brandon Lundeen/Brandon.lundeen@centurylink.com	303-451-2582
Denver Water Department	1600 West 12th Avenue, Denver, CO 80204	Vincent Gaiter/Vincent.gaiter@denverwater.org	720-840-4289
Denver Wastewater Management	2000 West 3 <sup>rd</sup> Avenue, Denver, CO 80223	Sam Stevens/Sam.Stevens@denvergov.org	303-446-3529
Metro Wastewater Reclamation	6450 York St., Denver, Co 80229	Craig Simmonds/Csimmonds@mwrddst.co.us	303-286-3000
Denver Traffic Engineering Serv.	5440 Roslyn Street, Denver, CO 80216	Chris Lillie/Chris.Lillie@denvergov.org	720-865-4066
Denver Parks and Recreation	201 W. Colfax Avenue, Denver, CO 80202	Attn: Utility Locates	Office (720) 865-0393
XO Communications	9706 E Easter Avenue, Englewood, CO 80112	Steve Valdez/Steve.g.valdez@xo.com	303-539-1022, 303-435-2793
Level 3 Communications	633 17 <sup>th</sup> Street, Denver, CO 80202	Tom Longan/Thomas.Longan@level3.com	303-326-7595

I-70 and Colorado Blvd			
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Denver Parks and Recreation	201 W. Colfax Avenue, Denver, CO 80202	Attn: Utility Locates	Office (720) 865-0393

S Tamarac and I-225 Frontage Rd			
Utility Company	Address	Contact / Email	Phone Number
Comcast Cable	1617 Acoma Street, Denver, CO 80223	Eric Carroll/Eric_Carroll@cable.comcast.com	303-603-5256
Xcel Energy@Street Lighting/Electric	1123 W. 3 <sup>rd</sup> Avenue, Denver, CO 80223	Marisa Montoya/Marisa.l.montoya@xcelenergy.com	303-571-3720
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Denver Wastewater Management	2000 West 3 <sup>rd</sup> Avenue, Denver, CO 80223	Sam Stevens/Sam.Stevens@denvergov.org	303-446-3529
Metro Wastewater Reclamation	6450 York St., Denver, Co 80229	Craig Simmonds/Csimmonds@mwrddst.co.us	303-286-3000
Denver Traffic Engineering Serv.	5440 Roslyn Street, Denver, CO 80216	Chris Lillie/Chris.Lillie@denvergov.org	720-865-4066
Denver Parks and Recreation	201 W. Colfax Avenue, Denver, CO 80202	Attn: Utility Locates	Office (720) 865-0393
XO Communications	9706 E Easter Avenue, Englewood, CO 80112	Steve Valdez/Steve.g.valdez@xo.com	303-539-1022, 303-435-2793
Level 3 Communications	633 17 <sup>th</sup> Street, Denver, CO 80202	Tom Longan/Thomas.Longan@level3.com	303-326-7595
Above Net	360 Hamilton Avenue, White Plains, NY 10601	Chuck Todd/Ctodd@above.net	480-252-6914
T-W Telecom	14200 E Jewell Avenue, Aurora, CO 80012	Russ Oliver/Russ.Oliver@twtelcom.com	303-566-6022, 720-234-5777
Denver Suburban Water District	6380 S. Fiddlers Green Cir., Ste 400, Greenwood Village, CO 80111	Doug Scott/ Doug.Scott@sheapropties.com	303-779-4550
Goldsmith Metro District	8350 E Crescent Pkwy, Englewood, CO 80111	Doug Scott/ Doug.Scott@sheapropties.com	303-779-4550

### UTILITIES

UTILITY LINES AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 105.11 OF THE STANDARD SPECIFICATIONS CONCERNING UTILITIES.

THE CONTRACTOR SHALL COMPLY WITH ARTICLE 1.5 OF TITLE 9, CRS ("EXCAVATION REQUIREMENTS") WHEN EXCAVATING OR GRADING IS PLANNED IN THE AREA OF UNDERGROUND UTILITY FACILITIES. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITIES AT LEAST TWO (2) BUSINESS DAYS, NOT INCLUDING THE ACTUAL DAY OF NOTICE, PRIOR TO COMMENCING SUCH OPERATIONS. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811OR 1-800-922-1987, TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNER. UTILITY SERVICE LATERALS SHALL ALSO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING. THE CONTRACTOR SHALL LOCATE NON-MEMBER UTILITIES, SUCH AS STORM SEWER AND DITCH FACILITIES AS NECESSARY TO PREVENT DAMAGE THERETO.

IT IS SUGGESTED THAT THE CONTRACTOR INITIATE A REQUEST TO XCEL ENERGY FOR ANY CONSTRUCTION RELATED TEMPORARY ELECTRICAL POWER SOURCES AS SOON AS POSSIBLE. THE REQUEST IS TO BE PROCESSED THROUGH XCEL ENERGY-BUILDER'S CALL LINE AT 1-800-628-2121.

IT IS SUGGESTED THAT THE CONTRACTOR CALL XCEL ENERGY AT 1-800-895-1999 FOR AN ELECTRIC EMERGENCY.

IT IS SUGGESTED THAT THE CONTRACTOR CALL XCEL ENERGY AT 1-800-895-2999 FOR A GAS EMERGENCY.

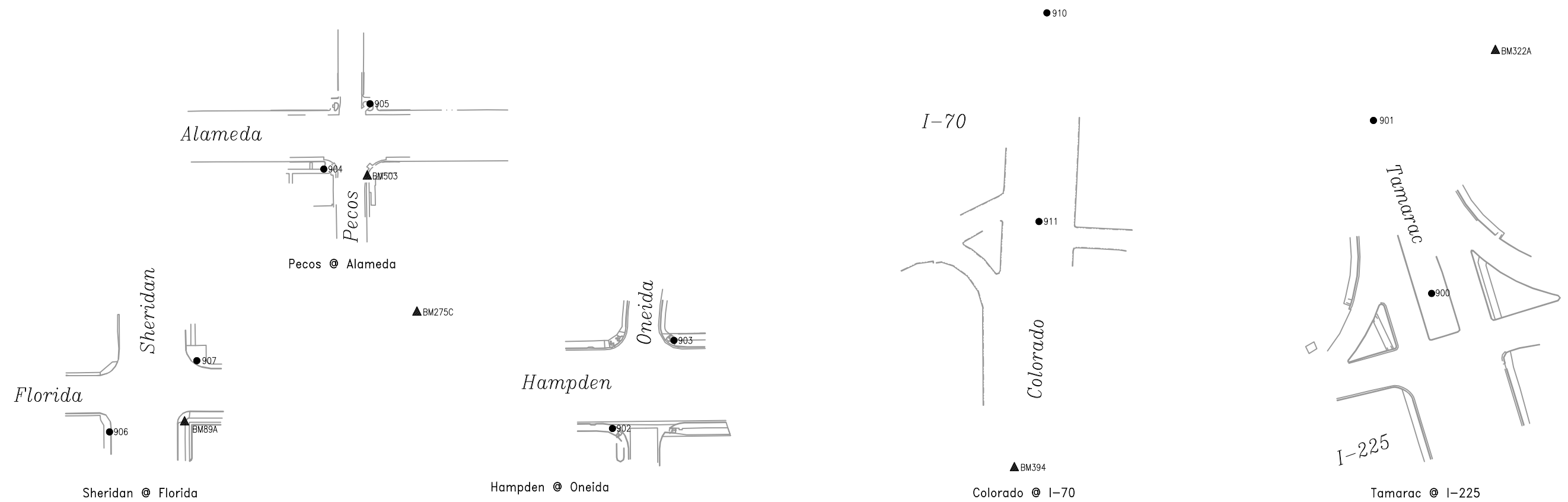
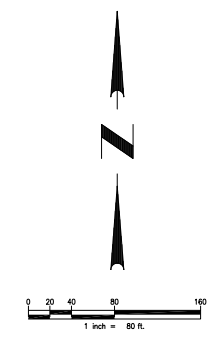
IT IS ESTIMATED THAT 80 POTHOLES WILL BE REQUIRED ON THIS PROJECT AS DIRECTED BY THE PROJECT ENGINEER.

CONTRACTOR SHALL POSITIVELY LOCATE AND POTHOLE ALL POTENTIAL CONFLICTS WITH EXISTING BURIED UTILITY FACILITIES WITH THE PROPOSED CONSTRUCTION AS SHOWN ON THE PLANS OR BY FIELD LOCATION MARKINGS. IF CONFLICT EXISTS, MODIFY PROPOSED CONSTRUCTION PLANS TO AVOID ALL EXISTING BURIED UTILITY FACILITIES.

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Acad Ver.	Scale: As Shown	Units: English	R-	/	/	.	.		.		.		.		

Pt. #	Northing	Easting	Elev	Latitude	Longitude	Description
TAMARAC & I-225						
BM322A	1658914.660	3170919.639	5547.59	39° 38' 27.411751792° N	104° 53' 35.081320883° W	MF2BC #322A CCD BC @ Tamarac & Oxford, SE Cor, Top of Curb
900	1657304.758	3170678.353	5551.46	39° 38' 11.517115691° N	104° 53' 38.302944151° W	MS2AC CP 900
901	1657507.912	3170610.007	5550.43	39° 38' 13.529378989° N	104° 53' 39.159235744° W	MS2AC CP 901
HAMPDEN & ONEIDA						
BM275C	1663386.674	3165350.285	5555.67	39° 39' 11.970055452° N	104° 54' 45.904546728° W	MF2BC #275C CCD BC @ Monaco Pkwy & Hampden
902	1663261.144	3166343.430	5538.09	39° 39' 10.665813652° N	104° 54' 33.217431876° W	MSCX CP 902
903	1663364.547	3166415.735	5537.06	39° 39' 11.683093463° N	104° 54' 32.284407384° W	MSCX CP 903
PECOS & ALAMEDA						
BM503	1684263.341	3138920.260	5217.87	39° 42' 39.844869793° N	105° 00' 22.369043524° W	MF2BC BM CCD BC SE Cor, Top of Inlet
904	1684271.452	3138869.237	5218.31	39° 42' 39.927775883° N	105° 00' 23.021360122° W	MF3.25AC CDDT
905	1684348.151	3138923.474	5217.69	39° 42' 40.682854922° N	105° 00' 22.322018748° W	MSCX 905
SHERIDAN & FLORIDA						
BM89A	1676323.213	3125762.845	5446.32	39° 41' 22.047272958° N	105° 03' 11.228945708° W	MF2BC BM89A CCD BC @ back ramp, by PP
906	1676311.374	3125674.661	5446.41	39° 41' 21.934547966° N	105° 03' 12.357735253° W	MF3.25AC CDDT
907	1676395.021	3125777.254	5446.77	39° 41' 22.756232847° N	105° 03' 11.040111279° W	MF3BC
COLORADO & I-70						
B394	1709382.644	3157220.762	5261.82	39° 46' 47.041060094° N	104° 56' 26.221266431° W	MF3.25BC #B394 NGS BM DISC in conc abutment, center of overpass
910	1710247.686	3157242.952	5234.02	39° 46' 55.588456240° N	104° 56' 25.868821020° W	MS2DK #910
911	1710002.627	3157233.662	5244.00	39° 46' 53.167233148° N	104° 56' 26.007144864° W	MS2DK #911

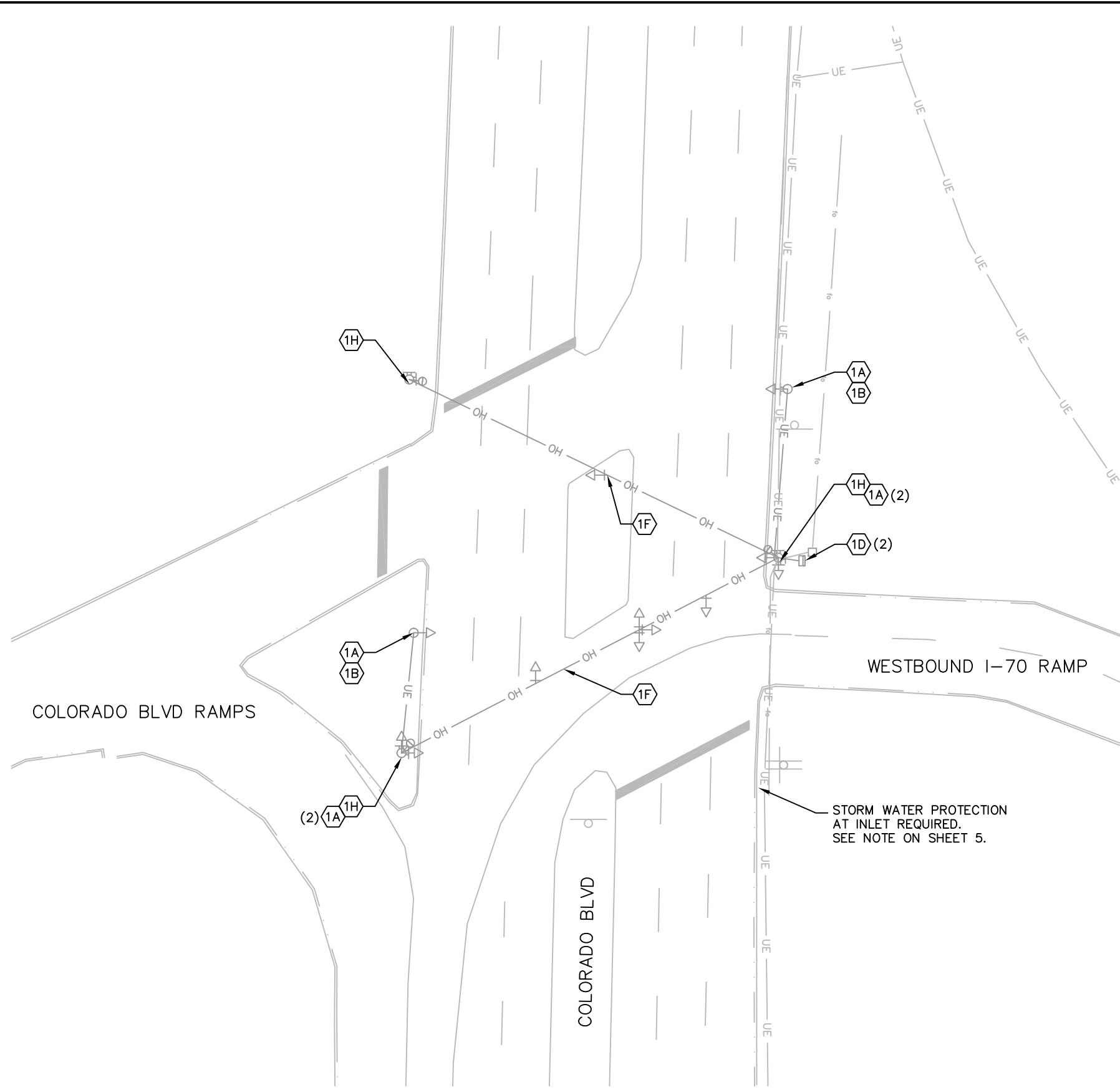


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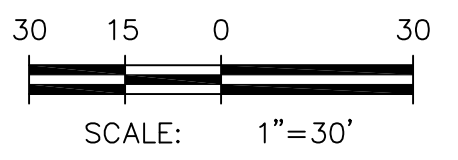
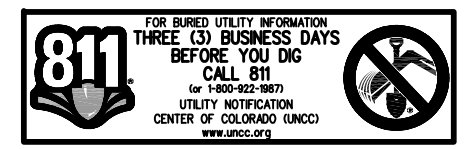
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ITEM NO.	KEY	ITEM	UNT	QUANTITY
*202	1A	REMOVE SIGNAL HEAD	EACH	6
*202	1A	REMOVE PEDESTRIAN SIGNAL HEAD	EACH	-
*202	1B	REMOVE PEDESTAL POLE	EACH	2
*202	1D	REMOVE SIGNAL CABINET, CONTROLLER, PULL BOXES & WATER PULL BOXES	EACH	2
*202	1F	REMOVE SPAN WIRE, CABLE AND ALL ATTACHED SIGNAL HEADS AND EQUIPMENT	EACH	2
*202	1G	REMOVE PUSH BUTTON	EACH	-
*202	1H	REMOVE TRAFFIC SIGNAL POLE (XCEL)	EACH	3

\* NOT TO BE PAID FOR SEPERATLEY; REMOVAL OF ALL SIGNAL EQUIPMENT TO BE PAID ON A LUMP SUM BASIS

TABULATION FOR INFORMATION ONLY



Computer File Information		Sheet Revisions		 CDOT Region 6 City & County of Denver		As Constructed		SHE 2010 TRAFFIC SIGNAL UPGRADES I-70 & COLORADO BLVD. TRAFFIC SIGNAL REMOVAL PLAN		Project No./Code		
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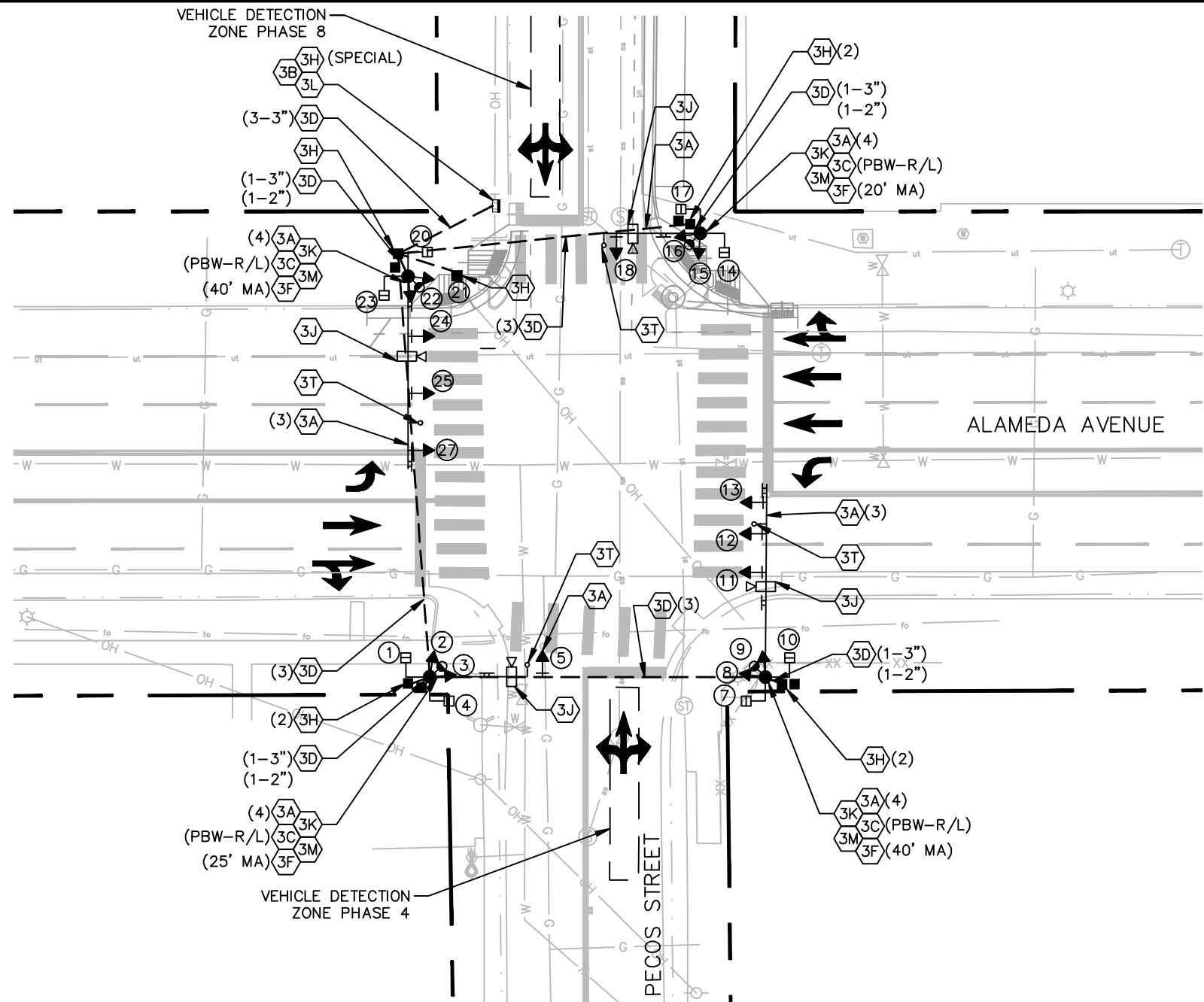












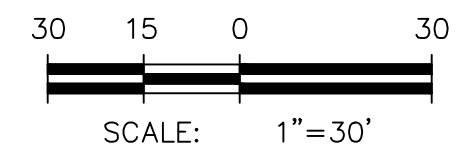
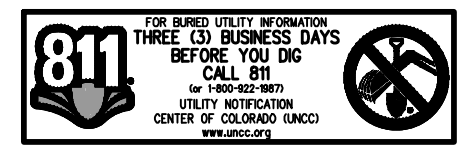
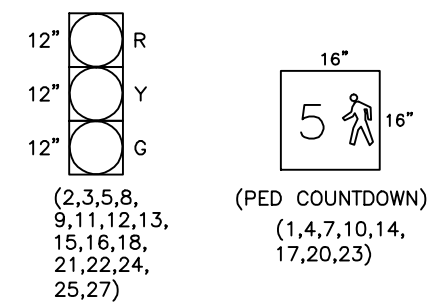
ITEM NO.	KEY	ITEM	UNIT	QUANTITY
614	3A	TRAFFIC SIGNAL HEADS (12-12-12)	EACH	16
614	3A	PEDESTRIAN SIGNAL HEADS (COUNTDOWN)	EACH	8
614	3B		EACH	1 (1)
614	3C	PEDESTRIAN PUSH BUTTON	EACH	8
613	3D	2-INCH ELECTRICAL CONDUIT (BORED)	LF	300
613	3D	3-INCH ELECTRICAL CONDUIT (BORED)	LF	570
614	3E	TRAFFIC SIGNAL PEDESTAL POLE STEEL	EACH	--
614	3F	INSTALL MAST ARM (LENGTH AS SHOWN)	EACH	4
613	3H	PULL BOX (TYPES A & B)	EACH	8 (4)
613	3H	PULL BOX (SPECIAL)	EACH	1 (3)
613			EACH	1 (5)
614	3J	VIDEO DETECTION SYSTEM (CAMERA)	EACH	4
614	3K	TRAFFIC SIGNAL-LIGHT POLE STEEL	EACH	4
613	3M	LUMINAIRE HIGH PRESSURE SODIUM (250 WATT)	EACH	4
614	3T	FIRE PREEMPTION UNIT AND TIMER SYSTEM	EACH	1
614		CONCRETE FOOTING (TRAFFIC SIGNAL POLE)	EACH	4
614		TELEMETRY (FIELD)	EACH	1
614		ETHERNET SWITCH	EACH	1

- (1)
- (3) PULL BOX(SPECIAL) PAID FOR SEPARATELY.
- (4) NOT TO BE PAID FOR SEPARATELY; PULL BOX (TYPE A & B) TO BE PAID FOR IN THE PRICE OF ELECTRICAL CONDUIT.
- (5) ELECTRICAL METER TO BE FURNISHED BY XCEL, CONTRACTOR TO INSTALL METER BASE.

TABULATION FOR INFORMATION ONLY

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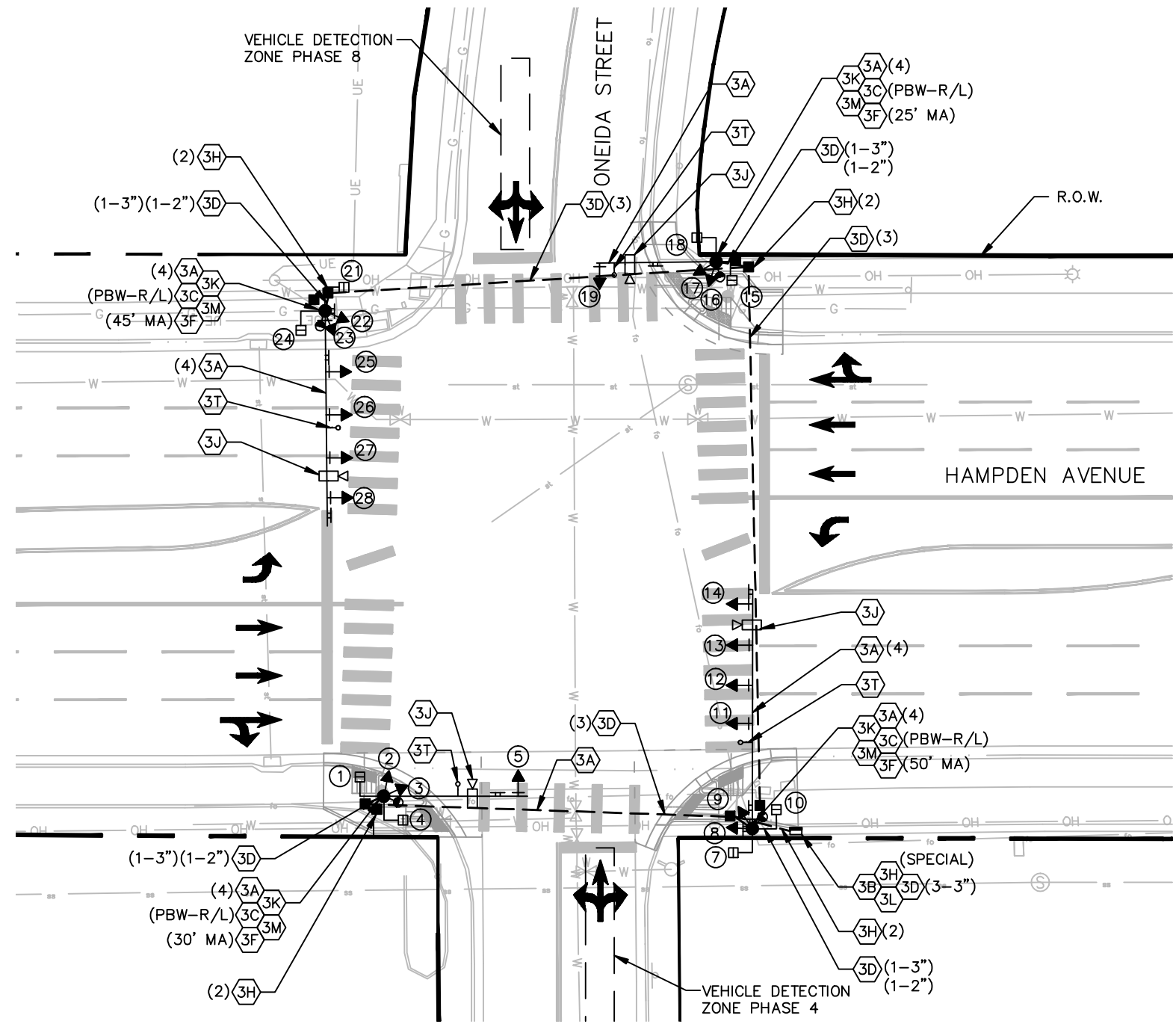
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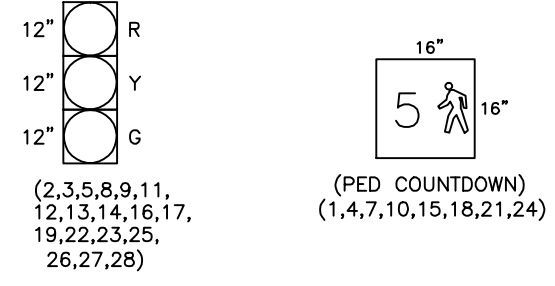
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614	3A	TRAFFIC SIGNAL HEADS (12-12-12)	EACH	18
614	3A	PEDESTRIAN SIGNAL HEADS (COUNTDOWN)	EACH	8
614	3B		EACH	1 (1)
614	3C	PEDESTRIAN PUSH BUTTON	EACH	8
613	3D	2-INCH ELECTRICAL CONDUIT (BORED)	LF	360
613	3D	3-INCH ELECTRICAL CONDUIT (BORED)	LF	700
614	3E	TRAFFIC SIGNAL PEDESTAL POLE STEEL	EACH	--
614	3F	INSTALL MAST ARM (LENGTH AS SHOWN)	EACH	4
613	3H	PULL BOX (TYPES A & B)	EACH	8 (4)
613	3H	PULL BOX (SPECIAL)	EACH	1 (3)
614	3J	VIDEO DETECTION SYSTEM (CAMERA)	EACH	4
614	3K	TRAFFIC SIGNAL-LIGHT POLE STEEL	EACH	4
613	3M	LUMINAIRE HIGH PRESSURE SODIUM (250 WATT)	EACH	4
613			EACH	1 (5)
614	3T	FIRE PREEMPTION UNIT AND TIMER SYSTEM	EACH	1
614		CONCRETE FOOTING (TRAFFIC SIGNAL POLE)	EACH	4
614		CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)	EACH	--
614		TELEMETRY (FIELD)	EACH	1
614		ETHERNET SWITCH	EACH	1

- (1)
- (3) PULL BOX(SPECIAL) PAID FOR SEPARATELY.
- (4) NOT TO BE PAID FOR SEPARATELY; PULL BOX(TYPE A & B) TO BE PAID FOR IN THE PRICE OF ELECTRICAL CONDUIT.
- (5) ELECTRICAL METER TO BE FURNISHED BY XCEL, CONTRACTOR TO INSTALL METER BASE.

TABULATION FOR INFORMATION ONLY

**PHASING DIAGRAM**

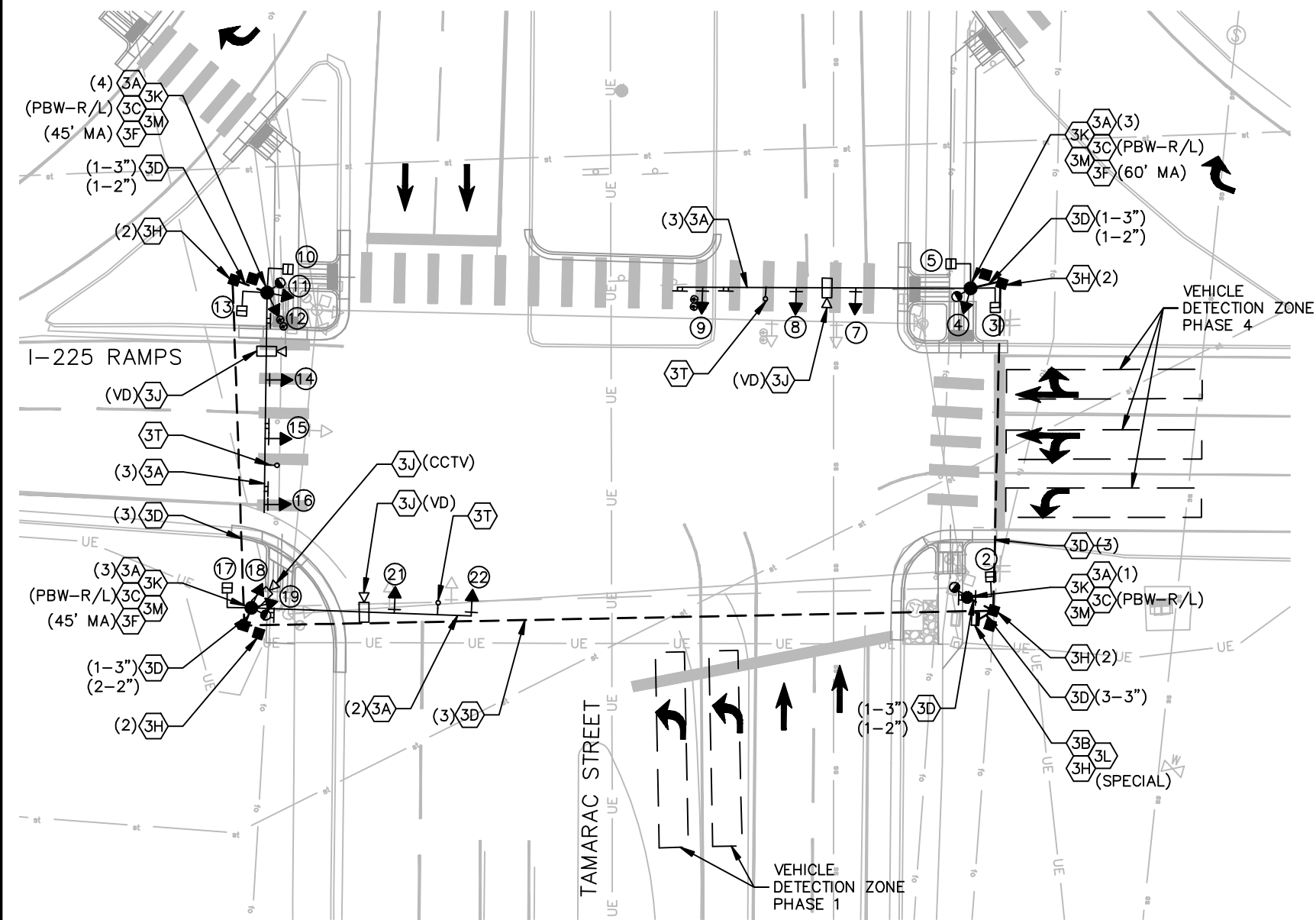
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PHASE 5	PHASE 6	PHASE 7	PHASE 8
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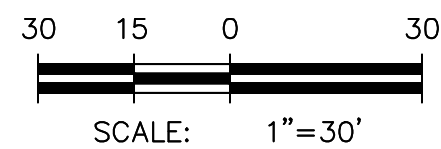
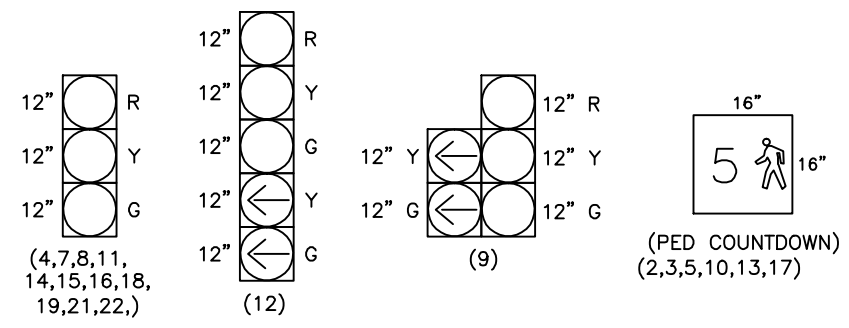
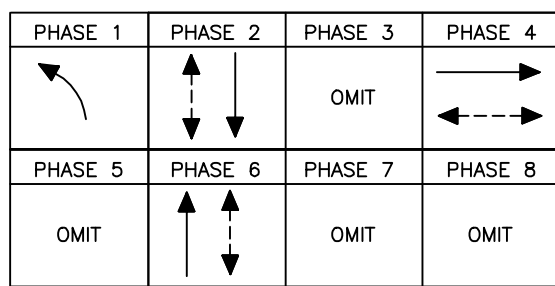


ITEM NO.	KEY	ITEM	UNIT	QUANTITY
614	3A	TRAFFIC SIGNAL HEADS (12-12-12)	EACH	11
614	3A	TRAFFIC SIGNAL HEADS (12-12-12-12)	EACH	2
614	3A	PEDESTRIAN SIGNAL HEADS (COUNTDOWN)	EACH	6
614	3B	PEDESTRIAN SIGNAL HEADS (COUNTDOWN)	EACH	1
614	3C	PEDESTRIAN PUSH BUTTON	EACH	6
613	3D	2-INCH ELECTRICAL CONDUIT (BORED)	LF	380
613	3D	3-INCH ELECTRICAL CONDUIT (BORED)	LF	720
614	3E	TRAFFIC SIGNAL PEDESTAL POLE STEEL	EACH	-
614	3F	INSTALL MAST ARM (LENGTH AS SHOWN)	EACH	3
613	3H	PULL BOX (TYPES A & B)	EACH	8
613	3H	PULL BOX (SPECIAL)	EACH	1
614	3J	VIDEO DETECTION SYSTEM (CAMERA)	EACH	3
614	3K	TRAFFIC SIGNAL-LIGHT POLE STEEL W/MAST ARM	EACH	3
614	3K	TRAFFIC SIGNAL-LIGHT POLE STEEL W/O MAST ARM	EACH	1
613	3M	LUMINAIRE HIGH PRESSURE SODIUM (250 WATT)	EACH	4
613			EACH	1
614	3T	FIRE PREEMPTION UNIT AND TIMER SYSTEM	EACH	1
614		CONCRETE FOOTING (TRAFFIC SIGNAL POLE)	EACH	3
614	3J	CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVE)	EACH	1
614		TELEMETRY (FIELD)	EACH	1
614		ETHERNET SWITCH	EACH	1

- (1)
- (2) TRAFFIC SIGNAL BASE FOUNDATION FOR TRAFFIC SIGNAL LIGHT POLE (STEEL) WITHOUT MASTARM IS NOT TO BE PAID SEPARATELY, BUT TO BE INCLUDED IN THE PRICE OF THE POLE.
- (3) PULL BOX (SPECIAL) PAID FOR SEPARATELY.
- (4) NOT TO BE PAID FOR SEPARATELY; PULL BOX (TYPE A & B) TO BE PAID FOR IN THE PRICE OF ELECTRICAL CONDUIT.
- (5) ELECTRICAL METER TO BE FURNISHED BY XCEL, CONTRACTOR TO INSTALL METER BASE.

TABULATION FOR INFORMATION ONLY

### PHASING DIAGRAM

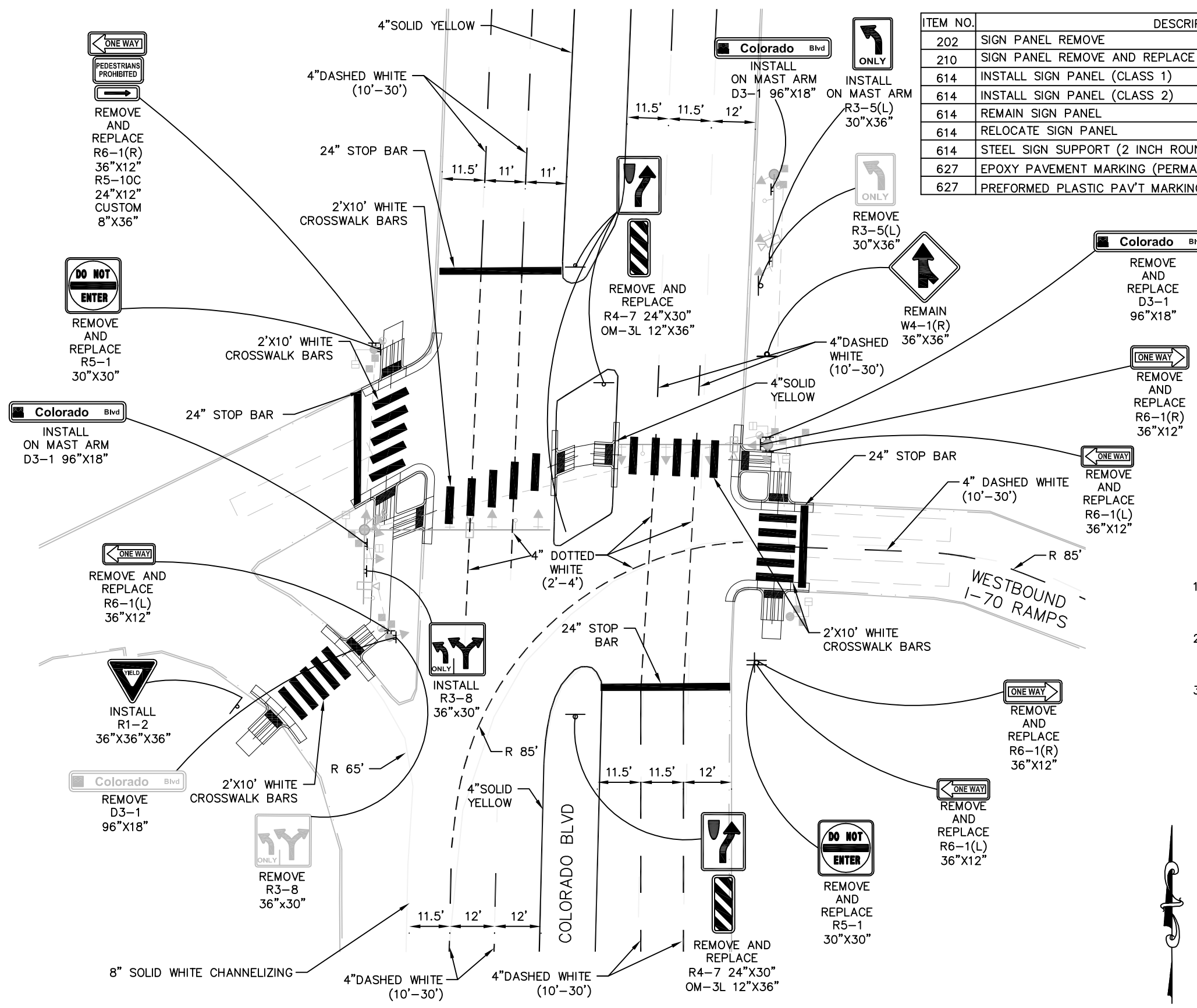


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ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	SIGN PANEL REMOVE	EACH	3
210	SIGN PANEL REMOVE AND REPLACE	EACH	19
614	INSTALL SIGN PANEL (CLASS 1)	EACH	4
614	INSTALL SIGN PANEL (CLASS 2)	EACH	1
614	REMAIN SIGN PANEL	EACH	1
614	RELOCATE SIGN PANEL	EACH	-
614	STEEL SIGN SUPPORT (2 INCH ROUND)(POST AND SOCKET)	LF	10
627	EPOXY PAVEMENT MARKING (PERMANENT)	GAL	3.33
627	PREFORMED PLASTIC PAV'T MARKING (CROSS WALK-STOP BAR)	SF	742



- NOTES:
1. PAVEMENT MARKINGS SHALL BE EPOXY PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
  2. ALL CROSSWALKS, STOP BARS, WORDS, AND SYMBOLS SHALL BE PREFORMED THERMOPLASTIC.
  3. REPLACE EXISTING STRIPING AS SHOWN. MATCH EXISTING STRIPING APPROXIMATELY 100' FROM INTERSECTION. LANE WIDTHS ARE APPROXIMATE AND MEASURED FROM FLOWLINE.

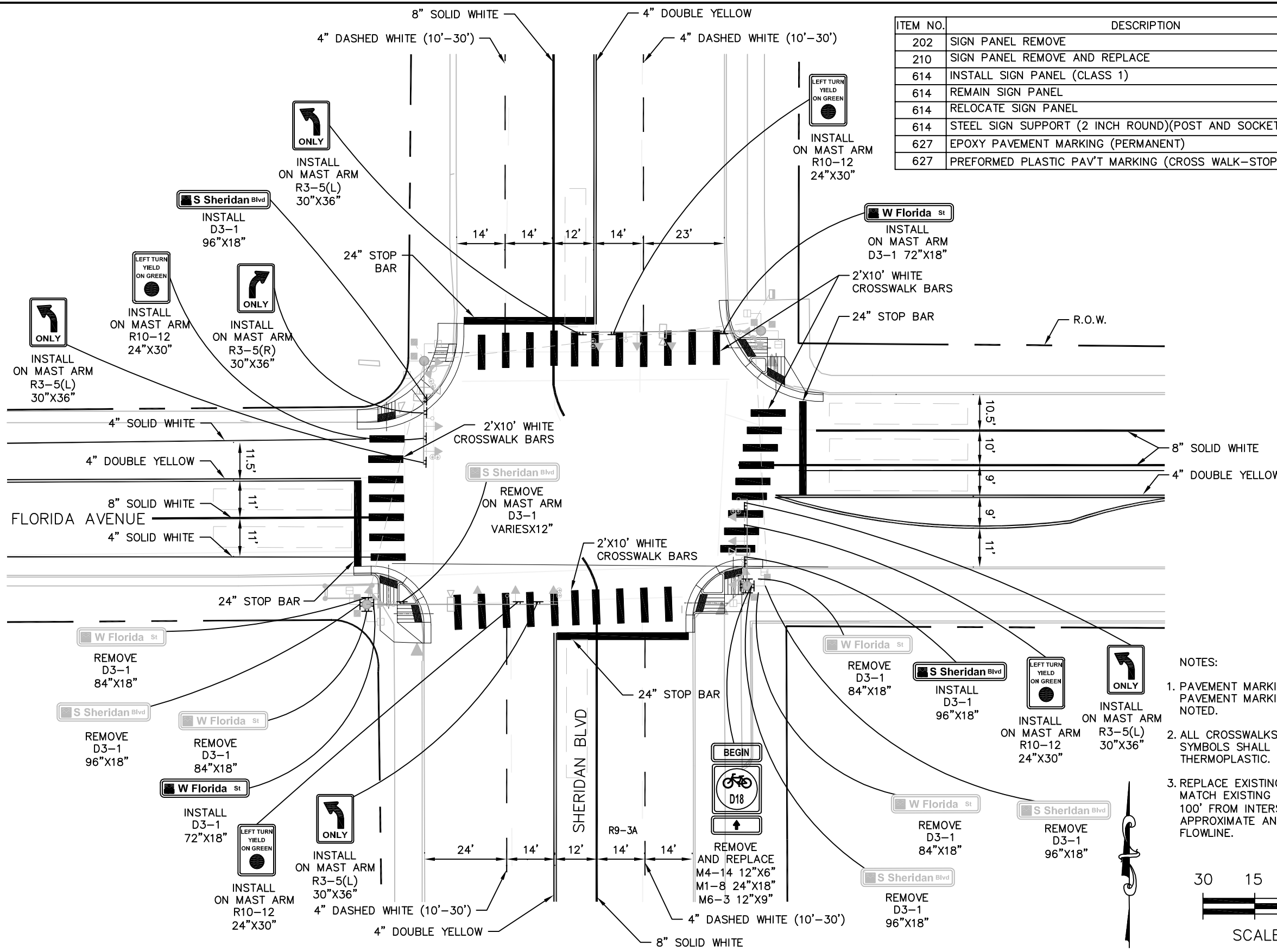
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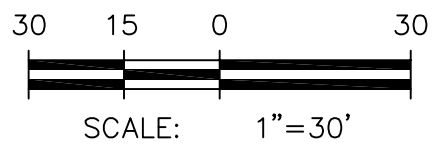




ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	SIGN PANEL REMOVE	EACH	8
210	SIGN PANEL REMOVE AND REPLACE	EACH	3
614	INSTALL SIGN PANEL (CLASS 1)	EACH	13
614	REMAIN SIGN PANEL	EACH	-
614	RELOCATE SIGN PANEL	EACH	-
614	STEEL SIGN SUPPORT (2 INCH ROUND)(POST AND SOCKET)	LF	-
627	EPOXY PAVEMENT MARKING (PERMANENT)	GAL	7.6
627	PREFORMED PLASTIC PAV'T MARKING (CROSS WALK-STOP BAR)	SF	996

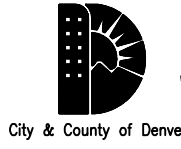
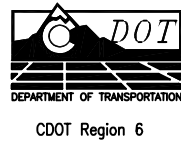


- NOTES:
1. PAVEMENT MARKINGS SHALL BE EPOXY PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
  2. ALL CROSSWALKS, STOP BARS, WORDS, AND SYMBOLS SHALL BE PREFORMED THERMOPLASTIC.
  3. REPLACE EXISTING STRIPING AS SHOWN. MATCH EXISTING STRIPING APPROXIMATELY 100' FROM INTERSECTION. LANE WIDTHS ARE APPROXIMATE AND MEASURED FROM FLOWLINE.



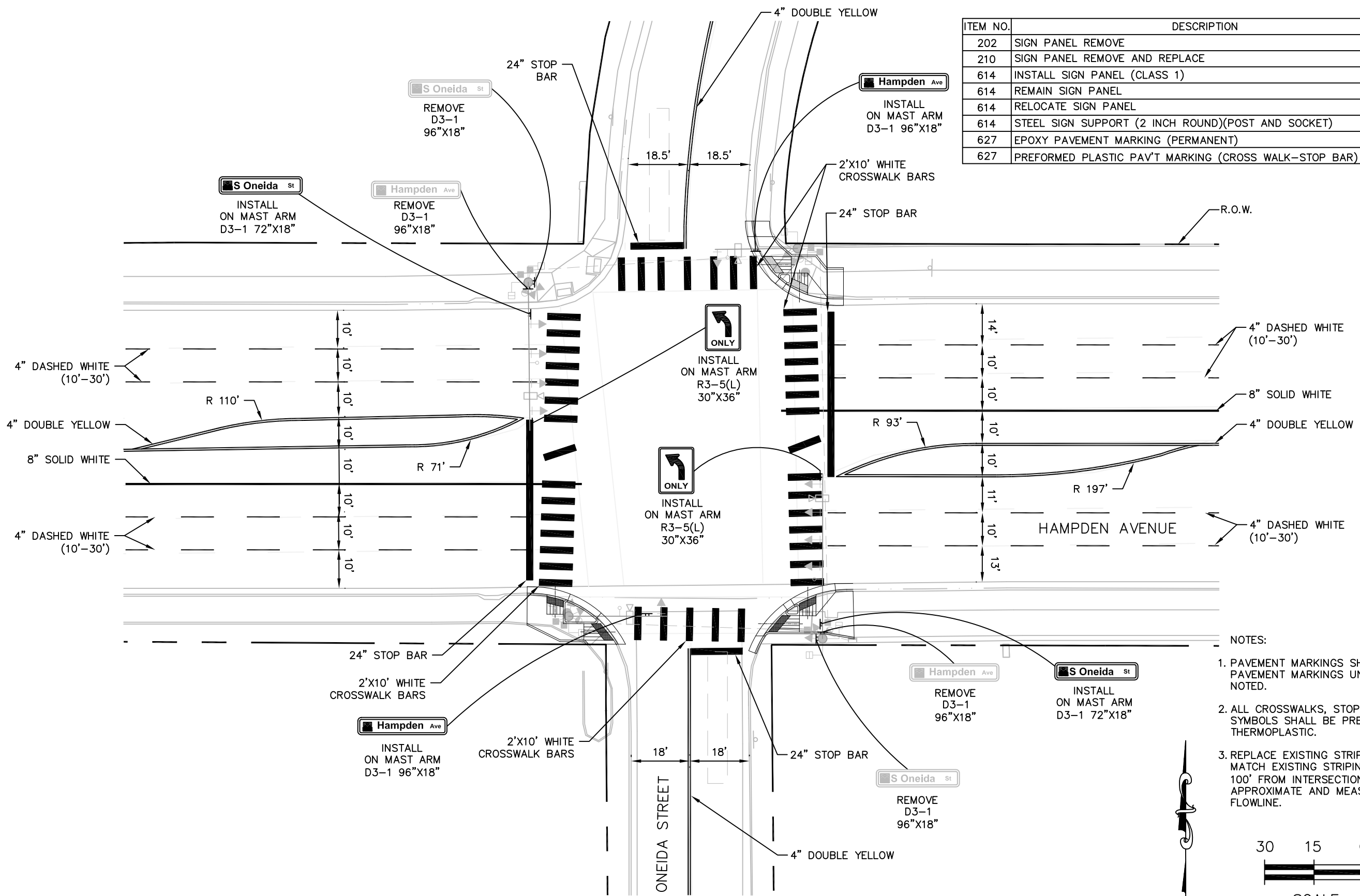
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Last Modification Date:	Initials:	(R-)	/ / .	Revised:	/ /	Detailer: DMS		17659	
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**JACOBS**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	SIGN PANEL REMOVE	EACH	4
210	SIGN PANEL REMOVE AND REPLACE	EACH	-
614	INSTALL SIGN PANEL (CLASS 1)	EACH	6
614	REMAIN SIGN PANEL	EACH	-
614	RELOCATE SIGN PANEL	EACH	-
614	STEEL SIGN SUPPORT (2 INCH ROUND)(POST AND SOCKET)	LF	-
627	EPOXY PAVEMENT MARKING (PERMANENT)	GAL	7.15
627	PREFORMED PLASTIC PAV'T MARKING (CROSS WALK-STOP BAR)	SF	1102

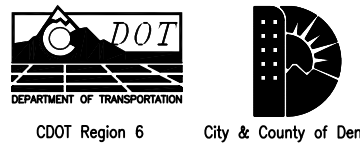


- NOTES:
- PAVEMENT MARKINGS SHALL BE EPOXY PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
  - ALL CROSSWALKS, STOP BARS, WORDS, AND SYMBOLS SHALL BE PREFORMED THERMOPLASTIC.
  - REPLACE EXISTING STRIPING AS SHOWN. MATCH EXISTING STRIPING APPROXIMATELY 100' FROM INTERSECTION. LANE WIDTHS ARE APPROXIMATE AND MEASURED FROM FLOWLINE.



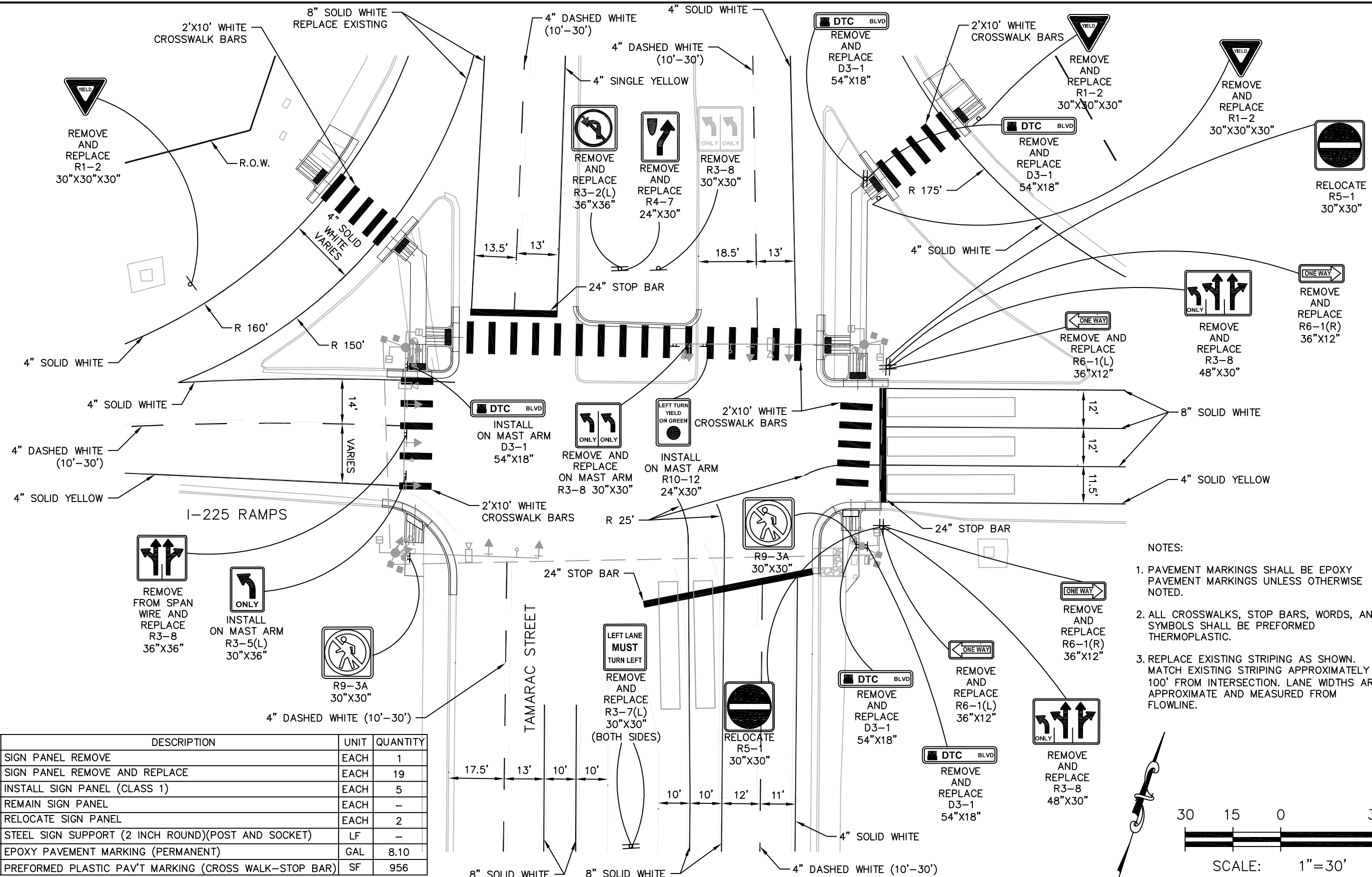
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Creation Date:	Initials:	(R-)	/ / .	No Revisions:	/ /	Designer:	SP	Structure	
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- NOTES:
1. PAVEMENT MARKINGS SHALL BE EPOXY PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
  2. ALL CROSSWALKS, STOP BARS, WORDS, AND SYMBOLS SHALL BE PERFORMED THERMOPLASTIC.
  3. REPLACE EXISTING STRIPING AS SHOWN. MATCH EXISTING STRIPING APPROXIMATELY 100' FROM INTERSECTION. LANE WIDTHS ARE APPROXIMATE AND MEASURED FROM FLOWLINE.

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	SIGN PANEL REMOVE	EACH	1
210	SIGN PANEL REMOVE AND REPLACE	EACH	19
614	INSTALL SIGN PANEL (CLASS 1)	EACH	5
614	REMAIN SIGN PANEL	EACH	-
614	RELOCATE SIGN PANEL	EACH	2
614	STEEL SIGN SUPPORT (2 INCH ROUND)(POST AND SOCKET)	LF	-
627	EPOXY PAVEMENT MARKING (PERMANENT)	GAL	8.10
627	PREFORMED PLASTIC PAV'T MARKING (CROSS WALK-STOP BAR)	SF	956

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Sheet Revisions


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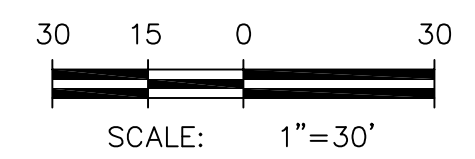
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SHE 2010 TRAFFIC SIGNAL UPGRADES  
I-225 RAMPS & TAMARAC ST  
SIGNING & STRIPING PLAN

Designer: SP	Structure:
Detailer: DMS	Numbers:
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Project No./Code

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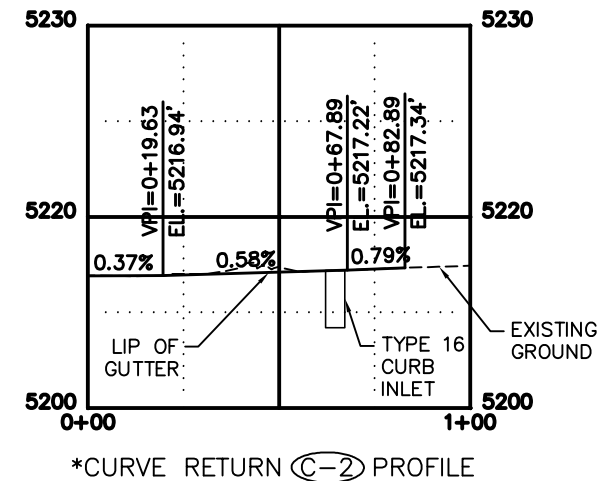
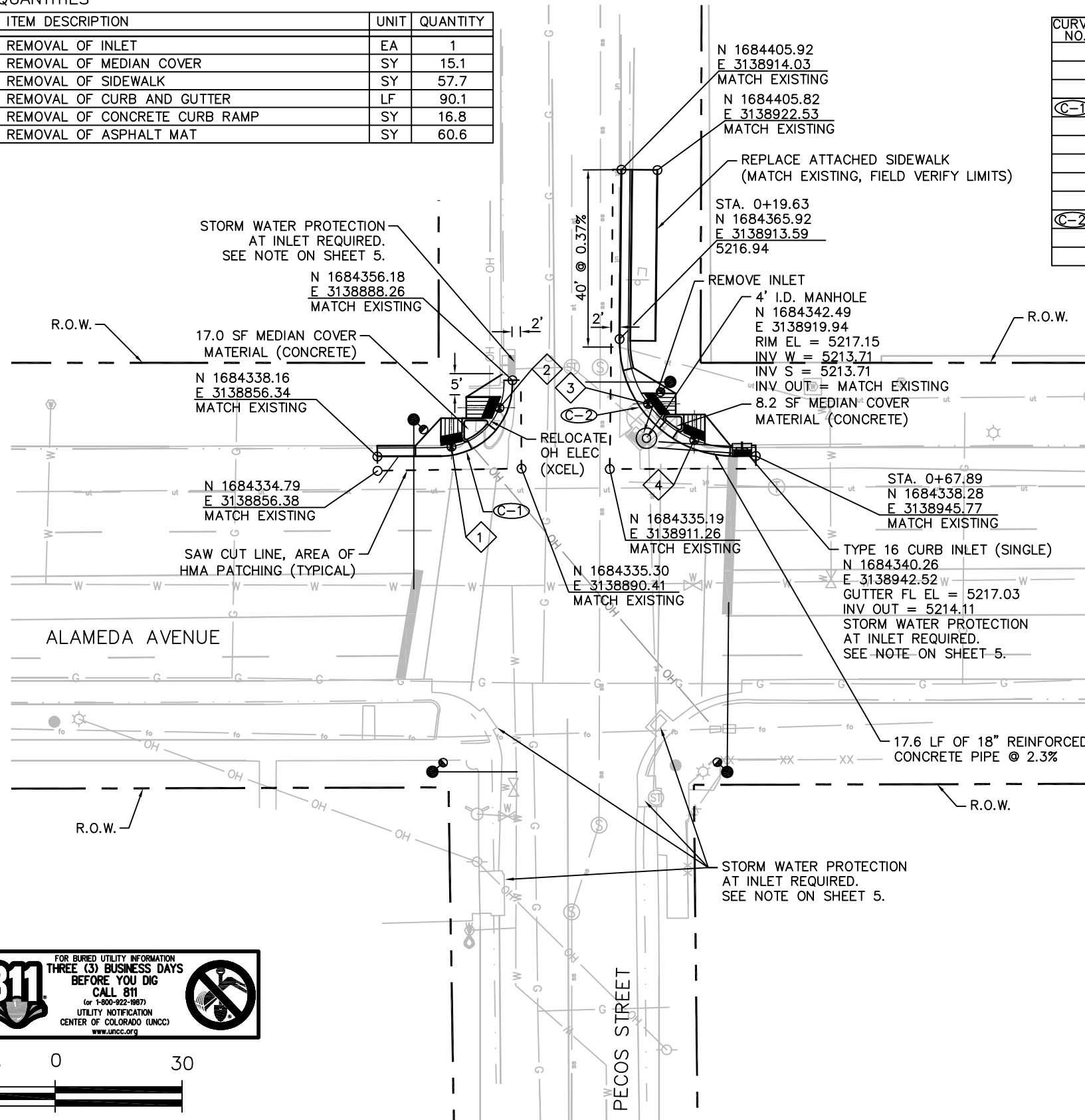


REMOVAL QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
202	REMOVAL OF INLET	EA	1
202	REMOVAL OF MEDIAN COVER	SY	15.1
202	REMOVAL OF SIDEWALK	SY	57.7
202	REMOVAL OF CURB AND GUTTER	LF	90.1
202	REMOVAL OF CONCRETE CURB RAMP	SY	16.8
202	REMOVAL OF ASPHALT MAT	SY	60.6

CURVE DATA

CURVE NO.	DESCRIPTION	STATION	NORTHING	EASTING	ELEVATION	CURVE DATA			
						DELTA	T	L	R
	PC		1684338.25	3138871.37	5217.22'				
	QUARTER POINT		1684348.81	3138887.00	5217.25'				
	MIDPOINT		1684343.31	3138883.37	5217.28'				
(C-1)	PI		1684338.34	3138888.40		90°05'01.00" LT	27.04'	42.45'	27.00'
	QUARTER POINT		1684339.60	3138877.91	5217.31'				
	PT		1684355.38	3138888.27	5217.35'				
	PC	0+20.00	1684365.55	3138913.59	5216.94'				
	QUARTER POINT	0+30.72	1684355.08	3138915.57	5217.00'				
	MIDPOINT	0+41.44	1684346.20	3138921.45	5217.07'				
(C-2)	PI		1684338.07	3138913.28		91°00'56.00" LT	27.48'	42.89'	27.00'
	QUARTER POINT	0+52.17	1684340.28	3138930.31	5217.13'				
	PT	0+62.89	1684338.25	3138940.77	5217.19'				



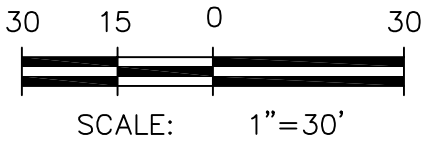
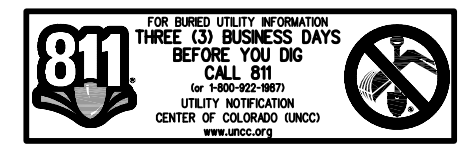
CURB RAMP LOCATIONS

CONTROL POINT	NORTHING	EASTING	CURB RAMP	CL LENGTH*	WIDTH	SY
1	1684340.47	3138873.86	TYPE 3	6.72'	5'	6.5
2	1684349.67	3138885.19	TYPE 3	7.81'	5'	6.9
3	1684350.59	3138920.34	TYPE 3	6.50'	5'	6.9
4	1684342.06	3138931.24	TYPE 3	6.00'	5'	6.2

THE RAMP CONTROL POINT IS LOCATED ON THE FLOW LINE  
 \* CENTERLINE LENGTH IS FROM FLOW LINE TO BACK OF RAMP  
 NOTE: SEE CCD STANDARD AND DETAIL 7.1, 7.3, AND 7.4 FOR CURB RAMPS.

CONSTRUCTION QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
403	HMA (PATCHING) (ASPHALT)	TON	30.9
603	18" REINFORCED CONCRETE PIPE (CIP)	LF	18
604	TYPE 16 CURB INLET (SINGLE)	EACH	1
604	4' I.D. MANHOLE W/FLAT TOP (CCD S-501.1)	EACH	1
608	CONCRETE SIDEWALK (4 INCH)	SY	33.8
608	CONCRETE CURB RAMP	SY	26.5
609	CURB TYPE 2 (SECTION B)	LF	25.6
609	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	127.2
610	MEDIAN COVER MATERIAL (CONCRETE)	SF	25.2



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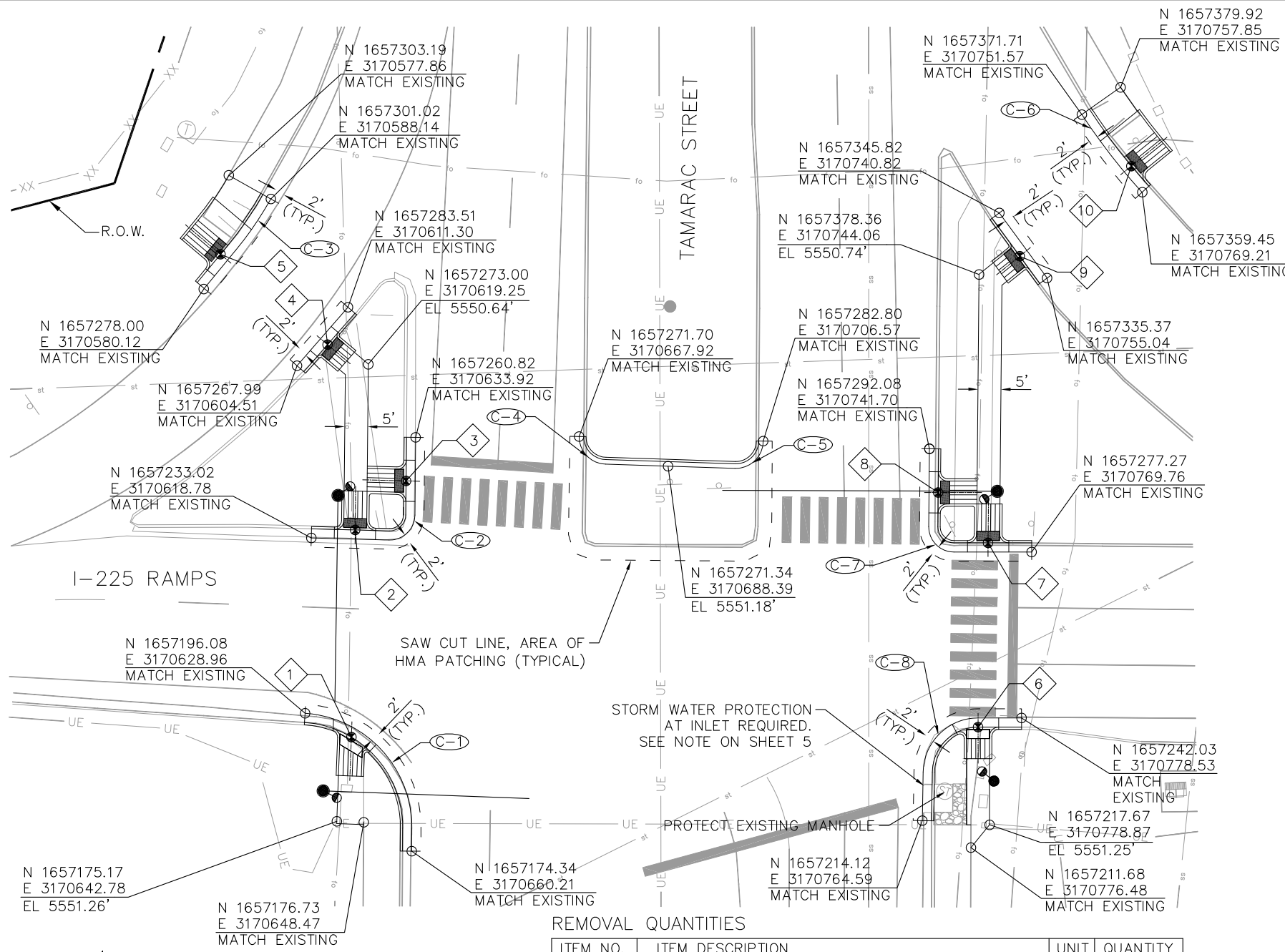
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CURVE NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION	CURVE DATA			
					DELTA	T	L	R
	PC	1657179.12	3170658.74	5550.66'				
	QUARTER POINT	1657187.41	3170654.35	5550.54'				
	MIDPOINT	1657193.50	3170647.21	5550.35'				
(C-1)	PI	1657201.61	3170651.83		86°31'30.00" LT	23.53'	37.75'	25.00'
	QUARTER POINT	1657196.53	3170638.34	5550.12'				
	PT	1657196.08	3170628.96	5549.90'				
	PC	1657237.69	3170635.10	5550.49'				
	MIDPOINT	1657240.34	3170638.42	5550.53'				
(C-2)	PI	1657239.22	3170640.47		90°55'10.00" LT	5.59'	8.73'	5.50'
	PT	1657244.57	3170638.85	5550.52'				
	PC	1657288.03	3170584.17	5549.52'				
	MIDPOINT	1657294.44	3170586.44	5549.50'				
(C-3)	PI	1657294.35	3170586.73		10°07'15.00" LT	6.82'	13.60'	77.00'
	PT	1657301.02	3170588.14	5549.48'				
	PC	1657271.70	3170667.92	5550.96'				
	MIDPOINT	1657268.19	3170670.78	5551.02'				
(C-4)	PI	1657266.10	3170669.63		88°36'12.00" LT	5.86'	9.28'	6.00'
	PT	1657267.68	3170675.27	5551.09'				
	PC	1657275.26	3170702.45	5551.11'				
	MIDPOINT	1657278.16	3170706.10	5551.04'				
(C-5)	PI	1657276.92	3170708.37		91°24'14.00" LT	6.15'	9.57'	6.00'
	PT	1657282.80	3170706.57	5551.00'				
	PC	1657371.71	3170751.57	5549.71'				
	QUARTER POINT	1657368.39	3170755.79	5549.73'				
	MIDPOINT	1657365.23	3170760.15	5549.74'				
(C-6)	PI	1657364.89	3170759.91		8°59'53.00" LT	10.78'	21.52'	137.0'
	QUARTER POINT	1657362.25	3170764.63	5549.76'				
	PT	1657359.45	3170769.21	5549.78'				
	PC	1657275.83	3170746.64	5550.44'				
	MIDPOINT	1657272.56	3170749.34	5550.47'				
(C-7)	PI	1657270.51	3170748.26		90°31'41.00" LT	5.55'	8.69'	5.50'
	PT	1657272.18	3170753.56	5550.50'				
	PC	1657239.18	3170769.47	5551.00'				
	QUARTER POINT	1657236.96	3170765.41	5550.83'				
	MIDPOINT	1657233.37	3170762.49	5550.78'				
(C-8)	PI	1657235.63	3170758.24		88°56'45.00" LT	11.78'	18.63'	12.00'
	QUARTER POINT	1657228.94	3170761.14	5550.69'				
	PT	1657224.33	3170761.57	5550.58'				

CURB RAMP LOCATIONS						
CONTROL POINT	NORTHING	EASTING	CURB RAMP	CL LENGTH*	WIDTH	SY
1	1657194.15	3170640.17	TYPE 1	8.50'	5'	5.8
2	1657237.56	3170627.39	TYPE 1	8.50'	5'	5.9
3	1657251.12	3170634.77	TYPE 1	8.50'	5'	5.9
4	1657274.38	3170609.49	TYPE 1	5.50'	5'	3.7
5	1657286.19	3170581.27	TYPE 4	8.50'	5'	11.7
6	1657237.27	3170770.07	TYPE 1	6.90'	5'	4.8
7	1657276.33	3170760.08	TYPE 1	8.50'	5'	5.9
8	1657283.55	3170746.38	TYPE 1	8.50'	5'	5.9
9	1657338.13	3170747.90	TYPE 1	5.50'	5'	3.7
10	1657364.22	3170765.26	TYPE 4	8.50'	5'	11.6

THE RAMP CONTROL POINT IS LOCATED ON THE FLOW LINE  
 \* CENTERLINE LENGTH IS FROM FLOW LINE TO BACK OF RAMP  
 NOTE: SEE CCD STANDARD AND DETAIL 7.1, 7.3, AND 7.4 FOR CURB RAMPS.

REMOVAL QUANTITIES			
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
202	REMOVAL OF SIDEWALK	SY	138.6
202	REMOVAL OF MEDIAN COVER	SY	77.1
202	REMOVAL OF CURB AND GUTTER	LF	308.8
202	REMOVAL OF ASPHALT MAT	SY	85.0

CONSTRUCTION QUANTITIES			
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
403	HMA (PATCHING) (ASPHALT)	TON	70.6
608	CONCRETE SIDEWALK (4 INCH)	SY	72.2
608	CONCRETE CURB RAMP	SY	64.9
609	CURB AND GUTTER TYPE 2 (SECTION I-B)	LF	180.3
609	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	234.4
610	MEDIAN COVER MATERIAL (CONCRETE)	SF	139.4

**811** FOR BURIED UTILITY INFORMATION  
 THREE (3) BUSINESS DAYS  
 BEFORE YOU DIG  
 CALL 811  
 (or 1-800-922-1987)  
 UTILITY NOTIFICATION  
 CENTER OF COLORADO (UNCC)  
 www.uncc.org

Computer File Information		Sheet Revisions		 DEPARTMENT OF TRANSPORTATION CDOT Region 6	 City & County of Denver	As Constructed		SHE 2010 TRAFFIC SIGNAL UPGRADES I-225 RAMPS & TAMARAC ST ROADWAY PLAN		Project No./Code SHE-C010-105	
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# CITY & COUNTY OF DENVER TRAFFIC ENGINEERING SERVICES PROJECT SPECIALS

SHEET NAME	STD DWG NO
2011 TRAFFIC ENGINEERING SERVICES	16.1.0
TRAFFIC SIGNAL NOTES	16.1.1
LEGEND/KEY NOTES	16.1.2
SPAN WIRE SIGNAL DESIGN	16.1.3
MOUNTING HARDWARE	16.1.4
LOOP DETECTION	16.1.5
CONDUIT DETAILS	16.1.6
PULL BOXES	16.1.7
SIGNAL POLE FOUNDATION	16.1.8
MAST ARM POLE LOADS	16.1.9
MOUNTING DETAILS	16.1.10
TABLE DATA	16.1.11
LUMINAIRE DETAILS	16.1.12
PEDESTAL POLE DETAILS	16.1.13
POLE FOUNDATION DETAILS	16.1.14
FOUNDATIONS FOR XCEL FACILITIES	16.1.15
"P" CABINET BASE	16.1.16
"P" CABINET & BASE	16.1.17
"M" CABINET BASE	16.1.18
METER PEDESTAL DETAILS	16.1.19
METER PEDESTAL CABINET FOUNDATION AND BASE	16.1.20
FLASHING BEACON DETAILS	16.1.21
DRIVER'S FEEDBACK SIGN DETAILS	16.1.22
FLASHING BEACON & SIGN SHEET 1	16.1.23
FLASHING BEACON & SIGN SHEET 2	16.1.24

APPROVED:

*B. R. Maxwell*  
CITY TRAFFIC ENGINEER

7-5-11  
DATE

CITY & COUNTY OF DENVER

2011 TRAFFIC ENGINEERING SERVICES



STD DWG NO  
16.1.0

DATE  
7/5/2011

# TRAFFIC SIGNAL NOTES

## GENERAL

1. ITEM NUMBER REFERS TO THE APPROPRIATE SECTION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – COLORADO DEPARTMENT OF TRANSPORTATION 2011.
2. THE CONTRACTOR SHALL BE AWARE OF THE FRANCHISE AGREEMENT IN PLACE BETWEEN THE CITY & COUNTY OF DENVER AND XCEL ENERGY. PER THE FRANCHISE AGREEMENT ALL TRAFFIC SIGNAL POLES WITH STREET LIGHTS ATTACHED AND STREET LIGHT POLES ARE OWNED AND MAINTAINED BY XCEL ENERGY. THEREFORE ALL SUBMITTALS FOR TRAFFIC SIGNAL POLES AND STREET LIGHT POLES SHALL BE MADE TO XCEL ENERGY AND CITY & COUNTY OF DENVER TRAFFIC ENGINEERING SERVICES. NO TRAFFIC SIGNAL POLES OR STREET LIGHT POLES SHALL BE ORDERED UNTIL A SUBMITTAL HAS BEEN ACCEPTED FROM XCEL ENERGY AND CITY & COUNTY OF DENVER TRAFFIC ENGINEERING SERVICES.
3. XCEL ENERGY TO REMOVE ALL POLES WITH EXISTING STREET LIGHTING ATTACHED. THE CONTRACTOR SHALL REMOVE ALL OTHER SIGNAL EQUIPMENT INCLUDING SIGNAL POLES WITHOUT STREET LIGHTING, MAST ARMS, SPAN WIRE POLES, PEDESTAL POLES, SIGNAL HEADS, SPAN WIRE, PUSH BUTTONS, PULL BOXES, CONTROLLER CABINETS AND ALL FOUNDATIONS AS SHOWN ON THE PLANS. CONTRACTOR SHALL REPAIR ALL SIDEWALK AND OTHER CONCRETE AFTER REMOVALS OR AS DIRECTED AND APPROVED BY THE TRAFFIC ENGINEERING SERVICES ENGINEER.
4. ALL SALVAGED SIGNAL EQUIPMENT REMOVED REMAINS THE PROPERTY OF CITY & COUNTY OF DENVER AND MUST BE DELIVERED TO TRAFFIC ENGINEERING SERVICES AT 5440 ROSLYN STREET. COORDINATE WITH TRAFFIC ENGINEERING SERVICES PROJECT INSPECTOR AT 720-865-4000 PRIOR TO DELIVERY.
5. NO TRAFFIC SIGNAL SHALL BE TURNED ON OR TURNED OFF ON A FRIDAY OR PRIOR TO A HOLIDAY WITHOUT PRIOR NOTIFICATION TO TRAFFIC ENGINEERING SERVICES (720-913-0801).

## HARDWARE

6. ALL OVERHEAD SIGNAL HEADS SHALL BE CONSTRUCTED OF DIE CAST ALUMINUM AND PAINTED DARK OLIVE GREEN IN CONFORMANCE WITH FEDERAL SPECIFICATION 14056 (12" DIAMETER ONLY).
7. POLY SIGNAL HEADS ARE REQUIRED FOR ALL SIDE MOUNT SIGNALS AND PEDESTRIAN SIGNALS. ALL POLY HEADS SHALL BE DARK OLIVE GREEN IN CONFORMANCE WITH FEDERAL SPECIFICATION 14056.
8. ALL HARDWARE INCLUDING SPACERS, ELBOWS, POLE PLATES AND PLUMBIZERS SHALL BE PAINTED DARK OLIVE GREEN IN CONFORMANCE WITH FEDERAL SPECIFICATION 14056.
9. LIGHT EMITTING DIODE (LED) SIGNAL LENSES SHALL BE INSTALLED IN ALL SIGNAL INDICATIONS (RED, YELLOW, GREEN, AND WALK, DON'T WALK, AND COUNTDOWN PEDESTRIAN SIGNAL SECTIONS).
10. EXACT LOCATION OF THE SIGNAL POLES AND PEDESTALS SHALL BE DETERMINED IN THE FIELD BY CITY & COUNTY OF DENVER TRAFFIC ENGINEERING SERVICES.

## CONSTRUCTION

11. CONDUIT RUNS SHOWN AS  $\text{3D}$  (3) TO BE TWO 3 INCH SCHEDULE 80 PVC FOR TRAFFIC AND ONE 2 INCH SCHEDULE 80 PVC FOR ELECTRIC UTILITY. SCHEDULE 80 PVC WILL CONSTITUTE THE MINIMUM REQUIRED CONDUIT THICKNESS.
12. TWO PULL BOXES TO BE INSTALLED AT LOCATIONS SHOWN AS  $\text{3H}$  (2). DESIGNATE ON LID "TRAFFIC" FOR SIGNAL CABLES AND "ELECTRIC" FOR ELECTRIC UTILITY CABLES BY PHYSICALLY EMBOSsing, NOT PAINTING. PULL BOX LIDS FOR COMMUNICATION CONDUITS  $\text{3H}$  (SPECIAL) SHALL BE DESIGNATED "TRAFFIC COMM" BY PHYSICALLY EMBOSsing, NOT PAINTING. SEE STD. DWG. NO. 16.1.7 FOR PULL BOX DIMENSIONS.
13. A SINGLE 3 INCH CONDUIT SHALL BE REQUIRED AND INSTALLED FROM THE TRAFFIC COMM PULL BOX TO THE TRAFFIC SIGNAL CONTROLLER CABINET. CONDUIT SHALL BE SCHEDULE 80 PVC CONDUIT.
14. INTERCONNECT CONDUIT PULL BOXES SHALL BE PLACED AT 500 FOOT MAXIMUM SPACING, OR OTHERWISE DIRECTED BY CITY & COUNTY OF DENVER ENGINEER.
15. INSTALL WATER VALVE PULL BOX  $\text{3P}$  AND 2 INCH SCHEDULE 80 PVC CONDUIT FOR LOOP DETECTION INTERCEPT WHERE SHOWN ON PLANS. SEE STD DWG NO 16.1.5.
16. ALL HOLES IN TRAFFIC SIGNAL POLES TO BE DRILLED OR SAWED. INSTALLING HOLES BY BURNING WITH A TORCH IS NOT APPROVED.
17. THE BOTTOM OF ALL SPAN WIRE MOUNTED SIGNAL HEADS SHALL BE ON THE SAME HORIZONTAL PLANE AND HAVE A MINIMUM CLEARANCE OF 16'-6" AND A MAXIMUM CLEARANCE OF 19'-0" ABOVE THE CROWN OF PAVEMENT SURFACE, UNLESS OTHERWISE SPECIFIED BY TRAFFIC ENGINEERING SERVICES. ALL SPAN WIRE SHALL INCLUDE A BOTTOM WIRE OR WIND TETHER.
18. EXISTING SIGNAL FACES SHALL REMAIN VISIBLE AND ILLUMINATED UNTIL NEW SIGNALS ARE TURNED ON. BLOCKING OF EXISTING FACE BY NEW FACE WILL REQUIRE NEW FACE TO BE TEMPORARILY WIRED FOR ILLUMINATION.
19. ANCHOR BOLTS SHALL NOT BE TRIMMED UNTIL SIGNAL POLE BASE ELEVATION IS APPROVED BY CITY & COUNTY OF DENVER ENGINEER.

## WIRING

20. ALL TRAFFIC SIGNAL WIRE CONNECTORS SHALL BE OF THE BUCHANNAN COMPRESSION TYPE WITH COPPER NONFERROUS CONNECTORS AND IDEAL WRAP-CAPS OR APPROVED EQUAL.
21. WIRE SPLICING IN THE PULL BOXES ARE NOT ALLOWED EXCEPT FOR THE LOOP WIRES. ALL LOOP WIRES SHALL BE SPLICED IN THE WATERVALVE TRAFFIC PULL BOXES.
22. THREE (3) SPARE CONDUCTORS SHALL BE PROVIDED TO EACH PULL BOX AND TO THE END OF EACH MAST ARM.
23. ALL SOLDERLESS CONNECTORS SHALL BE USED.
24. BARE WIRE IN OPTICOM CABLE SHALL BE SHRINK TUBED ON BOTH ENDS FOR TOTAL INSULATION.

CITY & COUNTY OF DENVER

TRAFFIC SIGNAL NOTES

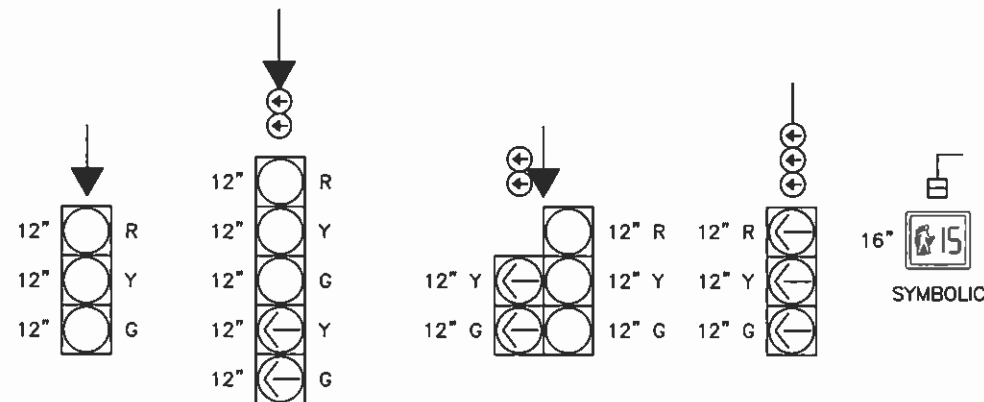


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## ELECTRICAL SERVICE LEGEND

- CONTROLLER CABINET—EXISTING
- ◼ CONTROLLER CABINET—NEW (DARKENED PORTION INDICATES DOOR SIDE OF CABINET)
- PULL BOX—EXISTING
- PULL BOX—NEW
- ⊙ WATER VALVE PULL BOX
- ▭ LOOP DETECTOR (LENGTH AS SPECIFIED)
- POLE—EXISTING
- POLE OR PEDESTAL—NEW
- OPTICOM
- DOWN GUY
- UNDERGROUND CONDUIT—EXISTING
- UNDERGROUND CONDUIT—NEW
- LUMINAIRE
- PBW—L or R PEDESTRIAN PUSH BUTTON, LEFT OR RIGHT ARROW. "WAIT FOR WALK SIGNAL"
- ↓ MAST ARM (LENGTH AS SPECIFIED, SHOWING SIGNAL WITH BACKPLATE)
- ↔ SPAN—WIRE MOUNTED (SHOWING SIGNAL WITH BACKPLATE)
- ↔ ↓ PEDESTAL OR SIDE BRACKET MOUNTED (SHOWING SIGNAL WITHOUT BACKPLATE)
- VD VIDEO DETECTION CAMERA
- ⊥ RADIO ANTENNA
- ⊥ MICROWAVE DETECTOR
- ⊥ POLE MOUNTED SIGN
- ⊥ SPAN WIRE MOUNTED SIGN
- ⊥ MAST ARM MOUNTED SIGN
- CCTV CLOSED CIRCUIT TELEVISION CAMERA
- BOS BLANK OUT SIGN
- VMS VARIABLE MESSAGE SIGN
- EM ELECTRIC METER



## KEY NOTES

### REMOVALS

- 1A REMOVE SIGNAL HEAD
- 1B REMOVE SIGNAL POLE
- 1D REMOVE SIGNAL CABINET, CONTROLLER, PULL BOXES & WATER VALVE PULL BOXES
- 1E REMOVE MAST ARM
- 1F REMOVE SPAN WIRE, CABLE AND ALL ATTACHED SIGNAL HEADS AND EQUIPMENT
- 1G REMOVE PUSH BUTTON
- 1H ELECTRIC UTILITY COMPANY TO REMOVE EXISTING POLE

### RESETS

- 2A RESET SIGNAL HEAD
- 2B RESET SIGNAL POLE
- 2C RESET SIGNAL CONTROLLER, CABINET AND ASSOCIATED EQUIPMENT
- 2D RESET PUSH BUTTON
- 2G RESET SPAN WIRE
- 2H RESET SPAN WIRE AND ALL ATTACHED SIGNAL EQUIPMENT
- 2J RESET DETECTOR
- 2K ELECTRIC UTILITY COMPANY TO RESET EXISTING POLE

### INSTALLATIONS

- 3A INSTALL SIGNAL HEAD OR HEADS
- 3B INSTALL SIGNAL CABINET, CONTROLLER AND ASSOCIATED EQUIPMENT
- 3C INSTALL PUSH BUTTON
- 3D INSTALL CONDUIT
- 3D (3) INSTALL THREE CONDUITS (TWO 3-INCH CONDUITS AND ONE 2-INCH CONDUIT)
- 3E INSTALL SIGNAL POLE
- 3F INSTALL MAST ARM - (LENGTH AS SHOWN)
- 3G INSTALL SPAN WIRE
- 3H (SPECIAL) INSTALL PULL BOX MARKED "TRAFFIC COMM" ON LID
- 3H (2) INSTALL TWO PULL BOXES ONE MARKED "TRAFFIC" ONE MARKED "ELECTRIC" ON LIDS
- 3J INSTALL DETECTOR
- 3K ELECTRIC UTILITY COMPANY TO INSTALL SIGNAL POLE
- 3L ELECTRIC UTILITY COMPANY TO INSTALL POWER FEED. CONTRACTOR TO EXTEND TO CONTROLLER
- 3M ELECTRIC UTILITY COMPANY TO INSTALL LUMINAIRE
- 3N INSTALL LUMINAIRE
- 3P INSTALL WATER VALVE PULL BOX
- 3Q NO CHANGE
- 3S INSTALL STREET LIGHT STANDARD
- 3T INSTALL OPTICOM
- 3U INSTALL INTERCONNECT (SIZE & TYPE AS SHOWN)
- 3V INSTALL VIDEO DETECTION CAMERA
- 3W INSTALL ELECTRIC METER

CITY & COUNTY OF DENVER

LEGEND/KEY NOTES

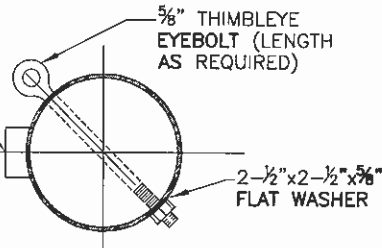


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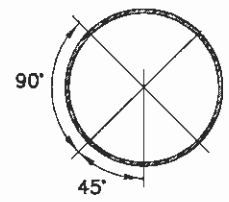


3" CLOSE COUPLING FOR SIGNAL CABLE WEATHER HEAD (FOR MULTIPHASE INSTALLATIONS PROVIDE AN ADDITIONAL COUPLING ON POLE ADJACENT TO CONTROL CABINET)

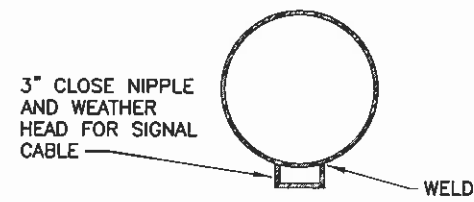


HOLE SPACING

CONTRACTOR TO DRILL OR TORCH (IF APPROVED) ALL HOLES REQUIRED FOR COMPLETE SIGNAL INSTALLATION.

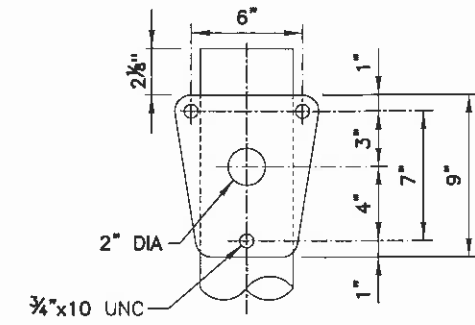


SECTION A-A



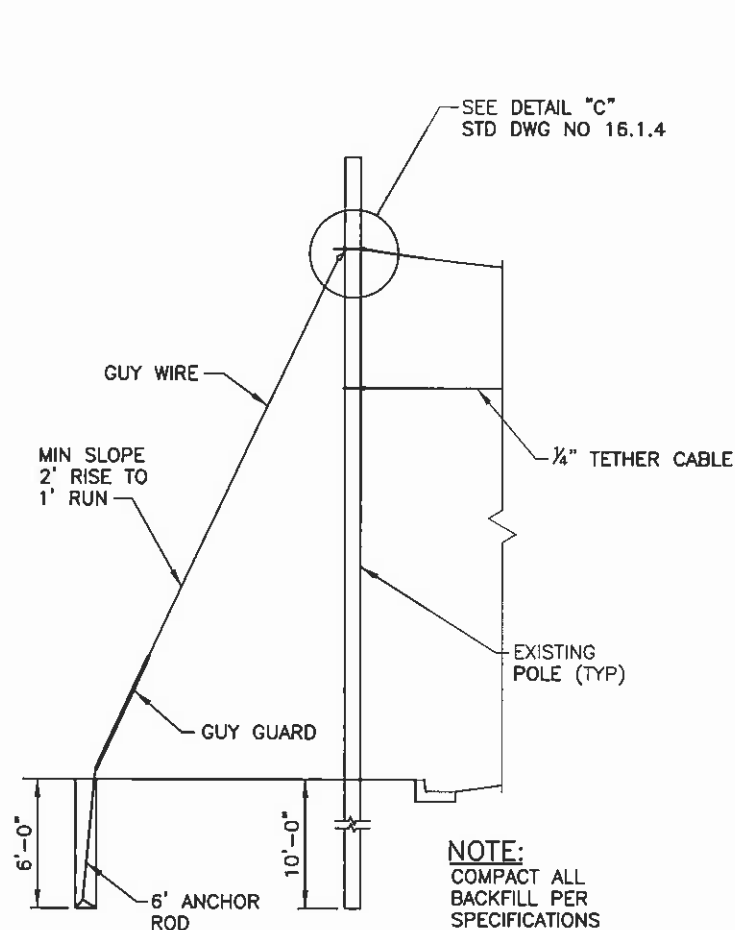
SECTION B-B

NOTE:  
SEE SECTION 614.10 (C) OF CDOT STANDARD SPECIFICATIONS FOR BONDING AND GROUNDING SPECIFICATIONS



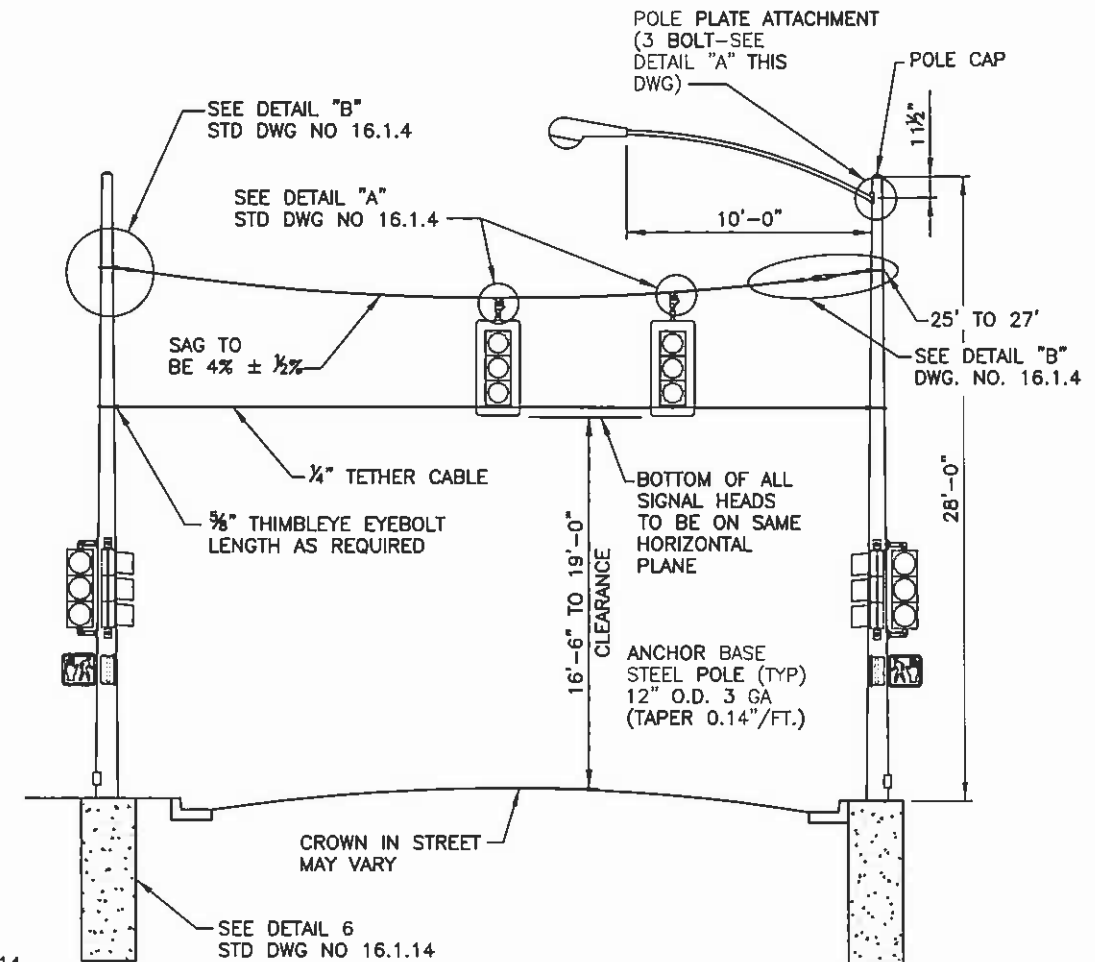
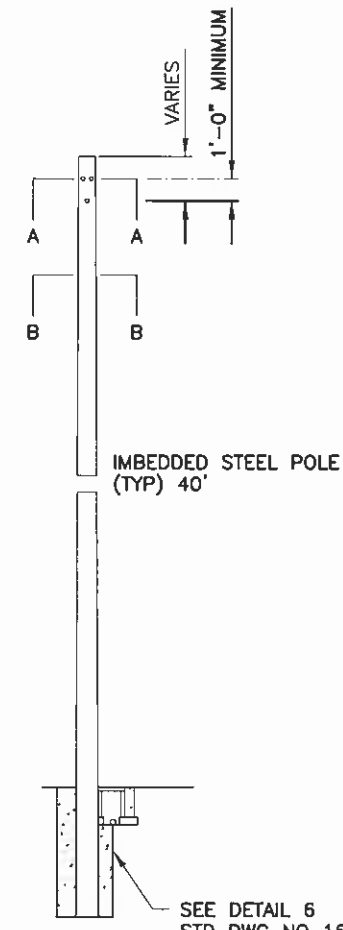
DETAIL "A"  
LUMINAIRE POLE PLATE ATTACHMENT

TYPICAL STRAIN POLE



EXISTING STRAIN POLE WITH SPAN WIRE

NOTE:  
COMPACT ALL BACKFILL PER SPECIFICATIONS



STEEL POLE WITH SPAN WIRE FOR BOX DESIGN

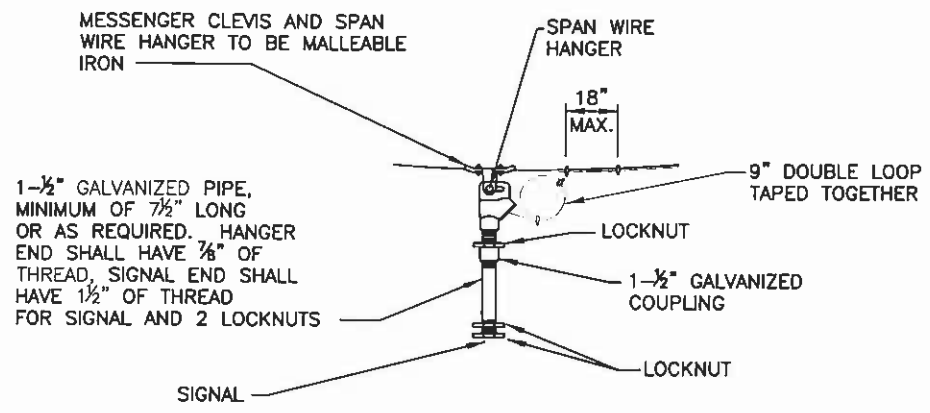
CITY & COUNTY OF DENVER

SPAN WIRE SIGNAL DESIGN

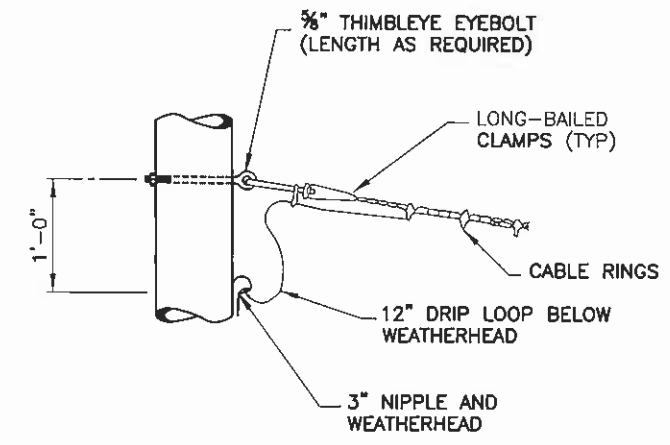


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16.1.3

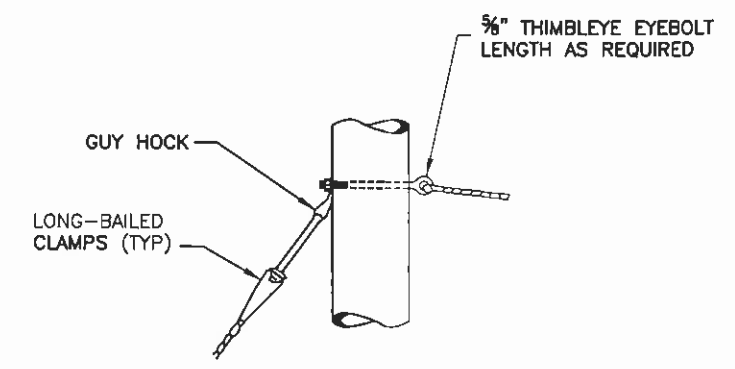
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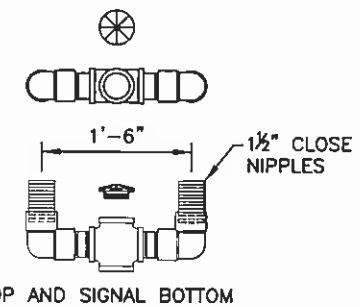
**DETAIL "A"**  
SPAN WIRE MOUNTING



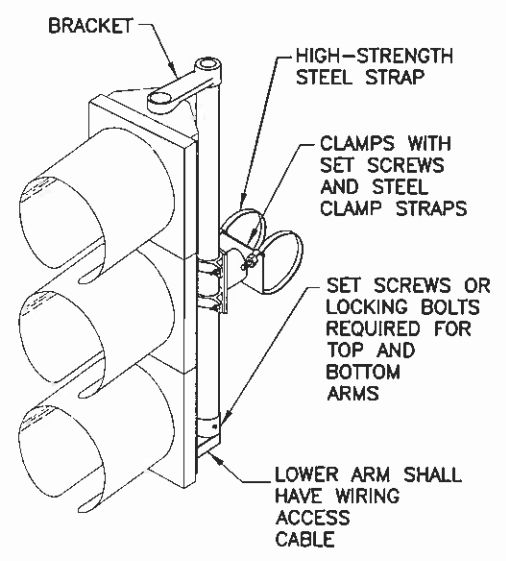
**DETAIL "B"**  
CABLE INSTALLATION WITHOUT INSULATOR-STEEL POLE



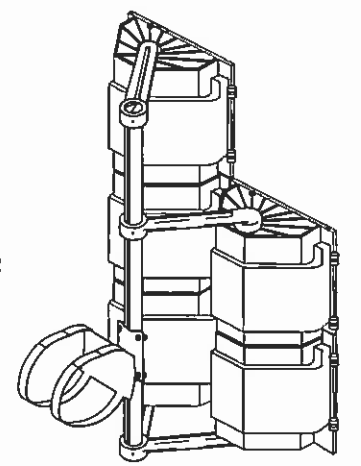
**DETAIL "C"**  
CABLE INSTALLATION ELECTRIC UTILITY POLE



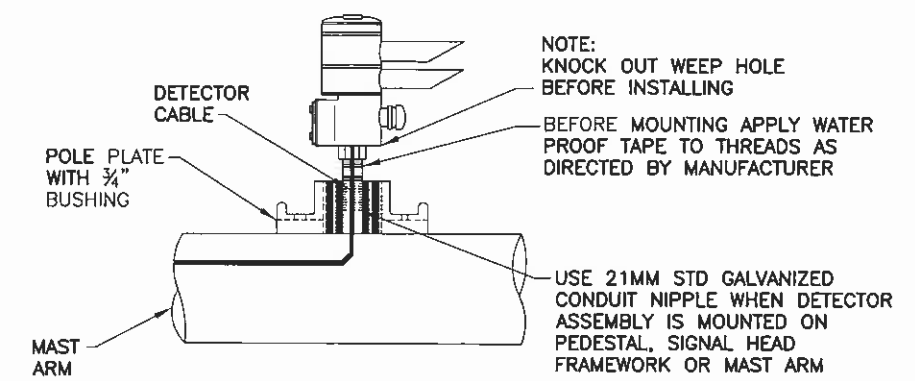
**2 WAY "L" HOLLOW SPACER**



**ASTRO-TYPE MOUNTING BRACKET**

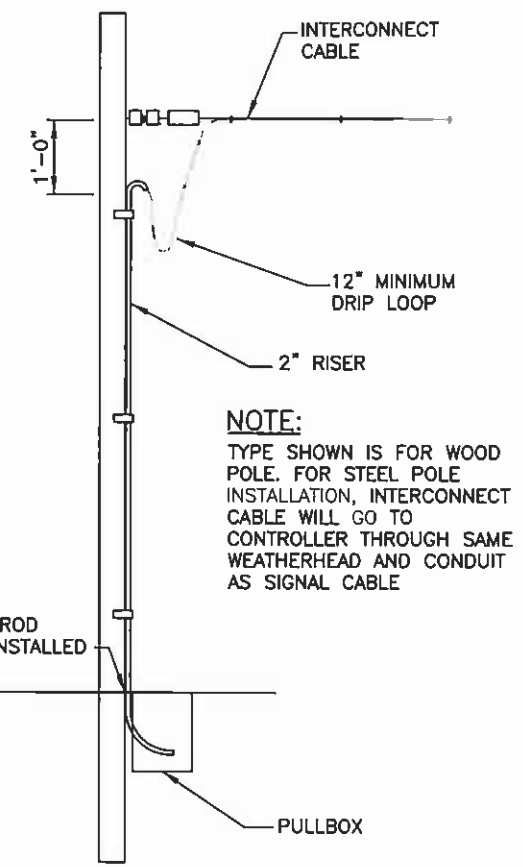


SIGNAL HEAD CONFIGURATIONS SHALL BE AS SHOWN ON PLANS

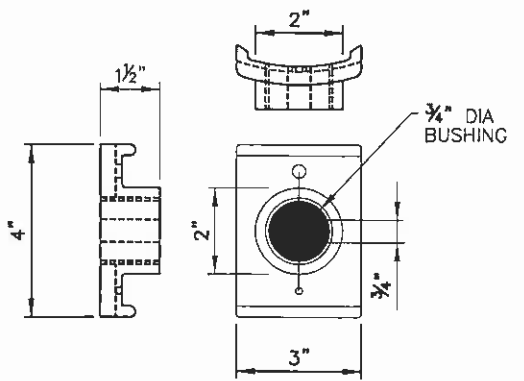


**FIRE PRE-EMPTION DETECTION UNIT MASTARM MOUNTING**

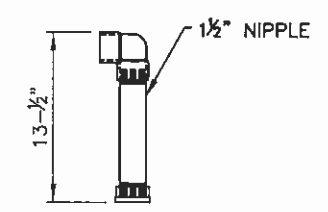
**BOTTOM VIEW**



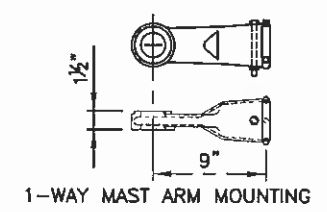
**RISER INSTALLATION FOR INTERCONNECT CABLE**



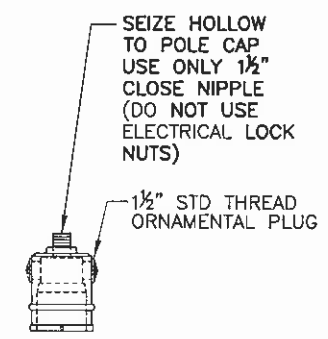
**POLE PLATE**



**POLE MOUNT**



**ELEVATOR PLUMBIZER**

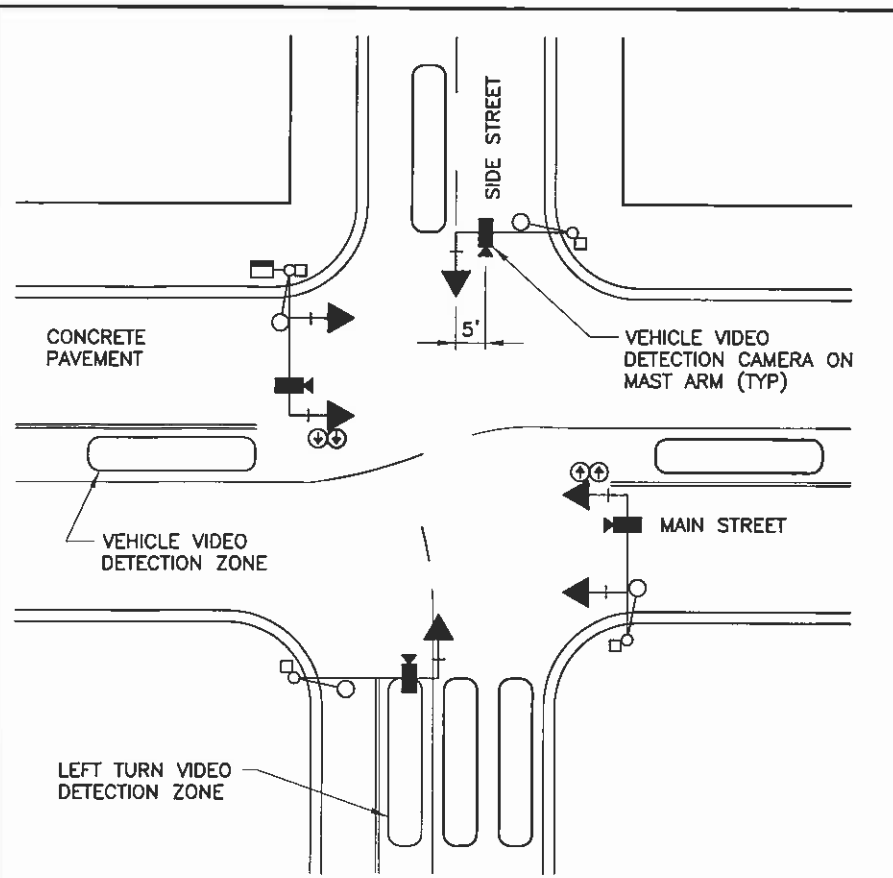


**SLIP FITTER**

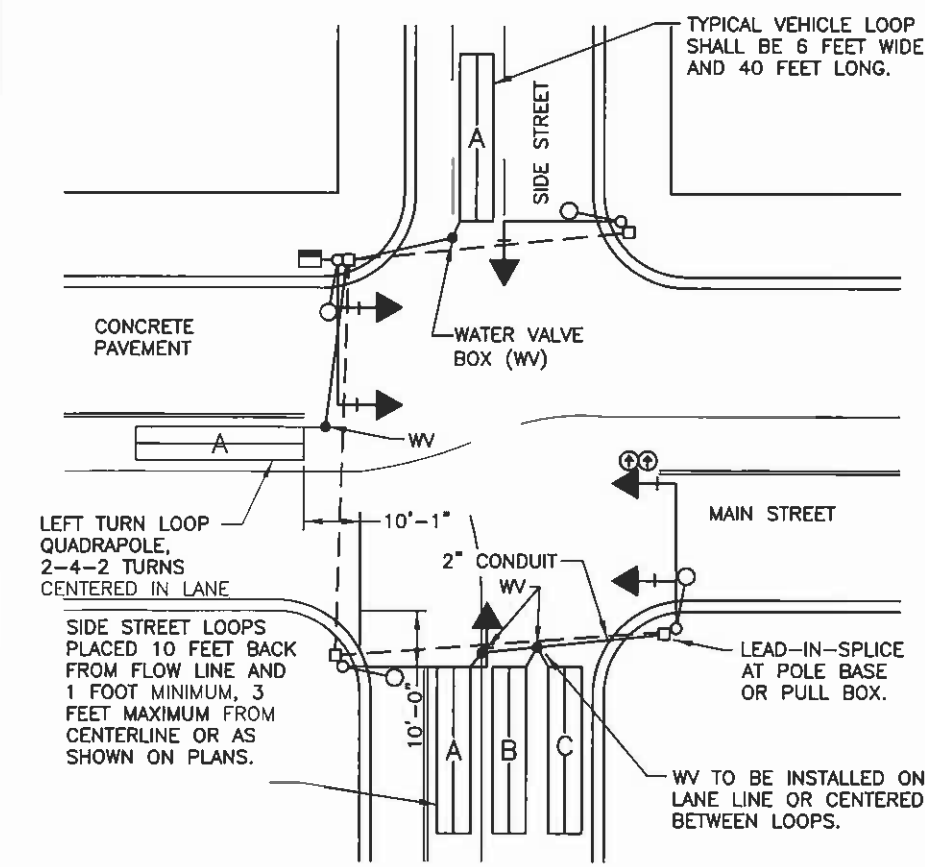
CITY & COUNTY OF DENVER  
MOUNTING HARDWARE



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**TYPICAL VIDEO CAMERA LOCATION DETAIL**



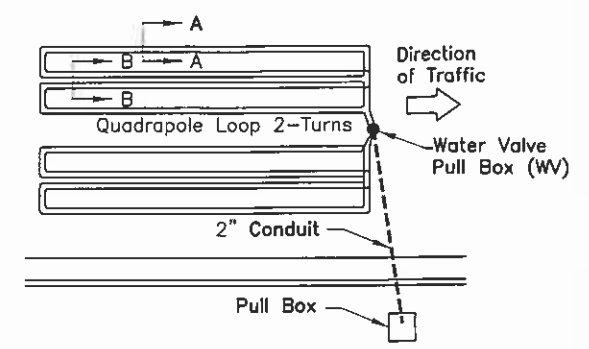
**TYPICAL LOOP LOCATION DETAIL**

**GENERAL NOTES**

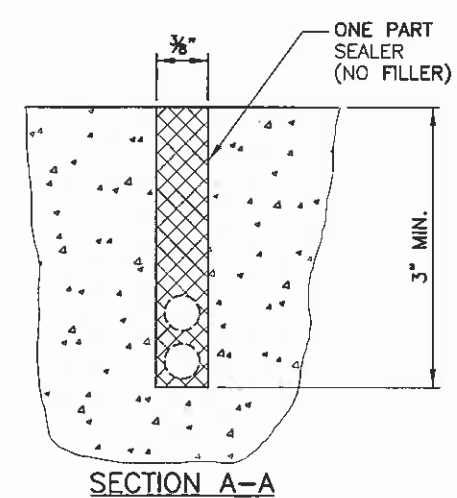
1. LOOP DETECTORS SHALL BE INSTALLED WITH THE NUMBER OF TURNS OF WIRE AND IN THE CONFIGURATION SHOWN ON SCHEMATIC. A COMPLETE INSTALLATION CONSISTS OF A LOOP OR GROUP OF LOOPS INSTALLED IN THE ROADWAY, LEAD-IN CABLE, AND A DETECTOR UNIT INSTALLED IN A TRAFFIC SIGNAL CONTROLLER CABINET.
2. LOOP WIRES SHALL BE BROUGHT OUT TO THE NEAREST SIGNAL POLE OR PULL BOX AND EXISTING UNDERGROUND CONDUIT OR OVERHEAD MESSENGER WIRE USED FOR LEAD-IN CABLE TO CONTROL CABINET.
3. THE LOOP DETECTOR WIRES SHALL BE SPICED TO THE LEAD-IN CABLE USING WATER PROOF SPICE DEVICES.
4. ALL LOOP WIRES SHALL BE CLEARLY IDENTIFIED AT THE CONNECTION POINT BY LETTERING FROM THE ROADWAY CENTER.
5. NO BACKER ROD OR FILLER MATERIAL SHALL BE USED IN THE SAW CUT.
6. THE SAW CUT SHALL BE MADE 3/8-INCHES WIDE AND A MINIMUM OF 3 INCHES DEEP. THE SLOT SHALL BE AS STRAIGHT AS POSSIBLE AND SHALL NOT VARY MORE THAN 1/2-INCH WHEN CHECKED WITH A 10 FOOT STRAIGHTEDGE. NO SAWING SHALL BE STARTED UNTIL LAYOUT OF LOOP IS CHECKED AND APPROVED BY THE ENGINEER'S REPRESENTATIVE.
7. SAW CUTS SHALL BE WASHED AND BLOWN DRY AND CLEANED PRIOR TO PLACEMENT OF WIRE. CORNERS OF LOOPS SHALL BE DRILLED 3-INCHES DEEP WITH 2-INCH DIAMETER. SEE DRILLED CORNER DETAIL.
8. AFTER SAW CUT IS CLEANED OF DEBRIS THE WIRE SHALL BE PLACED BY PUSHING IT INTO THE SLOT WITH A BLUNT NON-METALLIC OBJECT. A SCREWDRIVER OR OTHER SHARP TOOL SHALL NOT BE USED.
9. BEFORE THE LOOP SYSTEM IS SEALED THE LOOP SHALL BE CHECKED FOR ELECTRICAL CONTINUITY BY TESTING FOR INDUCED AC VOLTAGE, INDUCTANCE, AND RESISTANCE.
10. LOOPS SHALL BE SEALED USING SEALER AS DESCRIBED IN THE MATERIAL REQUIREMENTS AND SHOWN IN THE DETAILS.
11. WHEN POSSIBLE INSTALL LOOP UNDER CONCRETE PAVING BY STAKING WITH PLASTIC TENT STAKES OR REBAR CHAIRS AT THE DIRECTION OF THE ENGINEER.
12. LOOPS SHALL BE INSTALLED PRIOR TO FINAL LIFT OF ASPHALT.
13. PREFORMED LOOPS MAY BE USED AT THE DIRECTION OF THE ENGINEER.
14. BICYCLE DETECTION LOOPS SHALL BE LAYOUT AND INSTALLED IN THE SAME MANNER AS A VEHICLE LOOPS.

**MATERIAL REQUIREMENTS**

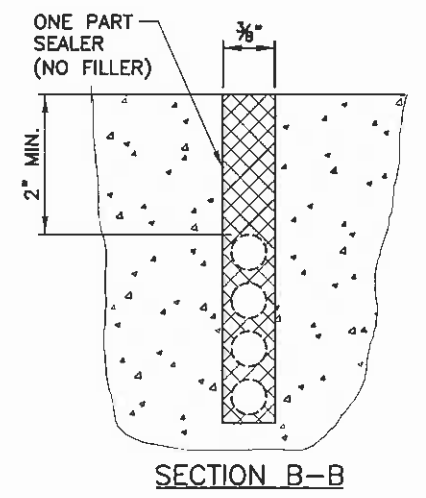
1. THE LOOP WIRE SHALL BE NO. 14 AWG, STRANDED SINGLE CONDUCTOR, CROSSLINKED POLYETHYLENE INSULATION WHICH IS PROTECTED BY A CONTINUOUS FLEXIBLE VINYL OR POLYETHYLENE PLASTIC TUBING.
2. LOOP LEAD-IN CABLE SHALL BE 4/C AWG#18 STRANDED COPPER WIRE SHIELDED WITH POLYETHYLENE JACKET AND INSULATION IN ACCORDANCE WITH 3M SPECIFICATION NO 30003.
3. ROADWAY LOOP EMBEDDING SEALER SHALL BE USED TO ENCAPSULATE THE LOOP WIRES. THE SEALER SHALL BE ONE PART COMPONENT SYSTEM WHICH IS PLACED UNDER PRESSURE USING A CONVENTIONAL CARTRIDGE GUN OR BULK HANDLING PUMP EQUIPMENT. SEALER SHALL HAVE A VISCOSITY WHICH WILL COMPLETELY ENCAPSULATE THE WIRES AND WILL REMAIN PERMANENTLY FLEXIBLE WITH AGE. SEALER SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEGINNING WORK.



**TYPICAL LOOP WIRING SCHEMATIC**

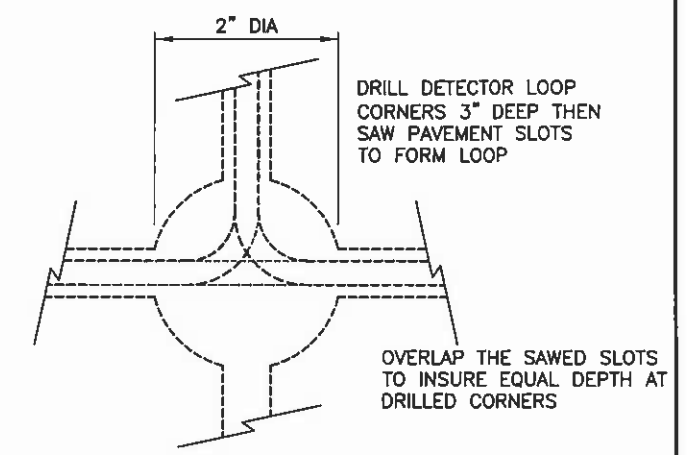


**SECTION A-A**

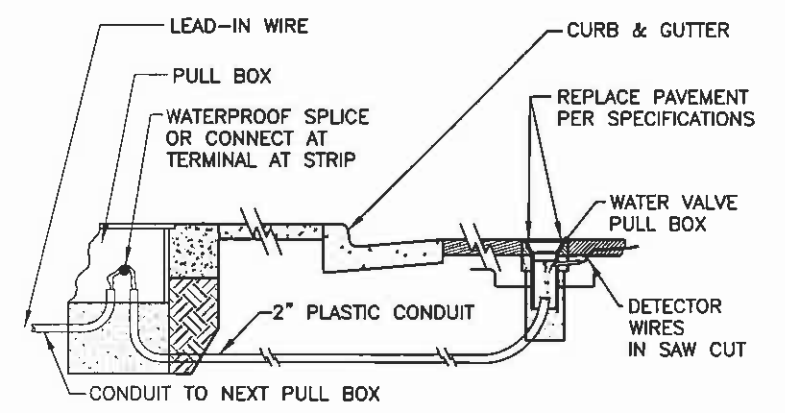


**SECTION B-B**

**SAWED SLOT DETAILS**



**DRILLED CORNER DETAIL**



EACH PAIR OF LOOP LEAD-IN DETECTOR WIRES SHALL BE TWISTED 3 TURNS PER FOOT THROUGH CONDUIT.

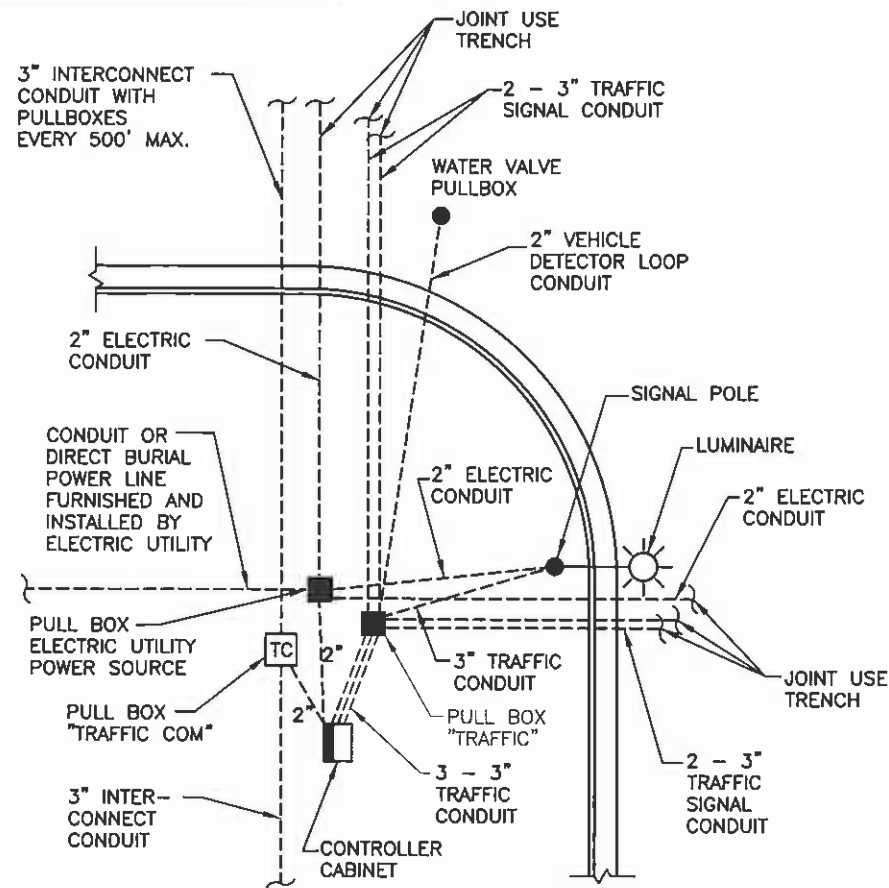
**LOOP DETECTOR LEAD-IN FOR WATER VALVE PULL BOX**

CITY & COUNTY OF DENVER  
 LOOP DETECTION

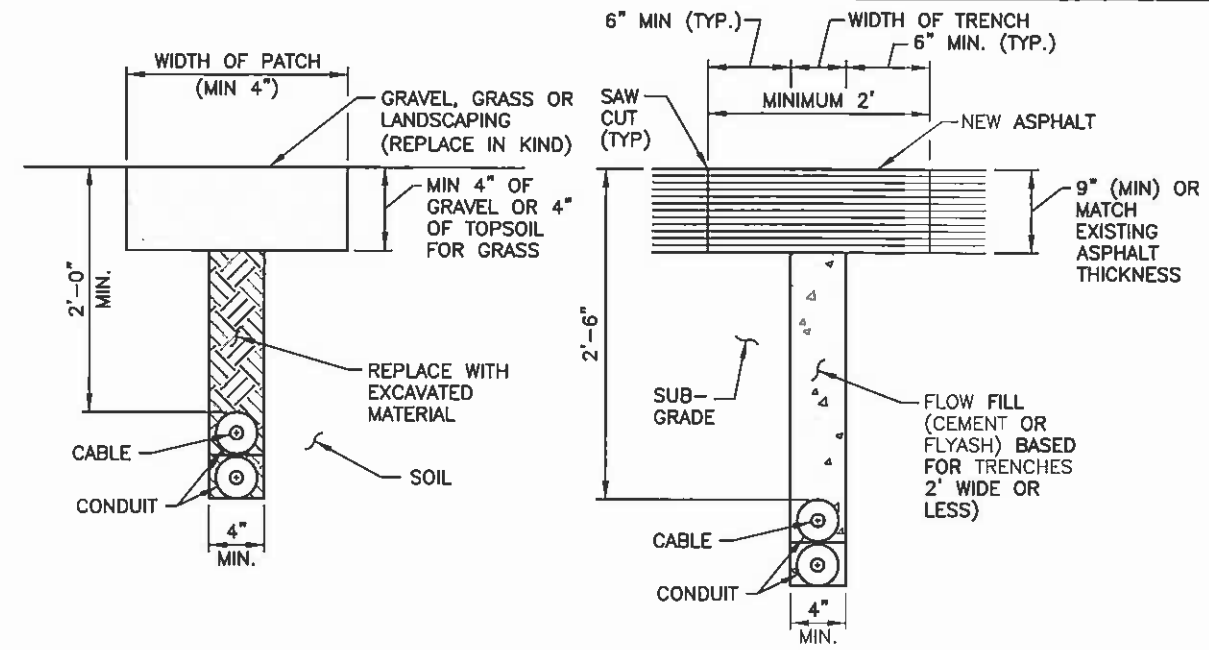


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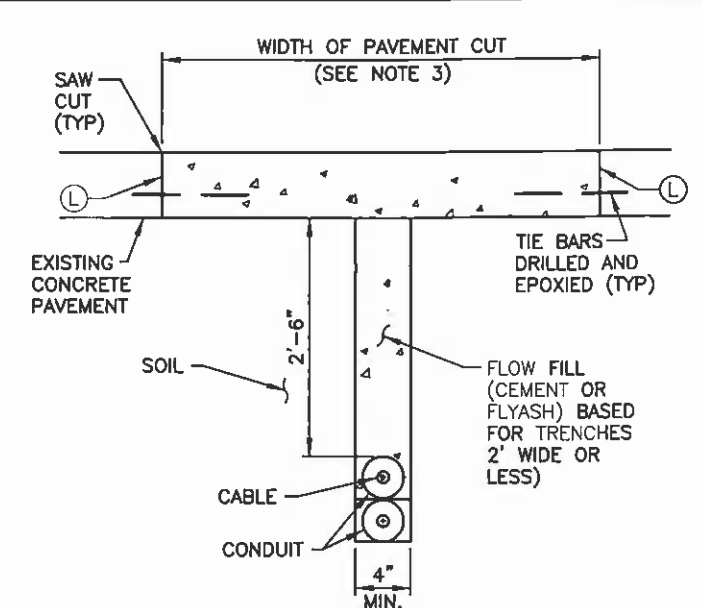




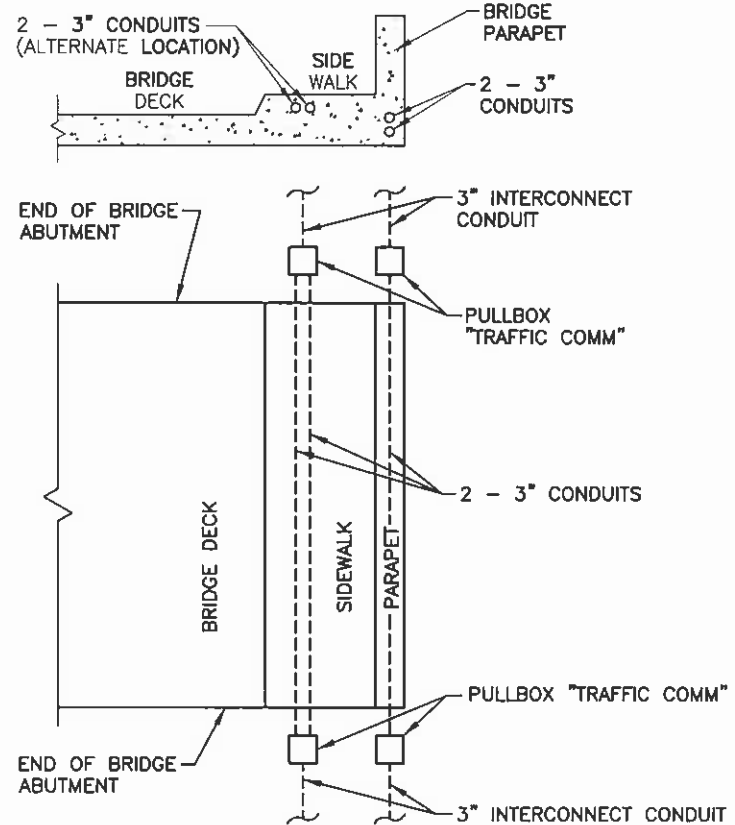
**POWER SOURCE DETAILS**



**TRENCH PATCH (GRAVEL OR LANDSCAPED) TRENCH PATCH (ASPHALT/MISC MATERIALS)**



**TRENCH PATCH (CONCRETE)**

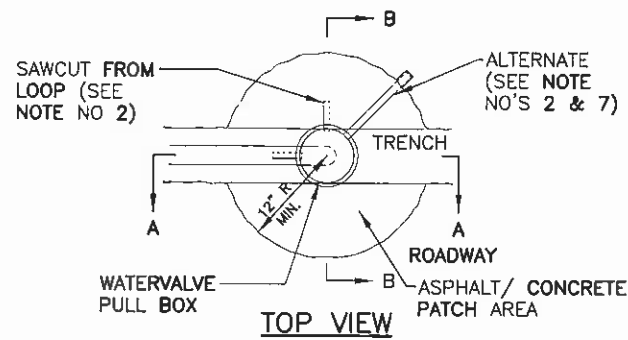


**INTERCONNECT CONDUIT PLACEMENT ON BRIDGE**

**NOTE:**  
PULLBOXES SHALL BE PLACED AS CLOSE AS PRACTICAL TO THE ENDS OF THE BRIDGE AND BE FLUSH WITH SIDEWALK OR FINISHED GRADE SURFACE.

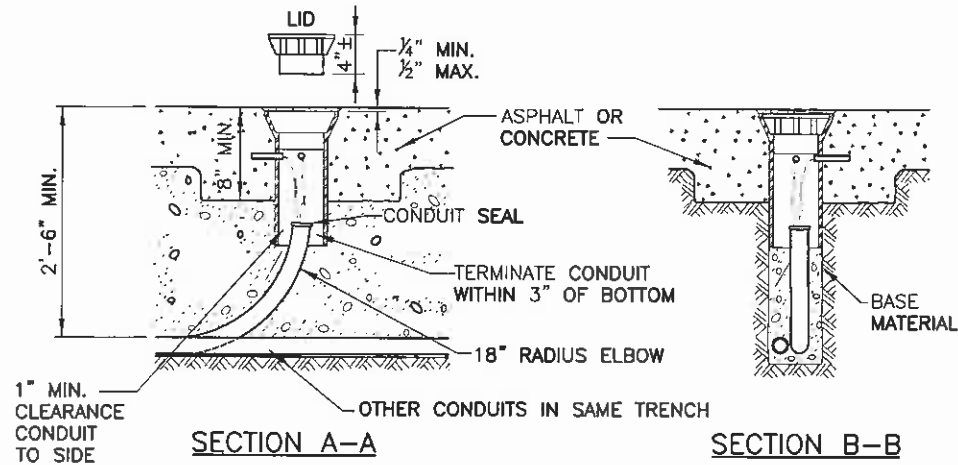
- NOTES:**
- SEE CDOT STANDARDS M-613-1 AND S-614-10(C).
  - FOR STREET LIGHT LUMINAIRES ON SPAN WIRE INSTALLATIONS - TWO (2) NUMBER 12 AGW COPPER TW INSULATED BUILDING WIRES SHALL BE INSTALLED BY THE CONTRACTOR FROM THE END OF THE LUMINAIRE ARM, THROUGH THE POLE, ALONG THE SPAN WIRE CABLE TO THE SIGNAL POLE NEAREST THE CONTROLLER CABINET, THRU THE POLE WITH APPROXIMATELY 5 FEET OF EXTRA WIRING COILED IN THE PULL BOX AT THE BASE OF THE POLE.
  - FOR STREET LIGHT LUMINAIRES ON MAST ARM INSTALLATION - TWO (2) NUMBER 12 AGW COPPER TW INSULATED BUILDING WIRES SHALL BE INSTALLED BY THE CONTRACTOR FROM THE END OF THE LUMINAIRE ARM, THROUGH THE POLE WITH APPROXIMATELY 5 FEET OF EXTRA WIRING COILED IN THE PULL BOX AT THE BASE OF POLE. THE CONTRACTOR SHALL ALSO INSTALL #4 ALUMINUM TRIPLEX FROM THE PULL BOX AT THE BASE OF THE SIGNAL POLE NEAREST THE CONTROLLER CABINET THROUGH CONDUIT NETWORK TO THE PULL BOXES AT OTHER SIGNAL POLES WITH LUMINAIRES.
  - ALL WIRING FOR LUMINAIRES SHALL BE INCLUDED IN WORK AND NOT PAID FOR SEPARATELY.
  - SPLICES OF LUMINAIRE WIRING SHALL BE DONE BY ELECTRIC UTILITY AT THE POWER SOURCE.
  - WIRING FOR STREET LIGHT LUMINAIRES SHALL BE TAGGED PER STANDARD SPECIFICATIONS.
  - ALL POLES SHALL BE GROUNDED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC).
  - ALL HDPE CONDUITS SHALL BE JOINED WITH THE APPROPRIATE HDPE COUPLINGS.
  - ALL ELECTRICAL SYSTEMS SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH THE SPECIFICATIONS. A 3/8" X 8" COPPER GROUND ROD SHALL BE INSTALLED IN ALL PULL BOXES. CONTROLLER CABINETS SHALL BE GROUNDED TO NEAREST TRAFFIC SIGNAL PULL BOX.
  - ALL CONDUITS AND POLES SHALL BE ELECTRICALLY BONDED WITH #10 COPPER WIRE AND CONTAIN A PULL STRING LOCATE WIRE. INTERCONNECT CONDUITS SHALL HAVE INSTALLED A SINGLE #14 INSULATED CONDUCTOR AND MULE TAPE.

- NOTES:**
- WHEREVER POSSIBLE CONDUIT OR CABLE SHALL BE INSTALLED BY BORING, DRIVING OR ANY OTHER ACCEPTABLE MEANS UNDER CONCRETE UNITS AND OPEN CUTTING SHALL BE USED ONLY UNDER SPECIAL CIRCUMSTANCES AND ONLY AFTER APPROVAL BY THE CITY.
  - THIS DETAIL APPLIES TO ALL CONCRETE STREETS, ALLEYS, SIDEWALKS, CURBS, GUTTERS AND DRIVEWAYS.
  - LIMITS OF CONCRETE PAVEMENT REMOVAL:
    - FOR CONCRETE PAVEMENT LESS THAN 3 YEARS OLD, ENTIRE PANEL SHALL BE REMOVED.
    - FOR PAVEMENT OLDER THAN 3 YEARS, THE FOLLOWING APPLIES:
      - ONE REMOVAL LIMIT SHALL FOLLOW AN EXISTING JOINT, WHEN POSSIBLE.
      - IF NEITHER LIMIT OF REMOVAL FOLLOWS AN EXISTING LINE, THE LIMITS OF REMOVAL SHALL BE 4' FROM AN EXISTING JOINT, OR THE REMOVAL SHALL BE EXTENDED TO THE EXISTING JOINT.
      - THE MINIMUM WIDTH OF PAVEMENT REMOVAL SHALL BE 4'.
  - A CONSTRUCTION JOINT SHALL BE USED TO TIE THE CONCRETE PATCH TO EXISTING CONCRETE ON ALL SIDES EXCEPT WHERE LIMITS MATCH AN EXISTING TRANSVERSE CONSTRUCTION JOINT. TIE BARS SHALL BE ELIMINATED AT TRANSVERSE CONTRACTION JOINTS.
  - THE LIMITS OF CONCRETE PATCHING SHALL BE PERPENDICULAR OR PARALLEL TO THE CENTERLINE OF THE STREET. SKEWED TRENCHES ARE NOT PERMITTED.

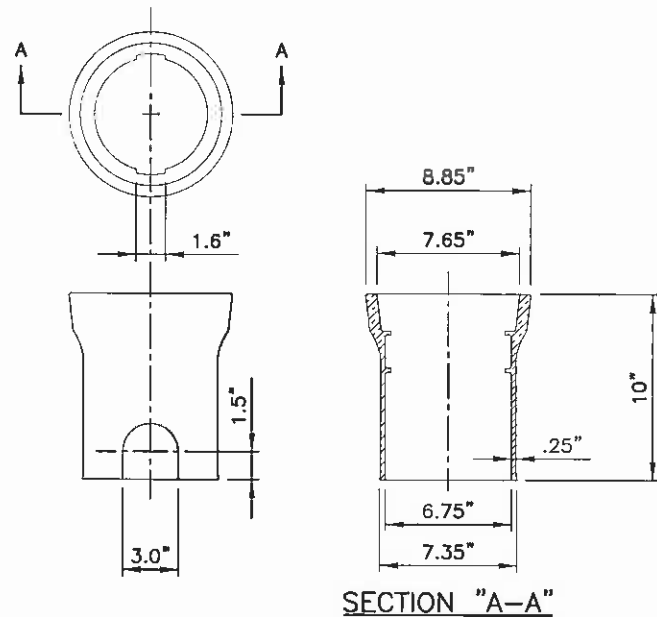


**WATER VALVE PULL BOX NOTES:**

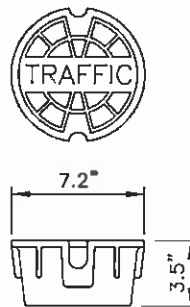
1. WATER VALVE PULL BOX SHALL BE A WATER VALVE STEM TYPE PULL BOX MADE OF CAST IRON. THE PULL BOX ITSELF SHALL HAVE CAPABILITY OF ACCEPTING RISER RINGS FOR FUTURE OVERLAYS. THE LID SHALL BE CAST IRON OR STEEL AND HAVE THE WORD "TRAFFIC" PRINTED ON IT.
2. PULL BOXES SHALL HAVE 3/4" TO 1" DIAMETER HOLES DRILLED OR TORCHED 3" FROM TOP TO ACCEPT A LOOP DETECTOR WIRE FLEXIBLE VINYL OR POLYETHYLENE TUBING. THE NUMBER OF HOLES SHALL BE AS PER PLANS OR AS DIRECTED BY THE ENGINEER.
3. CARE SHALL BE TAKEN DURING BACK FILL COMPACTION TO PREVENT COLLAPSE OF THE TUBES.
4. A MINIMUM 2 FEET OF SLACK IS TO BE PROVIDED ON BOTH FEED AND LOOP WIRES SO THAT ALL TESTING AND SPLICING CAN BE DONE OUTSIDE THE PULL BOX.
5. PULL BOX IS TO BE LOCATED IN AN AREA OF THE STREET NOT HEAVILY TRAVELED, IF POSSIBLE, AND A MINIMUM OF 12" FROM THE CONCRETE GUTTER PAN.
6. IF HOT ASPHALT IS NOT AVAILABLE, A CONCRETE RING (12" MINIMUM RADIUS AND 8" MINIMUM DEPTH) MAY BE USED AT THE DIRECTION OF THE ENGINEER.



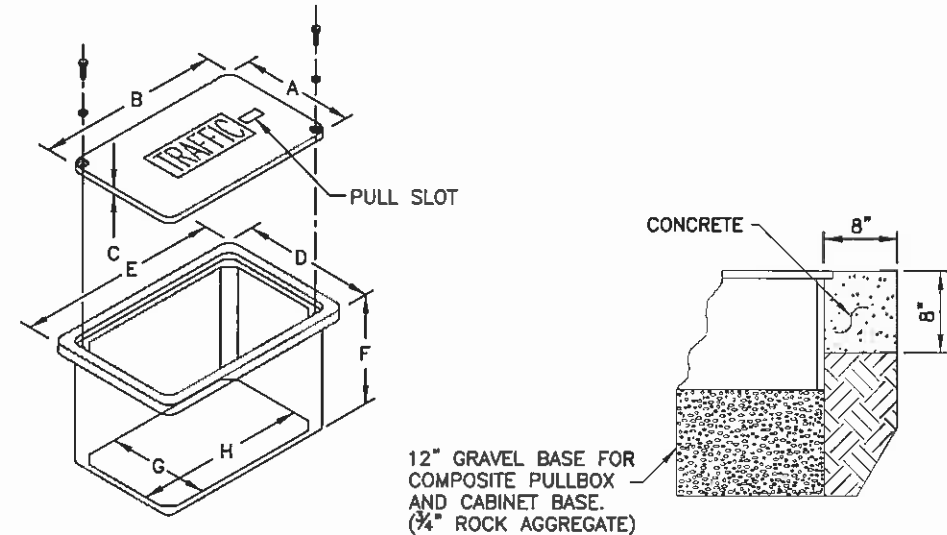
**WATER VALVE PULL BOX**  
FOR LOOP DETECTOR WIRE



**WATER VALVE PULL BOX**



**WATER VALVE PULL BOX LID**



FIBERGLASS REINFORCED POLYMER CONCRETE  
DESIGNED FOR INCIDENTAL VEHICULAR TRAFFIC  
(15,000 LBS ON A 10" X 10" AREA)

**PRECAST PULL BOX**

DESCRIPTION	TABLE OF DIMENSIONS FOR PRECAST PULL BOX								COMMENTS
	DIMENSIONS (IN.)								
	A	B	C	D	E	F	G	H	
TYPE A (ELECTRIC)	13-3/4"	23-1/4"	2"	15-1/2"	25"	12"	10-1/4"	19-1/4"	
TYPE B (TRAFFIC)	17-1/2"	30-1/2"	2"	19-1/4"	32-1/4"	12"	13-1/2"	26-1/2"	
TYPE C (COMM)	22-1/4"	34-1/4"	2"	24"	36"	24"	19-3/4"	30-1/4"	

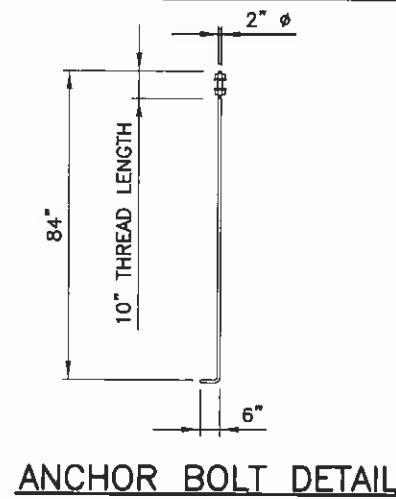
CITY & COUNTY OF DENVER

PULL BOXES



STD DWG NO  
16.1.7

DATE  
7/5/2011



**ANCHOR BOLT DETAIL**

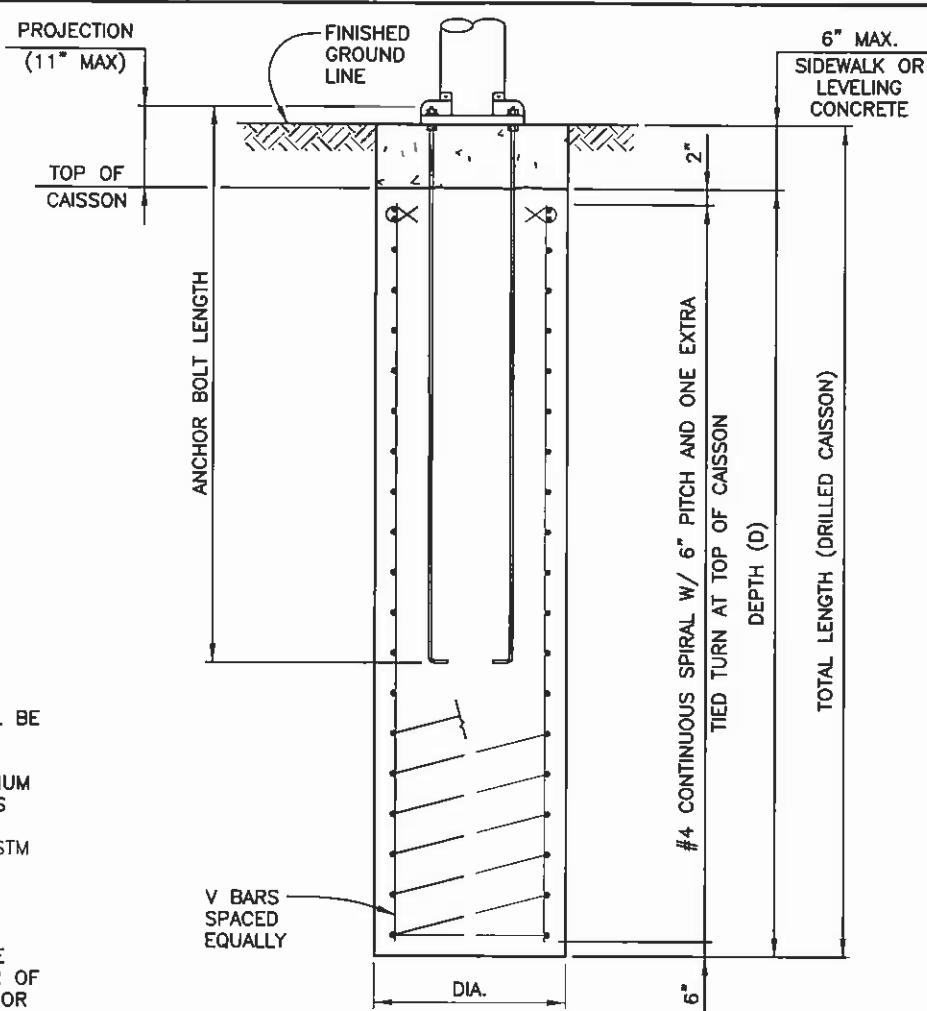
**NOTES:**

**ANCHOR BOLTS**

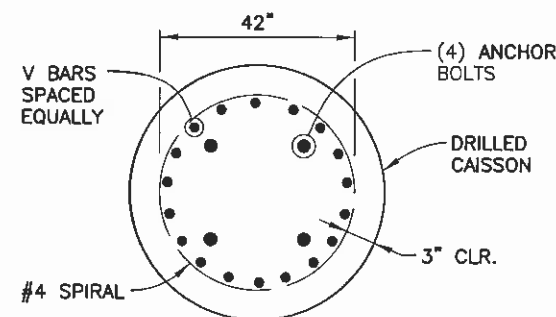
- (4) 2" DIAMETER ANCHOR BOLTS PER CAISSON WITH (2) 2" HEX AND (2) 2" WASHERS PER BOLT WITH THREADED END GALVANIZED TO AT LEAST 12" FROM END.
- LENGTH, THREAD LENGTH, HOOK LENGTH, AND DIAMETER OF EACH ANCHOR BOLT SHALL BE AS NOTED ABOVE IN DETAIL.
- ANCHOR BOLTS SHALL BE MEDIUM STRENGTH, MILD STEEL OR ALLOY STEEL WITH MINIMUM DESIGN YIELD STRENGTH OF ASTM F1554 GRADE 55, OR 55 KSI. ALLOY ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A193 GRADE B7. MEDIUM STRENGTH, MILD STEEL ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A MODIFIED ASTM A36 (WITH 55 KSI YIELD STRENGTH), OR ASTM A572 GRADE 55.
- WELDED SPlicing OF A ROD MATERIAL FOR ANCHOR BOLTS WILL NOT BE PERMITTED.
- THREADS FOR ANCHOR BOLTS SHALL BE ROLLED OR CUT THREADS OF UNIFIED COARSE THREAD SERIES IN ACCORDANCE WITH ANSI B1.1. FOR ROLLED THREADS, THE DIAMETER OF THE UNTHREADED PORTION SHALL NOT BE LESS THAN THE MINIMUM PITCH DIAMETER NOR MORE THAN THE MAXIMUM MAJOR DIAMETER OF THE THREADS.
- ALL THREADS FOR BOLTS AND NUTS SHALL HAVE CLASS 2 FIT TOLERANCES IN ACCORDANCE WITH ANSI B1.1.

**NUTS AND WASHERS**

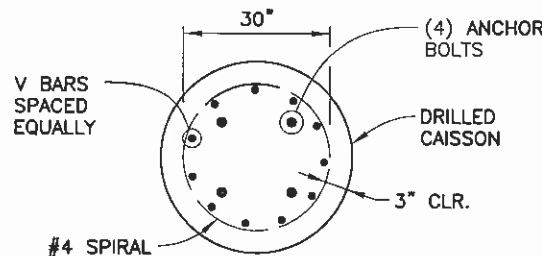
- NUTS FOR ALLOY STEEL ANCHOR BOLTS SHALL CONFORM TO ASTM A194 GRADE 2H OR ASTM A563, HEAVY HEX, GRADE DH CLASS 12. NUTS FOR MEDIUM STRENGTH, MILD STEEL ANCHOR BOLTS SHALL CONFORM TO ASTM A194 GRADE 2H OR ASTM A563, GRADE D OR BETTER. ALL THREADS FOR NUTS SHALL HAVE A CLASS 2B TOLERANCE IN ACCORDANCE WITH ANSI B1.1. WHEN NUTS ARE TO BE GALVANIZED, THE UNTAPPED BLANKS SHALL BE GALVANIZED PRIOR TO CUTTING THE THREADS.
- EXPOSED NUTS SHALL BE GALVANIZED OR COATED WITH A ZINC-RICH COATING IF THE ANCHOR BOLTS ARE NOT GALVANIZED.
- WASHERS INSTALLED WITH ANCHOR BOLTS OF ANY TYPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F436 AND SHALL HAVE THE SAME FINISH OR COATING AS THE BOLT AND NUT.



**CAISSON PROFILE**



**TRAFFIC SIGNAL POLE CAISSON - 48" DIA.**



**TRAFFIC SIGNAL POLE CAISSON - 36" DIA.**

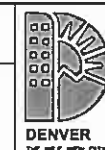
FOUNDATION SCHEDULE						
MAST ARM LENGTH (FT.)	CAISSON DATA					
	DIA. (IN.)	DEPTH (D) (FT.)		BOLT CIRCLE DIA. (IN.)	V BARS	
		COHESIVE SOIL	COHESIONLESS SOIL		SIZE	TOTAL
10 TO 40	36	13.0	12.0	20	#9	11
45	36	18.0	14.0	22	#9	11
50	36	18.0	14.0	22	#9	11
55	36	18.0	14.0	22	#9	11
60	48	17.0	14.5	25	#9	18
65	48	17.0	14.5	25	#9	18
70	48	17.0	14.5	25	#9	18
40 (DBL ARM)	36	16.0	13.5	22	#9	11

**GENERAL NOTES**

- DESIGN OF FOUNDATIONS IS BASED ON TRAFFIC SIGNAL POLE CONFIGURATIONS PROVIDED BY VALMONT INDUSTRIES, INC. DRAWING NO. DB00714 REV. C FOR THE CITY & COUNTY OF DENVER AND XCEL ENERGY OF COLORADO. REFER TO CITY & COUNTY OF DENVER TRAFFIC STANDARD DRAWINGS FOR ANY ADDITIONAL TRAFFIC POLE INFORMATION.
- DESIGN CRITERIA: AASHTO - STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 2001 EDITION.
- A DESIGN WIND VELOCITY OF 100 MPH HAS BEEN USED FOR THE DESIGNS HEREIN.
- ALL FOUNDATIONS ON THIS SHEET ARE FOR SINGLE MAST ARM POLES, EXCEPT AS NOTED.
- THE DESIGNS HEREIN ASSUME THAT SIGNALS ARE INSTALLED WITHIN THE ROADWAY PRISM WITH THE FOLLOWING SOIL PARAMETERS:  
SOIL DENSITY  $\gamma = 110$  LB./CU.FT.  
SOIL COHESION = 750 LB./SQ.FT. FOR MEDIUM STIFF COHESIVE SOIL  
SOIL  $\phi$  ANGLE = 30° FOR MEDIUM DENSE COHESIONLESS SOIL  
SF = 1.25 FOR TORSIONAL RESISTANCE AND 3.0 FOR FLEXURAL RESISTANCE
- CONTACT THE ENGINEER IF ANY OF THE FOLLOWING SOIL CONDITIONS ARE ENCOUNTERED DURING DRILLING:  
(A) SIGNALS WILL NOT BE INSTALLED WITHIN THE ROADWAY PRISM  
(B) THE SOIL HAS A HIGH ORGANIC CONTENT OR CONSISTS OF SATURATED SILT AND CLAY  
(C) THE SITE WON'T SUPPORT THE WEIGHT OF THE DRILLING RIG  
(D) THE FOUNDATION SOILS ARE NOT HOMOGENOUS  
(E) FIRM BEDROCK IS ENCOUNTERED  
(F) CAVING SOILS  
(G) GROUNDWATER  
(H) EXPANSIVE SOILS  
(I) TRASH  
(J) BOTTOM OF CAISSON WILL EXTEND BELOW BOTTOM OF ANY ADJACENT BUILDING OR RETAINING WALL FOUNDATION  
(K) SLOPES GREATER THAN 10%
- CAISSONS SHALL BE PLACED AGAINST UNDISTURBED EARTH.
- CAISSONS SHALL BE CONSTRUCTED WITH AIR ENTRAINED CDOT CLASS BZ CONCRETE IN ACCORDANCE WITH SECTION 503 OF THE STANDARD SPECIFICATIONS. REINFORCING STEEL SHALL BE GRADE 60.
- CAISSON CONCRETE SHALL REACH THE SEVEN DAY PREDICTED STRENGTH PRIOR TO INSTALLING THE SIGNAL STRUCTURE.
- FOUNDATION TO BE PROVIDED WITH 3 CONDUIT STUB OUTS (2 - 3" & 1 - 2"). DIRECTION TO BE DETERMINED BY CITY & COUNTY OF DENVER ENGINEER AND IS TO BE CONSIDERED AS PART OF THE FOUNDATION BID ITEM.
- BASE PLATE, NUTS AND NUT COVERS TO BE FURNISHED BY POLE MANUFACTURER. ANCHOR BOLTS ARE TO BE FURNISHED BY THE CONTRACTOR AND ARE INCLUDED IN THE COST OF THE FOUNDATION.
- FOUNDATION SHALL BE PAID BY THE FEET OF DEPTH DRILLED. USE OF THE SHORTER FOUNDATION FOR COHESIONLESS SOIL SHALL BE ALLOWED ONLY BY APPROVAL OF THE CCD TRAFFIC ENGINEER.
- PLUMBING OF POLES SHALL BE ACCOMPLISHED BY ADJUSTING NUTS AFTER LOADING OF MAST ARM.
- EACH END OF CAISSON TIES TO BE TERMINATED WITH A 135° HOOK AROUND A LONGITUDINAL BAR.
- DESIGN IS BASED ON A HORIZONTAL GROUND SURFACE CONDITION IN THE VICINITY OF THE CAISSON. CAISSONS SHOULD NOT BE INSTALLED AT SITES WITH A SLOPE EXCEEDING 10 PERCENT.
- LEVELING CONCRETE SHALL BE 3,000 PSI CLASS B AIR ENTRAINED CONCRETE.
- YIELD STRESS OF REINFORCING STEEL SHALL BE MINIMUM 60,000 PSI.

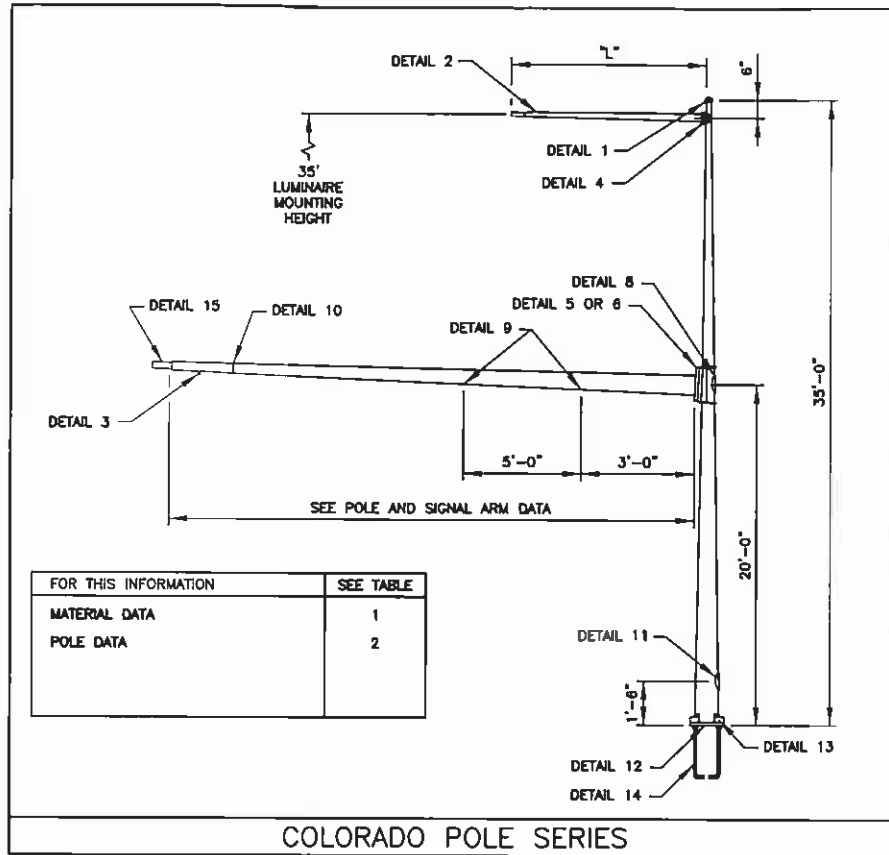
CITY & COUNTY OF DENVER

SIGNAL POLE FOUNDATION



STD DWG NO  
16.1.8

DATE  
7/5/2011

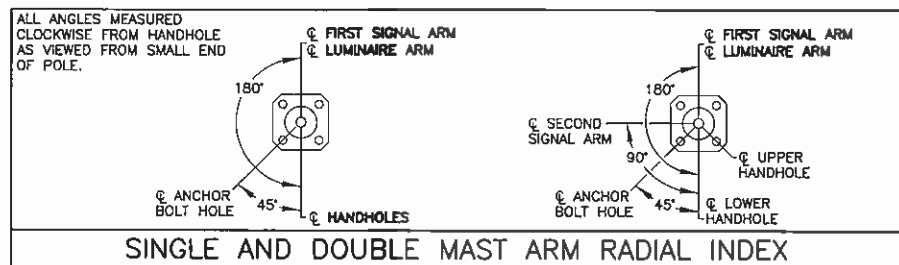
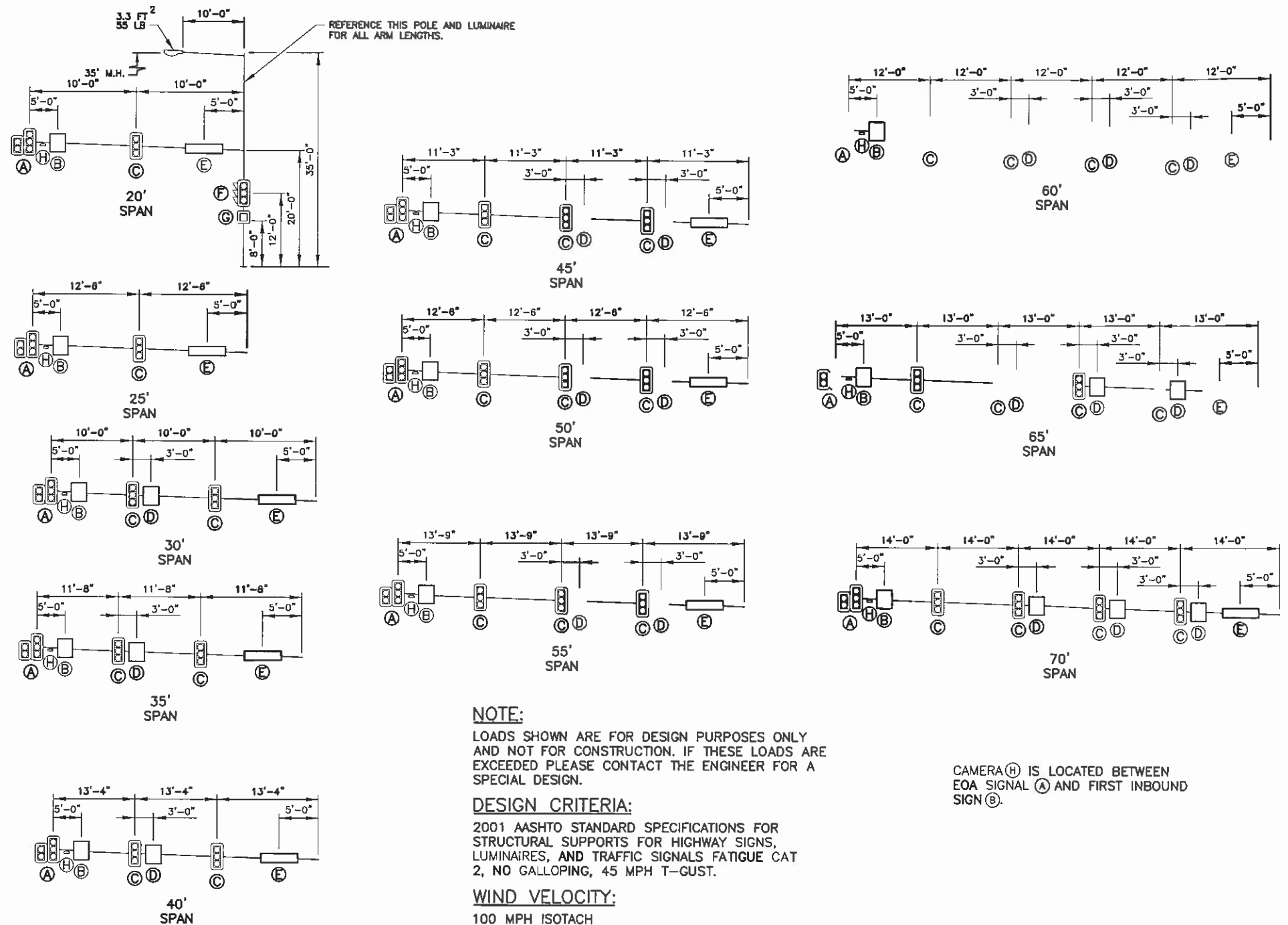
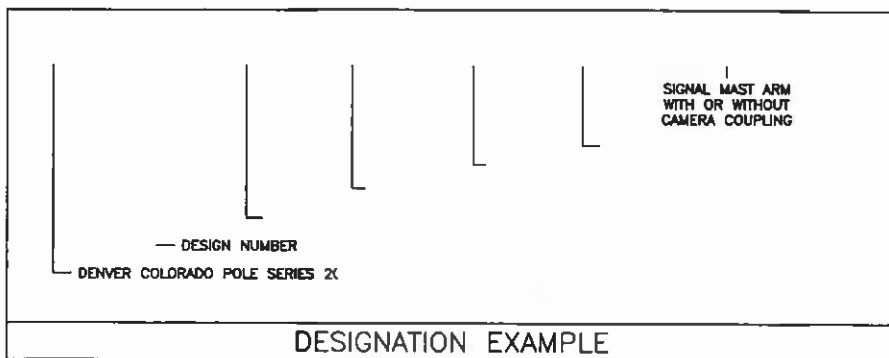


COLORADO POLE SERIES

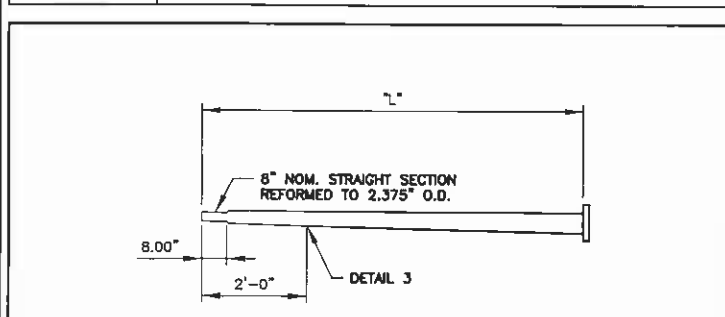
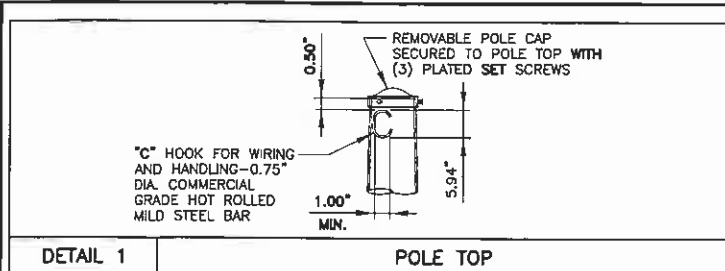
TABLE 1: MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFTS - .188, .219 .250, .281, .313	A572 GR. 85	85	ANCHOR BOLTS	F1554	55
	A572 GR. 55	55	POLE BASE	A572	50
POLE SHAFTS - 3 GA.	A595 GR. A	55	LUM. ARM ATTACHMENTS	A36	36
	A572 GR. 55	55	MAST ARM ATTACHMENTS	A572	50
POLE SHAFTS - 7, 5 GA.	A595 GR. A	55	MAST ARM CONN. BOLT	A325	-
			LUM. CONNECTION BOLT	A325	-
			GALVANIZING HARDWARE	A153	-

FINISH NOTES:  
 BASE COAT - HOT DIP GALVANIZE TO ASTM A123.  
 PRIME COAT - NEW HIGH BUILD EPOXY POWDER  
 FINISH COAT - TGIC OR SUPER DURABLE POLYESTER POWDER  
 VALMONT SPECIFICATION - F-540AC  
 COLOR - DARK OLIVE/FEDERAL GREEN #14056

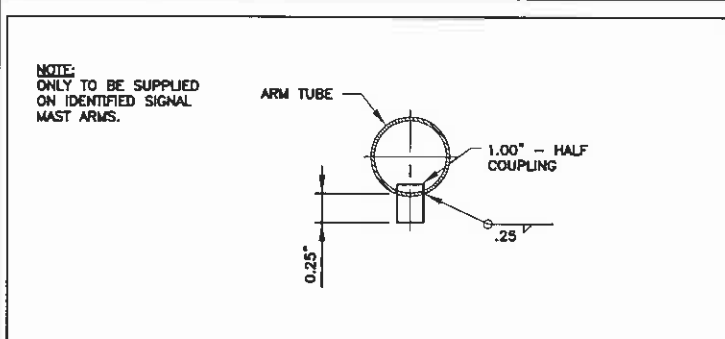


DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)
(A)	12" - 5 SEC. SIGNAL WITH BACKPLATE	13.72	75
(B)	36" x 80" REGULATORY SIGN	15.00	45
(C)	12" - 3 SEC. SIGNAL WITH BACKPLATE	8.67	45
(D)	30" x 36" REGULATORY SIGN	7.50	23
(E)	18" x 72" STREET NAME SIGN	9.00	27
(F)	DUAL 12" - 3 SEC. SIGNAL WITH BACKPLATE	6.50	90
(G)	SINGLE 16" PED. SIGNAL	2.25	30
(H)	CAMERA	1.00	20

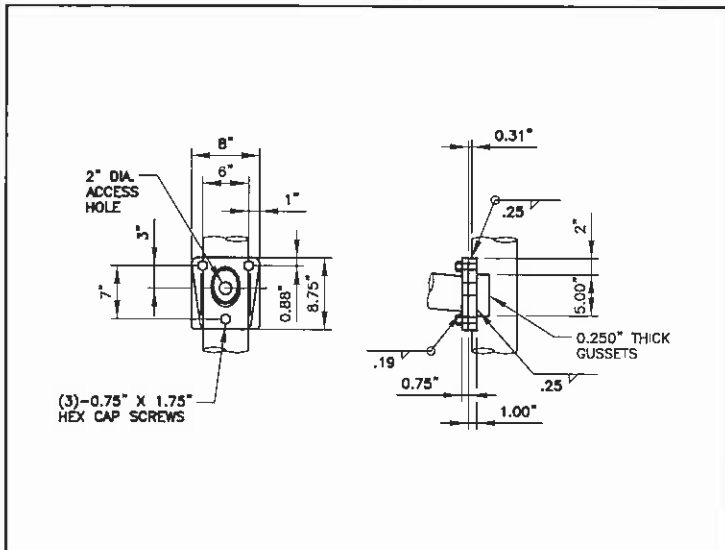


ARM RISE AFTER LOADING IS BETWEEN 0° DEG. +2° DEG FROM THE HORIZONTAL.

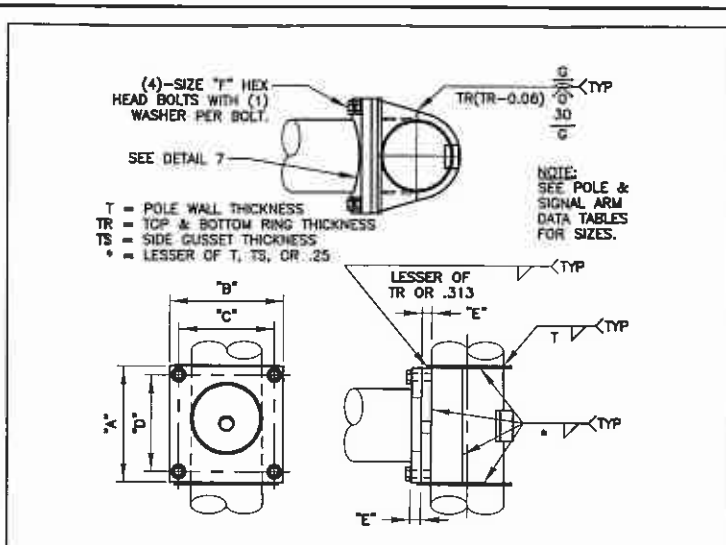
ARM SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	G.A.
10	3.80	2.38	11



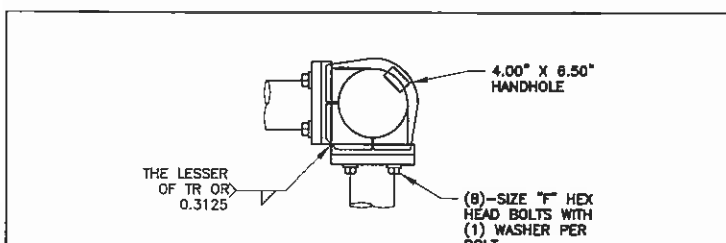
DETAIL 3 CAMERA COUPLING



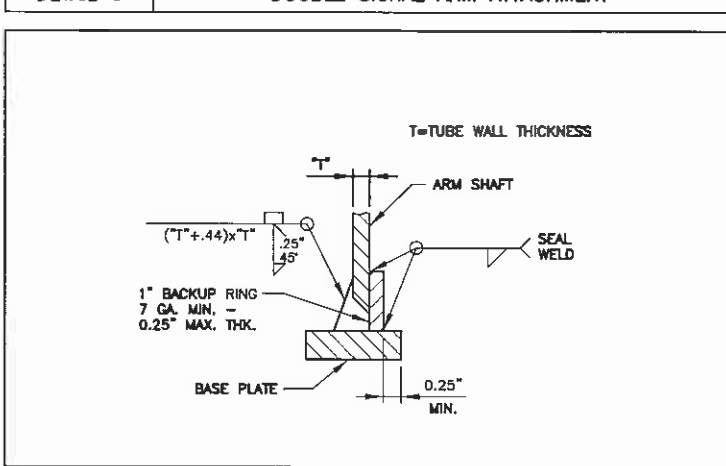
DETAIL 4 LUMINAIRE ARM ATTACHMENT



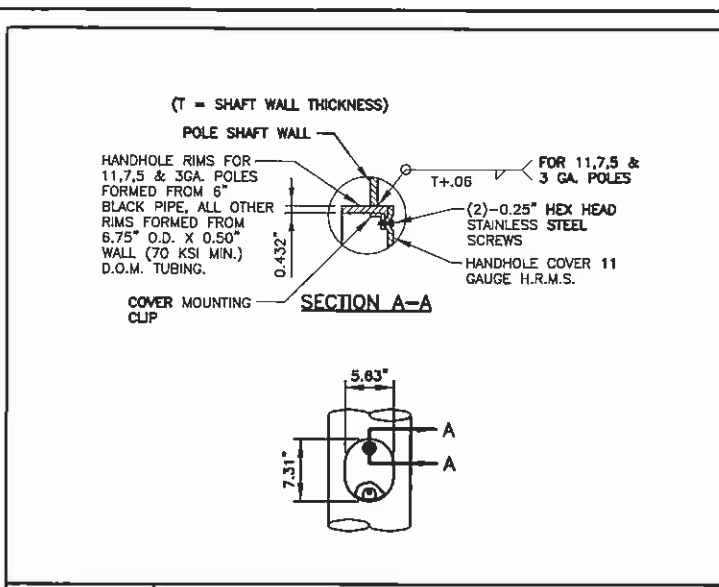
DETAIL 5 SIGNAL ARM ATTACHMENT



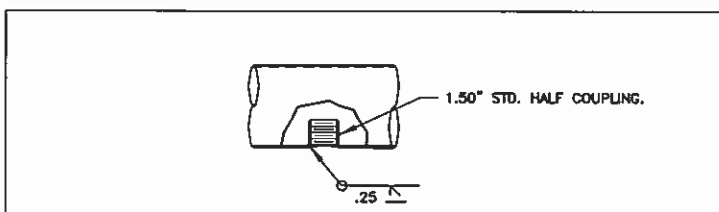
DETAIL 6 DOUBLE SIGNAL ARM ATTACHMENT



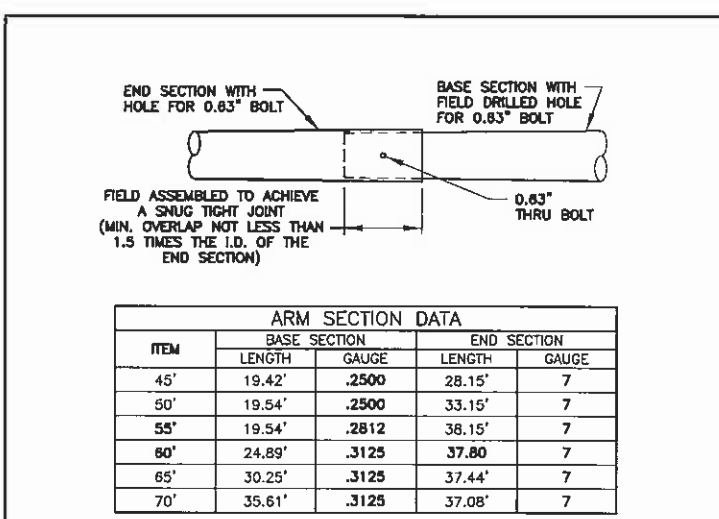
DETAIL 7 ARM PLATE WELD



DETAIL 8 UPPER HANDHOLE

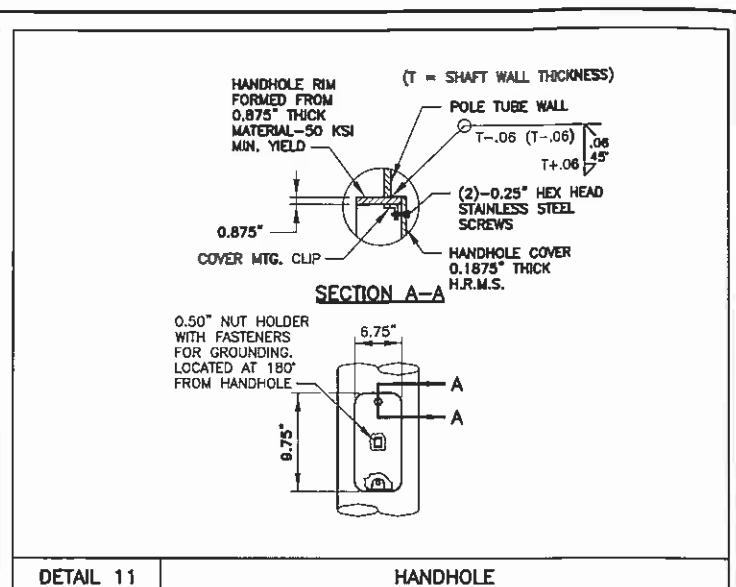


DETAIL 9 FLUSH COUPLING

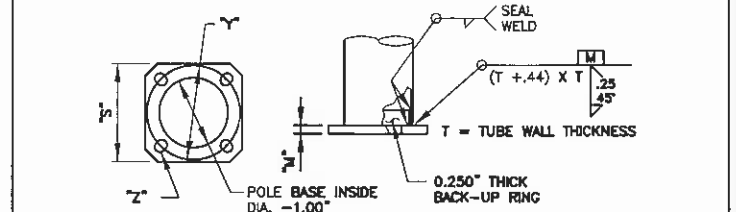


DETAIL 10 SIGNAL ARM SLIP JOINT

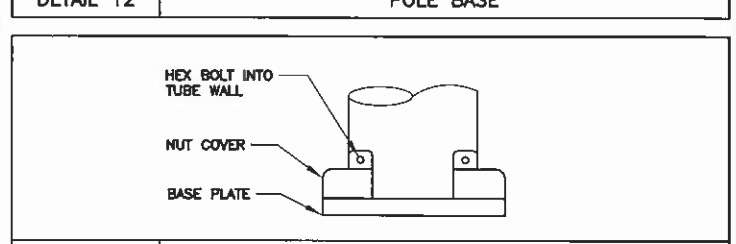
ITEM	BASE SECTION		END SECTION	
	LENGTH	GAUGE	LENGTH	GAUGE
45'	19.42'	.2500	28.15'	7
50'	19.54'	.2500	33.15'	7
55'	19.54'	.2812	38.15'	7
60'	24.89'	.3125	37.80'	7
65'	30.25'	.3125	37.44'	7
70'	35.61'	.3125	37.08'	7



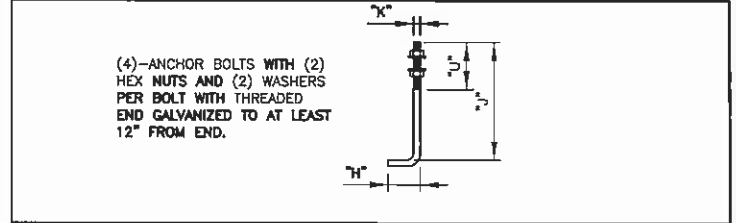
DETAIL 11 HANDHOLE



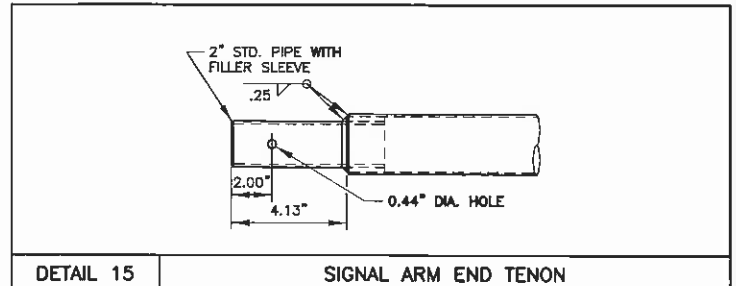
DETAIL 12 POLE BASE



DETAIL 13 NUT COVER



DETAIL 14 ANCHOR BOLT



DETAIL 15 SIGNAL ARM END TENON



TABLE 2: POLE DATA

POLE SERIES	DESIGN NUMBER	SINGLE ARM SPAN (FT)	DOUBLE MAST ARMS		POLE TUBE				POLE BASE				ANCHOR BOLT			
			1st ARM SPAN (FT)	2nd ARM SPAN (FT)	BASE O.D. (IN)	TOP O.D. (IN)	LENGTH (FT)	THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE OR SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)
DC01	1	20,25,30,35, & 40	N.A.	N.A.	15.50	10.60	35.00	.1875	21.00	20.00	2.00	2.25	2.00	84.00	6.00	10.00
DC01	2	45,50 & 55	N.A.	N.A.	17.00	12.10	35.00	.2188	23.00	22.00	2.00	2.25	2.00	84.00	6.00	10.00
DC01	3	60,65, & 70	N.A.	N.A.	19.50	14.60	35.00	.2500	26.00	25.00	2.00	2.25	2.00	84.00	6.00	10.00
DC01	4	N.A.	20 THRU 40	20 THRU 40	15.50	10.60	35.00	.2500	23.00	22.00	2.00	2.25	2.00	84.00	6.00	10.00

MAXIMUM ARM LENGTH COMBINATION FOR DUAL CONFIGURATAION ARE 40'-0" / 40'-0". ARM LENGTHS EXCEEDING THESE WILL REQUIRE A SPECIAL POLE DESIGN.

TABLE 3: SIGNAL ARM DATA

SIGNAL ARM TUBE				SIGNAL ARM SIMPLEX					
MAXIMUM ARM SPAN (FT)	FIXED END DIA. (IN)	SMALL END DIA. (IN)	GAUGE	A X B (IN)	C X D (IN)	THICKNESS "E" (IN)	BOLT SIZE "F" (IN)	GUSSET THICKNESS (IN)	ANGLE OF RISE IN ARM
20.00	9.00	6.20	7	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.00'
25.00	10.00	6.50	7	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.50'
30.00	12.00	7.80	5	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	0.50'
35.00	12.50	7.60	5	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	1.00'
40.00	13.00	6.90	3	21.75 X 21.75	18.00 X 18.00	1.75	1.50 X 3.75	.375	1.50'
45.00	14.00	8.06	SEE DETAIL 10 SHEET 16.10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	1.50'
50.00	15.00	8.36	SEE DETAIL 10 SHEET 16.10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	1.50'
55.00	15.00	7.66	SEE DETAIL 10 SHEET 16.10	23.25 X 23.25	19.50 X 19.50	2.00	1.50 X 4.25	.500	2.00'
60.00	15.75	7.71	SEE DETAIL 10 SHEET 16.10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.00'
65.00	16.50	7.76	SEE DETAIL 10 SHEET 16.10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.00'
70.00	17.25	7.81	SEE DETAIL 10 SHEET 16.10	26.25 X 26.25	22.50 X 22.50	2.00	1.50 X 4.25	.500	2.50'

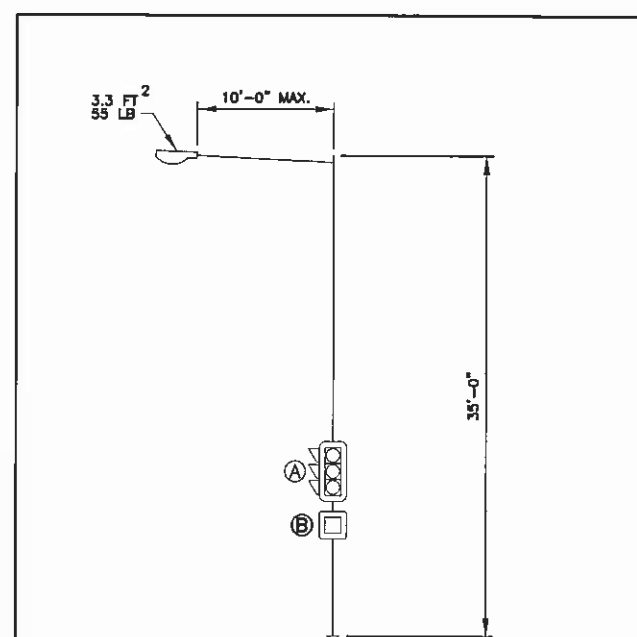
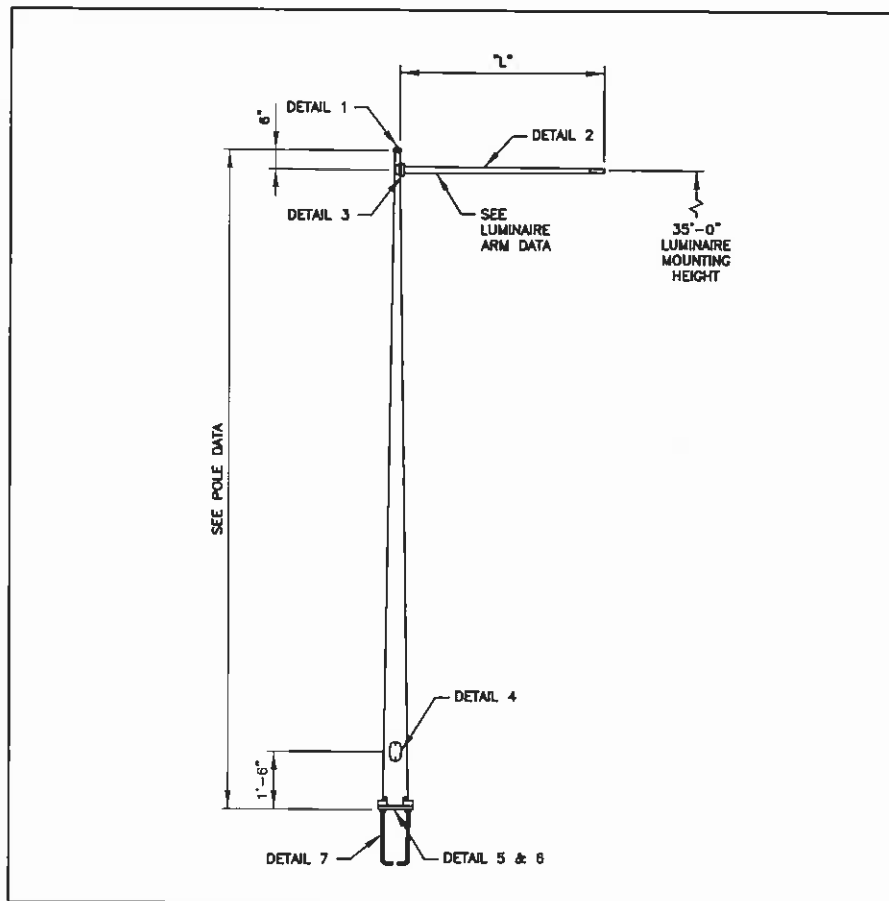
CITY & COUNTY OF DENVER

TABLE DATA



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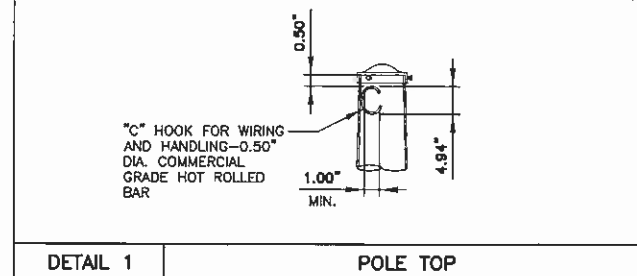


NOTE FOR CONSTRUCTION  
DESIGN NO. 5

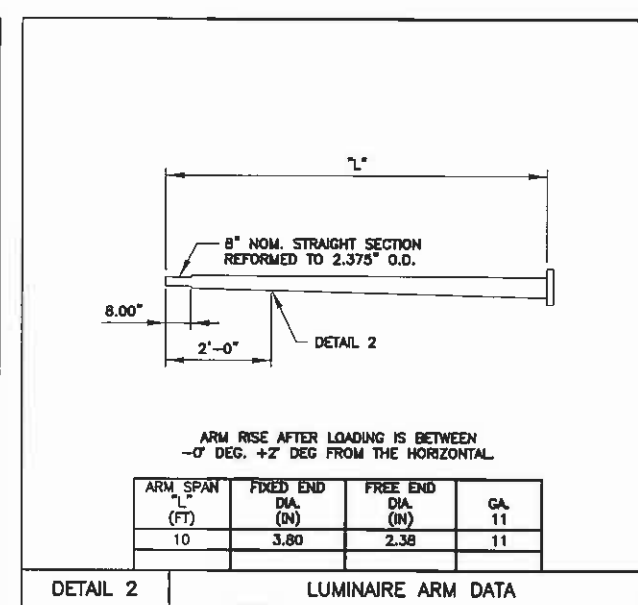
DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)
A	DUAL 12"-3 SEC. SIGNAL WITH BACKPLATE	17.34	90
B	SINGLE 18" PED SIGNAL	2.25	30

MATERIAL DATA					
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT	A595 GR. A	55	GALVANIZING - HARDWARE	A153	
ARM SHAFT	A595 GR. A	55	LUM. CONNECTION BOLT	A325	
POLE BASE	A36	36	LUM. ARM ATTACHMENTS	A36	36
			ANCHOR BOLTS	F1554	55

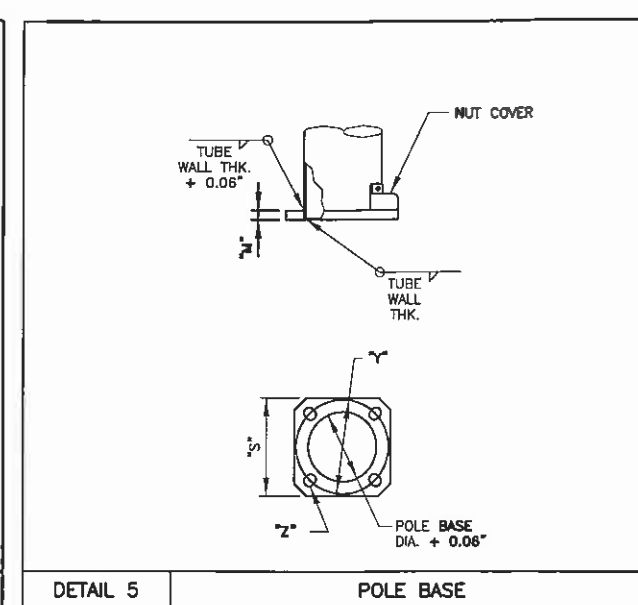
FINISH NOTES:  
BASE COAT - HOT DIP GALVANIZE TO ASTM A123.  
PRIME COAT - NEW HIGH BUILD EPOXY POWDER  
FINISH COAT - TGIC OR SUPER DURABLE POLYESTER POWDER  
VALMONT SPECIFICATION - F-540AC  
COLOR - GREEN



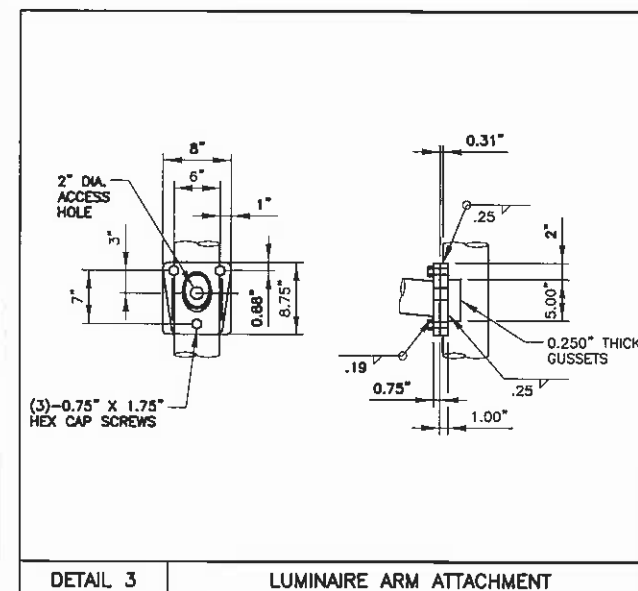
DETAIL 1 POLE TOP



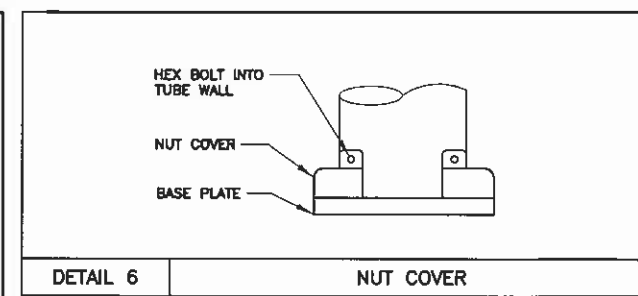
DETAIL 2 LUMINAIRE ARM DATA



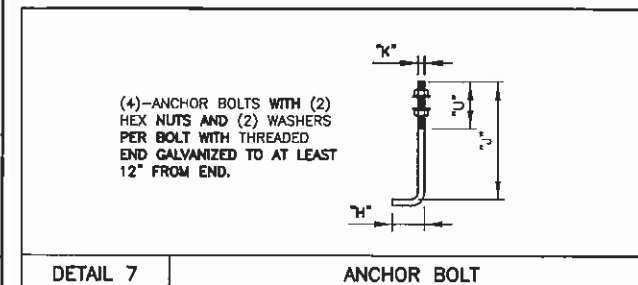
DETAIL 5 POLE BASE



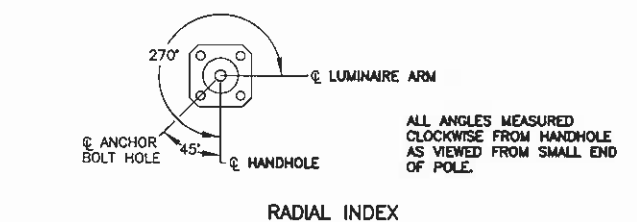
DETAIL 3 LUMINAIRE ARM ATTACHMENT



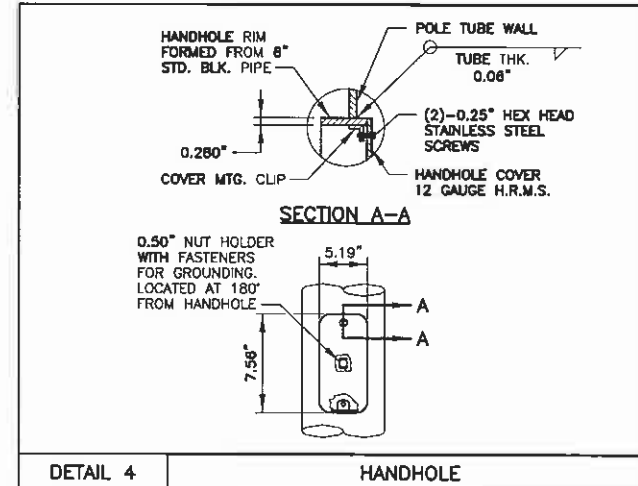
DETAIL 6 NUT COVER



DETAIL 7 ANCHOR BOLT



RADIAL INDEX



DETAIL 4 HANDHOLE

TABLE 2: POLE DATA																
QTY.	POLE SERIES	DESIGN NUMBER	SINGLE ARM SPAN (FT)	POLE TUBE				POLE BASE				ANCHOR BOLT				
				BASE O.D. (IN)	TOP O.D. (IN)	LENGTH (FT)	THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE OR SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD	THREAD LENGTH "U" (IN)
	DC01	5		8.75	3.85	35.00	.1793	12.00	12.50	1.25	1.38 X 1.94	1.25	42.00	6.00	7.00	6.00

CITY & COUNTY OF DENVER

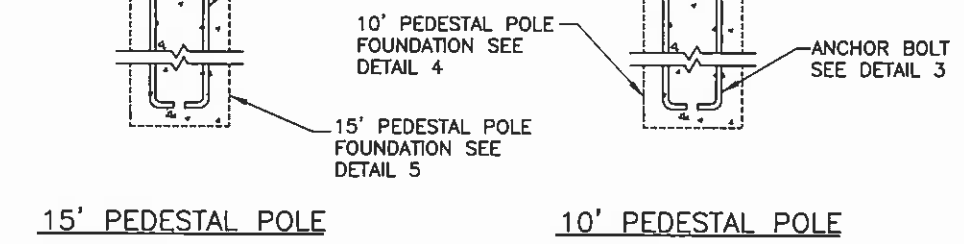
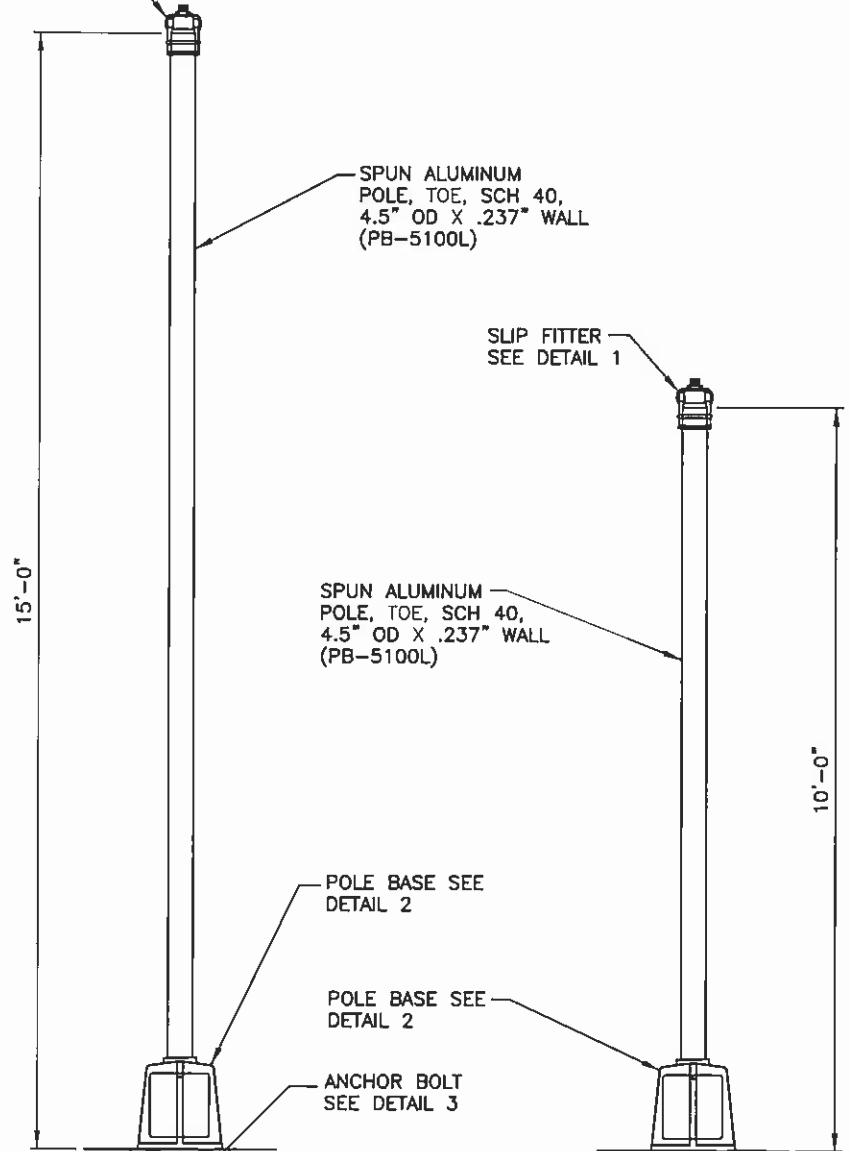
LUMINAIRE DETAILS



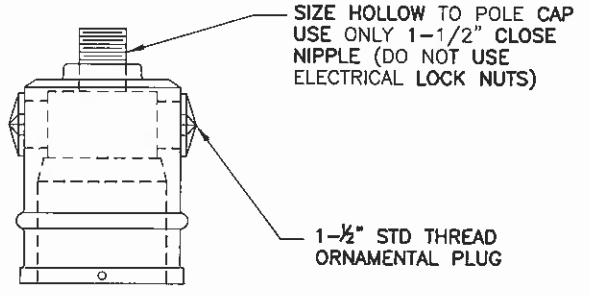
STD DWG NO  
16.1.12

DATE  
7/5/2011

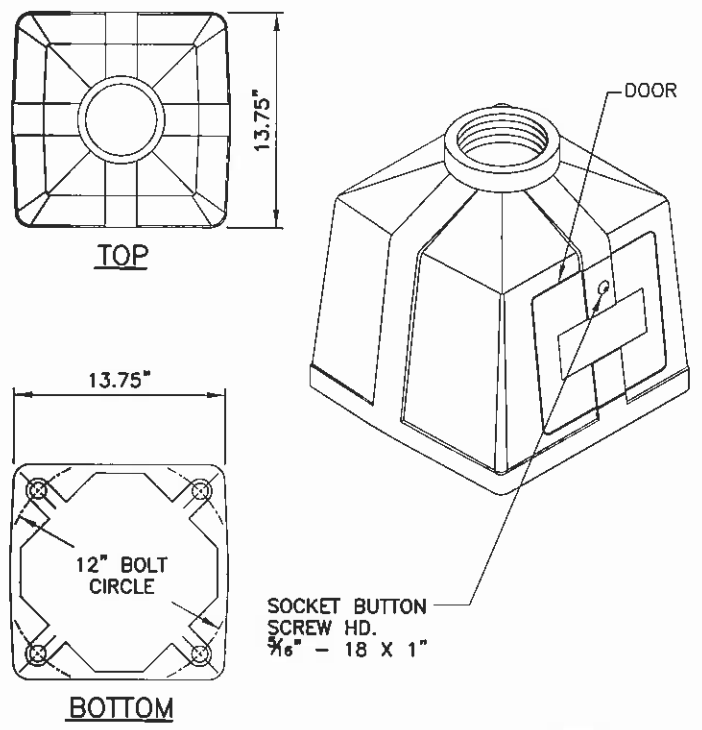
SLIP FITTER  
SEE DETAIL 1



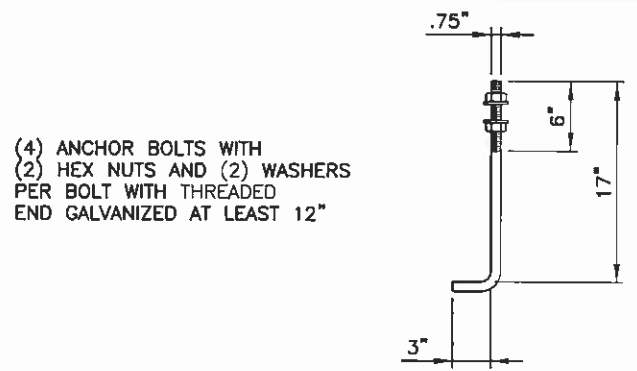
10' AND 15' PEDESTAL POLES AND BASES



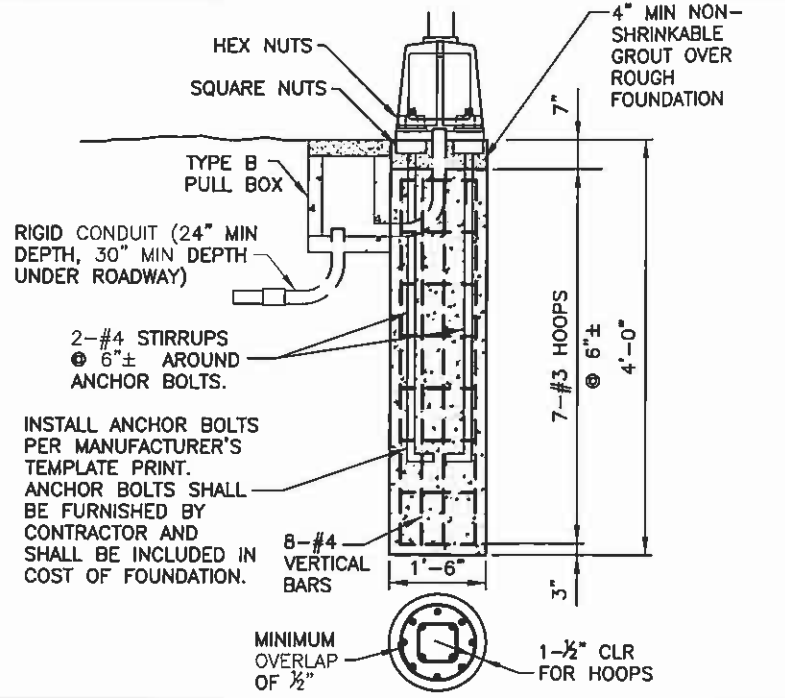
DETAIL 1 SLIP FITTER



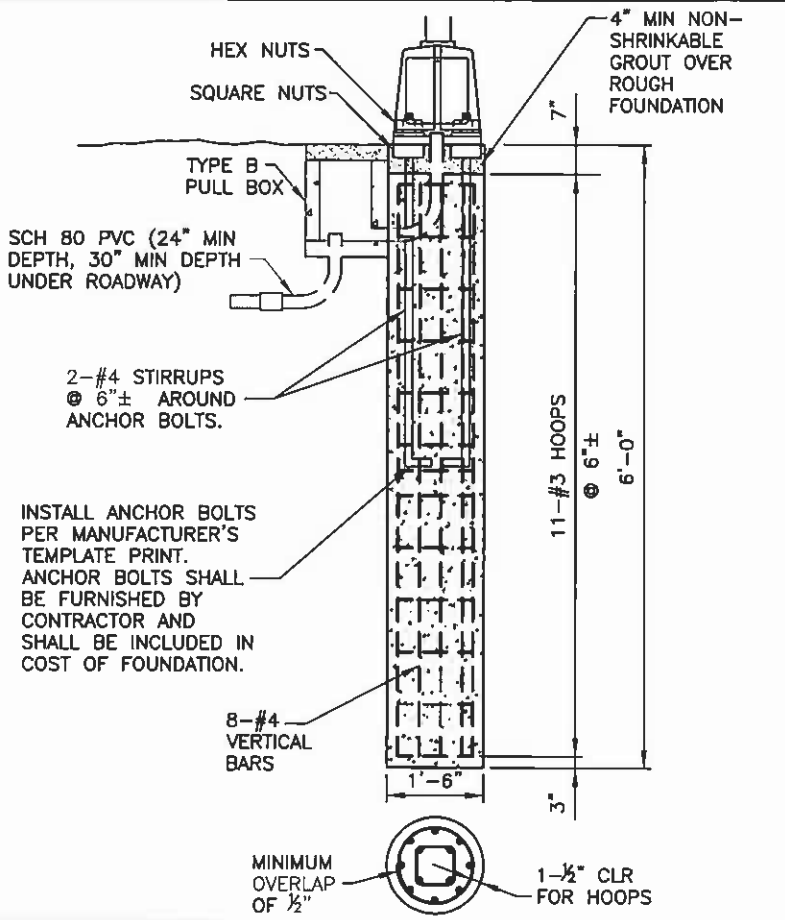
DETAIL 2 SQUARE ALUMINUM POLE BASE



DETAIL 3 ANCHOR BOLT



DETAIL 4 FOUNDATION BASE - 10' PEDESTAL POLE

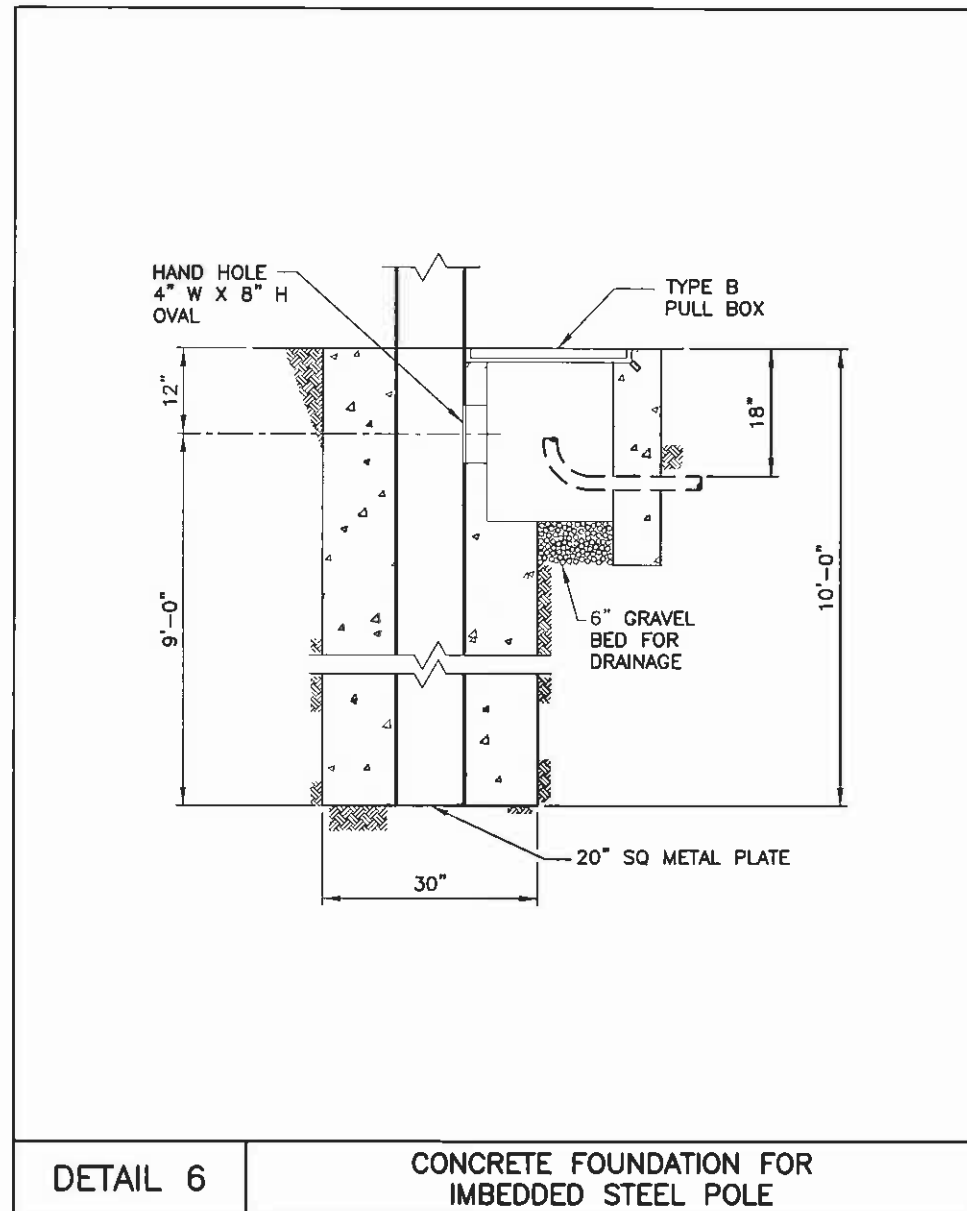


DETAIL 5 FOUNDATION BASE - 15' PEDESTAL POLE

NOTE: COST OF FOUNDATION IS INCIDENTAL TO THE COST OF THE POLE.

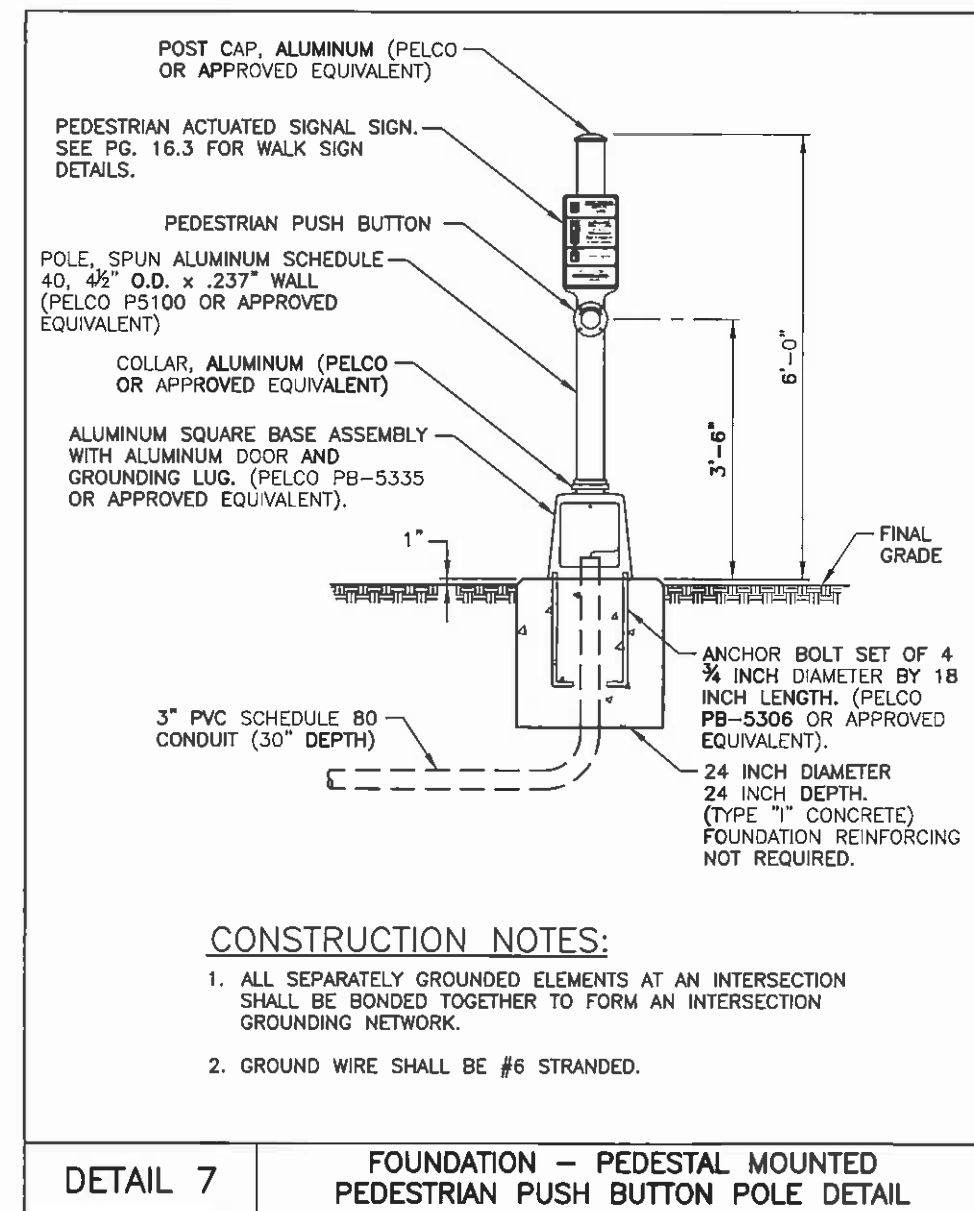






DETAIL 6

CONCRETE FOUNDATION FOR  
IMBEDDED STEEL POLE



DETAIL 7

FOUNDATION - PEDESTAL MOUNTED  
PEDESTRIAN PUSH BUTTON POLE DETAIL

**CONSTRUCTION NOTES:**

1. ALL SEPARATELY GROUNDED ELEMENTS AT AN INTERSECTION SHALL BE BONDED TOGETHER TO FORM AN INTERSECTION GROUNDING NETWORK.
2. GROUND WIRE SHALL BE #6 STRANDED.

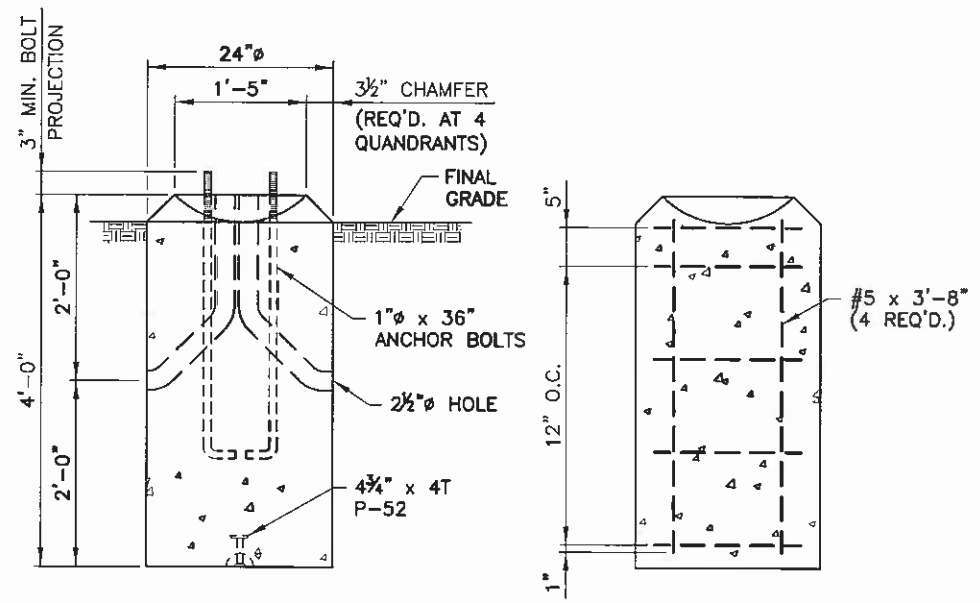
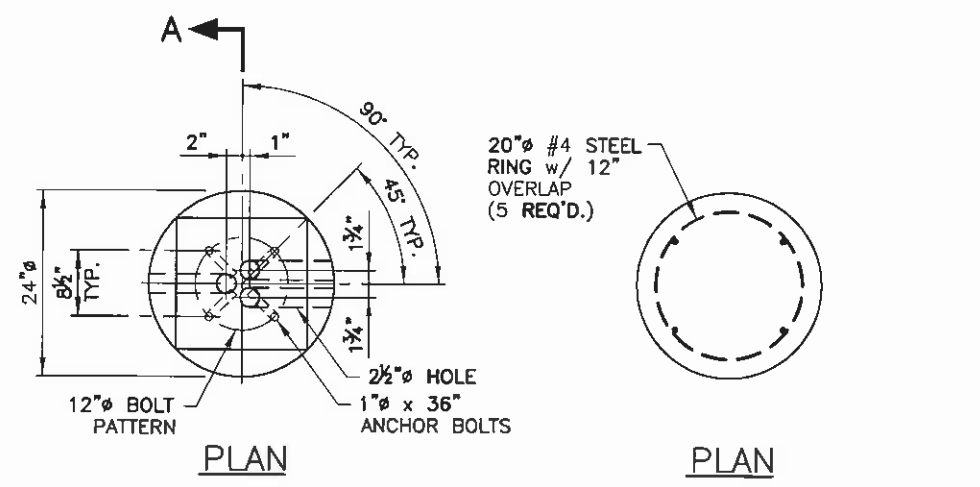
CITY & COUNTY OF DENVER

POLE FOUNDATION DETAILS



STD DWG NO  
16.1.14

DATE  
7/5/2011



SECTION A-A

SECTION A-A

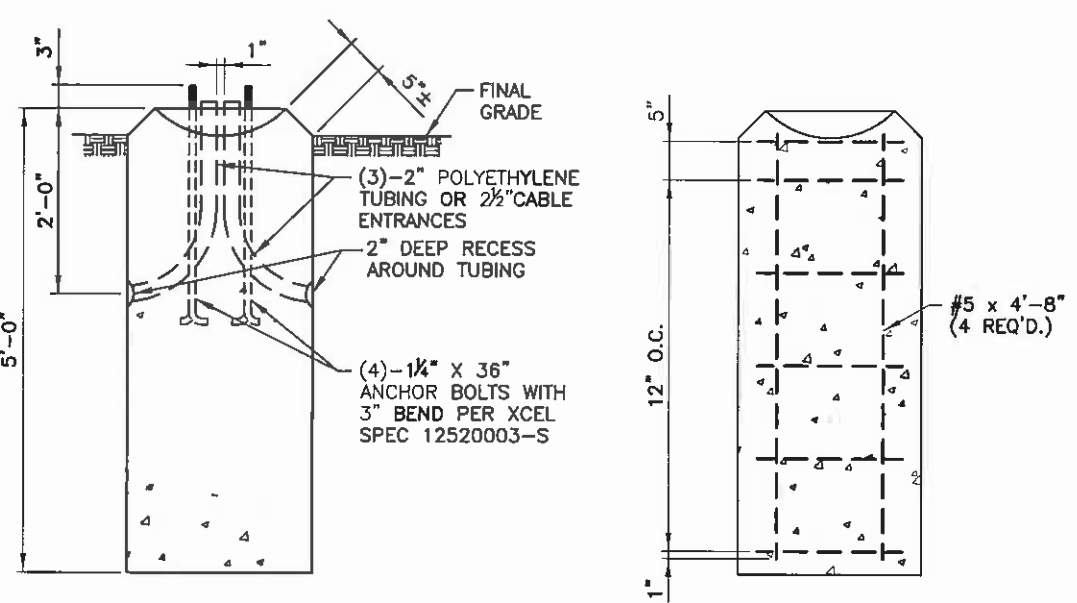
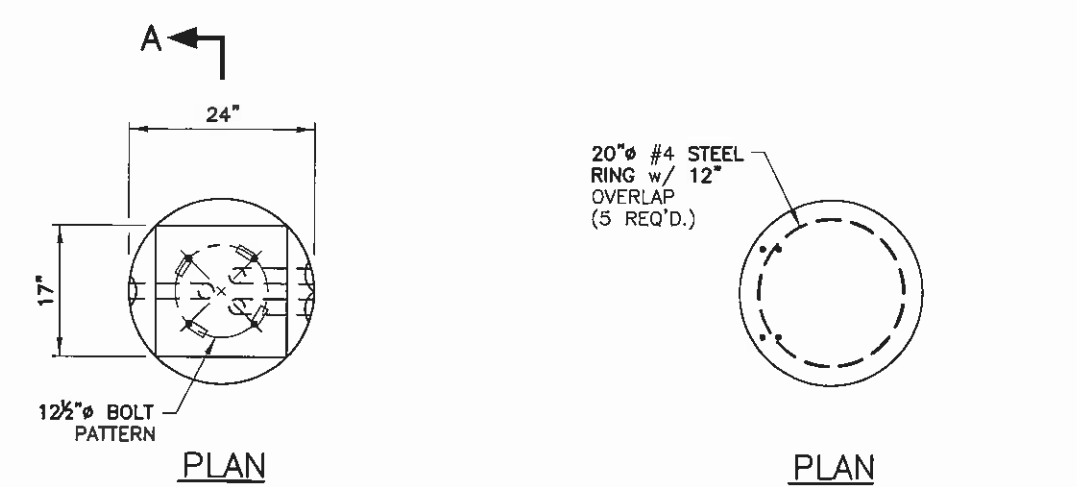
**MATERIALS**

1. 4 - #5 VERTICAL REINFORCING BARS 3'-8" LONG.
2. 5 - #4 HOOPS, 20" DIAMETER w/ 12" OVERLAP.
3. 4 - 1" x 36" ANCHOR BOLTS w/ 3" BEND PER XCEL SPEC. 12520000-5.
4. CONCRETE SHALL BE 6000 PSI. FINISH SHALL BE SMOOTH FINISH.
5. CONCRETE VOLUME SHOULD BE APPROX. 0.459 CY.
6. 3 - 2" POLYETHYLENE TUBING OR 2 1/2" CABLE ENTRANCES.

DETAIL 8

STREET LIGHT POLE BASE

\* FOR INFORMATION ONLY \*



SECTION A-A

SECTION A-A

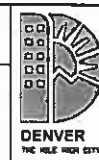
**NOTES:**

1. ALL FOUNDATION DETAILS SHALL BE SUBMITTED TO XCEL ENERGY AND CITY & COUNTY OF DENVER TRAFFIC ENGINEERING SERVICES. NO FOUNDATIONS SHALL BE INSTALLED UNTIL SUBMITTALS HAVE BEEN ACCEPTED BY XCEL ENERGY.
2. ALL FOUNDATIONS INSTALLED FOR XCEL FACILITIES BECOME THE PROPERTY OF XCEL ENERGY UPON ACCEPTANCE OF THE PROJECT.
3. ALL FOUNDATIONS SHALL BE PRECAST PER THE DETAILS PROVIDED.
4. FOR CITY PROJECTS WITH FEDERAL MONEY ATTACHED, THE CONTRACTOR SHALL PROVIDE AND INSTALL FOUNDATIONS PER XCEL ENERGY REQUIREMENTS.

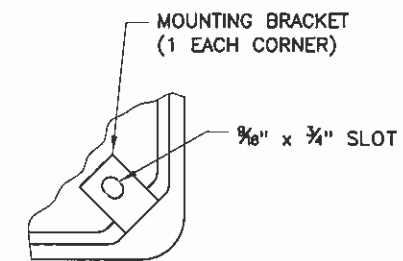
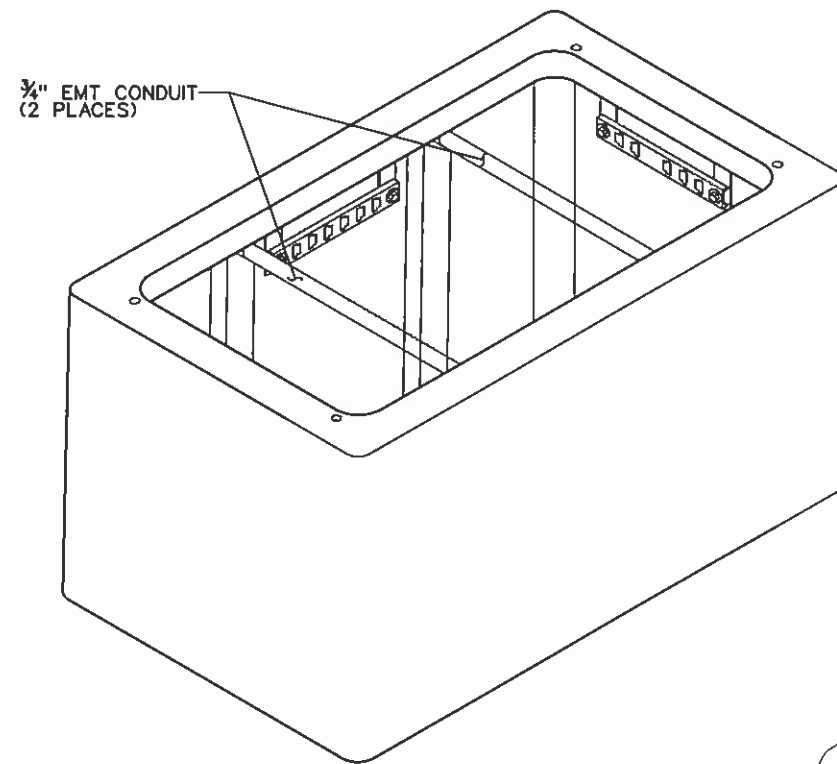
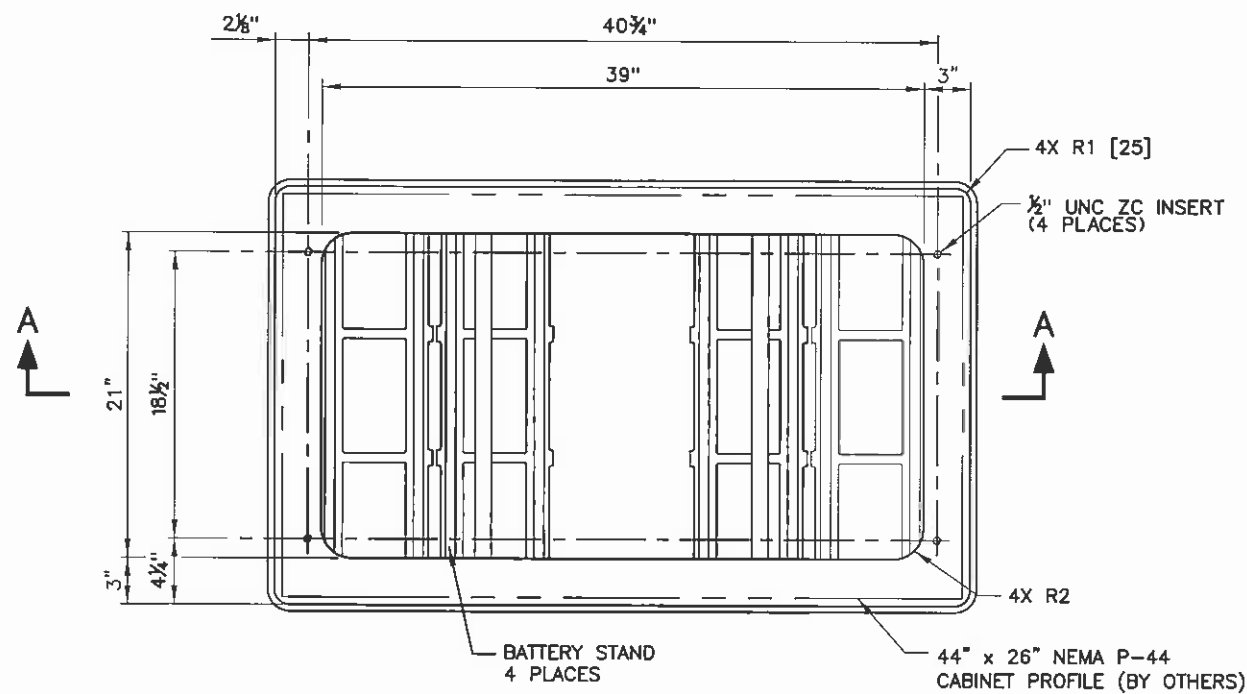
DETAIL 9

PRECAST STREET LIGHT FOUNDATION WITH POLE MOUNTED TRAFFIC SIGNAL HEADS (NO MAST ARM)

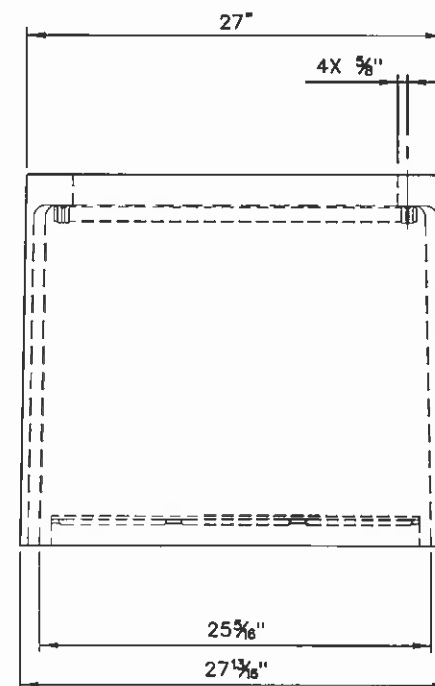
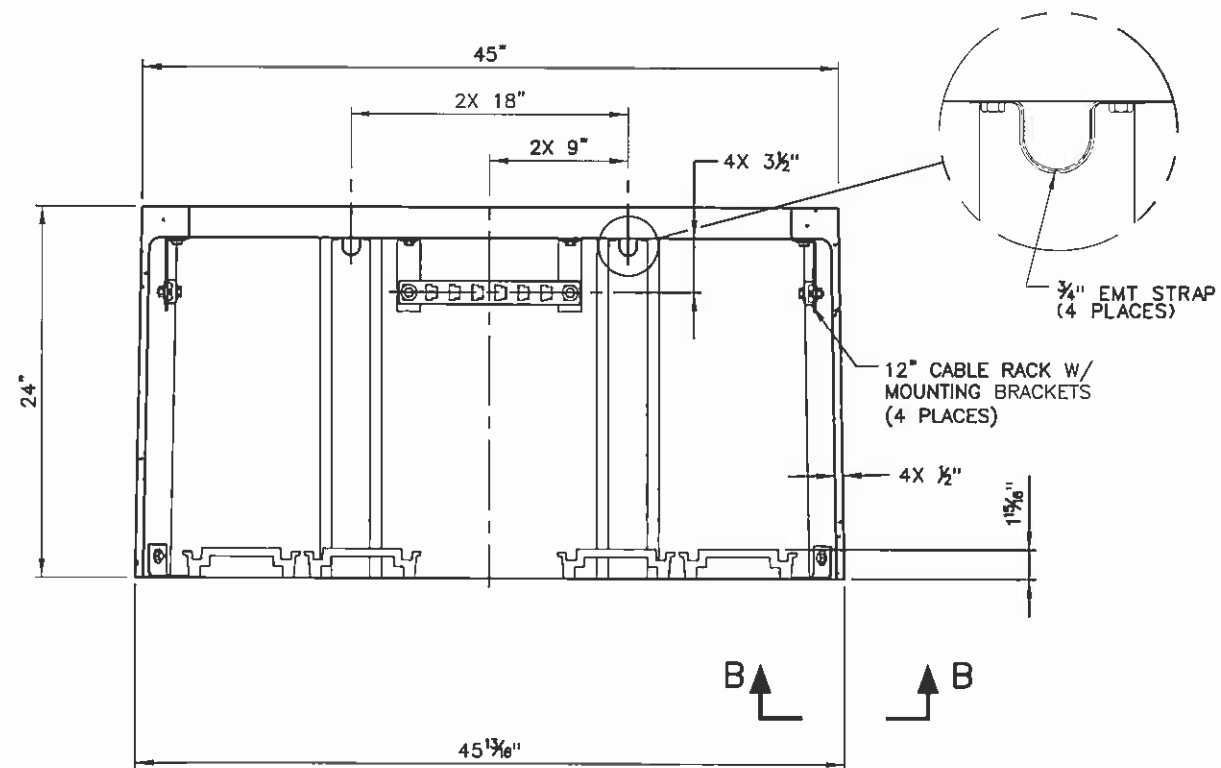
CITY & COUNTY OF DENVER  
FOUNDATIONS FOR XCEL FACILITIES



STD DWG NO  
16.1.15  
DATE  
7/5/2011



VIEW B-B  
4 PLACES



**NOTES:**

1. BASE DETAILS ARE FOR A NEMA P-44 CABINET ONLY.
2. BASE SHALL BE CONSTRUCTED FROM LIGHTWEIGHT POLYMER CONCRETE ONLY.
3. BASE SHALL MEET OR EXCEED ASTM D-2444 IMPACT RESISTANCE TESTING.
4. BASE SHALL MEET OR EXCEED ASTM METHOD D-543, SECTION 7, PROCEDURE 1 FOR CHEMICAL RESISTANCE.
5. BASE SHALL BE "UL" LISTED.

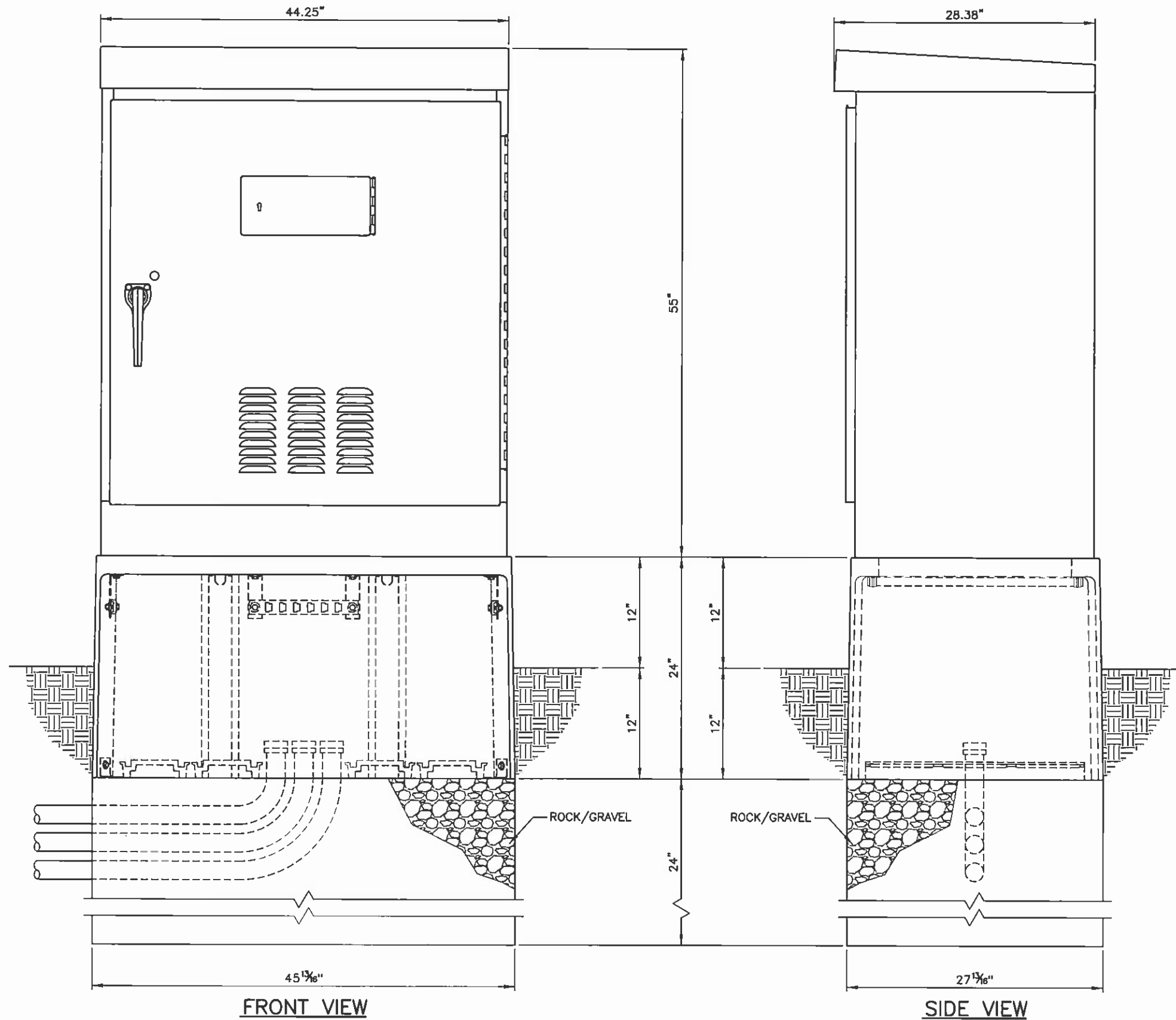
CITY & COUNTY OF DENVER

"P" CABINET BASE



STD DWG NO  
16.1.16

DATE  
7/5/2011

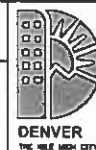


FRONT VIEW

SIDE VIEW

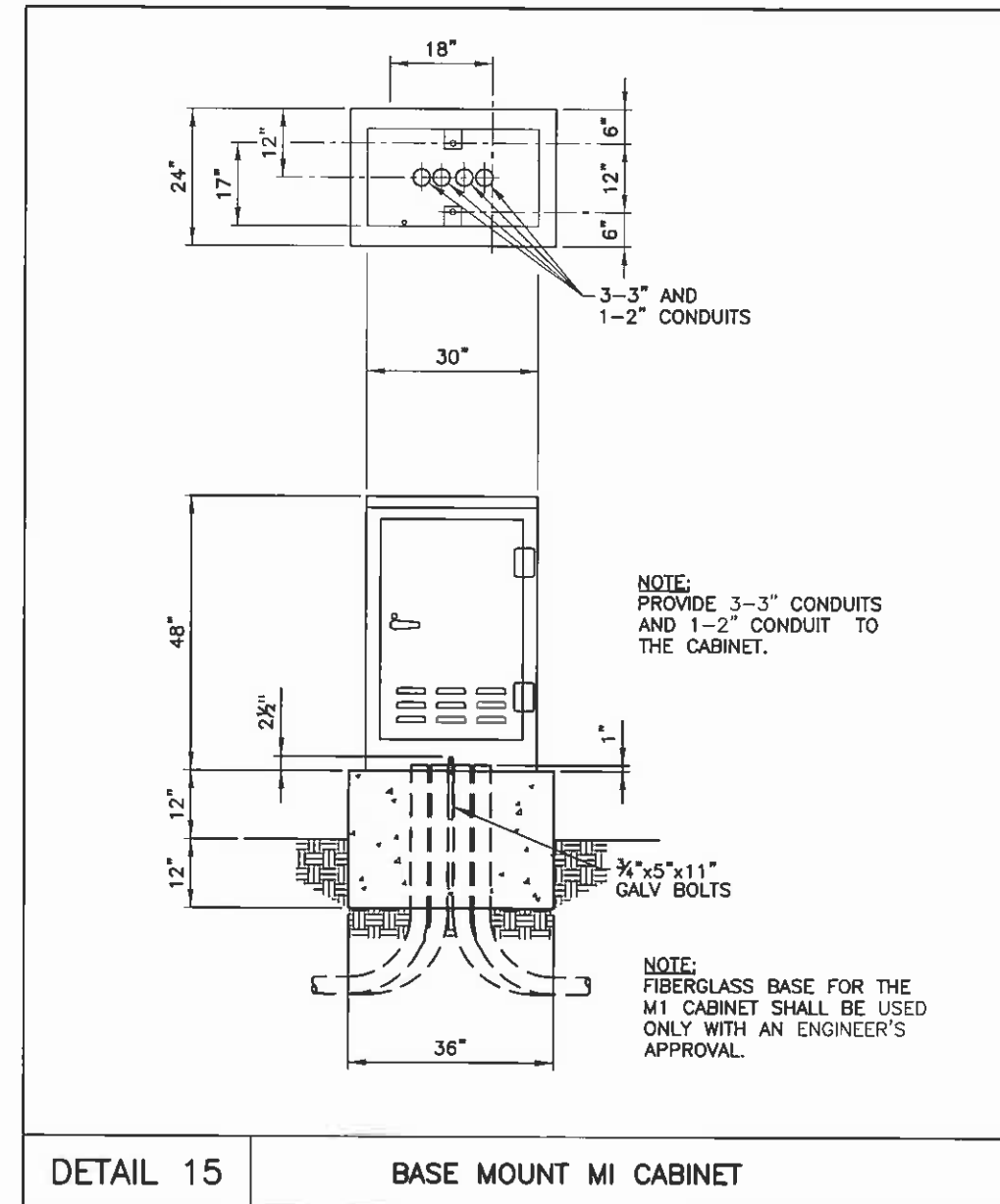
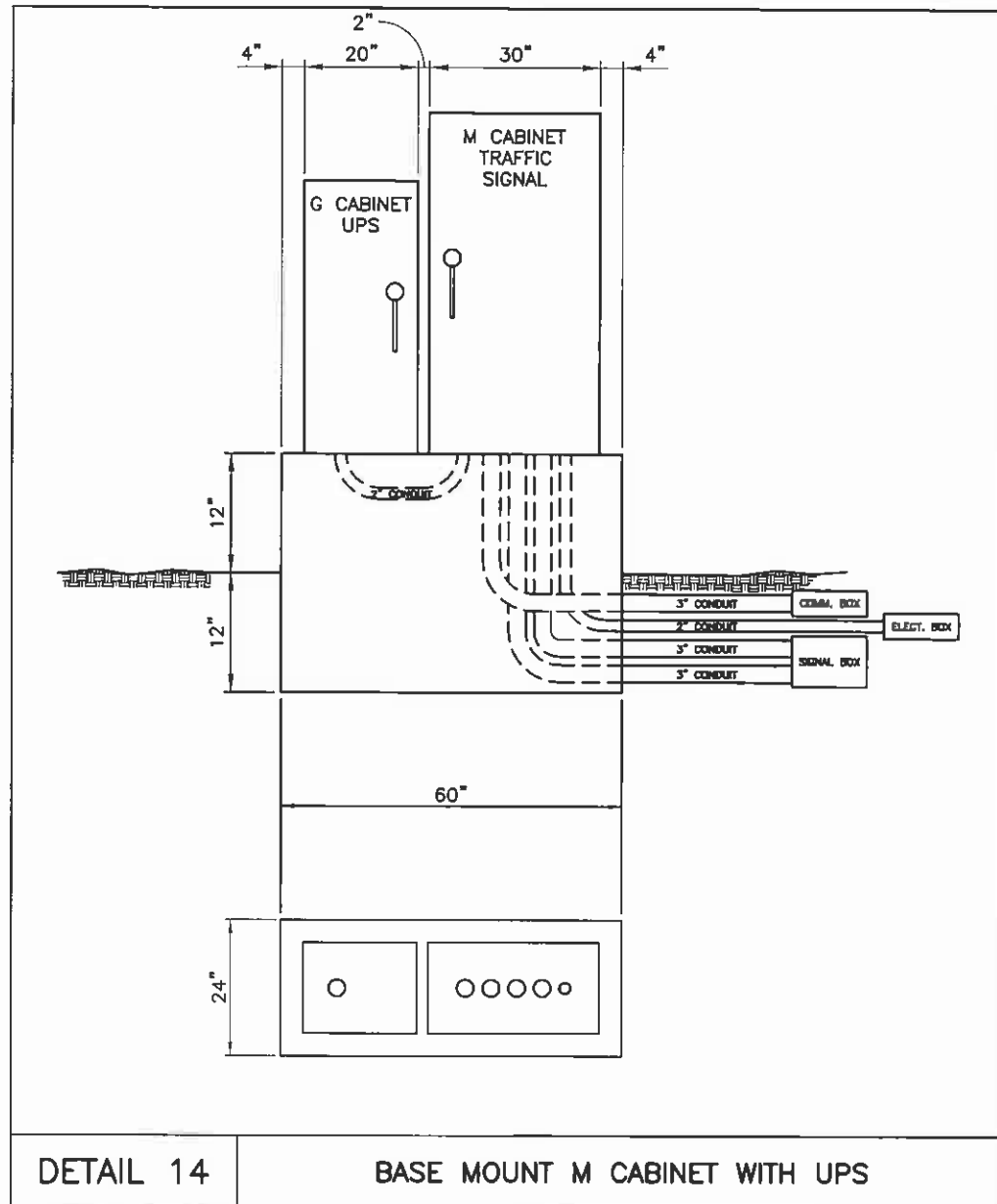
CITY & COUNTY OF DENVER

"P" CABINET & BASE



STD DWG NO  
16.1.17

DATE  
7/5/2011



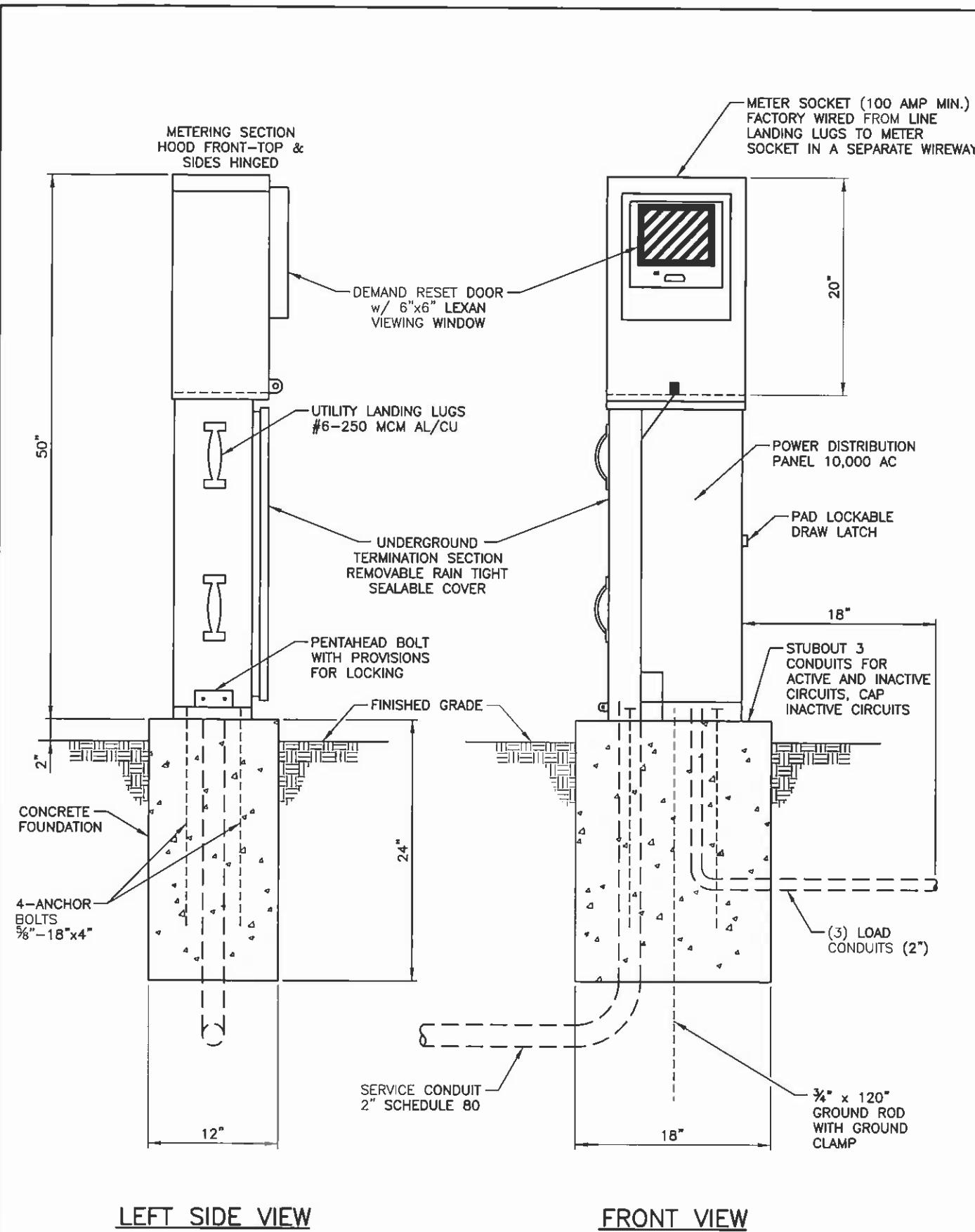
CITY & COUNTY OF DENVER

"M" CABINET BASE



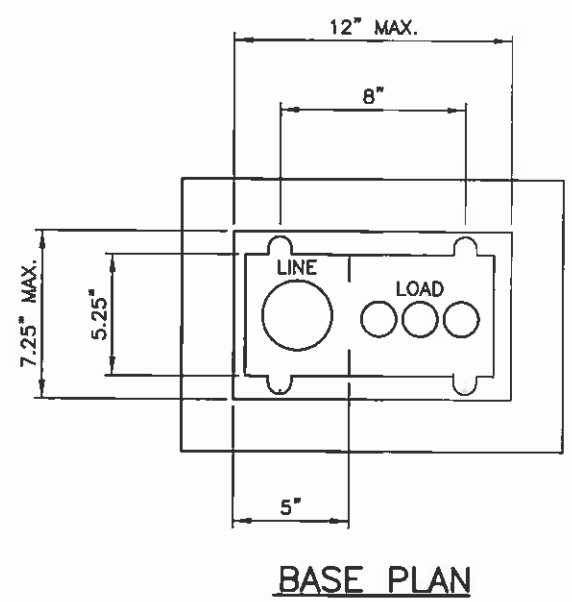
STD DWG NO  
16.1.18

DATE  
7/5/2011

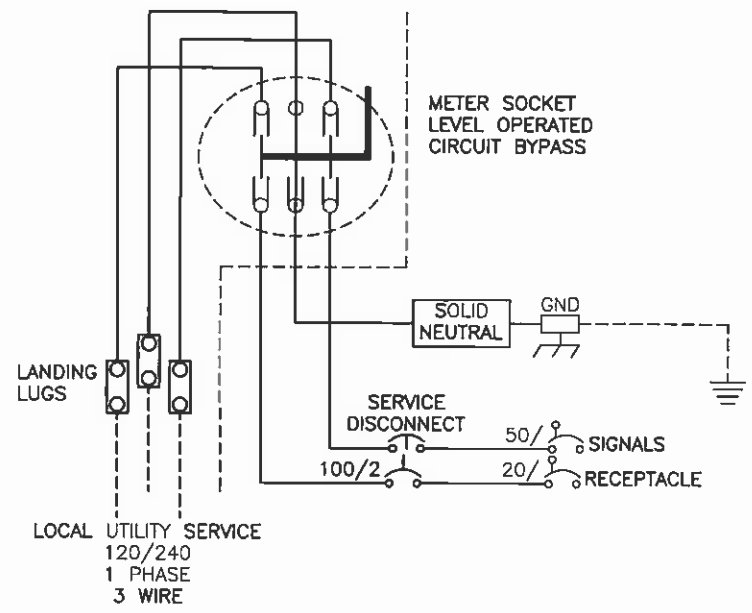


LEFT SIDE VIEW

FRONT VIEW




BASE PLAN



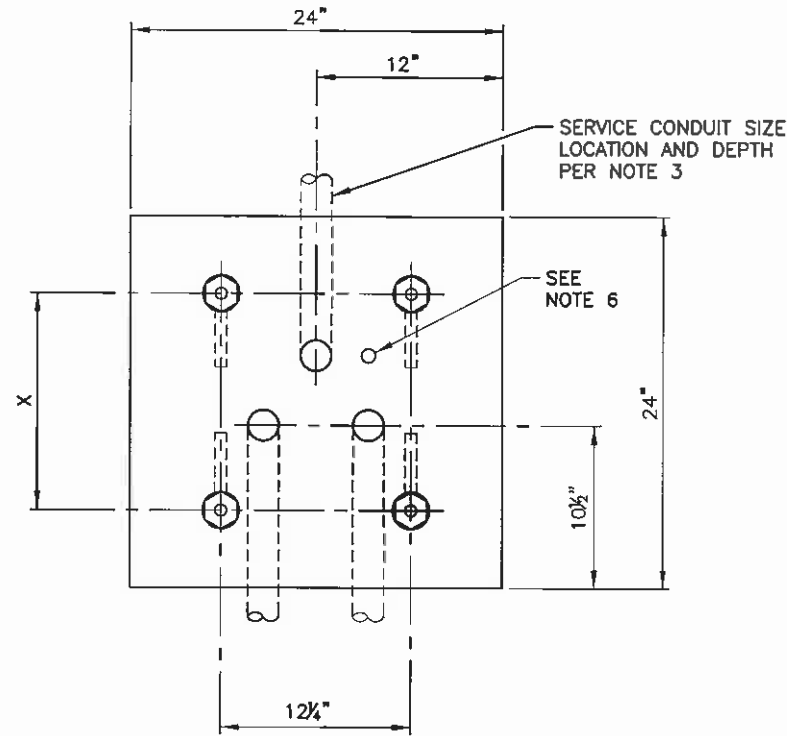
SERVICE EQUIPMENT WIRING DIAGRAM "A"

**METER PEDESTAL CONSTRUCTION NOTES:**

1. METER PEDESTAL SHALL BE UL LISTED "INDUSTRIAL CONTROL PANEL" PER UL 508.
2. METER PEDESTAL SHALL MEET THE ELECTRIC UTILITY SERVICE EQUIPMENT REQUIREMENTS COMMITTEE (EUSERC) GUIDELINES.
3. CONSTRUCTION SHALL BE NEMA 3R AND 12, RAIN TIGHT AND DUST TIGHT. ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
4. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
5. NUTS, BOLTS AND SCREWS SHALL NOT BE VISIBLE FROM OUTSIDE OF METER PEDESTAL.
6. PHENOLIC NAME PLATES SHALL BE PROVIDED AS REQUIRED.
7. CIRCUIT BREAKERS SHALL BE CABLE IN-CABLE OUT WITH LINE ON TOP & LOAD ON THE BOTTOM. HANDLE POSITION UP="ON", MIDDLE="TRIPPED", DOWN="OFF".
8. A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
9. METER PEDESTAL SHALL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
10. 0.125" ALUMINUM SHEET
11. CONCRETE FOUNDATIONS INCLUDING EXCAVATION AND BACKFILL, CONCRET AND ANCHOR BOLTS, COMPLETE-IN PLACE, WILL BE CONSIDERED INCIDENTAL TO THE METER PEDESTAL.

CITY & COUNTY OF DENVER		 DENVER THE BLUE AND GOLD CITY	STD DWG NO 16.1.19
METER PEDESTAL DETAILS			DATE 7/5/2011

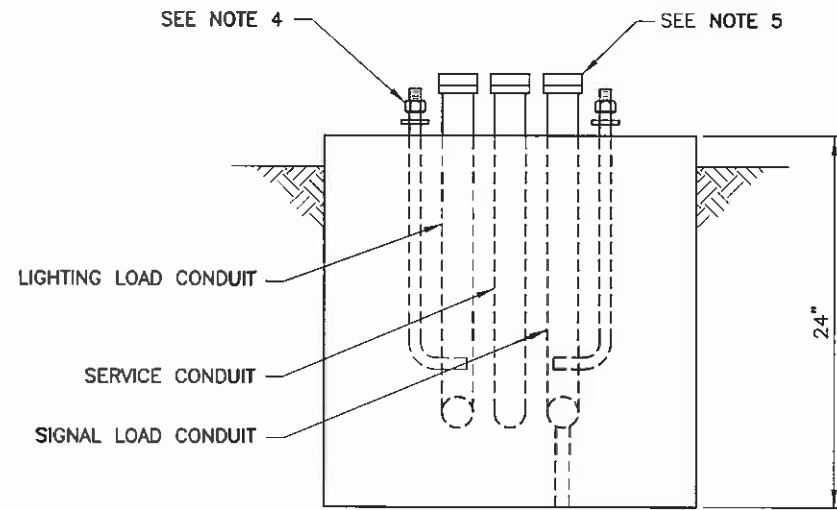
MAKE	X
TESCO	14"
MILBANK	14½"
MYERS	14¾"
PUP	14¼"



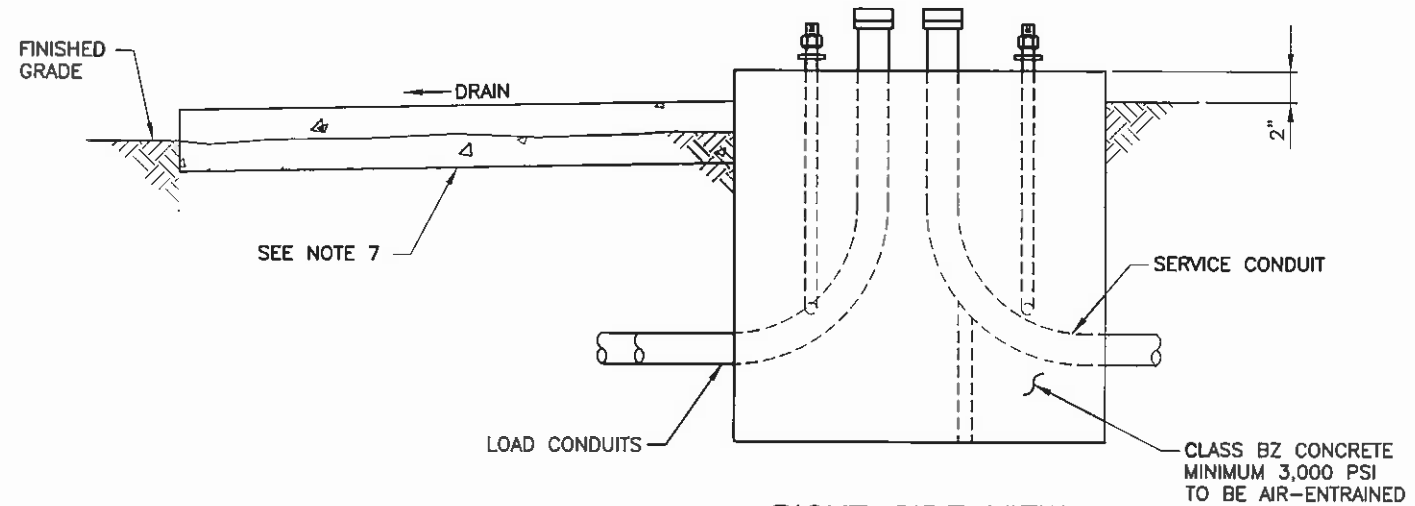
**FOUNDATION PLAN**

**NOTES:**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS.
2. UNSTABLE SOIL OR STEEP SLOPE MAY REQUIRE DEEPER FOUNDATIONS. SEE SPECIFICATIONS. CABINETS SHALL NOT BE LOCATED IN DRAINAGE AREAS, UNLESS THEY ARE ELEVATED.
3. CONDUIT SIZE SHALL BE 2" SCHEDULE 80 PVC.
4. ANCHOR BOLTS SHALL BE GALVANIZED, 5/8" x 18" x 4" COMPLETE WITH NUTS AND WASHERS.
5. CONDUIT PROJECTS ABOVE FOUNDATION SHALL BE 2" MIN. TO 4" MAX. CONDUITS SHALL BE CAPPED.
6. 1" SLEEVE FOR GROUND ROD, EXACT LOCATION PER CABINET MANUFACTURERS REQUIREMENTS.
7. IN UNPAVED AREAS A RAISED PCC PAD 36" x 4" x 36" SHALL BE PLACED IN FRONT OF THE CABINET. THE PAD SHALL BE SET 2" BELOW THE FOUNDATION ELEVATION AND SLOPED AWAY FROM CABINET.
8. CONFIRM ACTUAL ANCHOR BOLT LAYOUT DIMENSIONS AS SHOWN PER THE TABLE ON THIS DRAWING PRIOR TO CONSTRUCTION.
9. A METER PEDESTAL SHALL BE PROVIDED FOR ELECTRICAL SERVICES FOR TRAFFIC SIGNALS WHEN A SEPARATE SERVICE CABINET IS SPECIFIED. THIS CABINET CAN BE USED FOR OTHER PURPOSES AS WELL, SEE PLAN.
10. CABINETS SHALL BE OFFSET A MINIMUM OF 6 FT. FROM ANY ROADWAY AND 5 FT. FROM CONTROLLER CABINET, UPS CABINET, SERVICE POLE OR PAD MOUNTED TRANSFORMER.




**FRONT VIEW**

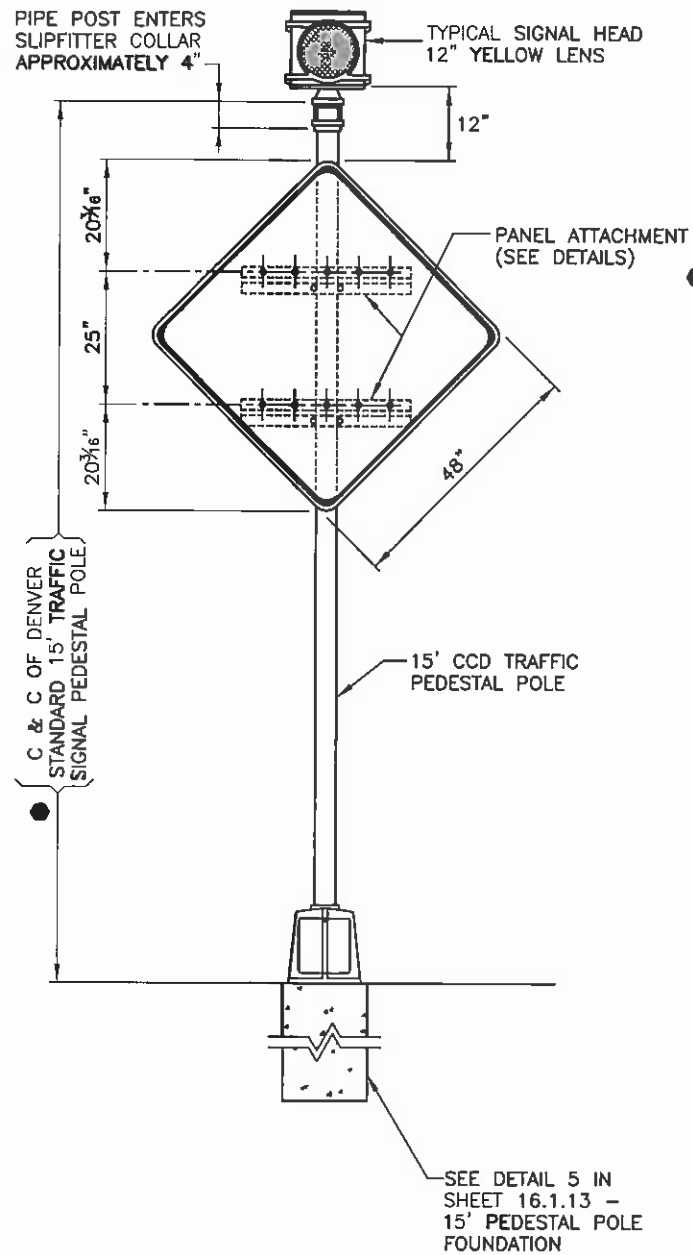


**RIGHT SIDE VIEW**

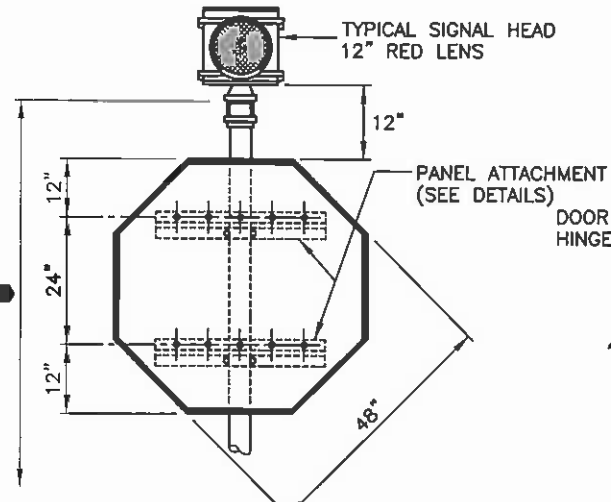
**METER PEDESTAL CABINET FOUNDATION DETAIL**

CITY & COUNTY OF DENVER		 DENVER <small>THE MILE HIGH CITY</small>	STD DWG NO 16.1.20
METER PEDESTAL CABINET FOUNDATION AND BASE			DATE 7/5/2011

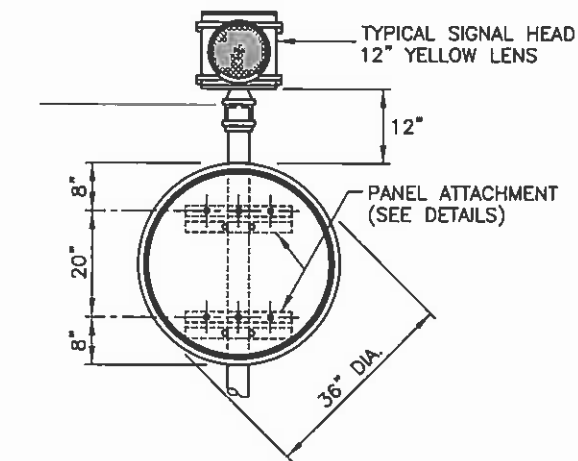
**COMPLETE INSTALLATION WITH DIAMOND PANEL**



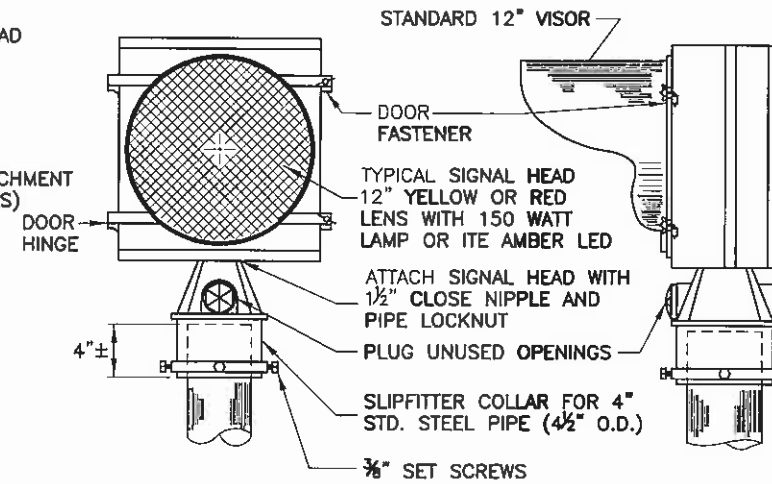
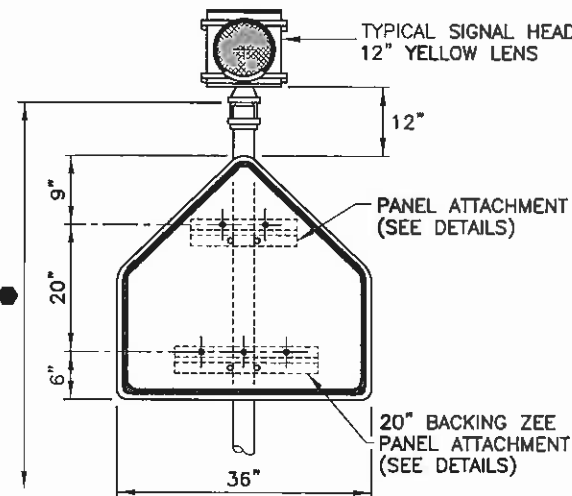
**WITH OCTAGON PANEL**



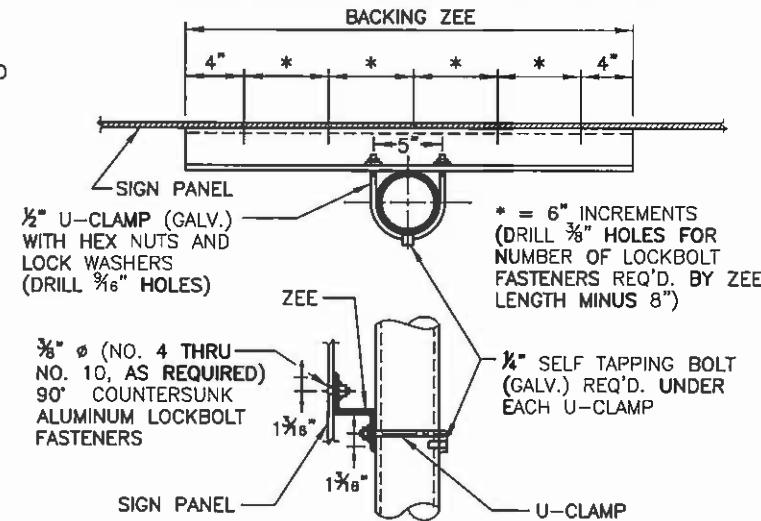
**WITH CIRCLE PANEL**



**WITH PENTAGON PANEL**



**TYPICAL SIGNAL HEAD - 12 INCH LENS**



**TYPICAL PANEL ATTACHMENT DETAILS**

**GENERAL NOTES**

1. ALL SIGN PANELS USED ON FLASHING BEACONS ARE CLASS II AND SHALL BE FABRICATED IN ACCORDANCE WITH
  - A. PANELS SHALL BE SINGLE SHEET ALUMINUM 0.100 MINIMUM THICKNESS.
  - B. BACKING ZEES ARE 3 IN. x 2 / IN. 2.33 LBS. PER FT. ALUMINUM.
  - C. ALL SIGNS SHALL BE FABRICATED USING RETROREFLECTIVE SHEETING CONFORMING TO ASTM D4956. THE TYPE SHALL BE DESCRIBED IN THE STANDARD SPECIFICATIONS AND/OR AS SHOWN ON THE PLANS.
  - D. BOLTS, U-CLAMPS, NUTS AND METAL WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.
2. INSTALLATION DESIGN CONFORMS WITH AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND SHALL BE FABRICATED IN ACCORDANCE WITH:
  - A. STEEL PIPE, POST ANCHOR PLATES AND BREAK-AWAY PLATES SHALL CONFORM TO AASHTO M270 (ASTM A709) GRADE 36.
  - B. HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM-A325 AND SHALL BE GALVANIZED OR CADMIUM PLATED.
  - C. HOLES SHALL BE DRILLED AND CUTS SHALL PREFERABLY BE SAW CUTS; HOWEVER, FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL SHALL NOT PROJECT BEYOND THE PLANE OF THE PLATE FACE ON BREAK-AWAY PLATES.
  - D. ALL WELDING IS TO BE CONTINUOUS AND IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS.
  - E. A "KEEPER PLATE" OF THIN (28 GAGE) GALVANIZED SHEET METAL, FABRICATED TO MATCH BREAK-AWAY PLATE DIMENSIONS BUT WITH HOLES RATHER THAN SLOTS, SHALL BE USED TO RESTRAIN BOLT LOOSENING DUE TO WIND VIBRATION.
  - F. FLASHING BEACON POLE SHALL BE THE CITY AND COUNTY OF DENVER TRAFFIC ENGINEERING SERVICE STANDARD PEDESTAL POLE. POLE SHALL BE THE STANDARD 15' POLE WITH THE SQUARE ALUMINUM POLE BASE. FOUNDATION FOR THE PEDESTAL POLE BASE SHALL BE THE 6' DEEP POLE FOOTING FOR THE 15' PEDESTAL POLE (SEE DETAIL 5 IN SHEET 16.1.3).
  - G. 48" PANELS AND LARGER USE "Z" BAR, SMALLER PANELS USE ALTERNATE DETAIL.

**WITH PANELS NOT ILLUSTRATED**

- 48" CIRCLE (12" YELLOW LENS)  
VERTICAL SPACING: 10 1/2"-27"-10 1/2"  
BACKING ZEES: 20"
- 48" PENTAGON (12" YELLOW LENS)  
VERTICAL SPACING TOP TO BOTTOM: 12"-25 1/4"-9"
- 24" x 48" RECTANGLE (12" YELLOW LENS) (SCHOOL SPEED LIMIT)  
VERTICAL SPACING: 12"-24"-12"  
BACKING ZEES: 20"

**TYPICAL ELEVATION FACING TRAFFIC**

CITY & COUNTY OF DENVER

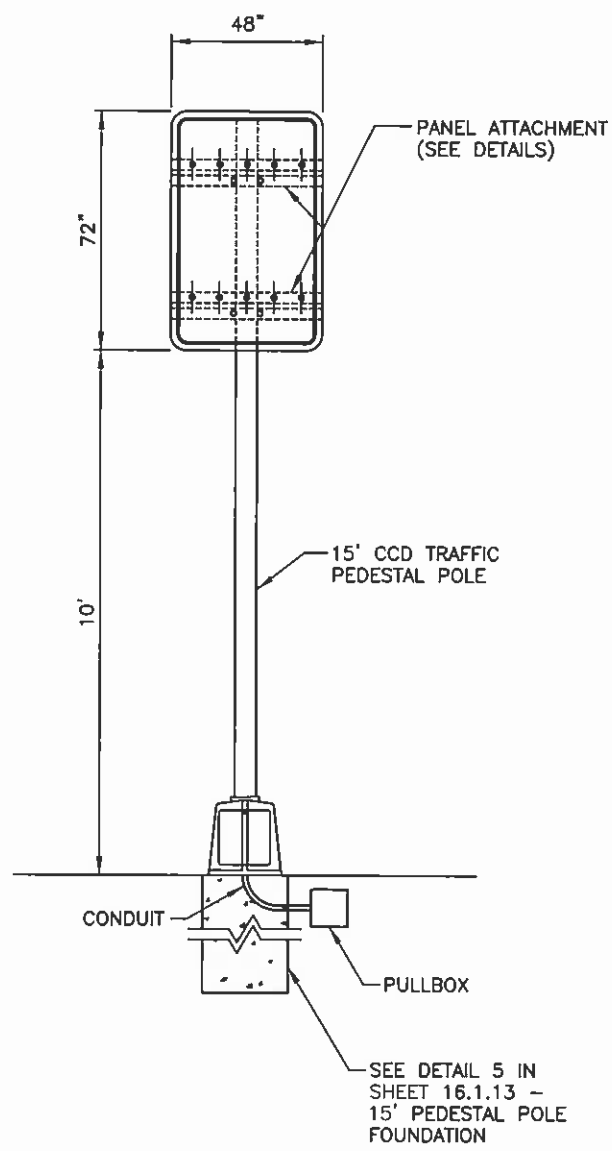
FLASHING BEACON DETAILS



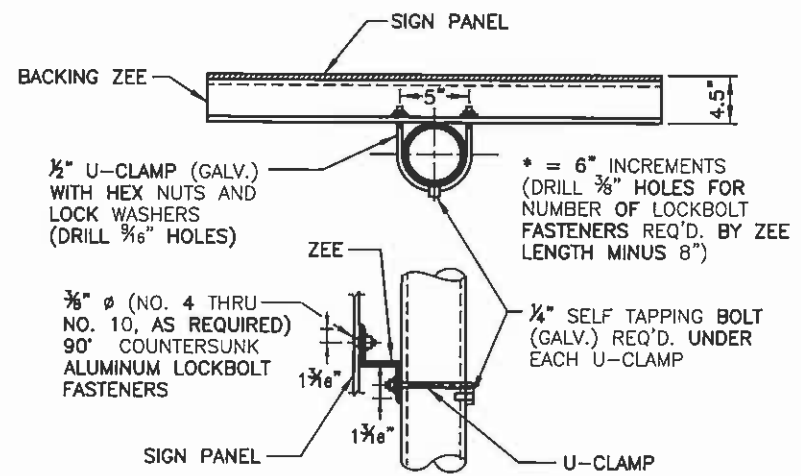
STD DWG NO  
16.1.21

DATE  
7/5/2011





TYPICAL ELEVATION FACING TRAFFIC



TYPICAL PANEL ATTACHMENT DETAILS

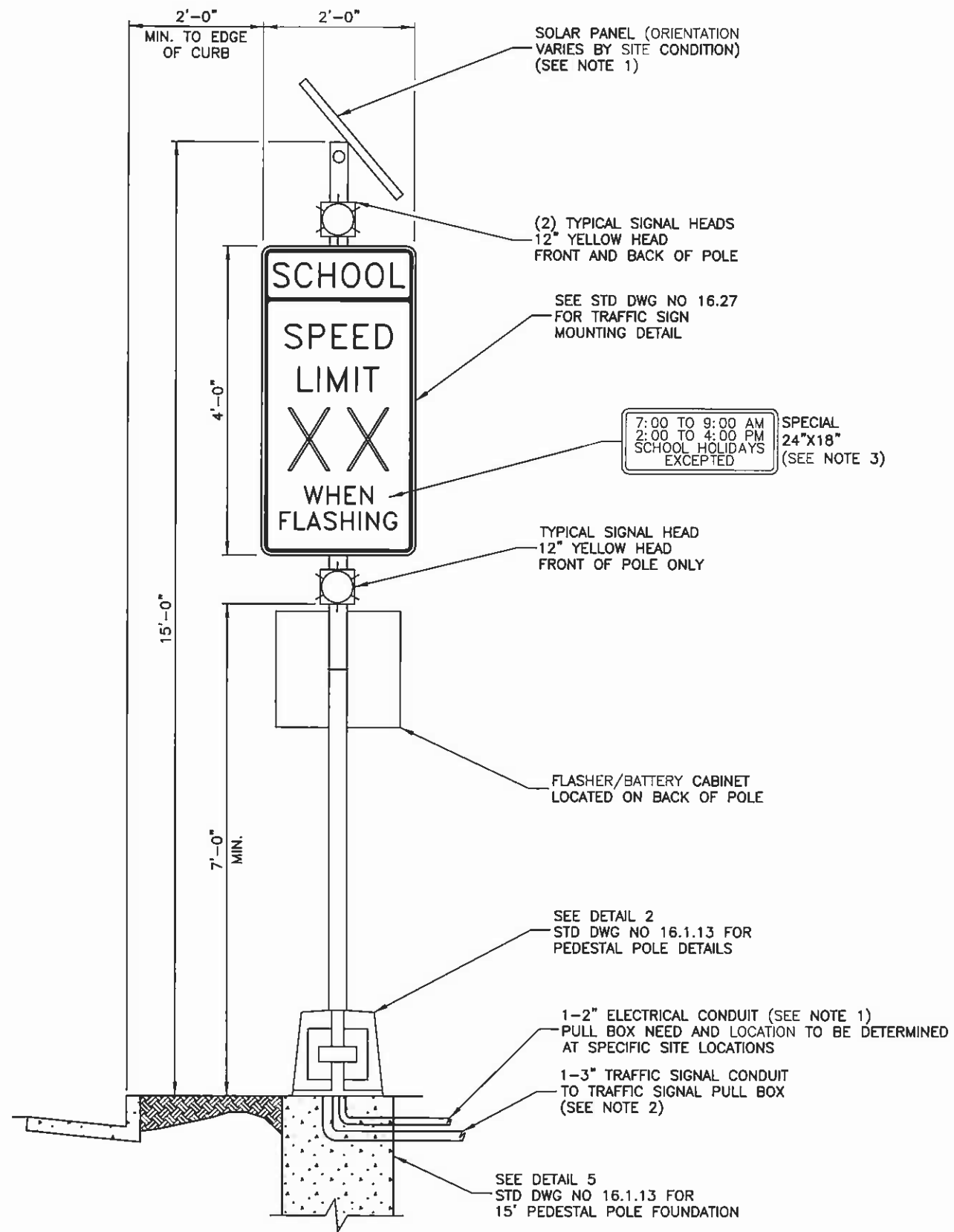
**GENERAL NOTES**

1. INSTALLATION DESIGN CONFORMS WITH AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND SHALL BE FABRICATED IN ACCORDANCE WITH:
  - A. STEEL PIPE, POST ANCHOR PLATES AND BREAK-AWAY PLATES SHALL CONFORM TO AASHTO M270 (ASTM A709) GRADE 36.
  - B. HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM-A325 AND SHALL BE GALVANIZED OR CADMIUM PLATED.
  - C. HOLES SHALL BE DRILLED AND CUTS SHALL PREFERABLY BE SAW CUTS; HOWEVER, FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL SHALL NOT PROJECT BEYOND THE PLANE OF THE PLATE FACE ON BREAK-AWAY PLATES.
  - D. ALL WELDING IS TO BE CONTINUOUS AND IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS.
  - E. A "KEEPER PLATE" OF THIN (28 GAGE) GALVANIZED SHEET METAL, FABRICATED TO MATCH BREAK-AWAY PLATE DIMENSIONS BUT WITH HOLES RATHER THAN SLOTS, SHALL BE USED TO RESTRAIN BOLT LOOSENING DUE TO WIND VIBRATION.
  - F. DRIVER FEEDBACK SIGN POLE SHALL BE MOUNTED ON THE CITY AND COUNTY OF DENVER TRAFFIC ENGINEERING SERVICE STANDARD PEDESTAL POLE. POLE SHALL BE THE STANDARD 15' POLE WITH THE SQUARE ALUMINUM POLE BASE. FOUNDATION FOR THE PEDESTAL POLE BASE SHALL BE THE 6' DEEP POLE FOOTING FOR THE 15' PEDESTAL POLE (SEE DETAIL 5 IN SHEET 16.13).
  - G. BOLTS, U-CLAMPS, NUTS AND METAL WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.

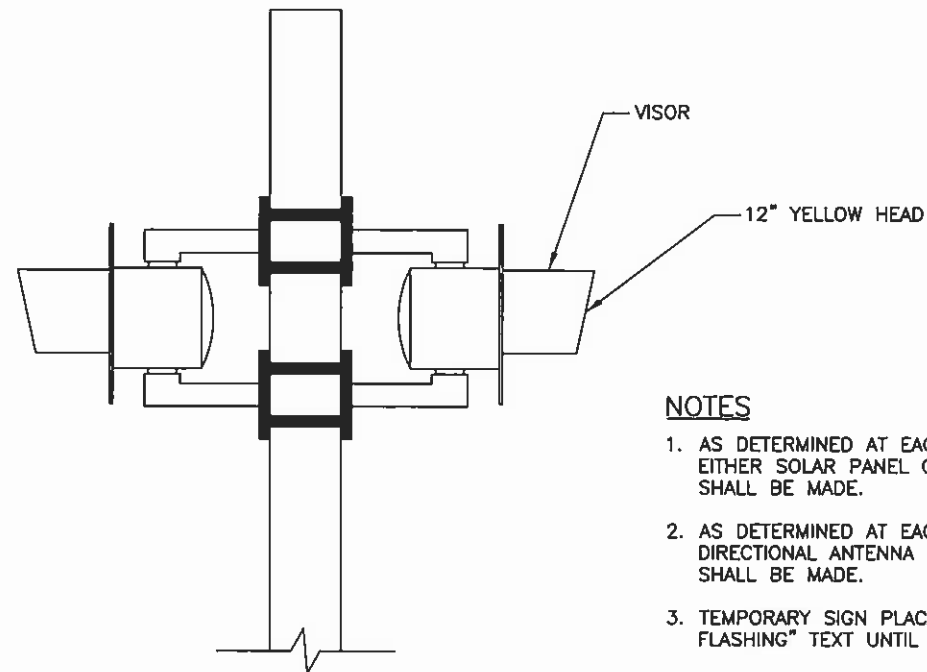
CITY & COUNTY OF DENVER  
 DRIVER'S FEEDBACK SIGN DETAILS



STD DWG NO  
 16.1.22  
 DATE  
 7/5/2011



TYPICAL ELEVATION FACING TRAFFIC



TYPICAL SIGNAL HEAD SECTION - 12" LENS

NOTES

1. AS DETERMINED AT EACH SPECIFIC SITE LOCATION, FOR POWER, EITHER SOLAR PANEL OR HARD-WIRE ELECTRICAL CONNECTION SHALL BE MADE.
2. AS DETERMINED AT EACH SPECIFIC SITE LOCATION, EITHER DIRECTIONAL ANTENNA OR HARD-WIRE TRAFFIC SIGNAL CONNECTION SHALL BE MADE.
3. TEMPORARY SIGN PLACARD TO BE INSTALLED OVER S5-1 "WHEN FLASHING" TEXT UNTIL BEACONS ARE OPERATIONAL.

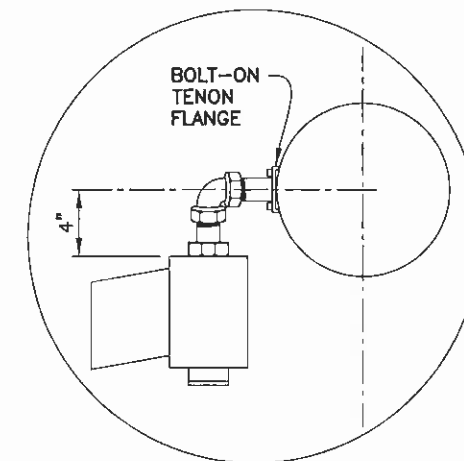
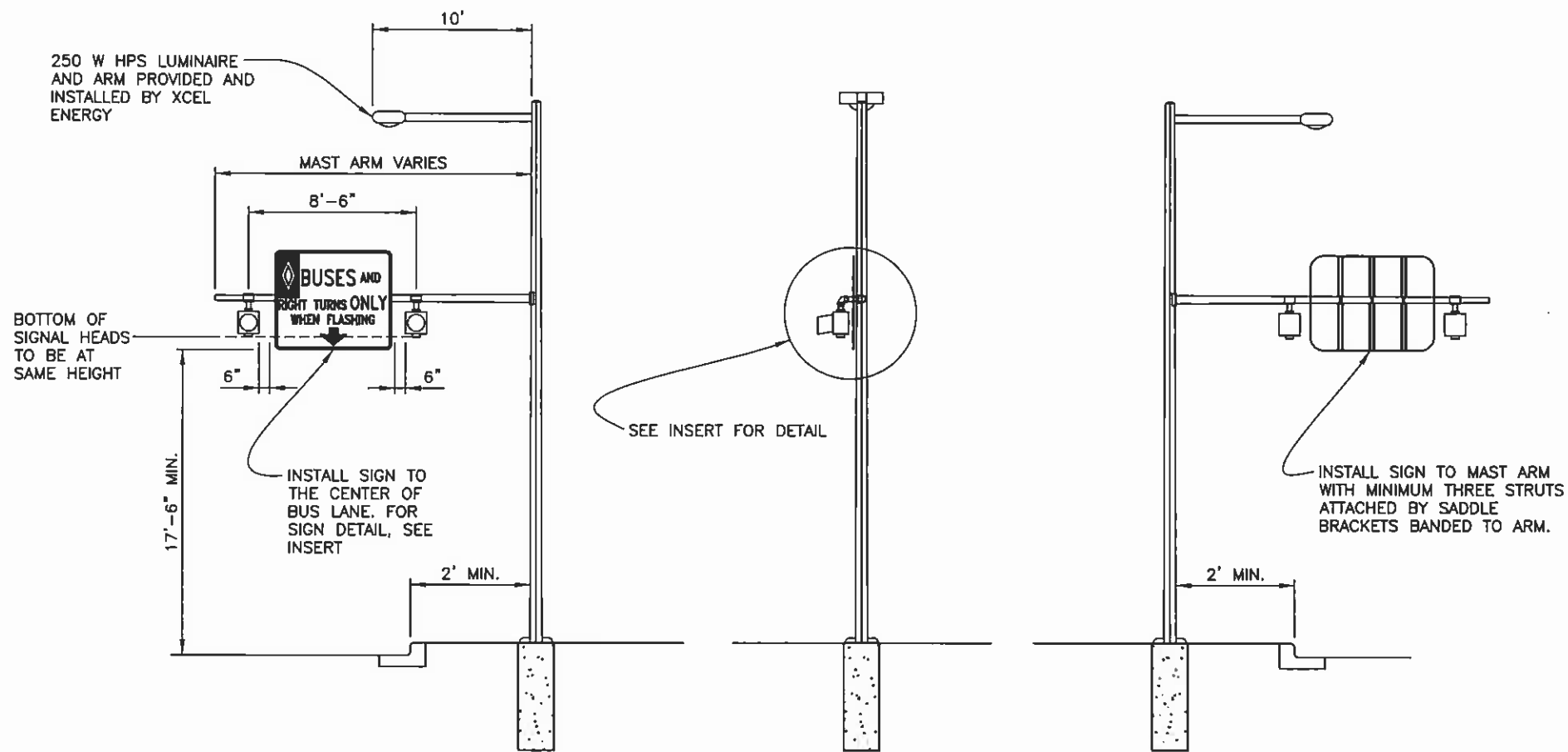
CITY & COUNTY OF DENVER

FLASHING BEACON & SIGN SHEET 1



STD DWG NO  
16.1.23

DATE  
7/5/2011

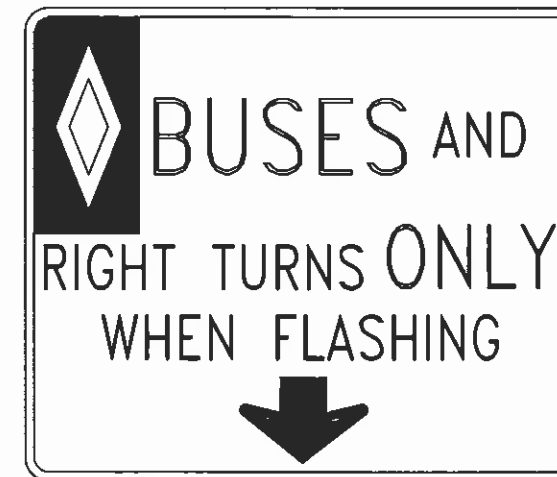


**SIGNAL HEAD DETAIL**  
N.T.S.

**BUS LANE SIGN & SIGNAL FLASHER:**  
20' MAST ARM DESIGN  
N.T.S.

**BUS FLASHER SIGN & SIGNAL NOTES:**

1. INSTALL CABLE (2 COND, #12 AWG) IMSA TO SIGNAL BOX, FM. (BY CCD)
2. FLASHER WORK SHALL BE PERFORMED BY A QUALIFIED SIGNAL CONTRACTOR.
3. INSTALL NEW 12" YELLOW LED FLASHERS (2 EACH)
4. CONTACT TRAFFIC OPERATIONS AT 720-865-4000 FOR SIGN SPECIFICATIONS.
5. POLES SHALL BE FURNISHED AND INSTALLED BY XCEL ENERGY
6. DURING MOUNTING OF SIGN PANEL, NO TRAFFIC WILL BE ALLOWED IN THE AFFECTED LANE
7. LUMINAIRE AND LUMINAIRE ARM MAY BE PROVIDED AND INSTALLED BY XCEL ENERGY.



**BUS FLASHER SIGN DETAIL**

CITY & COUNTY OF DENVER

FLASHING BEACON & SIGN SHEET 2



STD DWG NO  
16.1.24

DATE  
7/5/2011