

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLIC WORKS

CONTRACT DOCUMENTS FOR:

**COLFAX/GALAPAGO/WELTON INTERSECTION
IMPROVEMENTS**

Contract No. 201207581

September 24, 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

New Design Construction Company
2350 East 70th Avenue
Denver, CO. 80229

The MANAGER OF PUBLIC WORKS has considered the Bids submitted on October 19, 2012, for work to be done and materials to be furnished in and for:

CONTRACT NO 201207581 COLFAX/GALAPAGO/WELTON INTERESESECTION IMPROVEMENTS

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: **202-00828 through 700-70589 (One Hundred Fourteen [114] Total Bid Items)**, the total estimated cost thereof being: **One Million Four Hundred Thirty Two Thousand Five Hundred Ninety Seven Dollars and Ninety Five Cents (\$1,432,597.95)**.

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

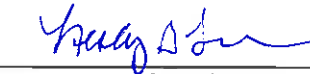
NOTICE OF APPARENT LOW BIDDER
PROJECT NO. 201207581
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The Bid Security submitted with your Bid, will be returned upon execution of the Contract and furnishing of the Performance Bond. In the event you should fail to execute the Contract and to furnish 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 14th day of November 2012.

CITY AND COUNTY OF DENVER

By



Jose M. Cornejo, P.E.
Manager of Public Works

JC/joa

cc: H. Bright(CAO), Gallagher (AUD), Schellinger (Treasury/Tax Compliance), DSBO Inbox, «Project_Mgr», Marco Cabanillas, Merritt (PW-Aud), File.

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

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

BIDDER'S CHECKLIST

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

FORM/ PAGE NO.	COMMENTS	COMPLETE
BF-4 – BF-5	a.) Acknowledgment signature and attestation required.	<input type="checkbox"/>
BF-6+	a.) Fill in individual bid item dollars and totals in Numerical figures only b.) Complete all blanks	<input type="checkbox"/> <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 b.) If Addenda have been issued, complete bottom section.	<input type="checkbox"/> <input type="checkbox"/>
BF-12	a.) Complete appropriate sections - signature(s) required. b.) If corporation, then corporate seal required.	<input type="checkbox"/> <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-19	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**

BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT

**CONTRACT NO. 201207581
FEDERAL AID PROJECT NOs. : STU M320-060
COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**

BIDDER: NEW DESIGN CONST

ADDRESS: 2350 E 70TH AVE
DENVER CO 80229

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. 201207581, COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated September 24, 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.

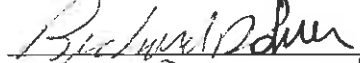
IN WITNESS WHEREOF, the undersigned bidder has signed personally or by duly authorized officer or agent and duly attested.

BIDDER:

ATTEST:

Name: NEW DESIGN

By: 

By: 

Title: VICE PRESIDENT

[SEAL]

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

BID FORM

CONTRACT NO. 201207581
FEDERAL AID PROJECT NOS. : STU M320-060

COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

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

BIDDER NEW DESIGN COST

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 **September 24, 2012**, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: **STU M320-060 CITY OF DENVER CONTRACT NO. 201207581, COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS** 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
202-00002	REMOVAL OF STRUCTURE (SPECIAL) at the unit price of \$ <u>90⁻</u> per EACH.	14 EA	\$ <u>1,260⁻</u>
202-00010	REMOVAL OF TREE at the unit price of \$ <u>500⁻</u> per EACH.	6 EA	\$ <u>3,000⁻</u>
202-00019	REMOVAL OF INLET at the unit price of \$ <u>655⁻</u> per EACH.	1 EA	\$ <u>655⁻</u>
202-00032	REMOVAL OF VALVE at the unit price of \$ <u>93⁻</u> per EACH.	1 EA	\$ <u>93⁻</u>
202-00035	REMOVAL OF PIPE (15" CLAY STORM SEWER) <i>(27)</i> at the unit price of \$ <u>14⁻</u> per LINEAR FOOT.	306 LF	\$ <u>4,284⁻</u>
202-00036	REMOVAL OF PIPE (12" WATERLINE) at the unit price of \$ <u>64⁻</u> per LINEAR FOOT.	33 LF	\$ <u>2,112⁻</u>
202-00037	REMOVAL OF PIPE (15" WATERLINE) at the unit price of \$ <u>24⁻</u> per LINEAR FOOT.	52 LF	\$ <u>1,248⁻</u>
202-00195	REMOVAL OF MEDIAN COVER at the unit price of \$ <u>7⁻</u> per SQUARE YARD.	117 SY	\$ <u>819⁻</u>
202-00200	REMOVAL OF SIDEWALK at the unit price of \$ <u>7⁻</u> per SQUARE YARD.	782 SY	\$ <u>5,474⁻</u>
202-00203	REMOVAL OF CURB AND GUTTER at the unit price of \$ <u>5⁻</u> per LINEAR FOOT.	903 LF	\$ <u>4,515⁻</u>
202-00240	REMOVAL OF ASPHALT MAT (PLANING) at the unit price of \$ <u>10⁻</u> per SQUARE YARD.	4,956 SY	\$ <u>49,560⁻</u>
202-00810	REMOVAL OF GROUND SIGN at the unit price of \$ <u>107⁻</u> per EACH.	8 EA	\$ <u>856⁻</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT at the unit price of \$ <u>2,236</u> per LUMP SUM.	1 LS	\$ <u>2,236</u>
202-01000	REMOVAL OF FENCE at the unit price of \$ <u>3</u> per LUMP SUM.	200 LS	\$ <u>600</u>
202-04005	CLEAN VALVE BOX at the unit price of \$ <u>209</u> per EACH.	3 EA	\$ <u>627</u>
202-04010	CLEAN INLET at the unit price of \$ <u>209</u> per EACH.	4 EA	\$ <u>836</u>
202-12001	REMOVAL OF CURB STOP (SPECIAL) at the unit price of \$ <u>117</u> per EACH.	1 EA	\$ <u>117</u>
202-12002	REMOVAL OF WATER METER PIT (SPECIAL) at the unit price of \$ <u>295</u> per EACH.	1 EA	\$ <u>295</u>
203-00010	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE) at the unit price of \$ <u>41</u> per CUBIC YARD.	750 CY	\$ <u>30,750</u>
203-00100	MUCK EXCAVATION at the unit price of \$ <u>27</u> per CUBIC YARD.	750 CY	\$ <u>20,250</u>
203-01597	POTHOLING at the unit price of \$ <u>200</u> per HOUR.	40 HR	\$ <u>8,000</u>
207-00205	TOPSOIL at the unit price of \$ <u>38</u> per CUBIC YARD.	135 CY	\$ <u>5,130</u>
208-00034	GRAVEL BAG at the unit price of \$ <u>6</u> per LINEAR FOOT.	75 LF	\$ <u>450</u>
208-00045	CONCRETE WASHOUT STRUCTURE at the unit price of \$ <u>1,100</u> per EACH.	2 EA	\$ <u>2,200</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
208-00050	STORM DRAIN INLET PROTECTION at the unit price of \$ <u>176</u> per EACH.	14 EA	\$ <u>2,464</u>
208-00070	VEHICLE TRACKING PAD at the unit price of \$ <u>1104</u> per EACH.	1 EA	\$ <u>1104</u>
208-00206	EROSION CONTROL SUPERVISOR at the unit price of \$ <u>9,600</u> per LUMP SUM.	1 LS	\$ <u>9,600</u>
210-00810	RESET GROUND SIGN at the unit price of \$ <u>143</u> per EACH.	8 EA	\$ <u>1,144</u>
210-01000	RESET FENCE at the unit price of \$ <u>15</u> per LINEAR FOOT.	100 LF	\$ <u>1,500</u>
210-04010	ADJUST MANHOLE at the unit price of \$ <u>300</u> per EACH.	4 EA	\$ <u>1,200</u>
210-04050	ADJUST VALVE BOX at the unit price of \$ <u>121</u> per EACH.	6 EA	\$ <u>726</u>
212-00048	SOIL PREPARATION (SPECIAL) at the unit price of \$ <u>72</u> per CUBIC YARD.	29 CY	\$ <u>2,088</u>
212-00050	SOD at the unit price of \$ <u>0 85</u> per SQUARE FOOT.	3382 SF	\$ <u>2,874⁷⁰</u>
213-00065	INORGANIC MULCH at the unit price of \$ <u>76</u> per CUBIC YARD.	24 CY	\$ <u>1,824</u>
214-00230	DECIDUOUS TREE (3 INCH CALIPER) at the unit price of \$ <u>702</u> per EACH.	3 EA	\$ <u>2106</u>
214-00508	EVERGREEN TREE (8 FOOT) (BALL AND BURLAP) at the unit price of \$ <u>556</u> per EACH.	3 EA	\$ <u>1,668</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
214-00320	DECIDUOUS SHRUB (2 GALLON CONTAINER) at the unit price of \$ <u>32</u> per EACH.	117 EA	\$ <u>3,744</u>
214-00350	DECIDUOUS SHRUB (5 GALLON CONTAINER) at the unit price of \$ <u>35</u> per EACH.	58 EA	\$ <u>2,030</u>
214-00950	PERENNIALS (5 GAL) at the unit price of \$ <u>20</u> per EACH.	19 EA	\$ <u>380</u>
304-06000	AGGREGATE BASE COURSE (CLASS 6) at the unit price of \$ <u>31</u> per TON.	811 TON	\$ <u>25,141</u>
403-00720	HOT MIX ASPHALT (PATCHING) (ASPHALT) at the unit price of \$ <u>110</u> per TON.	105 TON	\$ <u>11,550</u>
403-33841	HOT MIX ASPHALT (GRADING S) (100) (PG 64-22) at the unit price of \$ <u>82</u> per TON.	534 TON	\$ <u>43,788</u>
403-34871	HOT MIX ASPHALT (GRADING SX) (100) (PG 76-28) at the unit price of \$ <u>103</u> per TON.	130 TON	\$ <u>13,390</u>
411-10255	EMULSIFIED ASPHALT (SLOW SETTING) at the unit price of \$ <u>4</u> per GALLON.	329 GAL	\$ <u>1,316</u>
412-01020	CONCRETE PAVEMENT (10 INCH) (CLASS E) at the unit price of \$ <u>85</u> per SQUARE YARD.	3031 SY	\$ <u>257,635</u>
503-00030	DRILLED CAISSON (30 INCH) at the unit price of \$ <u>300</u> per LINEAR FOOT.	20 LF	\$ <u>6,000</u>
507-00400	BITUMINOUS SLOPE AND DITCH PAVING (ASPHALT) at the unit price of \$ <u>138</u> per TON.	10 TON	\$ <u>1,380</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
603-01185	18 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE) at the unit price of \$ <u>161</u> per LINEAR FOOT.	218 LF	\$ <u>35,098</u>
603-01245	24 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE) at the unit price of \$ <u>118</u> per LINEAR FOOT.	271 LF	\$ <u>31,978</u>
604-00305	INLET TYPE C (5 FOOT) at the unit price of \$ <u>3000</u> per EACH.	3 EA	\$ <u>9,000</u>
604-19105	INLET TYPE R L 5 (5 FOOT) at the unit price of \$ <u>4,100</u> per EACH.	3 EA	\$ <u>12,300</u>
604-30005	MANHOLE SLAB BASE (5 FOOT) at the unit price of \$ <u>2,400</u> per EACH.	4 EA	\$ <u>9,600</u> 4,800
604-39000	MANHOLE SPECIAL at the unit price of \$ <u>2,400</u> per EACH.	2 EA	\$ <u>4,800</u>
607-00001	FENCE (SPECIAL) at the unit price of \$ <u>17</u> per LINEAR FOOT.	100 LF	\$ <u>1,700</u>
608-00006	CONCRETE SIDEWALK (6 INCH) at the unit price of \$ <u>56</u> per SQUARE YARD.	646 SY	\$ <u>36,176</u>
608-00012	CURB RAMP (SPECIAL) at the unit price of \$ <u>129</u> per SQUARE YARD.	137 SY	\$ <u>17,673</u>
609-21010	CURB AND GUTTER TYPE 2 (SECTION I-B) at the unit price of \$ <u>21</u> per LINEAR FOOT.	194 LF	\$ <u>4,074</u>
609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B) at the unit price of \$ <u>27</u> per LINEAR FOOT.	486 LF	\$ <u>13,122</u>
613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC) at the unit price of \$ <u>15</u> per LINEAR FOOT.	390 LF	\$ <u>5,850</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
613-01300	3 INCH ELECTRICAL CONDUIT (PLASTIC) at the unit price of \$ <u>18</u> ⁻ per LINEAR FOOT.	780 LF	\$ <u>14,040</u> ⁻
613-07000	PULL BOX (SPECIAL) at the unit price of \$ <u>490</u> ⁻ per EACH.	12 EA	\$ <u>5,880</u> ⁻
613-10000	WIRING at the unit price of \$ <u>6,798</u> ⁻ per LUMP SUM.	1 LS	\$ <u>6,798</u> ⁻
613-70250	LUMINAIRE HPS (250 WATT) at the unit price of \$ <u>318</u> ⁻ per EACH.	4 EA	\$ <u>1,272</u> ⁻
614-00011	SIGN PANEL (CLASS I) at the unit price of \$ <u>27</u> ⁻ per SQUARE FOOT.	162.75 SF	\$ <u>4,394</u> ²⁵
614-00216	STEEL SIGN POST (2X2 INCH TUBING) at the unit price of \$ <u>19</u> ⁻ per LINEAR FOOT.	147 LF	\$ <u>2,793</u> ⁻
614-70150	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN) at the unit price of \$ <u>683</u> ⁻ per EACH.	8 EA	\$ <u>5,464</u> ⁻
614-70336	TRAFFIC SIGNAL FACE (12-12-12) at the unit price of \$ <u>750</u> ⁻ per EACH.	15 EA	\$ <u>11,250</u> ⁻
614-72855	TRAFFIC SIGNAL CONTROLLER CABINET at the unit price of \$ <u>17,380</u> ⁻ per EACH.	1 EA	\$ <u>17,380</u> ⁻
614-72886	INTERSECTION DETECTION SYSTEM (CAMERA) at the unit price of \$ <u>7,636</u> ⁻ per EACH.	2 EA	\$ <u>15,272</u> ⁻
614-79867	FIRE PREEMPTION UNIT AND TIMER at the unit price of \$ <u>1,831</u> ⁻ per EACH.	3 EA	\$ <u>5,493</u> ⁻

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL at the unit price of \$ <u>5,486</u> per EACH.	1 EA	\$ <u>5,486</u>
614-81135	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-35 FOOT MAST ARM) at the unit price of \$ <u>25,055</u> per EACH.	2 EA	\$ <u>50,110</u>
614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-55 FOOT MAST ARM) at the unit price of \$ <u>32,934</u> per EACH.	1 EA	\$ <u>32,934</u>
614-86105	TELEMETRY (FIELD) at the unit price of \$ <u>3,060</u> per EACH.	1 EA	\$ <u>3,060</u>
614-86239	TRAFFIC SIGNAL CONTROLLER (SOLID STATE) (F-A) (12 PHASE) at the unit price of \$ <u>4,198</u> per EACH.	1 EA	\$ <u>4,198</u>
614-87401	FIBER OPTIC CABLE (SPECIAL) at the unit price of \$ <u>9</u> per LINEAR FOOT.	230 LF	\$ <u>2,070</u>
619-06120	12 INCH DUCTILE IRON PIPE at the unit price of \$ <u>98</u> per LINEAR FOOT.	76 LF	\$ <u>7,448</u>
619-75096	12 INCH GATE VALVE at the unit price of \$ <u>2.34</u> per EACH.	2 EA	\$ <u>468</u>
623-00164	DRIP EMITTER at the unit price of \$ <u>8</u> per EACH.	265 EA	\$ <u>2,120</u>
623-00166	3/4 INCH EMITTER VALVE ASSEMBLY (DRIP VALVE ASSEMBLY) at the unit price of \$ <u>194</u> per EACH.	3 EA	\$ <u>582</u>
623-00186	3/4 INCH FLUSH UNIT (DRIP LINE BLOW-OUT STUB) at the unit price of \$ <u>108</u> per EACH.	4 EA	\$ <u>432</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
623-00204	POP-UP LAWN SPRAY (POP-UP SPRAY HEAD) at the unit price of \$ <u>25</u> per EACH.	42 EA	\$ <u>1,050</u>
623-03108	1 INCH AUTOMATIC CONTROL VALVE (ELECTRIC CONTROL VALVE) at the unit price of \$ <u>184</u> per EACH.	2 EA	\$ <u>368</u>
623-04008	1 INCH QUICK-COUPLER VALVE (QUICK COUPLING VALVE) at the unit price of \$ <u>270</u> per EACH.	1 EA	\$ <u>270</u>
623-50060	3/4 INCH PLASTIC PIPE (POLY DRIP TUBING) (IRRIGATION) at the unit price of \$ <u>1</u> per LINEAR FOOT.	550 LF	\$ <u>550</u>
623-50080	1 INCH PLASTIC PIPE (IRRIGATION) at the unit price of \$ <u>3</u> per LINEAR FOOT.	420 LF	\$ <u>1,260</u>
623-50100	1 1/4 INCH PLASTIC PIPE (IRRIGATION) at the unit price of \$ <u>4</u> per LINEAR FOOT.	115 LF	\$ <u>460</u>
625-00000	CONSTRUCTION SURVEYING at the unit price of \$ <u>17,000</u> per LUMP SUM.	1 LS	\$ <u>17,000</u>
626-00000	MOBILIZATION at the unit price of \$ <u>228,000</u> per LUMP SUM.	1 LS	\$ <u>228,000</u>
626-01000	PUBLIC INFORMATION SERVICES at the unit price of \$ <u>21,800</u> per LUMP SUM.	1 LS	\$ <u>21,800</u>
627-00002	THERMOPLASTIC PAVEMENT MARKING at the unit price of \$ <u>54</u> per SQUARE FOOT.	100 SF	\$ <u>5,400</u>
627-00004	EPOXY PAVEMENT MARKING at the unit price of \$ <u>4</u> per SQUARE FOOT.	808 SF	\$ <u>3,232</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
627-00011	PAVEMENT MARKING PAINT (WATERBORNE) at the unit price of \$ <u>123</u> per GALLON.	31 GAL	\$ <u>3,813</u>
627-30410	PREFORM THERMOPLASTIC PVMT MKG (XWALK-STOP LINE) at the unit price of \$ <u>15</u> per SQUARE FOOT.	883 SF	\$ <u>13,245</u>
629-01004	SURVEY MONUMENT (TYPE 4) at the unit price of \$ <u>225</u> per EACH.	3 EA	\$ <u>675</u>
630-00000	FLAGGING at the unit price of \$ <u>15</u> per HOUR.	3,000 HR	\$ <u>45,000</u>
630-00003	UNIFORMED TRAFFIC CONTROL at the unit price of \$ <u>80</u> per HOUR.	72 HR	\$ <u>5,760</u>
630-00007	TRAFFIC CONTROL INSPECTION at the unit price of \$ <u>35</u> per DAY.	240 DAY	\$ <u>8,400</u>
630-00012	TRAFFIC CONTROL MANAGEMENT at the unit price of \$ <u>470</u> per DAY.	240 DAY	\$ <u>112,800</u>
630-80336	BARRICADE (TYPE 3 M-A) (TEMPORARY) at the unit price of \$ <u>98</u> per EACH.	5 EA	\$ <u>490</u>
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A) at the unit price of \$ <u>25</u> per EACH.	38 EA	\$ <u>950</u>
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B) at the unit price of \$ <u>25</u> per EACH.	11 EA	\$ <u>275</u>
630-80355	PORTABLE MESSAGE SIGN PANEL at the unit price of \$ <u>2,200</u> per EACH.	3 EA	\$ <u>6,600</u>
630-80356	FLASH ARROW PANEL at the unit price of \$ <u>1,500</u> per EACH.	2 EA	\$ <u>3,000</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
630-80360	DRUM CHANNELIZING DEVICE at the unit price of \$ <u>30</u> per EACH.	30 EA	\$ <u>900</u>
630-80364	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN) at the unit price of \$ <u>34</u> per EACH.	30 EA	\$ <u>1,020</u>
630-80380	TRAFFIC CONE at the unit price of \$ <u>4</u> per EACH.	50 EA	\$ <u>200</u>
	TOTAL BASE BID AMOUNT		\$ <u>1,402,052</u> ⁹⁵
700-70016	FUEL COST ADJUSTMENT at the unit price of \$ <u>\$520.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>\$520.00</u>
700-70019	ASPHALT CEMENT COST ADJUSTMENT at the unit price of <u>\$5,700.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>5,700.00</u>
700-70021	ON THE JOB TRAINEE at the unit price of <u>\$525.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>525.00</u>
700-70028	ESB PROGRAM at the unit price of <u>\$7,500.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>7,500.00</u>
700-70072	OBTAIN POWER SOURCE FROM XCEL ENERGY at the unit price of <u>\$10,000.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>10,000.00</u>
700-70380	EROSION CONTROL at the unit price of <u>\$3,500.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>3,500.00</u>
700-70589	ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT at the unit price of <u>\$2,000.00</u> per FORCE ACCOUNT.	1 FA	\$ <u>2,000.00</u>
	TOTAL FORCE ACCOUNTS		\$ <u>29,745.00</u>
	TOTAT BASE BID & FORE ACCOUNTS		\$ <u>1,432,597</u> ⁹⁵

Total Bid Amount of:

ONE MILLION, FOUR HUNDRED, THIRTY-TWO THOUSAND, FIVE HUNDRED, NINETY-
SEVEN DOLLARS AND NINETY-FIVE CENTS
Dollars (\$ 1,432,597.95)

[Total bid amount equals the sum of each estimated cost for item numbers 202-00828 through 700-70589 (One Hundred Fourteen [114] 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 Travelers Casualty & Surety, a corporation of the State of CT, 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%. The Undersigned Bidder agrees that the entire amount of this bid guarantee is to be paid to and become the property of the City as liquidated damages, and not as a penalty, if: (i) the bid is considered to be the best by the City; (ii) the City notifies the Undersigned Bidder that it is the Apparent Low Bidder; and (iii) the Undersigned Bidder fails to execute the Contract in the form prescribed or to furnish the required bond and proofs of insurance, within five (5) days after the date of such notification.

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

Name: None Name: _____
Address: _____ Address: _____


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

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
SIGNAL WORK	12.74	DYNA ELECTRIC
LANDSCAPE	1.57	JDR
JK TRANSPORT	3.04	TRUCKING
K&E STRIPING	2.27	KOLBE STRIPING
PAVING/ASPHALT	4.88	LOYA CONSTRUCTION
PUBLIC INFORMATION	1.38	ZOZO GROUP

(Copy this page if additional room is required.)

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

 DENVER <small>THE MILE HIGH CITY</small>	List of Proposed MWBE or DBE Bidders, Subcontractors, Suppliers (Manufacturers) or Brokers		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				
	City and County of Denver Contract No.: <u>201207581</u>						
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 type="checkbox"/>	Supplier (v)	<input type="checkbox"/>	Manufacturer (v)	<input type="checkbox"/>	Broker (v)
Business Name: <u>Zozo Group</u>							
Address: <u>3100 Downing St</u>		Type of Service: <u>Public Information</u>					
Contact Person: <u>LASHEITA</u>		Dollar Amount: \$: <u>19711.00</u>	Percent of Project: <u>1.42</u>				
<input checked="" type="checkbox"/>	Subcontractor (v)	<input type="checkbox"/>	Supplier (v)	<input type="checkbox"/>	Manufacturer (v)	<input type="checkbox"/>	Broker (v)
Business Name: <u>JK Transport</u>							
Address: <u>PO Box Hudson CO</u>		Type of Service: <u>Trucking</u>					
Contact Person: <u>KATHLEEN FAATZ</u>		Dollar Amount: \$: <u>47697.00</u>	Percent of Project: <u>3.40</u>				
<input type="checkbox"/>	Subcontractor (v)	<input type="checkbox"/>	Supplier (v)	<input type="checkbox"/>	Manufacturer (v)	<input type="checkbox"/>	Broker (v)
Business Name: <u>JDR Company</u>							
Address: <u>34 S Federal Blvd</u>		Type of Service: <u>LANDSCAPING</u>					
Contact Person: <u>MARBEL DEBILES</u>		Dollar Amount: \$: <u>22544.00</u>	Percent of Project: <u>1.62</u>				

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

 DENVER <small>THE MILE HIGH CITY</small>	List of Proposed MWBE or DBE Bidders, Subcontractors, Suppliers (Manufacturers) or Brokers	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.: 201207581

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: Not Applicable	Contact Person:	
Type of Service:	Dollar Amount: \$:	Percent of Project:

MWBE or DBE Prime Bidder

Business Name: Not Applicable		
Address:		Contact Person:
Type of Service:	Dollar Amount: \$:	Percent of Project:

Subcontractors, Suppliers Manufacturers or Brokers (check one box)

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

Business Name: MGC		
Address: 5475 Peoria St., Bldg 4, Ste 109, Denver 80239		Type of Service: Material Supplier
Contact Person: Mitchell Gonzales		Dollar Amount: \$: 51,629.78
		Percent of Project: 3.67
<input type="checkbox"/> Subcontractor (√)	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/> Manufacturer (√)
<input type="checkbox"/> Broker (√)		

Business Name: N/A Loya Construction		
Address: 20 Box 21555 Denver		Type of Service: Asphalt Paving
Contact Person: Yesenia Loya		Dollar Amount: \$: 69,850.00
		Percent of Project: 5.02
<input type="checkbox"/> Subcontractor (√)	<input type="checkbox"/> Supplier (√)	<input type="checkbox"/> Manufacturer (√)
<input type="checkbox"/> Broker (√)		

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

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

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: 2350 E 70th AVE

City, State, Zip Code: Denver CO 80229

Telephone Number of Bidder: 3-286-8500 Fax No. 3-286-9958

Contact Name for this Project: Rick Suer

Social Security or Federal Employer ID Number of Bidder: 84-0988540

Name and location of the last work of this kind herein contemplated upon which the Bidder was engaged:
CDOT SH 177 University C470 Intersection

For information relative thereto, please refer to:

Name: George Warda

Title: Project Manager

Address: 2000 S Holly St

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

Addenda Number 1 Date 10/11/12

Addenda Number _____ Date _____

Addenda Number _____ Date _____


Dated this 18 day of October, 2012

Signature of Bidder:

If an Individual: _____ doing business
as _____.

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

If a Corporation: NEW DESIGN CONSTRUCTION
a COLORADO Corporation,
by: Richard R. Sauer Vice, its President.

Attest:

Secretary (Corporate Seal)

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

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

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

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

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

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

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

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



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 15 % 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): NEW DESIGN Construction

Firm's Representative (Please print): RICHARD SWER

Signature (Firm's Representative): Richard Swer

Title: VICE PRESIDENT

Address: 7350 E 70TH AVE

City: DENVER

State: CO

Zip: 80229

Phone: 3-286-8500

Fax: 3-286-9958

Email: rswer@newdesign
Construction.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, OR
 - Fax: 720-913-1803, OR
 - Hand-Delivery: Office Economic Dev. 1st Fl., "Business Assistance Center (BAC)"
- FOR RFPs: LOIs should be submitted with Proposal.

Contract No.:		Project Name:			
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					
Name of Bidder/Consultant:			Self-Performing: <input type="checkbox"/> Yes <input type="checkbox"/> No		Phone:
Contact Person:		Email:		Fax:	
Address:		City:		State:	Zip:
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					
Name of Certified Firm:			Phone:		
Contact Person:		Email:		Fax:	
Address:		City:		State:	Zip:
Please check the designation which applies to the certified firm.		MBE/WBE ()	SBE ()	DBE ()	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:					
A Copy of the M/WBE, SBE or DBE Letter of Certification must be Attached					
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. <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 this 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.*

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

Select One ✓	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.)
<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, 1 st Floor, Business Assistance Center

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.

COMP-FRM-012 Revised 04-12-13



DENVER
THE MILE HIGH CITY

JOINT VENTURE AFFIDAVIT

N/A

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: _____	
Print Name: _____	Title _____
Signature: _____	Date: _____

Notary Public

County of _____	State of _____	My Commission Expires: _____
Subscribed and sworn before me this _____ day of _____, 20____		Notary Seal
Notary Signature: _____		
Address: _____		

Name of Firm: _____	
Print Name: _____	Title _____
Signature: _____	Date: _____

Notary Public

County of _____	State of _____	My Commission Expires: _____
Subscribed and sworn before me this _____ day of _____, 20____		Notary Seal
Notary Signature: _____		
Address: _____		

Name of Firm: _____	
Print Name: _____	Title _____
Signature: _____	Date: _____

Notary Public

County of _____	State of _____	My Commission Expires: _____
Subscribed and sworn before me this _____ day of _____, 20____		Notary Seal
Notary Signature: _____		
Address: _____		



JOINT VENTURE ELIGIBILITY FORM

N/A

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:		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)

N/A

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)			
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 <u>number</u> of management, administrative, support and non-management employees that will be required to operate the business and indicate whether they will be employees of the SMWBE, non-SMWBE or joint venture.			
	Non- SBE/MBE/WBE/DBE	SBE/MBE/WBE/DBE	Joint Venture
Management			
Administrative			
Support			
Hourly Employees			

N/A

JOINT VENTURE ELIGIBILITY FORM

General Information

Please provide the name of the person who will be responsible for hiring employees for the joint venture.

Who will they be employed by?

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

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-016

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as Principal, and _____, a corporation organized and existing under and by virtue of the laws of the State of _____, and authorized to do business within the State of Colorado, as Surety, are held and firmly bound unto the City and County of Denver, Colorado, as Obligee, in full and just sum of _____ Dollars, (\$ _____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, the said Principal is herewith submitting its bid, dated _____, 20____, for the construction of: **Contract No. 201207581, COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**, as set forth in detail in the Contract Documents for the City and County of Denver, Colorado, and said Obligee has required as a condition for receiving said bid that the Principal deposit specified bid security in the amount of not less than five percent (5%) of the amount of said bid, as it relates to work to be performed for the City, conditioned that in event of failure of the Principal to execute the Contract, for such construction and furnish required Performance and Payment Bond if the contract is offered him that said sum be paid immediately to the Obligee as liquidated damages, and not as a penalty, for the Principal's failure to perform.

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

Signed, sealed and delivered this _____ day of _____, 20____.

ATTEST

Secretary

Principal
By _____
Title _____

Surety
By _____

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

[SEAL]

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

BIDDER/CONTRACTOR/VENDOR/PROPOSER DISCLOSURE FORM

Bidding Entity's/Proposer's Name

Date this form was completed

Address

()
Telephone Number

City, State, Zip Code

Name of Officer/Owner completing this Form

INSTRUCTIONS

1. Section 20-69 of the Denver Revised Municipal Code provides that the public interest is best served by maximum disclosure of political contributions made to candidates seeking election to City office by persons transacting business with the City and County of Denver. This Disclosure Form was devised to insure that City Bidder/Contractor/Vendor/Proposers comply with all applicable requirements of Section 20-69, D.R.M.C.

2. Complete each applicable Section of this Form in accordance with the following instructions and return it to the appropriate City official as directed.

3. If your business entity has previously submitted a Form **and** the information provided in this previously submitted Form **has not changed**, you need only complete Section 6 and return the Form.

4. If your business entity has not previously submitted a Form or any of the information contained in a previously submitted Form **has changed**, you must identify in Section 1 the **name** of **each** of the following for your business entity: (a) any director, (b) any officer, (c) any principal, (d) any owner and (e) any shareholder who owns or controls 5% or more of your entity.

5. If you are required to complete Section 1, you must also **EITHER**:

(A) Identify in Section 2, for each person listed in Section 1, that person's spouse, if any, and any children of that person, under the age of eighteen (18);

OR

(B) Identify in Section 3, any person listed in Section 1 and any spouse or age eighteen (18) or under child of any person listed in Section 1 that made a CONTRIBUTION, as defined in D.R.M.C. 15-32, to any CANDIDATE, as also defined in D.R.M.C. 15-32, during the last five (5) years,

AND

Certify in Section 4 that, except as disclosed in Section 3, no other person listed in Section 1 or any spouse or child under the age of eighteen (18) of any person listed in Section 1 made a contribution to any candidate, as these terms are defined in D.R.M.C. 15-32, during the last five (5) years.

6. And finally, if your bid/contract/purchase order/proposal includes subcontractors, subconsultants or suppliers receiving **more than \$100,000.00** for any work performed, materials provided or services rendered **or** your business entity has a collective bargaining agreement with any union, you must identify each such subcontractor/subconsultant/supplier and each such union in Section 5.

SECTION 1. MUST BE FILLED OUT BY ALL BIDDER/PROPOSERS/CONTRACTORS/VENDORS:

Identify below each individual having the noted relationship with the business entity listed above. Show appropriate letter in the box to the left. A = Officer, B= Director, C = Principal, D = Owner, E= Controller of 5% or more of the stock. If more than one category applies, show in second box.

1. [] [] _____	9. [] [] _____
2. [] [] _____	10. [] [] _____
3. [] [] _____	11. [] [] _____
4. [] [] _____	12. [] [] _____
5. [] [] _____	13. [] [] _____
6. [] [] _____	14. [] [] _____
7. [] [] _____	15. [] [] _____
8. [] [] _____	16. [] [] _____

EITHER FILL OUT SECTION 2 OR SECTION 3 AND SECTION 4 IF APPLICABLE.

SECTION 2. Identify below each individual that is the spouse or a child under the age of eighteen (18) of any individual listed in Section 1 above. Use the first box to designate relationship as follows; F = Spouse, G = Child under 18. Use the second box to identify relationship to person listed in Section 1 above. For example, if on Line 3 of Section 1 the name of John Doe is listed and his spouse, Jane Doe is listed on line 7 of Section 2, the number 3 should be placed in the second box of line 7 of Section 2.

1. [] [] _____	9. [] [] _____
2. [] [] _____	10. [] [] _____
3. [] [] _____	11. [] [] _____
4. [] [] _____	12. [] [] _____
5. [] [] _____	13. [] [] _____
6. [] [] _____	14. [] [] _____
7. [] [] _____	15. [] [] _____
8. [] [] _____	16. [] [] _____

SECTION 3. DISCLOSURE OF CONTRIBUTION BY PERSONS LISTED IN SECTION 1 AND DISCLOSURE OF ANY SPOUSE OR CHILD UNDER THE AGE OF EIGHTEEN (18) OF A PERSON LISTED IN SECTION 1 WHO HAS MADE A CONTRIBUTION:

List the names of any person listed in Section 1 who has made a contribution and the name of any spouse or child under the age of eighteen (18) of any person listed in Section 1 who has made a contribution during the last five (5) years. Use the first box to identify the person: A = Officer, B = Director, C = Principal, D = Owner, E = Controller of 5% or more of the stock, F = Spouse, G= Child under 18, use the second box to identify relationship of spouse or child listed to person listed in Section 1.

1. [] [] _____	9. [] [] _____
2. [] [] _____	10. [] [] _____
3. [] [] _____	11. [] [] _____
4. [] [] _____	12. [] [] _____
5. [] [] _____	13. [] [] _____
6. [] [] _____	14. [] [] _____
7. [] [] _____	15. [] [] _____
8. [] [] _____	16. [] [] _____

SECTION 4. BIDDER/CONTRACTOR/VENDOR/PROPOSER CERTIFIED STATEMENT IN LIEU OF DISCLOSURE. I hereby certify that, except as listed above, no officer, director, shareholder who owns or controls 5% or more of the business entity, principal, owner or his or her spouse or child under eighteen years of age has made a contribution, as defined in Section 15-32 D.R.M.C., or a contribution in kind, as defined at Section 15-32 D.R.M.C., to a candidate, as defined at Section 15-32 D.R.M.C., during the last five years.

 Authorized Signature of Officer/Owner of Business entity

SECTION 5. DISCLOSURE OF SUBCONTRACTORS, SUPPLIERS AND UNIONS. List the names of any unions with which your entity has a collective bargaining agreement and the names of any subcontractors or suppliers whose share of the amount to be paid by the City for this contract, purchase order or proposal will exceed One Hundred Thousand Dollars (\$100,000.00), identifying them in the box provided as follows: H = Subcontractor, I = Supplier, J = Union.

- | | |
|------------------|-------------------|
| 1. [] [] _____ | 9. [] [] _____ |
| 2. [] [] _____ | 10. [] [] _____ |
| 3. [] [] _____ | 11. [] [] _____ |
| 4. [] [] _____ | 12. [] [] _____ |
| 5. [] [] _____ | 13. [] [] _____ |
| 6. [] [] _____ | 14. [] [] _____ |
| 7. [] [] _____ | 15. [] [] _____ |
| 8. [] [] _____ | 16. [] [] _____ |

SECTION 6. CERTIFIED STATEMENT OF PREVIOUS DISCLOSURE.

I hereby certify that the information required to be disclosed by Section 20-69(d) D.R.M.C. [i.e. the information contained in responses to Sections 1, 2, 3, 4, 5 and 6 of this Form] for _____ has previously been furnished
 Name of Entity

to the City and County of Denver and is on file with the City Clerk and further certify that such information is current as of the date indicated below.

 Authorized Signature of Officer/Owner of
 Business Entity

 Date

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

Project #

201207581

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

NEW DESIGN CONST

By

Richard Sauer

Date

10/18/12

Title

VICE PRESIDENT

2nd Contractor's firm or company name (if joint venture)

By

Date

Title

COLORADO DEPARTMENT OF TRANSPORTATION ANTI-COLLUSION AFFIDAVIT	Project No.: <u>201207581</u> Location: <u>COLFAX/GALAPAGO/WELTON</u>
---	--

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:

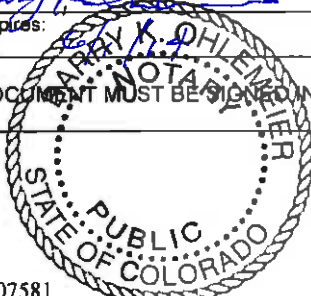
1. The price(s) and amount of this bid have been arrived at independently, without consultation, communication or agreement for the purpose or with the effect of restricting competition with any other firm or person who is a bidder or potential prime bidder.
- 2A. Neither the price(s) nor the amount 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: <u>NEW DESIGN CONST</u>	By: <u>[Signature]</u>	Date: <u>10/18/12</u>
	Title: <u>VICE PRESIDENT</u>	
2 nd Contractors firm or company name:	By:	Date:
	Title:	

Sworn to before me this NINETEENTH day of OCTOBER 2012

Notary Public: <u>[Signature]</u>	
My commission expires:	
NOTE: THIS DOCUMENT MUST BE SIGNED IN INK.	



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

Project No.:

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:	By: <i>Richard E. Quinn</i>	Date: <i>10/18/12</i>
<i>NEW DESIGN CONST</i>	Title: <i>VICE PRESIDENT</i>	
2 ND Contractors firm or company name:	By:	Date:
	Title:	

Form 621

**COLORADO DEPARTMENT OF TRANSPORTATION
 BIDDERS LIST DATA and UNDERUTILIZED
 DBE (UDBE) BID CONDITIONS ASSURANCE**

Project #:
 Location: COLFAX / GAIAPAGO / WELTON

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

Name of firm submitting Bid/Quote	Certified DBE firm?		Work item(s) description	Firm being used?		
	Yes	No		Yes	No	Maybe
1. Dynalectric		X	Signals			X
2. Kolba Stepping		X	Pavement Marking			X
3. JDR	X		Landscaping			X
4. Martin Marietta		X	Asphalt Pavement			X
5. Dalco		X	Material Supplier			X
6. 2020 Group	X		Public Information			X
7. Loya Const	X		Asphalt Pavement			X
8. JK Transport	X		Trucking			X
9. D+H Equipment	X		Asphalt Pavement			X
10. Ready Mix		X	Concrete Supplier			
11. W.L.		X	Traffic Signals			
12. CMC		X	Material Supplier			
13. Bramman		X	Concrete Supplier			
14. JFS&A		X	Survey			

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

SECTION II: UNDERUTILIZED DBE (UDBE) PARTICIPATION COMMITMENT

- 1) Total eligible Underutilized DBE (UDBE) percentage amount from Box A below: **15.13%**
 2) Will your company's Underutilized DBE (UDBE) participation commitment meet the contract goal? Yes No
 3) 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. ZOZO Group		Public Information	1 .42%
2. JK Trans Det		Trucking	3 .40%
3. Loya Construction		Asphalt Pavement	5 .02%
4. JDE		Landscape	1 .62%
5. MBC		Signal.	3 .67%
BOX A: TOTAL ELIGIBLE UDBE PERCENTAGE AMOUNT (Round to nearest hundredth)			15.13%

* 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 #718s 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: NEW DESIGN Construction	Date: 10/18/12
Company Officer Signature: Rubun DeWan	Title: VICE PRESIDENT

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLICWORKS

ADDENDUM NO. 1

Contract No. 201207581

**COLFAX/GALAPAGO/WELTON INTERSECTION
IMPROVEMENTS**

September 24, 2012

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

CONTRACT NO. 201207581
PROJECT NAME: COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

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

BID DOCUMENT PACKAGE

TECH SPECS/DRAWINGS

- Geotechnical Investigation Report

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


(For L. Thomas) Lesley B. Thomas
City Engineer

10-11-12

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: _____



Yeh and Associates, Inc.

Consulting Engineers & Scientists

**GEOTECHNICAL INVESTIGATION REPORT
WEST COLFAX AVENUE AND WELTON STREET
DENVER, COLORADO**

**PROJECT NO. 29-228
August 16, 2010**

Prepared For:

**Stantec Consulting, Inc.
Attn: Paul Moreau, PE
2000 South Colorado Boulevard
Suite 2-300
Denver, Colorado 80222**

Prepared By:

**Yeh and Associates, Inc.
5700 East Evans Avenue
Denver, Colorado 80222
Phone: 303-781-9590
Fax: 303-781-9583**



Yeh and Associates, Inc.

Consulting Engineers & Scientists

August 16, 2010

Project No. 29-228

Stantec Consulting, Inc.
2000 South Colorado Boulevard, Suite 2-300
Denver, Colorado 80222

Attn: Paul Moreau, PE

Subject: Geotechnical Investigation Report, Intersection Reconstruction, Welton Street and West Colfax Avenue, Denver, Colorado

Dear Mr. Moreau:

Yeh and Associates is pleased to present the results of our geotechnical investigation for the proposed project. Our work consisted of subsurface exploration, laboratory testing, engineering analysis and preparation of this report and was performed in general accordance with our proposal.

The subsurface conditions at the site consisted of silty sand fill. Based on the site conditions, proposed construction and our engineering analysis, we believe the new pavement on Welton Street can be a full depth asphalt section while the pavement on West Colfax Avenue can be a Portland cement concrete section. Where patches are needed for the pavement, matching the existing pavement section is recommended. Our design and construction recommendations are presented in the report.

We appreciated the opportunity to be of service to you during this phase of the project and look forward to assisting you during the final design and construction phases. If you have any questions regarding this report or need additional information or services, please feel free to contact the undersigned in our Denver office.

YEH AND ASSOCIATES, INC.


Jere A. Strickland, P.E.
Senior Project Manager




Robert F. LaForce, P.E.
Senior Materials Manager

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GEOTECHNICAL INVESTIGATION REPORT

INTRODUCTION

This report contains the results of our geotechnical investigation for the proposed replacement of the intersection of West Colfax Avenue and Welton Street in Denver, Colorado. A site map showing the work area and surrounding areas is included as Figure 1.

Our services were to evaluate the subsurface and existing pavement conditions of the intersection and provide recommendations for the pavement design for replacement or rehabilitation of the intersection pavement and for the possible addition of a pocket park.

The recommendations contained in this report are based upon our understanding of the existing intersection, the results of field and laboratory testing, engineering analyses and our experience with similar soil conditions and sites.

PROPOSED CONSTRUCTION

The reconstruction of the intersection of Welton Street and Colfax Avenue will include the realignment of the intersection, new turn lanes on Colfax to Welton, extension of the fire station parking lot and possible construction of a small park or hardscape area. The new alignment will create an intersection that is easier to navigate.

SITE EXPLORATION

The scope of the services performed for this project included site reconnaissance by a representative of Yeh and Associates, a subsurface exploration, laboratory testing and engineering analysis.

A total of 2 test borings were drilled on November 24, 2009 to depths of about 5 feet below existing site grade at the approximate locations shown on the Bore Hole Location Plan. The borings were drilled within the proposed intersection realignment in proposed pavement areas. The borings were completed in a two step system. First the asphalt and concrete pavement was sampled using a core drill to allow for inspection of the pavement section. Second the underlying soil was hand-augered and representative bulk samples of the soil were collected. The borings were advanced with a 6-inch hand auger that was also used to collect samples.

The borings were located in the field by pacing from existing site features. The accuracy of boring locations should only be assumed to the level implied by the method used.

Logs of subsurface conditions were recorded for each boring by our representative during the drilling operations. Representative bulk samples of subsurface materials were obtained from the borings.

Relative density or consistency of the materials encountered was estimated by our representative during hand-augering of the soil. The estimates are based on the level of difficulty encountered when augering the sample, considering the type of soil.

No groundwater was encountered at the time of site exploration. The borings were backfilled and the pavement core hole packed with asphalt patch upon completion.

LABORATORY TESTING

Samples retrieved during the field exploration were returned to the laboratory for observation by the project geotechnical engineer and were classified both in accordance with the Unified Soil Classification System and the AASHTO Classification System. An applicable program of laboratory testing was developed to determine engineering properties of the subsurface materials. Following the completion of the laboratory testing, the field descriptions were confirmed or modified as necessary and boring logs were prepared. These logs are presented in Appendix A.

Laboratory test results are presented in Appendix B. These results were used for the geotechnical engineering analyses and the development of pavement and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable local or other accepted standards.

The soil samples were tested for the following engineering properties:

- Water content
- Dry density
- Grain size
- Plasticity index
- R-value
- Water soluble sulfates
- Plant nutrient analysis

SITE CONDITIONS

Currently the site is occupied by the city streets and a small private parking lot. The borings were located in the right-hand parking lane reserved for Denver Fire Department (DFD) vehicles. The parking lot is asphalt paved and is the only visible extent of development for the property however, no historical research was performed. The site was bounded on the north by a parking garage, on the east by a vocational school, on the south by the parking lot and Colfax Avenue, and on the west by DFD Station 1. Abandoned buried utilities were indicated as being present during the utility clearance at the site, but locations and depths were unknown. The ground surface was very gently sloping to the west. No vegetation was present on Welton Street, however, a landscaped island is present on Colfax in the area of the proposed turn lanes. Site drainage was generally in the form of sheet flow directed by the roadway crown to the gutters and storm sewer inlets.

Subsurface Conditions

As presented on the boring logs, the surface material consisted of asphalt pavement overlying concrete pavement ranging in total depth from 0.9 feet to 1.2 feet underlain by a sand fill subgrade soils extending to 5 feet in depth. Bedrock material was not encountered in the borings.

Field and Laboratory Test Results

Our field geologist estimated that the silty sand fill was loose to medium dense in relative density. Standard property testing was performed in the laboratory on samples from the borings. Test results are summarized on Table I in Appendix B. The subgrade soils have an American Association of State Highway and Transportation Officials (AASHTO) classification of A-1-b and A-2-4 with a group index of 0 and are considered good subgrade material.

An R-value was performed on a composite sample of the subgrade materials. The laboratory test indicated an R-value of 37, which was used in our design.

Groundwater Conditions

Groundwater was not observed in the test borings at the time of field exploration. The holes were backfilled and patched after the drilling was completed as required by the permit. These observations represent groundwater conditions at the time of the field exploration, and may not be indicative of other times or at other locations. Groundwater conditions can change with varying seasonal, irrigation and weather conditions and other factors.

CONCLUSIONS AND RECOMMENDATIONS

As the majority of the proposed intersection is currently paved with an asphalt surface layer, we understand that the reconstruction of the intersection will generally be accomplished by removal of the pavement sections and constructing new pavement throughout Welton and Colfax. The replacement pavement section proposed for Colfax is a Portland cement concrete (PCC) pavement with Welton Street using an asphalt pavement to match the existing pavement surface and for ease of construction.

Traffic Loading

From the traffic counts provided for 2007, West Colfax Avenue has an average daily traffic count of 30,400 vehicles. The east bound turn lanes from West Colfax to Welton Street have about 48 percent of the mainline traffic volume during peak hours. The Colorado Department of Transportation (CDOT) traffic data indicates the design-hour traffic count is about 8 percent of the total daily traffic count. The traffic mix from the CDOT information indicates a 3.4 percent truck mix. The Welton Street traffic was estimated by using 48 percent of the Colfax mainline from CDOT. The 48 percent was estimated by using the peak traffic counts provided for the turning lanes onto Welton and the Colfax mainline traffic. In addition to the CDOT traffic information, the RTD bus routes were reviewed and it was estimated that 230 busses pass through the intersection on the Colfax mainline and 82 busses turn onto Welton daily. Denver Public Schools (DPS) were also contacted and they indicated 10 busses per day on Welton Street and 8 busses per day on Colfax Avenue. Using the CDOT traffic counts, a 48 percent traffic onto Welton, the RTD and DPS bus loadings and the Metropolitan Government Pavement Engineers Council (MGPEC) load equivalency factors for the vehicles, the 18-kip equivalent single axial loading (ESAL) for a 20 year design life was calculated for each roadway. As the RTD bus loading is the greatest factor in the ESAL calculation and the busses typically stay in the right lane a conservative lane factor of 0.6 was used. The ESAL for Colfax Avenue was estimated to be 8,742,172 and the Welton Street ESAL was estimated to be 3,790,509.

The parking lot for the DFD station has about 20 parking spaces and the reconstruction will add another 13 parking spaces. Due to the size and configuration of the parking lot, it is anticipated that the vehicular traffic will generally be confined to cars and some single unit trucks. It is also anticipated that the traffic turnover in the lot will be low. Therefore, the ESAL for the parking lot is estimated to be less than 10,000.

Pavement Design and Construction

Based on our conversations with personnel at the City and County of Denver, this type of pavement construction would require the new patch areas to match the existing sections or provide the design section of 9.5 inches of full depth asphalt.

To match the existing pavement section, the thickness of both the asphalt and Portland cement concrete pavement were taken as equivalent. The thickness of the overall pavement section for Welton Street was 11 inches and 14 inches in borings P-1 and P-2, respectively. No pavement cores were obtained from Colfax in the project area, however, Yeh’s work on several other projects along Colfax have indicated the pavement thickness on Colfax is up to 16 inches in the vicinity of the project.

As reconstruction of the pavements on both Colfax and Welton is proposed, a new pavement section design was performed for the roadways. Using the ESALs above and a design R-value of 37, the pavement sections were calculated using the MGPEC design program. Due to the heavy bus loading, a composite section for the asphalt pavement was not considered. For the parking lot the CAPA and ACI pavement recommendations for a lightly loaded parking lot were used. The recommended pavement sections are:

Recommended Pavement Sections

Roadway Section	Full Depth Asphalt Thickness (inches)	PCC Thickness (inches)
West Colfax Avenue	-	10.0
Welton Street	12.0	8.5*
DFD Station Parking Lot	5.0	5.0

*This section is less than the minimum patch section required by the City and County of Denver. Approval of this section would be needed.

The MGPEC design program does not recommend a full depth asphalt section for asphalt sections generally greater the 10 inches. For these situations, MGPEC suggests considering subgrade improvement to reduce the asphalt section. For this intersection, it is the traffic loading not the subgrade that is controlling the design section, therefore, a full depth asphalt section is presented. The pavement design calculations are presented in Appendix C.

The asphalt pavement mix should meet the City and County of Denver requirements and should be approved by the City prior to placement. Placement and compaction of the asphalt and subgrade should conform to the City’s standard specifications.

Earthwork

The following presents recommendations for site preparation, subgrade preparation and placement of engineered fills on the project.

Earthwork on the project should be observed and evaluated by Yeh and Associates. The evaluation of earthwork should include observation and testing of engineered fills, subgrade preparation, and other geotechnical conditions exposed during the construction of the project.

Site Preparation

Strip and remove existing pavements and other deleterious materials from the park or hardscaped areas and remove vegetation and roots from the proposed turn lanes to a depth of at least 5 feet. All exposed surfaces should be free of mounds and depressions, which could prevent uniform compaction.

Stripped materials consisting of asphalt or concrete should be removed from the site and recycled if possible. Reuse of these materials as subbase material is possible, however, given the anticipated small quantity of the materials, on-site processing of the materials for reuse does not appear practical. Vegetation and other deleterious materials should be removed from the site or processed for use in planted areas.

All exposed areas that will receive fill, once properly cleared, should be scarified to a minimum depth of 8 inches, conditioned to near optimum moisture content and compacted.

The intersection is in a historically developed area of Denver. We understand that old trolley rails likely exist in West Colfax Avenue. Previous work by CDOT in Colfax has encountered trolley rails, cobblestone pavement and multiple pavement overlays. Therefore, the subsurface pavement and subgrade conditions could vary significantly from those encountered in our limited exploration.

Based upon the subsurface conditions encountered, subgrade soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade may be affected by the proximity to existing utilities, drainage, precipitation, repetitive construction traffic and other factors. If unstable conditions are encountered or develop during construction, stability may be improved by scarifying and drying the subgrade soils. Use of fly ash, kiln dust, cement or geotextiles could also be considered as stabilization techniques.

Subgrade Preparation

Subgrade soils beneath exterior slabs, hardscaping and beneath pavements should be scarified, moisture conditioned and compacted to a minimum depth of 8 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction. The subgrade soils within the private parking lot were not evaluated by this investigation and therefore, could vary from the conditions encountered on Welton Street.

Fill Materials and Placement

Clean on-site soils or approved imported materials may be used as fill material. Imported soils (if required) should be granular soils with no more than 25 percent passing the No. 200 sieve and be non-plastic in nature. Import fill material should be reviewed by the geotechnical engineer prior to importing to the site.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce a uniform fill with the recommended moisture contents and densities throughout the lift. Recommended compaction criteria for engineered fill is 95 percent of the maximum dry density (ASTM D1557). On-site sands and/or imported soils should be compacted within a moisture range of 3 percent below to 3 percent above optimum unless modified by the project geotechnical engineer.

Excavation and Trench Construction

Based on the nature of the project, relocation or installation of utilities is not anticipated, therefore, no deep excavations are expected during construction. All excavations must comply with the applicable local, State, and Federal safety regulations, and particularly with the excavation standards of the Occupational Safety and Health Administration (OSHA). Construction site safety, including excavation safety, is the sole responsibility of the Contractor as part of its overall responsibility for the means, methods, and sequencing of construction operations.

Surface Drainage

Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility excavations and beneath pavements, slabs and hardscape features should be prevented during construction. Planters and irrigated landscaped features that could introduce water in areas adjacent to pavements will require mitigation measures to improve pavement performance.

Over-watering of landscape areas adjacent to pavements can seriously affect the subgrade materials and the long term performance of the pavements. Therefore, we recommend that an irrigation schedule be developed in order to prevent over-watering of the landscaping. The amount of watering should be regulated and scheduled to provide only enough water to sustain life and promote growth of the landscaping yet prevent saturation of the subsoils. This may require a greater amount of landscape maintenance.

Landscaping

A sample of the subgrade materials was submitted for laboratory analysis of plant nutrients. The results of the laboratory analysis are included in Appendix B. Based on the results of the analysis, it appears that the soils will require some supplements to improve plant performance. The results should be reviewed by a landscape designer for final recommendations based on the proposed planting.

GENERAL COMMENTS

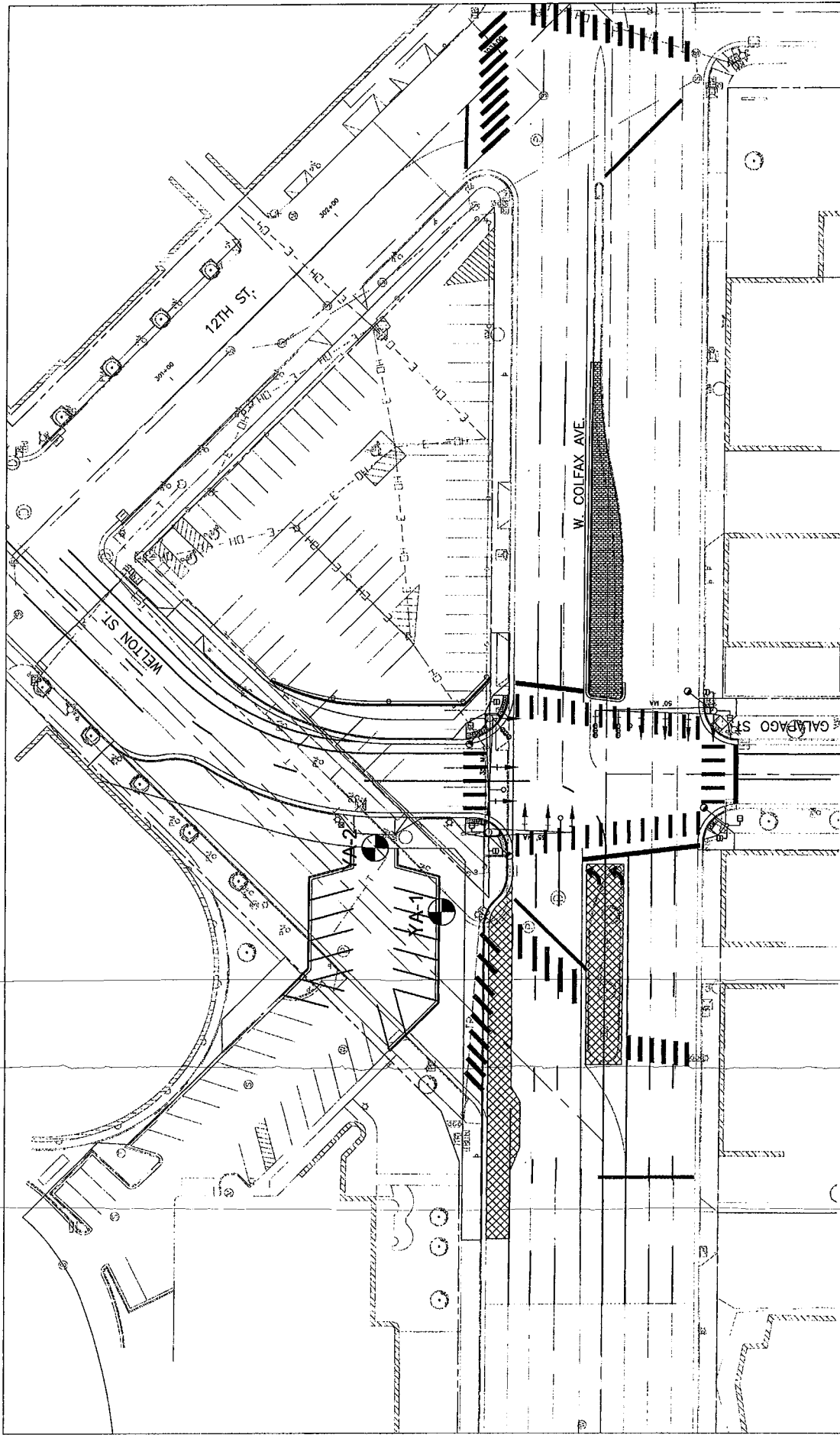
The analyses and recommendations presented in this report are based upon our data obtained from the borings at the indicated locations, field observations, laboratory testing, our understanding of the proposed construction and other information discussed in this report. It is possible that subsurface conditions may vary between or beyond the points explored. The nature and extent of such variations may not become evident until construction. If variations appear, we should be contacted immediately so we can review our report in light of the variations and provide supplemental recommendations as necessary. We should also review the report if the scope of the proposed construction, including the proposed surfacing, finished elevations or site feature locations, change from those described in this report. The conclusions and recommendations contained in this report shall not be considered valid unless Yeh and Associates reviews the changes and either verifies or modifies the conclusions of this report in writing.

The scope of services for this project did not include, specifically or by implication, any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions or biological conditions. If the owner is concerned about the potential for such contamination, conditions or pollution, other studies should be undertaken.

We have prepared this report for the exclusive use of Stantec Engineering for the proposed intersection reconstruction in Denver, Colorado. The report was prepared in substantial accordance with the generally accepted standards of practice for geotechnical engineering as exist in the site area at the time of our investigation. No warranties, express or implied, are intended or made. The recommendations in this report are based on the assumption that Yeh and Associates will conduct an adequate program of construction testing and observation to evaluate compliance with our recommendations.

Adequate testing and observation is essential to successful and economical completion of a construction project. Testing and observation allows us to verify that our recommendations are being followed. They also make it possible to identify varied conditions that require us to modify our recommendations. Construction testing and observation should be scheduled in advance so that our personnel can plan to be available for the work. It is also desirable that we receive a set of project plans and specifications at the time our work is first scheduled.

This report may be used only by the Client, and only for the purposes stated. Land use, site conditions (both on- and off-site), or other factors may change over time, so that additional investigation or revision of our recommendations may be required with the passage of time. It is the Client's responsibility to see that all parties in the design of this project are made aware of this report in its entirety. Any party other than the Client who wishes to use this report must notify Yeh and Associates of such intended use. In general, the information developed by this investigation is not appropriate for construction estimating and planning. The use of information contained in this report for bidding purposes shall be at the Contractor's option and risk. Based on the intended use of the report by others, we may require that additional work be performed and a supplemental report be issued. Noncompliance with these requirements by the Client or anyone else will release Yeh and Associates from any liability resulting from the use of this report by an unauthorized party. The cost of our work to meet with the other users and/or perform additional investigations is not included as part of this investigation.



Bore Hole Location

Note:
Bore locations are approximate,
holes were not surveyed.



Y&A and Associates, Inc.
Consulting Engineers & Planners
1000 North 10th Street
Denver, Colorado 80202
Phone: (303) 733-8888 Fax: (303) 733-8889

DRAWN BY: JAM
CHECKED BY: JAS
DESIGNED BY: GWATKINS CONSULTING INC
PROJECT NUMBER: 2002B
SCALE: AS SHOWN
DATE: 11/24/02
VERT: JAM

DATE ISSUED: _____
DATE EMBROID: _____
PROJECT: COLFAX AVE AND WELTON ST
FIGURE: 1

.....
APPENDIX A
Boring Logs



YEH AND ASSOCIATES, INC.
 GEOTECHNICAL ENGINEERING CONSULTANTS

Project: Colfax & Welton

Project Number: 29-228

Date:

Boring: P-1

Sheet 1 of 1

Boring Began: 11/24/2009
 Drilling Method: Hand Auger
 Drill:
 Driller:

Completed: 11/24/2009
 Drill Bit:
 Casing:
 Weather:

Total Depth: 5.0 ft
 Ground Elevation:
 Location:
 Coordinates: N: E:

Logged By: T. Hansen
 Final By: T. Hansen
 Inclination: Vertical

Ground Water Notes:

Depth	▽	Dry	-	-	-
Date		11/24/09	-	-	-
Time		-	-	-	-

Elevation (feet)	Depth (feet)	Run / Sample Type	Recovery (%)	Rock		Soil Samples		Lithology	Material Description	Field Notes and Lab Tests
				RQD		Blows per 6 in	N			
									0.0 - 0.9 ft. Asphalt/Concrete Pavement 11 inches.	
									0.9 - 5.0 ft. silty SAND FILL, dark brown, moist, loose to medium dense.	
	5								Bottom of Hole at 5.0 ft.	MC= 16.5 % #200= 33 % LL= NV PL= NP PI= NP AASHTO: A-2-4 (0) USCS: SM
	10									
	15									

BORING LOG 29-228 COLFAX & WELTON.GPJ YEH ASSOCIATES.GDT 3/16/10



Boring Began: 11/24/2009

Completed: 11/24/2009

Total Depth: 5.0 ft

Drilling Method: Hand Auger

Drill Bit:

Ground Elevation:

Drill:

Casing:

Location:

Driller:

Weather:

Coordinates: N: E:


Logged By: T. Hansen

Ground Water Notes:

Final By: T. Hansen

Inclination: Vertical

Depth	▽	Dry	-	-	-
Date		11/24/09	-	-	-
Time		-	-	-	-

Elevation (feet)	Depth (feet)	Run / Sample Type	Recovery (%)	Rock	Soil Samples		Lithology	Material Description	Field Notes and Lab Tests
				RQD	Blows per 6 in	N			
								0.0 - 1.2 ft. Asphalt/Concrete Pavement 14 inches.	
								1.2 - 5.0 ft. sandy SILT FILL, dark brown brown, moist, loose to medium dense.	
	5							Bottom of Hole at 5.0 ft.	MC= 10.7 % #200= 14 % LL= NV PL= NP PI= NP AASHTO: A-1-b (0) USCS: SM
	10								
	15								

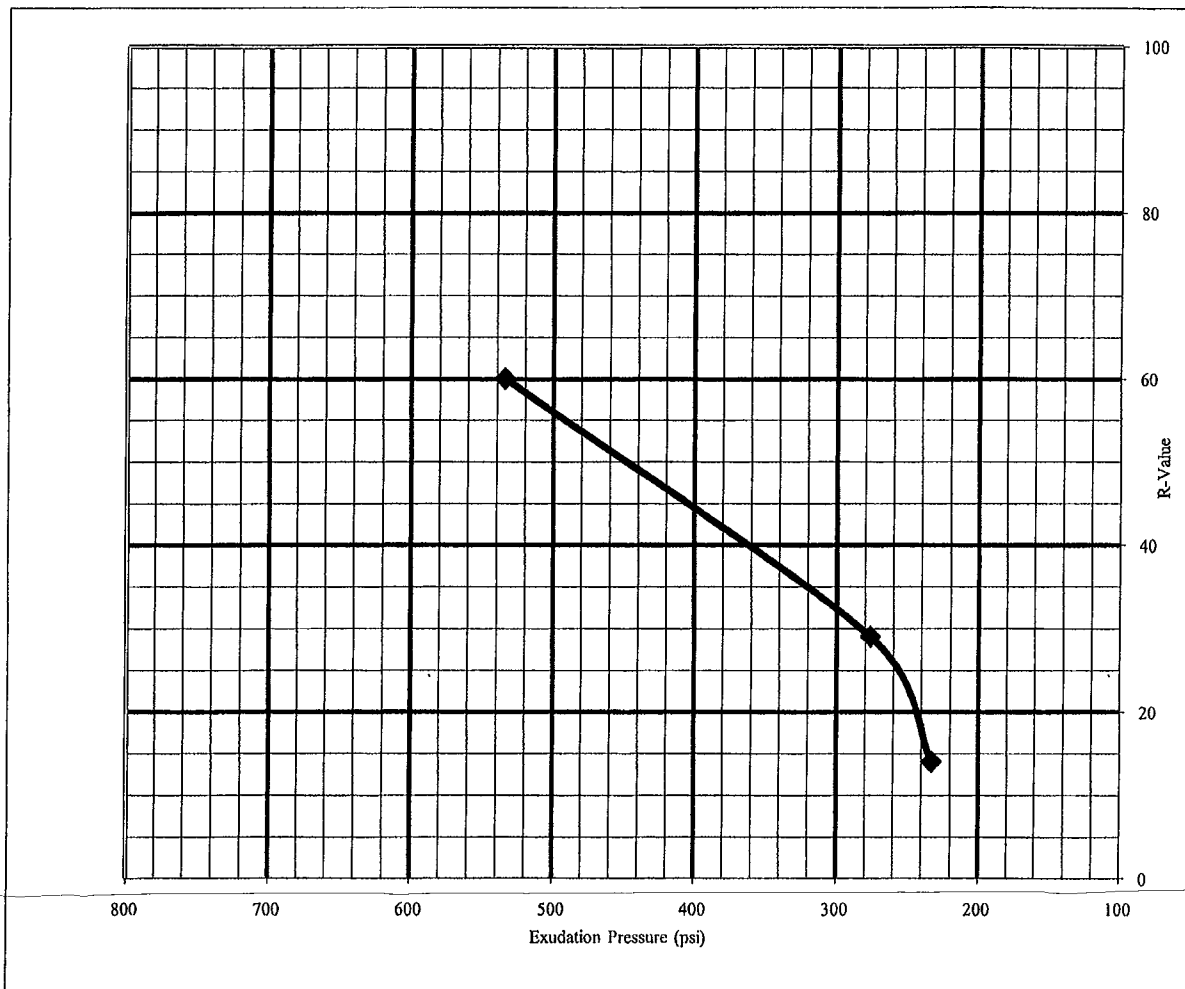
..... **APPENDIX B**
Laboratory Test Results

YEH AND ASSOCIATES, INC

5700 East Evans Ave
Denver CO, 80222

Project Number: 28 - 228
Sample Id: Mix
Soil Description: silty SAND

Project Name: Colfax and Welton
Depth: 0 - 5
Classification: SM / A-2-4(0)



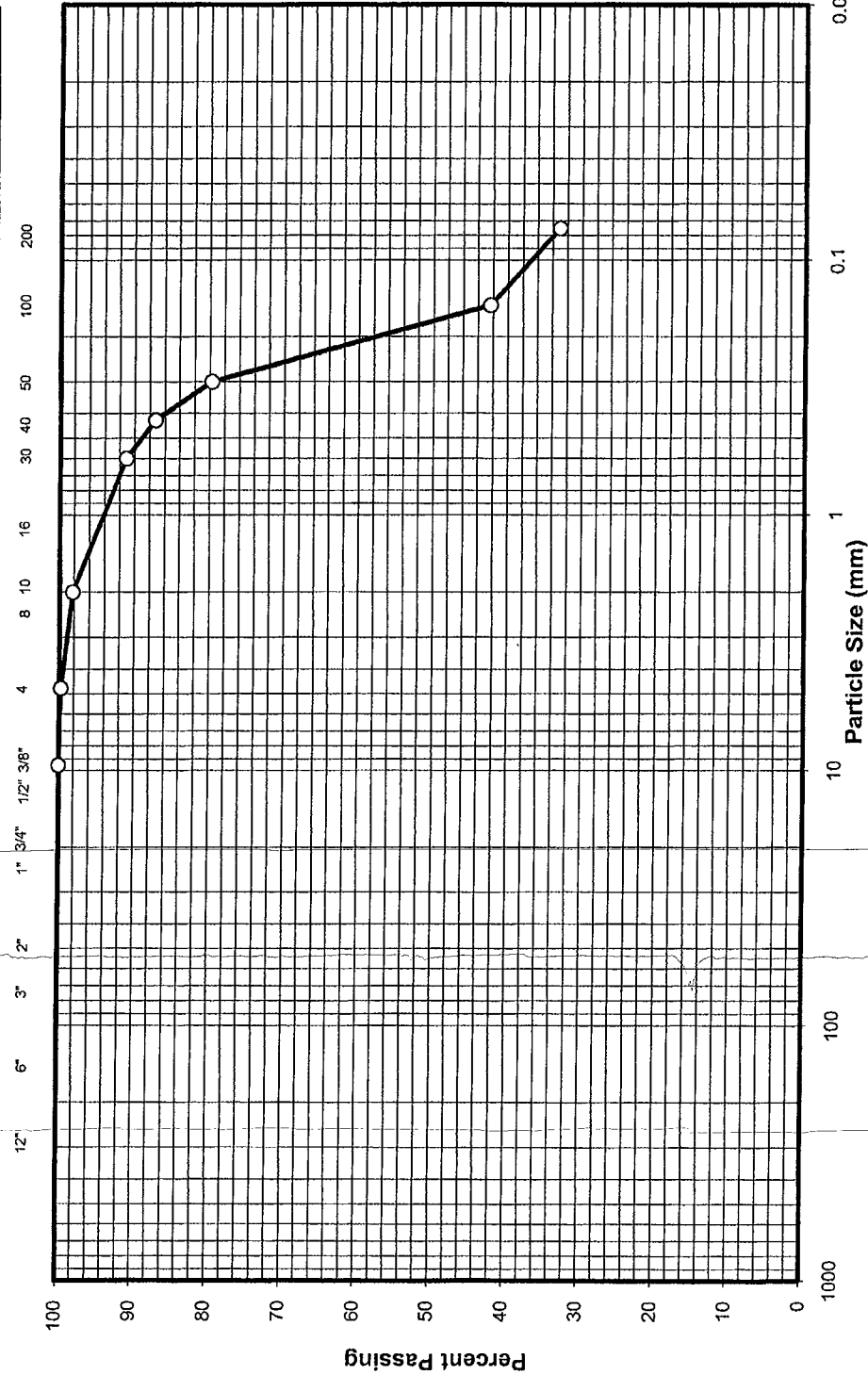
R-Value @ Exudation Pressure 300 psi =

37

Tested by: M.A	Check By: SY
Exudation Pressure (psi)	R-Value
534	60
276	29
233	14

Sieve Analysis	
Sieve Opening in Inches	U.S. Standard Sieves
12" 6" 3" 2" 1" 3/4" 1/2" 3/8"	200 100 50 30 20 10 8 4

Sieve Size	%
3"	-
2 1/2"	-
2"	-
1 1/2"	-
1"	-
3/4"	-
1/2"	-
3/8"	100
#4	100
#10	98
#40	87
#200	33

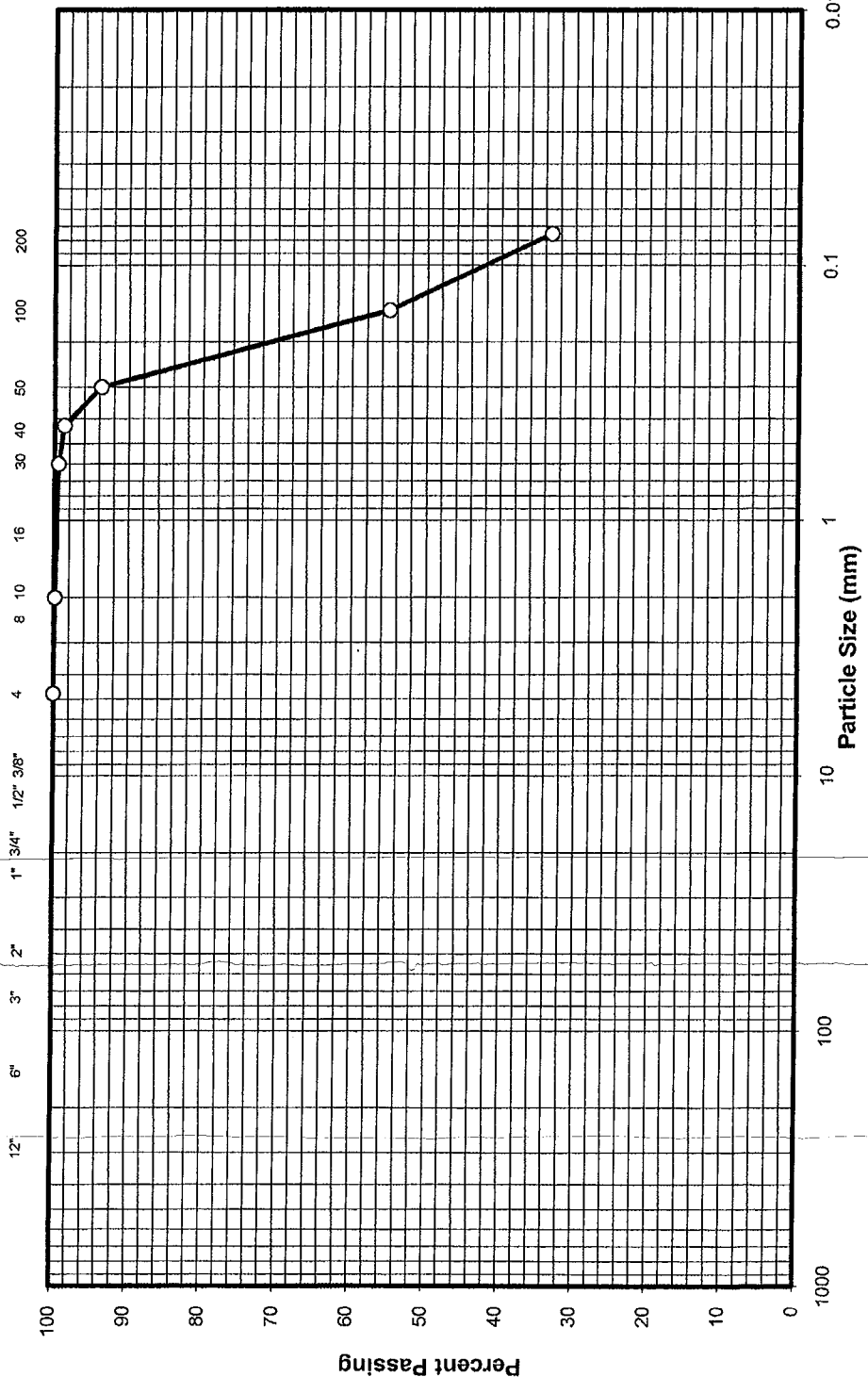


Yeh & Associates, Inc. Geotechnical Engineering Consultants	
SIEVE ANALYSIS	
Drawn By: MA	Project No.: 29 - 228
Checked By: SY	Figure No.: -
Date: 12/10/09	

Gravel (%)	0	LL	NV	Project Name:	Colfax and Welton
Sand (%)	67	PL	NP	Sample ID:	Mix
Fines (%)	33	PI	NP	Sample Depth (ft.):	5
Sample Description: SM / A - 2 - 4 (0)					

Sieve Analysis		Hydrometer Analysis
Sieve Opening in inches	U.S. Standard Sieves	Size of Particles in mm

Sieve Size	% Passing
3"	-
2 1/2"	-
2"	-
1 1/2"	-
1"	-
3/4"	-
1/2"	-
3/8"	-
#4	100
#10	100
#40	99
#200	33



Yeh & Associates, Inc.
Geotechnical Engineering Consultants

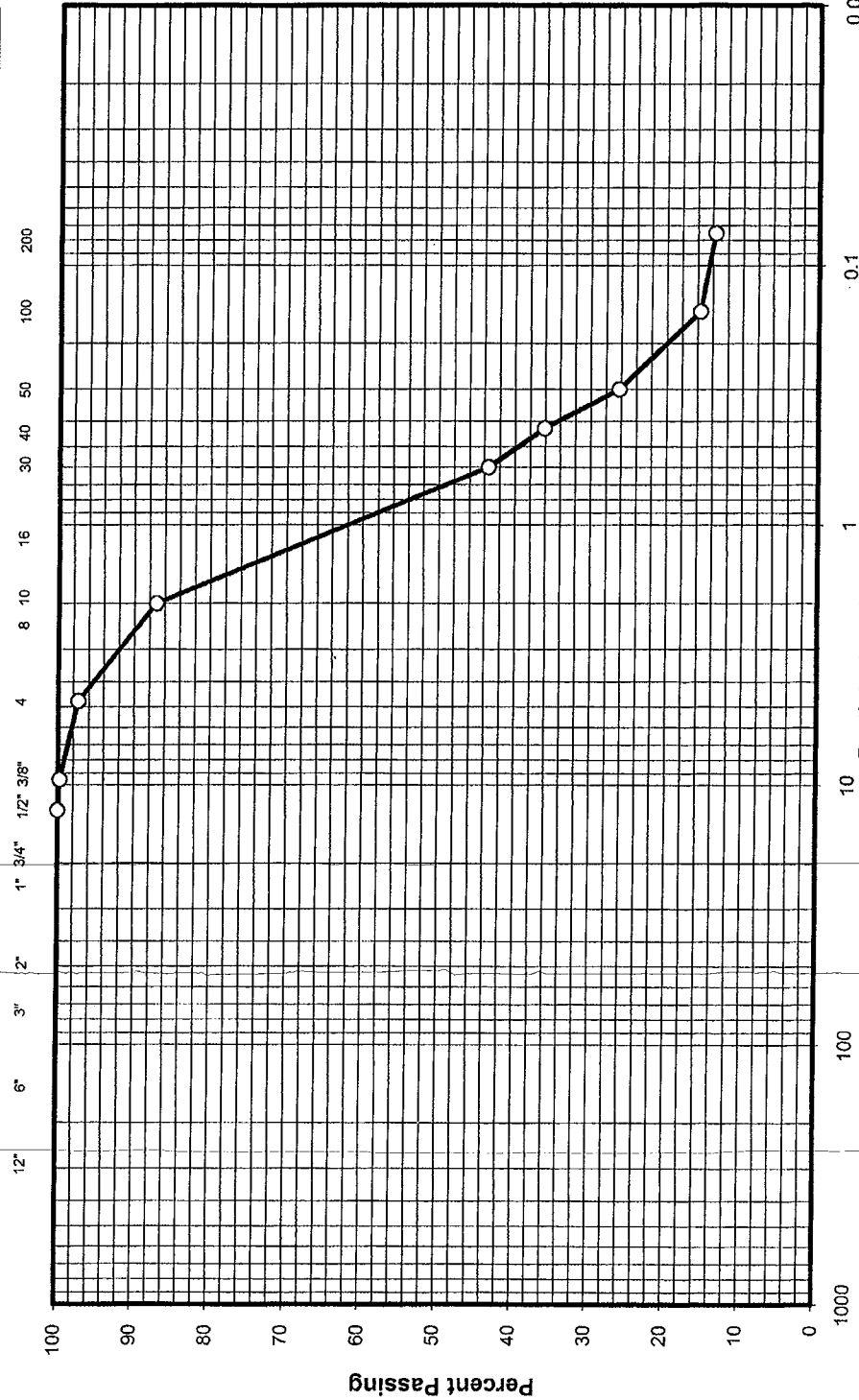
SIEVE ANALYSIS

Drawn By: MA	Project No.: 29 - 228
Checked By: SY	Figure No.: -
Date: 12/10/09	

Gravel (%)	0	LL	NV	Project Name:	Colfax and Welton
Sand (%)	67	PL	NP	Sample ID:	P - 1
Fines (%)	33	PI	NP	Sample Depth (ft.):	5
Sample Description:	SM / A - 2 - 4 (0)				

Sieve Analysis		Hydrometer Analysis
Sieve Opening in Inches		Size of Particles in mm

3"	-
2 1/2"	-
2"	-
1 1/2"	-
1"	-
3/4"	-
1/2"	100
3/8"	100
#4	97
#10	87
#40	36
#200	14



Yeh & Associates, Inc.
Geotechnical Engineering Consultants

SIEVE ANALYSIS

Drawn By: MA
Checked By: SY
Date: 12/10/09

Project No.: 29 - 228
Figure No.: -

Gravel (%)	3	LL	NV	Project Name:	Colfax and Welton
Sand (%)	83	PL	NP	Sample ID:	P - 2
Fines (%)	14	PI	NP	Sample Depth (ft.):	5
Sample Description:	SM / A - 1 - b (0)				



Summary of Laboratory Test Results

Project No: 29 - 228 Project Name: Colfax and Welton Date: 12/10/2009

Boring NO.	Sample Location		Natural Moisture Content (%)	Natural Dry Density (pcf)	Gravel > #4 (%)	Gradation			Atterberg			pH	Water Soluble Sulfate %	% Swell (+) / Consolida-tion (-)	Unconf. Comp. Strength (psf)	R-VALUE	CLASSIFICATION	
	Depth (ft)	Sample Type				Sand (%)	Fines < #200 (%)	LL	PL	PI	AASHTO						USCS	
P - 1	5	Bulk	16.5	-	0	67	33	NV	NP	NP	-	-	-	-	-	A-2-4 (0)	SM	
P - 2	5	Bulk	10.7	-	3	83	14	NV	NP	NP	-	-	-	-	-	A-1-b (0)	SM	
Mix	5	Bulk	14.1	-	0	67	33	NV	NP	NP	9.4	0.005	-	-	37	A-2-4 (0)	SM	



Soil Nutrient Laboratory Report

Lab No.: 09120164-01 Date Rec: 12/1/09 Reported: 12/11/09	Report To: Jere Strickland	Company: Yeh & Associates, Inc. 5700 E. Evans Ave Denver CO 80222
--	-----------------------------------	--

Sample ID: P1

Project: Colfax & Welton

Laboratory Results:	Sample Result	Low-----Ave-----High
Field Texture (EST)	Sandy Loam	
pH (units)	7.7	*****
Salts (MMHOS/CM)	1.4	*****
CEC Est. (MEQ/100G)	6.4	*****
Lime (Qual.)	Medium	*****
Organic Matter (%)	0.6	*****
Organic N (lbs/acre)	17.1	*****
Sodium (meq/100g Soil)	1.03	*****
Available Nutrients (ppm)		
Nitrate Nitrogen	1.9	*
Phosphorus	11.4	*****
Potassium	207.3	*****
Calcium	1163.5	*****
Magnesium	269.5	*****
Sulfur	5.2	*****
Boron	1.1	*****
Zinc	3.4	*****
Iron	8.9	*****
Manganese	1.2	*****
Copper	0.8	*****
<i>Note: Average Values are for Colorado Soils</i>		

Fertilizer Recommendations	
General Landscape	
Nitrogen:	130 lbs/Acre
Phosphorus - P2O5:	60 lbs/Acre
Potassium - K2O:	0 lbs/Acre
Sulfur SO4-S:	50 lbs/Acre
Lime:	0 lbs/Acre
<i>*To convert recommendations to lbs/1000 sq. ft. divide by 40.</i>	

Comments
<p style="text-align: center;"><i>Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.</i></p> <p>Soil Contains Excess Alkali. 3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.</p>

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
 Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



Soil Nutrient Laboratory Report

Lab No.: 09120164-02 Date Rec: 12/1/09 Reported: 12/11/09	Report To: Jere Strickland	Company: Yeh & Associates, Inc. 5700 E. Evans Ave Denver CO 80222
--	-----------------------------------	--

Sample ID: P2

Project: Colfax & Welton

Laboratory Results:	Sample Result	Low-----Ave-----High
Field Texture (EST)	Sandy Loam	
pH (units)	8.0	*****
Salts (MMHOS/CM)	1.2	*****
CEC Est. (MEQ/100G)	5.9	*****
Lime (Qual.)	Medium	*****
Organic Matter (%)	0.3	***
Organic N (lbs/acre)	10.2	*****
Sodium (meq/100g Soil)	1.04	*****
Available Nutrients (ppm)		
Nitrate Nitrogen	1.6	*
Phosphorus	1.2	
Potassium	147.5	*****
Calcium	795.4	*****
Magnesium	153.1	*****
Sulfur	5.9	*****
Boron	1.0	*****
Zinc	1.5	*****
Iron	13.0	*****
Manganese	2.5	*****
Copper	0.6	*****

Note: Average Values are for Colorado Soils

Fertilizer Recommendations	
General Landscape	
Nitrogen:	130 lbs/Acre
Phosphorus - P2O5:	80 lbs/Acre
Potassium - K2O:	0 lbs/Acre
Sulfur SO4-S:	50 lbs/Acre
Lime:	0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments
<p style="margin: 0;"><i>Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.</i></p> <p style="margin: 5px 0 0 20px;">Soil Contains Excess Alkali.</p> <p style="margin: 0 0 0 20px;">3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.</p>

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
 Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315

..... **APPENDIX C**
Pavement Design Calculations

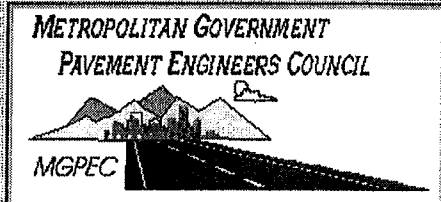
DESIGN RECORD

Open Analysis File - C:\Program

Total Records: 1 Analysis 1 Add Delete

SUBMISSION

Subdivision: **Colfax**
 Street: _____
 From: _____
 To: _____
 Township: _____ Range: _____
 Section: **0** Corner: **NW**



Formation: **Qs - Colluvium**
 Section: **0** Corner: **NW**

TRAFFIC

Classification: **Commercial** Speed Limit (mph): **30** Compute ESAL: ESALs: **8742172**
 Residential Lots: **0** Commercial Acres: **0** Industrial Acres: **0**

SUBGRADE

Soil Type: **Sand** AASHTO: **A-2-4** Subsurface Drainage Clear Subgrade
 R Value: **37** UNC: **0** Resilient Modulus: **6457** Swell: **0** %
 Load Transfer: **2.8 Doweled and Tied** Passing 200: **0** % Liquid Limit: **0** % Plasticity Index: **0** %
 Optimum Moisture: **0** % per Max Density: **0** Std Proctor Mod Proctor Use Custom Cost

Default Material Cost

Option One

Plain Portland Cement Concrete **10.0** Inches Thick
 At **211,200** \$ Per Lane Mile
 30 yr Maintenance **23,469** \$ Per Lane Mile
 Total Cost **239,669** \$ Per Lane Mile

Option Two (NOT RECOMMENDED)

Hot Mix Asphalt Pavement **14.0** Inches Thick
 At **177,408** \$ Per Lane Mile
 30 yr Maintenance **78,533** \$ Per Lane Mile
 Total Cost **255,942** \$ Per Lane Mile

Option Three

Hot Mix Asphalt Pavement **10.0** Inches Thick
 Chemical Stabilized Subgrade **12.0** Inches Thick
 At **200,640** \$ Per Lane Mile
 30 yr Maintenance **78,533** \$ Per Lane Mile
 Total Cost **279,174** \$ Per Lane Mile

DESIGN RECORD Open Analysis File - C:\Program

Total Records: 1 << Analysis 1 >> Add Delete

SUBDIVISION

Subdivision: Welton

Street: _____

From: _____

To: _____

Township: _____ Range: _____

Formation: Gs - Colluvium

Section: 0 Quarter: NW

TRAFFIC

Classification: Commercial Speed Limit (mph): 30 Compute ESAL: ESALs: 3877593

Residential Lots: 0 Commercial Acres: 0 Industrial Acres: 0

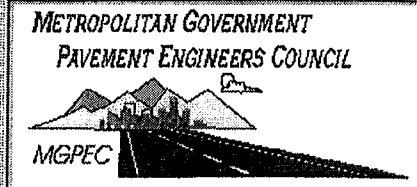
SUBGRADE

Soil Type: Sand AASHTO: A-2-4 Subsurface Drainage Clear Subgrade

Revalue: 37 * UMC: 0 * Resilient Modulus: 6457 * Swell: 0 %

Load Transfer: 2.8 Doweled and Tied Passing 200: 0 % Liquid Limit: 0 % Plasticity Index: 0 %

Optimum Moisture: 0 % net Mat Density: 0 Std Proctor Mod Proctor Use Custom Cost



Default Material Cost

Option One

Plain Portland Cement Concrete	8.5	Inches Thick
At	179,620	\$ Per Lane Mile
30 yr Maintenance	28,400	\$ Per Lane Mile
Total Cost	207,980	\$ Per Lane Mile

Option Two (NOT RECOMMENDED)

Hot Mix Asphalt Pavement	12.0	Inches Thick
At	152,064	\$ Per Lane Mile
30 yr Maintenance	78,533	\$ Per Lane Mile
Total Cost	230,598	\$ Per Lane Mile

Option Three

Hot Mix Asphalt Pavement	8.5	Inches Thick
Chemical Stabilized Subgrade	12.0	Inches Thick
At	175,295	\$ Per Lane Mile
30 yr Maintenance	78,533	\$ Per Lane Mile
Total Cost	253,830	\$ Per Lane Mile

**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. 201207581
COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated Quantity
202-00002	REMOVAL OF STRUCTURE (SPECIAL)	14 EA
202-00010	REMOVAL OF TREE	6 EA
202-00019	REMOVAL OF INLET	1 EA
202-00032	REMOVAL OF VALVE	1 EA
202-00035	REMOVAL OF PIPE (15" CLAY STORM SEWER)	306 LF
202-00036	REMOVAL OF PIPE (12" WATERLINE)	33 LF
202-00037	REMOVAL OF PIPE (15" WATERLINE)	52 LF
202-00195	REMOVAL OF MEDIAN COVER	117 SY
202-00200	REMOVAL OF SIDEWALK	782 SY
202-00203	REMOVAL OF CURB AND GUTTER	903 LF
202-00240	REMOVAL OF ASPHALT MAT (PLANING)	4,956 SY
202-00810	REMOVAL OF GROUND SIGN	8 EA
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1 LS
202-01000	REMOVAL OF FENCE	200 LS
202-04005	CLEAN VALVE BOX	3 EA
202-04010	CLEAN INLET	4 EA
202-12001	REMOVAL OF CURB STOP (SPECIAL)	1 EA
202-12002	REMOVAL OF WATER METER PIT (SPECIAL)	1 EA
203-00010	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	750 CY
203-00100	MUCK EXCAVATION	750 CY
203-01597	POTHOLING	40 HR
207-00205	TOPSOIL	135 CY
208-00034	GRAVEL BAG	75 LF
208-00045	CONCRETE WASHOUT STRUCTURE	2 EA
208-00050	STORM DRAIN INLET PROTECTION	14 EA
208-00070	VEHICLE TRACKING PAD	1 EA
208-00206	EROSION CONTROL SUPERVISOR	1 LS
210-00810	RESET GROUND SIGN	8 EA
210-01000	RESET FENCE	100 LF
210-04010	ADJUST MANHOLE	4 EA
210-04050	ADJUST VALVE BOX	6 EA
212-00048	SOIL PREPARATION (SPECIAL)	29 CY



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

**CONTRACT NO. 201207581
COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated Quantity
212-00050	SOD	3,382 SF
213-00065	INORGANIC MULCH	24 CY
214-00230	DECIDUOUS TREE (3 INCH CALIPER)	3 EA
214-00508	EVERGREEN TREE (8 FOOT) (BALL AND BURLAP)	3 EA
214-00320	DECIDUOUS SHRUB (2 GALLON CONTAINER)	117 EA
214-00350	DECIDUOUS SHRUB (5 GALLON CONTAINER)	58 EA
214-00950	PERENNIALS (5 GAL)	19 EA
304-06000	AGGREGATE BASE COURSE (CLASS 6)	811 TON
403-00720	HOT MIX ASPHALT (PATCHING) (ASPHALT)	105TON
403-33841	HOT MIX ASPHALT (GRADING S) (100) (PG 64-22)	534. TON
403-34871	HOT MIX ASPHALT (GRADING SX) (100) (PG 76-28)	130 TON
411-10255	EMULSIFIED ASPHALT (SLOW SETTING)	329GAL
412-01020	CONCRETE PAVEMENT (10 INCH) (CLASS E)	3031 SY
503-00030	DRILLED CAISSON (30 INCH)	20 LF
507-00400	BITUMINOUS SLOPE AND DITCH PAVING (ASPHALT)	10 TON
603-01185	18 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE)	218 LF
603-01245	24 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE)	271 LF
604-00305	INLET TYPE C (5 FOOT)	3 EA
604-19105	INLET TYPE R L 5 (5 FOOT)	3 EA
604-30005	MANHOLE SLAB BASE (5 FOOT)	4 EA
604-39000	MANHOLE SPECIAL	2 EA
607-00001	FENCE (SPECIAL)	100 LF
608-00006	CONCRETE SIDEWALK (6 INCH)	646 SY
608-00012	CURB RAMP (SPECIAL)	137 SY
609-21010	CURB AND GUTTER TYPE 2 (SECTION I-B)	194 LF
609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B)	486 LF
613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	390 LF
613-01300	3 INCH ELECTRICAL CONDUIT (PLASTIC)	780 LF
613-07000	PULL BOX (SPECIAL)	12 EA
613-10000	WIRING	1 LS
613-70250	LUMINAIRE HPS (250 WATT)	4 EA



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

**CONTRACT NO. 201207581
COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated Quantity
614-00011	SIGN PANEL (CLASS I)	162.75 SF
614-00216	STEEL SIGN POST (2X2 INCH TUBING)	147 LF
614-70150	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN)	8 EA
614-70336	TRAFFIC SIGNAL FACE (12-12-12)	15 EA
614-72855	TRAFFIC SIGNAL CONTROLLER CABINET	1 EA
614-72886	INTERSECTION DETECTION SYSTEM (CAMERA)	2 EA
614-79867	FIRE PREEMPTION UNIT AND TIMER	3 EA
614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL	1 EA
614-81135	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-35 FOOT MAST ARM)	2 EA
614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-55 FOOT MAST ARM)	1 EA
614-86105	TELEMETRY (FIELD)	1 EA
614-86239	TRAFFIC SIGNAL CONTROLLER (SOLID STATE) (F-A) (12 PHASE)	1 EA
614-87401	FIBER OPTIC CABLE (SPECIAL)	230 LF
619-06120	12 INCH DUCTILE IRON PIPE	76 LF
619-75096	12 INCH GATE VALVE	2 EA
623-00164	DRIP EMITTER	265 EA
623-00166	3/4 INCH EMITTER VALVE ASSEMBLY (DRIP VALVE ASSEMBLY)	3 EA
623-00186	3/4 INCH FLUSH UNIT (DRIP LINE BLOW-OUT STUB)	4 EA
623-00204	POP-UP LAWN SPRAY (POP-UP SPRAY HEAD)	42 EA
623-03108	1 INCH AUTOMATIC CONTROL VALVE (ELECTRIC CONTROL VALVE)	2 EA
623-04008	1 INCH QUICK-COUPLER VALVE (QUICK COUPLING VALVE)	1 EA
623-50060	3/4 INCH PLASTIC PIPE (POLY DRIP TUBING) (IRRIGATION)	550 LF
623-50080	1 INCH PLASTIC PIPE (IRRIGATION)	420 LF
623-50100	1 1/4 INCH PLASTIC PIPE (IRRIGATION)	115 LF
625-00000	CONSTRUCTION SURVEYING	1 LS
626-00000	MOBILIZATION	1 LS
626-01000	PUBLIC INFORMATION SERVICES	1 LS
627-00002	THERMOPLASTIC PAVEMENT MARKING	100 SF
627-00004	EPOXY PAVEMENT MARKING	808 SF
627-00011	PAVEMENT MARKING PAINT (WATERBORNE)	31 GAL
627-30410	PREFORM THERMOPLASTIC PVMT MKG (XWALK-STOP LINE)	883 SF



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

**CONTRACT NO. 201207581
COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**

STATEMENT OF QUANTITIES

Item No.	Description	Estimated Quantity
629-01004	SURVEY MONUMENT (TYPE 4)	3 EA
630-00000	FLAGGING	3,000 HR
630-00003	UNIFORMED TRAFFIC CONTROL	72 HR
630-00007	TRAFFIC CONTROL INSPECTION	240 DAY
630-00012	TRAFFIC CONTROL MANAGEMENT	240 DAY
630-80336	BARRICADE (TYPE 3 M-A) (TEMPORARY)	5 EA
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	38 EA
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	11 EA
630-80355	PORTABLE MESSAGE SIGN PANEL	3 EA
630-80356	FLASH ARROW PANEL	2 EA
630-80360	DRUM CHANNELIZING DEVICE	30 EA
630-80364	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	30 EA
630-80380	TRAFFIC CONE	50 EA
700-70016	FUEL COST ADJUSTMENT	\$520.00
700-70019	ASPHALT CEMENT COST ADJUSTMENT	\$5,700.00
700-70021	ON THE JOB TRAINEE	\$525.00
700-70028	ESB PROGRAM	\$7,500.00
700-70072	OBTAIN POWER SOURCE FROM XCEL ENERGY	\$10,000.00
700-70380	EROSION CONTROL	\$3,500.00
700-70589	ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	\$2,000.00

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

**NOTICE OF INVITATION FOR BIDS
FEDERAL AID PROJECT NOS. : STU M320-060 – SA 16952
CITY OF DENVER CONTRACT NO. 201207581**

COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

**BID SCHEDULE:
11:00 AM, Local Time
OCTOBER 19, 2012**

Sealed bids will be received at the Development Permits Counter Station #22, located on the 2nd floor at 201 West Colfax, Denver, CO 80202, beginning at 10:30 a.m., no later than 11:00 a.m., on bid day.

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, 2nd Floor, Denver, Colorado, 80202 and/or www.work4denver.com.

GENERAL STATEMENT OF WORK:

Re-configuration of the Colfax/Galapago/Welton intersection by shifting Welton Street eastward to align with Galapago Street. The traffic signal will be rebuilt at the new location of the intersection. Colfax Avenue will be paved in concrete from the edge of existing concrete (east of Speer Boulevard) to the east side of Galapago Street. Key project elements include: new roadway construction, both concrete and asphalt paving, signing and striping, new signals, sidewalks, curb and gutter, landscaping and drainage work.

ESTIMATED CONSTRUCTION COST:

The estimated cost of construction for this project is between \$1,353,000.00 and \$1,654,000.00.

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 . To download digital Contract Documents at a cost of \$10.00 per download, reference eBid Document Number #2269699. Contact QuestCDN at 952-233-1632 or info@questcdn.com for assistance.

PRE-BID CONFERENCE:

A pre-bid conference will be held for this Project at 10:00 AM, local time, on OCTOBER 02, 2012. This meeting will take place at 201 W. Colfax Ave., Denver, CO 80202 in conference room 4.I.5.

DEADLINE TO SUBMIT QUESTIONS:..... October 10, 2012 by 3:00PM local time

PREQUALIFICATION REQUIREMENTS:

Each bidder must be prequalified as a 3a Traffic Signals OR 5b Concrete Contractor in the \$3,000,000.00 monetary level in accordance with the City's Rules and Regulations Governing Prequalification of Contractors. Each bidder must have submitted a prequalification application a minimum of ten (10) calendar days prior to the 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 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:

15% 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 (29CFR 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: September 24, 25, & 26, 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: www.work4denver.com

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

INSTRUCTIONS TO BIDDERS

IB-1 INSTRUCTION TO BIDDERS

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

IB-2 BIDDING

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

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

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

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

IB-3 CONTRACT DOCUMENTS AS PUBLISHED BY CITY

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

IB-4 COMPLETING AND SIGNING THE BID FORMS

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

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 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 the Contract Documents by incorporating all of the documents submitted by the Apparent Low Bidder into one or more executable copies. Upon notification that contract documents are ready for execution the Apparent Low Bidder who shall execute the contract documents. At this time, the successful bidder shall also provide certain supplemental documents for incorporation into the Contract Documents. These supplemental documents shall include: the properly executed Certificate of Insurance Forms evidencing the apparent low bidder's satisfactory compliance with the insurance requirements set forth in the Contract Documents; a properly executed Payment and

Performance Bond Form and appropriate Power of Attorney evidencing the Apparent Low Bidder's satisfactory compliance with the bonding requirements set forth in the Contract Documents; and documentation of compliance with any other conditions precedent to execution of the Contract by the City set forth in the Contract Documents. The insurance and bond forms contained in the Contract Special Conditions Section of the Contract Documents must be used in satisfying these supplemental document requirements.

These documents are then delivered to the City within the prescribed time period for examination of the documents to determine whether or not the Contractor has correctly executed the Contract and has correctly provided the required supplemental documents and that these documents are satisfactorily and properly completed. From here, all of the documents are forwarded to the City Attorney who will, if the insurance and bonding offered is acceptable and if all other elements of the Contract Documents are in order, recommend that the Manager and the Mayor approve the documents and, when required by the City Charter, prepare an ordinance for submittal to City Council authorizing the execution of the Contract. The City Attorney shall in all applicable instances submit the proposed contract and ordinance to City Council. After City Council approval, the Contract shall be reviewed by the City Attorney and routed for execution by the Mayor, the Clerk for attestation and the Auditor for countersignature and registration. When the total process of contract execution is complete, a Notice to Proceed will be issued and a single executed copy of the Contract will be delivered to the Contractor. Any work performed or materials purchased prior to the issuance of 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 323, TAXES, as to taxes to which they may be subject in performing the Work under this Contract, including but not limited to sales and use taxes and the Denver Occupational Privilege Tax. The following instructions are to be considered along with the General Contract Conditions and not in lieu of them.

Sales and Use Tax. Construction and building materials sold to contractors and subcontractors for use on structures, roads, streets, highways, and other public works owned by the City and County of Denver are exempt from state, RTD, and Cultural Facilities District sales and use taxes. However, such materials will be subject to sales and use taxes imposed by the City and County of Denver.

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

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

IB-24 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/. 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 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.

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.

IB-29 PAYMENT PROCEDURE REQUIREMENTS

Contractor recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (CPM System) for this Project. Bidders are urged, when preparing a bid, to contact the Textura® Corporation for pricing schedule and fees, as all fees associated with the CPM System are to be paid by the Contractor and subcontractor for billings for work performed.

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. STU M320-060 – SA 16952
CITY OF DENVER CONTRACT NO. 201207581**

COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

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

**NEW DESIGN CONSTRUCTION
2350 E. 70TH AVE
DENVER, CO 80229**

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

WITNESSETH, Commencing on **September 24, 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>FEDERAL AID PROJECT NO. STU M320-060 – SA016952</p> <p>CITY OF DENVER CONTRACT NO. 201207581</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 **300 (Three Hundred 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 202-00828 through 700-70589 (One Hundred Fourteen [114] Total Bid Items), the total estimated cost thereof being One Million Four Hundred Thirty Two Thousand Five Hundred Ninety Seven Dollars and Ninety Five Cents (\$1,432,597.95)**. 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: 201207581

Vendor Name: NEW DESIGN CONTRACUTION

By: Steve McWilliams

Name: STEVE McWilliams
(please print)

Title: PRESIDENT
(please print)

ATTEST: [if required]

By: Richard Suer

Name: RICHARD SUER
(please print)

Title: VICE PRESIDENT
(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,
(2011 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, (5th floor), Denver, CO 80202. The *Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS* is available at http://www.denvergov.org/dpw_contract_admin/ContractAdministration/ContractorReferenceDocuments/tabid/440535/Default.aspx. *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. For Link to Updated CDOT Standard Special Provisions us this link <http://www.coloradodot.info/business/designsupport/construction-specifications/2011-Specs/standard-special-provisions>

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

SC-2 ENGINEERING DIVISION / CITY ENGINEER

The Engineering Division is a unit of the Department of Public Works and is supervised by the City Engineer, who is subordinate to the Manager of Public Works. This Division is responsible for the planning, design, construction, operation and maintenance of all of the City’s transportation facilities and the planning, design and construction of all of the City’s wastewater facilities, except for the City’s Municipal Airport System. All 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-3 CITY DELEGATION OF AUTHORITY

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

Denver Department of Public Works /Engineering Division,

<u>Project Manager</u> City Project Manager	<u>Name</u> John LaSala	<u>Telephone</u> (720) 913-4534
<u>Consultant</u> Stantec, Inc.	<u>Name</u> Mike Gill	<u>Telephone</u> (303) 285-4505

SC-4 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-5 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-6 RESERVED

SC-7 PAYMENTS TO CONTRACTORS

The application for payment shall be submitted through Textura® Corporations Construction Management Website. Contractor recognizes and agrees that it shall be required to use the Textura Construction Payment Management System for this Project. Contractor further agrees that, to the fullest extent possible within the CPM System, the City shall be entitled to all non-Confidential records, reports, data and other information related to the project that are available to Contractor through the CPM System, including, but not limited to, information related to Contractor and subcontractor billings. To that end, Contractor agrees that it will activate any available settings within the CPM System that are necessary to grant the City access to such non-Confidential information related to the contract and the project. Applications for payment shall be based on the Contract Unit Prices or the approved Schedule of Values described in GC 903.1

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

<u>Agency/Firm</u>	<u>Name</u>	<u>Telephone</u>
Public Works/Engineering Division		

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

1. The estimate of Work completed shall be based on the approved schedule of values or unit prices, as applicable, and the percent of the Work complete.
2. Each Application for Payment shall include each and every independent subcontractor’s payroll information including pay dates and pay amounts.
3. The Contractor shall also submit to the Auditor and other appropriate officials of the City in a timely fashion, information required by General Contract Condition 1004, REPORTING WAGES PAID.

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/OR** the Contractors' Certification of Payment Form. The forms, Final/Partial Release and Certificate of Payment (Subcontractor/Supplier) and the Contractor’s Certification of Payment, both of which must be used are attached hereto.

SC-8 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 Building Inspection will perform building code compliance inspections for structures designed for human occupancy. It is the General Contractor’s responsibility to schedule and obtain these inspections. If a code compliance inspection results in identification of a condition which will be at variance to the Contract Documents, the General Contractor shall immediately notify the Project Manager and confirm such notification with formal correspondence no later than forty-eight (48) hours after the occurrence.

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

SC-9 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-10 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-11 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-12 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-13 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-14 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-15 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-16 ATTORNEY’S FEES

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

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

SC-17 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 18: INSURANCE

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

(1) **General Conditions:** Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, or any extension thereof, during any warranty period, and for eight (8) years after termination of the Agreement. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as “A-”VIII or better. Each policy shall contain a valid provision or endorsement requiring notification to the City in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the parties identified in the Notices section of this Agreement. Such notice shall reference the City contract number listed on the signature page of this

Agreement. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the parties identified in the Notices section by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s) and referencing the City's contract number. If any policy is in excess of a deductible or self-insured retention, the City must be notified by the Contractor. Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

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

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

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

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

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

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

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

(9) **Additional Provisions:**

- (a) For Commercial General Liability, the policies must provide the following:
 - (i) That this Agreement is an Insured Contract under the policy;
 - (ii) Defense costs in excess of policy limits;
 - (iii) A severability of interests or separation of insureds provision (no insured vs. insured exclusion); and

- (iv) A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City.
- (b) For claims-made coverage:
 - (i) The retroactive date must be on or before the contract date or the first date when any goods or services were provided to the City, whichever is earlier
- (c) Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage is in force.

SC-19 GREENPRINT DENVER REQUIREMENTS

In accordance with the City and County of Denver Executive Order 123: Greenprint Denver Office and Sustainability Policy, as amended, Contractor shall adhere to sections of Executive Order 123 pertinent to the construction of the built environment. This includes but is not limited to: all construction and renovation of buildings shall follow instructions and memorandum for high performance buildings; horizontal projects shall include the use of fly ash concrete and recycled aggregate where possible; and, all projects shall recycle construction and demolition waste, and install materials that contain recycled content whenever possible using the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) as guidance. Non-hazardous solid waste that is eligible for reuse or recycling is not subject to the DADS disposal requirement defined in SC-12.

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

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

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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 New Design Construction Company, 2350 East 70th Avenue, Denver, CO 80229 a corporation organized and existing under and by virtue of the laws of the State of CO, hereafter referred to as the "Contractor", and Travelers Casualty and Surety Company of America, a corporation organized and existing under and by virtue of the laws of the State of CT, 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 Four Hundred Thirty Two Thousand Five Hundred Ninety Seven Dollars and Ninety Five Cents (\$1,432,597.95), 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. 201207581, FEDERAL PROJECT NO: STU M320-060 – SA 16952, COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**, 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;

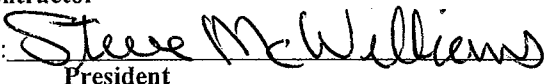
PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other supplies or materials used or consumed by said Contractor or its subcontractors in performance of the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

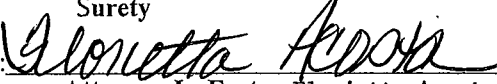
PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications 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 21 day of NOVEMBER, 2012

Attest:

Secretary
VICE PRESIDENT

New Design Construction Company
Contractor
By: 
President

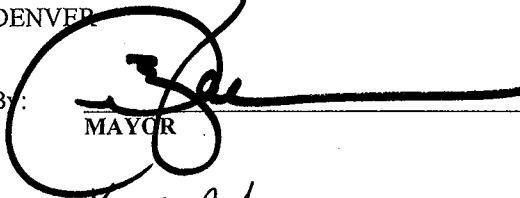
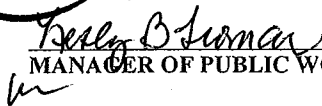
Travelers Casualty and Surety Company of America,
Surety
By: 
Attorney-In-Fact Florietta Acosta

(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



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 222991

Certificate No. 004364109

KNOW ALL MEN BY THESE PRESENTS: That St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, that Farmington Casualty Company, Travelers Casualty and Surety Company, and Travelers Casualty and Surety Company of America are corporations duly organized under the laws of the State of Connecticut, that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

J. R. Richards, Susan J. Lattarulo, DiLynn Guern, Kevin W. McMahon, Mark Sweigart, Florietta Acosta, Tiffany McGonigle, Donald E. Appleby, Gloria C. Blackburn, Sarah Brown, and Anne E. Hill

of the City of Denver, State of Colorado, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 23rd day of June, 2011.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
George W. Thompson, Senior Vice President

On this the 23rd day of June, 2011, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed 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 hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the 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 ____.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

ACORD™

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

12/05/2012

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).

PRODUCER Willis of Colorado, Inc. 2000 South Colorado Boulevard Tower II, Suite 900 Denver, CO 80222	CONTACT NAME:		
	PHONE (A/C, No, Ext):	303 722-7776	FAX (A/C, No): 303-722-8862
INSURED New Design Construction Company 2350 East 70th Avenue Denver, CO 80229	E-MAIL ADDRESS:		
	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A :	Phoenix Insurance Company	25623
	INSURER B :	Travelers Property Casualty Com	36161
	INSURER C :	Pinnacol Assurance	41190
	INSURER D :	Charter Oak Fire Insurance Comp	25615
	INSURER E :		
	INSURER F :		

COVERAGES

CERTIFICATE NUMBER:

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 WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> AI # CG D2 46 08/05 <input checked="" type="checkbox"/> Ltd pollution GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC			DTCO0748C220PHX12	10/01/2012	10/01/2013	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
D	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS <input checked="" type="checkbox"/> Ltd Pollution			DT8100748C220TIL12	10/01/2012	10/01/2013	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			DTSMCUP0748C220TIL	10/01/2012	10/01/2013	EACH OCCURRENCE \$ 4,000,000 AGGREGATE \$ 4,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE/OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	4058123	10/01/2012	10/01/2013	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000

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

Project Description: Colfax/Galapago/Welton Intersection Improvements


Federal Aid Project No. STU M320-060 SA 16952

Contract Control No. 201207581

City and County of Denver, its elected and appointed officials, employees and volunteers as additional insured with regard to General Liability & Auto Liability

CERTIFICATE HOLDER

CANCELLATION

City and County of Denver Department of Public Works 201 West Colfax Avenue 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 
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FAX NUMBER: 303-286-9958
TELEPHONE NUMBER: 303-286-8500

City Attorney
City and County of Denver
201 West Colfax Avenue, Dept. 1207
Denver, Colorado 80202

RE: New Design Construction Company
Project Name: Contract No. 201207581 – Colfax/Galapago/Welton Intersection
Improvements
Amount: \$1,432,597.95
Performance and Payment Bond No.: 105860491

The Performance and Payment Bonds covering the above captioned project were executed by this agency through Travelers Casualty and Surety Company of America, on November 19, 2012.

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.

Thank you.

Sincerely,



Florietta Acosta
Account Manager



Department of Public Works
Engineering Department

201 W. Colfax Avenue
Denver, CO 80202
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: **201207581**
Federal Project No. **STU M320-060 – SA 16952**
Project Name: **COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS**
Contract Amount:
Performance and Payment Bond No.:

Dear Assistant City Attorney,

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

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

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

Thank you.

Sincerely,





DENVER
THE MILE HIGH CITY

Department of Public Works
Engineering Department

201 W. Colfax Avenue
Denver, CO 80202
www.denvergov.org/PublicWorks

NOTICE OF APPARENT LOW BIDDER
(SAMPLE)

Date

To:

Gentlemen:

The MANAGER OF PUBLIC WORKS has considered the Bids submitted on October 19, 2012 for work to be done and materials to be furnished in and for:

PROJECT No. 201207581 COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to execution of the Contract Documents and your furnishing the items specified below, the total cost thereof (Contract Amount Written), (Contract Amount Numeric).

It will be necessary for you to appear forthwith at the office of the Department of Public Works, Finance and Administration, 201 W. Colfax Ave., Dept 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. 201207581

Page 2

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

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

CITY AND COUNTY OF DENVER

By _____
Manager of Public Works



DENVER
THE MILE HIGH CITY

Department of Public Works
Engineering Department

201 W. Colfax Avenue
Denver, CO 80202
www.denvergov.org/PublicWorks

Current Date

(S A M P L E)

Name
Company
Street
City/State/Zip

FEDERAL AID PROJECT NO. – STU M320-060 SA 16952
CITY OF DENVER CONTRACT NO. 201207581, COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS

NOTICE TO PROCEED

In accordance with General Contract Condition 302 of the Standard Specifications for Construction, General Contract Conditions, 2011 Edition, you are hereby authorized and directed to proceed on **201207581 COLFAX/GALAPAGO/WELTON INTERSECTION IMPROVEMENTS** 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 300 (Three Hundred 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 323.5, 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)	Date: _____, 20__.
(NAME OF CONTRACTOR)	Subcontract #: _____.
(NAME OF SUBCONTRACTOR/SUPPLIER)	Subcontract Value: \$ _____.
Check Applicable Box:	Last Progress Payment: \$ _____.
<input type="checkbox"/> DBE	Date: _____.
	Total Paid to Date: \$ _____.
	Date of Last Work: _____.

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

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

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

As additional consideration for the payments referenced above, the undersigned agrees to defend, indemnify and 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



DENVER
THE MILE HIGH CITY

Department of Public Works
Engineering Department

201 W. Colfax Avenue
Denver, CO 80202
www.denvergov.org/PublicWorks

Date

Name

Company

Street

City/State/Zip

(SAMPLE)

RE: Certificate of Contract Release for

FEDERAL AID PROJECT NO. STU M320-060-SA 16952

CITY OF DENVER CONTRACT NO. 201207581, COLFAX/GALAPAGO/WELTON INTERSECTION
IMPROVEMENTS

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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United States Department of Transportation - Federal Highway Administration – Infrastructure

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLICWORKS /

**PREVAILING WAGE RATES
CDOT HIGHWAY CONSTRUCTION**

Contract No. 201207581

**COLFAX/GALAPAGO/WELTON
INTERSECTION IMPROVEMENTS**

September 24, 2012

August 10, 2012

**U.S. DEPT. OF LABOR,
DAVIS BACON MINIMUM WAGES, COLORADO
GENERAL DECISION NUMBERS
CO100016, CO100017, CO100018, CO100019, CO100020,
CO100021, CO100022, CO100023 and CO100024
HIGHWAY CONSTRUCTION**

NOTICE

This is a standard special provision that revises or modifies CDOT's *Standard Specifications for Road and Bridge Construction*. It has gone through a formal review and approval process and has been issued by CDOT's Project Development Branch with formal instructions for its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions, unless such use is first approved by the Standards and Specification Unit of the Project Development Branch. The instructions for use on CDOT construction projects appear below.

Other agencies which use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

Instructions for use on CDOT construction projects:

Use this standard special provision on all federal-aid projects with contracts exceeding \$2000, except for non-ARRA projects on roadways classified as local roads or rural minor collectors, which are exempt. Projects on local roads, rural minor collectors, and enhancement projects funded with ARRA funds are not exempt.

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.		Modifications			ID
		MOD Number	Date	Page Number(s)	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
General Decision No. CO100016 applies to the following counties: Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, and Park counties.					
General Decision No. CO100016 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
	ELECTRICIAN (Traffic Signalization Only):				
1000	Clear Creek	26.42	4.75% + 8.68		
	POWER EQUIPMENT OPERATOR:				
	Drill Rig Caisson				
1001	Smaller than Watson 2500 and similar	24.27	8.62	4	
1002	Watson 2500 similar or larger	24.57	8.62	4	
	Crane (50 tons and under)				
1003	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	24.42	8.62	4	
	Crane (51 - 90 tons)				
1004	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	24.57	8.62	4	
	Crane (91 - 140 tons)				
1005	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	24.72	8.62	4	
1006	Scraper				
1007	Single bowl under 40 cubic yards	24.42	8.62	4	
1008	40 cubic yards and over	24.57	8.62	4	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
	CARPENTER:			
	Excludes Form Work			
1009	Adams	16.61	3.88	
1010	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	19.27	5.08	
	Form Work Only			
1011	Adams	16.78	3.57	
1012	Broomfield, Clear Creek, Elbert, Gilpin	19.11	5.46	
1013	Jefferson	16.88	3.81	
1014	Park	17.28	5.38	
	CEMENT MASON/CONCRETE FINISHER:			
1015	Adams	16.05	3.00	
1016	Arapahoe	18.70	3.85	
1017	Broomfield, Clear Creek, Elbert, Gilpin	18.37	3.00	
1018	Jefferson	18.02	3.42	
1019	Park	17.09	2.85	
	ELECTRICIAN:			
	Excludes Traffic Signal Installation			
1020	Adams	31.00	14.01	
1021	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	35.13	6.83	
	Traffic Signalization Electrician			
1022	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	27.25	7.10	
1023	Jefferson	26.78	5.44	
	Traffic Signalization Groundsman			
1024	Adams	13.96	2.80	
1025	Arapahoe, Broomfield, Elbert, Gilpin, Park	15.24	3.81	
1026	Clear Creek	15.70	2.14	
1027	Jefferson	15.19	4.72	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
1028	FENCE ERECTOR	13.02	3.20	
1029	FORM WORKER – Arapahoe	15.30	3.90	
	GUARDRAIL INSTALLER:			
1030	Adams	12.89	3.45	
1031	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	12.89	3.20	
	HIGHWAY/PARKING LOT STRIPING:			
	Painter			
1032	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	12.62	3.21	
1033	Jefferson	14.21	3.21	
	IRONWORKER:			
	Reinforcing			
1034	Adams	22.14	0.77	
1035	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson	16.69	5.45	
1036	Park	19.98	2.89	
1037	Structural	18.22	6.01	
	LABORER:			
	Asphalt Raker			
1038	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson	16.29	4.25	
1039	Park	17.41	1.86	
1040	Asphalt Shoveler	21.21	4.25	
1041	Asphalt Spreader	18.58	4.65	
	Common or General			
1042	Adams	16.29	4.25	
1043	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	16.67	4.27	
1044	Jefferson	16.51	4.27	
1045	Park	15.64	2.46	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	Concrete Saw (Hand Held)			
1046	Adams	16.29	5.20	
1047	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	16.29	6.14	
	Landscape and Irrigation			
1048	Adams, Arapahoe, Broomfield, Elbert, Gilpin, Jefferson, Park	12.26	3.16	
1049	Clear Creek	14.98	3.16	
	Mason Tender - Cement/Concrete			
1050	Adams	17.71	2.83	
1051	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	16.96	4.04	
1052	Jefferson	16.29	4.25	
1053	Park	15.08	3.10	
1054	Pipelayer	13.55	2.41	
	Traffic Control (Flagger)			
1055	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin	9.55	3.05	
1056	Jefferson	9.73	3.05	
1057	Park	9.42	3.21	
	Traffic Control (Sets Up/Moves Barrels, Cones, Install Signs, Arrow Boards and Place Stationary Flags)			
1058	Adams, Arapahoe, Broomfield, Elbert, Gilpin, Jefferson	12.43	3.22	
1059	Clear Creek	13.14	3.20	
1060	Park	12.76	3.20	
1061	PAINTER (Spray Only)	16.99	2.87	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1062	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson	22.67	8.75	
1063	Park	22.67	8.72	
1064	Asphalt Paver	24.97	6.13	
	Asphalt Roller			
1065	Adams	24.20	7.70	
1066	Arapahoe	22.68	8.72	
1067	Broomfield, Clear Creek, Elbert, Gilpin	23.41	7.67	
1068	Jefferson	22.84	7.69	
1069	Park	22.84	8.72	
	Asphalt Spreader			
1070	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	22.67	8.67	
1071	Jefferson	23.34	8.06	
1072	Backhoe/Trackhoe			
1073	Adams	20.31	4.24	
1074	Arapahoe	24.59	6.24	
1075	Broomfield, Clear Creek, Elbert, Gilpin	22.19	6.48	
1076	Jefferson	21.99	5.60	
1077	Park	20.81	6.58	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Bobcat/Skid Loader			
1078	Adams, Broomfield, Clear Creek, Elbert, Gilpin	15.37	4.28	
1079	Arapahoe	18.23	4.28	
1080	Jefferson	16.85	4.28	
1081	Park	22.46	0.00	
1082	Boom	22.67	8.72	
	Broom/Sweeper			
1083	Adams, Broomfield, Clear Creek, Elbert, Gilpin, Park	22.70	8.07	
1084	Arapahoe	22.67	8.73	
1085	Jefferson	22.18	8.36	
	Bulldozer			
1086	Adams	25.20	6.72	
1087	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	26.90	5.59	
1088	Concrete Pump	21.60	5.21	
	Crane			
1089	Adams, Park	22.82	8.72	
1090	Jefferson	23.55	6.68	
	Drill			
1091	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	20.48	4.71	
1092	Jefferson	20.65	5.74	
1093	Forklift	15.91	4.68	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Grader/Blade			
1094	Adams	23.94	8.23	
1095	Arapahoe	22.67	8.72	
1096	Broomfield, Clear Creek, Elbert, Gilpin, Park	23.90	7.93	
1097	Jefferson	23.28	7.73	
1098	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1099	Adams	23.09	8.72	
1100	Arapahoe	26.80	4.84	
1101	Broomfield, Clear Creek, Elbert, Gilpin	23.20	8.33	
1102	Jefferson	23.06	7.76	
1103	Park	22.67	8.72	
	Mechanic			
1104	Adams	22.82	8.72	
1105	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	24.04	7.35	
1106	Jefferson	23.56	8.72	
	Oiler			
1107	Adams, Jefferson	21.97	8.72	
1108	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	23.73	8.41	
	Roller/Compactor (Dirt and Grade Compaction)			
1109	Adams	16.70	3.30	
1110	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson	20.30	5.51	
1111	Park	16.52	3.13	
1112	Rotomill	16.22	4.41	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Screed			
1113	Adams	27.89	3.50	
1114	Arapahoe	22.67	8.72	
1115	Broomfield, Clear Creek, Elbert, Gilpin	24.67	6.02	
1116	Jefferson	22.64	8.43	
1117	Park	20.36	3.04	
1118	Tractor	13.13	2.95	
	TRUCK DRIVER:			
	Distributor			
1119	Adams	15.80	5.27	
1120	Arapahoe	19.62	5.27	
1812	Broomfield, Clear Creek, Elbert, Gilpin, Park	18.19	5.27	3
1121	Jefferson	19.46	6.04	
	Dump Truck			
1122	Adams	16.68	5.27	
1123	Arapahoe	18.94	5.27	
1124	Broomfield, Clear Creek, Elbert, Gilpin	16.47	5.27	
1125	Jefferson	16.97	4.78	
1126	Park	15.40	3.21	
	Lowboy Truck			
1127	Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	17.25	5.27	
1128	Jefferson	19.80	6.42	
1129	Mechanic	26.48	3.50	
	Multi-Purpose Speciality and Hoisting Truck			
1130	Adams, Broomfield, Clear Creek, Elbert, Gilpin, Park	17.49	3.17	
1131	Arapahoe	15.79	2.48	
1132	Jefferson	15.13	3.89	

General Decision No. CO100016				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
	Semi/Trailer Truck (Includes Pickup and Pilot Car)			
1133	Adams, Broomfield, Clear Creek, Elbert, Gilpin, Jefferson, Park	18.39	4.13	
1134	Arapahoe	16.00	2.60	
	Single Axle (Includes Pickup and Pilot Car)			
1135	Adams, Jefferson	13.93	3.68	
1136	Arapahoe	15.10	3.77	
1137	Broomfield, Clear Creek, Elbert, Gilpin, Park	14.74	3.68	
1138	Truck Mounted Attenuator	12.43	3.22	
	Water Truck			
1139	Adams	17.50	5.19	
1140	Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin, Park	19.36	4.07	
1141	Jefferson	17.57	5.27	

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

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100016

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.		Modifications			ID
		MOD Number	Date	Page Number(s)	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
General Decision No. CO100017 applies to the following counties: Boulder county.					
General Decision No. CO100017 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
	POWER EQUIPMENT OPERATOR:				
	Drill Rig Caisson				
1142	Smaller than Watson 2500 and similar	24.27	8.62	4	
1143	Watson 2500 similar or larger	24.57	8.62	4	
	Crane				
1144	50 tons and under	24.42	8.62	4	
1145	51 - 90 tons	24.57	8.62	4	
1146	91 - 140 tons	24.72	8.62	4	
	Scraper				
1147	Single bowl under 40 cubic yards	24.42	8.62	4	
1148	40 cubic yards and over	24.57	8.62	4	
	CARPENTER:				
1149	Excludes Form Work	16.61	3.88		
1150	Form Work Only	17.06	3.90		
1151	CEMENT MASON/CONCRETE FINISHER	17.39	3.00		
1152	ELECTRICIAN	33.39	7.64		
1153	FENCE ERECTOR	15.96	3.46		
1154	GUARDRAIL INSTALLER	16.21	3.63		
1155	HIGHWAY/PARKING LOT STRIPING:				
1156	Painter	12.62	3.21		

General Decision No. CO100017				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	IRONWORKER:			
1157	Reinforcing (Excludes Guardrail Installation)	16.69	5.45	
1158	Structural (Excludes Guardrail Installation)	18.22	6.01	
	LABORER:			
1159	Asphalt Raker	16.29	4.25	
1160	Asphalt Shoveler	21.21	4.25	
1161	Asphalt Spreader	18.58	4.65	
1162	Common or General	16.29	4.25	
1163	Concrete Saw (Hand Held)	16.29	6.14	
1164	Landscape and Irrigation	12.26	3.16	
1165	Mason Tender - Cement/Concrete	16.29	4.25	
1166	Pipelayer	16.74	1.89	
1167	Traffic Control (Flagger)	9.55	3.05	
1168	Traffic Control (Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags), (Excludes Flaggers)	12.43	3.22	
1169	PAINTER (Spray Only)	16.99	2.87	
	POWER EQUIPMENT OPERATOR:			
1170	Asphalt Laydown	22.67	8.25	
1171	Asphalt Paver	24.19	6.58	
1172	Asphalt Roller	23.01	9.22	
1173	Asphalt Spreader	22.67	8.72	
1174	Backhoe/Trackhoe	21.70	5.51	
1175	Bobcat/Skid Loader	15.37	4.28	
1176	Boom	22.67	8.72	
1177	Broom/Sweeper	22.83	8.72	
1178	Bulldozer	26.90	5.59	
1179	Drill	21.42	2.88	

General Decision No. CO100017				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
1180	Forklift	15.91	4.27	
1181	Grader/Blade	22.67	8.72	
1182	Guardrail/Post Driver	16.54	4.10	
1183	Loader (Front End)	22.67	8.72	
1184	Mechanic			
1185	Oiler	22.77	9.22	
1186	Roller/Compactor (Dirt and Grade Compaction)	22.32	8.72	
1187	Rotomill	16.22	4.41	
1188	Screed	22.67	8.72	
1189	Tractor	13.13	2.95	
	TRAFFIC SIGNALIZATION:			
1190	Groundsman	18.52	3.59	
	TRUCK DRIVER:			
1191	Distributor	21.69	5.27	
1192	Dump Truck	16.41	5.27	
1193	Lowboy Truck	17.25	5.27	
1194	Multi-Purpose Specialty & Hoisting Truck	16.41	4.97	
1195	Pickup and Pilot Car	13.93	3.68	
1196	Semi/Trailer Truck	18.39	4.13	
1197	Truck Mounted Attenuator	12.43	3.22	
1198	Water Truck	20.64	5.27	

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100017

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011. When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.	Modifications			ID
	MOD Number	Date	Page Number(s)	
	1	11-18-11	14	1
	2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
	3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4	
General Decision No. CO100018 applies to the following counties: El Paso, Pueblo, and Teller counties.				

General Decision No. CO100018
The wage and fringe benefits listed below reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	ELECTRICIAN:			
1199	El Paso, Teller	28.55	14.46	
1200	Pueblo	26.75	11.90	1
	POWER EQUIPMENT OPERATOR:			
	Drill Rig Caisson			
1201	Smaller than Watson 2500 and similar	24.27	8.62	4
1202	Watson 2500 similar or larger	24.57	8.62	4
	Crane			
1203	50 tons and under	24.42	8.62	4
1204	51 - 90 tons	24.57	8.62	4
1205	91 - 140 tons	24.72	8.62	4

General Decision No. CO100018
The wage and fringe benefits listed below do not reflect collectively bargained rates.

	CARPENTER:			
1206	Excludes Form Work	24.15	6.25	
	Form Work Only			
1207	El Paso, Teller	19.06	5.84	
1208	Pueblo	19.00	5.88	
	CEMENT MASON/CONCRETE FINISHER:			
1209	El Paso, Teller	17.36	3.00	
1210	Pueblo	17.74	3.00	
1211	FENCE ERECTOR	13.02	3.20	
1212	GUARDRAIL INSTALLER	12.89	3.20	

General Decision No. CO100018				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	HIGHWAY/PARKING LOT STRIPING:			
1213	Painter	12.62	3.21	
	IRONWORKER:			
	Reinforcing (Excludes Guardrail Installation)			
1214	El Paso, Teller	20.49	1.65	
1215	Pueblo	16.69	5.45	
1216	Structural (Excludes Guardrail Installation)	18.22	6.01	
	LABORER:			
1217	Asphalt Raker	17.54	3.16	
1218	Asphalt Shoveler	21.21	4.25	
1219	Asphalt Spreader	18.58	4.65	
	Common or General			
1220	El Paso	17.05	3.69	
1221	Pueblo	16.29	4.25	
1222	Teller	16.88	3.61	
1223	Concrete Saw (Hand Held)	16.29	6.14	
1224	Landscape and Irrigation	12.26	3.16	
1225	Mason Tender - Cement/Concrete	16.29	4.25	
1226	Pipelayer	18.72	3.24	
1227	Traffic Control (Flagger)	9.55	3.05	
1228	Traffic Control (Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags), (Excludes Flaggers)	12.43	3.22	
1229	PAINTER (Spray Only)	16.99	2.87	

General Decision No. CO100018				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR:			
1230	Asphalt Laydown	22.67	8.72	
1231	Asphalt Paver	21.50	3.50	
	Asphalt Roller			
1232	El Paso	24.42	6.96	
1233	Pueblo	23.67	9.22	
1813	Teller	24.42	6.96	3
1234	Asphalt Spreader	22.67	8.72	
	Backhoe/Trackhoe			
1235	El Paso	23.31	5.61	
1236	Pueblo	21.82	8.22	
1237	Teller	23.32	5.50	
1238	Bobcat/Skid Loader	15.37	4.28	
1239	Boom	22.67	8.72	
	Broom/Sweeper			
1240	El Paso, Teller	23.43	8.04	
1241	Pueblo	23.47	9.22	
	Bulldozer			
1242	El Paso	26.56	7.40	
1243	Pueblo, Teller	26.11	6.92	
1244	Drill	17.59	3.45	
1245	Forklift	15.91	4.68	
	Grader/Blade			
1246	El Paso	22.83	8.72	
1247	Pueblo	23.25	6.98	
1248	Teller	23.22	8.72	
1249	Guardrail/Post Driver	16.07	4.41	

General Decision No. CO100018				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Loader (Front End)			
1250	El Paso	23.61	7.79	
1251	Pueblo	21.67	8.22	
1252	Teller	23.50	7.64	
	Mechanic			
1253	El Paso	22.35	6.36	
1254	Pueblo	24.02	8.43	
1255	Teller	22.16	6.17	
	Oiler			
1256	El Paso	23.29	7.48	
1257	Pueblo	23.13	7.01	
1258	Teller	22.68	7.11	
	Roller/Compactor (Dirt and Grade Compaction)			
1259	El Paso	16.70	3.30	
1260	Pueblo, Teller	18.43	4.62	
1261	Rotomill	16.22	4.41	
1262	Scraper	24.28	4.83	
	Screed			
1263	El Paso, Teller	25.22	5.74	
1264	Pueblo	23.67	9.22	
1265	Tractor	13.13	2.95	

General Decision No. CO100018				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER:			
	Distributor			
1266	El Paso, Teller	17.98	3.97	
1267	Pueblo	18.35	3.85	
	Dump Truck			
1268	El Paso, Teller	16.85	4.83	
1269	Pueblo	16.87	4.79	
1270	Lowboy Truck	17.25	5.27	
1271	Mechanic	26.69	3.50	
1272	Multi-Purpose Specialty & Hoisting Truck	17.27	3.71	
1273	Pickup and Pilot Car	13.93	3.68	
1274	Semi/Trailer Truck	16.00	2.60	
1275	Truck Mounted Attenuator	12.43	3.22	
	Water Truck			
1276	El Paso	17.24	4.15	
1277	Pueblo	20.93	4.98	
1278	Teller	17.31	4.07	

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100018

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.		Modifications			ID
		MOD Number	Date	Page Number(s)	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
General Decision No. CO100019 applies to the following counties: Denver and Douglas counties.					
General Decision No. CO100019 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
1279	CARPENTER (Form Work Only)	24.00	11.28		
	TRAFFIC SIGNALIZATION:				
	Traffic Signal Installation				
1280	Zone 1	26.42	4.75% + 8.68		
1281	Zone 2	29.42	4.75% + 8.68		
	<u>Traffic Installer Zone Definitions</u> Zone 1 – Within a 35 mile radius measured from the addresses 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 Zone 2 - All work outside these areas.				
	POWER EQUIPMENT OPERATOR:				
	Hydraulic Backhoe				
1282	Wheel Mounted, under ¾ yds.	24.27	8.62	4	
1283	Backhoe/Loader combination	24.27	8.62	4	
	Drill Rig Caisson				
1284	Smaller than Watson 2500 and similar	24.27	8.62	4	
1285	Watson 2500 similar or larger	24.57	8.62	4	
	Loader				
1286	Up to and including 6 cubic yards	24.27	8.62	4	
1287	Denver County - Under 6 cubic yards	24.27	8.62	4	
1288	Denver County - Over 6 cubic yards	24.42	8.62	4	

General Decision No. CO100019				
The wage and fringe benefits listed below reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Motor Grader			
1289	Douglas county - Blade Rough	24.27	8.62	4
1290	Douglas county - Blade Finish	24.57	8.62	4
	Crane			
1291	50 tons and under	24.42	8.62	4
1292	51 to 90 tons	24.57	8.62	4
1293	91 to 140 tons	24.72	8.62	4
	Scraper			
1294	Single bowl under 40 cubic yards	24.42	8.62	4
1295	40 cubic yards and over	24.57	8.62	4
General Decision No. CO100019				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
1296	CARPENTER (Excludes Form Work)	19.27	5.08	
	CEMENT MASON/CONCRETE FINISHER:			
1297	Denver	20.18	5.75	
1298	Douglas	18.75	3.00	
1299	ELECTRICIAN (Excludes Traffic Signal Installation)	35.13	6.83	
1300	FENCE ERECTOR (Excludes Link/Cyclone Fence Erection)	13.02	3.20	
1301	GUARDRAIL INSTALLER	12.89	3.20	
	HIGHWAY/PARKING LOT STRIPING:			
	Painter			
1302	Denver	12.62	3.21	
1303	Douglas	13.89	3.21	
	IRONWORKERS:			
1304	Reinforcing (Excludes Guardrail Installation)	16.69	5.45	
1305	Structural (Includes Link/Cyclone Fence Erection), (Excludes Guardrail Installation)	18.22	6.01	

General Decision No. CO100019				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	LABORERS:			
1306	Asphalt Raker	16.29	4.25	
1307	Asphalt Shoveler	21.21	4.25	
1308	Asphalt Spreader	18.58	4.65	
	Common or General			
1309	Denver	16.76	6.77	
1310	Douglas	16.29	4.25	
1311	Concrete Saw (Hand Held)	16.29	6.14	
1312	Landscape and Irrigation	12.26	3.16	
	Mason Tender - Cement/Concrete			
1313	Denver	16.96	4.04	
1314	Douglas	16.29	4.25	
	Pipelayer			
1315	Denver	13.55	2.41	
1316	Douglas	16.30	2.18	
	Traffic Control			
1317	Flagger	9.55	3.05	
1318	Sets Up/Moves Barrels, Cones, Install Signs, Arrow Boards and Place Stationary Flags, (Excludes Flaggers)	12.43	3.22	
	PAINTER:			
1319	Spray Only	16.99	2.87	
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1320	Denver	22.67	8.72	
1321	Douglas	23.67	8.47	
	Asphalt Paver			
1322	Denver	24.97	6.13	
1323	Douglas	25.44	3.50	

General Decision No. CO100019				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Asphalt Roller			
1324	Denver	23.13	7.55	
1325	Douglas	23.63	6.43	
1326	Asphalt Spreader	22.67	8.72	
	Backhoe/Trackhoe			
1327	Douglas	23.82	6.00	
1328	Bobcat/Skid Loader	15.37	4.28	
1329	Boom	22.67	8.72	
	Broom/Sweeper			
1330	Denver	22.47	8.72	
1331	Douglas	22.96	8.22	
1332	Bulldozer	26.90	5.59	
1333	Concrete Pump	21.60	5.21	
	Drill			
1334	Denver	20.48	4.71	
1335	Douglas	20.71	2.66	
1336	Forklift	15.91	4.68	
	Grader/Blade			
1337	Denver	22.67	8.72	
1338	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1339	Douglas	21.67	8.22	
	Mechanic			
1340	Denver	22.89	8.72	
1341	Douglas	23.88	8.22	

General Decision No. CO100019				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Oiler			
1342	Denver	23.73	8.41	
1343	Douglas	24.90	7.67	
	Roller/Compactor (Dirt and Grade Compaction)			
1344	Denver	20.30	5.51	
1345	Douglas	22.78	4.86	
1346	Rotomill	16.22	4.41	
	Screed			
1347	Denver	22.67	8.38	
1348	Douglas	29.99	1.40	
1349	Tractor	13.13	2.95	
	TRAFFIC SIGNALIZATION:			
	Groundsman			
1350	Denver	17.90	3.41	
1351	Douglas	18.67	7.17	
	TRUCK DRIVER:			
	Distributor			
1352	Denver	17.81	5.82	
1353	Douglas	16.98	5.27	
	Dump Truck			
1354	Denver	15.27	5.27	
1355	Douglas	16.39	5.27	
1356	Lowboy Truck	17.25	5.27	
1357	Mechanic	26.48	3.50	
	Multi-Purpose Specialty & Hoisting Truck			
1358	Denver	17.49	3.17	
1359	Douglas	20.05	2.88	

General Decision No. CO100019				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
	Pickup and Pilot Car			
1360	Denver County	14.24	3.77	
1361	Douglas County	16.43	3.68	
1362	Semi/Trailer Truck	18.39	4.13	
1363	Truck Mounted Attenuator	12.43	3.22	
	Water Truck			
1364	Denver County	26.27	5.27	
1365	Douglas County	19.46	2.58	

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

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100019

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.		Modifications			ID
		MOD Number	Date	Page Number(s)	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
General Decision No. CO100020 applies to the following counties: Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Las Animas, Otero, and Prowers counties.					
General Decision No. CO100020 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
1366	CARPENTER (Form Work Only)	24.00	11.28		
1814	ELECTRICIAN (Boom Truck Operator)	20.91	3% + 6.10	3	
	POWER EQUIPMENT OPERATOR:				
	Power Broom/Sweeper				
1367	Under 70 hp	23.57	8.62	4	
1368	70 hp and over	24.27	8.62	4	
	Drill Rig Caisson				
1369	Smaller than Watson 2500 and similar	24.27	8.62	4	
1370	Watson 2500 similar or larger	24.57	8.62	4	
	Crane				
1371	50 tons and under	24.42	8.62	4	
1372	51 - 90 tons	24.57	8.62	4	
1373	91 - 140 tons	24.72	8.62	4	
General Decision No. CO100020 The wage and fringe benefits listed below do not reflect collectively bargained rates.					
1374	CARPENTER (Excludes Form Work)	18.96	3.18		
	CEMENT MASON/CONCRETE FINISHER:				
1375	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	17.70	2.53		
1376	Las Animas	17.24	2.85		
1377	ELECTRICIAN	28.06	8.76		
	HIGHWAY/PARKING LOT STRIPING:				
1378	Truck Driver (Line Striping Truck)	14.60	3.49		
1379	Painter	13.92	3.07		

General Decision No. CO100020				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	IRONWORKER:			
1380	Reinforcing	16.94	6.77	
1381	Structural	16.76	6.01	
	LABORER:			
	Common or General			
1382	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	14.48	3.53	
1383	Las Animas	14.52	3.53	
1384	Concrete Saw (Hand Held)	16.00	6.14	
1385	Landscape and Irrigation	15.37	3.16	
1386	Mason Tender - Cement/Concrete	12.44	3.10	
1387	Traffic Control (Flagger)	9.42	3.21	
1388	Traffic Control (Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags), (Excludes Flaggers)	12.39	3.20	
1389	PAINTER (Spray Only)	17.54	3.52	
	POWER EQUIPMENT OPERATOR:			
1390	Asphalt Laydown	24.17	6.73	
1391	Asphalt Paver	22.67	8.72	
1392	Asphalt Plant	21.13	2.16	
1393	Asphalt Roller	23.14	7.51	
1394	Asphalt Spreader	23.19	7.66	
	Backhoe/Trackhoe			
1395	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	23.19	4.18	
1396	Las Animas	24.70	3.40	

General Decision No. CO100020				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
1397	Bobcat/Skid Loader	18.43	3.12	
1398	Bulldozer	26.65	4.46	
1399	Chipper	22.04	8.26	
1400	Drill	20.49	2.66	
1401	Forklift	18.30	5.01	
	Grader/Blade			
1402	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	18.40	4.20	
1403	Las Animas	18.88	3.14	
1404	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1405	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	23.58	6.66	
1406	Las Animas	23.56	5.93	
1407	Mechanic	18.91	4.20	
1408	Oiler	22.54	9.22	
1409	Roller/Compactor (Dirt and Grade Compaction)	17.78	2.83	
1410	Scraper	19.93	5.38	
1411	Screed	16.21	3.76	
1412	Tractor	16.83	2.95	
	TRUCK DRIVER:			
1413	Distributor	17.98	5.27	
1414	Dump Truck	17.61	2.69	
	Lowboy Truck			
1415	Baca, Bent, Costilla, Crowley, Huerfano, Kiowa, Otero, Prowers	19.95	3.36	
1416	Las Animas	19.77	3.25	

General Decision No. CO100020				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER, (con't):			
1417	Mechanic	17.79	3.51	
1418	Multi-Purpose Specialty & Hoisting Truck	18.89	3.49	
1419	Pickup and Pilot Car	14.04	3.49	
1420	Semi Truck	17.58	4.67	
1421	Water Truck	14.88	2.07	

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100020

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.		Modifications			ID
		MOD Number	Date	Page Number(s)	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
General Decision No. CO100021 applies to the following counties: Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Sedgwick, Washington, and Yuma counties.					
General Decision No. CO100021 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
1815	ELECTRICIAN (Boom Truck Operator)	20.91	3% + 6.10	3	
	POWER EQUIPMENT OPERATOR:				
	Power Broom/Sweeper				
1422	Under 70 hp	23.57	8.62	4	
1423	70 hp and over	24.27	8.62	4	
1424	Boom	-	-		
	Drill Rig Caisson				
1425	Smaller than Watson 2500 and similar	24.27	8.62	4	
1426	Watson 2500 similar or larger	24.57	8.62	4	
	Asphalt Screed				
1427	Kit Carson	24.27	8.62	4	
	Crane				
1428	50 tons and under	24.42	8.62	4	
1429	51 - 90 tons	24.57	8.62	4	
1430	91 - 140 tons	24.72	8.62	4	
	LABORER:				
	Common or General				
1431	Kit Carson	16.05	6.89		
	TRUCK DRIVER:				
	Dump Truck				
1432	Kit Carson	-	-		

General Decision No. CO100021				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	CARPENTER:			
1433	Excludes Form Work	18.96	3.18	
	Form Work Only			
1434	Cheyenne, Kit Carson, Logan, Morgan, Phillips, Sedgwick, Washington, Yuma	20.28	4.50	
1435	Lincoln	20.98	3.89	
	CEMENT MASON/CONCRETE FINISHER:			
1436	Cheyenne, Logan, Morgan, Phillips, Sedgwick, Washington, Yuma	19.22	2.74	
1437	Kit Carson	17.98	2.53	
1438	Lincoln	21.00	1.40	
1439	ELECTRICIAN	28.06	8.76	
	HIGHWAY/PARKING LOT STRIPING:			
1440	Truck Driver (Line Striping Truck)	14.60	3.49	
1441	Painter	12.90	3.07	
1442	IRONWORKER:			
1443	Reinforcing	21.12	3.89	
1444	Structural	16.76	6.01	
	LABORER:			
	Asphalt Raker			
1445	Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Washington, Yuma	17.02	5.79	
1446	Sedgwick	15.79	4.87	
1447	Asphalt Spreader	22.67	8.72	
	Common or General			
1448	Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Sedgwick, Washington, Yuma	12.44	3.53	
1449	Concrete Saw (Hand Held)	16.00	6.14	
1450	Landscape and Irrigation	12.81	3.16	
1451	Mason Tender - Cement/Concrete	14.71	3.29	

General Decision No. CO100021				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	LABORER (con't):			
	Traffic Control			
1452	Flagger	9.42	3.21	
1453	Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags, (Excludes Flaggers)	12.39	3.20	
1454	PAINTER (Spray Only)	17.54	3.52	
	POWER EQUIPMENT OPERATOR:			
1455	Asphalt Laydown	24.56	6.68	
1456	Asphalt Paver	22.67	8.72	
1457	Asphalt Plant	21.13	2.16	
	Asphalt Roller			
1458	Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Washington, Yuma	23.79	7.59	
1459	Sedgwick	23.92	9.22	
1460	Asphalt Spreader	23.19	7.66	
	Backhoe/Trackhoe			
1461	Cheyenne, Lincoln, Logan, Morgan, Phillips, Sedgwick, Washington, Yuma	25.88	4.18	
1462	Kit Carson	28.64	1.40	
1463	Bobcat/Skid Loader	20.79	5.36	
1464	Bulldozer	29.99	2.90	
1465	Chipper	22.04	8.26	
1466	Drill	20.49	2.66	
1467	Forklift	18.30	2.01	
1468	Grader/Blade	19.02	4.20	
1469	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1470	Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Washington, Yuma	27.22	5.85	
1471	Sedgwick	27.48	4.87	

General Decision No. CO100021				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Mechanic			
1472	Cheyenne, Lincoln, Logan, Morgan, Phillips, Washington, Yuma	20.52	5.49	
1473	Kit Carson	16.74	4.20	
1474	Sedgwick	21.09	4.87	
1475	Oiler	22.54	9.22	
1476	Roller/Compactor (Dirt and Grade Compaction)	16.52	4.87	
1477	Scraper	19.93	5.38	
	Screed			
1478	Cheyenne, Kit Carson, Lincoln, Logan, Morgan, Phillips, Sedgwick, Washington, Yuma	21.30	6.40	
1479	Tractor	16.83	2.95	
	TRUCK DRIVER:			
1480	Distributor	17.98	5.27	
	Dump Truck			
1481	Cheyenne, Logan, Morgan, Phillips, Washington, Yuma	18.52	5.96	
1482	Lincoln	14.15	3.83	
1483	Sedgwick	18.92	6.19	
	Kit Carson			
1816	6 cu. yds. and under	18.55	3.87	3
1817	7 – 14 cu. yds.	18.70	3.87	3
1818	15 – 29 cu. yds.	19.04	3.87	3
1819	30 – 38 cu. yds.	19.38	3.87	3
1820	39 – 54 cu. yds.	19.66	3.87	3
1821	55 – 79 cu. yds.	19.95	3.87	3
1822	80 – 104 cu. yds.	20.22	3.87	3
1823	104 cu. yds. and over	20.51	3.87	3

General Decision No. CO100021				
The wage and fringe benefits listed below do not reflect collectively bargained rates				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
1484	Lowboy Truck	18.29	4.87	
1485	Mechanic	17.79	3.51	
1486	Multi-Purpose Specialty & Hoisting Truck	18.79	3.49	
1487	Pickup and Pilot Car	14.04	3.49	
	Semi Truck			
1488	Cheyenne, Kit Carson, Lincoln, Morgan	17.58	4.67	
1489	Logan, Phillips, Sedgwick, Washington, Yuma	15.80	4.67	
1490	Water Truck	14.88	2.07	

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

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100021

<p>Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.</p> <p>When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.</p>		Modifications			ID
		MOD Number	Date	Page Number(s)	
		1	11-18-11	14	1
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		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
		4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4
<p>General Decision No. CO100022 applies to the following counties: Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, La Plata, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, and San Miguel counties.</p>					
<p>General Decision No. CO100022</p> <p>The wage and fringe benefits listed below reflect collectively bargained rates.</p>					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
1491	CARPENTER (Excludes Form Work)	24.00	11.28		
1824	ELECTRICIAN (Boom Truck Operator)	20.91	6.10 + 3%	3	
	POWER EQUIPMENT OPERATOR:				
	Drill Rig Caisson				
1492	Smaller than Watson 2500 and similar	24.27	8.62	4	
1493	Watson 2500 similar or larger	24.57	8.62	4	
	Mechanic				
1494	La Plata County	24.42	8.62	4	
<p>General Decision No. CO100022</p> <p>The wage and fringe benefits listed below do not reflect collectively bargained rates.</p>					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
	CARPENTER:				
	Form Work Only				
1495	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	18.57	5.38		
1496	La Plata	18.60	5.38		
	CEMENT MASON/CONCRETE FINISHER:				
1497	Alamosa, Archuleta, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Ouray, Rio Grande, Saguache, San Juan, San Miguel	17.67	2.85		
1498	Chaffee	15.55	2.85		
1499	La Plata	18.99	2.85		
1500	Montrose	16.95	2.85		

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
1501	ELECTRICIAN	28.06	8.76	
1502	GUARDRAIL INSTALLER	12.78	3.31	
	HIGHWAY/PARKING LOT STRIPING:			
1503	Truck Driver (Line Striping Truck)	14.60	3.49	
1504	Painter	12.90	3.07	
	IRONWORKER:			
1505	Reinforcing (Excludes Guardrail Installation)	16.94	6.77	
1506	Structural (Excludes Guardrail Installation)	16.76	6.01	
	LABORER:			
	Asphalt Raker			
1507	Alamosa	17.53	3.75	
1508	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	16.43	3.42	
1509	La Plata	15.38	3.12	
	Common or General			
1510	Alamosa, Chaffee, Montezuma, Montrose	12.44	3.53	
1511	Archuleta, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Ouray, Rio Grande, Saguache, San Miguel	13.70	3.53	
1512	Fremont	15.19	3.00	
1513	La Plata	14.07	3.53	
1514	Mineral	14.84	3.53	
1515	San Juan	13.73	3.53	
1516	Concrete Saw (Hand Held)	16.00	6.14	
	Landscape and Irrigation			
1517	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	14.02	3.16	
1518	La Plata	13.54	3.16	

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	LABORER (con't):			
	Mason Tender - Cement/Concrete			
1519	Alamosa, Archuleta, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	14.59	3.10	
1520	Chaffee	12.44	3.10	
1521	La Plata	15.67	3.10	
	Traffic Control			
1522	Flagger	9.42	3.21	
1523	Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags, (Excludes Flaggers)	12.39	3.20	
1524	PAINTER (Spray Only)	17.54	3.52	
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1525	Alamosa, La Plata	22.67	8.72	
1526	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	23.13	8.64	
1527	Asphalt Paver	22.67	8.72	
1528	Asphalt Plant	17.23	4.07	
	Asphalt Roller			
1529	Alamosa	21.67	8.22	
1530	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	22.77	8.36	
1531	La Plata	22.68	7.30	
1532	Montezuma	22.67	8.72	
1533	Asphalt Spreader	22.67	8.72	

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Backhoe/Trackhoe			
1534	Alamosa	21.03	3.75	
1535	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	19.75	3.75	
1536	La Plata	19.79	5.13	
1537	Mineral	19.17	5.53	
1538	Montezuma	16.42	4.42	
	Bobcat/Skid Loader			
1539	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	18.20	4.54	
1540	La Plata	19.98	4.88	
1541	Mineral	17.94	4.62	
	Broom/Sweeper			
1542	Alamosa	20.67	9.22	
1543	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, La Plata, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	21.70	9.22	
	Bulldozer			
1544	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	23.28	9.22	
1545	Fremont	23.67	9.22	
1546	La Plata	23.57	8.72	
1547	Chipper	22.04	8.26	
	Crane			
1548	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	25.01	8.22	
1549	La Plata	25.21	8.22	

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
1550	Drill	20.84	2.66	
1551	Forklift	18.30	5.01	
1552	Grade Checker	23.91	7.89	
	Grader/Blade			
1553	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	16.39	4.20	
1554	Fremont	19.68	3.37	
1555	La Plata	19.83	4.20	
1556	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1557	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montrose, Ouray, Rio Grande, Saguache, San Juan	23.38	8.22	
1558	Fremont	23.67	9.22	
1559	La Plata	23.36	7.09	
1560	Montezuma	22.82	8.72	
1561	San Miguel	23.82	9.22	
	Mechanic			
1562	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	16.74	4.20	
1563	Fremont	18.79	3.51	
	Oiler			
1564	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan,	22.97	7.88	
1565	Fremont	22.97	8.56	
1566	La Plata	24.08	5.49	
1567	San Miguel	22.97	9.22	

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Roller/Compactor (Dirt and Grade Compaction)			
1568	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	19.24	4.96	
1569	Fremont	16.52	5.28	
1570	La Plata	18.33	2.98	
1571	Rotomill	16.28	4.41	
1572	Scraper	17.62	2.96	
	Screed			
1573	Alamosa	20.33	6.81	
1574	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	19.58	4.96	
1575	La Plata	17.86	2.75	
1576	Tractor	15.08	2.95	
	TRAFFIC SIGNALIZATION:			
1577	Groundsman	17.04	2.28	
	TRUCK DRIVER:			
	Distributor			
1578	Alamosa	18.40	4.51	
1579	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, La Plata, Mineral, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	17.62	5.27	
1580	Montezuma	15.80	5.27	

General Decision No. CO100022				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
	Dump Truck			
1581	Alamosa	14.15	3.83	
1582	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	16.56	4.03	
1583	Fremont	16.55	4.34	
1584	La Plata	16.90	3.83	
1585	Mineral	16.97	4.61	
1586	Lowboy Truck	17.25	5.84	
1587	Mechanic	17.79	3.51	
1588	Multi-Purpose Specialty & Hoisting Truck	14.60	3.49	
	Pickup and Pilot Car			
1589	Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	14.04	3.49	
1590	La Plata	15.47	3.49	
	Semi Truck			
1591	Alamosa, Archuleta, Chaffee, Gunnison, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	19.42	5.41	
1592	Conejos, Custer, Delta, Dolores, Fremont, Hinsdale, La Plata	17.25	5.41	
	Water Truck			
1593	Alamosa	17.58	3.75	
1594	Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Gunnison, Hinsdale, Mineral, Montrose, Ouray, Rio Grande, Saguache, San Juan, San Miguel	16.75	3.04	
1595	Fremont	16.15	3.14	
1596	La Plata	17.67	3.43	
1597	Montezuma	14.88	2.07	

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100022

<p>Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011.</p> <p>When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.</p>		Modifications			ID
		MOD Number	Date	Page Number(s)	
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		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
	4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4	
<p>General Decision No. CO100023 applies to the following counties: Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt and Summit counties.</p>					
<p>General Decision No. CO100023</p> <p>The wage and fringe benefits listed below reflect collectively bargained rates.</p>					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
1598	CARPENTER (Excludes Form Work)	24.00	11.28		
	TRAFFIC SIGNALIZATION:				
	SUMMIT COUNTY				
	Traffic Signal Installation				
1599	Zone 1	26.42	4.75% + 8.68		
1600	Zone 2	29.42	4.75% + 8.68		
	<p><u>Traffic Installer Zone Definitions</u> Zone 1 – Within a 35 mile radius measured from the addresses 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 Zone 2 - All work outside these areas.</p>				
1824	ELECTRICIAN (Boom Truck Operator)	20.91	6.10 + 3%	3	
	POWER EQUIPMENT OPERATOR:				
	Drill Rig Caisson				
1601	Smaller than Watson 2500 and similar	24.27	8.62	4	
1602	Watson 2500 similar or larger	25.57	8.62	4	
	IRONWORKER:				
	Structural				
1603	Garfield	23.80	18.07		

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
	CARPENTER (Form Work Only):			
1604	Eagle, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	15.92	5.38	
1605	Garfield	19.55	4.09	
	CEMENT MASON/CONCRETE FINISHER:			
1606	Eagle	17.59	2.85	
1607	Garfield	17.27	2.16	
1608	Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	18.23	2.85	
1609	Summit	15.55	2.85	
	ELECTRICIAN:			
1610	Excludes Traffic Signalization	28.06	8.76	
	Traffic Signalization Electrician			
1611	Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	28.24	8.52	
	Traffic Signalization Groundsman			
1612	Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	15.93	4.01	
1613	Summit	16.75	4.10	
	GUARDRAIL INSTALLER:			
1614	Eagle	12.78	3.46	
1615	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	12.78	3.31	
	HIGHWAY/PARKING LOT STRIPING:			
1616	Truck Driver (Line Striping Truck)	14.60	3.49	
	Painter			
1617	Eagle,	13.85	3.07	
1618	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	13.97	3.07	
	IRONWORKER:			
	Excludes Guardrail Installation			
1619	Reinforcing	16.94	6.77	
1620	Structural	22.22	6.01	

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	LABORER:			
	Asphalt Raker			
1621	Eagle	16.36	3.26	
1622	Garfield	18.66	3.53	
1623	Grand	17.90	3.02	
1624	Jackson, Lake, Moffatt, Routt	17.75	3.75	
1625	Pitkin	17.50	3.75	
1626	Rio Blanco	18.97	3.75	
1627	Summit	16.77	3.26	
	Common or General			
1628	Eagle, Garfield, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	12.44	3.53	
1629	Grand	19.14	3.53	
1630	Concrete Saw (Hand Held)	16.00	6.14	
	Landscape and Irrigation			
1631	Eagle	14.84	3.16	
1632	Garfield, Grand, Jackson, Lake, Moffatt, Rio Blanco, Routt	13.54	3.16	
1633	Pitkin	14.16	3.16	
1634	Summit	13.09	3.16	
	Mason Tender - Cement/Concrete			
1635	Eagle, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	12.44	3.10	
1636	Garfield	14.87	3.10	
	Traffic Control			
1637	Flagger	9.42	3.21	
	Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags, (Excludes Flaggers)			
1638	Eagle, Garfield, Grand, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	12.39	3.20	
1639	Jackson	12.93	3.22	

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	PAINTER: (Spray Only)			
1640	Eagle	17.49	3.52	
1641	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	17.54	3.52	
1642	Summit	19.96	3.52	
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1643	Eagle, Summit	22.67	8.72	
1644	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Routt	24.09	7.93	
1645	Rio Blanco	23.67	9.22	
1646	Asphalt Paver	22.67	8.72	
1647	Asphalt Plant	19.27	4.47	
	Asphalt Roller			
1648	Eagle	23.01	8.72	
1649	Garfield, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	23.15	8.07	
1650	Grand	22.67	8.72	
1651	Asphalt Spreader	25.61	6.96	
	Backhoe/Trackhoe			
1652	Eagle	22.56	7.02	
1653	Garfield	19.40	4.42	
1654	Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	22.92	6.15	
1655	Summit	24.30	5.75	
	Bobcat/Skid Loader			
1656	Eagle	18.25	4.32	
1657	Garfield	24.63	0.00	
1658	Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	21.04	5.18	
1659	Summit	19.77	4.28	

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Broom/Sweeper			
1660	Eagle	23.35	7.78	
1661	Garfield, Jackson, Lake, Moffat, Pitkin, Routt	21.92	7.66	
1662	Grand	21.67	8.22	
1663	Rio Blanco	21.66	0.00	
1664	Summit	22.67	8.72	
1665	Bulldozer	26.78	7.05	
1666	Chipper	22.04	8.26	
1667	Crane	23.82	9.22	
1668	Drill	20.84	2.66	
1669	Forklift	18.30	5.01	
1670	Grade Checker	23.82	9.22	
1671	Grader/Blade	23.05	6.45	
1672	Guardrail/Post Driver	16.07	4.41	
	Loader (Front End)			
1673	Eagle	24.98	7.55	
1674	Garfield	21.93	9.22	
1675	Grand, Pitkin,	22.67	8.72	
1676	Jackson, Lake, Moffatt, Routt	24.07	7.92	
1677	Rio Blanco	23.67	9.22	
1678	Summit	25.88	7.01	
	Mechanic			
1679	Eagle, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	23.31	3.93	
1680	Garfield	19.80	4.20	
	Oiler			
1681	Eagle	23.82	7.62	
1682	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	24.04	7.77	

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Roller/Compactor (Dirt and Grade Compaction)			
1683	Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Routt	22.72	5.98	
1684	Rio Blanco	23.67	9.22	
1685	Summit	24.38	6.11	
	Rotomill			
1686	Eagle	18.86	4.41	
1687	Garfield, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt	20.70	4.41	
1688	Grand	23.48	4.41	
1689	Summit	16.28	4.41	
1690	Scraper	20.60	7.99	
	Screed			
1691	Eagle	17.04	3.98	
1692	Garfield, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	23.76	5.05	
1693	Grand	23.29	4.05	
1694	Tractor	15.08	2.95	

General Decision No. CO100023				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER:			
	Distributor			
1695	Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Routt, Summit	19.07	4.35	
1696	Rio Blanco	15.80	5.27	
	Dump Truck			
1697	Eagle	16.17	3.83	
1698	Garfield	16.29	3.83	
1699	Grand, Jackson, Lake, Moffat, Routt	17.79	4.02	
1700	Pitkin	20.13	4.15	
1701	Rio Blanco	17.26	4.63	
1702	Summit	15.27	5.27	
	Lowboy Truck			
1703	Eagle	18.89	4.56	
1704	Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	18.43	4.56	
1705	Mechanic	17.79	3.51	
1706	Multi-Purpose Specialty & Hoisting Truck	14.60	3.49	
1707	Pickup and Pilot Car	14.04	3.49	
1708	Semi Truck	20.72	0.00	
	Water Truck			
1709	Eagle	23.05	2.90	
1710	Garfield	21.00	5.88	
1711	Grand	21.19	3.01	
1712	Jackson, Lake, Moffatt, Pitkin, Routt, Summit	20.39	3.43	
1713	Rio Blanco	17.25	3.75	

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION NO. CO100023

Decision Nos. CO100016, 17, 18, 19, 20, 21, 22, 23 and 24 dated January 06, 2012 supersedes Decision Nos. CO100018, 19, 20, 21, 22, 23, 24, 25 and 26 dated September 30, 2011. When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.		Modifications			ID
		MOD Number	Date	Page Number(s)	
		1	11-18-11	14	1
		2	01-06-12	1, 10, 14, 19, 25, 29, 34, 42 and 50	2
		3	02-10-12	8, 16, 25, 29, 32, 34, 42 and 50	3
	4	08-10-12	1, 10, 14, 19, 20, 25, 29, 34, 42 and 50	4	
General Decision No. CO100024 applies to the following counties: Larimer, Mesa, and Weld counties.					
General Decision No. CO100024 The wage and fringe benefits listed below reflect collectively bargained rates.					
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod	
	POWER EQUIPMENT OPERATOR:				
	Drill Rig Caisson				
1714	Smaller than Watson 2500 and similar	24.27	8.62	4	
1715	Watson 2500 similar or larger	24.57	8.62	4	
	Oiler				
1716	Weld	24.42	8.62	4	
General Decision No. CO100024 The wage and fringe benefits listed below do not reflect collectively bargained rates.					
	CARPENTER:				
1717	Excludes Form Work	20.72	5.34		
	Form Work Only				
1718	Larimer, Mesa	18.79	3.67		
1719	Weld	16.54	3.90	3	
	CEMENT MASON/CONCRETE FINISHER:				
1720	Larimer	16.05	3.00		
1721	Mesa	17.53	3.00		
1722	Weld	17.48	3.00		
	ELECTRICIAN:				
	Excludes Traffic Signalization				
1723	Weld	33.45	7.58		
	Traffic Signalization				
1724	Weld	25.84	6.66		

General Decision No. CO100024				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	FENCE ERECTOR:			
1725	Weld	17.46	3.47	
	GUARDRAIL INSTALLER:			
1726	Larimer, Weld	12.89	3.39	
	HIGHWAY/PARKING LOT STRIPING:			
	Painter			
1727	Larimer	14.79	3.98	
1728	Mesa	14.75	3.21	
1729	Weld	14.66	3.21	
	IRONWORKER:			
	Reinforcing (Excludes Guardrail Installation)			
1730	Larimer, Weld	16.69	5.45	
	Structural (Excludes Guardrail Installation)			
1731	Larimer, Weld	18.22	6.01	
	LABORER:			
	Asphalt Raker			
1732	Larimer	18.66	4.66	
1733	Weld	16.72	4.25	
1734	Asphalt Shoveler	21.21	4.25	
1735	Asphalt Spreader	18.58	4.65	
1736	Common or General	16.29	4.25	
1737	Concrete Saw (Hand Held)	16.29	6.14	
1738	Landscape and Irrigation	12.26	3.16	
1739	Mason Tender - Cement/Concrete	16.29	4.25	
	Pipelayer			
1740	Larimer	17.27	3.83	
1741	Mesa, Weld	16.23	3.36	
1742	Traffic Control (Flagger)	9.55	3.05	

General Decision No. CO100024				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	LABORER (con't):			
	Traffic Control (Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags), (Excludes Flaggers)			
1743	Larimer, Weld	12.43	3.22	
1744	PAINTER (Spray Only)	16.99	2.87	
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1745	Larimer	26.75	5.39	
1746	Mesa, Weld	23.93	7.72	
1747	Asphalt Paver	21.50	3.50	
	Asphalt Roller			
1748	Larimer	23.57	3.50	
1749	Mesa	24.25	3.50	
1750	Weld	27.23	3.50	
	Asphalt Spreader			
1751	Larimer	25.88	6.80	
1752	Mesa, Weld	23.66	7.36	
	Backhoe/Trackhoe			
1753	Larimer	21.46	4.85	
1754	Mesa	19.81	6.34	
1755	Weld	20.98	6.33	
	Bobcat/Skid Loader			
1756	Larimer	17.13	4.46	
1757	Mesa, Weld	15.37	4.28	
1758	Boom	22.67	8.72	
	Broom/Sweeper			
1759	Larimer	23.55	6.20	
1760	Mesa	23.38	6.58	
1761	Weld	23.23	6.89	

General Decision No. CO100024				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Bulldozer			
1762	Larimer, Weld	22.05	6.23	
1763	Mesa	22.67	8.72	
1764	Crane	26.75	6.16	
	Drill			
1765	Larimer, Weld	31.39	0.00	
1766	Mesa	35.06	0.00	
1767	Forklift	15.91	4.68	
	Grader/Blade			
1768	Larimer	24.82	5.75	
1769	Mesa	23.42	9.22	
1770	Weld	24.53	6.15	
1771	Guardrail/Post Driver	16.07	4.41	
1772	Loader (Front End)			
1773	Larimer	20.45	3.50	
1774	Mesa	22.44	9.22	
1775	Weld	23.92	6.67	
	Mechanic			
1776	Larimer	27.68	4.57	
1777	Mesa	25.50	5.38	
1778	Weld	24.67	5.68	
	Oiler			
1779	Larimer	24.16	8.35	
1780	Mesa	23.93	9.22	
	Roller/Compactor (Dirt and Grade Compaction)			
1781	Larimer	23.67	8.22	
1782	Mesa, Weld	21.33	6.99	

General Decision No. CO100024				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Rotomill			
1783	Larimer	18.59	4.41	
1784	Weld	16.22	4.41	
	Scraper			
1785	Larimer	21.33	3.50	
1786	Mesa	24.06	4.13	
1787	Weld	30.14	1.40	
	Screed			
1788	Larimer	27.20	5.52	
1789	Mesa	27.24	5.04	
1790	Weld	27.95	3.50	
1791	Tractor	13.13	2.95	
	TRAFFIC SIGNALIZATION:			
	Groundsman			
1792	Larimer	11.44	2.84	
1793	Mesa	16.00	5.85	
1794	Weld	16.93	3.58	
	TRUCK DRIVER:			
	Distributor			
1795	Larimer	19.28	4.89	
1796	Mesa	19.17	4.84	
1797	Weld	20.61	5.27	
	Dump Truck			
1798	Larimer	18.86	3.50	
1799	Mesa	15.27	4.28	
1800	Weld	15.27	5.27	

General Decision No. CO100024				
The wage and fringe benefits listed below do not reflect collectively bargained rates.				
Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
	Lowboy Truck			
1801	Larimer	18.96	5.30	
1802	Mesa, Weld	18.84	5.17	
1803	Mechanic	26.48	3.50	
	Multi-Purpose Specialty & Hoisting Truck			
1804	Larimer, Mesa	16.65	5.46	
1805	Weld	16.87	5.56	
1806	Pickup and Pilot Car	13.93	3.68	
1807	Semi/Trailer Truck	18.39	4.13	
1808	Truck Mounted Attenuator	12.43	3.22	
	Water Truck			
1809	Larimer	19.14	4.99	
1810	Mesa	15.96	5.27	
1811	Weld	19.28	5.04	

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

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 (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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.

END OF GENERAL DECISION NO. CO100024

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DEPARTMENT OF PUBLICWORKS /

PROJECT SPECIAL PROVISIONS

Contract No. 201207581

**COLFAX/GALAPAGO/WELTON
INTERSECTION IMPROVEMENTS**

September 24, 2012

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION
PROJECT SPECIAL PROVISIONS
Colfax/Galapago/Welton Intersection
Federal Aid Project No: STU M320-060
CDOT Subaccount No: 16952**

Prepared for:



**City and County of Denver
201 West Colfax Avenue
Denver, Colorado 80202**

Prepared by:



Stantec

**Stantec Consulting Services, Inc.
2000 South Colorado Boulevard Suite 2-300
Denver, CO 80222**

August 24, 2012

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**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION
PROJECT SPECIAL PROVISIONS
Colfax/Galapago/Welton Intersection Improvements**

GENERAL CONTRACT CONDITIONS

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

STANDARD CONSTRUCTION SPECIFICATIONS

Standard construction specifications shall be the Colorado Department of Transportation “Standard Specifications for Road and Bridge Construction, (Sections 200-700)” adopted in 2011 and as hereinafter modified shall be used for this project.

DETAILED CONSTRUCTION SPECIFICATION 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 City and County of Denver Public Works Transportation Standards and Details, 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/WMDDesign>.

**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION
PROJECT SPECIAL PROVISIONS
Colfax/Galapago/Welton Intersection**

The 2011 Standard Specifications for Road and Bridge Construction controls construction of this project. The following special provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and plans.

PROJECT SPECIAL PROVISIONS

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**CITY AND COUNTY OF DENVER
DEPARTMENT OF TRANSPORTATION
PROJECT SPECIAL PROVISIONS
Colfax/Galapago/Welton Intersection**

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DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS
COLFAX/GALAPAGO/WELTON INTERSECTION
STANDARD SPECIAL PROVISIONS**

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COLORADO
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COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall commence work under the Contract on or before the 5th day following Contract execution or the 20th day following the date of award, whichever comes later, unless such time for beginning the work is changed by the ENGINEER in the "Notice to Proceed." The Contractor shall complete all work in accordance with the "Notice to Proceed."

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

Subsection 108.03 shall include the following:

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

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

- (1) Mobilization and Advance Signing
- (2) Erosion Control
- (3) Environmental Health and Safety Management
- (4) General removals (curb, gutter, sidewalk, etc.)
- (5) Traffic signal and sign removals
- (6) Concrete item placement (curb, gutter, sidewalk, etc.)
- (7) Asphalt planing
- (8) Asphalt placement
- (9) Asphalt patching
- (10) Traffic sign, signal conduit and signals (placement and turn on)
- (11) Landscaping / irrigation work
- (12) Signing and striping

ON THE JOB TRAINING CONTRACT GOAL

The Department has determined that On the Job Training shall be provided to trainees with the goal of developing full journey workers in the types of trade or classification involved. The contract goal for On the Job Trainees working in an approved training plan in this Contract has been established as follows:

Minimum number of total On the Job Training required _____ hours

**REVISION OF SECTION 101
HOLIDAYS**

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

Subsection 101.36 shall include the following:

Holidays recognized by the City and County of Denver (and therefore applicable to this project) shall include:

- Colfax Marathon
- Denver Marathon
- Taste of Colorado
- Pride Fest
- Cinco De Mayo
- People's Fair

The Mayor may, at his discretion, declare additional holidays and events that should be treated as Holidays that would require special accommodations. Previous events included in this list would include, but not be limited to, Sports team championship parades and political party conventions.

REVISION OF SECTION 101 NOISE CONTROL

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

Add Subsection 101.96 which shall include the following:

101.96 Noise Control. In accordance with the City/County of Denver's (Noise Control Ordinance D.R.M.C) chapter 36, all contractors shall comply with the City/County of Denver noise restrictions for construction work during p.m. hours. No person shall operate any construction equipment nor conduct any construction activities between the hours of 9:00 p.m. to 7:00 a.m. Monday – Friday and 5:00 p.m. and 8:00 a.m. Saturday through Sunday if noise levels are expected to exceed 50 dBA in residential areas or 60 dBA in commercial areas.

In the cases where night time construction activities will take place between the hours listed above, the contractor is required to apply for a construction noise variance (approximately 2 months prior to construction) through the Denver Department of Environmental Health (DEH) at a cost of \$25.00 for application processing. The cost of such application shall be included in the cost of the work.

All application requirements and chapter 36 ordinance requirements regarding night time construction noise activities must be coordinated by the contractor with the City/County Denver Noise Specialist for review. The contractor is fully responsible for the timely submittal of the variance application and fulfilling the requirements set forth by the City/County of Denver which allow construction activities during p.m. hours under the granted variance.

**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.

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

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

Subsection 107.12 shall include the following:

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

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

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

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

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

The determination as to whether a plant is of replacement size or beyond will be made by the Department's Landscape Architect or Wetland Specialist.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is repaired to the Engineer's satisfaction at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

**REVISION OF SECTION 202
REMOVAL OF STRUCTURE (SPECIAL)**

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

Subsection 202.01 shall include the following:

This work shall also include the removal of parking meters and tree grates as designated on the project in the plans.

Subsection 202.11 shall include the following:

Removal of Parking Meters and Tree Grates shall be considered salvable material and shall be placed in the area designated by the Project Engineer. Payment shall be measured by each unit removed.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Structure (Special)	Each

REVISION OF SECTION 202 REMOVAL OF TREE

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

Subsection 202.01 shall include the following:

This work includes the removal and disposal of trees 6 inches or greater in diameter, as measured 24 inches above the existing ground as shown on the plans and as directed by the Engineer. This work also includes the removal and the disposal of the waste of the trees as shown on the plans and directed by the Engineer. This work includes the preservation from injury or defacement of all vegetation and objects designated to remain.

The Engineer will establish environmental limits. All trees, shrubs, plants, grasses, and other vegetative materials shall remain, except as designated by the Engineer. If it appears that the completion of construction may cause damage to the branches of any tree to remain, the Contractor shall prune trees to facilitate construction.

Subsection 202.02 shall include the following:

Prior to beginning any road construction or removal of encroaching vegetation, the Contractor shall be responsible to schedule and participate in a walk through of the site with the Contractor and the Engineer to mark/tag trees, to be removed, protected and or pruned. Trees to be transplanted and vegetation to be protected may also be marked during this walk through.

The Contractor shall submit for approval, a proposal including methods, materials, construction pruning, subsequent tree fertilization and schedule, to the Engineer.

After all directed clearing, trimming, and pruning is completed and accepted, no additional clearing, trimming, cutting, or pruning will be allowed unless approved, in writing, by the Engineer.

All pruning and removal work is to be accomplished using the American National Standard Institute standards (ANSI a 300-1995 section 5.3.3.2). This work shall be done by a Contractor or subcontractor who is a qualified tree surgeon and who is a member of the National Arborist Association. The firm's or individual's name and qualifications shall be submitted at the pre-construction conference for the Engineer's approval. A list of references and other clients shall be included with the qualifications statement. The Contractor shall provide a written description of work methods and time schedules to be approved in writing by the Engineer prior to work commencing.

Access for the removal or pruning of trees will be extremely limited. The Contractor shall obtain any local permits necessary for pruning or removal of all trees not in the right-of-way. Trees shall be felled at the risk of the Contractor. Strict limits of disturbance are defined in the plans and shall be adhered to. If damage or destruction occurs outside of the pre-established limits, the provisions of "Revision of Section 107-Protection of Existing Vegetation" will be enforced.

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**REVISION OF SECTION 202
REMOVAL OF TREE**

Where construction brings about a need to sever roots, roots shall be pruned. If tree roots larger than two (2) inches in diameter of trees scheduled only for trimming are encountered with digging or trenching, they should be tunneled under. The Contractor shall physically inspect and hand excavate around root zones to determine damage and health of tree. The Contractor shall not tear the roots out.

Removal of two (2) inches or larger diameter roots encountered during construction will not be allowed. If damage or destruction occurs on trees scheduled only for pruning, the provisions of "Revision of Section 107-Protection of Existing Vegetation" will be enforced.

Branches on trees or shrubs shall be removed as directed by the Engineer. All pruning shall be done by skilled workmen. All work shall be done according to the following requirements:

- 1. Trimming and pruning shall be done with proper, sharp, clean tools in such a manner as to preserve the natural character of the tree.*
- 2. All final cuts shall leave no projections on or off the branch and shall not be cut so close as to eliminate the branch collar.*
- 3. To avoid bark stripping, all branches 2 inches in diameter and larger shall be cut using the 3-cut method. These branches shall be lowered to the ground by the proper rope method.*
- 4. Tools used on trees known or found to be diseased shall be disinfected with alcohol before they are used on other trees.*
- 5. Branches which are weak or dead shall be removed. Structural weaknesses, decayed trunk or branches, or split crotches shall be reported to the Engineer.*
- 6. When trimming, cutting back or topping trees, the Contractor shall use the drop-crotch method and avoid trimming or cutting back to small suckers. Smaller limbs and twigs shall be removed in such a manner so as to leave the foliage pattern evenly distributed.*
- 7. When reducing size (cut back or topping) not more than one-third of the total area shall be reduced at a single operation.*
- 8. Climbing spikes will not be allowed when a tree is not scheduled for removal.*
- 9. Remove man made structures including wires and cables from existing trees.*
- 10. Make smooth cuts on any severed tree roots greater than 2 inches diameter. Do not rip or tear, by excavation equipment, roots of trees to remain.*
- 11. Fertilizers, insect sprays, or other chemicals shall not be applied before or during root or branch pruning processes.*

**REVISION OF SECTION 202
REMOVAL OF TREE**

All brush, branches, limbs, and foliage smaller than 3 inches in diameter shall be chipped into mulch and removed/hailed away from the site or stockpiled at a designated site. The trunks and limbs 3 inches and larger shall be cut into less than 6 foot lengths and hauled away or stockpiled at a designated site. Stumps shall be left no higher than 1 foot above the ground surface and shall not be removed when within the areas to be excavated. In lawn areas, stumps shall be left at a depth of 12 inches below the proposed finished grade surface. In paved areas, stumps shall be left at a depth of 36 inches below finish grade. Tree stumps designated on the plans for removal, shall be cut so that they are 1 foot below the ground surface and the majority of the stump removed. When trees being cut off are outside the excavation limits, the stumps shall be removed by grinding to 1 foot below the surface cut so that no more than 3 inches remains above the ground surface. Stump removal areas shall be filled with existing soil. Chemicals which will harm future landscapes, above stumps, may not be applied to aid in stump removal. Removals or mulch shall become the property of the Contractor.

Subsection 202.11 shall include the following:

Removal of trees will be measured by the actual number of trees 6 inches or greater in diameter, as measured 24 inches above the existing ground, removed and disposed of. Removal of trees smaller than 6 inches in diameter shall be included under the clearing and grubbing item.

Subsection 202.12 shall include the following:

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

Chipping and hauling chipping, stockpiling mulch, and hauling and stockpiling trunks and limbs will not be paid for separately but shall be included in the work.

Removal of trees less than 6 inches in diameter will not be paid for separately but shall be paid for as clearing and grubbing.

All pruning of trees to accommodate construction shall be included in the cost of the work.

All clearing and grubbing directed by the Engineer will be paid for as lump sum under the clearing and grubbing item.

END OF SECTION REVISION

**REVISION OF SECTION 202
REMOVAL OF PIPE**

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

Subsection 202.02 shall include the following:

Removal of Pipe shall include removal of pipe, valves, fittings, and all incidental pipe material within the designated removal area.

All material designated for removal shall be disposed of outside the limits of the project, unless otherwise designated on the plans, or as directed by the Engineer.

Subsection 202.11 shall include the following:

Removal of Pipe will be measured by the Linear Foot.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Pipe (15" Clay Storm Sewer)	Linear Foot
Removal of Pipe (12" Water Line)	Linear Foot
Removal of Pipe (15" Waterline)	Linear Foot

**REVISION OF SECTION 202
REMOVAL OF SIDEWALK**

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

Subsection 202.07 shall include the following:

Removal of Sidewalk shall include removal of sidewalk, curb ramps, truncated domes, and median cover material regardless of pavement thickness.

All material designated for removal shall be broken into pieces and disposed of outside the limits of the project, unless otherwise designated on the plans, or as directed by the Engineer. The Contractor shall document the existing conditions adjacent to buildings prior to any removals, and shall take special care in the removal of materials directly adjacent to buildings and/or building foundations.

Old concrete construction which abuts existing sidewalks, curbs, etc., to be left in place shall be saw cut to true line with a vertical face with minimal jagged edges to the satisfaction of the Engineer.

Subsection 202.11 shall include the following:

Removal of Sidewalk will be measured by the area in square yards, regardless of thickness.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Sidewalk	Square Yard

**REVISION OF SECTION 202
REMOVAL MEDIAN COVER MATERIAL**

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

Subsection 202.02 shall include the following:

Removal of Median Cover shall include removal of all median material including existing artwork foundation.

Subsection 202.11 shall include the following:

Removal of Pipe will be measured by the Square Yard.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Median	Square Yard

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

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

Subsection 202.03 shall include the following:

The removed cabinets and all appurtenances including controller(s) and all other equipment internal to the cabinet shall be delivered to the City and County of Denver maintenance yard at 5440 Roslyn Street, Denver. Contact Chris Lillie at (720) 865-4066. Existing cabinet and controller assemblies at the locations depicted in the plans shall be removed.

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

Subsection 202.04 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, attached signs, and all incidental equipment, except as noted on plans. All existing foundations and pull boxes shall be removed and backfilled. 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 luminaire, and the Contractor shall remove the remainder of 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:

Pay Item
Removal of Traffic Signal Equipment

Pay Unit
Lump Sum

Payment includes all labor, equipment and materials necessary to complete the work.

**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.

**REVISION OF SECTION 202
CLEAN VALVE BOX**

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

Subsection 202.02 shall include the following:

The Contractor shall clean each valve box of all foreign debris such that the operating nut of the valve is fully accessible to operation. The Engineer will obtain the Owner's inspection and written approval before accepting the work.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Clean Valve Box	Each

**REVISION OF SECTION 202
CLEAN INLET**

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

Subsection 202.02 shall include the following:

The Contractor shall clean each Inlet opening and box of all foreign debris such that stormwater enters and flows into the storm sewer unobstructed. The Engineer will obtain the Owner's inspection and written approval before accepting the work.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Clean Inlet	Each

**REVISION OF SECTION 202
REMOVAL OF CURB STOP (SPECIAL)**

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

Subsection 202.02 shall include the following:

Removal of Curb Stop shall include removal of all surface evidence of Curb Stop Valve box to 18 inches below finished grade. Existing Curb Stop valve may be abandoned in place.

All material designated for removal shall be disposed of outside the limits of the project, unless otherwise designated on the plans, or as directed by the Engineer.

Subsection 202.11 shall include the following:

Removal of Curb Stop will be measured by each removed.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Curb Stop (Special)	Each

**REVISION OF SECTION 202
REMOVAL OF WATER METER PIT (SPECIAL)**

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

Subsection 202.02 shall include the following:

Removal of Water Meter Pit shall include removal of all surface evidence of Water Meter Pit to 18 inches below finished grade.

All material designated for removal shall be disposed of outside the limits of the project, unless otherwise designated on the plans, or as directed by the Engineer.

Subsection 202.11 shall include the following:

Removal of Water Meter Pit will be measured by each removed.

Subsection 202.12 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Water Meter Pit (Special)	Each

REVISION OF SECTION 208 EROSION CONTROL

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

PART I: DEFINITIONS

Definitions used for this Section shall consist of those listed in Title 1 of the City and County of Denver “Standard Specifications for Construction, General Contract Conditions”, 1999 edition.

Definitions used for this Section hereby incorporate those identified within the City and County of Denver Construction Activities Stormwater Manual (CASM).

Additional Definitions applicable to this Section are listed heretofore:

Basis of Payment: The terms under which “Work” is paid, as a designated “Pay Item” in accordance with the quantity measured and the “Pay Unit.”

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, installation of devices, maintenance procedures, and other management practices deployed to stabilize the construction site to prevent or reduce the pollution of State Waters (see definition below). Stormwater BMPs can be classified as "structural" (i.e., devices installed or constructed on a site) or "non-structural" (procedures, such as modified landscaping practices).

Colorado Department of Health and Environment (CDPHE): State of Colorado, Water Quality Control Division responsible for issuance of State Construction Stormwater Permit.

Construction Activities Stormwater Discharge Permit (CASDP): Permit issued by the City for compliance with City & County of Denver Revised Municipal Code and Department of Public Works Rules & Regulations concerning the discharge of pollutants in storm generated runoff from construction sites to Municipal Separate Storm Sewer System (MS4, see definition below) or State Waters, via the Municipal Separate Storm Sewer System (MS4).

Construction Activities Stormwater Manual (CASM): City and County of Denver Construction Activities Stormwater Manual (CASM), 2010 edition.

Colorado Department of Transportation (CDOT): State agency that has published standards for Erosion Control with accompanying Erosion Control Supervisor certification courses.

Erosion Control Supervisor (ECS): The Erosion Control Supervisor is assigned by the Contractor to perform duties as described in this Section. The ECS shall be properly trained in BMPs per requirements of Part V below, and shall be under the direction of a Professional Engineer licensed in the State of Colorado when performing any modifications to the Project Stormwater Management Plan (SWMP).

Final Stabilization: Point of construction when all ground surface disturbing activities at the site have been completed and uniform vegetative cover has reached 70% of pre-disturbance vegetative cover, or equivalent permanent features have been employed. At this point, all temporary BMPs can be removed, all construction and equipment maintenance wastes have been disposed of properly; and all elements of the Stormwater Management Plan have been completed.

Major SWMP Modification: Changes to the original SWMP that removes or adds additional area to the Project, or modifies the final hydrology or drainage of the Project. A Major SWMP Modification requires the submission of revised Stormwater Management Plan (SWMP) elements to the Permit Authority for review and approval. Any adjustments to a SWMP must be performed either by or under the direction of a Professional Engineer licensed in the State of Colorado.

Minor SWMP Modification: Modification to the SWMP that does NOT increase the scope or change hydrology of the Project but: modifies/improves specific BMPs in use at site, indicates progression in phasing of the Project, or specifies relocation of previously approved BMPs within the Project. Any adjustments to a SWMP must be performed either by or under the direction of a Professional Engineer licensed in the State of Colorado.

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- a) owned or operated by a State, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of stormwater or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under Section 208 of the Federal Clean Water Act that discharges to State Waters;
- b) designed or used for collecting or conveying stormwater;
- c) which is not a combined sewer; and
- d) which is not part of a Publicly Owned Treatment Works (POTW).

Permit Authority: The Department authorized by the City to review and process CASDP Applications for Capital and/ or governmental sponsored Projects. The responsible City department serving as the Permit Authority is the Public Works Project Controls Office. As a clarification, the Development Services Department of the City serves as the point of intake and permit processing center.

Permit Enforcement Authority: The Department authorized by the City to inspect and enforce CASDP Rules and Conditions for all construction Projects within the City's MS4 Boundary. The responsible City department serving as the Permit Enforcement Authority is the Wastewater Management Division of the Department of Public Works.

State Construction Stormwater Permit: Colorado Revised Statutes require that all construction sites/development Projects, which, by definition, disturb one or more acres in area, shall be covered by a State issued general permit for construction activities. Information on the application requirements for the State permit can be obtained by phone at 303-692-3500; or by visiting their offices located at 4300 Cherry Creek Drive South, Denver, CO 80246 – 1530. or on the Web at: www.cdphe.state.co.us

State Waters: Any and all surface waters which are contained in or flow in or through this State, not to include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.

Examples of State Waters include, but are not limited to, perennial streams, intermittent or ephemeral gulches and arroyos, ponds, lakes, reservoirs, irrigation canals or ditches, wetlands, stormwater conveyances (when they discharge to a surface water), and groundwater.

Stormwater Management Plan (SWMP): The Stormwater Management Plan contains the requirements necessary to accomplish all the following:

The SWMP establishes a minimum standard to construct, install, maintain, and remove required BMPs during the life of the Contract to prevent or minimize pollution of stormwater due to erosion, sediment transport, and construction related pollutant generated during all phases of the Project. A SWMP consists of the following elements:

- (i) CASDP Narrative Worksheet with Narrative Report. The Narrative Report and supporting documents should fully address the methods to be used to prevent sediment, debris, and other pollutants from entering the MS4 and/ or State Waters in and around the Project area. Proposed structural and non-structural BMPs should be described with sufficient implementation detail to insure that the logical phases of the proposed construction Project meet the performance standards listed in the CASM.
- (ii) Proposed site drawings and Best Management Practice (BMP) installation details as they apply to the site conforming to the Urban Storm Drainage Criteria Manual, Vol. 3, "Best Management Practices", most current version as issued by the Urban Drainage and Flood Control District (UDFCD), or those established by the City's Department of Public Works. If erosion control drawings were included within the bid documents for the Project, they shall be used for bid purposes and initial planning/ deployment of BMPs on the Project. If provided drawings are signed/ sealed by a Professional Engineer, they have been pre-approved by the Permit Authority and may be used without revision for purposes of submitting for CASDP. If provided drawings do not have signature/ seal of Professional Engineer licensed by the State of Colorado, they will require revision by the Contractor with Professional Engineer signature/ seal prior to submission to the City and County of Denver for CASDP.
- (iii) Supporting documentation related to proposed BMPs that are not currently identified in UDFCD Vol. 3 or as otherwise published by the City.

Any preparation of or adjustments to a SWMP must be performed either by or under the supervision of a Professional Engineer licensed in the State of Colorado. SWMP elements submitted to the City shall also meet currently established criteria of the CDPHE as the SWMP must meet all local, State and Federal requirements.

Substantial Completion of Erosion Control: Point of construction when permanent BMPs have been installed, initial growth is in place, and the site is waiting for vegetative cover to reach 70% of pre-disturbance vegetative cover.

PART II: DESCRIPTION

This Work shall consist of constructing, installing, maintaining, and removing when required, BMPs during the life of the Contract until Final Stabilization to prevent or minimize erosion, sedimentation, and pollution of any waters including storm, drainageways, MS4, State Waters, and/ or wetlands. Work under this Section includes the Contractor obtaining required Permits, utilizing SWMP elements provided in the Contract, and/ or SWMP elements specifically prepared by the Contractor as defined herein. The work shall also consist of providing on-going maintenance and monitoring of the SWMP as may be necessary due to the specific and/or dynamic needs of the Project as well as meet all requirements set forth within the CASM.

The Contractor shall coordinate the construction of temporary BMPs with the construction of permanent BMPs to assure economical, effective, and continuous erosion and sediment control and water pollution prevention throughout the construction period until Final Stabilization is achieved

When a provision of this Section or an order by the Permit Enforcement Authority requires that an action be immediate or taken immediately, it shall be understood that the Contractor shall at once begin effecting

completion of the action and pursue it to completion in a manner acceptable to the Permit Enforcement Authority, and in accordance with applicable Permitting requirements.

PART III: MATERIALS

Materials to be used for BMPs shall conform to each specific detail as set forth within the Project SWMP or as noted on the Contract Drawings.

PART IV: EROSION CONTROL PERMIT STATUS

The current SWMP status for the Project is as follows

An approved SWMP has been prepared and CASDP obtained by the City prior to bidding of the Project and as such must be properly transferred to the Contractor prior to the start of construction. The SWMP has been provided within the Bid Documents and shall be made a part of the Contract. The Contractor shall coordinate with the Project Manager and Permit Authority to perform the necessary transfer of CASDP from City to Contractor prior to the start of construction. The Permit transfer will be performed at no cost to the Contractor.

Prior to transfer of CASDP, additional elements shall be completed by the Contractor before the CASDP will be transferred from City to Contractor:

- (i) Complete Sections B&E (Permittee & Site Supervisor) of the CASDP “Narrative Report Information Worksheet”.
- (ii) Prepare a complete SWMP including any required adjustments for proposed construction phasing, staging areas, or additional items necessary to address applicable project specific Permit requirements. This will require the Contractor to provide or retain a Professional Engineer or subcontract with the original Professional Engineer that prepared the Bid Documents.
- (iii) Complete the “Construction Scheduling” section of the “Narrative Report Information Worksheet”.
- (iv) Include specific methods and/or BMPs that the Contractor will implement to address hazardous spill prevention/ containment response.
- (v) Provide any “Additional Documentation and Correspondence” applicable to the Contractor as stated in the CASM. This will require the Contractor to provide or retain a Professional Engineer or subcontract with the original Professional Engineer that prepared the Bid Documents.

If deemed necessary, the Contractor may propose modifications to the approved SWMP once the CASDP has been transferred to the Contractor. Per CASDP requirements, the Contractor shall obtain the endorsement of a Professional Engineer licensed in the State of Colorado for any proposed Major or Minor SWMP Amendments. This may require the Contractor to provide or retain a Professional Engineer or subcontract with the original Professional Engineer of the “For reference only” erosion control drawings.

Per definition, a Major SWMP Modification requires the submission of revised SWMP elements to the Permit Authority for review and approval.

Prior to construction, the Contractor shall obtain the required State Construction Stormwater Permit(s) as applicable.

PART V: CONSTRUCTION REQUIREMENTS

A) SCHEDULES:

At least 10 working days prior to the beginning of any construction work, the Contractor shall submit for approval a schedule for accomplishment of temporary and permanent BMPs shown in the SWMP. This schedule shall specifically indicate the sequence of clearing and grubbing, earthwork operations, and construction of temporary and permanent BMPs. The schedule shall include BMPs for all areas within the Project boundaries, including but not limited to, haul roads, borrow pits, and storage and other staging sites. Work shall not be started until the BMP schedule has been approved in writing by the Project Manager. Once the work has started, and during the active construction period, the Contractor shall update the schedule for all BMPs on a regular basis, and as required to keep the SWMP in compliance.

B) CONSTRUCTION IMPLEMENTATION: The Contractor shall incorporate into the Project all BMPs as outlined in the accepted schedule.

C) UNFORSEEN CONDITIONS: The Contractor shall direct the ECS (under the supervision of a Professional Engineer licensed in the State of Colorado) to design and implement BMPs for correcting conditions unforeseen during design of the Project, or as possible for emergency situations, which arise during construction. The Project's SWMP, UDFCD Vol 3 standards and details, and CDOT's "Erosion Control and Storm-Water Quality Guide," and any approved modification to these documents as proposed by the Contractor, shall be used as reference documents for the purpose of designing appropriate BMPs. Measures and methods proposed by the Contractor to deal with unforeseen conditions shall be reviewed and approved in writing by the Permit Enforcement Authority and the Project Manager prior to implementation and construction.

In an emergency situation, the Contractor shall use best judgment for immediately responding to the emergency situation as it arises, and shall notify the Permit Enforcement Authority and ECS of the emergency situation and BMPs employed in response as soon as practical after installation.

D) PERMITS:

The Contractor shall obtain all required permits for the Project including those required by federal, state, and local agencies. The Contractor shall obtain (or transfer from the City when specified) required erosion control and water quality permits and shall be responsible for compliance with all requirements under any such permits.

E) EROSION CONTROL SUPERVISOR:

Contractor shall assign to the Project an employee or subcontractor to serve as Erosion Control Supervisor (ECS). The ECS shall be a person other than the Contractor's superintendent, foreman, or equivalent supervisory position. The ECS shall be experienced in aspects of BMP construction and have satisfactorily completed a Colorado DOT or equivalent ECS training program authorized by the City. Proof that this requirement has been met shall be submitted to the Project Manager at least ten working days prior to the beginning of any soil disturbance work. A list of authorized ECS training programs is available from the City upon request. Additionally, per definition, the ECS shall be under the direction of a Professional Engineer licensed in the State of Colorado when performing any modifications to the Project Stormwater Management Plan (SWMP).

The ECS shall be responsible for oversight of the implementation, maintenance, and revision of the SWMP for the duration of the Project. The ECS's responsibilities shall be as follows:

- 1) Ensure compliance with all water quality permits or certifications in effect during the construction work.
- 2) Supervise the installation, construction, and maintenance of all BMPs specified in the Contract and coordinate the construction of BMPs with all other construction operations.
- 3) Direct the implementation of suitable BMPs as necessary to correct unforeseen conditions or emergency situations. Direct the dismantling of those features when their purpose has been fulfilled due to completion of each Project phase unless the Permit Enforcement Authority agrees that the features be left in place.
- 4) Inspect the construction site and document inspection activities at least every seven (7) days and immediately following any precipitation or snowmelt event with the potential to cause surface erosion. If no land disturbing construction activities are present during a storm event, post-storm event inspections shall be conducted prior to commencing any new land disturbing construction activities, but no later than seventy-two (72) hours following the storm event.
- 5) Attend the preconstruction conference, erosion control preconstruction inspection, Project scheduling meetings, weekly construction/ field meetings, substantial completion and final stabilization inspections, and other meetings regarding construction that could impact water quality.

- 6) Evaluate all non-stormwater coming onto the site, such as springs, seeps, and landscape irrigation return flow. If such flow is identified, the ECS shall propose appropriate SWMP modifications to the Contractor to protect off-site water from becoming contaminated with sediment or other pollutants.
- 7) Coordinate with the Contractor to implement necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities.
- 8) Coordinate with the Contractor to ensure all labor, material, and equipment deployed to meet SWMP requirements is judged appropriately.
- 9) During construction, update and record the following items in the SWMP as changes occur:
 - (i) Construction boundaries (may require Major SWMP Modification)
 - (ii) Areas of disturbance (may require Major SWMP Modification)
 - (iii) Areas used for storage of construction materials, equipment, soils, or wastes.
 - (iv) Location of any dedicated asphalt or concrete batch plants.
 - (v) Location of construction offices and staging areas.
 - (vi) Location of work access routes during construction.
 - (vii) Location of borrow and waste.
 - (viii) Location of temporary and permanent stabilization

The ECS shall start a new site map before the current one becomes illegible. All site maps shall remain with the SWMP paperwork.

10) Amend the SWMP whenever there are: additions, deletions, or changes in locations of BMPs. SWMP revisions shall be recorded immediately. Items shall be dated and signed at time of occurrence. Specifically, amendments shall include the following:

- (i) A change in design, construction, operation, or maintenance of the site which would require the implementation of new or revised BMPs; or
- (ii) Changes when the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activity.
- (iii) Changes when temporary BMPs are no longer necessary from changes in Project phase and are removed. All inspection and maintenance activities or other repairs shall be documented.

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

11) Modify the site map with arrows to indicate direction of surface and storm water flowing across the Project site.

12) When adding or revising BMPs in the SWMP, amend the narrative to explain what, when, where, why, and how the BMP is being used, and add a detail to the SWMP.

13) If using existing topography, vegetation, etc. as a BMP, label it as such in the SWMP site map; amend the Narrative to explain when, why, and how the BMP is being used to the SWMP.

14) Record on the SWMP, and implement the approved plan for concrete and asphalt saw cutting, grinding, and milling containment and removal.

15) Update the potential pollutants list in the SWMP throughout construction meeting CASDP requirements.

16) Spills, leaks, or overflows that result in the discharge of pollutants shall be documented on the inspection form. The ECS shall record the time and date, weather conditions, reasons for spill, and how it was remediated. The ECS shall immediately report to the Contractor and Project Manager the following instances of noncompliance:

- (i) Noncompliance which may endanger health or environment.
- (ii) Spills or discharge of hazardous substance or oil which may cause pollution of the City MS4 or State Waters.
- (iii) Discharge of stormwater which may cause an exceedance of a water quality standard.

17) Perform a thorough inspection of the stormwater management system at least every seven (7) days and within 24 hours after any precipitation or snowmelt event with the potential to cause surface erosion. The inspection records shall be kept on-site in a written or previously approved format.

Inspections shall be conducted during the progress of the work, during work suspensions, or until Final Stabilization of all disturbed areas is approved by Permit Enforcement Authority and shall include the following services at a minimum:

- (i) The construction site perimeter, disturbed areas, and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. BMPs identified in the SWMP shall be observed to ensure that they are operating correctly.
- (ii) The description of potential pollutant sources, and the BMPs identified in the SWMP, shall be revised and modified as appropriate based on the results of the inspection as soon as practicable after such inspection. Modification to the SWMP shall be implemented in a timely manner and in accordance with applicable Permit requirements.
- (iii) The operator shall keep a record of inspections. Uncontrolled releases of sediment or polluted storm water or measurable quantities of sediment found off the site shall be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measures taken to clean up the sediment that has left the site. Inspection records shall be made available to the City upon request. Note: documentation of uncontrolled releases at site DOES NOT alleviate any State or Federal requirements for reporting of discharges or upset conditions. Care should be taken to ensure compliance with all regulatory requirements at site.
- (iv) Seven (7) day inspections are required during construction and at all times until Final Stabilization has been achieved. Seeding and mulching of disturbed areas does NOT count as final stabilization until such time as 70% pre disturbed vegetative cover has been achieved. Sites with growth in place sufficient to deter erosion that have not yet achieved final stabilization may petition the City to grant an alternative inspection schedule while awaiting additional growth for final stabilization. These inspections must be conducted in accordance with the above paragraphs.

F) APPLYING BMPs TO STABILIZE SITE:

The duration of the exposure of uncompleted construction to the effects of weather shall be as short as practicable. BMPs such as: seeding, surface roughening, mulching, applying tackifier, use of geotextiles and matting, permanent landscaping, or other selected BMPs shall be applied within fourteen (14) calendar days of completion of grading/soil disturbance activities to stabilize the construction site unless disturbed area is within 100 feet of an MS4 or State Waters or has slopes of 3 to 1 or greater in which case BMPs shall be implemented within seven (7) calendar days of completion of grading activities. Disturbed areas where work is temporarily halted shall be temporarily stabilized within seven (7) days after the activity ceased unless work is to be resumed within thirty (30) calendar days after the activity ceased.

Clearing and grubbing operations shall be scheduled and performed to minimize both the area of the Project disturbed at a given time and the amount of time that disturbed areas remain open. BMPs such as temporary seeding are required between successive construction stages when disturbed areas will not be stable or active for thirty (30) calendar days or more. No payment will be made for additional work required because the Contractor has failed to properly coordinate the BMP schedule, thus causing previously stabilized areas to be disturbed by operations that could have been performed prior to the stabilization. Upon failure of the Contractor to coordinate the permanent BMPs with the grading operations in a manner to effectively control erosion and prevent water pollution, the Permit Enforcement Authority can suspend the Contractor's grading operations and the Project Manager can withhold monies due to the Contractor on current estimates until such time that all aspects of the work are coordinated in an acceptable manner.

G) WORK OUTSIDE LIMITS OF CONSTRUCTION: Non-contiguous areas outside the limits of construction that are used by the Contractor that include, but are not limited to, borrow pits, haul routes, storage and disposal areas, field offices, maintenance, batching areas, etc., shall have appropriate BMPs implemented by the

Contractor at the Contractor's expense. Should said areas meet applicable CASDP Permit criteria, the Contractor shall obtain a separate CASDP for each area as applicable at no additional expense to the City.

H) MAINTENANCE: The Contractor shall continuously maintain erosion and sediment control BMPs on a daily basis or as directed by the ECS so that they function properly during and after construction (including work suspensions) until Final Stabilization has been approved by the Permit Enforcement Authority. Maintenance includes, but is not limited to, the following items:

- (i) From the time seeding and mulching work begins until the date the Project has reached Substantial Completion of Erosion Control, the Contractor shall keep all seeded areas stabilized at all times. Any damage to seeded areas or to mulch materials shall be promptly repaired.
- (ii) All inspection sediment removal, and BMP maintenance activities to comply with all Federal, State & Local erosion control permit requirements until Final Stabilization is reached.
- (iii) All removal and replacement of existing BMPs due to damage to same suffered either by the contractor, outside agencies, the public, or acts of God.
- (iv) All required mechanical and/ or manual street sweeping.
- (v) Discretionary changes required of any regulatory enforcement officer.

If the Contractor fails to maintain the BMPs in accordance with the Contract, or as directed, the City may at the expiration of a period of 48 hours, after having given the Contractor written notice, proceed to maintain BMPs as deemed necessary. The cost thereof will be deducted from any compensation due, or which may become due to the Contractor under this Contract.

I) MINOR SWMP MODIFICATIONS: Shall be made in the field by the Contractor and thoroughly documented in the Contractor's SWMP narrative and drawings. Should the Permit Enforcement Authority deem minor field modifications inadequate, the Contractor may be required to a) make specific modifications as requested by the Permit Enforcement Authority or b) return to the original approved design specifications. Minor SWMP Modifications are allowed, covered under the original CASDP, and required as part of standard maintenance and operation.

J) MAJOR SWMP MODIFICATION: The City reserves the right to require changes in the Work or Project Limits that may require a Major Modification to the SWMP and/ or CASDP due to unforeseen circumstances. Should this occur, the Contractor will be responsible for the following (as applicable):

- (i) Make required revisions to comply with changing federal or state rulemaking if occurs within timeframe of Project
- (ii) Make required revisions due to unforeseen or unplanned conditions leading to deficient Drawings/ SWMP (hazardous materials encountered, landfills, expansion of work limits, etc.)
- (iii) Prepare revised SWMP elements endorsed by a Professional Engineer licensed in the State of Colorado.

K) SUBSTANTIAL COMPLETION OF EROSION CONTROL: When a CASDP is required for the Project, Substantial Completion of the Project as defined by the City and County of Denver General Contract Conditions cannot be reached until Substantial Completion of Erosion Control has been granted. Granting of Substantial Completion of Erosion Control must be requested by the Contractor and be approved by the Permit Enforcement Authority in the form of a "Certificate of Substantial Completion of Erosion Control".

L) FINAL STABILIZATION: Granting of Final Stabilization must be requested by the Contractor and be approved by the Permit Enforcement Authority. Other permanent soil stabilization techniques may be proposed, in writing, by the Contractor and used upon approval, in writing, by the Project Manager and Permit Enforcement Authority.

The Contractor may reach Final Stabilization via the following procedures:

- (i) The Contractor shall file Inactivation Request for Construction Activities Stormwater Discharge Permit (available within CASDP guidance documents) with the Permit Enforcement Authority.
- (ii) The Contractor shall coordinate with the Permit Enforcement Authority to hold a Final Inactivation Inspection.
- (iii) If passing, the Permit Enforcement Authority transmits a letter of approval for Final Stabilization.
- (iv) If not passing, the Permit Enforcement Authority transmits a letter of denial for Final Stabilization with associated inspection report to Contractor.
- (v) Stabilization, inspection and maintenance requirements shall continue until confirmation of having met final closure requirements have been granted in writing by the Permit Enforcement Authority.

When Final Stabilization has been reached, the Permit Enforcement Authority shall issue a "Certificate of Final Stabilization".

M) FINAL ACCEPTANCE:

CASDP obligations (including reaching Final Stabilization) may hinder the ability to reach Final Acceptance for the overall Project as defined in the City General Contract Conditions.

PART VI: CONSTRUCTION OF BMPs

BMPs shall be constructed so that they conform to all requirements as set forth within the Project SWMP. They shall meet all requirements set forth within each BMP detail and shall be installed and maintained so that they function in an effective and operable manner.

PART VII: METHOD OF MEASUREMENT

Erosion Control Supervisor (ECS) will be measured by the total number of hours the ECS is required to be on the Project performing the duties (including supervision by a Professional Engineer licensed in the State of Colorado) as outlined in this Specification. The Contractor shall record the tasks that were performed by the ECS and the hours that were required to complete each task. The records for the payment period shall be submitted to the Project Manager after completion of work, at the time of monthly pay request, for approval and acceptance.

Silt fence, silt berms, erosion logs, gravel bags, silt dikes, temporary berms, temporary diversions, temporary drains, and brush barriers will be measured by the actual number of linear feet that are installed and accepted. Stakes, anchors, connections and tie downs used for temporary slope drains will not be measured and paid for separately, but shall be included in the work.

Concrete washout structure will be measured by the actual number of structures that are installed and accepted, and if specified on the SWMP as in-ground will include excavation, embankment, concrete, liner, erosion bales, fencing, and containment and disposal of concrete washout and all other associated waste material.

Storm drain inlet protection will be measured by the unit as specified in the Contract. Sediment trap and sediment basin quantities will be measured by the unit which shall include all excavation and embankment required to construct the item.

Removal of sediment & trash that is or is not generated by construction activities will not be measured separately but shall be included in the work.

Any excavation required for the removal of sediment from traps, basins, areas adjacent to silt fences and erosion bales, and any other cleanout excavation of accumulated sediment, and removal of check dams or storm drain inlet protection will not be measured separately but shall be included in the work.

PART VIII: BASIS OF PAYMENT

Work to furnish, install, maintain, replace (if not due to contractor negligence), remove, and dispose of BMPs specified in the Contract will be paid for at the contract unit price.

Payment will be made under:

Pay Item	Pay Unit	
Erosion Control Supervisor (includes P.E. oversight)		Lump Sum
Concrete Washout Structure		Each
Gravel Bag		Linear Foot
Storm Drain Inlet Protection		Each
Vehicle Tracking Pad		Each

The above pay items are the only BMPs anticipated on this project. The basis of payment for other BMPS are included below should they be added to the project.

Temporary BMPs will be measured and paid for by the BMPs used, except that surface roughening, removal and disposal of sediment, and removal of trash will not be measured and paid for separately.

Payment for each BMP item will be full compensation for all work, materials and equipment required to furnish, install, maintain, remove, and dispose of it. BMPs as deployed per the SWMP requiring replacement due to Contractor negligence and or carelessness shall be provided at the Contactor's expense.

Temporary BMPs required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or for the Contractor's convenience, shall be performed at the Contractor's expense.

If the Contractor fails to complete construction within the approved contract time, payment will not be made for Section 208 pay items for the period of time after expiration of the approved contract time. These items shall be provided at the Contractor's expense.

The cost for any corrective actions required by the State or City due to contractor's failure to obtain or comply with applicable Permits will be borne by the Contractor, including fines and penalties. In the case of failures on the part of the Contractor in controlling erosion, sedimentation, and/or water pollution, the City may provide the necessary corrective actions. All corrective action costs, including Project engineering costs, will be charged to the Contractor, and appropriate deduction will be made from the Contractor's monthly pay estimate.

The sole remedy for additional costs associated with installation of BMPs as required by regulatory agencies to ensure compliance with local and State requirements shall be per unit BMP as provided in the Bid Schedule of this Contract. The Contractor however may submit a separate itemized Change Order for any required Major SWMP Modification proposed by the City during the course of the Project.

Pay Units for ECS will be full compensation for the Erosion Control Supervisor including all materials, labor and equipment necessary for the ECS to perform the work. Commute time will not be measured and paid for separately, but shall be included in the work. The ECS pay item shall include all labor, Professional Engineering (includes supervisory Professional Engineer licensed in the State of Colorado), and/ or design fees to prepare modifications to Stormwater Management Plan(s), revise or amend Permits, coordinate with State and Local agencies, design special erosion control plans for emergency situations that develop during construction or unexpected weather conditions.

Additional stabilized construction/ staging area proposed by Contractor beyond area included in the Bid shall be installed per requirements of the Permit Authority and Permit Enforcement Authority without any additional compensation.

Payment for concrete washout structure, whether constructed or prefabricated, will be full compensation for all work and materials required to install, maintain, and remove the item. This includes, but is not limited to: excavation, embankment, liner, erosion bales, fencing, signing, and containment and disposal of concrete washout and all other associated waste material.

Silt berm spikes and dike staples will not be measured and paid for separately, but shall be included in the work.

Payment for storm drain inlet protection will be full compensation for all work, materials, and equipment required to complete the item, including surface preparation, maintenance throughout the Project, and removal upon completion of the work. Aggregate will not be measured and paid for separately, but shall be included in the work.

Sweeping, when used as a BMP as shown in the Contract, will be measured by the number of hours that a pickup broom or motorized equipment capable of collecting sediment, authorized by the Project Manager, is used to remove sediment from the roadway or other paved surfaces. Operator will not be measured and paid for separately, but shall be included in the work.

Stakes, anchors, connections, geotextile, riprap and tie downs used for temporary slope drains will not be measured and paid for separately, but shall be included in the work.

Payment for vehicle tracking pad will be full compensation for all work, materials and equipment required to construct, maintain, and remove the entrance upon completion of the work. Aggregate and geotextile will not be measured and paid for separately, but shall be included in the work.

Surveying of permanent BMPs will not be measured and paid for separately, but shall be included in the work.

END OF REVISION OF SECTION 208

**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.

**REVISION OF SECTION 210
ADJUST VALVE BOX AND MANHOLE**

Section 210 of the Standard Specifications is hereby revised for this project as follows:
Subsection 210.10 shall include the following:

The Contractor shall notify each utility company (Owner) prior to any construction that will involve the adjustment of its valve boxes or manholes.

Each Owner will mark all of its valve boxes and manholes that will be involved in the specified construction area.

Prior to commencing construction, the Contractor shall coordinate and conduct, with the Engineer and each Owner, an inspection of all impacted manholes and valve boxes. The purpose of this inspection will be to account for all valve boxes and manholes involved in the construction and determine their accessibility and condition. The Contractor shall provide traffic control for this inspection and for the final inspection. The Contractor shall coordinate construction with the Owner to allow sufficient time for the Owner to make all necessary repairs to valve boxes and manholes before construction begins in the area of the valve boxes and manholes. All parties shall agree on the condition of each valve box and manhole prior to construction.

The Contractor shall replace all valve box sections damaged or misplaced during construction with new valve box sections complying with the requirements of the Owner's specifications. The Contractor shall set each valve box to be adjusted so that it is $\frac{1}{4}$ inch to $\frac{1}{2}$ inch below the finished grade of the paved surface, or to the satisfaction of the Owner, and so that it is plumb over the operating nut of the valve.

The Contractor shall adjust all manholes that require adjustment with materials conforming to the owner's specifications. Some adjustments may require the addition, removal, or replacement of a manhole or cone section. If manhole adjustment requires a manhole cone or barrel section to be added, removed, or replaced, this work will not be considered as "Adjust Manhole", but shall be performed in accordance with the Section 210 requirements for the item "Modify Manhole".

The Contractor shall prevent tools, concrete, dirt, or debris of any kind from falling into the channel of the existing manhole. The Contractor shall clean or remove debris from downstream sewer that enters as a result of the Contractor's work.

When the project includes planing prior to resurfacing, the Contractor shall first lower all valve boxes and manholes below the surface to be planed and then adjust them up to final grade after the paving operation is complete.

Prior to the final inspection the Contractor shall thoroughly clean all valve boxes designated for cleaning. This work shall be performed in accordance with the Section 202 requirements for the item "Clean Valve Box".

The Contractor shall coordinate and conduct, with the Engineer and each Owner, a final inspection upon completion of construction. This inspection shall assure that all valve boxes and manholes are in compliance with these requirements. The Engineer will obtain the Owner's written approval before accepting the work.

Subsection 210.12 shall include the following:

The Contractor will be paid separately for each valve box or manhole adjustment completed down and for each adjustment completed up.

**REVISION OF SECTION 212
SOIL PREPERATION (SPECIAL)**

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

Subsection 212.02 shall include the following:

Organic soil amendment should be applied at the rate of (4) cubic yards of soil amendment product per 1000 SF of permeable area. This soil amendment product must be incorporated or rototilled to a depth of four to six inches.

- The soil amendment product applied to the premises must be on the Approved Soil Amendment product list available at denverwater.org.
- Tilled soil amendment product is required for all permeable area of the property, including tree lawn and right-of-way adjacent to the property for which the property owner is responsible for planting and maintaining.

Subsection 212.07 shall include the following:

Soil Preparation (Special) shall be measured by the Cubic Yard of material processed and accepted by the Engineer.

Subsection 212.08 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Soil Preparation (Special)	Cubic Yard

**REVISION OF SECTION 213
MULCHING**

Section 213 of the Standard Specifications is hereby deleted in its entirety and replaced with the following:

DESCRIPTION

213.01 This work consists of supplying and placing wood mulch at tree saucers and in all graded planting beds.

MATERIALS

213.02 Materials for mulching shall be shredded fir fiber mulch and a pea gravel mulch.

The wood mulch shall be free from deleterious materials and suitable for top dressing of trees, shrubs and ground covers. Mulch shall be of a long fibrous nature capable of matting together and interlocking when moistened and settled. Shredded cedar mulch will only be accepted. Submit sample to Engineer for acceptance prior to delivery to the site.

Pea gravel mulch shall be a washed, hard, durable stone free of loam, sand, clay, and other foreign substances. Gravel shall be tan in color.

CONSTRUCTION REQUIREMENTS

213.03 Wood Mulch shall be placed at a uniform depth of 3". Do not place mulch within 4" of tree trunks.

Pea gravel mulch shall be placed at a uniform depth of 2".

METHOD OF MEASUREMENT

213.04 The quantity of mulch will not be measured but shall be the quantity designated in the Contract, except that measurements will be made for revisions requested by the Engineer, or for discrepancies of plus or minus five percent of the total quantity designated in the Contract.

BASIS OF PAYMENT

213.05 The accepted quantities measured as provided above shall be paid for at the contract unit price as it appears on the bid schedule.

Payment will be made under:

Pay Item

Mulching (Wood Chip)
Inorganic Mulch

Pay Unit

Cubic Foot
Cubic Yard

REVISION OF SECTION 214 PLANTING

Section 214 of the Standard Specifications is hereby revised for this project as follows:

Subsection 214.02 shall include the following:

Delivery tickets for all bulk materials with the Engineer's approval or acknowledgment that materials were received in satisfactory condition.

Product certificates signed by manufacturers certifying that their products comply with specified requirements.

1. Manufacturer's certified analysis for standard products, where applicable.
2. Analysis for other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

Samples. 1 gallon bag of mulch, and 1 gallon bag of organic soil amendment, in labeled plastic bags, boxes, or buckets.

Qualification data for firms and persons specified in the "Quality Assurance" article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and address of Landscape Architects and Owners, and other information specified.

Material test reports from qualified independent testing agency, indicating and interpreting test results relative to compliance of the following materials with requirements indicated.

Analysis of existing surface soil for plant growth.

Planting schedule indicating anticipated dates and locations for each type of planting.

Three (3) sets of maintenance instructions recommending procedures by the property owner for maintenance of landscaping, submit before maintenance responsibilities are transferred to the property owners.

Three (3) copies of a written warranty stating all items included in the warranty, conditions of the warranty, and beginning and ending of warranty period(s).

Installer Qualifications. Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this project and with a record of successful landscape establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that landscaping is in progress.

Testing Agency Qualifications. To qualify for acceptance, an independent testing agency must demonstrate to the Engineer's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

Provide quality, size, genus, species, and variety of trees indicated, complying with current applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock", and all applicable state and local rules and regulations.

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**REVISION OF SECTION 214
PLANTING**

Inspection. The Engineer may inspect plants either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, cultivar, size, and quality.

1. The Engineer reserves the right to reject at any time or place prior to final acceptance all plant materials, which in the Engineer's opinion fail to meet specifications. Inspection of materials is primarily for quality, size, and variety, but other requirements are not waived even though visual inspection results in approval. Plants are to be inspected where available; however, inspection at the places of supply shall not preclude the right of rejection at the site or at a later time prior to final acceptance. Rejected material shall be removed from the site within 24 hours.
2. The Contractor shall schedule inspection of the plants, at either the supplier or on-site, to be completed in one visit. Any further inspection required due to plants being unavailable or rejected as not meeting specifications shall be charged to the Contractor at the current hourly rate for the Department personnel performing the inspection.
3. The Contractor shall pay all expenses for the Engineer and City Forester to visit the source for plants including airfare, taxi, hotels and meals.

Soil Analysis. The Contractor shall furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter, inorganic matter (silt, clay, and sand), deleterious material, pH, and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any other elements, or other soil amendments, to be added to produce a satisfactory topsoil.
2. Provide testing from 4 locations per direction of the Engineer.
3. The Contractor shall perform soil tests 30 days prior to mobilizing for landscape construction.
4. Soil testing shall be provided by Colorado Analytical Laboratory, 240 S. Main Street, Brighton, CO 80601, (303) 659-2313, or other approved testing facility. Soil shall be tested for soluble salts and nutrient levels. Testing facility shall provide interpretation of results and recommendation for soil amendments for each type of planting.
5. Deficient nutrients shall be corrected with the addition of appropriate fertilizer and amendment materials. The Contractor shall submit a Change Order Request for all additional materials that are recommended but are not included in this Specification.

Measurements. Measure trees according to ANSI Z60.1 with branches and trunks in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches (150 mm) above ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above ground for larger sizes. Measure main body of tree for height and spread; do not measure branches or roots tip-to-tip.

Pre-installation Conference. Contractor shall attend pre-installation conference at location specified by the Engineer.

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**REVISION OF SECTION 214
PLANTING**

Subsection 214.02 shall include the following:

General. Furnish nursery-grown trees and shrubs conforming to ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well shaped, symmetrical, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, girdling, and defects such as sun scald, injuries, abrasions, and disfigurement. Trees of a larger size may be used if acceptable to the Engineer with a proportionate increase in size of roots and balls, but must be a minimum of 3" caliper.

Label at least 1 plant of each variety and caliper with a securely attached waterproof tag bearing legible designation of botanical and common name.

All plants shall be the species designated on the Drawings. No substitutions will be accepted without the prior written approval of the Engineer. Contractor must provide proof of non-availability.

TREES

Shade Trees. Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, conforming to ANSI Z60.1 for type of trees required. Only plants grown and harvested from hardiness zones 2, 3, 4, and 5 will be acceptable.

1. Branching Height: 1/3 to 1/2 of tree height.

All deciduous trees of one species used in formal rows or groupings shall exhibit cultural uniformity, i.e. "matched" in height, crown width and shape, height to first branch, and trunk taper. For this reason it is desired that these trees be produced by a single grower.

SHRUBS

Provide plants well established and rooted in removable containers with not less than the minimum number and length of branches required by ANSI Z60.1 for the pot size indicated.

MULCH

Wood Mulch. Wood, organic mulch, free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of shredded wood fiber. Mulch shall be approved by the Landscape Architect based on submittal of material (See Section 213 Mulching).

TOPSOIL

Topsoil shall be imported and shall meet the requirements specified in Section 207.

WATER

The Contractor shall be responsible for providing water to all plantings until maintenance responsibilities have been transferred to the property owner.

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**REVISION OF SECTION 214
PLANTING**

MISCELLANEOUS MATERIALS

Water should be available from on-site irrigation system during the irrigation season (generally May through September), but the Contractor must coordinate activation of the system with the property owner. Contractor shall supply adequate amounts of water when system is not charged (10 gallons per caliper inch).

Water shall not contain any substances injurious to plant growth.

Antidesiccant. Water-insoluble emulsion, permeable moisture retarder, film forming, for trees. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's instructions.

Pre-Emergent Herbicide. Treflan as manufactured by Elanco Company, or an approved equal.

Herbicides and Pesticides. EPA registered and approved, of type recommended by manufacturer.

Subsection 214.02(a) shall include the following:

Packaged Materials. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site. The Engineer reserves the right to inspect containers before or after installation to verify compliance with Specifications.

Trees. Deliver nursery stock freshly dug; trees shall be harvested and planted during the same growing season. Do not prune before delivery, except as approved by the Engineer.

Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees in such a manner as to destroy natural shape. Provide protective covering during delivery. Plant materials delivered without protective covering may be rejected. Do not drop trees during delivery. Label at least one tree of each variety with a securely attached waterproof tag bearing a legible plant name. Remove all tags and flagging as directed by the Engineer.

Handle balled and burlapped stock by the root ball only.

Deliver trees after preparations for planting have been completed and install immediately. If planting is delayed more than 6 hours after delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with wood chips, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of trees stored on site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

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**REVISION OF SECTION 214
PLANTING**

Subsection 214.03 (a) shall include the following:

Determine location of above grade and underground utilities and perform work in a manner that will avoid damage. Hand excavate, as required. Maintain grade stakes until their removal is mutually agreed upon by parties concerned. Contractor shall be responsible for utility locating, repair of utilities damaged by Contractor, and establishment of grade controls.

Excavation. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify the Landscape Architect before planting.

Protection. Erect and maintain barricades, warning signs and lights, and provide guards as necessary or required to protect all persons on the site.

Coordinate installation of planting materials during normal planting seasons for each type of plant material required. Trees should be planted between April 15-June 15 and September 1-October 1. Plant trees after final grades have been accepted and prior to planting turf unless otherwise authorized by the Engineer. The Contractor shall obtain all permits associated with planting in public rights-of-way and/or storage of materials. Trees shall not be planted within 10 feet from water or sanitary sewer lines. Trees shall not be planted within 5 feet of buried electrical cables, gas lines or telephone lines.

Subsection 214.03(b) shall include the following:

All trees pits shall be dug so the top of the root crown sits 2 inches higher than finish grade. When conditions detrimental to plant growth, such as rubble fill, adverse drainage conditions or obstructions, are encountered the Contractor shall notify the Landscape Architect prior to continuing planting..

Subsection 214.03(c), delete first sentence of third paragraph, and replace with the following:

Areas to be planted with ground cover, ornamental grasses and perennials shall be prepared by placing planting topsoil and shall meet the requirements specified in Section 212.

Delete Subsection 214.03 (d) and replace with the following:

(d) *Backfilling.* Backfill shall be thoroughly worked and watered in to eliminate air pockets. The first watering shall be done immediately after the plant is placed. Backfilling of the planting pit shall be resumed after this water is absorbed. Roots and crown shall be covered with soil at this time. After the soil has settled, plants must be in the proper position and at the proper depth. Saucers shall be prepared around each plant to the dimensions shown on the planting details. A second watering shall take place after saucers are prepared. When saucers are required, they shall be covered with a 3 inch layer of mulch, as specified. After completion of all planting, and before acceptance of the work, the Contractor shall again thoroughly water all planting installed under this Contract. Any plants damaged by the Contractor's operations shall be replaced at no cost to the project.

Backfill shall be incorporated as specified under Topsoil, Section 207.

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**REVISION OF SECTION 214
PLANTING**

Subsection 214.03(e) shall include the following:

Pruning shall be done after delivery of plants and after plants have been inspected and approved by the Owner's Representative. Cuts shall be made flush, leaving no stubs. No tree paint shall be used. Dead wood, suckers, water sprouts and broken and badly bruised branches shall be removed.

At the Contractor's option, spray all evergreen and deciduous plant material in full leaf immediately before transporting with an anti-desiccant. Apply an adequate film over the trunk, branches, twigs and foliage. Anti-desiccant shall be an emulsion specifically manufactured for plant protection which provides a protective film over the plant surface which is permeable enough to permit transpiration. Prior to spraying any anti-desiccant, the Contractor shall submit the manufacturer's data sheet to the Engineer for approval.

Subsection 214.03(f) shall include the following:

Each tree shall be staked immediately following planting. Plants shall stand plumb before and after staking. Staking shall not be used to straighten trees that have been planted out of plumb. Trees shall be guyed with 12 inch by 1.5 inch strips of nylon/cotton webbing with 3/4 inch brass grommets.

Additionally, the Contractor shall stake all utilities in the areas of excavation to accomplish tree planting activities.

In Subsection 214.03(g), delete the second sentence and replace with the following:

Trunks of deciduous trees shall be wrapped from the base of the tree upward to a minimum height of the third branch or two-thirds of the height of the tree and secured with tape.

In Subsection 214.03 (g) delete the third sentence of first paragraph and replace with the following:

The Contractor shall submit the manufacture's certification for the wrapping material and a sample to the Engineer for approval.

In Subsection 214.04 (a) delete the third sentence and replace with the following:

The landscape establishment period ends when Landscaping and Irrigation System Coordinator officially transfers responsibility for maintaining the irrigation system and plantings to the property owner.

Delete Subsection 214.04 (b) and replace with the following:

During the Landscape Establishment period, the Contractor shall perform landscape maintenance as described herein. Maintain trees by pruning, cultivating, watering, mulching, winter watering, weeding, wrapping, unwrapping, restoring planting saucers, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Control as required to keep trees free of insects and disease. Restore or replace damaged tree wrappings.

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**REVISION OF SECTION 214
PLANTING**

The Contractor shall also be responsible for:

1. Fall irrigation winterization prior to shut-down of the irrigation system.
2. Spring start-up of the irrigation system.
3. Watering of the plants so as to maintain a minimum of 1" of water per week on the plant materials during the months of April through September, reducing as necessary in early spring and late fall.
4. Irrigation controller programming; operation and repair of the irrigation system.
5. Pruning and removal of dead branches on plant material.
6. Replacement of any dead, dying or diseased plant material, as directed by the Engineer.
7. Removal of trash from planting areas once a week.
8. Replacement and/or replenishing of cedar mulch in affected areas.
9. Application of an appropriate pre-emergent (in fall after one growing season) and post-emergent herbicide (as approved by City and County landscape maintenance staff).
10. Weed removal in all areas through hand-pulling, once per week minimum.

Warranty Requirements:

Once the Landscaping and Irrigation System Coordinator has notified the property owner that responsibility of maintaining the irrigation system and plantings belongs to the property owner, all plantings will have a warranty period of one year. After the one year warranty period has passed, the City, at its sole discretion, shall determine which plantings must be replaced by the Contractor. The Contractor will not have to replace any planted item more than once. The Contractor's cost to replace any plantings shall be included in the work.

Subsection 214.06, shall include the following:

Fertilizer, herbicide application, soil preparation and tree wrapping shall not be measured, but included in the work. Landscape establishment and maintenance performed during construction and replacements done under warranty will not be measured and paid for separately, but shall be included in the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
DECIDUOUS TREE (3 INCH CALIPER)	Each
EVERGREEN TREE (8' HT)	Each
DECIDUOUS SHRUB (2 GALLON CONTAINER)	Each
DECIDUOUS SHRUB (5 GALLON CONTAINER)	Each
PERENNIALS (5 GALLON CONTAINER)	Each

**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 and have a resistance value of at least 78 when tested by the Hveem Stabilometer method.

**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	70		70	70
Accelerated Moisture Sus-ceptibility 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
<p>Note: AI MS-2 = Asphalt Institute Manual Series 2</p> <p>Note: The current version of CPL 5115 is available from the Region Materials Engineer.</p> <p>Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.</p> <p>Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. Gradations for mixes with a nominal maximum aggregate size of ¾ inch or smaller are considered a coarse gradation if they pass below the maximum density line at the #8 screen.</p>					

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.

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**REVISION OF SECTION 403
HOT MIX ASPHALT**

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 (⅜)	15.6	15.7	15.8
<p>* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%.</p> <p>** Interpolate specified VMA values for design air voids between those listed.</p> <p>*** Extrapolate specified VMA values for production air voids beyond those listed.</p>			

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.

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading S) (100) (PG 76-28) for the top lift. Underlying lifts shall meet the gradation requirements for Hot Mix Asphalt (Grading S) (100) (PG 64-22). All patching shall be per the Engineer.

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

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**REVISION OF SECTION 403
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:

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

Payment will be made under:

Pay Item	Pay Unit
Hot Mix Asphalt (Grading SX) (100) (PG 76-28)	Ton
Hot Mix Asphalt (Grading S) (100) (PG 64-22)	Ton
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.

**REVISION OF SECTION 403
HOT MIX ASPHALT TICKET COLLECTION**

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

Subsection 403.05 shall include the following:

The Contractor shall collect the scale ticket on each load when it is delivered to the project site, and ensure that the information required in subsection 109.01 is shown on each ticket:.

The scale tickets shall be available on site for CDOT personnel to inspect.

Each day the Contractor shall provide to the Engineer envelopes which contain the previous day's signed tickets and the following:

1. On each envelope: Project number, date of paving, type of material, daily total and cumulative total.
2. One of the following:
 - A. Two adding machine tape tabulations of the weight tickets with corresponding totals run and signed by different persons,
 - B. One signed adding machine tape tabulation of the weight tickets that has been checked and signed by a second person,
 - C. Signed check tape of computer scale tickets that have a cumulative total. These scale tickets must be consecutive and without voids adjustments.
3. A listing of any overweight loads on the envelope, including ticket numbers and amount over legal limit.
4. A comparison of the actual yield for each day's placement to the theoretical yield. Theoretical yield shall be based on the actual area paved, the planned thickness, and the actual density of the mixture being placed. Any variance greater than +2.5% shall be indicated on the envelope and a written explanation included.

The Contractor shall provide a vehicle identification sheet that contains the following information for each vehicle:

- (1) Vehicle number
- (2) Length
- (3) Tare weight
- (4) Number of axles
- (5) Distance between extreme axles
- (6) All other information required to determine legal weight.
- (7) Legal weight limit.

**REVISION OF SECTION 503
DRILLED CAISSONS**

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

Subsection 503.01 shall include the following:

Drilled Caissons for the artwork foundation shall be coordinated with the City and County of Denver Arts and Venues. Artwork is to be moved and reset on CONTRACTOR prepared foundation by Arts and Venues or their designee. CONTRACTOR shall notify Arts and Venues of the CONTRACTOR's schedule for the new foundation completion, including allowing Arts and Venues to inspect elements required for satisfactory placement of the artwork on the new foundation. CONTRACTOR shall notify Arts and Venues at least 24 hours before concrete is poured to allow inspection of foundation mounting hardware.

CONTRACTOR shall be responsible for providing adequate space and time to allow Arts and Venues to remove the existing artwork from its existing location and to place artwork on the prepared new caisson foundation.

Arts and Venues coordination contact is Rudi Cerri at 720-865-4307.

Subsection 503.09 shall include the following:

Cost for drilled caissons shall include all necessary coordination with Arts and Venues for the relocation of existing artwork.

**REVISION OF SECTION 604
MANHOLE SPECIAL**

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

Subsection 604.04 shall include the following:

Cast in place manhole is to be constructed to allow new storm sewer to discharge into an existing storm sewer pipe. Location of proposed manhole shall be field verified and approved by ENGINEER prior to removal of existing storm sewer. Existing pipe to be removed only as is necessary to allow construction of proposed manhole base and manhole. Final size shall be field verified. Connection to existing brick pipe shall be grouted to cast in place manhole. Grout material shall be approved by Denver Wastewater prior to use and connection shall conform to Denver Wastewater detail S-550.

Please call CCD Wastewater Mainline Inspection @ 303-446-3529, at least 24 hours prior to construction for scheduling a preconstruction meeting.

Any modification to the standard CDOT manhole needs to be approved by CCD WW plan review engineer or per WW construction engineer's direction.

Subsection 604.06 shall include the following:

Cast in place Manhole shall be paid for by each as field installed. Size shown on plans is estimated only, final size will be determined in the field.

Subsection 604.07 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Manhole (Special)	Each

**REVISION OF SECTION 607
FENCE SPECIAL**

Section 607 of the Standard Specifications is hereby revised for this project as follows:

Subsection 607.03 shall include the following:

Fencing around parking lot impacted by project construction to be replaced in kind to match existing.

Subsection 607.04 shall include the following:

Fence shall be paid for by linear foot of fence installed and shall be full compensation for all materials and work required to complete the fence.

Subsection 607.05 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Fence (Special)	LF

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

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

Subsection 608.03 *Joints* shall be revised as follows:

Joint depths and types shall be in accordance with the Layout Enlargement Plan and the Landscape Details.

Immediately after sawing, the sawed joints shall be flushed with water to remove any saw residue, and the saw residue shall be completely removed from the surface of the pavement. This residue shall be removed by approved methods.

Subsection 608.03 *Finishing*: shall include the following:

A medium broom finish shall be as shown on the Layout Enlargement Plan and the Landscape Details. Contractor to provide mock-up for approval. Mockup shall demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.

1. Build mockups in the location indicated or, if not indicated, as directed by Landscape Architect.
2. Notify Landscape Architect seven days in advance of dates and times when mockups will be constructed.
3. Obtain Landscape Architect's approval of mockups before starting construction.
4. If Landscape Architect determines that mockups do not meet requirements, demolish and remove them from the site and cast another until the mockup is approved.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

Subsection 608.06 shall include the following:

Pay Item

Pay Unit

Concrete Sidewalk (6 Inch)

Square Yard

The price per square yard of Concrete Pavement shall be full compensation for furnishing and placing all materials, including any dowels, joint materials, sawing of joints, and finishing. Broom finish shall not be paid for separately but shall be included in the cost of item 608 Concrete Sidewalk (Special).

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

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

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 (Details 6.1, 6.2, 7.0abc, 7.1, 7.2, 7.3, 7.6, and 7.8).

Concrete Ramps shall be in accordance with the details included in the plans.

Subsection 608.02 shall be deleted in its entirety and replaced with the following:

Materials shall meet the requirements specified in the following subsections:

Joint Fillers 705.01

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

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

All concrete used for sidewalks and curb ramps shall be reinforced with polypropylene fibers. Length of fibers and mix proportion shall be as recommended by the manufacturer.

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

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

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

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

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

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

**REVISION OF SECTION 608
DETECTABLE WARNINGS**

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

Subsection 608.01 shall include the following:

This work includes the installation of detectable warnings on concrete curb ramps at the locations shown on the plans and in accordance with the plans.

Subsection 608.02 shall include the following:

Detectable warnings on curb ramps shall be truncated domes of the dimensions shown on the plans. Domes shall be prefabricated by the manufacturer as a pattern on concrete or masonry pavers.

Pavers shall meet all Americans with Disabilities Act (ADA) requirements for truncated domes, and when installed, shall be capable of producing the pattern of domes as shown on the plans.

Pavers shall meet the requirements of ASTM C 902 or ASTM C 936.

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 start of work. Known vendors of alternate products include but are not limited to the following:

Vendor Name	Product	Phone Numbers
Engineered Plastics, Inc.	Armor-Tile Cast-in-Place or Modular Paver Detectable Warning System	800-682-2525
TMA Construction Supply	CAST in TACT Warning Panels	303-295-6050
East Jordan Iron Works, Inc.	Truncated Dome Plates	800-626-4653

The domes and the underlying surface shall have a minimum of 70% contrast with the light reflectivity of the adjoining surface. The contrast shall be verified using the following equation:

$$Contrast = \frac{B_1 - B_2}{B_1} \times 100$$

Where B_1 = Light Reflectance Value (LRV) of the lighter area

B_2 = LRV of the darker area

Absolute black and white will not be permitted.

**REVISION OF SECTION 608
DETECTABLE WARNINGS**

The contrast shall be achieved by adding pigment during the fabrication of the paver. Prior to start of work, the Contractor shall submit appropriate documentation from the manufacturer verifying that the contrast has been met, along with a sample paver, to the Engineer for approval.

Bedding and joint sand shall be free of deleterious or foreign matter. The sand shall be natural or manufactured from crushed rock. Limestone screenings or stone dust shall not be used. Sand for bedding material shall conform to ASTM C 33. Sand that is to be placed between joints shall conform to ASTM C 144.

Subsection 608.03 shall include the following:

- (g) *Detectable Warnings.* Pre-fabricated pavers for detectable warnings shall be brought to the site in steel banded, plastic banded or plastic wrapped cubes capable of being transported by a fork lift or clamp lift. Pavers shall be carefully removed and stacked in a manner which results in the least amount of damage. All pavers that are damaged during transport or delivery will be rejected and shall be replaced at the Contractor's expense. Minor cracks or chipping due to transport and handling that do not interfere with the structural integrity of the paver or the overall pattern of truncated domes will not be deemed as grounds for rejection.

The Contractor shall spread the bedding sand evenly in the area defined and shall screed the sand to an appropriate embedment depth as shown on the plans or as directed by the Engineer. Sufficient sand should be placed to stay ahead of laid pavers

Pavers shall be placed in a running bond pattern. Pavers shall be installed such that the base of the truncated dome is at the same elevation as the adjoining surface, allowing for a smooth transition between the curb ramp and the detectable warning.

When cut pavers are required to fill gaps between the pavers and the edge of concrete, the Contractor shall bevel portions of the truncated domes at a 45-degree angle to create a smooth transition between the partial dome and the curb ramp surface. Unless otherwise directed by the Engineer, pavers shall be cut and installed in such a manner that the domes on the cut sections will not significantly impact the overall pattern of the truncated domes.

The Contractor shall use a plate vibrator to embed the pavers into the sand. The size and type of plate vibrator shall be in accordance with manufacturer's recommendations, or as directed by the Engineer. All pavers that are damaged during embedment shall be replaced at the Contractor's expense.

Joint spacing between paver units shall be in accordance with the manufacturer's recommendations, or as approved by the Engineer. Joints shall be filled completely with joint sand. Excess sand shall be removed by sweeping.

- (h) *Alternate products.* Alternate materials shall be installed in accordance with manufacturer's recommendations.

**REVISION OF SECTION 608
DETECTABLE WARNINGS**

The concrete surface to which alternate materials are to be applied shall be prepared in accordance with manufacturer's recommendations. Material requirements, color and application shall be in accordance with manufacturer's recommendations and as approved by the Engineer.

Subsection 608.05 shall include the following:

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

**REVISION OF SECTION 609
CURB AND GUTTER**

Section 609 of the Standard Specifications is hereby revised for this project as follows:

Subsection 609.01 shall include the following:

Concrete Curb and Gutter Type 2 (Section I-B) and Curb and Gutter Type 2 (Section II-B) shall be in accordance with the details included in the plans.

Subsection 609.02 shall be revised as follows:

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

Paragraph 2 shall be deleted and replaced with the following:

Concrete 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.

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

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

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

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

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

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

**REVISION OF SECTION 613
ELECTRICAL CONDUIT (PLASTIC)**

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 6" of Hot Bituminous Pavement (Patching) in accordance with Section 403 and City and County of Denver Street Cut Regulations if applicable.

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 and shall be compliant with Bellcore TW-NWT-000356 requirements. Each conduit shall be equipped with a pull rope or 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 (PLASTIC)**

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 is 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.

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. For traffic signal installation and connection to fiber optic signal interconnect system, the cost of fiber optic cable and electrical wire will not be measured separately and shall be included in the cost of the work.

Subsection 613.11 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
2 Inch Electrical Conduit (Plastic)	Linear Foot
3 Inch Electrical Conduit (Plastic)	Linear Foot

**SECTION 613
PULL BOX (SPECIAL)**

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

Subsection 613.01 shall include the following:

At locations shown in the plans, the Contractor shall install one or more pull boxes of the size and type indicated in the following section.

Subsection 613.02 shall include the following:

Traffic signal pull boxes shall be made of fiberglass reinforced polymer concrete and shall be designed to support a minimum service load of 15,000 pounds over a 10" x 10" square. Pull boxes shall be of the type specified in the plans. The pull box shall have a detachable cover that has a skid-resistant surface. Any boxes that are installed to house traffic signal cables shall have the words "TRAFFIC SIGNAL" physically impressed (not painted) on its top. The traffic pull boxes shall have minimum inside dimensions of 30.5" long by 17.5" wide by 24" deep. Electric pull boxes, or Pull Box (Type A), shall have the words "ELECTRIC" physically impressed on their top.

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 have minimum inside dimensions of 30.5" long by 17.5" wide by 24" deep. 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.

At some locations, existing pull boxes and conduits may need to be modified to accommodate minimum bend requirements of interconnect cable and/or splice closures. At the direction of the Engineer or Engineer's designee, the Contractor shall remove existing pull boxes and replace with a pull box large enough to meet the interconnect manufacturer's recommended minimum bend radius or the splice closure requirements.

This work shall be considered as incidental to the cost of the Pull Box (Special) installed and will not be paid for separately.

Subsection 613.11 shall include the following:

Payment will be made under:

Pay Item
Pull Box (Special)

Pay Unit
Each

**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 50' NORTH & 75' WEST THEN TO HIGHWAY
--

FEEDS FROM XFMR 250' SOUTH & EAST 200' WEST

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

Manufacturers	Catalog Numbers
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Uticom Systems Inc.	U5025Y1
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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.

**REVISION OF SECTION 613
LIGHTING (XCEL)**

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 Energy.

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

250 Watt, 120v, High Pressure Sodium, Cobra Style, Flat Lens Luminaire

<i>Manufacturer</i>	<i>Catalog Numbers</i>
American Electric	125-06233-DJ
Cooper Lighting	OVH25SWW3D4
General Electric	M2RC25S1A2GMC3
Or approved equal	

35' Davit Standard, Federal Green (Federal Color #14056)

<i>Manufacturer</i>	<i>Part No.</i>
Ameron Protective Coating	Xcel Specification 5720.3360
Union Metal Corp.	Xcel Specification 5720.3360
Valmont Industries	Xcel Specification 5720.3360
Or approved equal	

Contractor shall submit a lighting materials list to Xcel Energy for approval prior to ordering.

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 luminaires wired for 120 volts.

Subsection 613.11 shall include the following:

Pay Item	Pay Unit
Luminaire HPS (250 Watt)	Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL FACES**

Section 614 of the Standard Specifications 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 signal sections. This work shall be included in the cost of the Traffic Signal Face and will not be paid for separately.

REVISION OF SECTION 614 PEDESTRIAN SIGNAL FACE

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 16"x18" Pedestrian Hand/Person with Countdown Timer Signal Units as specified on the plans.

Subsection 614.08 shall include the following:

1.0 General

The LED pedestrian countdown module shall be designed as a retrofit replacement for existing signal lamps shall not require special tools for installation.

The LED countdown module shall fit into existing 16" traffic signal housings built to the Institute of Transportation Engineers (ITE) publication ST-017B "Vehicle Traffic Control Signal Heads" (VTCSH) standards without modification to the housing.

2.0 Environmental

The LED countdown module shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

The LED countdown module shall be completely sealed against dust and moisture intrusion per the requirements of NEMA Standard 250 – 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

3.0 Construction

The LED countdown module shall be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housings.

The assembly of the LED countdown module shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

The AC power wires for the Hand/Person portion of the signal and the Countdown Timer portion of the signal shall be secured, color coded (blue, red, white), 36 inch long, 600V, 18 AWG jacketed wires, and rated for service at +105°C. Three wires (blue, red, white) shall be provided for electrical connection to the Hand/Person portion of the module, and a separate set of three wires (blue, red, white) shall be provided for electrical connection to the Countdown Timer portion of the module, so that the Hand/Person and Countdown Timer portions can be tested, controlled, and monitored separately.

The LED signal module lens shall have a slightly textured surface to reduce glare.

**REVISION OF SECTION 614
PEDESTRIAN SIGNAL FACE**

4.0 Chromaticity

- 4.1 The measured chromaticity coordinates for the "Lunar White" walking Person and the "Portland Orange" Hand and digits shall conform to the chromaticity requirements of section 8.04 and figure 1 of the VTCSH standard.
- 4.2 The chromaticity measurements shall remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

5.0 Display

The LED countdown signal module shall consist of a double overlay message combining the symbols of a Hand and Walking Person and two "7 segment" digits forming the time display.

The Pedestrian icon LEDs shall be arranged in a manner to form solid icon symbols. The shape of the symbols shall conform to the standard symbols for pedestrian signals.

The LED's shall be distributed evenly in each Pedestrian icon. The distance between each LED shall be evenly spaced.

The Hand/Person symbols shall be not less than 11" in height and 6.5" in width. The Hand symbol shall be made of at least 84 high intensity LEDs, and the Person symbol shall be made of at least 68 high intensity LEDs, in order to assure adequate luminous intensity.

The countdown digits shall be 9" high, shall be made of at least 144 LED's, and shall be MUTCD compliant for crosswalks over 100 feet.

The countdown digits shall consist of two rows of LEDs in a staggered configuration, producing rounded numeral corners.

The "Portland Orange" LED's shall be of the latest AllnGaP technology and the "Lunar White" LED's of the latest InGaN technology.

The individual LED light sources shall be interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than 3 LED's or 5% of the signal light output.

The luminous output of the Hand/Person symbols and the Countdown numerals shall not vary more than 10% over the voltage range specified in Sec. 6.2, and shall not be perceptible to the human eye.

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**REVISION OF SECTION 614
PEDESTRIAN SIGNAL FACE**

6.0 Drive Circuitry

- 6.1 The LED's shall be driven at a DC current not exceeding the maximum rating recommended by the LED manufacturer.
- 6.2 The LED drive current on both Hand and Person messages shall be regulated to compensate for line voltage fluctuations over the range of 80VAC to 135 VAC.
- 6.3 The turn-on/turn-off time for the Hand/Person shall be 75ms or less.
- 6.4 The Total Harmonic Distortion induced into an AC power line by the LED signal module, when operated at nominal operating voltage and at an ambient temperature of 25°C (77°F), shall not exceed 20 percent.
- 6.5 The signal shall provide a power factor of 0.90 or greater when operated at nominal operating voltage and at 25 ° C (77°F).
- 6.6 The drive circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.6 and Section 2.1.8 of NEMA Standard TS-2, 1992.
- 6.7 The on-board circuitry shall meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.
- 6.8 The typical power consumption for the Hand shall be 6W, the typical power consumption for the Person shall be 6W, and the typical power consumption for the countdown shall be 5W.
- 6.9 The circuitry shall ensure compatibility and proper triggering and operation of load switches and conflict monitors in signal controllers currently in use by the City and County of Denver.
- 6.10 The pedestrian countdown signal shall not be illuminated by input signals under 35 VAC.
- 6.11 The Countdown Timer portion of the signal shall have a high "off state" input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signals. The input impedance of the countdown circuitry shall maintain a voltage reading above 25 VAC to the conflict monitor for a minimum of 4 units connected on the same channel.
- 6.12 The Countdown Timer drive circuitry shall not be damaged when subjected to defective load switches providing a half wave signal output.

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**REVISION OF SECTION 614
PEDESTRIAN SIGNAL FACE**

7.0 Countdown Functionality

- 7.1 The countdown module shall be compatible with all types of traffic controllers in existence.
- 7.2 The countdown timer module shall have a micro-processor capable of recording its own time when connected to a traffic controller.
- 7.3 When connected, the module shall blank out the display during the initial two cycles while it records the countdown time using the Walk & D/Walk signal indications.
- 7.4 The countdown timer module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.
- 7.5 The countdown module shall register the time for the walk and clearance intervals individually and shall begin counting down at the beginning of the pedestrian change interval.
- 7.6 When the flashing Hand becomes solid, the module shall display 0 for one second and then blank-out. The display shall remain dark until the beginning of the next countdown.
- 7.7 In the event of a pre-emption sequence, the countdown module shall skip the pre-empted clearance time and reach 0 at the same time as the flashing Hand becomes solid.
- 7.8 In the cycle following a pre-emption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indications and always reach 0 at the same time as the flashing Hand becomes solid.
- 7.9 The countdown timer shall be capable of timing 2 consecutive complete pedestrian cycles outputted by the traffic controller (no steady Hand signal between cycles).
- 7.10 The countdown module shall not display an erroneous or conflicting time when subjected to defective load switches.
- 7.11 The countdown module shall have an internal conflict monitor preventing any possible conflicts between the Hand/Person signal indications and the Countdown Timer display. It shall be impossible for the display to countdown during a solid Hand indication.
- 7.12 The countdown module shall have a user selectable option offering the possibility to countdown the entire duration of the walk and clearance time.

**REVISION OF SECTION 614
PEDESTRIAN SIGNAL FACE**

7.13 The countdown module shall have accessible dip-switches for the following user selectable options:

- 1- Display 0 during stand-by.
- 2- Turn on all LEDs for testing
- 3- Countdown walk + clearance time
- 4- Disable countdown display.

7.14 The LED module shall have a removable plug on the rear of the unit allowing easy access to dip switches.

8.0 Warranty

8.1 Manufacturers shall provide a written warranty issued by the factory located in the NAFTA country of module origin with the following minimum provisions:

8.2 Modules shall be replaced, repaired or purchase value refunded if the module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery.

8.3 Modules which exhibit luminous intensities less than the minimum specified values within the first 36 months of the date of delivery shall be replaced, repaired or purchase value refunded.

8.4 Upon request, the LED lamp module manufacturer shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim.

8.4.1 The documentation shall clearly show that the manufacturer and/or its parent corporation possesses a minimum of US\$10 million in net worth, within the United States, Canada, and/or England.

8.4.2 A current corporate annual report duly-certified by an independent auditing firm, containing a balance sheet illustrating such net worth, is an example of suitable documentation.

8.4.3 The documentation shall clearly disclose:

- a. The country in which the factory of module origin is located
- b. The name of the company or organization that owns the factory of module origin including any and all of its parent companies and/or organizations, and their respective country of corporate citizenship

**REVISION OF SECTION 614
PEDESTRIAN SIGNAL FACE**

8.4.4 For firms with business and/or corporate citizenship in the United States of less than seven years, the process by which the end-users/owners of the modules will be able to obtain worst-case, catastrophic warranty service in the event of bankruptcy or cessation-of-operations by the firm supplying the modules within North America, or in the event of bankruptcy or cessation-of-operations by the owner of the factory of origin, shall be clearly disclosed.

Subsection 614.13 shall include the following:

Pedestrian Signal Face (16) (Countdown) shall include all work necessary to provide and install a complete system.

Subsection 614.14 shall include the following:

Payment will be made under:

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

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

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

Subsection 614.08 shall include the following:

SYSTEM DESCRIPTION:

The emergency vehicle traffic signal priority control system shall enable designated vehicles to remotely cause the traffic signal controller to advance to and/or hold a desired traffic signal display by using existing controller functions. The control shall be activated at a minimum distance of 548.6M (1,800 feet) along an unobstructed "line of sight" path. The control shall not terminate until the vehicle is within 12.2M (40 feet) of the detector or at the intersection.

The system shall consist of the following components:

- A. Vehicle Emitter which shall be mounted on the emergency vehicle and shall transmit optical energy signals only in the forward direction. If the municipality presently uses optical pre-emption, the emitters shall be of the same manufacture currently used by the City and County of Denver Fire Department.
- B. Phase Selector (minimum 2 channel) 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 Operation:

- A. The operating sequence shall be initiated when the optical detector receives the required optical energy signal from the Emitter.
- B. The phase selector shall cause the traffic signal controller to advance to and/or hold the desired traffic signal display for the emergency vehicle.
- C. The phase selector shall cause the controller to advance to and/or hold the desired traffic signal display even if the optical energy signals cease before the desired display is obtained.
- D. The phase selector shall allow the traffic signal controller to resume normal operation within ten seconds after optical energy signals cease if the optical energy signals cease after the desired traffic signal display is obtained.

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

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.

1. Shall operate on ten to fifteen volts DC input voltage, but shall not be damaged by input voltage surges up to twenty-five volt 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, transmission safety switch.
4. Shall operate over an ambient temperature range of minus 34O C to plus 60O C. (minus 30O F. to plus 140O F.)
5. Shall operate in 0 to 95 % humidity.
6. Shall be a pulsed optical energy source with a controlled repetition rate.
7. Shall not generate voltage transients on the battery input line which exceed battery voltage by more than four volts.
8. Shall produce optical energy in a cone of not more than 90 degrees horizontal and not more than 30 degrees vertical. The detectors and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.

B. Optical Detector:

The optical detector receives the high intensity optical pulses produced by the emitter. These optical energy pulses are transformed by the detector into appropriate electrical signals which are transmitted to the phase selector. The optical detector is mounted at or near the intersection in a location which permits an unobstructed line of sight to vehicular approaches. The units may be mounted on signal span wires, mast arms or other appropriate structures.

1. Shall be of solid state construction.
2. Shall operate over an ambient temperature range of minus 34O C to plus 60O C. (minus 30O F. to plus 140O F.)
3. Shall have internal circuitry potted in a semi-flexible compound to ensure moisture resistance.
4. Shall operate in 0 to 95 % humidity.

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

5. 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.

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

D. Detector Cable (Optical):

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).

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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.

Subsection 614.10 shall include the following:

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):

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- Controller “D” harness and adapter.
- Pre-emption termination panel with terminal block and relay bases.
- Pre-emption disconnect switch, mounted on the emergency switch panel (on inside of cabinet door).
- Pre-emption test buttons, mounted on the pre-emption termination panel.

All connections from the phase selector to the “D” harness and to the cabinet wiring shall be made at the termination panel. The termination panel shall have AC+ Lights, AC-, and a switched logic ground. The switched logic ground feeds all the pre-empt inputs to the phase selector. When switched off by the pre-emption disconnect switch, the traffic controller shall not be affected by pre-empt calls from the optical pre-emption system. A minimum of two test buttons shall be provided. If there are more than two pre-empt runs, a button for each shall be installed. A chart or print out indicating the program steps and settings shall be provided along with the revised cabinet wiring diagrams.

Test the Pre-emption System According to the following Guidelines:

1. Notify the system owner/user, such as the Municipal Fire Chief or City Traffic Engineer, of the scheduled inspection
2. Request a fire department representative and an emergency vehicle, which has an emitter to conduct the test. If not available, the contractor shall provide an emitter.
3. In the presence of the Engineer and the municipal representative, test each pre-empted approach with the emergency vehicle. Test the following items of the system:
 - 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.

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EMERGENCY VEHICLE TRAFFIC SIGNAL PRIORITY CONTROL SYSTEM**

Subsection 614.13 shall include the following:

Method of Measurement:

Fire Preemption Unit and Timer payment shall include the Optical Detectors, Phase Selectors, System Chassis, Detector Cable (Optical), and Vehicle Emitters necessary and as shown on the plans and shall not be measured and paid for separately.

Subsection 614.14 shall include the following:

Basis of Payment:

Payment for Optical Detectors, Phase Selector, System Chassis and Detector Cable (Optical) will include the item unit cost, including all manufacturer's required mounting hardware and the cost of installation and supervision by the manufacturer or his designated representative, including travel and subsistence, and all materials, equipment and labor incidental thereto. Payment for termination panel, "D" harness, test buttons, program chart (or print out) and revised cabinet wiring diagrams shall be included in the item Fire Preemption Unit and Timer.

Payment will be made under:

Pay Item

Fire Preemption Unit and Timer

Pay Unit

Each

**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:

MVP Sensor. All system components shall be ISO 9002 and CE certified. The MVP sensor shall be an integrated imaging CCD array with optics, high-speed, color, image-processing hardware and a general-purpose CPU bundled into a sealed enclosure. It shall be equipped with a sunshield to reflect solar heat and shield the CCD array from direct exposure to the sun and a faceplate heater to melt accumulated ice, snow, or fog from the view of the camera.

The CCD array shall be directly controlled by the general-purpose CPU. The optics and camera electronics shall be directly controlled for optimal illumination for traffic detection. The lens shall be pre-focused at the factory and it shall be possible for the user to focus the lens, as required for operation. The MVP sensor shall operate at a maximum rate of 30 frames per second when configured for the NTSC (US) color video standard and 25 frames per second for the PAL (EURO) color video standard. The MVP sensor shall process a minimum of twenty detector zones placed anywhere in the field of view of the sensor. The video output shall have the ability to selectively show overlaid graphics indicating the current real-time detection state of each individual detector defined in the video. The sensor output NTSC or PAL color video shall be able to be viewed with any compatible video-display device.

MVP Sensor Detector Types. The MVP sensor shall be able to be programmed with a variety of detector types that perform specific functions. The general functions performed by the detectors shall include:

- Presence/passage detection of moving and stopped vehicles.
- Enable detection based on the direction of travel and/or exclusively for stopped vehicles.
- Measure speed.
- Generate a variety of alarms based on measured traffic conditions.
- Combined the output of several detectors with logical operators and optionally modify the cumulative state based on delay or extension timers and the state of any associated signal phase state.
- Each of the detector types shall optionally be made visible in the live video output of the sensor.

MVP Sensor External Interfaces. The external interfaces to the MVP sensor shall include:

- A detector port specifically to exchange detector state data with the Detector Rack Card, Mini Hub, Mini Hub II, or Mini Hub TS2.

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- Differential color video output.
- 24 VAC/DC power to operate the sensor.

There shall be a supervisor communications port to configure and provide general communications. The sensor shall use an RS-485 multi-drop network protocol to facilitate communications via a network of rack cards or mini-hubs to a remote or local PC client/server application. The communications port shall allow the user to update the embedded software with a new software release and interact with a PC client/server application for all of the various detection requests supported by the sensor. The communications protocol over the supervisor communications port shall be the UDP/IP message packet and routing standard. This protocol shall be used throughout the field network of sensors, hubs and the host PC server application.

The sensor detector port shall provide a dedicated, RS-485, half-duplex interface between the sensor and detector port master such as rack card or mini hub. The real-time state of phase inputs shall be transmitted to the sensor. The sensor shall exchange input and output state data with the detector port master every 100 ms. The communications port shall be UDP/IP over the single twisted-pair wiring. A detector port master shall subsequently translate the detection states, in an electronically compatible manner, to the traffic signal controller. Single pin state outputs shall be applied by the interface card immediately upon receipt of the state change and each on or off pulse shall be guaranteed a minimum pulse width of 100 ms. Speed outputs from two pins shall reflect the true output of the delay proportional to measured speed within 1 ms.

The MVP sensor shall output full motion video using a differential video port in either NTSC or PAL format. The differential video shall be transmitted over a single twisted pair.

The MVP sensor shall operate on 24 VAC/DC, 50/60 Hz at a maximum of 25 watts. The camera and processor electronics shall consume a maximum of 10 watts. The remaining 15 watts shall support an enclosure heater.

MVP Sensor Operations Log. The MVP sensor shall maintain a non-volatile operations log, which minimally contains:

- Revision numbers for the current MVP sensor hardware and software components in operation.
- Title and comments for the detector configuration.
- Date and time the last detector configuration was downloaded to the MVP sensor.
- Date and time the operation log was last cleared.
- Date and time communications were opened or closed with the MVP sensor.
- Date and time of last power-up.
- Time-stamped, self-diagnosed hardware, and software errors that shall aid in system maintenance and troubleshooting

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MVP Sensor Vehicle Detection Performance.

The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the field of view of the MVP sensor. Detection zones shall be able to be overlapped for optimal road coverage. Selective groups of detectors shall be able to be logically combined into a single output by using optional delay and extension timing and signal state information.

Placement of detection zones shall be by means of a portable or desktop computer using a keyboard and a mouse. The VGA monitor shall be able to show the detection zones superimposed on images of traffic scenes.

The mouse and keyboards shall be used to:

- Place, size, and orient detection zones to provide optimal road coverage for vehicle detection.
- Modify detector parameters for site geometry to optimize performance.
- Edit previously defined detector configurations.
- Adjust the detection zone size and placement.
- Add detectors for additional traffic applications.
- Reprogram the sensor for different traffic applications, changes in installation site geometry, or traffic rerouting.

It shall be possible to:

- Download detector configurations from the computer to the MVP sensor.
- Upload the current detector configuration that is running in the MVP sensor.
- Back up detector configurations by saving them to the computer's removable or fixed disks.
- Perform the above upload, store, and retrieve functions for video snapshots of the MVP sensors' view.

The MVP real-time detection operation shall be verifiable through the following means:

- View the video output of the sensor with any standard video display device (monitor).

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- The video output of the MVP sensor (differential twisted pair) shall be capable of selectively transmitting:
 - o Camera video only.
 - o Analog video overlaid with the current real-time detection state of each detector.
 - o Camera video with overlaid, scaled cross-hairs that are useful for aiming the sensor.
 - o Individual detectors shall have the option of being hidden.
- Electronically monitor assigned contact closure pinouts from a detector port master such as a Mini Hub TS1 interface card, Mini-Hub TS2 interface card, Detector Rack interface card, or Mini Hub II interface card. Each pin of an interface card shall have one associated LED output to reflect its output state.
- View the associated output LED state on the detector port master.

The video detection system shall reliably detect vehicle presence when the MVP sensor is mounted 30 feet (10 m) or higher above the roadway, when the MVP sensor is adjacent to the desired coverage area, and when the distance to the farthest detection zone location is not greater than 10 times the mounting height of the MVP sensor. Although optimal detection may be obtained when the image sensor is directly above the traveled lanes, the image sensor shall not be required to be mounted directly over the roadway. The MVP sensor shall be able to view both approaching or departing traffic. A single MVP sensor, placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, shall be able to monitor six to eight traffic lanes simultaneously.

For example, available infrastructure on which to mount MVP sensors is typically 40 feet (13 m) high, which can adequately cover 4 to 5 travel lanes if the pole is within 10 feet (3 m) of the nearest travel lanes. Detecting traffic in 6 to 8 lanes at a 40-foot mounting height may require the MVP sensor be centered over the traveled lanes for optimal detection.

Using a MVP sensor installed within the optimal viewing specifications and in the absence of occlusion, the system shall be able to count vehicles with less than four-percent error under normal conditions (day and night) and less than seven-percent error under artifact conditions (such as caused by shadows, fog, rain, snow). The volume count error shall be for the entire roadway and shall be compiled over time intervals, which contain a minimum of 100 vehicles to ensure statistical significance.

Using a MVP sensor installed within the optimal viewing specifications, the probability of not detecting a vehicle for demand presence shall be less than one-percent error under all operating conditions. In the presence of artifact conditions, the MVP sensor shall minimize extraneous protected movement call to less than seven-percent. The demand presence accuracy shall be calculated over time intervals that contain a minimum of 100 protected turning movements to ensure statistical significance and shall not include turning movements where vehicles do not pass through the presence detectors or where they stop short or beyond the combined zones. These performance specifications shall be achieved with a minimum of two presence detectors coupled with a single detector function to provide adequate road coverage to sample the random arrival patterns of vehicles at the stop line.

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The MVP sensor shall accurately measure average speed of multiple vehicles with less than two-percent error under all operating conditions for approaching and receding traffic. The average speed measurement shall include more than ten vehicles in the sample to ensure statistical significance. These specifications shall apply to vehicles that travel through both the count and speed detector pair and shall not include partial detection situations created by lane changing maneuvers.

MVP Sensor Hardware

MVP Sensor. The video intersection detection system shall use medium resolution, color image sensors as the video source for real-time vehicle detection. As a minimum, each image sensor shall provide the following capabilities:

- Images shall be produced with a CCD sensing element with horizontal resolution of at least 500 lines and vertical resolution of at least 350 lines. Images shall be output as video conforming to NTSC or PAL specifications.
- Software JPEG video compression.
- Useable video and resolvable features in the video image shall be produced when those features have luminance levels as low as 0.1 lux at night.
- Useable video and resolvable features in the video image shall be produced when those features have luminance levels as high as 10,000 lux during the day.
- Useable video and resolvable features in the video image shall be produced when the ratio of the luminance of the resolved features in any single video frame is 300:1.
- Direct real-time iris and shutter speed control.
- Useable for video surveillance.
- An optimal filter and appropriate electronic circuitry shall be included in the image sensor to suppress “blooming” effects at night.
- Gamma for the image sensor shall be preset at the factory to a value of 1.0.

MVP Sensor Optics. The MVP sensor shall be equipped with an integrated zoom lens with zoom and focus capabilities that can be changed using either configuration computer software or hand-held controller.

MVP Sensor Enclosure. The MVP sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

- The enclosure shall be waterproof and dust-tight to NEMA-4 specifications, and shall have the option to be pressurized with dry nitrogen to 5 ± 1 psi.
- The enclosure shall allow the MVP sensor to operate satisfactorily over an ambient temperature range from -34 degrees C to +74 degrees C while exposed to precipitation as well as direct sunlight.

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- The enclosure shall allow the image sensor horizon to be rotated during field installation.
- The enclosure shall include a provision at the rear of the enclosure for connection of the factory-fabricated power, communications and video signal cable. Input power to the environmental enclosure shall be 24 VAC/DC and either 50 or 60 Hz.
- A heater shall be at the front of the enclosure to prevent the formation of ice and condensation in cold weather, as well as to assure proper operation of the lens' iris mechanism. The heater shall not interfere with the operation of the image sensor electronic, and it shall not cause interference with the video signal.
- The enclosure shall be light-colored and shall include a sun shield to minimize solar heating and glare. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sunshield shall be adjustable to prevent direct sunlight from entering the lens or hitting the faceplate.
- The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 2.7 kg or 6 pounds.
- When operating in the environmental enclosure with the power, communication and video signal cable connected, the image sensor shall meet FCC class B and CE requirements for electromagnetic interference emissions.

MVP Sensor Electrical. The video output of the MVP sensor shall be isolated from earth ground. All video connections from the sensor to the interface panel shall also be isolated from earth ground.

The video output, communication, and power stages of the sensor shall include transient protection to prevent damage to the sensor due to voltage transients occurring on the cable leading from the MVP sensor to other field terminations.

Connections for video, communications and power shall be made to the image sensor using a single 18-pin circular metal shell connector. The mating cable shall use a right-angle shell.

The MVP sensor shall have passed requirements for and received the CE mark.

MVP Sensor Field Interface Equipment. A communications panel shall be provided with each MVP sensor for installation. The communications panel shall contain a terminal block for terminating power to the image sensor and terminated, four twisted-pair wiring to the image sensor.

The MVP sensor communications interface panel shall provide 24 VAC input power, at less than 25 Watts, 50/60 Hz.

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INTERSECTION DETECTION SYSTEM (CAMERA)**

Warranty, Maintenance Support and Training

Warranty. The video detection system shall be warranted by its supplier for a minimum of two years.

Support. Ongoing software support by the supplier shall include updates of the MVP software. These updates shall be provided free of charge during the warranty period.

Support Program. The supplier shall maintain a program for technical support and software updates following expiration of the warranty period. This program shall be made available to the contracting agency in the form of a separate agreement for continuing support.

Training. Two training sessions consisting of two days of training each shall be provided to personnel of the contracting agency in the operation, setup and maintenance of the video detection system. Instruction and materials shall be provided for a maximum of 20 persons and shall be conducted at a location selected by the contracting agency. The contracting agency shall be responsible for any travel, room and board expenses for its own personnel.

Subsection 614.13 shall include the following:

Intersection Detection System (Camera) shall be measured and paid by the number of intersections at which the system is installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional system to the satisfaction of the Engineer.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Intersection Detection System (Camera)	Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET**

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

Delete Subsection 614.08 (c) and replace with the following:

Controller Cabinets: Traffic signal cabinets shall comply with NEMA TS2 specifications and shall be compatible with the existing closed loop or distributed traffic signal system as specified. They shall provide all components, connections, and cables unless otherwise noted in this specification. The signal control system operating this project is "ICONS".

The equipment includes but is not limited to fiber distribution panels and jumpers, telemetry units, and auxiliary power supplies.

1. Cabinets

1.1 General – Traffic signal controller cabinets shall conform to the requirements for NEMA 3R rating, NEMA TS2-1992 Section 7, and this specification. Where differences occur, this specification shall govern. Unless noted otherwise, size MSX cabinets shall be furnished.

1.2 Materials – Cabinets shall be fabricated from sheet aluminum alloy, 0.125 inch thick, meeting the requirements of ASTM 5052-H32.

1.3 Dimensions – Size MSX cabinets outside of dimensions shall nominally be 60 inches high, 18 inches deep, and 30 inches wide. Size "P" cabinets shall be 57 inches high, 27 inches deep and 38 inches wide. Unless noted otherwise, cabinets shall be size MSX.

1.4 Construction – The cabinet top shall be constructed with a one inch slope from front to back. Cabinet seams shall meet all requirements for NEMA Type 4 enclosures. All seams shall be sealed with an approved sealant on the interior of the cabinet. The main door opening shall be double flanged on all four sides.

1.5 Doors – Cabinet main doors shall be full width, hinged on the right side when facing the cabinet. The main door opening shall be a minimum of 90% of the width and 80% of the height of the front surface of the cabinet. A stiffener plate, at least 15 inches long, 6 inches high and on-half inch deep, shall be welded across the inside of the main door. (The bottom of the door opening shall be at least 3 inches above the bottom of the cabinet.)

The main door hinge shall be continuous and bolted to the cabinet door using 1/4-20 stainless steel carriage bolts and ny-lock nuts. The hinge shall be attached so that no bolts or rivets are exposed. The hinges shall have a 0.120 inch diameter stainless steel hinge pin, capped top and bottom to render it tamper proof. The main door shall include a door restraint capable of holding the door open at approximately 90, 120, and 150 degrees under windy conditions. The door restraint shall be attached to the main door and pivot to placement holes in the bottom flange of the door opening.

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A three-point draw-roller type door latch shall be provided with push rods of at least 0.25 inch by 0.75 inch steel. Rollers shall be a minimum of 0.875 inches in diameter, be made of nylon, and have a 0.150 inch steel center. The handle on the main door shall be stainless steel with a three-quarter inch diameter shank. The handle shall rotate counter-clockwise to open and shall not extend beyond the door perimeter at any time. The handle shall include a hasp for attachment of a padlock. The main door shall be equipped with a sturdy, permanently lubricated lock which shall be covered with a weatherproof tab, and shall be provided with two keys. The lock shall be positioned so that the key shall not interfere with operation of the handle. The hinged police door compartment shall have a strong lock of different design than that of the main door of the cabinet and provided with one key.

The main door and the police door shall close against weatherproof and dustproof closed-cell neoprene gasket seals. The gasket material for doors shall be a minimum of 0.250 inches thick. The main door gasket shall be a minimum of 1.00 inch wide; the police door gasket shall be a minimum of 0.50 inch wide. Both gaskets shall be permanently bonded to the cabinet.

- 1.6 Shelves – Unless noted otherwise, cabinets shall be provided with two adjustable “C” channels mounted vertically on the interior of the back and both side walls. The channels shall accommodate spring mounted nuts or studs. Mounting channels shall extend at least 3 inches from bottom to at least 3 inches from the cabinet top.

Cabinets shall be provided with two adjustable shelves, fabricated of 5052-H32 aluminum. Shelves shall be at least 11 inches deep and extend the full width of the cabinet.

- 1.7 Finish & Surface Preparation – Cabinets shall be provided with a natural aluminum finish meeting Federal Specification QQA-250/18. All surfaces shall be free from weld flash. Welds shall be smooth, neatly formed, and free from cracks, blow holes, and other irregularities. Any sharp edges or burrs shall be ground smooth. Care shall be taken during handling to prevent scratches or dents. All walls of cabinet shall be folded wider the cabinet at the base and each flange created.

- 1.8 Mounting – Cabinets shall be provided with internal mounting flanges for mounting on a base. All walls of the cabinet shall be folded under the cabinet at the base and each flange created shall be equal to or greater than 2”.

- 1.9 Ventilation – The lower portion of the main cabinet door shall be louvered for ventilation intake. The air inlet shall be large enough to accommodate the air flow of the rated fan. Louvers must meet the NEMA rod entry test for 3R ventilated enclosures. An aluminum, non-corrosive, vermin and insect proof, mesh air filter shall be mounted on the inside of the main door. The air filter must be held firmly in place by a fixed bottom bracket and a spring loaded top bracket that allow easy removal for cleaning. The top of the cabinet shall include an exhaust air plenum with a vent screen having perforations no greater than 0.125 inches in diameter. A removable fan plate shall be mounted in the top of the cabinet.

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**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET**

2. Terminals and Facilities

2.1 General – Cabinets shall be assembled and wired to accommodate the following:

Main panel with 12 load switches, 6 flash transfer relays, 1 flashers, and 2 bus interface units.

- Power distribution panel on lower right side panel
- Fiber Optics System telemetry panels on lower left side panel
- Detector rack for 16 channels of detection, 4 channels of preemption, and 1 bus interface unit on upper shelf
- Power supply for bus interface units
- One TS2 Type 2 controller and Type 16 malfunction management unit on lower shelf
- Police switch compartment on inside of main door
- Detector I/O panel mounted on left side
- A ventilation fan mounted in the cabinet top with an adjustable thermostat
- An incandescent lamp with a 15 inch arm mounted on the right side of the cabinet
- A flourescent light mounted on the inside top of the cabinet
- Loading resistors

2.2 Main Panel – The main panel shall be constructed from 5052-H32 brushed aluminum of 0.090 inches minimum thickness and formed so as to minimize any flexing when plug-in components are installed.

Main panels shall be hinged at the bottom to allow easy access to all wiring on the rear of the panel. The panel shall be designed so it can easily be move from vertical to a minimum of 60 degrees of vertical. The bottom of the panel shall be at least 4 inches above the base of the cabinet.

The main panel shall be fully wired in the following configuration:

Twelve load switch sockets, (6) flash transfer relay sockets, one flasher socket, two main panel BIU rack slots, one detector rack each with one BIU, and one Type-16 MMU. Power to flashers shall be terminated on a separate easily accessible terminal strip mounted on front of the panel.

All load switch and flash transfer relay socket shall be labeled on the front of the main panel to match drawing designations.

Up to eight load switch sockets may be positioned horizontally and stacked in two rows.

All load switches shall be supported by a bracket extending at least half the length of the load switch.

Rack style mounting shall be provided to accommodate the required BIUs per the configuration listed. A dual-row, 64-pin female DIN 41612 Type B connector shall be provided for each BIU rack position. Card guides shall be provided for both edges of the BIU. Terminal and facilities BIU mounting shall be an integral part of the main panel. Detector rack BIU mounting shall be an integral part of the detector rack.

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All BIU rack connectors shall have prewired address pins corresponding to the requirements of the TS2 specification. The address pins shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no additional programming.

Main panels should have all field wires contained on two rows of horizontally mounted terminal blocks. The upper row should be wired for the phase 9-12 vehicle 02, 4, 6, 8 pedestrian field terminations. The lower row shall be reserved for phase one through phase eight vehicle field terminations.

All field output circuits shall be terminated on an unfused screw type (#10 screw) terminal block with a minimum rating of 10 amps.

All field input/output (I/O) terminals shall be accomplished at the field terminals with the use of a screwdriver only. It shall also be possible to program which flasher circuit the phase shall be programmed to. It shall not be necessary to debus field terminal blocks for flash programming.

The main panel shall contain 1 labeled flasher sockets capable of operating 15-amp, 2-pole, NEMA solid-state flashers. The flasher shall be supported by a bracket that extends at least half its length.

One RC network shall be wired in parallel with each group of three flash-transfer relays and any other relay coils.

All logic-level, NEMA-controller and Malfunction Management Unit input and output terminations on the main panel shall be permanently labeled. Cabinet prints shall identify the function of each terminal position.

At a minimum, five 20-position terminal blocks shall be provided at the top of the main panel to provide access to the BIU/controller unit's programmable and non programmable I/O. Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32 inch screw as a minimum.

The main panel shall incorporate a relay to remove +24 VDC from the common side of the load switches when the intersection is placed into flash. The relay shall have a momentary push-button to apply power to the load switch inputs for ease of troubleshooting.

- 2.3 Wiring and Cables – All main panel wiring shall be the size indicated below and shall be color-coded. As a minimum, colors shall be used to distinguish between different equipment. The following color code is proved as an example:

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Green/Walk load switch output	brown wire (14 gauge)
Yellow load switch output	yellow wire (14 gauge)
Red/Don't Walk load switch output	red wire (14 gauge)
MM (other than AC power)	violet wire (22 gauge)
AC Line (power panel to main panel)	black wire (8 gauge)
AC Line (main panel)	black wire (10 gauge)
AC Neutral (power panel to main panel)	white wire (8 gauge)
AC Neutral (main panel)	white wire (10 gauge)
Earth ground (power panel)	green wire (8 gauge)
Logic ground	gray wire (22 gauge)
Flash programming	orange wire to flasher terminal, black wire to red or yellow field terminal (14 gauge)

All wiring, 14 AWG and smaller, shall conform to MIL-W-16878/1, type B/N, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation with clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall have UL listed THHN/THWN 90 degrees Celsius, 600 V, 0.020 inches thick PVC insulation and clear nylon jacketed.

Both "A" and TS2 controller power harnesses and connectors shall be included.

All cabinet configurations shall be provided with enough RS-485 Port 1 communication cables to allow full capabilities of that cabinet. One additional RS-485 port cable, capable of reaching any RS 485 device, shall be supplied for testing. Each communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be shielded cable suitable for RS-485 communications. The additional port cable connector shall be cupped to prevent dirt or moisture contamination. The RS-485 port cables shall be as small as possible and remain flexible throughout the NEMA temperature range of operation.

All main panels shall be prewired for a Type-16 Malfunction Management Unit.

All wiring shall be neat in appearance. All cabinet wiring shall be continuous from its point of origin to its termination point. Butt type connections/splices are not acceptable.

All connecting cables and wire runs shall be secured by mechanical clamps. Stick-on type clamps are not acceptable.

The grounding system in the cabinet shall be divided into three separate circuits (AC Neutral, Earth Ground, and Logic Ground). These ground circuits shall be connected together at a single point, using removable jumpers, as outlined in the NEMA TS2 Standard.

All pedestrian push-button inputs from the field to the controller shall be optoisolated through the BIU and operate at 12 VAC.

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TRAFFIC SIGNAL CONTROLLER CABINET**

All wire (size 16 AWG or smaller) at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

2.4 Power Panel – The power panel shall consist of a separate, wholly enclosed module, securely fastened to the right side wall of the cabinet. The power panel shall be wired to provide the necessary power to the cabinet, controller, Malfunction Management Unit, cabinet power supply and auxiliary equipment. It shall be manufactured from 0.090-inch, 5052-H32 aluminum with a removable plastic front cover. The panel shall be of such design so as to allow a technician to access the main and auxiliary breakers without removing the front cover.

- a. The power panel shall house the following components:
- b. A 5-amp Rem equipment breaker which also functions as an on/off switch. This breaker shall supply power to the controller, MMU, cabinet power supply and auxiliary panels. The equipment breaker shall be wired after the main breaker, transient protection and filtering.
- c. A 30 amp main breaker, which shuts off all power to the equipment breaker and all signal lights.
- d. A 15-amp auxiliary breaker. This breaker shall supply power to the fan, light and GFI outlet and shall be wired directly to the incoming power.
- e. All breakers Rem shall be thermal magnetic type, UL listed for HACR service, with a minimum of 10,000 amp interrupting capacity.
- f. A surge arrestor with a continuous service current of 10 amps at 120 volts AC.
- g. A 50 amp, 125 VAC radio interference line filter.
- h. A normally-open, 60-amp, mercury connector Durakool model BBC-7032 or exact equivalent.
- i. A 15-position neutral bus bar capable of connecting three #12 wires per position. There shall be at least 13 positions, with no wires, available for field connections.
- j. A 7-position ground bus bar capable of connecting three #12 wires per position.
- k. A NEMA type 5-15GFI convenience outlet.
- l. A two-position 15amp non-GFI protected outlet shall be provided on the cabinet wall to provide power for telemetry units and other external devices. Fused at 1 amp, fast-blow, and mounted adjacent to the fiber optic modem.

2.5 Auxiliary Cabinet Equipment – The cabinet shall be provided with a thermostatically controlled (adjustable between 80-150 degrees Fahrenheit) ventilation fan in the top of the cabinet plenum. The fan shall be a ball bearing type fan and shall be capable of drawing a minimum of 100 cubic feet of air per minute.

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A R14 intermediate screw base (E17) 25 watt lamp protected in a metal housing and connected to a 15 inch flexible arm. Arm shall be attached to the inside right of the cabinet at an optimum location for lighting the controller and other panels. A fluorescent lighting fixture shall be mounted on the inside top of the cabinet near the front. The lamps shall be wired to door activated switch mounted near the top of the door.

A sealable print pouch shall be mounted to the door of the cabinet. The pouch shall be at least 19 inches by 13 inches made of 10 mil plastic.

Two sets of complete and accurate non-fading cabinet drawings shall be supplied with each cabinet.

All equipment supplied with the cabinet shall include one set of operating and service manuals per unit up to a maximum of ten sets per order.

Loadswitches 1, 3, 5, & 7 – green, yellow & red outputs and loadswitch 9, 10, 11, & 12 yellow outputs shall be loaded with a 2,500 ohm, 25 watt, 5% high density aluminum encased resistors. These resistors shall be mounted on an aluminum panel and located for easy access.

2.6 Vehicle Detection Rack – A vehicle detector amplifier rack shall be provided in each cabinet. Detector racks shall support up to 16 channels of loop detection, two 2-channel preemption devices and one BIU and mounted on top of the upper shelf.

Each cabinet shall contain detector interface panels for the purpose of connecting field loops and vehicle detector amplifiers. One 16-position interface panel shall be provided. The interface panel shall be secured to a mounting plate and attached to the left sidewall of the cabinet.

Interface panels shall allow for the connection of sixteen independent field loops. A ground bus terminal shall be provided between each loop pair terminal to provide a termination for the loop lead-in cable ground wire.

Interface panels shall provide a 10-position terminal block to terminate the field wires for up to two 2-channel preemption devices.

The lightning arrestor/surge suppressor on the AC service shall meet or exceed the following requirements:

- 1) Capable of withstanding repeated 20,000 ampere surges (minimum of 25).
- 2) Have internal follow current limiters (resistive elements).
- 3) Contain a minimum of three active clamping stages.
- 4) Self-extinguish within 8.3 milliseconds after trailing edge surge.
- 5) Parallel impedance of limiters shall be less than 15 ohms.

**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET**

A cable consisting of 20 - 22 AWG twisted pair wires shall be provided to enable connection to and from the panel to a detector rack. The twisted pair wires shall be color. All termination points shall be identified by a unique number and labeled on the panel.

Each detector rack shall accommodate rack mountable phase selector/discriminator type preemption cards.

2.7 Cabinet Test Switches and Police Panel – The police door switch panel shall contain the following:

- a. **SIGNALS ON/OFF SWITCH.** In the OFF position, power shall be removed from signal heads in the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.
- b. **AUTO/FLASH SWITCH.** In the flash position, power shall not be removed from the controller and stop time shall not be applied. When the switch is returned to the Auto position the controller shall restart.
- c. **AUTO/MANUAL SWITCH.** Cabinet wiring shall include an AUTO/MANUAL switch and a terminal strip with a momentary push-button and 24” coiled hard cord, which is extendable to 12 feet. Terminal strip shall be accessible only from the inside of the cabinet.
- d. **MANUAL PUSH BUTTON SWITCH.** An additional manual advance momentary push button switch mounted on and accessible through the police panel door shall operate with the Auto/Manual switch.
- e. A door open/closed switch, connected to the BIU on Alarm 1, shall be provided.

All toggle type switches shall be rated 5 amps. Single-(all the time) or double-pole switches may be provided, as required.

Any exposed terminals or switch solder points shall be covered with a non-flexible shield to prevent accidental contact.

All switch functions must be permanently and clearly labeled.

All wire routed to the police door-in-door switch panel shall be adequately protected against damage from repetitive opening and closing of the main door.

All test switch panel wiring shall be connected to the main panel via a 15-pin AMP type connector.

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**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET**

3. Auxiliary Devices

3.1 Load Switches – Load switches shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS2 Standard.

Signal load switches shall have a minimum rating of 10 amperes at 120 VAC for an incandescent lamp load.

The front of the load switch shall be provided with three indicators to show the input signal from the controller to the load switch.

Load switches shall be dedicated per phase. The use of load switches for other partial phases is not acceptable.

The full complement of load switches shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

3.2 Flashers – The flashers shall be solid state and shall conform to the requirements of section 6.3 of the NEMA TS2 Standard.

Flashing of field circuits for the purpose of intersection flash shall be accomplished by a separate flasher.

The flasher shall be rated at 15 amperes, double pole with a nominal flash rate of 60 FPM.

3.3 Flash Transfer Relays – All flash transfer relays shall meet the requirements of Section 6.4 of the NEMA TS2 Standard.

The coil of the flash transfer relay must be de-energized for flash operation. Contacts shall be rated at 20 amps resistive.

The full complement of relays shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

3.4 Cabinet Power Supply – The cabinet power supply shall meet the requirements of Section 5.3.5 of the NEMA TS2 Standard. The power supply shall be a stand alone type.

The cabinet power supply shall provide LED indicators for the line frequency, 12 VDC, 12 VAC, and 24 VDC outputs.

The cabinet power supply shall provide (on the front panel) jack plugs for access to the +24 VDC for test purposes.

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REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET

3.5 24V Load Switch Control Relay The relay used to control the 24VDC to the load switcher shall have a push button, which allows it to be mechanically energized.

4. Testing and Warranty

4.1 Testing – Each controller and cabinet assembly shall be tested as a complete entity under signal load for a minimum of 48 hours.

Each assembly shall be delivered with a signed document detailing the cabinet final tests performed. The cabinet shall be assembled and tested by the controller manufacturer or authorized local distributor to ensure proper component integration and operation.

- a. Warranty – The controller and Malfunction Management Unit shall be warranted by the manufacturer against mechanical and electrical defects for a period of 5 years. The manufacturer’s warranty shall be supplied in writing with each cabinet and controller. Second party extended warranties are not acceptable.

The cabinet assembly and all other components shall be warranted for a period of one year.

Any defects shall be corrected by the manufacturer or supplier at no cost to the owner.

Subsection 614.09 shall include the following:

The Contractor shall deliver the cabinet to the City and County of Denver’s Traffic Engineering Services at 5440 Roslyn, Building E, Denver, CO six (6) weeks before installation for cabinet setup. The Contractor shall pick up the cabinet from the City and County of Denver’s Traffic Engineering Services and shall install it at the proper location. The Contractor shall coordinate pick-up times with Chris Lillie at (720) 865-4066.

Subsection 614.10 shall include the following:

All new traffic signal controller cabinets are to be M1-stretch size. All new cabinet foundations are to be 60”x24”x24” for M1-stretch cabinets and UPS cabinet at locations specified in the plans. Prior to starting foundation installation, the contractor shall obtain field verification of cabinet foundation location from the Engineer or Engineer’s designee.

Cabinet base installation shall include all labor and materials to completely install a new M1-stretch size foundation for controller cabinets as specified in the plans. This is to include the concrete foundation, all conduit modification work, back-filling, and concrete repair.

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**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET**

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 installation of traffic signal controllers and cabinets shall include all labor, materials and ancillary hardware, wiring and wiring re-connection 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:

Payment will be made under:

Pay Item
Traffic Signal Controller Cabinet

Pay Unit
Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER (SOLID STATE) (FULL ACTUATED) (12 PHASE)**

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

Subsection 614.08 (b) shall be deleted and replaced with the following:

Traffic Signal Controllers – General. This specification sets forth the minimum requirements for a shelf-mountable, two through twelve phase, fully-actuated, digital, solid-state traffic controller. The controller shall meet, as a minimum, all applicable sections of the NEMA Standards Publication No. TS2-1998. Where differences occur, this specification shall govern. Controller versions shall be available to comply with NEMA TS2 Types 1 and 2. Type 2 versions of the controller shall be capable of operating as a Type 1.

The controller shall be Econolite model ASC/3-1000 Fully Actuated Controller, or an equivalent approved by the City and County of Denver Traffic Engineering Services.

Subsection 614.09 shall include the following:

The Contractor shall deliver the controller to the City and County of Denver’s Traffic Engineering Services at 5440 Roslyn, Building E, Denver, CO six (6) weeks before installation for controller programming. The Contractor shall pick up the controller from the City and County of Denver’s Traffic Engineering Services and shall install it at the proper location. The Contractor shall coordinate pick-up times with Chris Lillie at (720) 865-4066.

The controller shall be installed in accordance with the details shown in the plans and in accordance with manufacturer’s recommendations.

Subsection 614.13 shall include the following:

Traffic signal controller (solid state) (full actuated) (12 phase) shall include pedestrian detectors and all auxiliary equipment required on the plans and shall include all work necessary to provide and install a complete system. Connection of the controller to the fiber optic interconnect system shall be paid for separately under item 210 “Reset Telemetry”.

Subsection 614.14 shall include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Traffic Signal Controller (Solid State) (Fully Actuated) (12 Phase)	Each

**REVISION OF SECTION 614
TRAFFIC SIGNAL LIGHT POLE STEEL**

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 mast arm poles shall conform to City and County of Denver Traffic Standards.

Painting. All traffic signal mast arm poles shall be powder coated in accordance with the following specifications.

SUPER DURABLE POWDER COATING

General

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 Fahrenheit. The thermosetting powder resin shall provide both intercoat as well as substrate fusion adhesion that meets 5A or 5B classifications of ASTM D3359.

Packaging

Prior to shipment, small poles shall be wrapped in 0.188" thick Ultraviolet inhibiting plastic backed foam. Larger poles shall be cradled in a 1.0" rubberized foam base.

**REVISION OF SECTION 614
TRAFFIC SIGNAL LIGHT POLE STEEL**

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 3/4 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 614.13, 13th paragraph, shall be deleted and replaced with the following:

Traffic signal poles shall include mast arms, concrete foundations (caissons) and all necessary hardware required to complete the item in place. Drilled caissons used as foundations for traffic signal poles will not be measured separately but shall be included in the cost of the work.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Traffic Signal Light Pole Steel (1-35 Foot Mast Arm)	Each
Traffic Signal Light Pole Steel (1-55 Foot Mast Arm)	Each
Traffic Signal Pedestal Pole Steel	Each

REVISION OF SECTION 614 TELEMETRY (FIELD)

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

Subsection 614.01 shall include the following:

This work consists of fan-out and termination of fiber optic communication cable at each traffic signal controller cabinet location identified in the plans. The work also includes providing and installing all necessary telemetry equipment, including but not limited to optical splice closures, patch panels, splice organizers, cables, pigtails/jumpers and labels.

This work also includes installation of City furnished fiber optic transceivers or Ethernet fiber switches.

At every cabinet or optical closure, only the fiber strands that are specified 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 coiled neatly in a splice organizer.

The same color-coded pairs of fibers and/or wires shall be used throughout the entire project unless specified 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: Fiber optic pigtail cables shall consist of Multi-Mode (MM) fiber strands 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. The length of fiber optic patch cord cables shall be suitably long to be connected between the interconnect patch panel and the communication equipment (optical transceivers, ethernet switches, etc). Patch cord couplings shall be compatible with termination points. Appropriate strain relief in the cabinet (through cable Velcro wraps) shall be installed at a minimum of three locations. Sufficient slack shall be left to allow relocation of the equipment anywhere in the cabinet. The attenuation of a fiber optic patch cord cable after installation, not including the connector loss, shall not exceed 0.1 dB measured at 850 nm and 1300 nm.

Connectors: The connector shall have a ceramic ferrule with a nickel-plated nut and body. The connector shall be an AT&T ST style compatible field mounted connector. The connector shall be compatible with a physical contact (PC) finish. All connectors shall be polished to a PC finish such that the return loss per mated pair of connectors is less than -25 dB. The return loss when the connector is mated with previously installed connectors shall be less than -18 dB. The connector insertion loss shall not be greater than 0.20 dB (typical). The connector loss shall not vary more than 0.20 dB after 1000 repeated matings. Tensile strength shall withstand an axial load of 20 lb. with less than 0.20 dB change.

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: -40o to +80o C
Storage Temperature: -40o to +85o 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.

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

Miscellaneous Cabling: Cable from fiber optic transceiver 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) 865-3984 for coordination.

Optical Splice Closures: Optical splice 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. A small optical splice closure shall be used at locations with 3 fiber optic cables. In locations requiring more than 3 cables, a larger optical splice 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.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Telemetry (Field)	Each

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 or Engineer's designee 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 or Engineer's designee), 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. The main backbone Fiber Optic Cable shall contain both multi-mode and single mode fibers as designated in the plans. The main cable shall be installed in continuous runs except where maximum pull lengths govern. Manufacturer's recommended limits for cable pull lengths shall not be exceeded.

Cable ends shall be stored in pull boxes or splice closures at locations indicated in the plans or as directed by the Engineer or Engineer's designee. 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 or Engineer's designee.**

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 or 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, Uticom 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 or Engineer's designee 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 or Engineer's designee.

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 Engineer or Engineer's designee.

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 Engineer or Engineer's designee 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 Engineer or Engineer's designee 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 or Engineer's designee 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 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.

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

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 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 will be measured by the linear feet for the main (backbone), lateral and branch cables, 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.

All cables requiring 72 strands shall be paid for as Fiber Optic Cable (Special) and all cables requiring 12 strands shall be paid for as Fiber Optic Cable (Multi Mode) (12 Strand). Payment shall include single mode fibers as specified in this special provision.

Installation of all internal field cabinet telemetry, splicing, fan-out and termination of the cable at individual controller cabinets is also paid separately under Telemetry (Field).

Conduit shall be paid for under the appropriate 613 conduit pay item.

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Fiber Optic Cable (Multi Mode) (12 Strand)	Linear Feet
Fiber Optic Cable (Special)	Linear Feet

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:

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1. 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 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).

2. 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.

The proposed cable should contain Zero Water Peak Fiber for Single-Mode applications, or 62.5 um Multimode fibers. All fibers should comply with specific fiber requirements outlined in Appendix 2.

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

3. CABLE CORE CHARACTERISTICS

3.1 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.

Table 1 – Fiber and Tube Color Code

<i>Fiber or Tube No.</i>	Color	<i>Tube No.</i>	Color
1	Blue (BL)	13	Blue-Dash (BL-DS)
2	Orange (OR)	14	Orange-Dash (OR-DS)
3	Green (GR)	15	Green-Dash (GR-DS)
4	Brown (BR)	16	Brown-Dash (BR-DS)
5	Slate (SL)	17	Slate-Dash (SL-DS)
6	White (WH)	18	White-Dash (WH-DS)
7	Red (RD)	19	Red-Dash (RD-DS)
8	Black (BK)	20	Black-Dash (BK-DS)
9	Yellow (YL)	21	Yellow-Dash (YL-DS)
10	Violet (VI)	22	Violet-Dash (VI-DS)
11	Rose (RS)	23	Rose-Dash (RS-DS)
12	Aqua (AQ)	24	Aqua-Dash (AQ-DS)

3.2 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.

3.3 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 buffer tubes are protected against water ingress by the use of water blocking yarns placed adjacent to the fibers. The water blocking yarns form a gel compound upon exposure to water which serves to block the moisture ingress into the cable. 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

Fiber Count	Buffer Tube OD (mm)	Fibers per Tube
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.

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3.4 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.

3.5 Core 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.**

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.

4. CABLE SHEATH CHARACTERISTICS

The sheaths described in this section are:

- All-Dielectric Single Jacket: one polyethylene jacket, no metallic elements (SJ)

4.1 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

4.2 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.

4.3 Ripcords

For ease of jacket removal, one clearly identifiable polyester ripcord is provided under the outer jacket.

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4.4 Cable Cross-Sections:

4.4.1 Single Jacket (SJ)



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 - 144 (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)
<i>Single Jacket Dielectric</i>	0.398 (10.1)	0.421 (10.7)	0.492 (12.5)	0.555 (14.1)	0.618 (15.17)	0.606 (15.4)	0.638 (16.2)	0.709 (18.0)

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5. 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:

Operation:	-40°C to 70°C (-40°F to 158°F)
Installation:	-30°C to 60°C (-22°F to 140°F)
Storage/Shipping:	-40°C to 75°C (-40°F to 167°F)

5.1 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 0.25 dB/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	≤ 0.05 dB/km Mean Added Loss ≤ 0.15 dB/km Max Added Loss
Cable Aging	EIA/TIA-455-3 IEC 794-1-F1	≤ 0.10 dB/km Mean Added Loss ≤ 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

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5.2 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 0.40 dB/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.

Table 5 – Testing for Multi-Mode Fibers

Cable Test	Test Method	Requirement
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	≤ 0.5 dB/km Max Added Loss 80 % ≤ 0.25 dB/km Added Loss
Cable Aging	EIA/TIA-455-3 IEC 794-1-F1	≤ 1.0 dB/km Max Added Loss 80 % ≤ 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.

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6. CABLE MARKING

6.1 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.

6.2 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.

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]), (Fiber Count [XXX F], where XXX is the number of optical fibers in the cable), and (Manufacturers' Serial Number) "

6.3 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.

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7. CABLE PACKAGING

7.1 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.

7.2 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.

7.3 Reel Lagging

7.3.1 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.

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7.3.2 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

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7.4 Others

7.4.1 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.

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.

7.4.2 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.

7.4.3 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

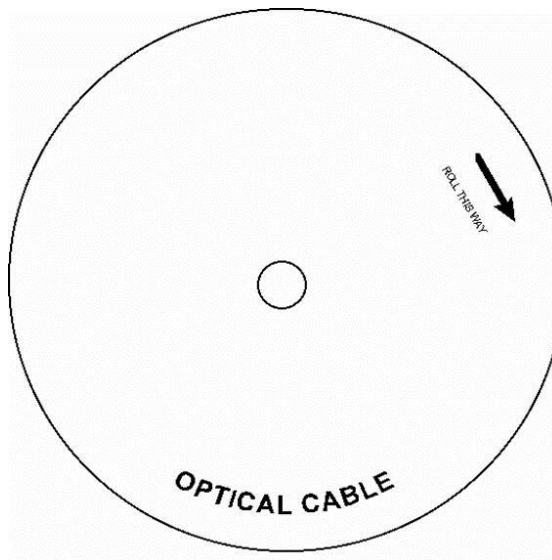
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7.4.4 Reel Tag

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

8. Appendix 1. Reel STENCILING



* If company name stenciling is required use lettering height shown below.

Reel	"Company name" Height	"OPTICAL CABLE" Height
ALL SIZES	4	2

All Dimensions in Inches

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9. Appendix 2 Fiber Specifications

9.1 Zero Water Peak Singlemode Fiber Specifications

Parameter	Zero Water Peak Singlemode fiber
Attenuation at 1310 nm (dB/km)	≤ 0.35 dB/km
Attenuation at 1385 nm (dB/km)	≤ 0.31 dB/km
Attenuation at 1490 nm (dB/km)	≤ 0.27 dB/km
Attenuation at 1550 nm (dB/km)	≤ 0.25 dB/km
Attenuation at 1625 nm (dB/km)	≤ 0.27 dB/km
Attenuation difference from 1550 nm value at any wavelength between 1525-1575 nm (dB.km)	≤ 0.02 dB/km
Attenuation difference from 1550 nm value at any wavelength between 1550-1625 nm (dB.km)	≤ 0.04 dB/km
Point Discontinuity at 1310 and 1550 (dB0)	0.05 dB Max
Cladding Diameter (um)	125.0 ± 0.7 um
Cladding non-circularity	$\leq 0.70\%$
Core-clad concentricity error (um)	≤ 0.5 um
Coating outer diameter (um)	241 ± 5 um
Coating concentricity error (um)	≤ 12 um
Mode Field Diameter, 1550 nm (um)	$10.4+0.5$ um
Dispersion [ps/(nm/km)]: C-band, 1530-1565 nm L-band, 1565-1625 nm	Max Dispersion 18 ps/nm ² -km @1550nm 22 ps/nm ² -km @ 1625 nm
Zero Dispersion wavelength (nm)	1312 nm
Dispersion Slope at 1550 nm [ps-nmsq.km]]	≤ 0.090 ps/nm ² -km
Macrobend Attenuation: 1 Turn-32 mm Diameter, (dB at 1550 nm) (dB at 1625 nm)	≤ 0.05 dB @ 1550/1625 nm
100 Turn-60 mm Diameter (dB at 1550 nm) (dB at 1625 nm)	≤ 0.05 dB @ 1550/1625 nm
Polarization Mode Dispersion Fiber Link Design Value (ps/km 1/2) Max. Individual Fiber (ps/km 1/2) Cable Link Design Value (ps/km 1/2)	Fiber Link Design Value ≤ 0.06 ps/(km 1/2) Max. Individual Fiber ≤ 0.1 ps/(km 1/2) Cable Link Design Value ≤ 0.1 ps/(km 1/2)
Cable Cutoff Wavelength (nm)	< 1260 nm
Proof Test (kpsi)	100 kpsi
Fiber Curl (radius of curvature) (m)	≥ 4 m

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Coating Strip Force (N)	≥ 1.3 N (0.3 lbf.) and ≤ 8.9 N (2.0 lbf.)
Temp. Dependence of Attenuation Induced Attenuation -60 degrees C to +85 degrees C at 1319 nm (dB/km) at 1550 nm (dB/km)	≤ 0.05 dB/km @ 1310/1550
Temperature-Humidity Cycling up to 95% RH Induced Attenuation -10 degrees C to +85 degrees C at 1310 nm (dB/km) at 1550 nm (dB/km)	≤ 0.05 dB/km @ 1310/1550
Accelerated Aging (Temperature) Induced Attenuation due to Temperature Aging at 85+2 degrees C at 1310 nm (dB/km) at 1550 nm (dB/km)	≤ 0.05 dB/km @ 1310/1550
Water Immersion Induced Attenuation due to Water Immersion at 23+2 degrees C at 1310 nm (dB/km) at 1550 nm (dB/km)	≤ 0.05 dB/km @ 1310/1550

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9.2 62.5 um Multimode Fiber Specifications

<u>Parameter</u>	<u>62.5 um Multimode Fiber</u>
Attenuation at 850 nm (dB/km)	≤ 3.4 dB/km
Attenuation at 1300 nm (dB/km)	≤ 1.0 dB/km
Bandwidth at 850 nm (dB/km)	< 200 MHz*km
Bandwidth at 1300 nm (dB/km)	≤ 500 MHz*km
1 Gb Ethernet distance 850 nm 1000BASE-SX (m)	275 m
1 Gb Ethernet distance 1300 nm 1000BASE-LX (m)	550 m
10 Gb Ethernet distance 850 nm 10GBASE-S (m)	33 m
10 Gb Ethernet distance 1300 nm	No Standards
Point Discontinuity at 850 nm and 1300 nm (dB)	0.08 dB Max
Cladding Diameter (um)	125.0 ± 1.0 um
Cladding non-circularity	$\leq 1\%$
Core-clad concentricity error (um)	≤ 1.5 um
Coating outer diameter (um)	245 ± 10 um
Coating concentricity error (um)	≤ 6 um
Zero Dispersion wavelength (nm)	1320-1365 nm
Dispersion Slope [ps-nmsq.km]	≤ 0.97 ps/nm ² -km
100 Turn-75 mm	≤ 0.5 dB
Proof Test (kpsi)	100 kpsi
Coating Strip Force (N)	≥ 2.2 N (0.5 lbf.) and ≤ 4.4 N (1.0 lbf.)
Temp. Dependence of Attenuation Induced Attenuation -60 degrees C to +85 degrees	≤ 0.1 dB/km @ 1310/1550
Temperature-Humidity Cycling up to 94% RH Induced Attenuation -10 degrees C to +85 degrees C	≤ 0.1 dB/km @ 1310/1550
Accelerated Aging (Temperature) Induced Attenuation due to Temperature Aging at 85+2 degrees C	≤ 0.2 dB/km @ 1310/1550
Water Immersion Induced Attenuation due to Water Immersion at 23+2 degrees C	≤ 0.2 dB/km @ 1310/1550

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 ± 10 nm or 1550 ± 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.

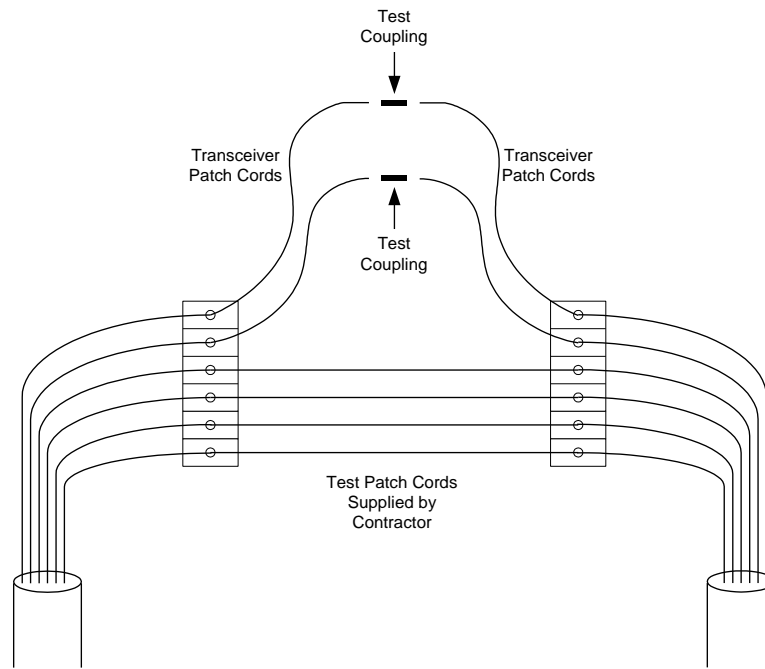
OPTICAL FIBER CABLE TESTING WITH O.T.D.R

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 or Engineer's designee 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 or Engineer's designee prior to accepting the cable. After installation, if there are unused portions of cable remaining on the reel, the Engineer or Engineer's designee may request the Contractor or other qualified technician to perform a reel test. The Contractor shall provide the Engineer or Engineer's designee the test results prior to delivering the cable to the Engineer or Engineer's designee. Any cable damaged while in the Contractor's possession shall be replaced at the Contractor's expense.

REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

All fiber testing shall be performed on all fibers in the completed end-to-end system. Testing shall consist of a bi-directional end-to-end OTDR trace performed per TIA/EIA-455-61. The system margin loss measurements shall be provided at 1310 and 1550nm. If the Plans require installation of a fiber optic patch panel, the Contractor shall supply patch cords to patch all terminated fibers through the panel for all fiber testing. If patch cords are specified in the Plans for final equipment installation, these patch cords shall be connected using a test coupling for the end-to-end test.



OTDR readings will be used to ensure proper installation and to troubleshoot faults. OTDR signature traces will be used for documentation and maintenance. An OTDR provides an indirect estimate of the loss of the cable plant, generally, more accurate or reliable values will be obtained by using an Optical Power Meter. For fibers that are identified in the Plans to be left non-terminated, an OTDR shall be used to test end-to-end attenuation.

Loss numbers for the installed link shall be calculated by taking the sum of the bi-directional measurements and dividing that sum by two.

The Contractor shall use an OTDR that is capable of storing traces electronically and shall save each final trace.

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.

REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

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.

ACCEPTABLE ATTENUATION VALUES

Acceptable attenuation values shall be calculated for each fiber tested. These values represent the maximum acceptable test values.

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TEST FIBER OPTIC CABLE

SM Fiber. The general attenuation equation for any SM link segment is as follows:

$$\text{Acceptable Link Attn.} = \text{Cable Attn.} + \text{Connector Attn.} + \text{Splice Attn.}$$

8.3 μm 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

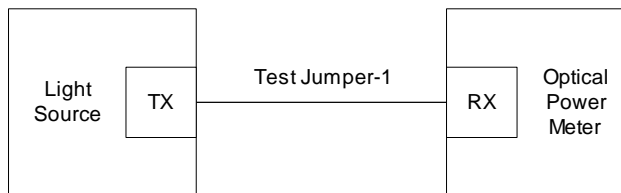
All fiber testing shall be performed on all fibers in the completed end-to-end system.

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.

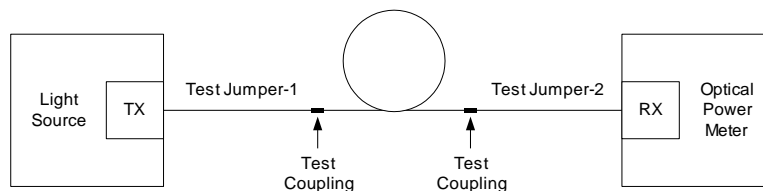
Connect Test Jumper-1 between the light source and the power meter. Avoid placing bends in the jumper that are less than 100 mm (4 inches) in diameter.



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.



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

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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:

$$CPR (dB) = 10 \times \log_{10} [O_{sum}/P_{ref}]$$

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 ½" 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.

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.

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REVISION OF SECTION 614
TEST FIBER OPTIC CABLE

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 Fiber Optic Cable (48 Strand) or (12 Strand) pay items.

**REVISION OF SECTION 614
SIGN PANELS**

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

Subsection 614.04, first paragraph, last sentence shall be deleted and replaced with:

All new ground mounted traffic signs shall be retro-reflective and conform to at least ANSI Standards for Type III sign sheeting material. Type VII or Type VIII sheeting material is acceptable. All new overhead mounted traffic signs shall be retro-reflective and conform to ANSI Standard for Type IX sign sheeting material.

Subsection 614.13, second paragraph, shall be deleted and replaced with the following:

Installing only of ground mounted sign structures provided by others will not be measured and paid for separately but shall be included in the cost of Steel Sign Post (2 x 2 Inch Tubing). Sign structures requiring coordination with the City and County of Denver or RTD will not be measured and paid for separately but shall be included in the cost of Steel Sign Post (2 x 2 Inch Tubing) for ground mounted signs or in the cost of Traffic Signal–Light Pole Steel (35 or 55 Foot Mast Arm).

**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

**REVISION OF SECTION 619
WATER LINES**

Section 619 of the Standard Specifications is hereby revised for this project as follows:

Subsection 619.02 shall include the following:

Ductile Iron Pipe shall conform to Denver Water Materials Specification – 1 (March 2012).

Subsection 619.03 shall include the following:

Installation of Ductile Iron Water pipe, including fittings and valves shall conform to Denver Water Engineering Standards 14th Edition (March 2012) Chapter 8 Pipe Installation.

Subsection 619.04 shall include the following:

Potable Water lines will be measured by the linear foot complete in place and shall include all fittings, kick blocks, related appurtenances, testing and chlorination.

Subsection 619.05 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
12 Inch Ductile Iron Pipe	Linear Foot

**REVISION OF SECTION 623
IRRIGATION**

Section 623 of the Standard Specifications is hereby deleted and replaced with the following:

**NEW SECTION 623
IRRIGATION**

This new section is hereby added to the Standard Specifications as follows:

DESCRIPTION

623.01 **WORK INCLUDED** - Work of this Section generally includes provisions for the installation of an underground irrigation system including the following:

- A. Static pressure verification and coordination of irrigation system installation with landscape material installation.
- B. Trenching, stockpiling excavation materials, refilling and compacting trenches.
- C. Complete irrigation system including but not limited to piping, backflow preventer assemblies, valves, fittings, heads, controllers and wiring, and final adjustments to insure complete coverage.
- D. Water connections.
- E. Replacement of unsatisfactory materials.
- F. Clean-up, inspections, and approval.
- G. Tests.

623.02 **RELATED SECTIONS**

- A. **Warranty.** The Contractor shall warranty the irrigation system to be in working condition for a period of one year from the date of Substantial Completion. To ensure proper operation of the system, the Contractor shall perform, as required, activities including, but not limited to, the following: inspection and correction of system leaks, improperly operating valves, clogged spray heads, malfunctioning automatic control valves and other components, maintaining optimum sprinkler coverage, and adjusting sprinkler head elevations relative to finish grade. The Contractor shall make corrections as necessary to ensure proper operation before final acceptance.

623.03 **REFERENCES**

- A. Perform Work in accordance with requirements of Conditions of the Contract and Division 01 - General requirements as well as provisions of all applicable laws, codes, ordinances, rules, and regulations.

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**REVISION OF SECTION 623
IRRIGATION**

- B. Conform to requirements of reference information listed below except where more stringent requirements are shown or specified in Contract Documents.
 - 1. American Society for Testing and Materials (ASTM) - Specifications and Test Methods specifically referenced in this Section.
 - 2. Underwriters Laboratories (UL) - UL Wires and Cables.
 - 3. National Sanitation Foundation (NSF) – Piping and Backflow prevention.
 - 4. American Water Works Association - Piping and Backflow prevention.

623.04 **QUALITY ASSURANCE**

- A. Installer Qualifications - Installer shall have had considerable experience and demonstrate ability in the installation of irrigation system(s) of specific type(s) in a neat orderly, and responsible manner in accordance with recognized standards of workmanship. To demonstrate ability and experience necessary for this Project, and financial stability, submit if requested by Consultant, prior to contract award the following:
 - 1. List of 3 projects completed in the last 2 years of similar complexity to this Project. Description of projects shall include:
 - a. Name of project.
 - b. Location.
 - c. Owner.
 - d. Brief description of work and project budget.

623.05 **EXTRA STOCK** - In addition to installed system furnish the following items to Owner:

- A. Furnish the following maintenance items to Owner prior to final Acceptance:
 - 1. 2 Sets of special tools required for removing, disassembling, and adjusting each type of sprinkler head and valve supplied on this Project.
 - 2. Two 6-foot valve keys for operation of gate valves or stop and waste valves (if applicable).
 - 3. 2 keys for each automatic controller.
 - 4. 2 quick coupler keys and 2 matching hose swivels for each type of quick coupling valve installed.
 - 5. 2 aluminum drain valve keys of sufficient length for operation of drain valves.
- B. 10 Pop-up spray heads with nozzles of each type used.
- C. 4 Rotor heads of each type used.
- D. 30 Drip emitters of each type used.

MATERIALS

623.06 **MATERIALS:**

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**REVISION OF SECTION 623
IRRIGATION**

A. General Piping:

1. Pressure Supply Line (from point of connection through backflow prevention unit) - Type "k" Hard Copper.
2. Pressure Supply Lines (downstream of backflow prevention units) - Class 200 PVC BE (1" - 2 1/2") and Class 200 PVC RT (3" and larger).
3. Non-pressure Lines – Class 200 PVC.
4. PVC Sleeving - Class 200 PVC.
5. Drip Tubing - Hardie Dura-Pol EHD 1645 3/4" with .050 inch wall thickness.
6. Emitter Tubing - As recommended by emitter manufacturer.

B. Copper Pipe and Fittings:

1. Copper Pipe - Type K, hard tempered.
2. Fittings - Wrought copper, solder joint type.
3. Joints - Soldered with solder, 45% silver, 15% copper, 16% zinc, and 24% cadmium and solidus at 1125~F and liquids at 1145~F.

C. Brass Pipe and Fittings:

1. Brass Pipe - 85% red brass, ANSI Schedule 40 screwed pipe.
2. Fittings - Medium brass, screwed 125-pound class.

D. Plastic Pipe and Fittings:

1. Identification Markings:
 - a. Identify all pipe with following indelible markings:
 - 1) Manufacturer's name.
 - 2) Nominal pipe size.
 - 3) Schedule of class.
 - 4) Pressure rating.
 - 5) NSF (National Sanitation Foundation) seal of approval.
 - 6) Date of extrusion.
2. Solvent Weld Pipe - Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12454-B, Type 1, Grade 1.
 - a. Fittings - Standard Wright, Schedule 40, injection molder PVC; complying with ASTM D1784 and D2466, cell classification 12454-B.
 - 1) Threads - Injection molded type (where required).
 - 2) Tees and ells - Side gated.
 - b. Threaded Nipples - ASTM D2464, Schedule 80 with molded threads.
 - c. Joint Cement and Primer - Type as recommended by manufacturer of pipe and fittings.

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3. Gasketed End Pipe - Manufactured from virgin Polyvinyl Chloride compound in accordance with ASTM D2241 and ASTM D1784; cell classification 1254-B, Type 1, Grade 1.
 - a. Fittings and Services Tees (3" and larger) - Ductile iron, grade 70-55-05 in accordance with ASTM A-536. Fittings shall have deep bell push-on joints with gaskets meeting ASTM F-477.
 - b. Gaskets - Factory installed in pipe and fittings, having a metal or plastic support within gasket or a plastic retainer ring for gasket.
 - c. Lubricant - As recommended by manufacturer of pipe fittings
 4. Flexible Plastic Pipe - Manufactured from virgin polyethylene in accordance with ASTM D2239, with a hydrostatic design stress of 630 psi and designated as PE 2306.
 - a. Fittings - Manufactured in accordance with ASTM D2609; PVC Type 1 cell classification 12454-B.
 - b. Clamps - All stainless steel worm gear screw clamps. Use 2 clamps per joint on 1-1/2 inch and 2 inch fittings.
- E. Drip Irrigation Systems, Bubblers and Micro Irrigation:
1. Drip Tubing - Manufactured of flexible vinyl chloride compound conforming to ASTM D1248, Type 1, Class C, Category 4, P14 and ASTM D3350 for PE 122111C. Capillary tubing shall have 1/8" I.D.
 2. Fittings - Type and make recommended by tubing manufacturer.
 3. Drip Valve Assembly - Type and size shown on Drawings.
 - a. As manufactured by Rainbird, or approved equal. Strainer shall have 120 mesh nylon screen with 1/2" blow-out. Pressure reducing valve shall have manual adjusting nut.
 4. Emitters - Single port, Rainbird XB series pressure compensating for shrubs and ornamental grasses.
 5. Micro-Sprays - Rainbird Xeri-Spray 360 True Spray Series or approved equal.
 6. Bubblers - Rainbird 1400 Series or approved equal. Xeri-Bubblers for trees by Rainbird, or approved equal.
- F. Gate Valves:
1. Gate Valves (line size) for 3/4 inch through 2-1/2 Inch Pipe - Brass construction; solid wedge, IPS threads, and non-rising stem with wheel operating handle, designed for working pressure of 150 PSI.

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2. Gate Valves for 3 Inch and Larger Pipe - Iron body, brass or bronze mounted AWWA gate valves with a clear waterway equal to full nominal diameter of valve; rubber gasket or mechanical joint-type only. Valves shall be able to withstand a continuous working pressure of 200 psi and be equipped with a square operating nut and resilient wedge
- G. Quick Coupling Valves - Brass two-piece body designed for working pressure of 5 to 125 PSI; operable with quick coupler. Equip quick coupler with locking rubber cover. Key size and type as shown on Drawing.
- H. Valve Boxes:
1. Quick Coupling Valves, Drain Valves, Drip Line Blow-out Stubs, and Wire Stub Box - Carson Brooks #910-10 or approved equal (including bolt) box with lid, in green, as detailed.
 2. Gate Valves and Electric Control Valves located individually - Carson Brooks #1419-12 box, or approved equal (including bolt) box with lid, in green, as detailed.
 3. Drip Valve Assemblies - Carson Brooks #1220-12 box, or approved equal (including bolt) box with lid, in green, as detailed.
- I. Electrical Control Wiring:
1. Low Voltage:
 - a. Electrical Control Wire - AWG UFUL approved No. 14 direct burial solid conductor copper wire.
 - b. Electrical Common Wire - AWG UFUL approved No. 12 direct burial solid conductor copper wire.
 - c. Wire Colors:
 - 1) Control Wires - Red.
 - 2) Common Wires - White.
 - 3) Master Valve Wires - Blue.
 - 4) Spare Control Wires - Black.
 - 5) Spare Common Wires - Yellow.
 - d. If multiple controllers are utilized, and wire paths of different controllers cross each other, both common and control wires from each controller shall be different colors approved by Consultant.
 - e. Control Wire connections and splices shall be made with 3M DBY splices (two wire connection), 3M DBM splices (three wire connection) direct bury splice.
 2. High Voltage - Type required by local codes and ordinances, of proper size to accommodate needs of equipment serviced.

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- J. Automatic Controller - Size and type shown on Drawings; mounted as detailed.
- K. Electric Control Valves - Size and type shown on Drawings having manual flow adjustment (except drip valves) and manual bleed nut.
- L. Sprinkler Heads - As indicated on Drawings. Fabricated riser units in accordance with details on Drawings - with fittings and nipples of equal diameter of riser inlet in sprinkler body.
 - 1. Pop-Up Sprinkler Heads – Rainbird 1804 PRS Series or approved equal with plastic nozzle.
 - 2. Rotary Sprinklers – Hunter I-20, I-25, or I-40 or approved equal, as indicated on the Drawings.
- M. Backflow Preventer - Size and type indicated on Drawings; Brass construction with 150 psi working pressure.
- N. Water Meter and Vault:

Construction of Water Meter and Vault shall conform to the details and requirements of the Denver Water Department.

CONSTRUCTION REQUIREMENTS

623.07 QUALITY ASSURANCE:

- 1. Special Requirements:
 - a. Work involving substantial plumbing for installation of copper piping, backflow preventer(s), and related Work shall be executed by licensed and bonded plumber(s). Work shall meet the latest edition of the Uniform Plumbing Code as published by the Western Plumbing Officials Association, and all applicable laws and regulations of the City & County of Denver Building Department and Denver Water. Secure a permit at least 48 hours prior to start of installation.
 - b. Tolerances - Specified depths of mains and laterals and pitch of pipes are minimums. Settlement of trenches is cause for removal of finish grade treatment, refilling, compaction, and repair of finish grade treatment.
 - c. Coordination With Other Contractors - Protect, maintain, and coordinate work with work under other Sections.
 - d. Damage To Other Improvements - Contractor shall replace or repair damage to grading, soil preparation, seeding, sodding, or planting done under other Sections during Work associated with installation of irrigation system at no additional cost to the City.

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- e. Work involving high voltage electrical wiring, grounding and related Work shall be executed by licensed and bonded electrician(s). Work shall meet the latest edition of the National Electric Code, and all applicable laws and regulations of the City & County of Denver Building Department. Secure a permit at least 48 hours prior to start of installation.
- f. Tolerances – Specified depths of mains and laterals and pitch of pipes are minimums. Settlement of trenches is cause for removal of finish grade treatment, refilling, compaction, and repair of finish grade treatment.

623.08 PRE-CONSTRUCTION CONFERENCE – Contractor shall schedule and conduct a conference to review in detail quality control and construction requirements for equipment, materials, and systems used to perform the Work. Conference shall be scheduled not less than 10 days prior to commencement of Work. All parties required to be in attendance shall be notified no later than 7 days prior to date of conference. Contractor shall notify qualified representatives of each party concerned with that portion of Work to attend conference, including but not limited to the Landscaping and Irrigation System Coordinator, the City Project Manager, the Parks Project Director, Parks Maintenance District Superintendent, Contractor’s Designated Representative, and Installer.

- a. Minutes of conference shall be recorded and distributed by contractor to all parties in attendance within five days of conference.

623.09 SUBMITTALS:

Prepare and make submittals in accordance with conditions of the Contract.

1. Material List Submittal – Prior to commencing construction of the irrigation systems, submit for review material cut-sheets of all equipment to be installed including manufacturer, model number and description of all materials and equipment to be used. Show appropriate dimensions and adequate detail to accurately portray intent of construction. Submittal shall include a cover sheet that identifies all items within the submittal. The Contractor shall not order any materials nor begin any work on any irrigation system until the City and County of Denver has approved the Contractor’s Parts and Materials.

2. Record Drawings (As-Built):

- a. At onset of irrigation installation secure copies of original irrigation design. At the end of every day, revise prints for Work accomplished that day in red ink. As-built copies shall be brought up-to-date at the close of the working day every Friday. A print of record plan(s) shall be available at Project Site. Indicate zoning changes on weekly as-built drawings. Indicate non-pressure piping changes on as-builts. Upon completion of Project, submit for review, prior to final acceptance, final set of as-built copies. Dimensions, from two permanent points of reference (building corners, sidewalk, road intersections or permanent structures), location of following items:
 - Connection to existing water lines.
 - Routing of sprinkler pressure lines.
 - Sprinkler control valves.

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- Quick coupling valves.
 - Drain valves.
 - Control wire routing if not with pressure mainline.
 - Gate valves.
 - Control wire splices and splice boxes
 - Sleeves
 - Flush valves
 - Other related equipment as directed.
- b. The City will not certify any pay request submitted by the Contractor if the as-built drawings are not current, and processing of pay request will not occur until as-builts are updated.
- (1) The irrigation legend must be changed to accurately reflect the irrigation equipment installed, if such equipment is not the same as originally specified on the contract documents. This includes flow rates, effective spray diameter/radius and operating pressure of all sprinkler heads.
 - (2) Operation Instructions – Submit 3 written operating instructions including winterization procedures and start-up, with cut sheets of products, and coordinate controller/watering operation instruction with the Owners maintenance personnel.
- c. Controller Charts:
- Do not prepare charts until record (as-built) drawings have been reviewed by Owners Representative.
- d. Provide one controller chart for each automatic controller installed.
- (1) Chart shall be reproduction of record drawing. If photo reduction prints are required, keep reduction to maximum size possible to retain full legibility (11”x 17” minimum size)
 - (2) Chart shall be blue-line print of actual “as-built” system, showing area covered by that controller.
- e. Identify area of coverage of each remote control valve, using a distinctly different pastel color drawing over entire area of coverage.
- f. Following review of charts by Owners Representative, they shall be hermetically sealed between two layers of 20 mm thick plastic sheet.
- g. Charts shall be completed and reviewed prior to final review of irrigation system.

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3. Shop Drawings – Submit Shop Drawings if noted on construction drawings, include a complete materials list indicating manufacturer, model number, and description of all materials and equipment to be used. Show appropriate dimensions and adequate detail to accurately portray intent of construction.

623.10 DELIVERY, STORAGE, AND HANDLING:

Deliver, unload, store, and handle materials, packaging, bundling, products in dry, weatherproof, condition in manner to prevent damage, breakage, deterioration, intrusion, ignition, and vandalism. Deliver in original unopened packaging containers prominently displaying manufacturer's name, volume, quantity, contents, instructions, and conformance to local, state, and federal law. Remove and replace cracked, broken, or contaminated items or elements prematurely exposed to moisture, inclement weather, snow, ice, temperature extremes, fire, or jobsite damage.

1. Handling of PVC Pipe – Exercise care in handling, loading and storing, of PVC pipe. All PVC pipe shall be transported in a vehicle which allows length of pipe to lie flat so as not to subject it to undue bending or concentrated external loads. All sections of pipe that have been dented or damaged shall be discarded, and if installed, shall be replaced with new piping. All piping to be stored on-site in excess of three days shall be fully covered with non-transparent material. Piping stored in improper manner shall be subject to rejection by Owner and replaced by contractor at no additional cost to Owner.

623.11 JOBSITE CONDITIONS:

1. Existing Conditions:

- a. Contractor is responsible for knowing that information contained in the Specifications for earthwork and other related operations is as specified and indicated in those documents before beginning work under this Section.
- b. Report unsatisfactory conditions in writing to the Project Inspector.
- c. Coordinate power requirement and electrical connections with, the affected utility company and the City prior to beginning work.
- d. Beginning of installation means acceptance of existing conditions by this contractor.

2. Protection of Property:

- a. Preserve and protect all trees, plants, monuments, structures, and paved areas from damage due to work of this Section. In the event damage does occur, all damage to inanimate items shall be completely repaired or replace to satisfaction of the City. All costs of such repairs shall be charged to and paid by Contractor.
- b. Protect buildings, walks, walls, and other property from damage. Barricade open ditches. Damage caused to asphalt, concrete, or other building material surface shall be repaired or replaced at no cost to Owner. Restore disturbed areas to original condition.

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3. Existing Trees:

- a. All trenching or other work under limb spread of any and all evergreens or low branching deciduous material shall be done by hand or by other methods so as to prevent damage to limbs or branches.
- b. Where it is necessary to excavate adjacent to existing trees, use all possible care to avoid injury to trees and tree roots. Excavation in areas where 2-inch and larger roots occur shall be done by hand. Roots 2 inches or larger in diameter, except directly in the path of pipe or conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a trenching machine is operated close to trees having roots smaller than 2 inches in diameter, wall of trench adjacent to tree shall be hand trimmed, making clean cuts through roots. Trenches adjacent to trees shall be closed within 24 hours, and when this is not possible, side of trench adjacent to tree shall be kept shaded with moistened burlap or canvas.

4. Protection and Repair of Underground Lines:

- a. Request proper utility company to stake exact location (including depth) of all underground electric, gas, sewer, and telephone lines. Take whatever precautions are necessary to protect these underground lines from damage. If damage does occur, all damage shall be repaired by Utility Owner. All costs of such repairs shall be paid by Contractor unless other arrangements have been made.

5. Replacement of Paving and Curbs – Where pipes and sleeves cross existing roadways, paths, curbing, etc., damage to these shall be kept to a minimum and shall be restored to original condition, unless otherwise directed by Owners Representative.

623.12 WARRANTY / GUARANTY:

Manufacturer shall warrant materials against defects for a period of one year from date of Final Completion. Installer(s) shall guaranty workmanship for similar period.

1. Settling of backfilled trenches which may occur during guaranty period shall be repaired at no expense to Owner, including complete restoration of damaged property.
2. Expenses due to vandalism before substantial completion shall be borne by the Contractor.
3. Final Completion shall be defined as completion of all contract work including punch list items, preparation and turn-over of irrigation as-built drawings and controller charts.
 - a. Warranty/Guaranty shall include any corrective work required to existing irrigation system outside of project work limits damaged and/or affected by a defect within the irrigation system included in this project. This shall include, but not limited to, flushing debris from lines, cleaning/replacing nozzles, etc.

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**REVISION OF SECTION 623
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623.13 MAINTENANCE:

1. Maintenance during warranty period:
 - a. Make repairs and replacements needed due to defective workmanship and materials.
 - b. Make repairs within three days of notification. If Contractor fails to make repairs within three days, Engineer may make such repairs at Contractor's expense. If in City's judgment an emergency exists, City may make repairs at Contractor's expense.
2. The Contractor is responsible for repair or replacement of any elements of system which do not function properly before final acceptance.
3. Clean up: Continuous clean up operations shall be performed throughout the duration of the work. Remove rubbish from site on a daily basis. Deposit all excavated materials at least 2' away from any trench side and promptly haul away any excess material leaving the backfilled trench with a neat and workmanlike appearance to the satisfaction of the Engineer. Any material not cleaned up may be removed by the City at Contractor's expense with a minimum advance notice of five (5) working days.

623.14 INSPECTION:

1. Examine areas and conditions under which Work of this Section is to be performed. Do not proceed with Work until unsatisfactory conditions have been corrected.
2. Grading operations, with the exception of final grading, shall be completed and approved by Owner before staking or installation of any irrigation system begins.

623.15 LANDSCAPE PLAN REVIEW AND COORDINATION - Contractor will be held responsible for coordination between landscape and irrigation system installation. Landscape material locations shown on the Landscape Plan shall take precedence over the irrigation system equipment locations. If irrigation equipment is installed in conflict with the landscape material locations shown on the Landscape Plan, the Contractor will be required to relocate the irrigation equipment, as necessary, at Contractor's expense.

623.15 STATIC PRESSURE VERIFICATION - Contractor shall field verify the static pressure at the project site, prior to commencing work or ordering irrigation materials, and submit findings, in writing, to Consultant. If Contractor fails to verify static water pressure prior to commencing work or ordering irrigation materials, Contractor shall assume responsibility for all costs required to make system operational and the costs required to replace any damaged landscape material. Damage shall include all required material costs, design costs and plant replacement costs.

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623.16 PREPARATION:

1. Staking shall Occur as Follows:

- a. Mark, with powdered lime or paint, routing of pressure supply line and flag spray heads for first few zones. Contact Owners Representative five days in advance and request review of staking. Owners Representative will advise installer as to the amount of staking to be prepared. Owners Representative will review staking and direct changes if required. Review does not relieve installer from coverage problems due to improper placement of spray heads after staking.
- b. Pipe Installation – all pipes under roadways, driveways and existing sidewalks shall be encased in a sleeve which shall be jacked or placed in a hole bored under new paving, unless otherwise authorized by the Engineer. At least 4 inches of clearance shall be provided between lines and at least 4 feet of clearance between lines of other trades. Parallel pipes shall not be installed directly over any other line. Manual drain valves shall be installed at all low points in the lowest point in the laterals of an irrigation zone, as shown on the Drawings. Minimum grade of pipe to drains shall be 3 inches per 100 feet. Plastic threaded fittings shall be assembled using teflon tape applied to male pipe threads only. Threaded fittings shall be kept to a minimum. The Contractor shall tape all open ends of the pipe during installation to prevent entry of any foreign mater into the system.
- c. Trenching – Where allowed, trench excavation shall follow, as much as possible, layout shown on Drawing. The Contractor shall be responsible for contacting the respective utility companies five (5) days in advance of excavation and verifying the
- d. exact locations of all utilities. Dig trenches straight and support pipe continuously on bottom of trench. Trench bottom shall be clean and smooth with all rock and organic debris removed. Trenching under limb spread of existing trees shall be accomplished by hand or other method that will not damage limbs or branches. Keep trenches at least 6' from trunk of existing trees and shrubs.

2. Clearances:

- a. Piping 3 Inches and Larger – Make trenches of sufficient width (18 inches minimum and 24 inches maximum to properly assemble and position pipe in trench. Minimum horizontal clearance of piping 3 inches or larger shall be 6 inches. Stacking of pipes in the same trench is not permitted.
- b. Piping Smaller than 3 Inches – Trenches shall have a minimum width of 7 inches and a maximum width of 9”.
- c. Line Clearance – Provide not less than 6 inches of clearance between each line, and not less than 12 inches of clearance between lines of other trades.

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3. Pipe and Wire Depth:

Trenching - Trench excavation shall follow, as much as possible, layout shown on Drawing. Dig trenches straight and support pipe continuously on bottom of trench. Trench bottom shall be clean and smooth with all rock and organic debris removed.

- a. Pressure Supply Piping – 46 inches from top of pipe (min.), 50” maximum.
 - b. PVC Sleeving – Depth to match that of piping/wiring to be installed through sleeve.
 - c. High-Pop Rotor Laterals – 24 inches from top of pipe.
 - d. Control Wiring – West and North side of pressure main.
4. Install sleeving under asphalt paving and concrete walks, prior to concreting and paving operations, to accommodate piping and wiring. Compact backfill around sleeves to 95% Modified Proctor Density within 2% of optimum moisture content in accordance with STM D1557.
 5. Boring will be permitted only where pipe must pass under obstruction(s) which cannot be removed. In backfilling bore, final density of backfill shall match that of surrounding soil. It is acceptable to use sleeves of suitable diameter installed first by jacking or boring, and pipe laid through sleeves. Observe same precautions as though pipe were installed in open trench.
 6. Vibratory Plow - Non-pressure piping may be installed through use of vibratory plow method if consultant determines soil conditions are satisfactory for this method of installation. Vibratory plowing does not relieve installer of minimum pipe depths.

623.17 INSTALLATION - Locate other equipment as near as possible to locations designated. Consultant shall review deviations prior to installation.

- A. PVC Piping - Snake pipe in trench as much as possible to allow for expansion and contraction. Do not install pipe when air temperature is below 40~F. Place manual drain valves at low points and dead ends of pressure supply piping to insure complete drainage of system. When pipe installation is not in progress, or at end of each day, close pipe ends with tight plug or cap. Perform Work in accordance with good practices prevailing in piping trades.
 1. Solvent Weld PVC Pipe - Lay pipe and make all plastic to plastic joints in accordance with manufacturer's recommendations.
 - a. Snake pipe in trench as much as possible to allow for expansion and contraction. Do not install pipe when air temperature is below 40 degrees (F).
 - b. Place manual drain valves at low points and dead ends of pressure supply piping to ensure complete drainage of system.
 - c. When pipe laying is not in progress, or at end of each day, close pipe ends with tight plug or cap.
 - d. Perform work in accordance with good practices prevailing in piping trades.

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- e. Solvent Weld PVC Pipe – Lay pipe and make all plastic to plastic joints in accordance with manufacturer’s recommendations.
 - f. Lateral lines 12” minimum from top of pipe to finish grade. Maximum trench width 9”. Mainline installed at 18” minimum, 24” maximum depth. Maximum trench width 12”.
 - g. All PVC pipe 4” and smaller solvent welded. Connection shall be primed prior to glue welding. Do not solvent weld joints when air temperature is below 40 degrees F.
2. Gasketed End Pipes:
- a. Lay pipe and make pipe to fitting or pipe to pipe joint, following OR70 recommendations (Johns-Manville Guide for Installation of Ring-Tite Pipe), or pipe manufacturer's recommendations.
 - b. Construct thrust blocks behind all gasketed fittings, tees, bends, reducers, line valves, and caps in accordance with pipe manufacturer's recommendations. Contact Consultant prior to placing thrust blocks, for observation of thrust block excavation and initial placement. Size thrust blocks based on tables below:

SAMPLE THRUST BLOCK SIZING GUIDE:

Thrust developed per 100 PSI pressure (lbs. force) for various fitting configurations.

Pipe Size	Fitting 90 deg. Elbow	Fitting 45 deg. Elbow	Valves, Tees Dead Ends
3	1,000	600	800

Approximate bearing strength of typical soils.

Soil Type	Lbs/ft 2
Mulch, Peat, etc.	0
Soft Clay	500
Sand	1,000
Sand and Gravel	1,500
Sand and Gravel with Clay	2,000
Sand and Gravel Cemented with Clay	4,000
Hard Pan	5,000

- 3. Flexible Plastic (Polyethylene) Pipe - Lay pipe and assemble fittings following manufacturer's recommendations.

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B. Drip Tubing:

1. Make all fitting connections as per manufacturers recommendations.
2. Use only manufacturer provided or recommended hole punch when making penetrations in drip tubing for insert fittings. Use of any other hole punch shall be cause for immediate removal and replacement of all installed drip tubing.
3. Install drip line blow-out stubs at all dead ends of drip tubing.

C. Control Wiring:

1. Low Voltage Wiring:
 - a. Bury control wiring between controller and electric valves in pressure supply line trenches, strung as close as possible to main pipe lines with such wires to be consistently located below and to one side of pipe, or in separate trenches.
 - b. Bundle all 24 volt wires at 10 foot intervals and lay with pressure supply line pipe to one side of the trench.
 - c. Provide an expansion loop at every pressure pipe angle fitting, every electric control valve location (in valve box), and every 500 feet. Form expansion loop by wrapping wire at least 8 times around a 3/4 inch pipe and withdrawing pipe.
 - d. Make all splices and E.C.V. connections using Rain Bird Pentite, Snaptite, or 3M DBM/DBY connectors. Label all wiring within 1" of stripped end at valve box connection at Private Property Owner control box.
 - e. Install all control wire splices not occurring at control valve in a separate splice valve box.
 - f. Install one control wire for each control valve.
 - g. Run two spare #14 AWG UFUL control wires and one common wire from controller pedestal to the end of each and every leg of mainline. Label spare wires at controller and wire stub box.
2. High Voltage Wiring for Automatic Controller:
 - a. Provide 120 volt power connection to automatic controller.
 - b. All electric work shall conform to local codes, ordinances, and authorities having jurisdiction. All high voltage electrical work shall be performed by licensed electrician.

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- D. Automatic Controller:
1. Install controller in accordance with manufacturer's instructions as detailed and where shown on Drawings.
 2. Connect remote control valves to controller in numerical sequence as shown on Drawings.
 3. Consultant shall approve final location of controller prior to installation.
 4. Each controller shall be a dedicated separate ground wire and grounding rod as detailed.
 5. All above ground conduit shall be rigid galvanized with appropriate fittings. All below ground conduit shall be schedule 40 PVC.
- E. Electric Control Valves - Install per design specifications. Valve manifold riser assemblies shall be constructed with Schedule 80 PVC. Install valve box flush with grade.
- a. Contractor to connect new lateral lines to existing irrigation zones, new lateral lines to new zones, and connect new main line to existing main lines as shown on Drawings.
 - b. Contractor is responsible for ensuring that both the new irrigation zones and the existing irrigation zones (on and off-site systems that are connected to the existing main line) function properly.
- F. Quick Coupling Valves - Install quick couplers on double swing-joint assemblies of Schedule 80 PVC pipe; plumb and flush to grade. Angled nipple relative to pressure supply line shall be no more than 45 degrees and no less than 10 degrees. Install quick coupling valves as detailed.
- G. Drip Valve Assemblies - Install drip valve assembly as detailed.
- H. Drip Emitters - Stake all surface emitters as detailed and staked with acceptable tubing stakes.
- I. Drain Valves - Install manual drain valves at all low points in pressure supply line as detailed. Provide a three cubic foot drainage sump for each drain valve installed.
- J. Valve Boxes:
1. Install one valve box for each type of valve installed as detailed. Valve box extensions are not acceptable except for master valves. Install gravel sump after compaction of all trenches. Place final portion of gravel inside valve box after valve box is backfilled and compacted.
 2. Brand controller letter and station number on lid of each valve box. Letter and number size shall be no smaller than 1 inch and no greater in size than 1 1/2 inches. Depth of branding shall be no more than 1/8 inch into valve box lid.

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- K. Gate Valves - Install where shown on Drawings as detailed.
- L. Sprinkler Heads - Install sprinkler heads where designated on Drawings or where staked. Set to finish as detailed. Spacing of heads shall not exceed the maximum indicated on Drawing unless re-staked as directed by Consultant. In no case shall the spacing exceed maximum recommended by manufacturer. Install heads on double swing-joint risers of schedule 40 PVC pipe. Angled nipple relative to non-pressure line shall be no more than 45 degrees or less than 10 degrees. Adjust part circle heads for proper coverage. Adjust heads to correct height after sod is installed. Plant placement shall not interfere with intended sprinkler head coverage, piping, or other equipment. Consultant may request nozzle changes or adjustments without additional cost to the Owner.
- M. Backflow Preventer - Install as detailed at location designated on Drawings.
- N. Backfilling - Do not begin backfilling operations until required system tests have been completed. Backfill shall not be done in freezing weather except with review by Consultant. Leave trenches slightly mounded to allow for settlement after backfilling is completed. Trenches shall be finish graded prior to walk-through of system by Consultant.
 - a. Materials - Excavated material is generally considered satisfactory for backfill purposes. Backfill material shall be free of rubbish, vegetable matter, frozen materials, and stones larger than 1 inch in maximum dimension. Do not mix subsoil with topsoil. Material not suitable for backfill shall be hauled away. Contractor shall be responsible for providing suitable backfill if excavated material is unacceptable or not sufficient to meet backfill, compaction, and final grade requirements.
 - b. Do not leave trenches open for a period of more than 48 hours. Open excavations shall be protected in accordance with OSHA regulations.
 - c. Compact backfill to 90% maximum density, determined in accordance with ASTM D1557 utilizing the following methods:
 - a. Mechanical tamping.
 - b. Puddling or ponding. Puddling or ponding and/or jetting is prohibited within 20'-0" of building or foundation walls.
- O. Piping Under Paving:
 - a. Provide for a minimum cover of 18 inches between the top of the pipe and the bottom of the aggregate base for all pressure and non-pressure piping installed under asphaltic concrete or concrete paving.
 - b. Piping located under areas where asphalt or concrete paving will be installed shall be bedded with sand (a layer 6" below pipe and 6" above pipe).
 - c. Compact backfill material in 6" lifts at 90% maximum density determined in accordance with ASTM D1557 using manual or mechanical tamping devices.

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- d. Set in place, cap, and pressure test all piping under paving, in presence of Owner prior to backfilling and paving operations.
 - e. Piping under existing walks or concrete pavement shall be done by jacking, boring, or hydraulic driving, but where cutting or breaking of walks and/or concrete is necessary, it shall be done and replaced at not cost to Owner. Obtain permission to cut or break walks and/or concrete from Owner.
- P. Water Supply and Point of Connection - Water supply shall be extended as shown from water supply lines.
- a. Contractor will connect new irrigation system to existing lines at the Private Property Owners connection valve box located in the Private Property Owners right of way.
 - b. Contractor to pull all required permits and locate all utilities prior to excavation.
 - c. Contractor to be responsible for all barricades, and traffic control.
 - d. Contractor to backfill and compact soils to existing densities.

623.18 FIELD QUALITY CONTROL:

- A. Flushing - After piping, risers, and valves are in place and connected, but prior to installation of sprinkler heads, quick coupler assemblies, and hose valves, thoroughly flush piping system under full head of water pressure from dead end fittings. Maintain flushing for 5 minutes through furthest valves. Cap risers after flushing.
- B. Testing - Conduct tests in presence of Consultant. Arrange for presence of Consultant 48 hours in advance of testing. Supply force pump and all other test equipment.
 - a. After backfilling, and installation of all control valves, fill pressure supply line with water, and pressurize to 40 PSI over the designated static pressure or 120 PSI, whichever is greater, for a period of 2 hours.
 - b. Leakage, Pressure Loss - Test is acceptable if no loss of pressure is evident during the test period.
 - c. Leaks - Detect and repair leaks.
 - d. Retest system until test pressure can be maintained for duration of test.
 - e. Before final acceptance, pressure supply line shall remain under pressure for a period of 48 hours.
- C. Walk-Through for Substantial Completion:
 - a. Arrange for Consultant's presence 48 hours in advance of walk-through.
 - b. Entire system shall be completely installed and operational prior to scheduling of walk-through.

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- c. Operate each zone in its entirety for Consultant at time of walk-through and additionally, open all valve boxes if directed.
 - d. Generate a list of items to be corrected prior to Final Completion.
 - e. Furnish all materials and perform all work required to correct all inadequacies of coverage due to deviations from Contract Documents.
 - f. During walk-through, expose all drip emitters under operations for observation by Consultant to demonstrate that they are performing and installed as designed, prior to placing of all mulch material. Schedule separate walk-through if necessary.
- D. Walk-Through for Final Completion:
- a. Arrange for Consultant's presence 48 hours in advance of walk-through.
 - b. Show evidence to Consultant that Owner has received all accessories, charts, record drawings, and equipment as required before Final Completion walk-through is scheduled.
 - c. Operate each zone, in its entirety for Consultant at time of walk-through to insure correction of all incomplete items.
 - d. Items deemed not acceptable by Consultant shall be reworked to complete satisfaction of Consultant.
 - e. If after request to Consultant for walk-through for Final Completion of irrigation system, Consultant finds items during walk-through which have not been properly adjusted, reworked, or replaced as indicated on list of incomplete items from previous walk-through, Contractor shall be charged for all subsequent walk-throughs. Funds will be withheld from final payment and/or retainage to Contractor, in amount equal to additional time and expenses required by Consultant to conduct and document further walk-throughs as deemed necessary to insure compliance with Contract Documents.

623.19 ADJUSTING - Upon completion of installation, "fine-tune" entire system by regulating valves, adjusting patterns and break-up arms, and setting pressure reducing valves at pro-per and similar pressure to provide optimum and efficient coverage. Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walks, roadways, and buildings as much as possible. Heads of same type shall be operating at same pressure +/- 7%.

- A. If it is determined that irrigation adjustments will provide proper coverage, and improved water distribution as determined by Consultant, contractor shall make such adjustments prior to Final Acceptance, as directed, at no additional cost to Owner. Adjustments may also include changes in nozzle sizes, degrees of arc, and control valve throttling.
- B. All sprinkler heads shall be set perpendicular to finish grade unless otherwise designated.

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C. Areas which do not conform to designated operation requirements due to unauthorized changes or poor installation practices shall be immediately corrected at no additional cost to the Owner.

623.20 **CLEANING** - Maintain continuous cleaning operation throughout duration of work. Dispose of, off-site at no additional cost to Owner, all trash or debris generated by installation of irrigation system.

METHOD OF MEASUREMENT

623.21 Automatic controllers and backflow preventers will be measured by the number of units of each size installed and accepted, including concrete pad, conduit, bolts, enclosure, ground wire, and all other items necessary to complete the work as shown in the plans.

623.22 Valves, quick couplers, sprinklers, drip emitters of the various types and sizes including risers, check valves, swing joints, and fittings, will be measured by the number of units installed and accepted. 24 volt power source wire and control wire will be paid for as part of the cost of installation of Automatic Control Valves and will not be measured and paid for separately.

623.23 Plastic and copper pipe will be measured by the linear foot installed and will include the cost of all fittings, manual drain valves and blow-out stubs.

623.24 Structure excavation and backfill including compaction and water will not be paid for separately but shall be included in the work.

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**REVISION OF SECTION 623
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BASIS OF PAYMENT

623.27 The accepted quantities will be paid for at the contract unit price for the various items below that appear in the bid schedule.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Drip Emitter	Each
¾ Inch Emitter Valve Assembly (Drip Valve Assembly)	Each
¾ Inch Flush Unit (Drip line blow-out stub)	Each
Pop-Up Lawn Spray (Pop-Up Spray Head)	Each
1 Inch Automatic Control Valve (Electric Control Valve)	Each
1 Inch Quick-Coupler Valve (Quick Coupling Valve)	Each
¾ Inch Plastic Pipe (Poly Drip Tubing) (Irrigation)	Linear Foot
1 Inch Plastic Pipe (Irrigation)	Linear Foot
1 ¼ Inch Plastic Pipe (Irrigation)	Linear Foot

All work that is incidental to unit costs including but not limited to installation and labor shall be included in the cost for that unit.

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.

Electronic submittal of survey records may be acceptable, please coordinate with the City Surveyor's Office.

**REVISION OF SECTION 625
CONSTRUCTION SURVEYING**

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:

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Surveying	Lump Sum

Traffic control for construction surveying will be measured and paid for in accordance with Section 630.

**REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES**

Section 626 of the Standard Specifications is hereby revised for this project as follows:

Subsection 626.01 shall include the following:

The Contractor shall provide the following public information services on an ongoing basis throughout the duration of the project:

At the preconstruction conference the Contractor shall designate a Public Information Manager (PIM) for the project. The PIM shall 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 PIM shall maintain communications with the Engineer and affected businesses, and provide information on a regular basis to private individuals, local news media, local organizations interested in the project, and persons on the attached list.

The Contractor shall establish a local public information office equipped with a telephone and an answering machine. The public information office may be located within the Contractor's regular office provided that the telephone line is a local call line. A cellular phone line is acceptable. The answering machine shall provide an updated message each week concerning the forthcoming activities on the project and shall give the public information office hours and allow the recording of a message from the caller. The PIM shall check the answering machine at least twice every calendar day, including weekends. The PIM shall respond to questions concerning project activities and schedules within 24 hours, participate in and document meetings held with affected individuals, and maintain ongoing communication with businesses directly impacted by construction.

The PIM shall prepare and distribute a flier to the residents and businesses directly adjacent to the project limits prior to beginning construction and once each month thereafter. The flier shall be printed on orange paper and shall discuss the project's ongoing work, the anticipated completion date and the schedule for the forthcoming month. The flier shall provide the name of the Contractor's PIM and the telephone number and office hours of the public information office. Fliers, and media releases, shall be provided to the Engineer, CDOT's Public Information Office, and to the people on the attached list for review 48 hours prior to distribution.

The Contractor shall erect construction traffic signs with the dates the Contractor expects to initiate and complete construction and with the Contractor's public information office phone number at each major approach to the project. These signs shall conform to the requirements of Section 630 and shall be erected as directed by the Engineer in accordance with the plans. These signs shall be erected at least one week prior to the beginning of construction.

The Contractor shall maintain a logbook of citizen and business contacts, including names, addresses, phone numbers, nature of the inquiry and subsequent action taken during construction and shall provide the Engineer a copy each week. All inquiries and complaints shall be followed up with either a return phone call, or a meeting, as warranted.

**REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES**

Subsection 626.02 shall include the following:

The Engineer will monitor the PIM and all public information services. When the Contractor provides acceptable public information services in accordance with these specifications, partial payments for the pay item Public Information Services will be made as the work progresses. These partial payments will be made as follows:

When 5 percent of the original Contract amount is earned, 25 percent of the amount bid for this item will be paid.

When 10 percent of the original Contract amount is earned, 40 percent of the amount bid for this item, less all previous payments, will be paid.

When 25 percent of the original Contract amount is earned, 50 percent of the amount bid for this item, less all previous payments, will be paid.

When 75 percent of the original Contract amount is earned, 75 percent of the amount bid for this item, less all previous payments, will be paid.

When 100 percent of the original Contract amount is earned, 100 percent of the amount bid for this item, less all previous payments, will be paid.

Failure to provide acceptable public information services will result in withholding of progress payment for this item. Continued failure to provide the services required will result in non-payment of the corresponding percentage of the original bid item and may result in suspension of the work in those areas affected until proper notification is provided by the Contractor.

For the purpose of this Specification, the term “original Contract amount” as used above, shall mean the amount bid for the construction items on this Contract, not including the amounts bid for Public Information Services and Mobilization.

Payment for Public Information Services will be full compensation for all fliers, public information office, telephone lines, and all other labor and materials required to complete the item, except signs. Signs will be measured and paid for in accordance with Section 630.

Payment will be made under:

Pay Item	Pay Unit
Public Information Services	Lump Sum

**REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES**

Public Information Services Contact List

City and County of Denver

Project Manager

John La Sala, 201 W Colfax Ave., Dept 508, Denver, CO 80202

Fire Department:

Dispatch - Capt. Dave Burke

Phone: 720-913-2407 Fax: 720-913-2420

Non-emergency Phone: 720-913-2400

Police Department:

Non Emergency Phone: 720-913-2000

Colorado Department of Transportation

Project Engineer

Tony Stewart, 4670 North Holly, Denver, CO 80216

Phone: 303-398-6738 Fax: 303-398-6781

Regional Transportation Department

Lorraine Taylor

Phone: 303-299-6440

Colorado Department of Transportation, Public Information Office

Stacey Stegman, 4201 E. Arkansas, Room 277, Denver, CO 80222

Phone: 303-757-9362 Fax: 303-757-9153

Bob Wilson, 4201 E. Arkansas, Room 277, Denver, CO 80222

Phone: 303-757-9431 Fax: 303-757-9153

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, 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, range boxes, 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:

<u>Pay Item</u>	<u>Pay Unit</u>
Survey Monument (Type 4)	Each

Traffic control for monumentation and related surveying will be measured and paid for in accordance with Section 630.

**REVISION OF SECTION 630
TRAFFIC CONE**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 630.05, revise the second paragraph as follows:

The reflectorized material shall be AP 1000 Polyester (Reflexite Corp.), 3M Type III, Transparent (Reflexite Corp.), or 2010 Vinyl Cone Collar (Reflexite Corp.). Any other material is not acceptable unless its brightness is equivalent or greater than the types named.

**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work consists of furnishing, operating, and maintaining a portable message sign panel.

Subsection 630.09 shall include the following:

Portable Message Sign Panel. Portable message sign panel shall be furnished as a device fully self-contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The portable message sign panel shall be stable in winds up to 80 MPH. The panel shall display a minimum of three eight-character lines. The panel shall be a dot matrix type with either fluorescent yellow flip disks legend and/or LED legend on a flat black background. LED signs shall have a pre-default message that activates before a power failure. The sign shall have its own separate solar or diesel engine power source with independent back up battery powered source. The sign shall be capable of 360 degrees rotation and be able to be elevated to a height of at least five feet above the ground to the bottom of the sign. Lifting of the sign shall be accomplished by electric/hydraulic methods. The sign shall be visible from one half mile under both day and night conditions. The message shall be legible from a minimum of 650 feet. The sign shall automatically adjust its light source to meet the legibility requirements during the hours of darkness. The sign enclosure shall be weather tight and provide a clear polycarbonate front cover.

Solar powered message signs shall be capable of operating continuously for 10 days without any sun. Message signs that are diesel generator powered shall be provided with a 20-gallon minimum capacity fuel tank. All instrumentation and controls shall be contained in a lockable enclosure.

The sign shall include and be operated and programmed through a laptop computer or microprocessor capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Each sign shall also conform to the following:

1. Flip-disks legend signs shall have fluorescent ultraviolet blacklight bulbs.
2. In addition to the onboard power source with battery back up, each sign shall be capable of operating on a hard wire, 100 110 VAC, external power source.
3. Each sign shall be furnished with an operating and parts manual, wiring diagrams, and trouble shooting guide.
4. The portable message sign shall be capable of maintaining all required operations under Colorado mountain winter weather conditions.
5. Each sign shall be furnished with an attached license plate and mounting bracket.
6. Each sign shall be wired with a 7 prong male electric plug for the brake light wiring system.

**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

- 7. All communications hardware for remote programming, including, cellular phone, laptop computer, computer hardware and software, on trailer electrical wiring connectors, and switch controls necessary to allow all sign functions required by the specification shall be provided with each sign.
- 8. Each sign shall also be provided with all necessary equipment so that it can be switched to remote programming, using either hard wire dedicated telephone line, or remote dial-up via cellular telephone.
- 9. The supplier shall demonstrate the capabilities of the sign, and provide 2 days of training for operation and maintenance of the sign.)

Prior to obtaining this item, the Contractor shall submit the trade name, model number and specifications of the portable message sign panel he intends to use, to the Engineer, for approval. ADDCO Manufacturing Co. Inc., American Signal Company, Winko Matic Signal Company, Precision Solar Controls Inc. and National Signal Company are known to produce a suitable portable message sign panel. The Engineer's decision concerning acceptability of this item shall be Final.

Subsection 630.13 shall include the following:

The portable message sign panel shall be available on the project site at least ten working days prior to the start of active roadway construction. Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message sign panels shall be the responsibility of the Contractor.

Subsection 630.15 shall include the following:

Portable message sign panels will be measured by the Week for each work week that they are in use as directed.

Subsection 630.16 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Portable Message Sign Panel	Each

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Section 630 of the Standard Specifications is hereby revised as follows:

Subsection 630.01 shall be revised to include the following:

As required by, in descending order of precedence, the specifications, the Standard Specifications, as augmented by the Colorado Department of Transportation M and/or S standards, and the manual on Uniform Traffic Control Devices for Streets and Highways.

The Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for review and approval of the Project Manager as indicated in the Project Special Provisions (Revision of 630 – Construction Zone Traffic Control). The MHT shall be developed according to this section and the construction plans.

Subsection 630.05 TRAFFIC CONES shall include the following:

Steel drum channelizing devices shall not be used for traffic control

Subsection 630.06 shall be modified to include the following:

Non-metallic drums or tubular markers may be substituted for vertical panel channelizing devices.

Subsection 630.09 shall be modified to include the following:

The flagger's STOP/SLOW sign paddle shall be 18 inches with letters six inches high.

Equipment

The Contractor shall not have construction equipment or materials in the lanes open to traffic any time, unless approved by the Project Manager.

The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

All personal / employee vehicle and construction equipment parking is prohibited when it conflicts with safety, access, or the flow of traffic.

Devices:

The Contractor shall install construction traffic control devices in locations where they do not block or impede other existing traffic control devices, or sidewalks for pedestrians, disabled persons, or bicyclists.

Steel drum channelizing devices shall not be used for traffic control.

Subsection 630.10, shall be modified to include the following:

Traffic Control shall be provided as required by, in descending order of precedence, MUTCD, the plans and special provisions for this project, Colorado Department of Transportation Standard Specifications, and Colorado Department of Transportation M and/or S Standards.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

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 Manager following approval of the Traffic Engineering Services Department.

Approval of the proposed MHT does not relieve the Contractor of liability specifically assigned to him under the contract. The Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, and obstructions.

The contractor shall notify the Project Manager 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 (5) shall be revised to include the following:

Access to driveways shall be maintained at all times during construction. The Contractor shall coordinate driveway work with the property owner. Appropriate signage shall be provided alerting all motorists leaving driveways that enter a work zone as to which direction the through lane is traveling and what access restrictions exist, if any.

Subsection 630.09 (10) shall be added as follows

Number of hours for uniformed traffic control shall be tabulated for submittal.

Subsection 630.09 (11) shall be added as follows:

General Work restrictions

The Contractor shall perform all the work on the roadway between the hours of 8:30 A.M. and 3:30 P.M. or as approved by the Project Manager. Weekend and nighttime work will be allowed with the prior written approval of the Project Manager.

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 3:00 PM to 6:30 PM Monday through Thursday; and after 2:00 PM on Fridays unless otherwise authorized by the Project Manager.

Work that interferes with traffic 1] on any day of a 3 or 4 day holiday weekend; or 2] after 12:00 noon on the day preceding such holiday weekend, will only be permitted following review of a Contractor submitted request and approval by the Project Manager and the City of Denver Traffic Engineering Services Department:

The Contractor shall coordinate all of the work on the roadway during any special event with the City and County of Denver.

Subsection 630.09 (12) shall be added as follows:

Access:

Two-way, two-lane traffic shall be maintained on Colfax Avenue from Speer Blvd to Delaware St at all times. Two-way traffic shall be maintained on 12th Street from Colfax Ave to Welton St and on all surrounding streets at all times, via flagging if necessary for closures of less than one day unless authorized by the Project Manager and the Traffic Engineering Services Department.

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

One-way, One-lane traffic shall be maintained at all times on Galapago St from 14th Ave to Colfax Avenue.

Contractor shall obtain all required access and construction permits from the City & County of Denver prior to initiating work along City right of way.

The Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, and hike/bike paths at all times unless otherwise approved by the Project Manager. The sole exception to this requirement is that the City will permit full closures of access to all alleyways, walkways, driveways, and hike/ bike paths **DIRECTLY ADJACENT** to an active work Phase for a maximum period of one (1) week. Should the Contractor wish to exercise this exception, a request for same shall be submitted to the Project Manager for review and approval including proposed method for Public notice per Section 632. If access restrictions are approved by the Project Manager, the Contractor shall coordinate with all tenants affected by alley and/or access closures two weeks prior to closure.

All proposed lane closures shall be subject to the approval of the Project Manager and Traffic Engineering Services Department. Requests for such lane closures shall be submitted with a Method of Handling Traffic at least 48 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless utilized in continuum for the duration of each working period. Contractor shall make all efforts to fashion his lane closure proposal to close no more than one lane at a given time.

Subsection 630.15 is hereby deleted and replaced with the following:

Temporary pavement markings for traffic control will not be measured and paid for separately, but shall be included in the work.

Subsection 630.16 is hereby deleted and replaced with the following:

Payment for Construction Zone Traffic Control shall be paid through the individual pay items for traffic control.

Payment for Uniformed Traffic Control will be made based on the number of hours, approved in advance by the Project Manager, that Uniformed Traffic Control is utilized to control and direct traffic through the construction zone.

**REVISION OF SECTION 630
UNIFORMED TRAFFIC CONTROL**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work includes furnishing a uniformed police agency officer from the City of Denver to perform uniformed traffic control.

Subsection 630.15 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. Arrangements for officers shall be made at least 2 weeks in advance by contacting the following police agency:

Denver Police Department (Recorder - Leave Message)
Phone Number: (303) 640-3636

Uniformed Traffic Control will be measured by the total number of hours that Uniformed Traffic Control is actually used as authorized.

Subsection 630.16 shall include the following:

The accepted number of hours of Uniformed Traffic Control will be paid for at the contract unit price per hour.

Payment will be made under:

Pay Item	Pay Unit
Uniformed Traffic Control	Hour

Payment for the item Uniformed Traffic Control by the hour, will be full compensation for all work, coordination, equipment and other items necessary to complete the item.

Hours of Uniformed Traffic Control Coordination that are not approved or not authorized will not be paid for.

FORCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the Department's estimate for force account items included in the Contract. The estimated amounts marked with an asterisk 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>Force Account Item</u>	<u>Estimated Quantity</u>	<u>Amount</u>
F/A Fuel Cost Adjustment	F.A.	\$ 520
F/A Asphalt Cement Cost Adjustment	F.A.	\$ 5700
F/A On the Job Trainee	F.A.	\$ 525
F/A ESB Program	F.A.	\$ 7,500
F/A Obtain Power Source from Xcel Energy	F/A	\$ 10,000
F/A Erosion Control	F.A.	\$ 3,500
F/A Environmental Health and Safety Management	F.A.	\$ 2,000

F/A Fuel Cost Adjustment – Fuel Cost Adjustment will be made in accordance with Revision of Section 109 – Fuel Cost Adjustment

F/A Asphalt Cement Cost Adjustment – Payment will be made in accordance with Revision of Section 109 – Asphalt Cement Cost Adjustment (Asphalt Cement Included in the Work)

F/A On-The-Job Trainee – As per the standard special provision: On the Job Training

F/A ESB Program - As per Emerging Small Business Program standard specification.

F/A Obtain Power Source from Xcel Energy - This work consists of obtaining a power source for the traffic signals and street lights as per Revision of Section 613 – Lighting (Xcel) and for a power source for the proposed traffic signal controller.

F/A Erosion Control - This Force Account is to pay for any other erosion control items the ECS will need during the duration of this project. All items shall be pre-approved by the Engineer prior to installation or they will be at no cost to the project.

FORCE ACCOUNT ITEMS

F/A Environmental Health and Safety Management – This work will be required if any unforeseen contaminated or suspect material is encountered during construction. This will include Health & Safety Officer hours, containment, testing, and disposal of material.

TRAFFIC CONTROL PLAN - GENERAL

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.09.

The components of the TCP for this project are included in the following:

- (1) Subsection 104.04 and Section 630 of the specifications.
- (2) Standard Plan S-630-1, Traffic Controls for Highway Construction, and Standard Plan S-630-2.
- (3) Schedule of Construction Traffic Control Devices.
- (4) Signing Plans included in this plan set
- (5) Construction phasing details included in this plan set
- (6) Denver Barricade Manual
- (7) Manual of Uniform Traffic Control Devices (MUTCD).

The following documents shall control the preparation of the MHT and are listed in the order of precedence:

Denver Barricade Manual
CDOT Standard Plans and Specifications
CDOT M & S Standards
Manual on Uniform Traffic Control Devices
AASHTO – A Policy on Geometric Design of Highways and Streets
AASHTO – Roadside Design Guide

Special Traffic Control Plan requirements for this project are as follows:

Refer to Revision of Section 104 for requirements regarding maintaining access for emergency vehicles.

The Contractor shall develop detailed Construction Phasing Plans and submit to the Engineer for approval. The Contractor's phasing plans and work areas shall be as approved by the Engineer prior to implementation.

During the construction of this project, traffic shall use the present traveled roadway at all times unless otherwise specified by the Engineer. Traffic shall be carried on paved surfaces at all times.

Steel drum channelizing devices shall not be used for traffic control.

The Contractor shall not have construction equipment or materials in the lanes open to traffic at any time, unless directed. All personal vehicle parking will be prohibited where it conflicts with safety, access, or the flow of traffic. The Contractor shall not store material or allow personal vehicle parking on private property or sidewalks not closed to pedestrian traffic.

The Contractor shall install construction traffic control devices in locations where they do not block or impede other existing traffic control devices, or sidewalks for pedestrians, disabled persons, or bicyclists.

The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

TRAFFIC CONTROL PLAN - GENERAL

The contractor shall maintain access to all roadways, sidestreets, walkways, alleyways, driveways, doorways, and sidewalks at all times unless otherwise approved by the Engineer. The contractor shall coordinate with all tenants affected by access closures seven days prior to closure. One access (driveway and doorway) to all properties shall be left open at all times.

The Contractor shall remove pavement markings and striping where it conflicts with the construction traffic zone striping.

The contractor shall remove or cover all signs in the work zone that conflict with the construction traffic control plans. Whenever the Contractor removes, obliterates, or overlays any pavement markings, he shall replace them on a daily basis prior to opening the affected area to traffic. All pavement markings shall be placed in accordance with the specifications. All pavement markings shall be in full compliance at the end of each day.

During non-construction periods, all work shall be adequately protected to ensure 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.

The contractor shall obtain all required access and construction permits from the city and County of Denver prior to initiating work. The Contractor shall submit Traffic control Plans (TCP) two weeks prior to work for approval by the Engineer.

All flagging stations used at night shall be adequately illuminated in accordance with the MUTCD. Adequate illumination of flagging stations will include the use of temporary light plants whenever other sources of adequate lighting are not available.

MHT plans shall address or include at a minimum the following:

(Phasing plans may be combined with the Construction Traffic Control Plans or developed separately).

- Traffic control require for all the placement of all signing, traffic control devices, channelizing devices, temporary pavement markings, and any other related devices or required work items.
- Portable message sign panels and other specialty device placements and use, including typical messages.
- Placement of Temporary pavement markings.
- Oversize load restrictions, notification, and handling of specific work activities and proposed overall project handling.
- Road closure points and barricade placements.
- Use of special construction signs.
- Work zone protection
- Site specific details, and handling of isolated work elements
- Flagging stations and illumination, if required
- Control of construction access points and prevention of unauthorized use.
- Emergency vehicle handling
- Accident resolution methods and emergency road closure details
- Traffic control during concrete truck delivery and patching / paving operations
- Special construction activities

TRAFFIC CONTROL PLAN - GENERAL

- Construction signing and detour implementation plan
- Traffic control during phase changes
- Number of flaggers and support personnel for the work
- Night work requirements and device placement

GENERAL RESTRICTIONS. No work will be allowed between 6:00PM Friday through 7:00am Sunday. Sunday work is allowed, subject to the City noise ordinance.

The contractor shall coordinate with the City all work on the roadway during any special event. Additional restrictions to working hours may be required.

All lane closures shall be subject to the approval of the Project Engineer. Requests for lane closures shall be made at least two weeks in advance of the time the lane closure is to be implemented and approved by the Engineer. Lane closures will not be allowed to remain unless utilized in continuum for the duration of each working period.

Traffic shall be maintained on all streets at all times, via flagging if necessary for closures of less than one day.

A minimum lane width of 10 feet shall be provided for all Traffic lanes, with 12 feet being desirable.

Contact Lorraine Taylor at RTD (303)299-6440 regarding impacts to bus stop access (pedestrian or vehicular) 48 hours in advance of such impact.

COLFAX AVENUE. Two lanes of traffic in each direction shall be maintained between the hours or 6:00am to 8:30am and 3:30pm to 6:00pm Monday through Friday.

WELTON STREET. Two lanes of traffic shall be maintained between the hours or 6:00am to 8:30am and 3:30pm to 6:00pm Monday through Friday.

12TH STREET. One lane of traffic shall be maintained between the hours or 6:00am to 8:30am and 3:30pm to 6:00pm Monday through Friday.

GALAPAGO STREET. One lane of traffic shall be maintained between the hours or 6:00am to 8:30am and 3:30pm to 6:00pm Monday through Friday.

All costs incidental to the foregoing requirements will not be measured or paid for separately, but shall be included in the original bid price for the associated traffic control items. The cost of construction traffic control signs, flagging, temporary barricades, pavement and pavement markings, and other items listed in the Schedule of Construction Traffic Control Devices shall be paid for at the unit price in accordance with the applicable specifications.

UTILITIES

The known utilities within the limits of this project are:

UTILITY / ADDRESS	CONTACT/EMAIL	PHONE/FAX
Above Net Communications 7905 S 196th St Kent, WA 98032	Dan Walla dwalla@above.net	206-988-8660
Comcast 1617 South Acoma Street Denver, CO 80223	Eric Carroll Eric_Carroll@cable.comcast.com	303-603-5256 720-413-0245
MCI Communications 24055 E 6th Ave Aurora, CO 80018	Erik Baker Erik.Baker@verizonbusiness.com	903-357-3282
Xcel Energy - Electric 1123 W. 3rd Avenue Denver, CO 80223	Marisa Montoya Marisa.I.Montoya@xcelenergy.com	303-571-3720 303-571-3102
Xcel Energy - Gas 1123 W. 3rd Avenue Denver, CO 80223	Michelle McKnight michelle.t.mcknight@xcelenergy.com	303-571-3358 303-571-3166
Xcel Energy - Steam S1875 Degany St Denver, CO 80202	Gary Hubel Gary.hubel@xcelenergy.com	303-571-7394 303-571-7313
Century Link Local Network 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen brandon.lundeen@centurylink.com	303-451-2582
XO Communications 317 Inverness Way South Englewood, CO 80112	Steve Valdez steve.g.valdez@xo.com	303-539-1022 303-435-2793
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Don Wyman Don.Wyman@denverwater.org	303-628-6628
	Vince Gaiter Vincent.Gaiter@denverwater.org	303-628-6527 720-840-4289
	Marty Buckstein - Valve boxes/manholes Marty.Buckstein@denverwater.org	303-628-6818 303-944-7026
	Meter Shop Supervisor	303-628-6706
Denver Parks and Recreation	Jim Tenorio	720-810-1539
Denver Wastewater Management	Reza Kazemian	303-446-3433
Denver Traffic Operations 201 W Colfax Ave, Dept 508 Denver, CO 80202	John La Sala John.lasala@ci.denver.co.us	720-913-4534

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 Section 804 of the City and County of Denver, Department of Public Works, Standard Specifications for Construction, General Contract Conditions.

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UTILITIES

PART 1 – THE 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. For all utilities other than Xcel Energy, the following procedure applies:

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.

For Xcel Energy, the following procedure applies:

At the pre-construction meeting, notify the Engineer of schedule requirements for completion of utility work as specified in Part 2. Based upon scheduling needs, the Manager of Public Works will send a Work Request to Xcel Energy per the Franchise Agreement between the City and County of Denver and Public Service Company of Colorado, and the related Operating Agreement and Street Lighting Agreement (collectively know as the “Franchise Agreements”). Typically, this work request would have been sent to Xcel Energy during the design phase of the project. Referring to Relocation of Xcel Energy Facilities, Section 5.7 of the Franchise Agreement states that “The relocations set forth in Section 5.7.A of the franchise shall be completed within a reasonable time, not to exceed ninety (90) days from the date on which the Manager of Public Works requests, in writing, that the relocation commence.”

In reference to new/modified service to City facilities (i.e., power supply, removal or installation of poles, etc.), Section 5.3 of the Operating Agreement states: “The company (Xcel Energy) shall complete each project requested by the City within a reasonable time. The Parties agree that for Traffic Facilities, a reasonable time shall not exceed one hundred twenty (120) days from the date upon which the Manager of Public Works makes a Work Request and for all other City Facilities a reasonable time shall not exceed one hundred eighty (180) days from the date upon which the Manager of Public Works makes a Work Request.” When requesting that the City initiate a Work Request to Xcel Energy, the Contractor should consider the time limits contained in the Franchise Agreements.

Conduct necessary utility coordination meetings, and provide other necessary accommodations as directed by the Engineer. Complete any other tasks as specified in Part 2 or elsewhere in this utility specification.

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.

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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 below 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.

All Utility Owners:

Contractor shall 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 a conflict exists, modify proposed construction plans to avoid all existing buried utility facilities as approved by the Engineer.

Contractor shall contact utility owners 5 days prior to potholing to allow their observation of potholing activities.

DENVER WATER DEPARTMENT

All work on Denver Water Department facilities performed by the Contractor shall be performed by a contractor on the current list of Denver Water Department Pre-Qualified Contractors. The Contractor shall perform all work according to currently applicable Denver Water Department standards and specifications. The Contractor shall conform to all Denver Water Department inspection requirements before, during, and after construction, and prior to final acceptance.

The Contractor shall perform the following:

Protect valve boxes to prevent damage during the removal of asphalt and concrete paving operations.

Adjust valve boxes down to ¼" to ½" below final grade of the paved surface as shown on the plans.

Adjust water meters up to ¼" to ½" below final grade of the paved surface or sidewalk as shown on the plans. Adjust yoke if necessary to ensure that it is no more than 18" below final grade.

Clean all valve boxes after final adjustment.

Remove and replace approximately 75 feet of water main (12-inch and 15-inch pipe).

Where conflicts exist, lower the water main under the proposed storm pipe and its associated appurtenances.

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UTILITIES

Remove all evidence of one abandoned meter pit and curb stop to a depth of 18 inches below finished grade.

Coordinate required inspections with Denver Water Department forces.

Coordinate the work by Denver Water Department forces as listed below and in Part 2 of the Utility Specifications.

Contractor shall provide the utility owner written notice 5 days immediately prior to required inspections.

DENVER WASTEWATER MANAGEMENT

It is the responsibility of the contractor to examine the site for evidence of failures of or deficiencies in Denver Wastewater Management Division (WMD) facilities and to immediately call any such evidence of pre-existing damage to the attention of the WMD along with proper documentation.

Without such evidence of pre-existing damage, the contractor hereby agrees that any and all damages (direct or indirect) to WMD facilities, which may be subsequently discovered within those areas where construction occurred within six feet of WMD facilities (direct or indirect) and within a period of three years from the date of construction, were caused by the construction activities. Furthermore, their repair is agreed to be the sole responsibility of the contractor.

The contractor hereby agrees that the repair of any and all damages (direct or indirect), that may be subsequently discovered and proven to have been caused by the construction activities, is the sole responsibility of the contractor.

It shall be the contractor's responsibility to protect all WMD facilities within the area of construction. This includes all steps necessary to prevent subsidence of the soil adjacent to or near WMD facilities.

Adjust manholes down prior to the Removal of Asphalt Mat (Planing) surface, as shown on the plans, to prevent damage during the removal operation.

Adjust manholes up to ¼" to ½" below final grade of the paved surface as shown on the plans.

The Contractor shall provide the utility owner written notice 5 days immediately prior to required inspections.

PART 2 - UTILITY OWNERS SHALL PERFORM THE WORK LISTED BELOW:

The Contractor shall provide traffic control for any utility work expected to be coordinated with construction, as directed by the City and County of Denver Engineer. However, 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 City and County of Denver a Method of Handling Traffic for utility work to be performed outside typical project work hours. The utility owner shall obtain approval of the Method of Handling traffic from the City and County of Denver Engineer prior to beginning the utility work to be performed outside typical project work hours.

Contractor shall contact utility owners 5 days prior to potholing to allow their observation of potholing activities.

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UTILITIES

All Utility Owners:

Contractor shall 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 a conflict exists, modify proposed construction plans to avoid all existing buried utility facilities as approved by the Engineer.

XCEL ENERGY – ELECTRIC OPERATIONS

After the City or the City Contractor has realigned the Welton/Galapago intersection, installed the proposed, traffic signal conduits, service wires, and has coordinated with PSCo, PSCo forces shall:

Raise duct banks prior to construction of the storm sewer.

Install the points of service for the traffic signal.

Extend wire and conduit and terminate service to the new, proposed traffic signal controller point of service and traffic signal luminaries, as shown on the Utility Plan.

Extend wire and conduit and terminate service to the new street luminare locations, as shown on the Utility Plan.

The PSCo portion of this work will be completed on the time frames set forth in the Franchise Agreements (as defined above), in a manner which does not interfere with the Project construction activities of the City.

The cost of the work described above for Xcel Energy will be reimbursed from a project Force Account. The preliminary analysis indicates the direct and indirect cost of this work is reimbursable to PSCo as a Project expense, and the cost is estimated to be \$10,000.

After the City Contractor has verified that the, new, proposed traffic signals are operational but before the City Contractor removes the existing traffic signals and foundations (The City Contractor is responsible for removal of traffic signals, traffic signal mast arms and traffic signal and street light foundations) and has coordinated with PSCo, PSCo forces shall:

Remove traffic signal poles and luminaires, as shown on the Utility Plans. The PSCo portion of this work will be completed on the time frames set forth in the Franchise Agreements (as defined above), in a manner which does not interfere with the Project construction activities of the City.

Remove street light poles and luminaires, as shown on the Utility Plans. The PSCo portion of this work will be completed on the time frames set forth in the Franchise Agreements (as defined above), in a manner which does not interfere with the Project construction activities of the City.

After the City Contractor has marked the elevation of the surface of the reconstructed roadway, and has coordinated with PSCo, PSCo forces shall:

Adjust the height of two manholes shown on the plans to match the surface elevation of the reconstructed roadway. The PSCo portion of this work will be completed on the time frames set forth in the Franchise Agreements (as defined above), in a manner which does not interfere with the Project construction activities of the City.

6-
UTILITIES

After PSCo completes construction, the City will facilitate restoration of the intersection at Colfax and Welton, at a Project expense, unless otherwise noted.

DENVER WATER DEPARTMENT

Denver Water will provide required inspections of work listed in Part 1. The City and County of Denver Contractor shall provide the utility owner written notice 5 days immediately prior to required inspections.

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, 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. 201207581

**COLFAX/GALAPAGO/WELTON INTERSECTION
IMPROVEMENTS**

September 24, 2012

TABULATION OF LENGTH & DESIGN DATA

STATION	FEET	
	ROADWAY	FT
W. COLFAX AVE. STA. 100+71.75 BEGIN PROJECT M.P. STA. 104+37.80 END PROJECT M.P.	366.05	
GALAPAGO/WELTON ST. STA.201+25.00 BEGIN PROJECT STA.204+50.00 END PROJECT	325.00	
TOTAL	691.0	
SUMMARY OF PROJECT LENGTH	FEET	
ROADWAY (NET LENGTH)	691.0	
MAJOR STRUCTURE	0	
PROJECT GROSS LENGTH	691.0	
DESIGN DATA	COLFAX AVE.	WELTON ST.
MAXIMUM RADIUS OF CURVE	N/A	126
MAXIMUM GRADE	N/A	1%
MINIMUM S.S.D. HORIZONTAL	N/A	N/A
MINIMUM S.S.D. VERTICAL	N/A	N/A
MAXIMUM DESIGN SPEED	35 MPH	30 MPH
DHV TRUCKS %	3.5%	N/A
CLEAR ZONE DISTANCE (TANGENT)	N/A	N/A

COLFAX / GALAPAGO / WELTON INTERSECTION IMPROVEMENTS

PREPARED FOR:
DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION
CITY AND COUNTY OF DENVER
PILAR NO. 2010-0156-04
PCO TRACKING NO. PWC2009-8144
FEDERAL AID PROJECT NO. STU M320-060
CDOT SUBACCOUNT NO. 16952

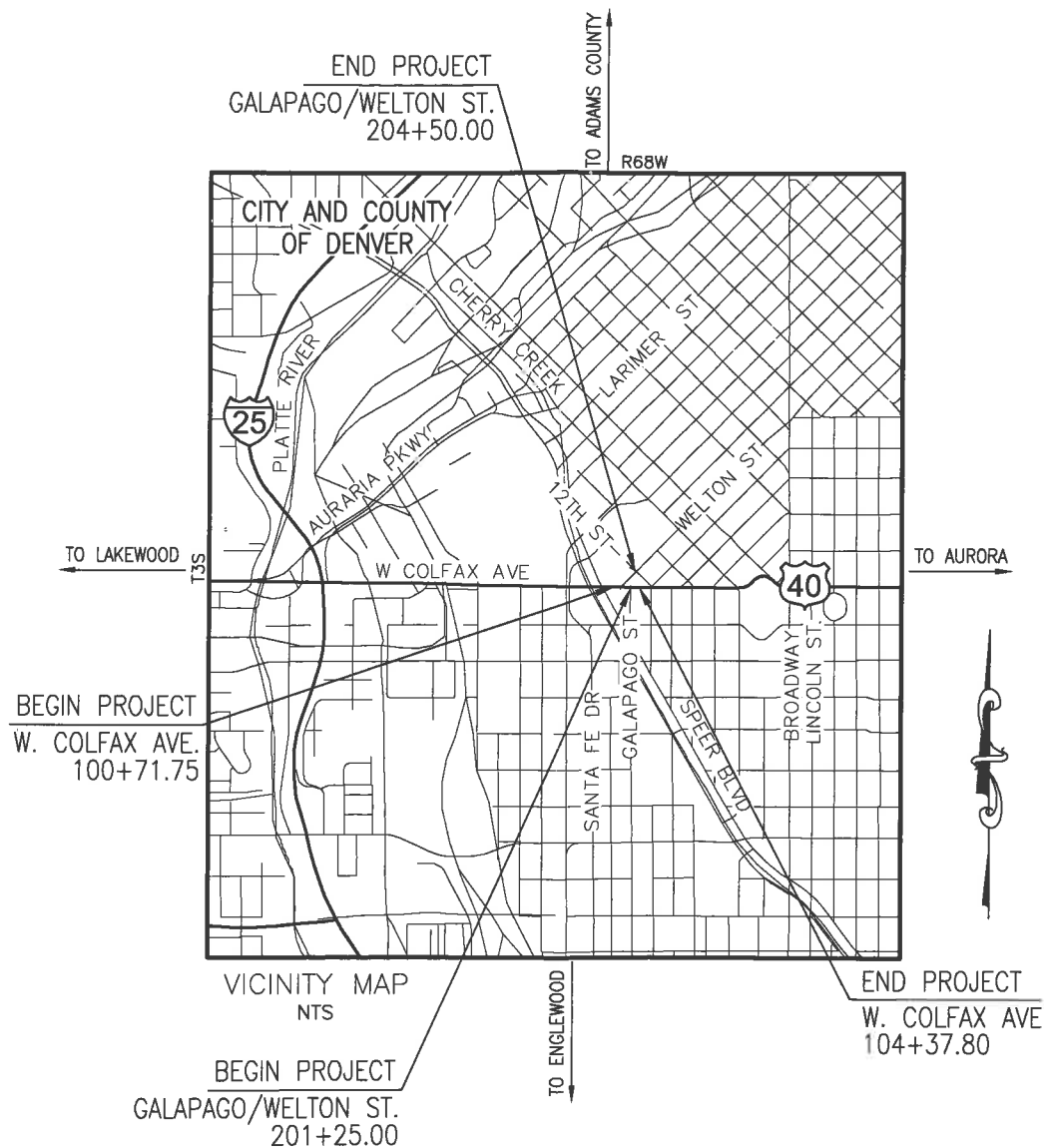
INDEX OF SHEETS

Sheet Number	Sheet Title
01	Title Sheet
02	Standard Plans List
03	Typical Sections - Colfax
04	Typical Sections - Welton/Galapago
05-07	General Notes
08	Summary of Approximate Quantities
09	Tabulations
10	Horizontal Control Plan
11	Removal Plan
12	Utility Plan
13	Water Plan & Profile
14-15	Denver Water Notes
16	W. Colfax Ave. Plan & Profile
17	Concrete - Jointing Plan
18	Concrete - Detailed Grading Plan
19	Galapago/Welton St. Plan & Profile
20	East Flowline Plan & Profile
21	Northwest Flowline Plan & Profile
22-23	Storm Sewer Plan & Profiles
24	Final Drainage Map
25	Grading and Erosion Control Plan
26-27	Stormwater Management Plans
28	Traffic Signal Removal Plan
29	Traffic Signal Plan
30	Signing & Striping Plan
31	Signing on Traffic Signal
32	Signing, Striping & Construction Devices Tabulation
33	Traffic Control Plan
34-41	Construction Phasing Plans
42	Proposed ROW
43	Survey Tabulation
44	Survey Control Plan
45	Ownership Map
46-48	Landscape Plans
49-51	Irrigation Plans
52	Colfax Ave. - Cross Sections
53	Galapago/Welton St. - Cross Sections
54	Mangold Sculpture Foundation

CONSTRUCT IN ACCORDANCE WITH APPLICABLE CITY & COUNTY OF DENVER AND CDOT CONSTRUCTION STANDARDS.

Denver Water's review of these plans relates only to Denver Water requirements, and does not include a full analysis of: soil conditions, support or load factors, or any other matters. Any modification of these plans must be resubmitted to Denver Water for review prior to construction. The Professional Engineer, Contractors, and Owners designing and constructing this proposed water distribution system shall be solely responsible for the adequacy of the design, installation, and materials utilized in this water distribution system for any specific site location.

Date	I.D. No.
Contract No.	Map No.
<input type="checkbox"/> Approved for Construction Approval Valid for 1 year	
Sales Administrator	



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

ACCEPTED	
<i>Yusef B. Sumar</i>	9.5.12
MANAGER OF PUBLIC WORKS	DATE
<i>Yusef B. Sumar</i>	9.5.12
CITY ENGINEER	DATE
<i>[Signature]</i>	9/4/12
DIRECTOR OF ENGINEERING CAPITAL PROJECTS	DATE
<i>[Signature]</i>	9-4-12
CITY TRAFFIC ENGINEER	DATE
<i>Jacqueline Robinson for Chris Martinec</i>	9.4.12
DIVISION OF SMALL BUSINESS OPPORTUNITY	DATE




Computer File Information		Index of Revisions		CDOT		As Constructed		Contract Information		Project No./Code	
Creation Date: 12/07/09	Initials: PM					No Revisions:	Contractor:	Contractor:		STU M320-060	
Last Modification Date: 8/24/2012	Initials: MCHAPMAN					Revised:	Resident Engineer:	Project Engineer:		16952	
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Cover Sheet.dwg				Region 6		Void:	PROJECT STARTED: / /	ACCEPTED: / /	Sheet Number 01		
Acad Ver. 2008	Scale: NTS	Units: Feet					Comments:				

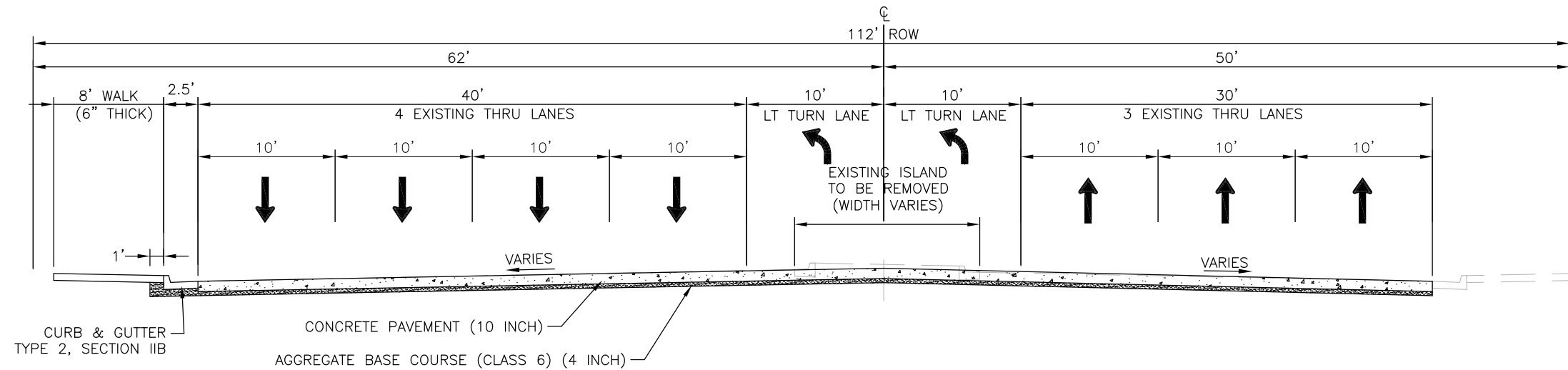
PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER	PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER	PLAN NUMBER	NEW OR REVISED	S STANDARD TITLE	PAGE NUMBER
<input checked="" type="checkbox"/>		M-100-1 STANDARD SYMBOLS (3 SHEETS.)	1-3	<input type="checkbox"/>		M-607-1 WIRE FENCES AND GATES (3 SHEETS.)	100-102	<input type="checkbox"/>		S-612-1 DELINEATOR INSTALLATIONS (7 SHEETS.)	151-157
<input type="checkbox"/>		M-100-2 ACRONYMS AND ABBREVIATIONS (4 SHEETS.)	4-7	<input type="checkbox"/>		M-607-2 CHAIN LINK FENCE (3 SHEETS.)	103-105	<input type="checkbox"/>	<input type="checkbox"/>	S-614-1 GROUND SIGN PLACEMENT (2 SHEETS) (REVISED ON JULY 24, 2012)	158-159
<input type="checkbox"/>		M-203-1 APPROACH ROADS	8	<input type="checkbox"/>		M-607-3 BARRIER FENCE	106	<input checked="" type="checkbox"/>		S-614-2 CLASS I SIGNS	160
<input type="checkbox"/>		M-203-2 DITCH TYPES	9	<input type="checkbox"/>		M-607-4 DEER FENCE AND GATES (3 SHEETS.)	107-109	<input type="checkbox"/>		S-614-3 CLASS II SIGNS	161
<input type="checkbox"/>		M-203-11 SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	10-12	<input type="checkbox"/>		M-607-10 PICKET SNOW FENCE	110	<input type="checkbox"/>		S-614-4 CLASS III SIGNS (3 SHEETS)	162-164
<input type="checkbox"/>		M-203-12 SUPERELEVATION STREETS (2 SHEETS)	13-14	<input type="checkbox"/>		M-607-15 ROAD CLOSURE GATE (9 SHEETS)	111-119	<input type="checkbox"/>		S-614-5 BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS)	165-166
<input type="checkbox"/>		M-206-1 EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	15-16	<input checked="" type="checkbox"/>		M-608-1 CURB RAMPS (6 SHEETS)	120-125	<input type="checkbox"/>		S-614-6 CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS)	167-168
<input type="checkbox"/>		M-206-2 EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)	17-18	<input type="checkbox"/>		M-609-1 CURBS, GUTTERS, AND SIDEWALKS (4 SHEETS) (REVISED ON JULY 24, 2012)	126-129	<input type="checkbox"/>		S-614-8 TUBULAR STEEL SIGN SUPPORT DETAILS (5 SHEETS)	169-173
<input checked="" type="checkbox"/>		M-208-1 TEMPORARY EROSION CONTROL (12 SHEETS)	19-30	<input type="checkbox"/>		M-611-1 CATTLE GUARD (2 SHEETS)	130-131	<input type="checkbox"/>		S-614-9 PEDESTRIAN PUSH BUTTON POST ASSEMBLY	174
<input type="checkbox"/>		M-210-1 MAILBOX SUPPORTS (2 SHEETS)	31-32	<input type="checkbox"/>		M-613-1 ROADWAY LIGHTING (4 SHEETS)	132-135	<input type="checkbox"/>		S-614-10 MARKER ASSEMBLY INSTALLATIONS	175
<input type="checkbox"/>		M-214-1 PLANTING DETAILS	33	<input type="checkbox"/>		M-614-1 RUMBLE STRIPS (3 SHEETS)	136-138	<input type="checkbox"/>		S-614-11 MILEPOST SIGN DETAIL FOR HIGH SNOW AREAS	176
<input type="checkbox"/>	<input checked="" type="checkbox"/>	M-412-1 CONCRETE PAVEMENT JOINTS (5 SHEETS) (REVISED ON JULY 24, 2012)	34-38	<input type="checkbox"/>		M-614-2 SAND BARREL ARRAYS (2 SHEETS)	139-140	<input type="checkbox"/>		S-614-12 STRUCTURE NUMBER INSTALLATION	177
<input type="checkbox"/>		M-510-1 STRUCTURAL PLATE PIPE H-20 LOADING	39	<input type="checkbox"/>		M-615-1 EMBANKMENT PROTECTOR TYPE 3	141	<input type="checkbox"/>		S-614-14 FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS)	178-180
<input type="checkbox"/>		M-601-1 SINGLE CONCRETE BOX CULVERT (2 SHEETS)	40-41	<input type="checkbox"/>		M-615-2 EMBANKMENT PROTECTOR TYPE 5	142	<input checked="" type="checkbox"/>		S-614-20 TYPICAL POLE MOUNT SIGN INSTALLATIONS	181
<input type="checkbox"/>		M-601-2 DOUBLE CONCRETE BOX CULVERT (2 SHEETS)	42-43	<input type="checkbox"/>		M-616-1 INVERTED SIPHON	143	<input type="checkbox"/>		S-614-21 CONCRETE BARRIER SIGN POST INSTALLATIONS	182
<input type="checkbox"/>		M-601-3 TRIPLE CONCRETE BOX CULVERT (2 SHEETS)	44-45	<input type="checkbox"/>		M-620-1 FIELD LABORATORY CLASS 1	144	<input type="checkbox"/>		S-614-22 TYPICAL MULTI-SIGN INSTALLATIONS	183
<input type="checkbox"/>		M-601-10 HEADWALL FOR PIPES	46	<input type="checkbox"/>		M-620-2 FIELD LABORATORY CLASS 2 (2 SHEETS)	145-146	<input type="checkbox"/>		S-614-40 TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS)	184-188
<input type="checkbox"/>		M-601-11 TYPE "S" SADDLE HEADWALLS FOR PIPE	47	<input type="checkbox"/>		M-620-11 FIELD OFFICE CLASS 1	147	<input type="checkbox"/>		S-614-40A ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (4 SHEETS)	189-192
<input type="checkbox"/>		M-601-12 HEADWALLS AND PIPE OUTLET PAVING	48	<input type="checkbox"/>		M-620-12 FIELD OFFICE CLASS 2	148	<input type="checkbox"/>		S-614-41 PEDESTAL POLE AND TEMPORARY SPAN WIRE SIGNALS	193
<input type="checkbox"/>		M-601-20 WINGWALLS FOR PIPE OR BOX CULVERTS	49	<input checked="" type="checkbox"/>		M-629-1 SURVEY MONUMENTS (2 SHEETS)	149-150	<input type="checkbox"/>		S-614-42 CABINET FOUNDATION DETAIL (4 SHEETS)	194-197
<input type="checkbox"/>		M-603-1 METAL PIPE (4 SHEETS)	50-53					<input type="checkbox"/>		S-614-43 TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS (10 SHEETS)	198-207
<input checked="" type="checkbox"/>		M-603-2 REINFORCED CONCRETE PIPE	54					<input type="checkbox"/>		S-614-50 STATIC SIGN MONOTUBE STRUCTURES (12 SHEETS)	208-219
<input type="checkbox"/>		M-603-3 PRECAST CONCRETE BOX CULVERT	55					<input type="checkbox"/>		S-614-60 DYNAMIC SIGN MONOTUBE STRUCTURES (14 SHEETS)	220-233
<input type="checkbox"/>		M-603-4 CORRUGATED POLYETHYLENE PIPE (AASHTO M294)	56					<input checked="" type="checkbox"/>		S-627-1 PAVEMENT MARKINGS (5 SHEETS)	234-238
<input type="checkbox"/>		M-603-5 POLYVINYL CHLORIDE (PVC) PIPE (AASHTO M304)	57					<input checked="" type="checkbox"/>		S-630-1 TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (20 SHEETS)	239-258
<input type="checkbox"/>		M-603-10 CONCRETE AND METAL END SECTIONS (2 SHEETS)	58-59					<input checked="" type="checkbox"/>		S-630-2 BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP.) AND VERTICAL PANELS	259
<input type="checkbox"/>		M-604-10 INLET, TYPE C	60					<input type="checkbox"/>		S-630-3 FLASHING BEACON (PORTABLE) DETAILS	260
<input type="checkbox"/>		M-604-11 INLET, TYPE D	61					<input type="checkbox"/>		S-630-4 STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (2 SHEETS)	261-262
<input type="checkbox"/>		M-604-12 CURB INLET TYPE R (2 SHEETS)	62-63					<input type="checkbox"/>		S-630-5 PORTABLE RUMBLE STRIPS (TEMPORARY) (2 SHEETS)	263-264
<input type="checkbox"/>		M-604-13 CONCRETE INLET TYPE 13	64					<input type="checkbox"/>		S-630-6 EMERGENCY PULL-OFF AREA (TEMPORARY)	265
<input checked="" type="checkbox"/>		M-604-20 MANHOLES (3 SHEETS)	65-67					<input type="checkbox"/>		S-630-7 ROLLING ROADBLOCKS FOR TRAFFIC CONTROL (3 SHEETS)	266-268
<input type="checkbox"/>		M-604-25 VANE GRATE INLET (5 SHEETS)	68-72								
<input type="checkbox"/>		M-605-1 SUBSURFACE DRAINS	73								
<input type="checkbox"/>		M-606-1 GUARDRAIL TYPE 3 W-BEAM (19 SHEETS)	74-92								
<input type="checkbox"/>		M-606-13 GUARDRAIL TYPE 7 F-SHAPE BARRIER (4 SHEETS)	93-96								
<input type="checkbox"/>		M-606-14 PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS)	97-99								

COLORADO
 DEPARTMENT OF TRANSPORTATION
 M&S STANDARDS PLANS LIST
 July 04, 2012
 Revised on July 24, 2012

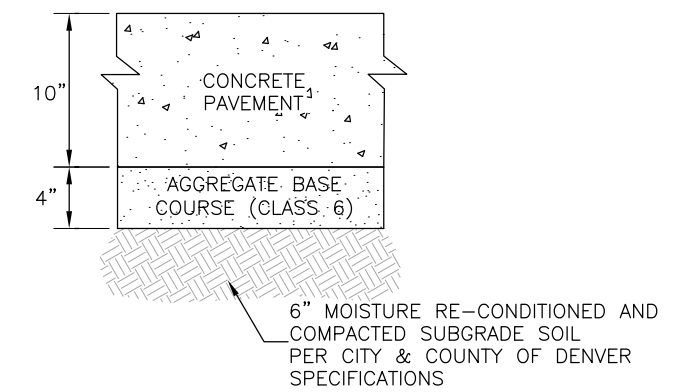
THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

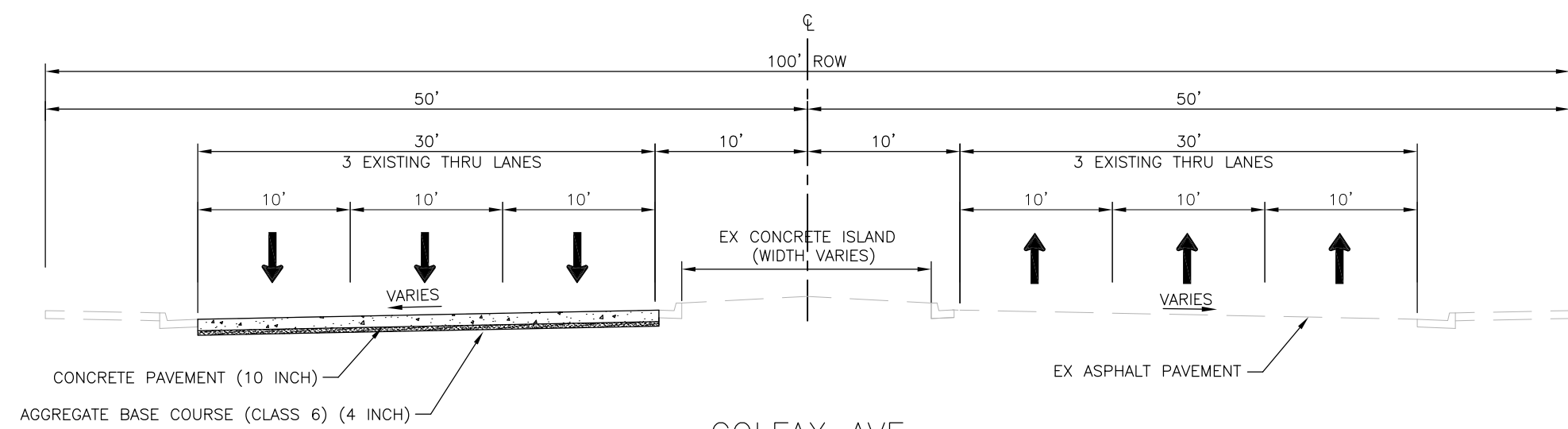
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Last Modification Date: 8/24/2012	Initials: MAC	<input type="checkbox"/>				Revised:				16952	
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Standard Plans List.dwg		<input type="checkbox"/>		Region 6		Void:				Sheet Number 02	
Acad Ver. 2008	Scale: N/A	Units: Feet							ROADWAY PLANS		



COLFAX AVE.
STA. 100+71.75 TO 102+36.70

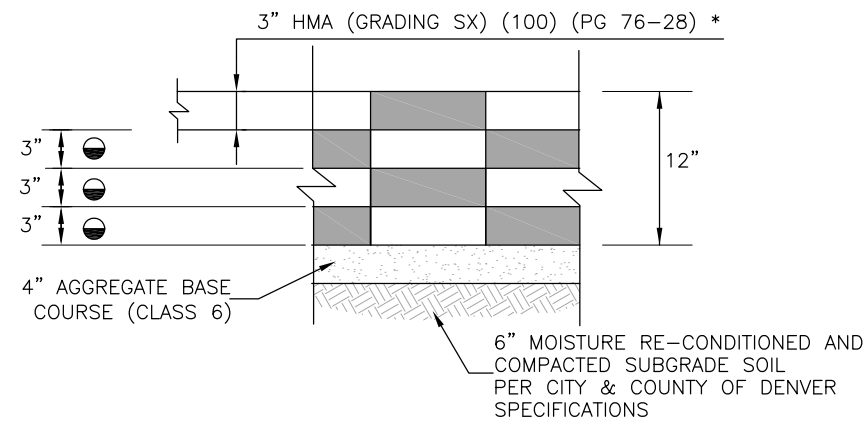


CONCRETE PAVEMENT DETAILS

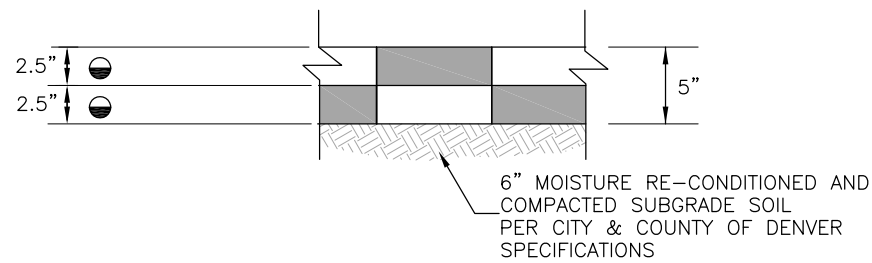


COLFAX AVE.
STA. 103+43.24 TO 104+37.80

Computer File Information		Index of Revisions		 	As Constructed	COLFAX TYPICAL SECTIONS	Project No./Code
Creation Date: 12/07/09	Initials: PM				No Revisions:		STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN			Revised:	16952		
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Typical Sections.dwg				Void:	Roadway Plans	Sheet Number 03	
Acad Ver. 2008	Scale: NTS	Units: Feet					



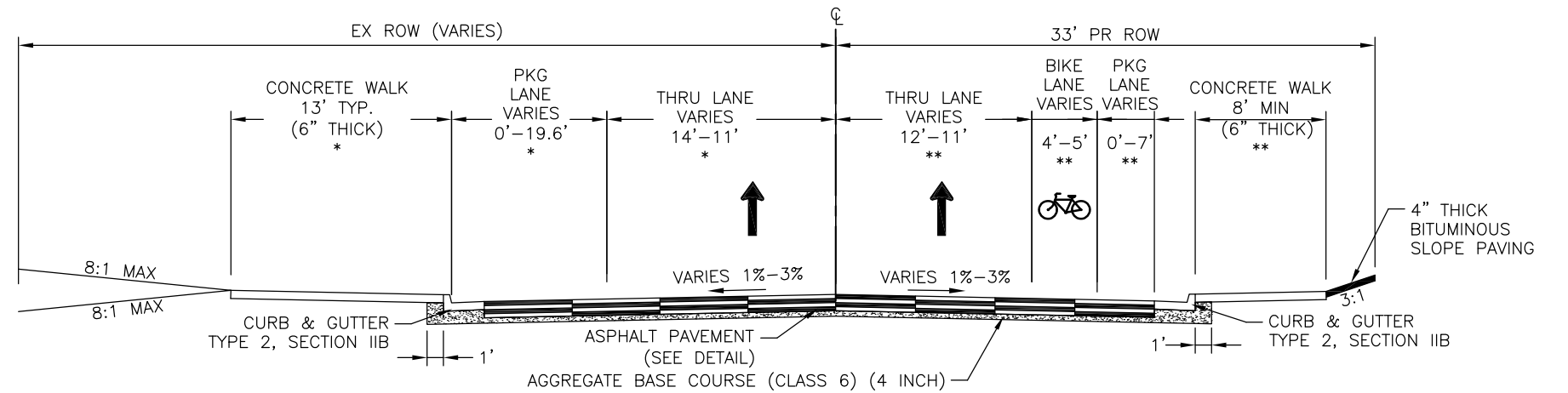
WELTON STREET
ASPHALT PAVEMENT DETAILS



FIRE DEPT. PARKING LOT
ASPHALT PAVEMENT DETAILS

● LAYERS SHALL BE HMA (GRADING S) (100) (PG 64-22).
FOR PATCHING, TOTAL DEPTH SHALL MATCH EXISTING.

* AT THE DISCRETION OF THE ENGINEER, THE CONTRACTOR MAY USE
HMA (GRADING S) (100) (PG 64-22) FOR PATCHING AREAS ONLY, BUT
NOT IN AREAS WHERE NEW PAVING WILL FOLLOW.



* THRU LANE
14' WIDTH: STA 202+57.16 TO STA 202+94.74
TRANSITION: STA 202+94.74 TO STA 204+00.83
11' WIDTH: STA 204+00.83 TO STA 204+50.00

* PARKING LANE
0' WIDTH: STA 202+57.16 TO STA 203+69.50
TRANSITION: STA 203+69.50 TO STA 204+02.46
19.6' WIDTH: STA 204+02.46 TO STA 204+50.00

* CONCRETE WALK
13' WIDTH: STA 202+57.16 TO STA 203+66.68
TRANSITION TO EX: STA 203+66.68 TO STA 204+02.46

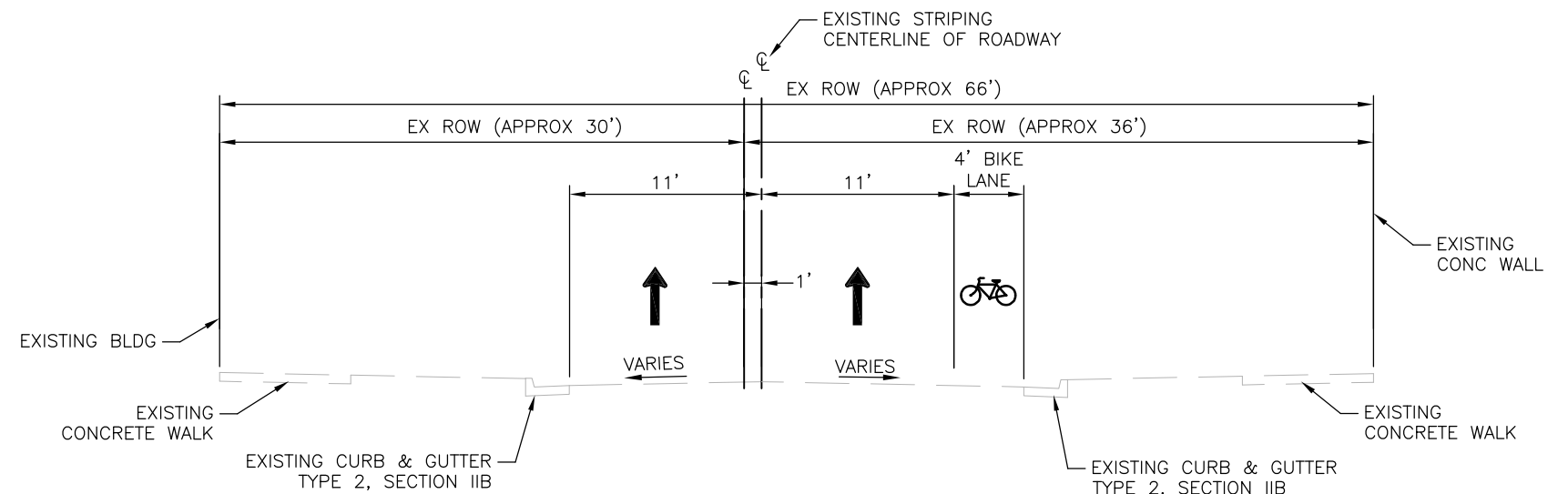
** THRU LANE
12' WIDTH: STA 202+62.13 TO STA 203+02.30
TRANSITION: STA 203+02.30 TO STA 204+02.25
11' WIDTH: STA 204+02.25 TO STA 204+50.00

** BIKE LANE
4' WIDTH: STA 202+62.13 TO STA 202+91.54
TRANSITION: STA 202+91.54 TO STA 203+07.62
5' WIDTH: STA 203+07.62 TO STA 204+50.00

** PARKING LANE
0' WIDTH: STA 202+62.13 TO STA 203+07.62
TRANSITION: STA 203+07.62 TO STA 204+02.25
7' WIDTH: STA 204+02.25 TO STA 204+50.00

** CONCRETE WALK
8' WIDTH: STA 202+62.13 TO STA 203+55.59
TRANSITION/MATCH EX: STA 203+55.59 TO STA 204+50.00

WELTON ST.
STA. 202+57.16 TO 204+50.00



GALAPAGO ST.
STA. 201+25.00 TO 201+43.10

Computer File Information		Index of Revisions		CDOT		As Constructed		WELTON/GALAPAGO TYPICAL SECTIONS		Project No./Code	
Creation Date: 12/07/09	Initials: PM						No Revisions:			STU M320-060	
Last Modification Date: 8/24/2012	Initials: MCHAPMAN						Revised:			16952	
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Typical Sections.dwg							Void:			Sheet Number 04	
Acad Ver. 2008	Scale: NTS	Units: Feet							Roadway Plans		

GENERAL NOTES & CDOT SPECIFICATION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY & COUNTY OF DENVER PUBLIC WORKS' TRANSPORTATION STANDARDS AND DETAILS FOR THE ENGINEERING DIVISION.
2. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
3. CONSTRUCTION INSPECTION AND MATERIAL TESTING WILL BE PROVIDED BY THE CITY / COUNTY OF DENVER.
4. ALL PROPOSED ELEVATIONS ARE SHOWN AT FLOW LINE AND AT TOP OF FINISHED GRADE, UNLESS OTHERWISE DESIGNATED.
5. LOCATION OF STAGING AREAS, EQUIPMENT AND MATERIAL STORAGE ARE THE CONTRACTOR'S RESPONSIBILITY. ALL LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.
6. COOPERATION WITH OTHER CONTRACTORS: THE CONTRACTOR SHALL COOPERATE WITH ANY OTHER CONTRACTORS WORKING IN THE AREA. INCONVENIENCE, DELAYS OR LOSS CAUSED BY THIS COOPERATION SHALL NOT BE REASON FOR CLAIMS FOR ADDITIONAL COMPENSATION. ALL COORDINATION SHALL BE INCLUDED IN THE COST OF THE WORK.
7. DAMAGE BY CONTRACTOR TO EXISTING CITY OR UTILITY OWNED IMPROVEMENTS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY CURB, SIGNS, DRAINAGE STRUCTURES, MANHOLES, WATER VALVES, OR OTHER IMPROVEMENTS. WORK SHALL BE DONE SOLELY AT THE CONTRACTOR'S EXPENSE.
8. FINAL CLEANUP: BEFORE FINAL INSPECTION OF THE WORK, THE CONTRACTOR SHALL CLEAN THE ROADWAY, MATERIAL SITES, AND ALL GROUND OCCUPIED BY HIM IN CONNECTION WITH THE WORK OF ALL RUBBISH, EXCESS MATERIALS, AND EQUIPMENT. ALL PARTS OF THE WORK SHALL BE LEFT IN A NEAT AND PRESENTABLE CONDITION. THE CITY SHALL ACCEPT THE COMPLETION OF THIS CLEANUP PHASE BEFORE FINAL PAYMENT CAN BE MADE. FULL COMPENSATION FOR FINAL CLEAN UP WILL BE CONSIDERED AS INCLUDED IN THE CONTRACT PRICE FOR THE PAY ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.
9. A FINAL GEOTECHNICAL INVESTIGATION REPORT, "WEST COLFAX AVENUE AND WELTON STREET" PREPARED BY YEH AND ASSOCIATES, INC. TO EXPLORE THE SUBSURFACE CONDITIONS, AUGUST 16, 2010, IS AVAILABLE UPON REQUEST FOR REVIEW AT THE CITY'S OFFICES.
10. ALL EROSION/SEDIMENT CONTROL AND STORMWATER RESPONSIBILITIES STATED IN THE STORMWATER MANAGEMENT PLAN, AND SUBSECTIONS 101,107, AND 208 SHALL BE FOLLOWED OR AMENDED. IF ANY DISCREPANCIES OR CONFLICTS ARE FOUND AMONG THE STORMWATER MANAGEMENT PLAN, SUBSECTIONS 101, 107, AND 208, AND THE DEPARTMENT OF PUBLIC WORKS STORMWATER DISCHARGE PERMIT, THE STRICTER REQUIREMENTS SHALL APPLY.
11. ALL EROSION/SEDIMENT CONTROL BMP'S SHALL BE PLACED AS NEEDED ACCORDING TO THE CONSTRUCTION PHASING AND AS APPROVED BY THE ENGINEER.
12. PORTLAND CEMENT CONCRETE PAVEMENT SHALL UTILIZE COMPRESSIVE STRENGTH CRITERIA.
13. THIS PROJECT IS OBTAINING A CDOT ACCESS PERMIT THEREFORE IT IS EXEMPT FROM CDOT'S CONSENT ORDER REQUIREMENT.
14. FOR THE PURPOSE OF EROSION CONTROL, A CONSTRUCTION ACTIVITIES STORMWATER DISCHARGE PERMIT (CASDP) AND COLORADO DISCHARGE PERMIT SYSTEM, STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES PERMIT (CDPS-SCP) HAVE BEEN OBTAINED FROM THE CITY AND COUNTY OF DENVER AND THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) RESPECTIVELY. AFTER NOTICE TO PROCEED HAS BEEN ISSUED, THE CONTRACTOR WILL BE RESPONSIBLE FOR HAVING THOSE PERMITS TRANSFERRED TO THEM.
15. FOR CONSTRUCTION ACTIVITIES WITHIN CITY/COUNTY DENVER JURISDICTION:

IN ACCORDANCE WITH THE CITY/COUNTY OF DENVER'S (NOISE CONTROL ORDINANCE D.R.M.C) CHAPTER 36, ALL CDOT CONTRACTORS SHALL COMPLY WITH THE CITY/COUNTY OF DENVER NOISE RESTRICTIONS FOR CONSTRUCTION WORK DURING P.M. HOURS. NO PERSON SHALL OPERATE ANY CONSTRUCTION EQUIPMENT NOR CONDUCT ANY CONSTRUCTION ACTIVITIES BETWEEN THE HOURS OF 9:00 P.M. TO 7:00 A.M. MONDAY - FRIDAY AND 5:00 P.M. AND 8:00 A.M. SATURDAY THROUGH SUNDAY IF NOISE LEVELS ARE EXPECTED TO EXCEED 50 DBA IN RESIDENTIAL AREAS OR 60 DBA IN COMMERCIAL AREAS.

IN THE CASES WHERE NIGHT TIME CONSTRUCTION ACTIVITIES WILL TAKE PLACE BETWEEN THE HOURS LISTED ABOVE, THE CONTRACTOR IS REQUIRED TO APPLY FOR A CONSTRUCTION NOISE VARIANCE (APPROXIMATELY 2 MONTHS PRIOR TO CONSTRUCTION) THROUGH THE DENVER DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH) AT A COST OF \$25.00 FOR APPLICATION PROCESSING.

ALL APPLICATION REQUIREMENTS AND CHAPTER 36 ORDINANCE REQUIREMENTS REGARDING NIGHT TIME CONSTRUCTION NOISE ACTIVITIES MUST BE COORDINATED BY THE CONTRACTOR WITH THE CITY/COUNTY DENVER AND CDOT'S R6 NOISE SPECIALIST FOR REVIEW. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TIMELY SUBMITTAL OF THE VARIANCE APPLICATION AND FULFILLING THE REQUIREMENTS SET FORTH BY THE CITY/COUNTY OF DENVER WHICH ALLOW CONSTRUCTION ACTIVITIES DURING P.M. HOURS UNDER THE GRANTED VARIANCE.

200

16. CLEARING AND GRUBBING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER PAY ITEMS.
17. UNLESS OTHERWISE SPECIFIED, REMOVAL ITEMS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVALS SHALL BE DISPOSED OF PROPERLY OUTSIDE THE PROJECT'S LIMITS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
18. ALL ASPHALT PAVEMENT REMOVED WITHIN THE PROJECT LIMITS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE DISPOSED OF OFF-SITE.
19. IN SOME AREAS, REMOVAL OF EXISTING ASPHALT FOR PLANING MAY REQUIRE NON-CONVENTIONAL MEANS DUE TO LIMITATIONS OF THE MILLING MACHINE. HOWEVER, ALL ASPHALT REMOVAL NECESSARY FOR THIS PLANING PAY ITEM WILL BE PAID FOR AS REMOVAL OF ASPHALT MAT (PLANING).
20. THE TYPE OF COMPACTION FOR THIS PROJECT WILL BE AASHTO T-180.
21. ANY IMPORTED FILL SHALL HAVE A MINIMUM R-VALUE OF 37 BY CDOT CP-L-3101.
22. PROOF ROLLING SHALL BE COMPLETED PER CDOT STANDARD SPECIFICATION 203.09. PROOFROLL SHALL BE REDONE IF INCLEMENT WEATHER OR OTHER FACTORS DISTURB THE SUBGRADE CONDITION PRIOR TO PAVING.




23. RECONDITIONING, PER CDOT SPEC. 306, IS REQUIRED TO A MINIMUM 6-INCH DEPTH ON COLFAX AVE, WELTON ST., AND FIRE DEPARTMENT PARKING LOT. IT IS ESTIMATED THAT 4580 SY SHALL BE REQUIRED. RECONDITIONING SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF UNCLASSIFIED EXCAVATION.
24. MINIMAL AMOUNTS OF GROUNDWATER ARE ANTICIPATED TO BE ENCOUNTERED DURING SIGNAL CAISSON WORK. SUCH GROUNDWATER SHALL NOT BE DISCHARGED OR ALLOWED TO RUN OFF DIRECTLY INTO A STORM SEWER, DITCH, OR ANY WATERS OF THE STATE. GROUNDWATER SHALL BE PROPERLY CONTAINERIZED IN A TANK OR DRUM. THE CONTAINERIZED WATER SHALL BE PROPERLY DISPOSED AS REQUIRED BY STATE AND FEDERAL REGULATIONS. TESTING MAY BE NECESSARY PRIOR TO DISPOSAL. CONTRACTOR SHALL REFER TO CDOT STANDARD SPECIFICATION SECTION 107.25 FOR ADDITIONAL GUIDANCE. ANY REQUIRED DEWATERING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE PROJECT.
25. THE PROJECT AREA HAS HELD A VARIETY OF LAND USES THAT MAY HAVE BEEN A SOURCE OF VARIOUS TYPES OF CONTAMINATION, POSSIBLY PETROLEUM-RELATED. AS RECOMMENDED IN THE "PHASE I ENVIRONMENTAL SITE ASSESSMENT" (REVISED OCTOBER 4, 2012), A MATERIALS MANAGEMENT PLAN SHALL BE DEVELOPED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE COGNIZANT OF VISUAL AND OLFACTORY SIGNS OF CONTAMINATION. IF CONTAMINATION IS ENCOUNTERED, WORK SHALL STOP, AND PROCEDURES IN THE CDOT 250 ENVIRONMENTAL, HEALTH & SAFETY SPECIFICATION SHALL BE FOLLOWED.

400

26. FOR PRELIMINARY PLAN QUANTITIES OF BITUMINOUS MATERIALS, THE FOLLOWING RATES WERE USED:
HOT MIX ASPHALT @ 110 LBS. PER SQ. YD. \ INCH
TACK COAT EMULSIFIED ASPHALT (SLOW-SETTING) @ 0.10 GAL. PER SQ. YD. (DILUTED)
AGGREGATE BASE COURSE (CLASS 6) @ 133 LBS. PER CUBIC FOOT
27. DILUTED EMULSIFIED ASPHALT FOR TACK COAT SHALL CONSIST OF ONE PART EMULSION AND ONE PART WATER. RATES OF APPLICATION SHALL BE AS DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.
28. A TACK COAT IS REQUIRED BETWEEN LAYERS OF BITUMINOUS PAVEMENT. RATES OF APPLICATION SHALL BE AS DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.
29. WHERE NEW PAVEMENT IS TO ABUT EXISTING PAVEMENT, THE EXISTING PAVEMENT SHALL BE REMOVED TO A NEAT LINE USING A CUTTING SAW OR OTHER METHOD AS DIRECTED BY THE ENGINEER. PAVEMENT SAWCUTTING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
30. PATCHING SHALL BE TO THE DEPTH OF THE SURROUNDING EXISTING PAVEMENT OR TO THE DEPTH SHOWN IN THE LIFT DETAILS AS DIRECTED BY THE ENGINEER. THE THICKNESS OF SUBSEQUENT LIFTS MUST BE EQUAL TO OR GREATER THAN THE LIFT DIRECTLY ABOVE. ALL HMA PATCHING SHALL BE A MINIMUM OF 9 INCHES THICK. ALL PATCHING SHALL BE PER THE ENGINEER.
31. SWEEPING OF MATERIAL FROM MAT TO BE OVERLAID WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
32. WHERE TIEING THE NEW PAVING OR OVERLAY INTO FIXED GRADE POINTS (SUCH AS INTERSECTIONS OR BEGINNING OR ENDING POINTS OF THE PROJECT) THE ENGINEER WILL COORDINATE WITH THE CONTRACTOR WHETHER TO MILL A BUTT JOINT, LINE CUT OR FEATHER THE NEW PAVEMENT TO MATCH THESE EXISTING GRADES. LINE CUTTING AND FEATHERING WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND WILL NOT BE MEASURED OR PAID FOR SEPARATELY.
33. PAVEMENT SMOOTHNESS SHALL BE HRI CATEGORY I. PAVEMENT WILL NOT BE SUBJECT TO SMOOTHNESS INCENTIVE.
34. THE CONCRETE PAVEMENT SHALL UTILIZE CLASS E CONCRETE.
35. CLASS E CONCRETE SHALL ATTAIN A MINIMUM FIELD COMPRESSIVE STRENGTH OF 2,500 PSI WITHIN 4 - 6 HOURS.
36. CLASS E CONCRETE SHALL ATTAIN THE MINIMUM FIELD COMPRESSIVE STRENGTH OF 2,500 PSI BEFORE OPENED TO TRAFFIC.
37. THE CONCRETE PAVEMENT JOINTING PLANS ARE FOR INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE A JOINTING PLAN FOLLOWING DENVER STANDARDS AND INDUSTRY BEST PRACTICES. THE JOINTING PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT THE PRE-PAVING MEETING AND AT LEAST 14 DAYS BEFORE THE COMMENCEMENT OF PAVING OPERATIONS.

600

38. TO PROVIDE FOR ADEQUATE SULFATE RESISTANCE IN ALL CONCRETE SUPPLIED, SEVERITY OF POTENTIAL EXPOSURE SHALL BE CLASS 2 FOR THIS PROJECT. THE CONTRACTOR MAY AT HIS OWN EXPENSE HAVE A CERTIFIED LABORATORY TEST THE SUB GRADE AS PER THE FIELD MATERIALS MANUAL. TESTING SHALL BE AT THE SAME SCHEDULE AND FREQUENCY AS REQUIRED FOR A PRELIMINARY SOIL SURVEY. THE CONTRACTOR MAY PROPOSE A DIFFERENT CLASS OF EXPOSURE FOR THE PROJECT BASED ON THOSE TEST RESULTS.
39. WHENEVER THE CONTRACTOR REMOVES, OBLITERATES, OR OVERLAYS ANY PAVEMENT MARKINGS (INCLUDING CENTERLINES, EDGE LINES, TURNING LANE LINES, SYMBOLS, WORDS, STOP BARS, CROSSWALKS, OR OTHER MISC. PAVEMENT MAKINGS) THE CONTRACTOR SHALL REPLACE THEM IN ACCORDANCE WITH THE CONTRACT OR AS DIRECTED BY THE ENGINEER. PRIOR TO THE START OF WORK THE CONTRACTOR SHALL MEASURE AND SUBMIT A PAVEMENT MARKING PLAN THREE DAYS PRIOR TO THE PRE-CONSTRUCTION CONFERENCE. THE PLAN SHALL SHOW THE LOCATION AND CONFIGURATION OF THE PROPOSED PAVEMENT MARKINGS, AND SHALL DETAIL THE METHODS TO BE USED IN THE FIELD TO ESTABLISH A CONTROL LINE. PAVING SHALL NOT COMMENCE UNTIL THE PLAN HAS BEEN APPROVED IN WRITING BY THE ENGINEER.
40. THE TOP THREE FEET OF ANY TRENCH UNDER PAVING OR CONCRETE FLATWORK SHALL BE COMPACTED TO 95% OF ASTM D1557 FOR GRAVEL OR SAND TYPE SOILS (AASHTO CLASS A-1 THROUGH A-5 SOILS) AND 95% OF ASTM D698 FOR CLAY OR SILT TYPE SOILS (AASHTO A-6 AND A-7 SOILS).
41. ANY CURB AND GUTTER, SIDEWALK, OR OTHER ELEMENTS WHICH ARE TO REMAIN AND ARE DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATION, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
42. ALL SAW WATER SHALL BE PROPERLY CONTAINED AND NOT ALLOWED TO DRAIN TO ANY STORM DRAINS OR WATERWAYS.
43. IT IS ESTIMATED THAT THE FOLLOWING ITEMS WILL BE REQUIRED ON THIS PROJECT:
PUBLIC INFORMATION SERVICES 1 LUMP SUM
CONSTRUCTION SURVEYING 1 LUMP SUM
POTHOLING 40 HOURS
UNIFORMED TRAFFIC CONTROL 72 HOURS
MUCK EXCAVATION 750 CY

Computer File Information		Index of Revisions		CDOT  Region 6			As Constructed	GENERAL NOTES			Project No./Code
Creation Date: 12/07/09	Initials: PM	<input type="checkbox"/>					No Revisions:				STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN	<input type="checkbox"/>					Revised:				16952
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-General Notes 1.dwg		<input type="checkbox"/>					Void:				Sheet Number 05
Acad Ver. 2008	Scale: N/A	Units: Feet							ROADWAY PLANS		

UTILITY NOTES:

THE POTENTIAL UTILITIES WITHIN THE INTERSECTION INCLUDE:

UTILITY / ADDRESS	CONTACT/EMAIL	PHONE/FAX
Above Net Communications 7905 S 196th St Kent, WA 98032	Dan Walla dwalla@above.net	206-988-8660
Comcast 1617 South Acoma Street Denver, CO 80223	Eric Carroll Eric_Carroll@cable.comcast.com	303-603-5256 720-413-0245
MCI Communications 24055 E 6th Ave Aurora, CO 80018	Erik Baker Erik.Baker@verizonbusiness.com	903-357-3282
Xcel Energy - Electric 1123 W. 3rd Avenue Denver, CO 80223	Marisa Montoya Marisa.I.Montoya@xcelenergy.com	303-571-3720 303-571-3102
Xcel Energy - Gas 1123 W. 3rd Avenue Denver, CO 80223	Michelle McKnight michelle.t.mcknight@xcelenergy.com	303-571-3358 303-571-3166
Xcel Energy - Steam S1875 Degany St Denver, CO 80202	Gary Hubel Gary.hubel@xcelenergy.com	303-571-7394 303-571-7313
Century Link Local Network 5325 Zuni Street, Suite 728 Denver, CO 80221	Brandon Lundeen brandon.lundeen@centurylink.com	303-451-2582
XO Communications 317 Inverness Way South Englewood, CO 80112	Steve Valdez steve.g.valdez@xo.com	303-539-1022 303-435-2793
Denver Water Department 1600 West 12th Avenue Denver, CO 80204	Don Wyman Don.Wyman@denverwater.org Vince Gaiter Vincent.Gaiter@denverwater.org Marty Buckstein - Valve boxes/manholes Marty.Buckstein@denverwater.org Meter Shop Supervisor	303-628-6628 303-628-6527 720-840-4289 303-628-6818 303-944-7026 303-628-6706
Denver Parks and Recreation	Jim Tenorio	720-810-1539
Denver Wastewater Management	Reza Kazemian	303-446-3433
Denver Traffic Operations 201 W Colfax Ave, Dept 508 Denver, CO 80202	John La Sala John.lasala@ci.denver.co.us	720-913-4534

CONTRACTORS SHALL CALL FOR UTILITY LOCATIONS AT LEAST 3 WORKING DAYS PRIOR TO ANY EXCAVATION. AFFECTED INDIVIDUAL UTILITIES SHALL BE NOTIFIED AT LEAST 48-HOURS PRIOR TO ANY EXCAVATION. SEE UTILITY SPECIFICATIONS FOR ADDITIONAL SPECIFIC INFORMATION.

CONTRACTORS ARE RESPONSIBLE FOR PROTECTING UTILITIES DURING CONSTRUCTION. THE CITY/COUNTY SHALL BE HELD HARMLESS FOR DAMAGE ARISING FROM FAILURE TO ADEQUATELY PROTECT UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH UTILITIES TO AVOID CONFLICTS WITH PROGRESS OF THE WORK. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OPERATIONS AT NO COST TO THE PROJECT.

ALL UNDERGROUND UTILITY CONSTRUCTION SHALL BE COMPLETED AND ACCEPTED PRIOR TO PLACING PAVEMENT.

UTILITY LINES AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION AND SOME UTILITIES MAY NOT BE SHOWN ON THESE PLANS. 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 PHONE NO. 811. TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBERS 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.

IT IS SUGGESTED THAT THE CONTRACTOR INITIATE A REQUEST TO EXCEL 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.

PW STORM AND SANITARY STANDARD NOTES:

1. PUBLIC WORKS, WASTEWATER MANAGEMENT DIVISION'S STANDARD DETAILS AND TECHNICAL SPECIFICATIONS FOR SANITARY & STORM SEWERS APPLY TO THIS WORK. PUBLIC WORKS, WASTEWATER MANAGEMENT DIVISION'S STANDARD DETAILS (DRAWINGS), MOST RECENT EDITION, SHALL BE USED AS A MINIMUM. THIS BOOKLET IS AVAILABLE IN A REDUCED SIZE BOOKLET FORM AND IS AVAILABLE AT THE PUBLIC WORKS PERMIT OPERATIONS (PWPO) DURING NORMAL BUSINESS HOURS. THE TECHNICAL SPECIFICATIONS ARE AVAILABLE FROM PW DES. BOTH SETS MUST BE IN POSSESSION OF THE CONTRACTOR AT THE PRE-CONSTRUCTION CONFERENCE AND MUST REMAIN ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION. THE STANDARD DETAILS CAN BE VIEWED AT THE FOLLOWING WEBSITE ADDRESS: WWW.DENVERGOV.ORG/DES

2. CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULES AND REGULATIONS.

3. ONE SET OF THE APPROVED SEWER CONSTRUCTION DRAWINGS MUST BE ON-SITE AT ALL TIMES OF CONSTRUCTION.

4. ALL SEWER PIPES SHALL BE INSTALLED WITH CLASS B BEDDING AS A MINIMUM.

5. ANY MODIFICATIONS, ADJUSTMENTS, CONSTRUCTION OR RECONSTRUCTION OF PUBLIC WORKS, WASTEWATER DIVISION FACILITIES MUST BE INSPECTED BY A PW DES CONSTRUCTION ENGINEERING INSPECTOR. PLEASE SCHEDULE AN APPOINTMENT AT 303-446-3722 A MINIMUM OF 48 HOURS IN ADVANCE OF THE WORK TO SCHEDULE AN INSPECTOR.

6. PIPE MATERIAL, FITTINGS, TRENCHING, BEDDING, CONNECTIONS, AND SEWER INSTALLATION MUST BE INSPECTED BY A PW DES CONSTRUCTION ENGINEERING INSPECTOR PRIOR TO ANY TRENCH BACKFILL. PLEASE SCHEDULE AN APPOINTMENT AT 303-446-3722 A MINIMUM OF 48 HOURS IN ADVANCE OF THE WORK TO SCHEDULE AN INSPECTOR. MONITORING OF THE PROJECT BY PW DES SHALL BE FOR THE PURPOSE OF ASSURING GENERAL COMPLIANCE WITH THE APPROVED PLANS, STANDARDS, DETAILS, AND SPECIFICATIONS AS WELL AS THE RULES & REGULATIONS. STORM AND SANITARY INSPECTIONS SHALL NOT TAKE THE PLACE OF CONSTRUCTION INSPECTION AND MATERIALS TESTING, WHICH IS THE OWNER'S RESPONSIBILITY.




7. SANITARY SEWER PIPES SHALL BE PVC AND CONFORM TO: ASTM D3034 SDR 35 FOR SIZES 8 INCHES TO 15 INCHES IN DIAMETER (SOLID WALL), ASTM F789 FOR 18 INCHES (SOLID WALL), ASTM F679 FOR SIZES 18 TO 36 INCHES (SOLID WALL), ASTM F949 FOR SIZES 8 TO 36 INCHES (PVC PROFILE WALL), ASTM F794 FOR SIZES 8 TO 48 INCHES (PROFILE WALL), OR ASTM F1803 FOR SIZES 18 TO 60 INCHES (CLOSED PROFILE GRAVITY PIPE).

8. ANY QUESTIONS REGARDING PUBLIC WORKS STORM OR SANITARY FACILITIES THAT ARISE DURING CONSTRUCTION SHOULD BE BROUGHT TO THE ATTENTION OF PW DES CONSTRUCTION ENGINEERING INSPECTION AT (303) 446-3722.

9. BACKFILL IN PUBLIC RIGHT OF WAY MUST MEET THE REQUIREMENTS OF DENVER PUBLIC WORKS DEPARTMENT. A STREET CUT PERMIT AND INSPECTION OF A BACKFILL AND PAVEMENT REPAIR BY PUBLIC WORKS IS REQUIRED FOR ALL WORK IN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR AND/OR DEVELOPER IS ADVISED TO CONTACT CONSTRUCTION ENGINEERING ROW INSPECTION AT 303-446-3469 OR PWPO AT 303-446-3759 TO OBTAIN INFORMATION REGARDING FEES AND PROCEDURES FOR OBTAINING THE REQUIRED PERMIT(S). CONTRACTOR MUST OBTAIN A STREET CUT PERMIT AND NOTIFY THE DISTRICT INSPECTOR AT (303) 446-3469, 48-HOURS PRIOR TO START OF JOB. COMPACTION TESTING IS REQUIRED.

10. THE CONTRACTOR PERFORMING WORK ON ANY PUBLIC OR PRIVATE STORM SEWER FACILITY OR APPURTENANCE MUST BE PROPERLY TRADE LICENSED AS A COMPANY AND HAVE A LICENSED PLUMBER OR CERTIFIED JOURNEYMAN DRAINLAYER ON SITE DURING THE WORK.



11. ACCESS MUST BE MAINTAINED FOR ALL SEWER MANHOLES DURING CONSTRUCTION. ANY DESIGN CHANGES TO NEW OR EXISTING PUBLIC STORM OR SANITARY SEWER MUST INCLUDE PERMANENT ACCESS TO THE PUBLIC STORM AND SANITARY SEWER MANHOLES AND COULD REQUIRE ROLL-OVER CURB, COMMERCIAL DRIVE, REINFORCED CONCRETE SIDEWALK, RITTER RINGS OR CONCRETE PAD. MINIMUM ACCESS TO EACH MANHOLE IS A 20' WIDE LANE FROM THE NEAREST PUBLIC RIGHT OF WAY, CENTERED AT THE MANHOLE INCLUDING A 10' RADIUS AROUND THE MANHOLE AND 22.0' VERTICAL CLEARANCE.

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Acad Ver. 2008	Scale: N/A	Units: Feet		Region 6					ROADWAY PLANS		

SUMMARY OF APPROXIMATE QUANTITIES

INDEX BOOK	PAGE	SHEET	CONTRACT ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL	
						PLAN	AS CONST.
			202-00002	REMOVAL OF STRUCTURE (SPECIAL)	EACH	14	
			202-00010	REMOVAL OF TREE	EACH	6	
			202-00019	REMOVAL OF INLET	EACH	1	
			202-00032	REMOVAL OF VALVE	EACH	1	
			202-00035	REMOVAL OF PIPE (15" CLAY STORM SEWER)	LF	306	
			202-00036	REMOVAL OF PIPE (12" WATERLINE)	LF	33	
			202-00037	REMOVAL OF PIPE (15" WATERLINE)	LF	52	
			202-00195	REMOVAL OF MEDIAN COVER	SY	117	
			202-00200	REMOVAL OF SIDEWALK	SY	782	
			202-00203	REMOVAL OF CURB AND GUTTER	LF	903	
			202-00240	REMOVAL OF ASPHALT MAT (PLANING)	SY	4956	
			202-00810	REMOVAL OF GROUND SIGN	EACH	8	
			202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	1	
			202-01000	REMOVAL OF FENCE	LF	200	
			202-04005	CLEAN VALVE BOX	EACH	3	
			202-04010	CLEAN INLET	EACH	4	
			202-12001	REMOVAL OF CURB STOP (SPECIAL)	EACH	1	
			202-12002	REMOVAL OF WATER METER PIT (SPECIAL)	EACH	1	
			203-00010	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	CY	750	
			203-00100	MUCK EXCAVATION	CY	750	
			203-01597	POTHOLING	HOURL	40	
			207-00205	TOPSOIL	CY	135	
			208-00034	GRAVEL BAG	LF	75	
			208-00045	CONCRETE WASHOUT STRUCTURE	EACH	2	
			208-00050	STORM DRAIN INLET PROTECTION	EACH	14	
			208-00070	VEHICLE TRACKING PAD	EACH	1	
			208-00206	EROSION CONTROL SUPERVISOR	LS	1	
			210-00810	RESET GROUND SIGN	EACH	8	
			210-01000	RESET FENCE	LF	100	
			210-04010	ADJUST MANHOLE	EACH	4	
			210-04050	ADJUST VALVE BOX	EACH	6	
			212-00048	SOIL PREPARATION (SPECIAL)	CY	29	
			212-00050	SOD	SF	3382	
			213-00065	INORGANIC MULCH	CY	24	
			214-00230	DECIDUOUS TREE (3 INCH CALIPER)	EACH	3	
			214-00508	EVERGREEN TREE (8 FOOT) (BALL AND BURLAP)	EACH	3	
			214-00320	DECIDUOUS SHRUB (2 GALLON CONTAINER)	EACH	117	
			214-00350	DECIDUOUS SHRUB (5 GALLON CONTAINER)	EACH	58	
			214-00950	PERENNIALS (5 GAL)	EACH	19	
			304-06000	AGGREGATE BASE COURSE (CLASS 6)	TON	811	
			403-00720	HOT MIX ASPHALT (PATCHING) (ASPHALT)	TON	105	
			403-33841	HOT MIX ASPHALT (GRADING S) (100) (PG 64-22)	TON	534	
			403-34871	HOT MIX ASPHALT (GRADING SX) (100) (PG 76-28)	TON	130	
			411-10255	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	329	
			412-01020	CONCRETE PAVEMENT (10 INCH) (CLASS E)	SY	3031	
			503-00030	DRILLED CAISSON (30 INCH)	LF	20	
			507-00400	BITUMINOUS SLOPE AND DITCH PAVING (ASPHALT)	TON	10	
			603-01185	18 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE)	LF	218	
			603-01245	24 INCH REINFORCED CONCRETE PIPE (COMPLETE IN PLACE)	LF	271	
			604-00305	INLET TYPE C (5 FOOT)	EACH	3	
			604-19105	INLET TYPE R L 5 (5 FOOT)	EACH	3	
			604-30005	MANHOLE SLAB BASE (5 FOOT)	EACH	4	
			604-39000	MANHOLE SPECIAL	EACH	2	
			607-00001	FENCE (SPECIAL)	LF	100	
			608-00006	CONCRETE SIDEWALK (6 INCH)	SY	646	
			608-00012	CURB RAMP (SPECIAL)	SY	137	

INDEX BOOK	PAGE	SHEET	CONTRACT ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL	
						PLAN	AS CONST.
			609-21010	CURB AND GUTTER TYPE 2 (SECTION I-B)	LF	194	
			609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	486	
			613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	390	
			613-01300	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	780	
			613-07000	PULL BOX (SPECIAL)	EACH	12	
			613-10000	WIRING	LS	1	
			613-70250	LUMINAIRE HPS (250 WATT)	EACH	4	
			614-00011	SIGN PANEL (CLASS I)	SF	162.75	
			614-00216	STEEL SIGN POST (2X2 INCH TUBING)	LF	147	
			614-70150	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN)	EACH	8	
			614-70336	TRAFFIC SIGNAL FACE (12-12-12)	EACH	15	
			614-72855	TRAFFIC SIGNAL CONTROLLER CABINET	EACH	1	
			614-72886	INTERSECTION DETECTION SYSTEM (CAMERA)	EACH	2	
			614-79867	FIRE PREEMPTION UNIT AND TIMER	EACH	3	
			614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL	EACH	1	
			614-81135	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-35 FOOT MAST ARM)	EACH	2	
			614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-55 FOOT MAST ARM)	EACH	1	
			614-86105	TELEMETRY (FIELD)	EACH	1	
			614-86239	TRAFFIC SIGNAL CONTROLLER (SOLID STATE) (F-A) (12 PHASE)	EACH	1	
			614-87401	FIBER OPTIC CABLE (SPECIAL)	LF	230	
			619-06120	12 INCH DUCTILE IRON PIPE	LF	76	
			619-75096	12 INCH GATE VALVE	EACH	2	
			623-00164	DRIP EMITTER	EACH	265	
			623-00166	3/4 INCH EMITTER VALVE ASSEMBLY (DRIP VALVE ASSEMBLY)	EACH	3	
			623-00186	3/4 INCH FLUSH UNIT (DRIP LINE BLOW-OUT STUB)	EACH	4	
			623-00204	POP-UP LAWN SPRAY (POP-UP SPRAY HEAD)	EACH	42	
			623-03108	1 INCH AUTOMATIC CONTROL VALVE (ELECTRIC CONTROL VALVE)	EACH	2	
			623-04008	1 INCH QUICK-COUPLER VALVE (QUICK COUPLING VALVE)	EACH	1	
			623-50060	3/4 INCH PLASTIC PIPE (POLY DRIP TUBING) (IRRIGATION)	LF	550	
			623-50080	1 INCH PLASTIC PIPE (IRRIGATION)	LF	420	
			623-50100	1 1/4 INCH PLASTIC PIPE (IRRIGATION)	LF	115	
			625-00000	CONSTRUCTION SURVEYING	LS	1	
			626-00000	MOBILIZATION	LS	1	
			626-01000	PUBLIC INFORMATION SERVICES	LS	1	
			627-00002	THERMOPLASTIC PAVEMENT MARKING	SF	100	
			627-00004	EPOXY PAVEMENT MARKING	SF	808	
			627-00011	PAVEMENT MARKING PAINT (WATERBORNE)	GAL	31	
			627-30410	PREFORM THERMOPLASTIC PVMT MKG (XWALK-STOP LINE)	SF	883	
			629-01004	SURVEY MONUMENT (TYPE 4)	EACH	3	
			630-00000	FLAGGING	HOURL	3000	
			630-00003	UNIFORMED TRAFFIC CONTROL	HOURL	72	
			630-00007	TRAFFIC CONTROL INSPECTION	DAY	240	
			630-00012	TRAFFIC CONTROL MANAGEMENT	DAY	240	
			630-80336	BARRICADE (TYPE 3 M-A) (TEMPORARY)	EACH	5	
			630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EACH	38	
			630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EACH	11	
			630-80355	PORTABLE MESSAGE SIGN PANEL	EACH	3	
			630-80356	FLASH ARROW PANEL	EACH	2	
			630-80360	DRUM CHANNELIZING DEVICE	EACH	30	
			630-80364	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	EACH	30	
			630-80380	TRAFFIC CONE	EACH	50	
			700-70016	F/A FUEL COST ADJUSTMENT	FA	1	
			700-70019	F/A ASPHALT CEMENT COST ADJUSTMENT	FA	1	
			700-70021	F/A ON THE JOB TRAINEE	FA	1	
			700-70028	F/A ESB PROGRAM	FA	1	
			700-70072	F/A OBTAIN POWER SOURCE FROM XCEL ENERGY	FA	1	
			700-70380	F/A EROSION CONTROL	FA	1	
			700-70589	F/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	FA	1	

Computer File Information		Index of Revisions		CDOT  DEPARTMENT OF TRANSPORTATION Region 6		As Constructed	SUMMARY OF APPROXIMATE QUANTITIES		Project No./Code
Creation Date: 07/01/08 Initials: KRM		[] [] [] []				No Revisions:			STU M320-050
Last Modification Date: 8/24/2012 Initials: MCHAPMAN		[] [] [] []				Revised:			16220
Full Path & Drawing File Name: V:\52876\active\187607770\drawing\sheets\07770c-CGAL-Summary of Quantities.dwg		[] [] [] []				Void:	ROADWAY PLANS		Sheet Number 08
Acad Ver. 2008 Scale: N/A Units: Feet									

REMOVALS											REMARKS
LOCATION	OFFSET	REMOVAL OF ASPHALT MAT SY	@ REMOVAL OF CURB & GUTTER LF	REMOVAL OF MEDIAN COVER SY	# REMOVAL OF SIDEWALK SY	REMOVAL OF STRUCTURE (SPECIAL) EACH	REMOVAL OF FENCE LF	REMOVAL OF TREE EACH	REMOVAL OF PIPE (15" CLAY STM SWR) LF	REMOVAL OF INLET EACH	
COLFAX											
100+71 TO 101+55	L		84		79						
101+77 TO 102+64 (MEDIAN)	L & R		184	117				2			
101+79	45' R				13						
102+39 TO 103+64	L		130		113					1	
100+71 TO 104+38	L & R	2931									
WELTON											
202+50 TO 205+05		1600							306		EXWELTON PAVEMENT
202+53 TO 204+02			228		291			4			EXWEST CURBLINE TREE GRATES EXPKG LOT WEST OF WELTON EXEAST CURBLINE
		50	21			3					
202+50 TO 204+37		375	207		256					200	EXPKG LOT EAST OF WELTON PARKING METER POST/SIGNS
202+77	38' L					1					PARKING METER POST/SIGNS
202+92	23' L					1					PARKING METER POST/SIGNS
203+07	7' L					1					PARKING METER POST/SIGNS
203+24	6' R					1					PARKING METER POST/SIGNS
203+25	68' L					1					PARKING METER POST/SIGNS
203+46	17' R					1					PARKING METER POST/SIGNS
203+38	56' L					1					PARKING METER POST/SIGNS
203+52	46' L					1					PARKING METER POST/SIGNS
203+68	40' L					1					PARKING METER POST/SIGNS
203+70	24' R					1					PARKING METER POST/SIGNS
203+96	33' L					1					PARKING METER POST/SIGNS
GALAPAGO											
201+55	18' L		22		15						
201+55	22' R		27		15						
TOTALS		4956	903	117	782	14	200	6	306	1	

@ INCLUDES GUTTER CONSTRUCTED AS A PART OF A CURB RAMP
 # INCLUDES CURB RAMPS AND TRUNCATED DOMES

EARTHWORK QUANTITIES

STATION/LOCATION	UNCLASSIFIED EXCAVATION CY
COLFAX	200
WELTON / FIRE DEPT	550
TOTAL	750

* IT IS ANTICIPATED THAT EXCESS DIRT WILL NEED TO BE HAULED AWAY FROM THE PROJECT. DEPENDING ON ACTUAL PAVEMENT THICKNESSES ENCOUNTERED IN THE FIELD, THE AMOUNT MAY BE APPROXIMATELY 150-200 CYS. HAUL AWAY SHALL NOT BE PAID FOR SEPARATELY AND IS CONSIDERED PART OF UNCLASSIFIED EXCAVATION (CIP).

SURVEY MONUMENTS

POINT #	DESCRIPTION	SURVEY * MONUMENT Type 4 Each
82, 84, 85	RANGE POINTS	3
TOTALS		3

* IN CITY SUPPLIED RANGE BOX

SURVEY NOTES:

THESE RANGE POINTS MUST BE SET PRIOR TO COMPLETION OF THIS PROJECT. IF THESE POINTS CANNOT BE SET DUE TO UTILITY CONFLICTS, THE TIE-POINTS TO THE ACTUAL POSITION ARE TO BE SET. STANDARD CITY TIE BOOK MONUMENT RECORDS ARE TO BE FILED ON THESE RANGE POINTS PRIOR TO PAY OUT FOR SURVEY COSTS.

SURFACING QUANTITIES

STATION/LOCATION	RECONDITIONING 6 INCH (FOR INFO ONLY) SY	AGGREGATE BASE COURSE (CLASS 6) 4 INCH TON	HOT BITUMINOUS PAVEMENT					CONCRETE PAVEMENT (10 INCH) (FAST TRACK) SQ. YD.	COMMENTS
			HOT MIX ASPHALT (GRADING SX) (100) (PG 76-28) TON	HOT MIX ASPHALT (GRADING S) (100) (PG 64-22) TON	HOT MIX ASPHALT (PATCHING) * TON	EMULSIFIED ASPHALT (SLOW SETTING) GAL.	SLOPE AND DITCH PAVING (ASPHALT) TON		
COLFAX									
100+72 TO 104+38	3054	603						3031	27279 SF AREA PVMT
WELTON									
202+65 TO 203+65									415 SF AREA (4" DEPTH)
202+62 TO 204+50	1054	208	130	390		237	10		7097 SF AREA PVMT
204+50 TO 205+05					105	48			1425 SF PATCH AREA (ASSUMES 12" EXIST.)
FIRE DEPT PKG LOT	454					45			4088 SF AREA (ASSUMES 5")
10% IRREGULARITIES			19						
TOTAL	4562	811	130	534	105	329	10	3031	

* HMA (PATCHING) SHALL USE (GRADING S) (100) (64-22) LIFTS.

CURB AND GUTTER TYPE 2 / CONCRETE SIDEWALK

LOCATION	OFFSET	SECTION I-B (LF)	SECTION II-B (LF)	CONCRETE SIDEWALK (SY)	DESCRIPTION
COLFAX					
100+71 TO 102+62	L		194	204	NORTH CURBLINE
101+79	45' R			13	
103+43 TO 103+65	L		21	31	NORTH CURBLINE
WELTON					
202+66 TO 204+02	L		119	248	WEST CURBLINE
202+66 TO 204+50	R		138	128	EAST CURBLINE
GALAPAGO					
201+55	L		4	10	CURB RAMP AREA
201+55	R		10	12	CURB RAMP AREA
FIRE DEPT PKG LOT					
		84			NORTH CURBLINE
		110			SOUTH CURBLINE
TOTALS		194	486	646	

STORM SEWER

LOCATION	STRUCTURES					PIPE	
	* NO. 14 INLET (SINGLE) EACH	** NO. 16 INLET (VALLEY) EACH	*** TYPE C MANHOLE (4' DIA) EACH	*** TYPE C MANHOLE (5' DIA) EACH	MANHOLE SPECIAL EACH	18" RCP LF	24" RCP LF
COLFAX / FIRE DEPT.							
CONNECT TO 38" EX STM					1	29	
INLET-1	1					42	
INLET-2		1				54	
INLET-3		1				54	
INLET-4		1					
WELTON							
CONNECT TO 38" EX STM					1	86	
MH-3, INLET-5, INLET-6	2		1	1		39	25
MH-4			1				108
MH-5			1				9
MH-6			1				43
CONNECT TO EX MH							
TOTALS	3	3	3	1	2	218	271

* NO. 14 INLET (SINGLE) SHALL BE PAID FOR AS 'INLET TYPE R'.
 ** NO. 16 INLET (VALLEY) SHALL BE PAID FOR AS 'INLET TYPE C'.
 *** TYPE C MANHOLE SHALL BE PAID FOR AS 'MANHOLE SLAB BASE'.

WORK TO BE COMPLETED BY XCEL ENERGY

LOCATION	OFFSET OR SIDE	RELOCATE LIGHT POLE EACH	REMOVE LIGHT POLE EACH	INSTALL NEW LIGHT POLE EACH	ADJUST MANHOLE EACH	REMARKS
COLFAX						
101+50	53' L			1		PER DENVER STD DTL 16.12
101+79	44' R			1		PER DENVER STD DTL 16.12
102+36	33' L				1	
102+79	50' R		1			
103+15	52' L		1			
103+34	43' R		1			
WELTON						
202+76 / 203+23	126' L / 17' L	1				DECORATIVE LIGHT FIXTURE
203+09	75' L				1	
203+33	60' L		1			
203+04 / 203+58	9' L / 24' R	1				
203+96	35' L / 32' L	1				DECORATIVE LIGHT FIXTURE
TOTALS		3	4	2	2	

CURB RAMPS

LOCATION	OFFSET	CURB RAMP (SPECIAL) SY	REMARKS
COLFAX			
102+71	L	17	TYPE 3
103+33	L	15	TYPE 3
WELTON			
202+56	L	15	TYPE 3
202+56	R	15	TYPE 3
203+00	L	30	DRIVEWAY
204+16	R	21	DRIVEWAY
GALAPAGO			
201+55	L	12	TYPE 2
201+55	R	12	TYPE 2
TOTALS		137	

All curb ramps built in accordance with City of Denver Specifications

UTILITY MODIFICATIONS AND ADJUSTMENTS

LOCATION	OFFSET OR SIDE	# ADJUST VALVE BOX EACH	REMOVE CURB STOP (SPECIAL) EACH	CLEAN VALVE BOX EACH	REMOVE WATER METER PIT (SPECIAL) EACH	REMOVE 12" PIPE LF	REMOVE 15" PIPE LF	REMOVE 15" GATE VALVE EACH	@ REMOVE 15"X12" TEE EACH	INSTALL 12" DIP LF	12" GATE VALVE EACH	@ 12"X12" TEE EACH	@ 12" ~45 DEG. BEND EACH	@ 15"X12" REDUC. COUPL. EACH	@ 12" SPIGOT EACH	# ADJUST MANHOLE EACH	CLEAN INLET EACH	REMARKS
COLFAX																		
102+01	30' L															2		BY CONTRACTOR FOR DENVER WASTEWATER
102+49	20' L															2		BY CONTRACTOR FOR DENVER WASTEWATER
102+70	27' R	2	1															BY CONTRACTOR FOR DENVER WATER
103+37	27' R	2	1															BY CONTRACTOR FOR DENVER WATER
GALAPAGO																		
201+41	16' R																1	BY CONTRACTOR FOR DENVER WASTEWATER
201+45	10' L																1	BY CONTRACTOR FOR DENVER WASTEWATER
WELTON																		
202+81	35' L		1															BY CONTRACTOR FOR DENVER WATER
202+86	25' L				1													BY CONTRACTOR FOR DENVER WATER
204+27	0.3' R	2		1														BY CONTRACTOR FOR DENVER WATER
204+40 TO 204+95	2' R					33	52	2	1	76	2	1	4	1	1			BY CONTRACTOR FOR DENVER WATER
204+39	22' R																1	BY CONTRACTOR FOR DENVER WASTEWATER
204+47	30' L																1	BY CONTRACTOR FOR DENVER WASTEWATER
TOTALS		6	1	3	1	33	52	2	1	76	2	1	4	1	1	4	4	

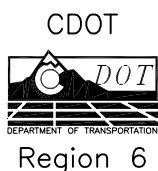
The Contractor will be paid separately for each valve box or manhole adjustment completed down and for each adjustment completed up in asphalt pavement.

@ Removal or installation of this item is incidental to removal or installation of pipe and shall not be paid for separately.

Computer File Information

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	Units: Feet

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As Constructed

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TABULATIONS

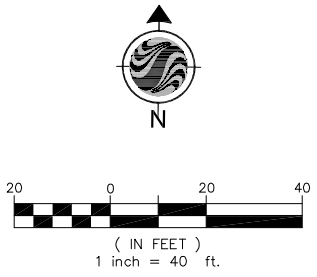
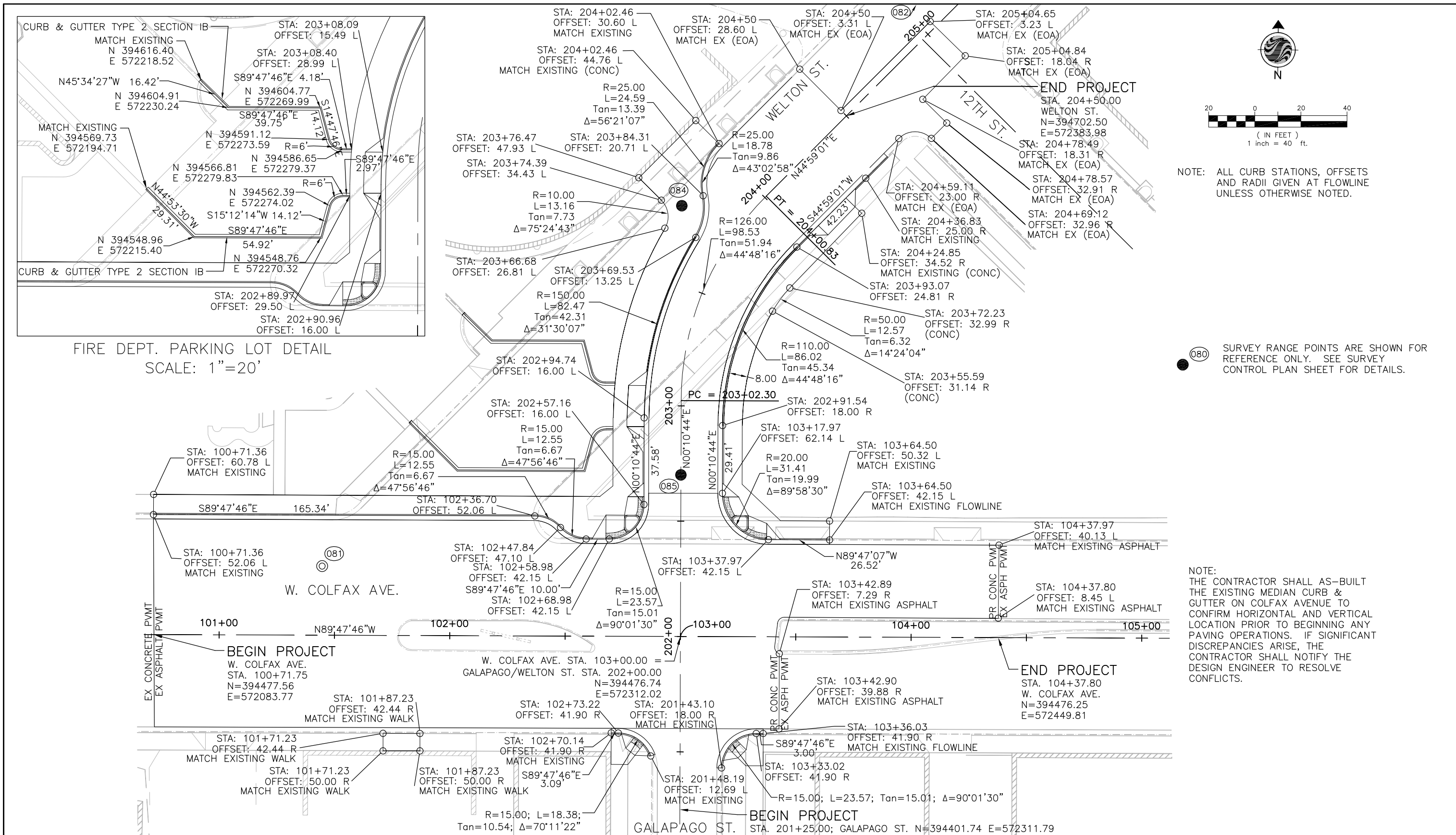
ROADWAY PLANS

Project No./Code

STU M320-050

16220

Sheet Number 09



NOTE: ALL CURB STATIONS, OFFSETS AND RADII GIVEN AT FLOWLINE UNLESS OTHERWISE NOTED.

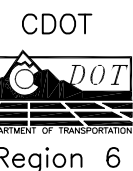
NOTE: SURVEY RANGE POINTS ARE SHOWN FOR REFERENCE ONLY. SEE SURVEY CONTROL PLAN SHEET FOR DETAILS.

NOTE: THE CONTRACTOR SHALL AS-BUILT THE EXISTING MEDIAN CURB & GUTTER ON COLFAX AVENUE TO CONFIRM HORIZONTAL AND VERTICAL LOCATION PRIOR TO BEGINNING ANY PAVING OPERATIONS. IF SIGNIFICANT DISCREPANCIES ARISE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER TO RESOLVE CONFLICTS.

Computer File Information

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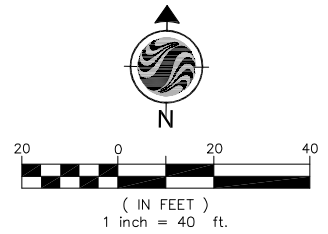
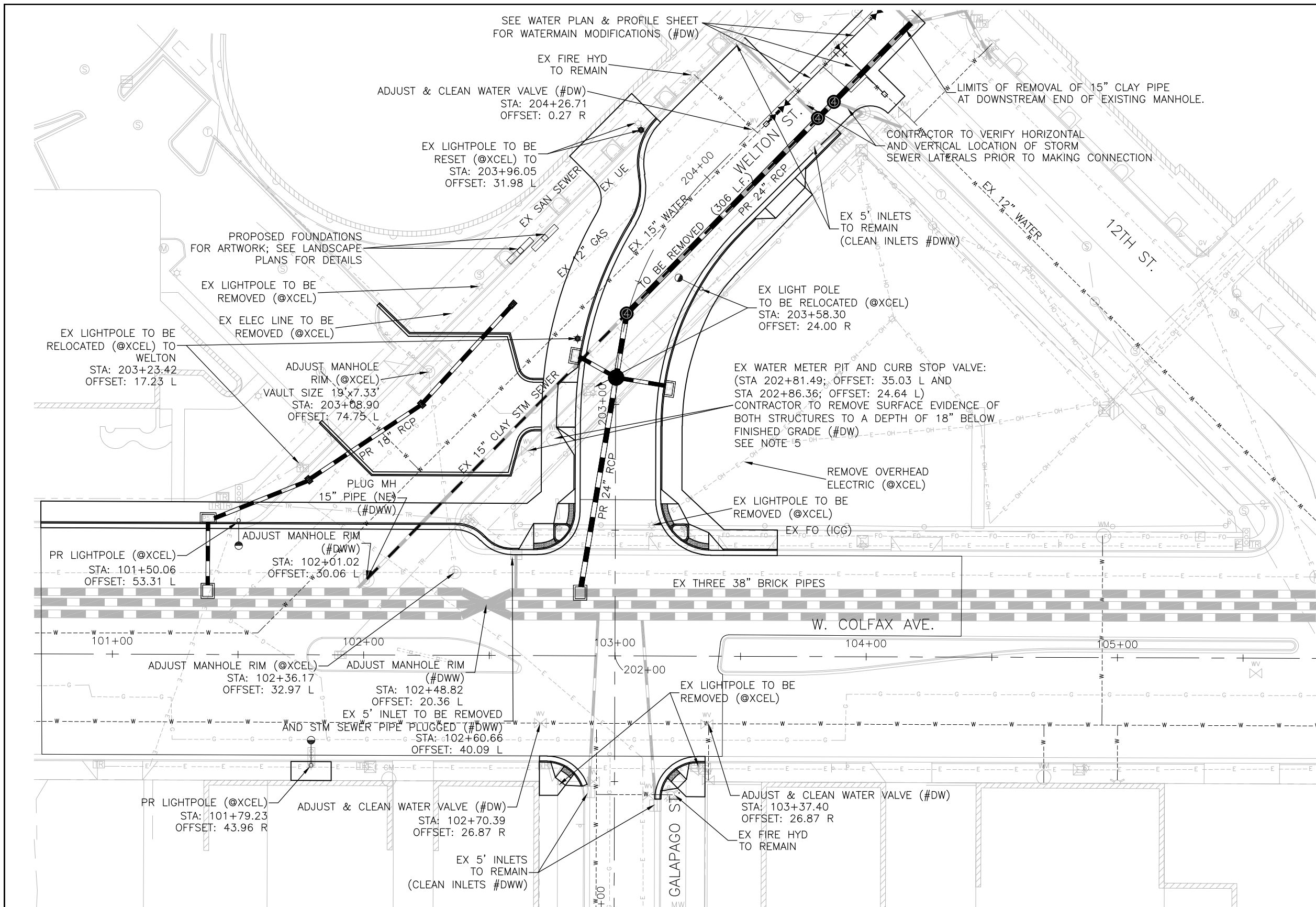
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HORIZONTAL CONTROL PLAN

Project No./Code

STU M320-060
16952
Sheet Number 10



NOTES:

1. SEE TRAFFIC SIGNAL PLANS FOR REMOVAL OF SIGNAL EQUIPMENT.
2. ALL VALVES BOXES AND MANHOLES SHALL BE ADJUSTED TO FINISHED ELEVATIONS.
3. # = CONTRACTOR TO PERFORM WORK
@ = UTILITY OWNER TO PERFORM WORK
4. UTILITY OWNER
DW = DENVER WATER DEPARTMENT
DWW = DENVER WASTE WATER
XCEL = XCEL ENERGY CO
5. THE EXISTING WATER METER WAS PREVIOUSLY REMOVED AND ONLY THE METER PIT REMAINS. THE EXISTING CURB STOP VALVE CAN BE ABANDONED IN PLACE. IF CONTRACTOR FINDS CONDITIONS TO BE DIFFERENT THAN DESCRIBED ON THIS PLAN SHEET, CONTRACTOR SHALL NOTIFY DENVER WATER DEPARTMENT INSPECTOR IMMEDIATELY.

FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS
BEFORE YOU DIG
CALL 811
(or 1-800-922-9887)
UTILITY NOTIFICATION
CENTER OF COLORADO (UNCC)
www.uncc.org

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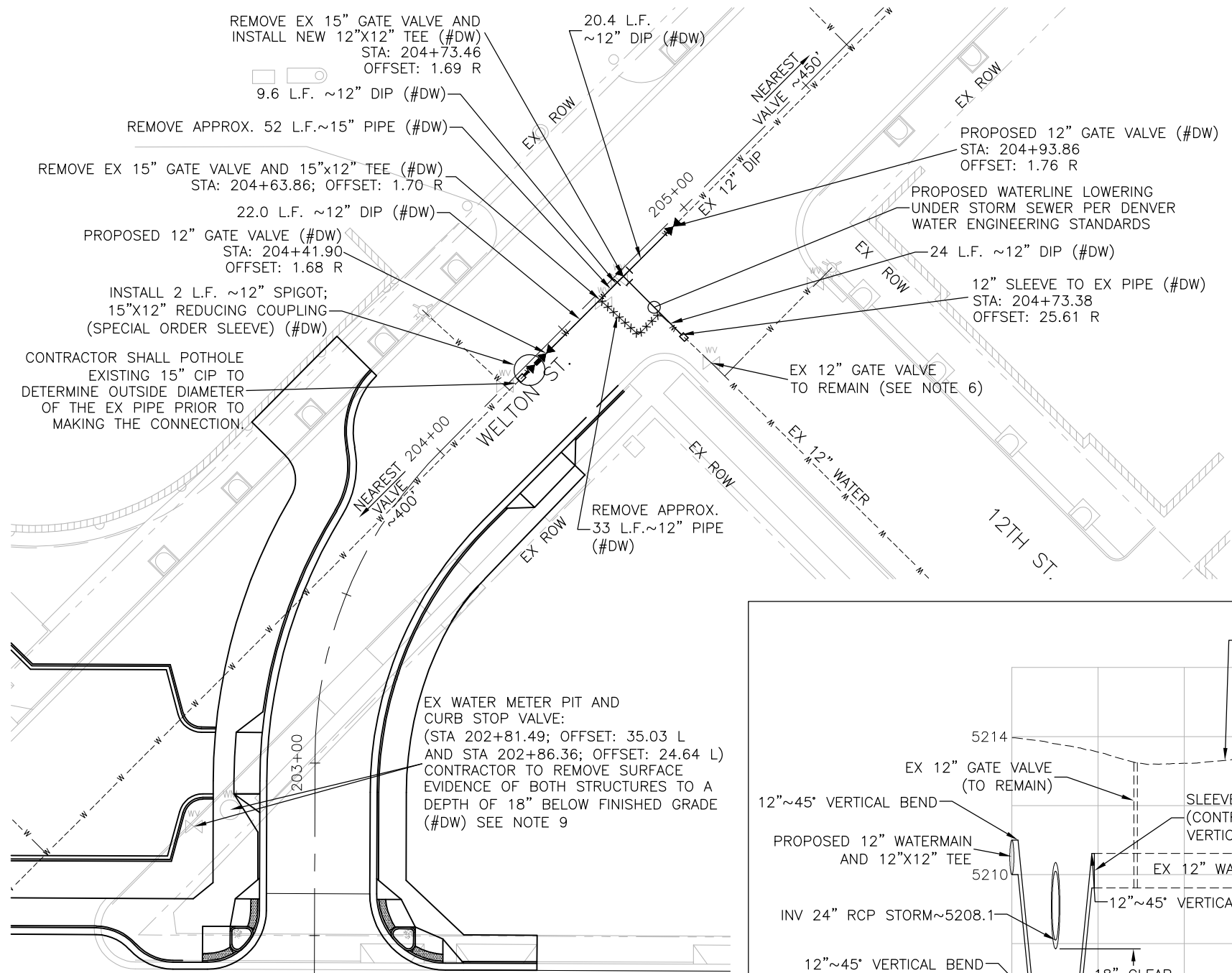
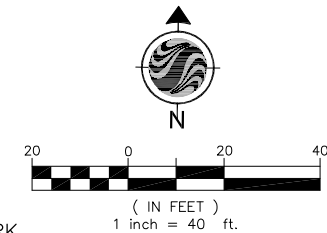
CDOT
 DEPARTMENT OF TRANSPORTATION
 Region 6

CITY AND COUNTY OF DENVER
 SEAL

Stantec

As Constructed	UTILITY PLAN	
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Revised:		
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	Utility Plans	

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STU M320-060
16952
Sheet Number 12



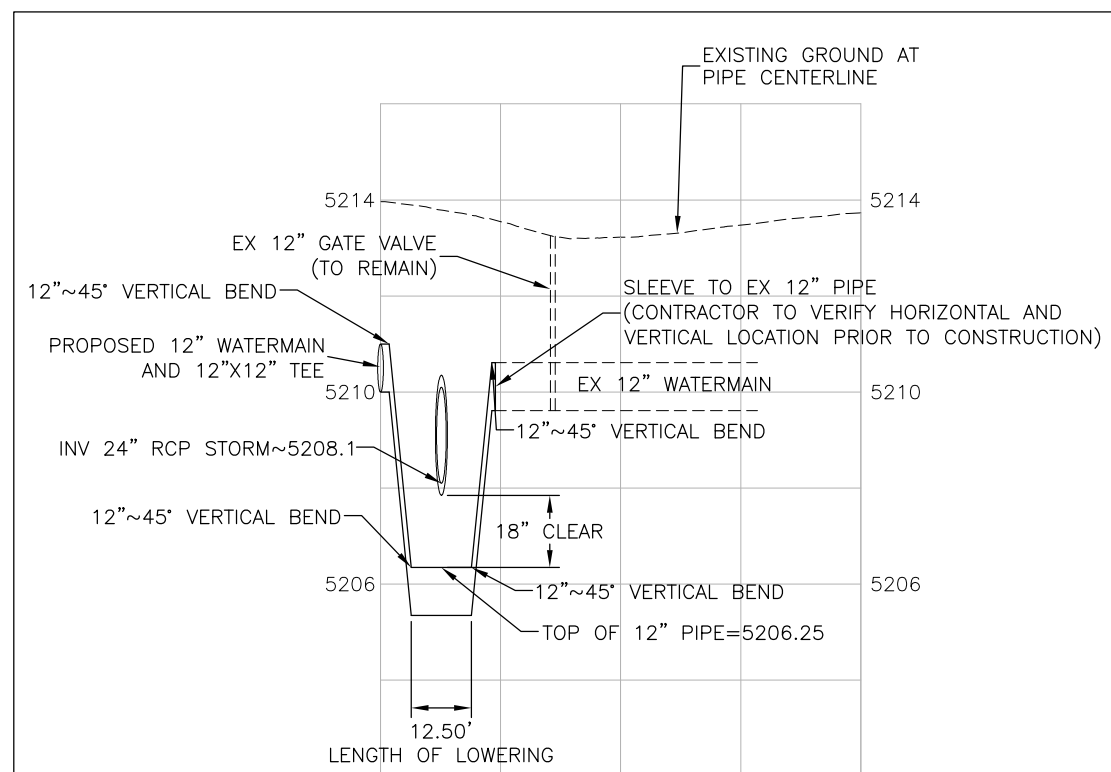
NOTES:

- # = CONTRACTOR TO PERFORM WORK
@ = UTILITY OWNER TO PERFORM WORK
- UTILITY OWNER
DW = DENVER WATER DEPARTMENT
- THE NEED FOR LOWERING THE WATERLINE UNDER THE STORM SEWER SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION. IF NEEDED, THE WATER LOWERING SHALL BE CONSTRUCTED PER DENVER WATER STANDARD DETAIL NO. 46.
- STATION LABELS AND OFFSETS ON WATERMAIN ARE BASED ON CENTERLINE OF WELTON STREET.
- WATER IMPROVEMENTS CONSIST OF APPROXIMATELY 75 L.F. OF PIPE.
- THE EXISTING VALVE AT STATION 204+73, 38' RT CANNOT BE USED AS A SHUT-OFF VALVE. THIS VALVE IS TO REMAIN OPEN DURING CONSTRUCTION TO AVOID ANY PRESSURE BUILD-UP.
- THE CONTRACTOR SHALL CONTACT DENVER WATER INSPECTOR GRANT HOFFMEISTER (303-628-6068) TO COLLECT A SOIL SAMPLE AT PIPE ELEVATION PRIOR TO WATER PIPE INSTALLATION.
- ALL CONSTRUCTION SHALL CONFORM TO DENVER WATER STANDARDS (INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING DENVER WATER STANDARD DETAILS):
 - 9 VALVE OPERATION
 - 11 TYPICAL TRENCH SECTION PIPE PROTECTION
 - 26 CONCRETE KICKBLOCKS BEARING SURFACE AND INSTALLATION
 - 27 CONCRETE KICKBLOCKS
 - 28 LENGTH OF RESTRAINED PIPE
 - 34 MECHANICAL JOINT RESTRAINT DETAIL
 - 37 POLYETHYLENE WRAP ON PIPE AND AT TAP INSTALLATION
 - 46 OPEN CUT CROSSING BENEATH CONDUIT OR CONFLICTING UTILITY
 - 47 CROSSING STORM AND SANITARY SEWERS
 - 49 TRACER WIRE INSTALLATION FOR PVC WATER MAIN

ADDITIONALLY, ALL TAP CUTS AND ABANDONMENTS SHALL CONFORM TO DENVER WATER ENGINEERING STANDARD 3.18.

9. THE EXISTING WATER METER WAS PREVIOUSLY REMOVED AND ONLY THE METER PIT REMAINS. THE EXISTING CURB STOP VALVE CAN BE ABANDONED IN PLACE. IF CONTRACTOR FINDS CONDITIONS TO BE DIFFERENT THAN DESCRIBED ON THIS PLAN SHEET, CONTRACTOR SHALL NOTIFY DENVER WATER DEPARTMENT INSPECTOR IMMEDIATELY.

Denver Water's review of these plans relates only to Denver Water requirements, and does not include a full analysis of: soil conditions, support or load factors, or any other matters. Any modification of these plans must be resubmitted to Denver Water for review prior to construction. The Professional Engineer, Contractors, and Owners designing and constructing this proposed water distribution system shall be solely responsible for the adequacy of the design, installation, and materials utilized in this water distribution system for any specific site location.



PROFILE FOR WATERMAIN MODIFICATIONS
WELTON STREET AND 12TH STREET

811 FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS BEFORE YOU DIG
CALL 811 (or 1-800-922-9877)
UTILITY NOTIFICATION CENTER OF COLORADO (UNCC)
www.uncc.org

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CDOT

 Region 6

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WATER PLAN & PROFILE	

Project No./Code	STU M320-060
	16952
	Sheet Number 13

GENERAL CONSTRUCTION AND WATER NOTES:

MAIN EXTENSION NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH DENVER WATER'S ENGINEERING STANDARDS, MATERIALS SPECIFICATIONS, AND DRAWINGS. ALL MAIN INSTALLATIONS/SYSTEM MODIFICATIONS WILL BE APPROVED AND INSPECTED BY DENVER WATER.
2. CONTRACTORS SHALL MAINTAIN A COPY OF THE CURRENT ENGINEERING STANDARDS ON-SITE AT ALL TIMES DURING CONSTRUCTION. SEE THE CHART BELOW FOR A QUICK REFERENCE TO THE FREQUENTLY USED MATERIAL SPECIFICATIONS.

MATERIAL SPECIFICATION QUICK REFERENCES:

MATERIAL SPECIFICATION	DESCRIPTION
MS 01	DI PIPE
MS 02	PVC PIPE
MS 03	FITTINGS
MS 4, MS 5	VALVES
MS 8	TAPPING VALVES
MS 9	TAPPING SLEEVES
MS 12	VALVE BOXES (RECYCLED WATER SYSTEM VALVE BOXES SHALL BE FITTED WITH TRIANGULAR COVERS CAST WITH THE WORDS "DENVER WATER RECYCLES" AND SHALL BE COATED WITH A FUSION BONDED EPOXY COATING, PANTONE 2577U IN COLOR.)
MS 13	DRY BARREL FIRE HYDRANTS
MS 23	BRASS AND BRONZE GOODS
MS 29	RESTRAINT DEVICE

3. TRACER WIRE, 12 GAUGE, SHALL BE INSTALLED ON ALL NON-METALLIC WATER MAINS.
4. FOR ALL PIPE INSTALLATIONS, THE DEPTH OF COVER OVER THE PIPE, MEASURED FROM OFFICIAL STREET GRADE TO THE TOP OF THE PIPE, SHALL BE A MINIMUM OF 4-1/2 FEET AND SHALL BE KNOWN AS THE COVER OVER THE PIPE. IF DIFFICULTIES ARISE WHEN CROSSING INTERFERENCE, AND WHERE SPECIFICALLY APPROVED BY DENVER WATER, DEVIATIONS FROM 4-1/2 FEET OF COVER WILL BE PERMITTED. THE COVER OVER THE PIPE SHALL BE A MINIMUM OF 3 FEET AND A MAXIMUM OF 10 FEET.
5. ANY CHANGES IN ALIGNMENT AND GRADE SHALL BE AUTHORIZED BY DENVER WATER AND SHALL BE ACCOMPLISHED BY THE INSTALLATION OF ADDITIONAL FITTINGS. THE DEFLECTION OF JOINTS IS PERMITTED ONLY WHEN INSTALLING PIPE ON HORIZONTAL OR VERTICAL CURVES.
6. THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES AND FIRE HYDRANTS TO THE FINAL FINISHED GRADE.
7. ALL BENDS, TEES, FIRE HYDRANTS, BLOW-OFFS, AND PLUGS AT DEAD-END MAINS SHALL BE PROTECTED FROM THRUST WITH MECHANICAL RESTRAINT AND CONCRETE THRUST BLOCKS IN ACCORDANCE WITH DENVER WATER'S ENGINEERING STANDARDS, DRAWINGS 26 AND 27.
8. ALL VALVES ARE TO BE LOCATED ON PROPERTY LINE EXTENSIONS, EXCEPT FOR TAPPING TEES WHERE AN ADDITIONAL VALVE SHALL BE PLACED ON THE TAPPING TEE. OTHER VALVE LOCATIONS MAY BE REQUIRED AS SHOWN ON THE PLANS.
9. WHEN IT IS NECESSARY TO LOWER OR RAISE WATER LINES AT STORM DRAINS AND OTHER UTILITY CROSSINGS, A MINIMUM CLEARANCE OF 1.5 FEET SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF THE PIPES.
10. THE CONTRACTOR SHALL HAVE ONE SIGNED COPY OF THE APPROVED WATER PLANS IN HIS/HER POSSESSION AT ALL TIMES.
11. ONLY ONE POINT OF CONNECTION WILL BE ALLOWED UNTIL THE TESTING OF THE NEW INSTALLATIONS IS COMPLETE.
12. NEWLY INSTALLED WATER MAINS AND FIRELINES SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH DENVER WATER ENGINEERING STANDARDS, SECTION 8.25.
13. PRIOR TO THE INSTALLATION OF WATER MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE SUB-GRADE STATE. SUB-GRADE IS DEFINED AS AN ELEVATION OF NO MORE THAN 7 INCHES BELOW THE FINISHED STREET GRADE.

14. THE CONTRACTOR IS RESPONSIBLE FOR:

- A. NOTIFYING CUSTOMERS WHO MAY BE AFFECTED BY A WATER OUTAGE DURING CONSTRUCTION.
- B. OBTAINING, AT THE CONTRACTOR'S EXPENSE, APPLICABLE LICENSES, PERMITS, BONDS, ETC. THAT ARE REQUIRED FOR THE MAIN INSTALLATION/SYSTEM MODIFICATION.
- C. CONTACT DENVER WATER'S CONSTRUCTION ENGINEERING PERSONNEL FOR THE PRECONSTRUCTION MEETING AND INSPECTION, 303-628-6671, AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. IN THE EVENT OF AN EMERGENCY IN DENVER OR IN A TOTAL SERVICE AREA AFTER WORKING HOURS, CALL DENVER WATER'S WESTSIDE DISPATCHER: 303-628-6390. IN A MASTER METER DISTRICT, PLEASE CONTACT THE REPRESENTATIVE OF THE DISTRICT IN WHICH THE PROJECT IS TAKING PLACE.
- D. PAYING ALL ADDITIONAL CHARGES FOR INSPECTION OUTSIDE NORMAL WORK HOURS.

NOTE: BE ADVISED THAT ON OCCASION VALVES IN OUR SYSTEM MAY BE INOPERABLE. ON SUCH OCCASIONS, IT MAY BECOME NECESSARY TO BACK UP AN ADDITIONAL BLOCK FOR THE SHUT OUT. IF THAT OCCURS, MAKE ADDITIONAL NOTIFICATIONS TO CUSTOMERS WITH THE MANDATORY 24 HOURS ADVANCE NOTICE. WHEN VALVE MAINTENANCE IS REQUIRED, A DELAY OF SEVERAL DAYS SHOULD BE EXPECTED.

TAP AND METER NOTES (FOR DENVER, TOTAL SERVICE, AND READ AND BILL AREAS ONLY. IN MASTER METER DISTRICTS, PLEASE REFER TO THE SPECIFICATION FOR THAT DISTRICT).

1. BEFORE ANY TAPS ARE MADE FROM MAINS, APPLICATION(S) FOR THE TAPS MUST BE RECEIVED AND APPROVED BY THE DISTRIBUTOR AND BY DENVER WATER.
2. DENVER WATER WILL MAKE ALL TAPS THAT ARE 2 INCHES AND SMALLER.
3. INDIVIDUAL SERVICE LINE PRVS ARE REQUIRED WHEN AREA PRESSURE EXCEEDS 80 PSI.
4. SERVICES AND METERS:
 - A. CONSTRUCTION WATER IS AVAILABLE PRIOR TO SETTING THE METER ONLY THROUGH NEW TAPS AND SERVICE LINES WHERE PAYMENT HAS BEEN MADE IN ADVANCE. CONSTRUCTION WATER MAY ONLY BE USED FOR CONSTRUCTION PURPOSES, EXCLUDING LANDSCAPING, AND MUST BE USED AT THE PROPERTY FOR WHICH THE SERVICE IS LICENSED. THE PROPERTY MAY NOT BE OCCUPIED OR LANDSCAPED UNTIL AFTER THE SERVICE HAS BEEN ACTIVATED. VIOLATORS OF THIS PROVISION SHALL INCUR FINES.
 - B. THE CONTRACTOR SHALL HOLD AN ON-SITE PRE-CONSTRUCTION CONFERENCE WITH THE METER INSPECTOR FOR ALL TAPS, SERVICE LINES, AND METERS LARGER THAN ONE INCH, AND FOR PROJECTS INVOLVING MORE THAN ONE TAP AND SERVICE. TO SCHEDULE A PRECONSTRUCTION CONFERENCE CALL 303-628-6145.
 - C. A COPY OF THESE PLANS WITH DENVER WATER'S APPROVAL STICKER MUST BE PRESENT ONSITE AT THE TIME THE TAP IS MADE AND AT THE TIME THE METER IS INSPECTED OR INSTALLED.
 - D. METERS CANNOT BE SET OR INSPECTED, OR SERVICES ACTIVATED, UNTIL ALL REQUIREMENTS FOR THE SOIL AMENDMENT HAVE BEEN COMPLETED. CONTACT CONSERVATION AT 303-628-6670 FOR INFORMATION AND TO SCHEDULE A SOIL AMENDMENT INSPECTION.
 - E. METERS CANNOT BE SET OR INSPECTED, OR SERVICES ACTIVATED, UNTIL THE REQUIREMENTS FOR BACKFLOW PREVENTION HAVE BEEN COMPLETED. CONTACT THE BACKFLOW PREVENTION PROGRAM PERSONNEL AT 303-628-5940 FOR FURTHER INFORMATION.
 - F. ALLOW AT LEAST 3 WORKING DAYS ADVANCE NOTICE WHEN SCHEDULING TAPS, METER SETS, AND INSPECTIONS. TO SCHEDULE A TAP CALL 303-628-6701; TO SCHEDULE A METER INSPECTION CALL 303-628-6145. SERVICE ACTIVATION WILL TAKE PLACE WHEN THE SERVICE AND METER SETTING PASS INSPECTION.
 - G. ALL METER AND AUTOMATIC METER READING DEVICE LOCATIONS SHALL BE APPROVED BY A DENVER WATER METER INSPECTOR, EXCEPT IN MASTER METER DISTRIBUTOR DISTRICTS.
 - H. METER PITS AND VAULTS MUST BE SET FLUSH WITH THE FINAL GRADE OF THE LANDSCAPE, INCLUDING PROPER DEPTH OF SOIL AMENDMENT. IF FINAL GRADING HAS NOT BEEN COMPLETED AT THE TIME OF METER INSPECTION, THE OWNER WILL BE REQUIRED TO RAISE OR LOWER THE METER PIT/VAULT WHEN FINAL GRADE IS ESTABLISHED. ADJUSTMENT OF THE PIT MAY REQUIRE ADJUSTMENT OF THE METER SETTING WITHIN THE PIT.
 - I. METER SETTING, VALVES, AND SERVICE LINES FROM THE MAIN TO THE BACKFLOW PREVENTER ASSEMBLY, IF PRESENT, OR TO 5 FEET AFTER THE METER VAULT, MUST MEET ALL APPLICABLE ENGINEERING STANDARDS IN EFFECT AT THE TIME OF ACTIVATION. IF NECESSARY TO COMPLY WITH CURRENT STANDARDS, MODIFICATIONS MAY BE REQUIRED FROM THE DETAILS ON THESE PLANS.
 - J. NO PRESENT OR FUTURE FENCES OR WALLS ARE PERMITTED BETWEEN THE RIGHT OF WAY (ROW) OR EASEMENT AND THE METER SETTING. THERE SHALL BE NO PERMANENT OBSTRUCTIONS WITHIN 5 FEET OF THE OUTSIDE WALL OF THE METER PIT OR VAULT.
 - K. TAP RELOCATION (FROM WHAT IS SHOWN ON THESE PLANS) MAY BE NECESSARY TO AVOID PAVED AREAS OR OTHER OBSTRUCTIONS THAT ARE NOT SHOWN ON THE PLANS. DEVIATIONS FROM THESE PLANS AND STANDARDS MUST BE APPROVED PRIOR TO CONSTRUCTION.
 - L. INSIDE THE CITY OF DENVER AND IN TOTAL SERVICE AND READ & BILL DISTRIBUTOR DISTRICTS, METERS MUST BE FURNISHED WITH AUTOMATIC METER READING (AMR) DEVICES AS SPECIFIED BY DENVER WATER. THE AMR DEVICES WILL BE INSTALLED BY DENVER WATER AT THE TIME OF SERVICE ACTIVATION.


- M. METER PITS AND VAULTS SHALL HAVE APPROPRIATE LIDS BASED ON THE LOCATION AND THE APPLICATION. CONTACT METER INSPECTION AT 303-628-6145 TO DETERMINE THE CORRECT LID CONFIGURATION.
- N. THE CONTRACTOR SHALL PROVIDE A REMOTE AMR DEVICE MOUNTING BOX WHEN REQUIRED. INSTALL A DOUBLE-GANG 4X4 ELECTRICAL JUNCTION BOX; MOUNT AS DIRECTED 7 FEET ABOVE GRADE. INSTALL BELDEN #9451 CABLE IN 3/4-INCH OR LARGER CONDUIT FROM THE METER TO THE MOUNTING BOX. TWO BOXES AND TWO CABLES ARE REQUIRED FOR COMPOUND METERS.
- O. INSIDE THE CITY OF DENVER, ALL MULTI-FAMILY DWELLINGS WITH A SINGLE TAP, SERVICE LINE, AND METER ARE REQUIRED TO SUB-METER EACH INDIVIDUAL UNIT (SEC 401.3.2 OF DENVER MODIFICATIONS TO THE INTERNATIONAL PLUMBING CODE, ORDINANCE NUMBER 576, SERIES OF 2004). CALL THE CITY AND COUNTY OF DENVER PLUMBING INSPECTOR FOR INFORMATION AT 720-865-2625.
- P. INSIDE THE CITY OF DENVER, ALL SERVICE LINES MUST BE INSTALLED TO AVOID EXISTING OR PROPOSED STREET TREES. CONTACT THE CITY AND COUNTY OF DENVER'S FORESTER AT 720-913-0647 FOR INFORMATION.
- Q. EXISTING SERVICES MUST BE METERED AT ALL TIMES UNTIL THE TAP HAS BEEN CUT AT THE MAIN AND WITNESSED BY DENVER WATER.


CROSS-CONNECTION CONTROL REQUIREMENTS:

THE LICENSEES LISTED BELOW SHALL BE IN CONFORMANCE WITH DENVER WATER'S ENGINEERING STANDARDS, CHAPTER 5.05, CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION. BACKFLOW PREVENTION ASSEMBLIES ARE REQUIRED TO BE INSTALLED ON THE FOLLOWING WATER SERVICE LINES:

1. COMMERCIAL PROPERTIES: REAL ESTATE ZONED FOR BUSINESSES AND/OR INDUSTRIAL USE THAT CONSIST OF SIX OR MORE UNITS WITH A DOMESTIC, FIRELINE, OR DEDICATED WATER IRRIGATION SERVICE TAP (DEFINED AS SUCH FOR CROSS-CONNECTION PURPOSES).
 - * DOMESTIC, DEDICATED IRRIGATION, FIRELINE AND/OR RECYCLED WATER SERVICE LINES.
2. MULTI-FAMILY RESIDENTIAL: A DWELLING WITH TWO TO FIVE UNITS WITH A DOMESTIC, FIRELINE, AND/OR DEDICATED WATER SERVICE TAP (DEFINED AS SUCH FOR CROSS-CONNECTION PURPOSES).
 - * PREMISES OVER THREE STORIES/GREATER THAN 30 FEET, FIRE PROTECTION SYSTEM, COMMON BOILER, AUXILIARY WATER, SWIMMING POOL AND IRRIGATION SYSTEMS.
3. SINGLE FAMILY RESIDENTS: A SINGLE UNIT DWELLING (DEFINED AS SUCH FOR CROSS-CONNECTION PURPOSES)
 - * DUAL WATER SUPPLY AGREEMENT.

Denver Water's review of these plans relates only to Denver Water requirements, and does not include a full analysis of: soil conditions, support or load factors, or any other matters. Any modification of these plans must be resubmitted to Denver Water for review prior to construction. The Professional Engineer, Contractors, and Owners designing and constructing this proposed water distribution system shall be solely responsible for the adequacy of the design, installation, and materials utilized in this water distribution system for any specific site location.

Date	I.D. No.
Contract No.	Map No.
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Computer File Information		Index of Revisions		CDOT	As Constructed	DENVER WATER NOTES		Project No./Code
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Last Modification Date: 8/24/2012	Initials: MCHAPMAN				Revised:			16952
Full Path & Drawing File Name: V:\52876\active\187607770\Cofax Galapago\drawing\sheets\07770c-CGAL-Water Notes.dwg				Region 6	Void:	Utility Plans		Sheet Number 14
Acad Ver. 2008	Scale: N/A							

A. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE A MODEL MANUFACTURED IN COMPLIANCE WITH AWWA C510 AND C511 AND SHALL HAVE MET THE SPECIFICATIONS BY THE UNIVERSITY OF CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH:

FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH
SCHOOL OF ENGINEERING MC-2531
UNIVERSITY OF SOUTHERN CALIFORNIA
P.O. BOX 77902
LOS ANGELES, CA 90007
FOUNDATION OFFICE: (866) 545-6340
HTTP://WWW.USC.EDU/DEPT/FCCCHR/

B. THE LICENSEE IS REQUIRED TO HAVE A CERTIFIED AMERICAN BACKFLOW PREVENTION ASSOCIATION (ABPA) OR AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) TESTER INSPECT AND TEST THE EXISTING AND/OR NEWLY INSTALLED CONTAINMENT BACKFLOW PREVENTION ASSEMBLIES ON THE DEDICATED WATER SERVICE LINES (DOMESTIC, DEDICATED IRRIGATION, FIRELINE, AND RECYCLED) UPON INSTALLATION AND ANNUALLY THEREAFTER.

C. THE ABPA OR ASSE CERTIFIED BACKFLOW TESTER IS RESPONSIBLE TO MEET THE REQUIREMENTS LISTED IN THE ENGINEERING STANDARDS, CHAPTER 5.05.
* IF THE ABPA OR ASSE CERTIFIED BACKFLOW TESTER IS TESTING A BACKFLOW PREVENTION ASSEMBLY INSTALLED ON A RECYCLED WATER SERVICE LINE, THE TESTER IS REQUIRED TO HAVE A DEDICATED RECYCLED WATER TEST GAUGE.

D. WITHIN 48 HOURS OF DENVER WATER SETTING THE METER AND TURNING ON THE WATER SERVICE, THE ABPA OR ASSE CERTIFIED BACKFLOW TESTER IS REQUIRED TO SUBMIT THE CONTAINMENT BACKFLOW ASSEMBLY TEST REPORT(S) TO THE CROSS-CONNECTION CONTROL OFFICE:

PHONE: 303-628-5969
FAX: 303-794-8325
E-MAIL: CROSSCONNECTIONCONTROL@DENVERWATER.ORG
MAILING ADDRESS: DENVER WATER
ATTN: CROSS-CONNECTION CONTROL
6100 W. QUINCY AVENUE
DENVER, CO 80235

E. THERE SHALL BE NO UNPROTECTED TAKEOFFS FROM THE SERVICE LINE AHEAD OF ANY METER OR AHEAD OF A BACKFLOW PREVENTION ASSEMBLY LOCATED AT THE POINT OF DELIVERY TO THE CUSTOMER'S WATER SYSTEM.

F. NO BRANCH LINES OR TAPS ARE ALLOWED ON DEDICATED COMMERCIAL IRRIGATION WATER SERVICE LINES OR RECYCLED WATER SERVICE LINES FOR DOMESTIC (POTABLE) USE (E.G., DRINKING FOUNTAINS, WATER PLAY FEATURES, SWIMMING POOL, RESTROOM FACILITIES, ETC.):

1. BETWEEN THE IRRIGATION TAP AND THE METER.
2. BETWEEN THE METER AND THE BACKFLOW PREVENTION ASSEMBLY.
3. DOWNSTREAM FROM THE BACKFLOW PREVENTION ASSEMBLY.

4. COMMERCIAL IRRIGATION WATER SERVICE LINE TAPS:
* COMPLY WITH THE CROSS-CONNECTION CONTROL REQUIREMENTS LISTED ABOVE (A-F).
* REQUIRE AN APPROVED USC FCCCHR REDUCED PRESSURE PRINCIPLE (RP) BACKFLOW PREVENTION ASSEMBLY TO BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT AS AN ABOVE GROUND INSTALLATION BEFORE ANY CONNECTIONS. REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR HEIGHT AND ORIENTATION REQUIREMENTS.

*IF THE BACKFLOW PREVENTION ASSEMBLY CANNOT BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT, INCLUDE A VARIANCE LETTER JUSTIFYING THE NEED FOR RELOCATION.

5. RECYCLED WATER SERVICE LINES TAPS:
BACKFLOW PREVENTION ASSEMBLIES ARE REQUIRED TO BE INSTALLED ON COMMERCIAL RECYCLED WATER SERVICE LINE TAPS:

- * IF CHEMICAL INJECTION IS USED DOWNSTREAM FROM THE METER.
- * IF PUMPS ARE USED DOWNSTREAM FROM THE METER.
- * IF THE EXISTING OR PROPOSED SYSTEM POSES A RISK TO THE INTEGRITY OF THE RECYCLED WATER SYSTEM.
- *COMPLY WITH THE CROSS-CONNECTION CONTROL REQUIREMENTS LISTED ABOVE (A-F).
- *REQUIRE AN APPROVED USC FCCCHR REDUCED PRESSURE PRINCIPLE (RP) BACKFLOW PREVENTION ASSEMBLY TO BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT AS AN ABOVE GROUND INSTALLATION BEFORE ANY CONNECTIONS. REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR HEIGHT AND ORIENTATION REQUIREMENTS.
- *IF THE BACKFLOW PREVENTION ASSEMBLY CANNOT BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT, INCLUDE A VARIANCE LETTER JUSTIFYING THE NEED FOR RELOCATION.
- *BACKFLOW PREVENTION ASSEMBLIES INSTALLED ON RECYCLED WATER SERVICE LINES SHALL BE IDENTIFIED AS "RECYCLED WATER."

6. RECYCLED OR RAW WATER (DITCH WATER, POND, WELL, ETC.) USED FOR IRRIGATION ON THE PREMISES:

- * COMPLY WITH THE CROSS-CONNECTION CONTROL REQUIREMENTS LISTED ABOVE (A-F).
- * REQUIRES AN APPROVED USC FCCCHR BACKFLOW PREVENTION ASSEMBLY (CONTAINMENT) TO BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT ON ANY POTABLE WATER SERVICE LINE.
- *THE BACKFLOW ASSEMBLY TYPE IS DETERMINED BY THE 'DEGREE OF HAZARD' DOWNSTREAM FROM THE METER; REFER TO DENVER WATER'S ENGINEERING STANDARDS, 1.06, DEGREE OF HAZARD, OR CONTACT CROSS-CONNECTION CONTROL AT 303-628-5940.

7. IT IS AT THE SOLE DISCRETION OF DENVER WATER'S CROSS-CONNECTION CONTROL SECTION TO APPROVE A VARIANCE REQUEST RELATED TO A PROPOSED BACKFLOW PREVENTION ASSEMBLY INSTALLATION.

HEALTH NOTES/WATER QUALITY:

1. THE COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT (CDPHE) REGULATES ASBESTOS ACTIVITIES THROUGH THE AIR POLLUTION CONTROL DIVISION (APCD) AND THE SOLID WASTE AND MATERIALS MANAGEMENT DIVISION (SWMMD) WHEN SOIL CONTAMINATION IS INVOLVED. DENVER WATER WILL REQUIRE CONTRACTORS AND DEVELOPERS TO FOLLOW THE PROCEDURES BELOW WHEN CEMENT ASBESTOS PIPE IS ENCOUNTERED:

- *THE PIPE MUST BE REMOVED FROM THE EXCAVATION FOR PROPER DISPOSAL.
- *THE CONTRACTOR/DEVELOPER WILL MANAGE THE PIPE IN ACCORDANCE WITH THE FOLLOWING REGULATIONS:
*COLORADO AIR REGULATIONS NO 8 -CONTROL OF HAZARDOUS AIR POLLUTANTS
*OSHA 29 CFR 1910.1001 -GENERAL INDUSTRY STANDARDS -ASBESTOS
*OSHA 29 CFR 1926.1101 -CONSTRUCTION STANDARDS -ASBESTOS
- *IF LARGE AMOUNTS OF CEMENT ASBESTOS PIPE ARE ANTICIPATED TO BE REMOVED, THE MATERIAL MUST BE MANAGED BY AN APPROPRIATE ASBESTOS ABATEMENT CONTRACTOR (160 SQUARE FEET OR 260 LINEAR FEET WILL REQUIRE A PERMIT).

NOTE: CEMENT ASBESTOS PIPE IS CONSIDERED A NON-FRIABLE ASBESTOS MATERIAL, DEFINED AS CONTAINING MORE THAN 1% ASBESTOS BY WEIGHT, AND CANNOT BE CRUMBLED, PULVERIZED, OR REDUCED TO POWDER BY HAND PRESSURE. THEREFORE, A RELEASE OF ASBESTOS FIBERS IS NOT LIKELY DURING NORMAL USE AND HANDLING OF THIS MATERIAL.

2. DENVER WATER PERSONNEL ARE NOT RESPONSIBLE FOR WORK SITE SAFETY OR THE COMPLIANCE/ENFORCEMENT OF SAFETY REGULATIONS AND STANDARDS ESTABLISHED BY OTHER AGENCIES. ALL SAFETY COMPLIANCE/ENFORCEMENT AT THE WORK SITE SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY.

3. THE WATER QUALITY CONTROL DIVISION OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES ALL WATER LINE CONTRACTORS TO POSSESS A CURRENT DISCHARGE PERMIT FOR DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS OR CONDUITS. CONTACT CDPHE WATER QUALITY CONTROL DIVISION AT 303-692-3539 FOR INFORMATION ON OBTAINING THE REQUIRED PERMIT.

4. CHLORINATION AND FLUSHING: ALL WATER MAINS SHALL BE INSTALLED AND CHLORINATED IN ACCORDANCE WITH DENVER WATER'S ENGINEERING STANDARDS, SECTION 8.24. THE LINES SHALL BE CHLORINATED IN ACCORDANCE WITH AWWA C-651, "DISINFECTING WATER MAINS." THE PREFERRED METHOD IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 25 MG/L SOLUTION. TABLETS SHOULD BE ATTACHED TO THE TOP OF THE PIPE WITH AN APPROVED ADHESIVE CERTIFIED TO NSF STANDARD 61, PRIOR TO PIPE INSTALLATION IN THE TRENCH. CHLORINATION OF 16 INCH AND LARGER PIPE REQUIRES A CHLORINE SLURRY. THE CHLORINATION OF ANY FINISHED PIPELINE SHALL BE COMPLETED PRIOR TO HYDROSTATIC TESTING.

IRRIGATION NOTES:

1. IRRIGATION OF MEDIANS AND OTHER PUBLIC LANDSCAPED AREAS LESS THAN 25 FEET IN WIDTH MUST BE DONE IN ACCORDANCE WITH DENVER WATER OPERATING RULE 14.02.3. (CALL DW CONSERVATION SECTION AT 303-628-6343 FOR INFORMATION REGARDING IRRIGATION SYSTEMS.)

- *FOR STRIPS OF LAND LESS THAN 6 FEET IN WIDTH -SPRAY IRRIGATION SHALL BE PROHIBITED. LOW-FLOW IRRIGATION SYSTEMS ARE REQUIRED.
- *FOR STRIPS OF LAND BETWEEN 6 FEET AND 15 FEET IN WIDTH -ONLY LOW FLOW IRRIGATION, OR SPRAY IRRIGATION USING LOW-ANGLE SPRAY NOZZLES DESIGNED FOR THE SPECIFIC WIDTH TO BE IRRIGATED SHALL BE PERMITTED. ALL SPRAY HEADS MUST BE PRESSURE REDUCING AND DESIGNED TO PREVENT LOW HEAD DRAINAGE.
- *FOR STRIPS OF LAND MORE THAN 15 FEET IN WIDTH -ONLY GEAR-DRIVEN ROTORS WITH LOW ANGLE NOZZLES MAY BE USED TO IRRIGATE TURF AREAS. PLANTING BEDS MAY BE IRRIGATED WITH LOW-FLOW OR SPRAY IRRIGATION. ALL SPRAY HEADS MUST BE PRESSURE REDUCING AND DESIGNED TO PREVENT LOW HEAD DRAINAGE.


2. IRRIGATION SERVICE LINES REQUIRE AN APPROVED UNIVERSITY OF SOUTHERN CALIFORNIA (USC) REDUCED PRESSURE PRINCIPLE (RP) BACKFLOW PREVENTION ASSEMBLY (CONTAINMENT) TO BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT AS AN ABOVE GROUND INSTALLATION BEFORE ANY CONNECTIONS. REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR HEIGHT AND ORIENTATION REQUIREMENTS.

3. IF RECYCLED OR RAW WATER (DITCH WATER, POND, WELL, ETC.) IS USED FOR IRRIGATION ON THE PREMISES, AN APPROVED UNIVERSITY OF SOUTHERN CALIFORNIA (USC) BACKFLOW PREVENTION ASSEMBLY (CONTAINMENT) SHALL BE INSTALLED 5 FEET DOWNSTREAM FROM THE METER PIT ON ANY POTABLE WATER SERVICE LINE. THE BACKFLOW ASSEMBLY TYPE IS DETERMINED BY THE DEGREE OF HAZARD DOWNSTREAM FROM THE METER (RP-HIGH HAZARD INSTALLED ABOVE GROUND OR DC-LOW HAZARD INSTALLED BELOW GROUND -60 INCH DIAMETER MANHOLE). FOR ADDITIONAL INFORMATION, PLEASE REFERENCE DENVER WATER'S ENGINEERING STANDARDS, 6.11, OR CONTACT CROSS-CONNECTION CONTROL AT 303-628-5940.

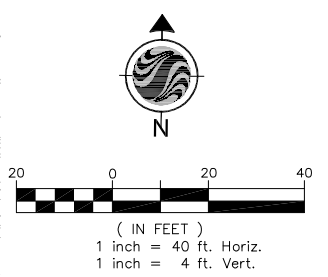
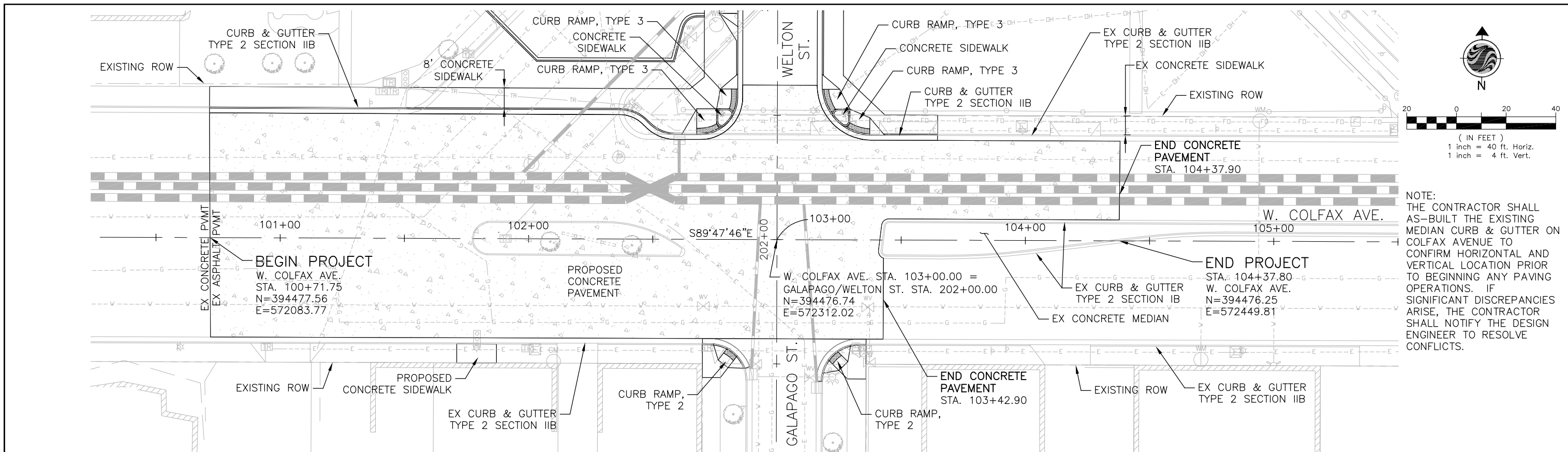
4. A SOIL AMENDMENT WILL BE REQUIRED ON EVERY PROPERTY REQUIRING NEW WATER SERVICE. METERS WILL NOT BE SET WITHOUT A SOIL INSPECTION BY DENVER WATER OR ITS DESIGNATED PERSONNEL.

DISCLAIMER: DENVER WATER STANDARD OPERATING PROCEDURES REPRESENT RECOMMENDED PRACTICES THAT SHOULD BE APPLICABLE TO MOST SITUATIONS ENCOUNTERED. THESE PROCEDURES SHOULD BE FOLLOWED TO THE EXTENT APPLICABLE; HOWEVER, THEY BY NO MEANS REPRESENT THE ONLY METHOD TO PERFORM THE TASKS THEY DESCRIBE. IT IS UNDERSTOOD THAT FIELD CONDITIONS, EMERGENCIES, AND OTHER CIRCUMSTANCES MAY REQUIRE DEVIATION FROM STANDARD OPERATING PROCEDURES.

Denver Water's review of these plans relates only to Denver Water requirements, and does not include a full analysis of: soil conditions, support or load factors, or any other matters. Any modification of these plans must be resubmitted to Denver Water for review prior to construction. The Professional Engineer, Contractors, and Owners designing and constructing this proposed water distribution system shall be solely responsible for the adequacy of the design, installation, and materials utilized in this water distribution system for any specific site location.

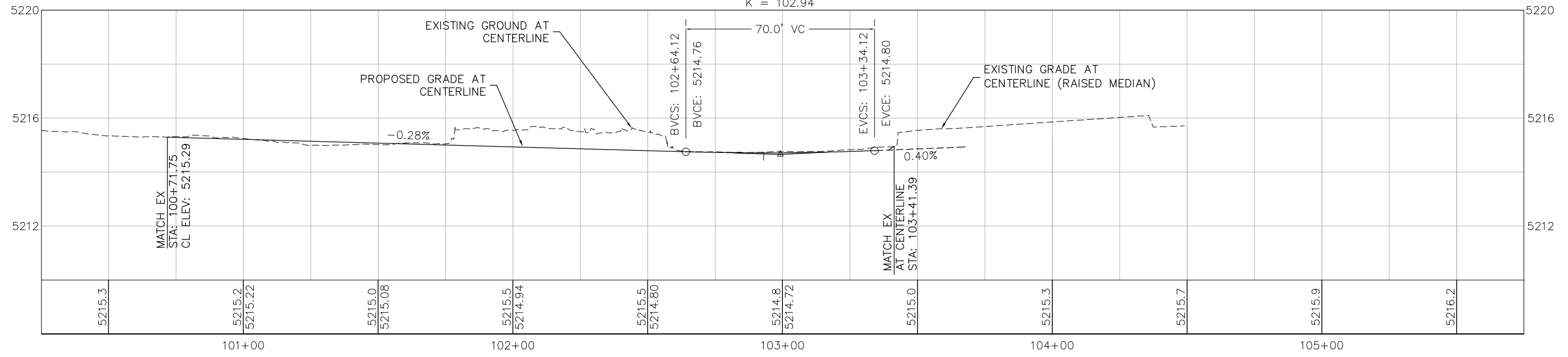
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Contract No.	Map No.
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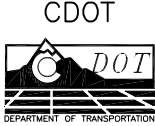


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Last Modification Date: 8/24/2012	Initials: MCHAPMAN	<input type="checkbox"/>		Region 6			Revised:			16952
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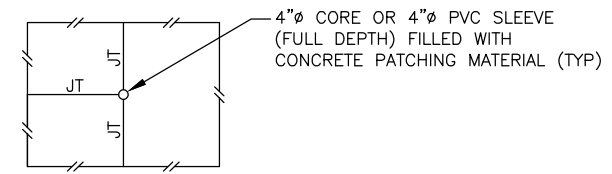
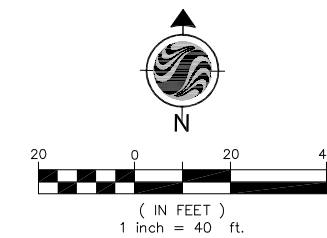


NOTE:
 THE CONTRACTOR SHALL AS-BUILT THE EXISTING MEDIAN CURB & GUTTER ON COLFAX AVENUE TO CONFIRM HORIZONTAL AND VERTICAL LOCATION PRIOR TO BEGINNING ANY PAVING OPERATIONS. IF SIGNIFICANT DISCREPANCIES ARISE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER TO RESOLVE CONFLICTS.

LOW POINT ELEV = 5214.72
 LOW POINT STA = 102+92.95
 PVI STA = 102+99.12
 PVI ELEV = 5214.66
 A.D. = 0.68
 K = 102.94

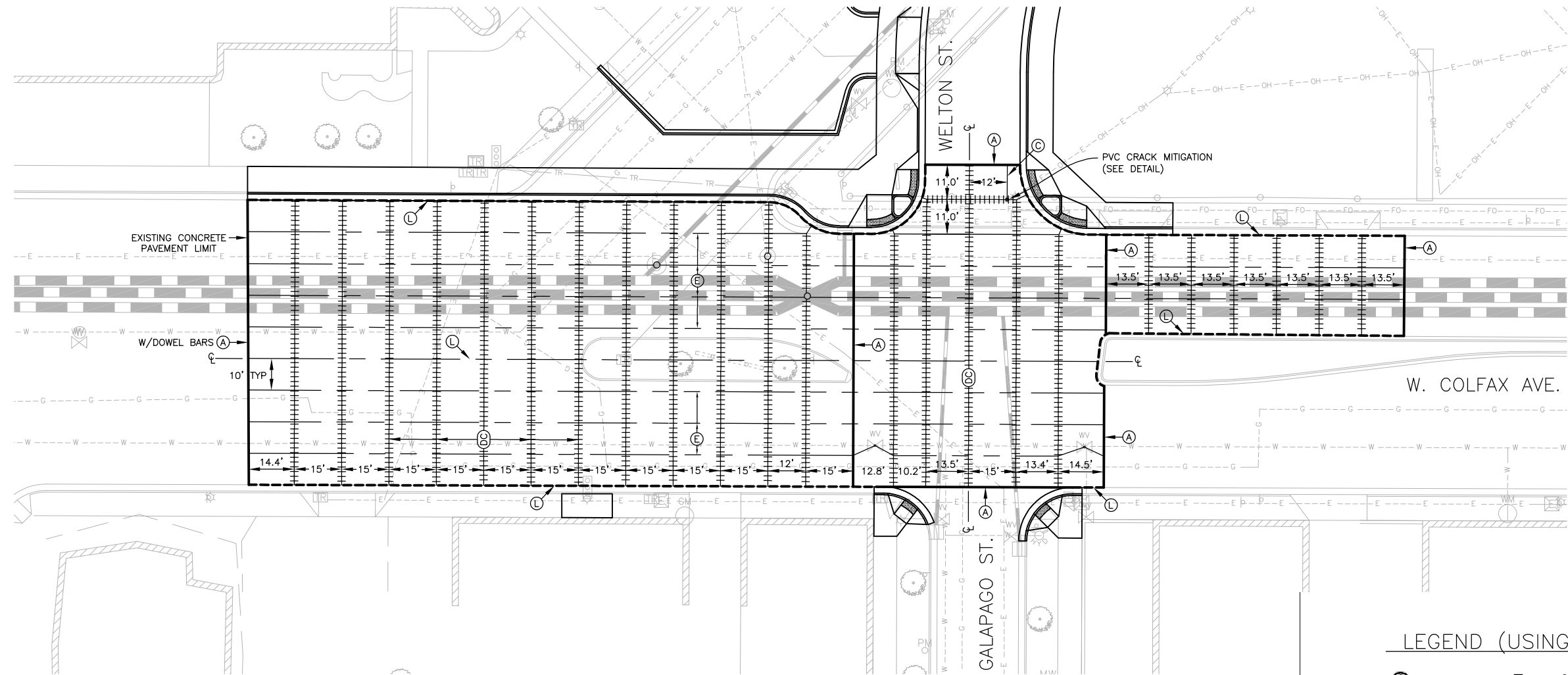


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PVC CRACK MITIGATION DETAIL

NOTE: DOWELS NEAR INTERSECTING 'DC' JOINTS SHALL BE AT LEAST 18" FROM EACH OTHER. CONTRACTOR SHALL REMOVE DOWELS FROM BASKET AS REQUIRED.



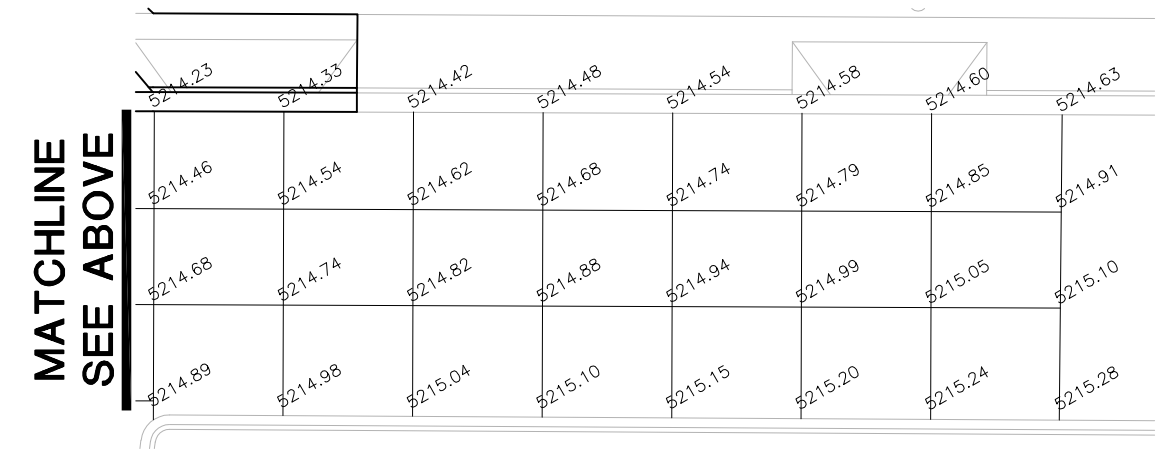
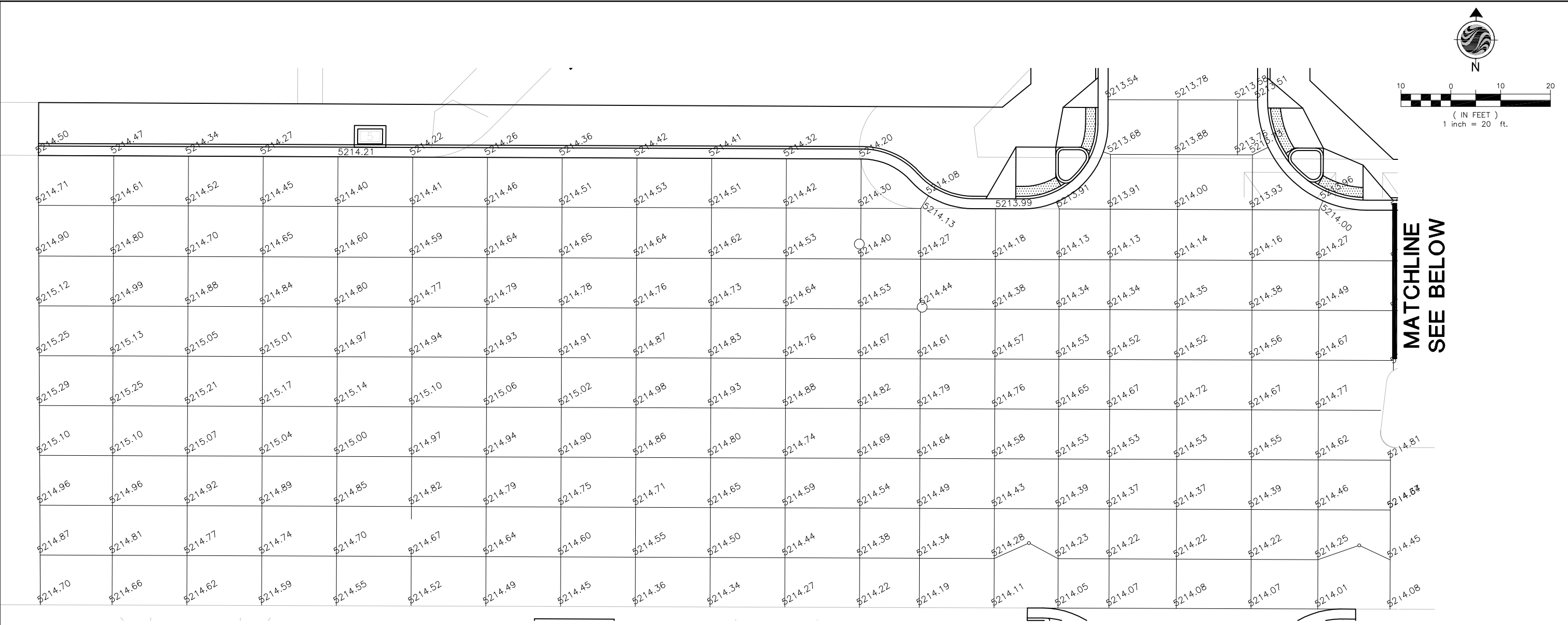
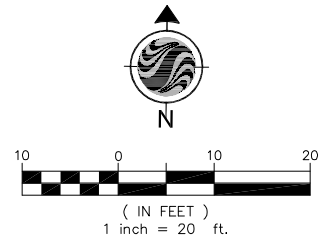
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LEGEND (USING CCD SYMBOLS)

- Expansion Joint Line
- Transverse Contraction Joint Line
- Longitudinal Construction Joint Line (Keyway)
- Doweled Transverse Contraction Joint
- Longitudinal Contraction Joint Line
- Longitudinal Construction Joint Line
- Transverse Construction Joint Line

NOTE: CONTRACTOR MAY MODIFY THE 'DC' JOINT BY USING A REMOVABLE EDGE FORM WITH HOLES FOR THE DOWELS TO BE CAST IN THE FIRST POUR.

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Acad Ver. 2008	Scale: 1"=40'	Units: Feet						Roadway Plans		



NOTE:
 THE CONTRACTOR SHALL AS-BUILT THE EXISTING MEDIAN CURB & GUTTER ON COLFAX AVENUE TO CONFIRM HORIZONTAL AND VERTICAL LOCATION PRIOR TO BEGINNING ANY PAVING OPERATIONS. IF SIGNIFICANT DISCREPANCIES ARISE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER TO RESOLVE CONFLICTS.

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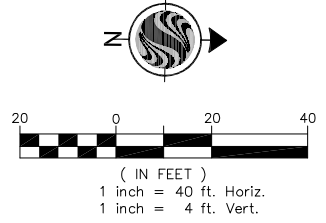
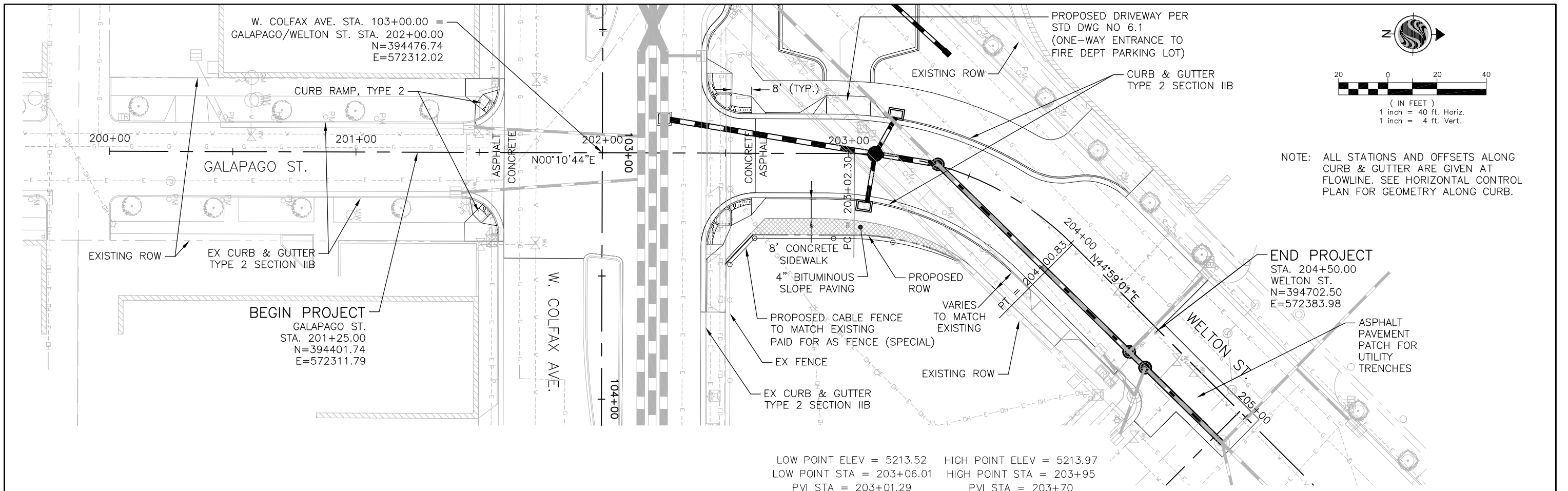
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CONCRETE – DETAILED GRADING PLAN

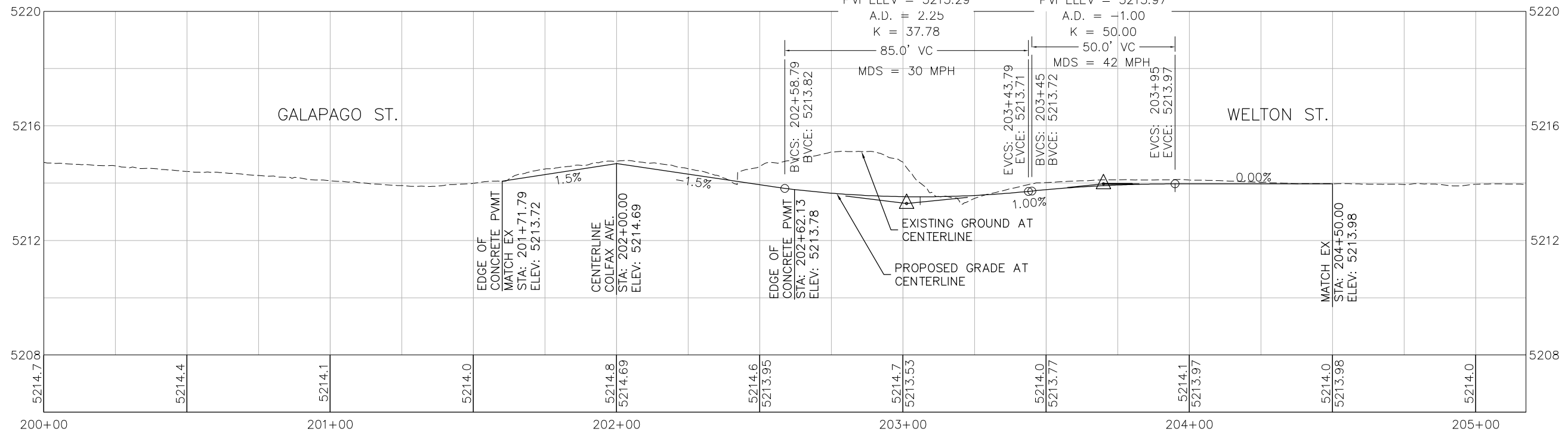
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STU M320-060
16952
Sheet Number 18

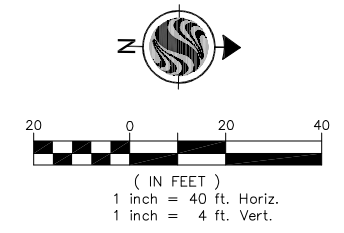
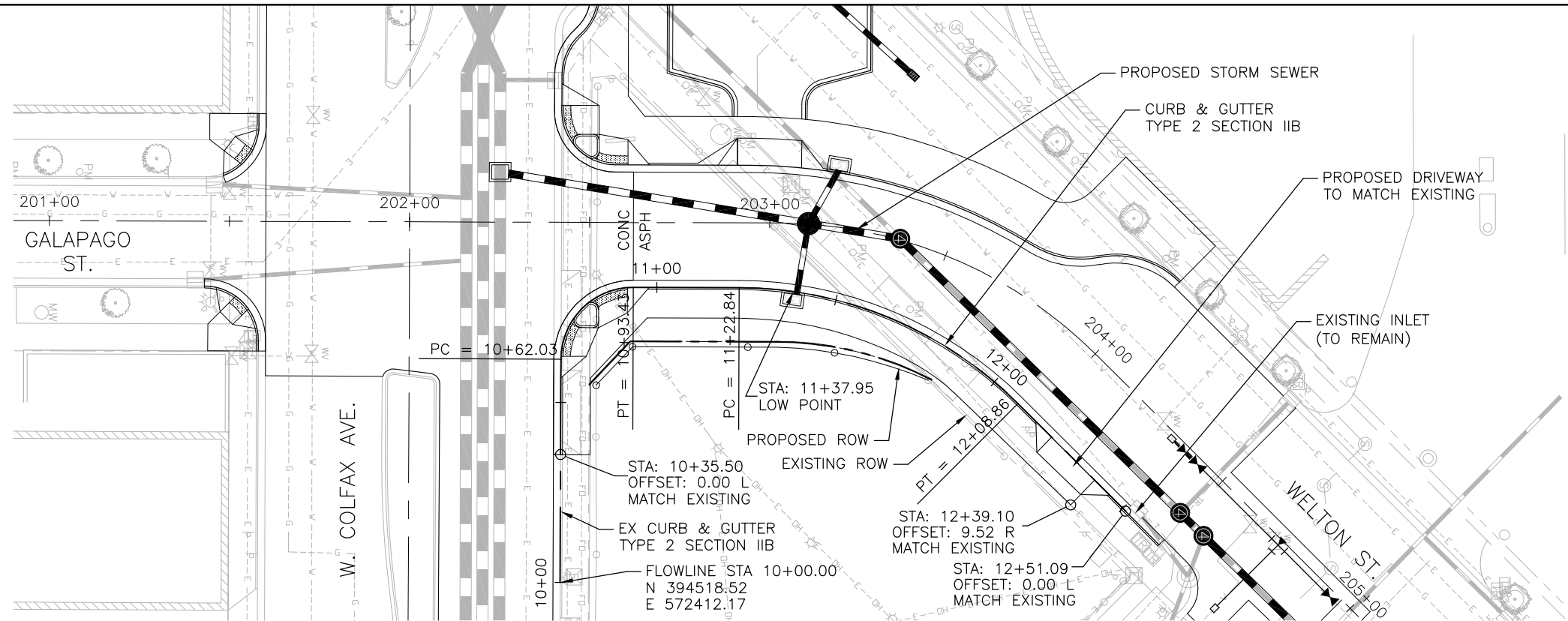


NOTE: ALL STATIONS AND OFFSETS ALONG CURB & GUTTER ARE GIVEN AT FLOWLINE. SEE HORIZONTAL CONTROL PLAN FOR GEOMETRY ALONG CURB.

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 LOW POINT STA = 203+06.01 HIGH POINT STA = 203+95
 PVI STA = 203+01.29 PVI STA = 203+70
 PVI ELEV = 5213.29 PVI ELEV = 5213.97



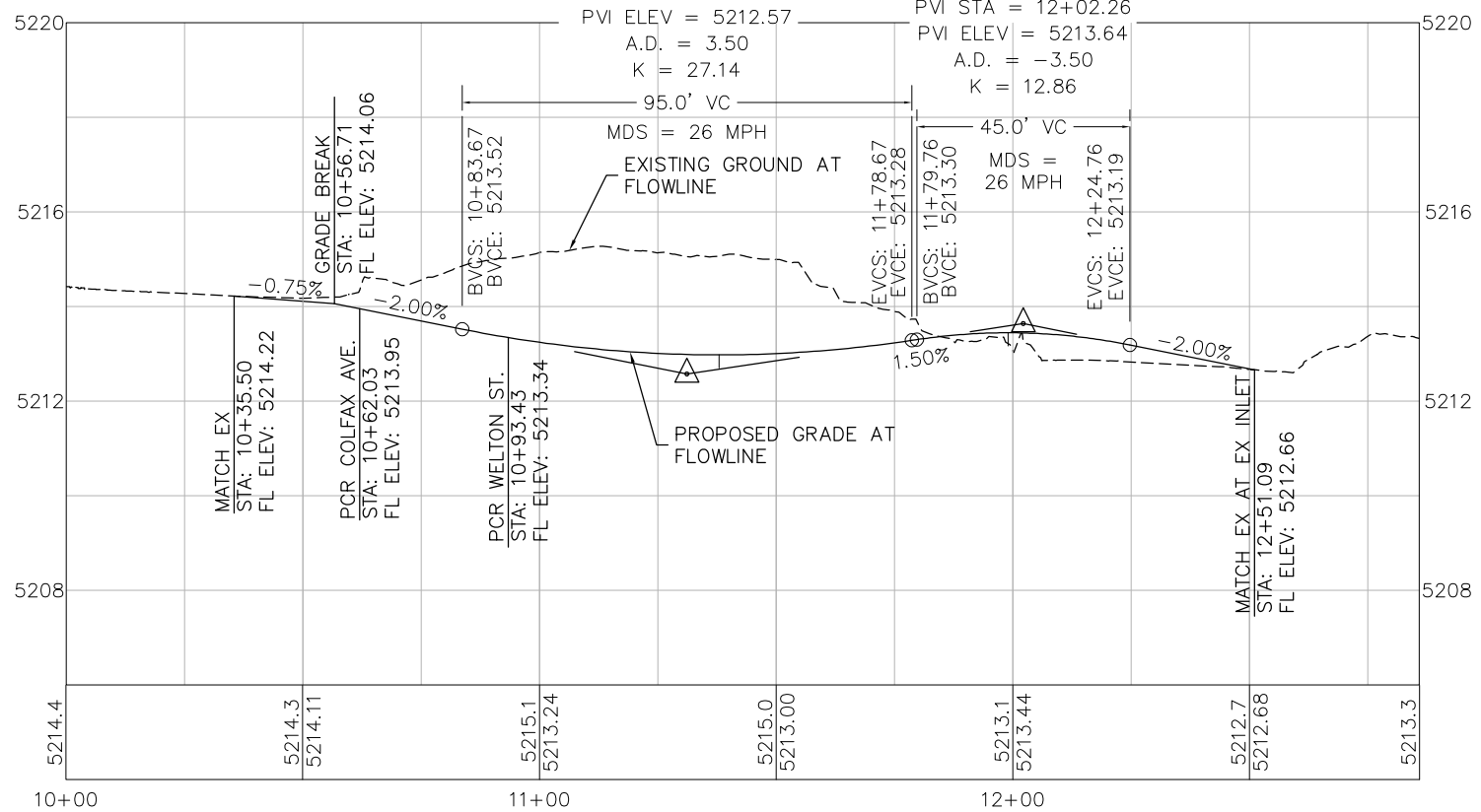
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Last Modification Date: 8/24/2012 Initials: MCHAPMAN					Revised:				16952	
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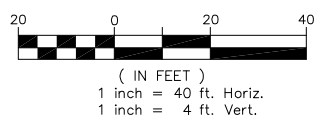
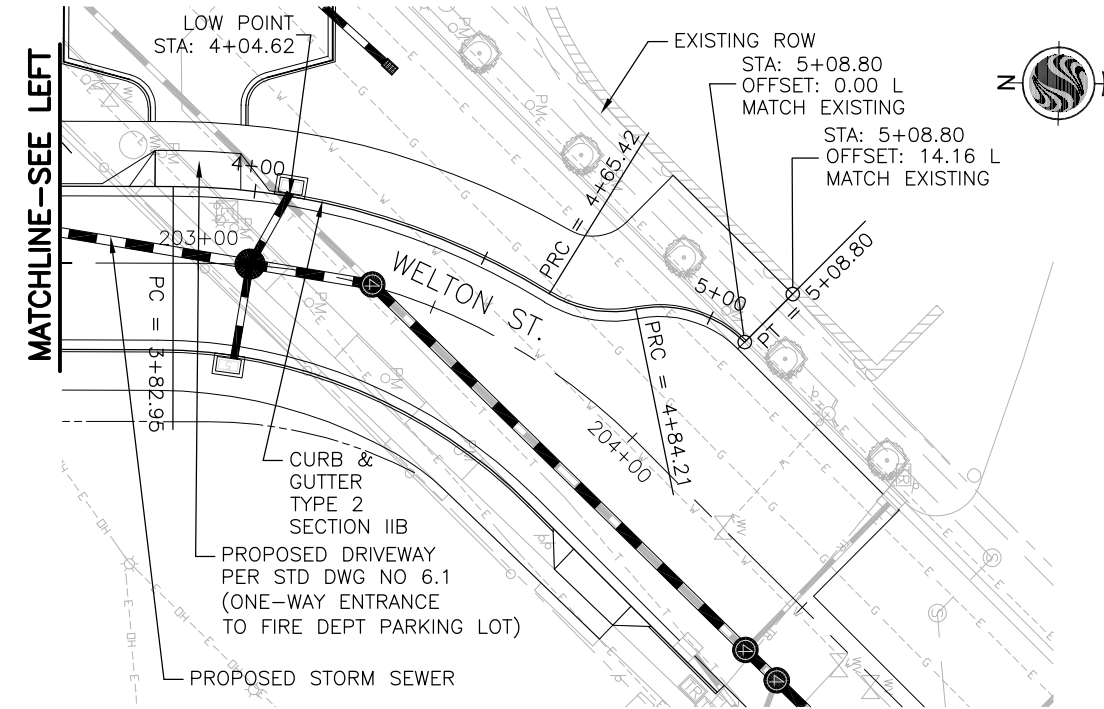
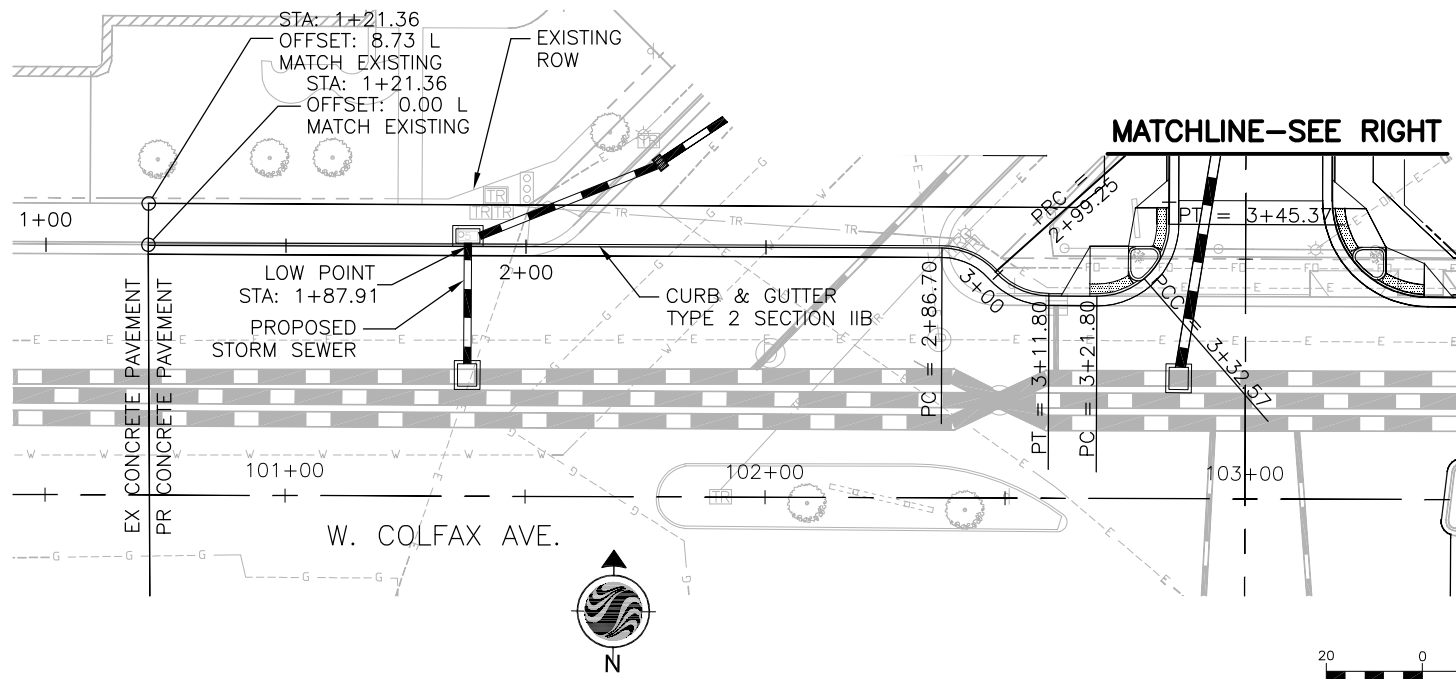
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 LOW POINT STA = 11+37.95
 PVI STA = 11+31.17
 PVI ELEV = 5212.57
 A.D. = 3.50
 K = 27.14

HIGH POINT ELEV = 5213.44
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 K = 12.86

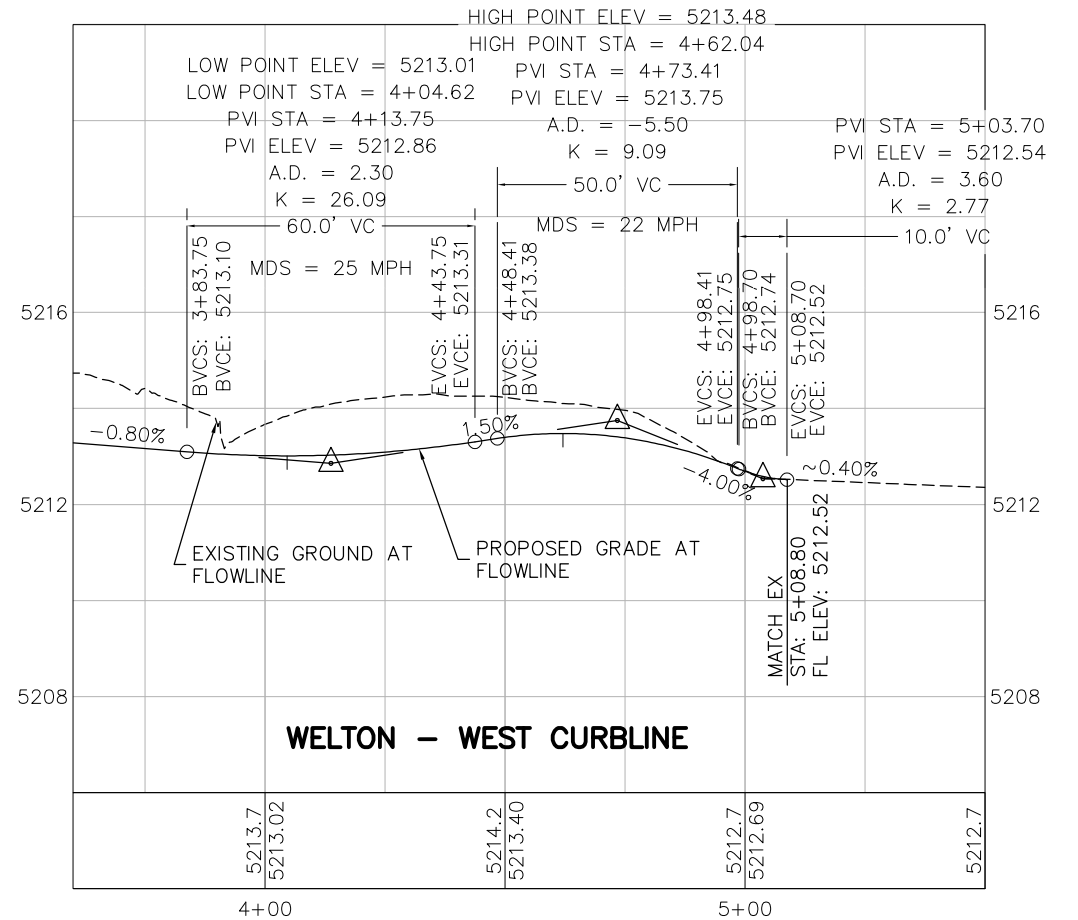
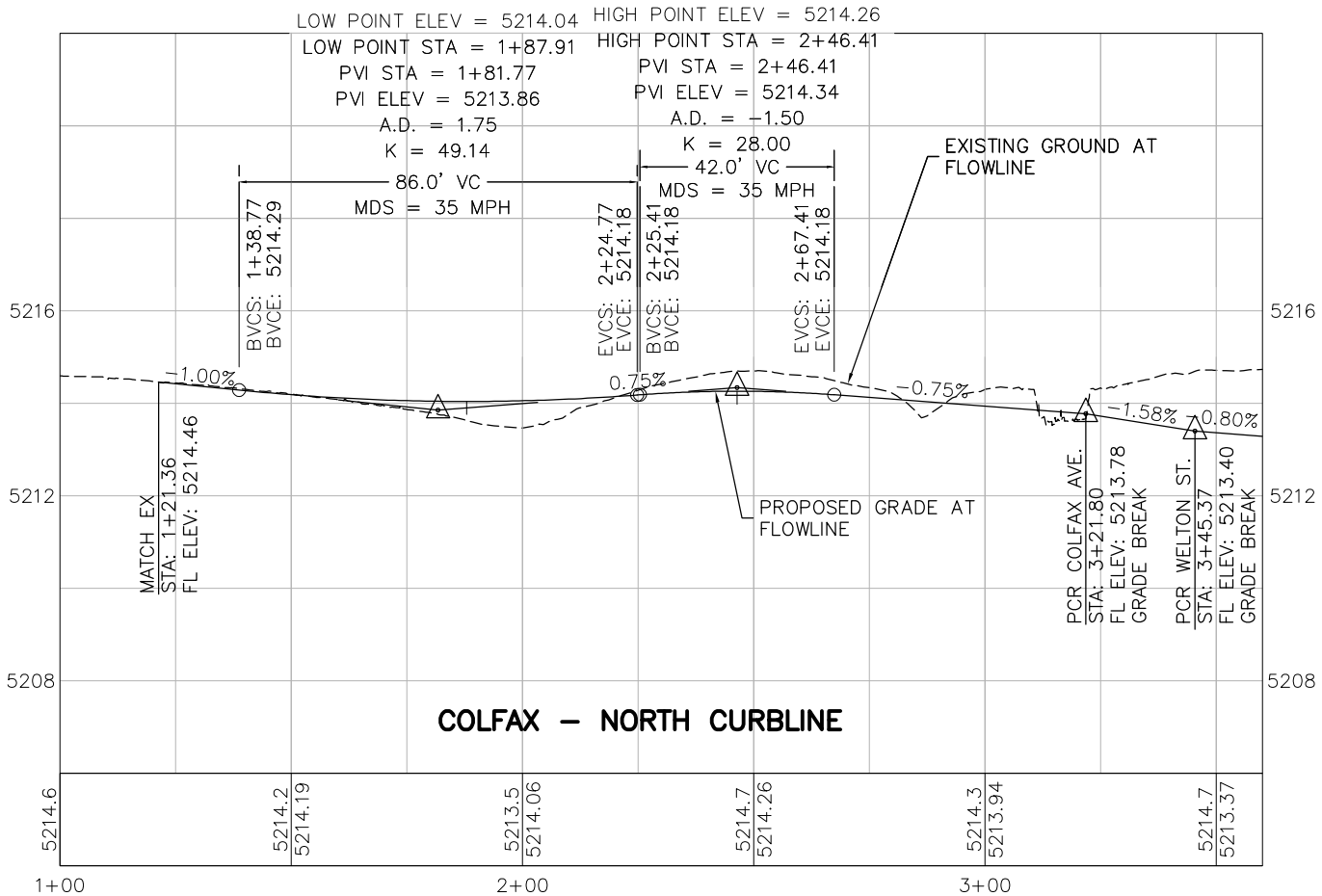
NOTE: ALL STATIONS AND OFFSETS ALONG CURB & GUTTER ARE GIVEN AT FLOWLINE. SEE HORIZONTAL CONTROL PLAN FOR GEOMETRY ALONG CURB.



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NOTE: ALL STATIONS AND OFFSETS ALONG CURB & GUTTER ARE GIVEN AT FLOWLINE. SEE HORIZONTAL CONTROL PLAN FOR GEOMETRY ALONG CURB.



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Acad Ver. 2008	Scale: 1"=40' Units: Feet

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DEPARTMENT OF TRANSPORTATION
Region 6

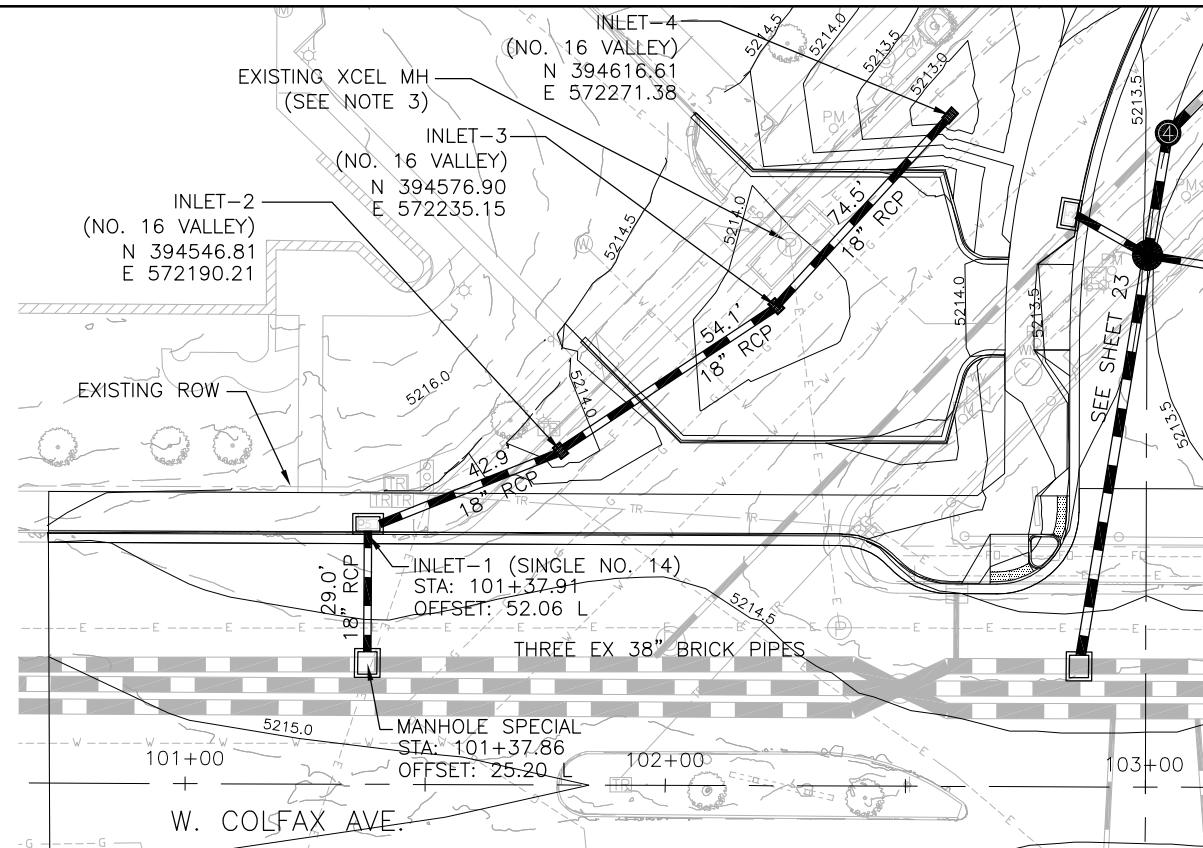
CITY OF GALAPAGOS

Stantec

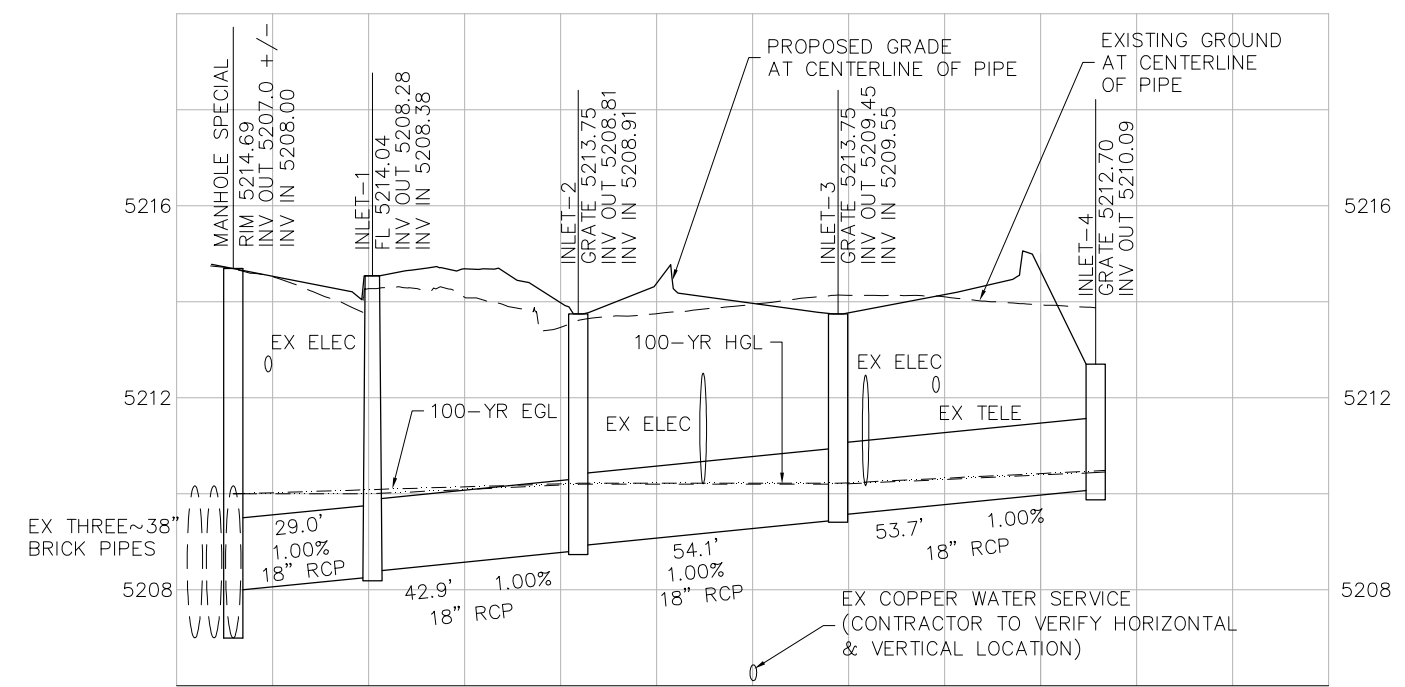
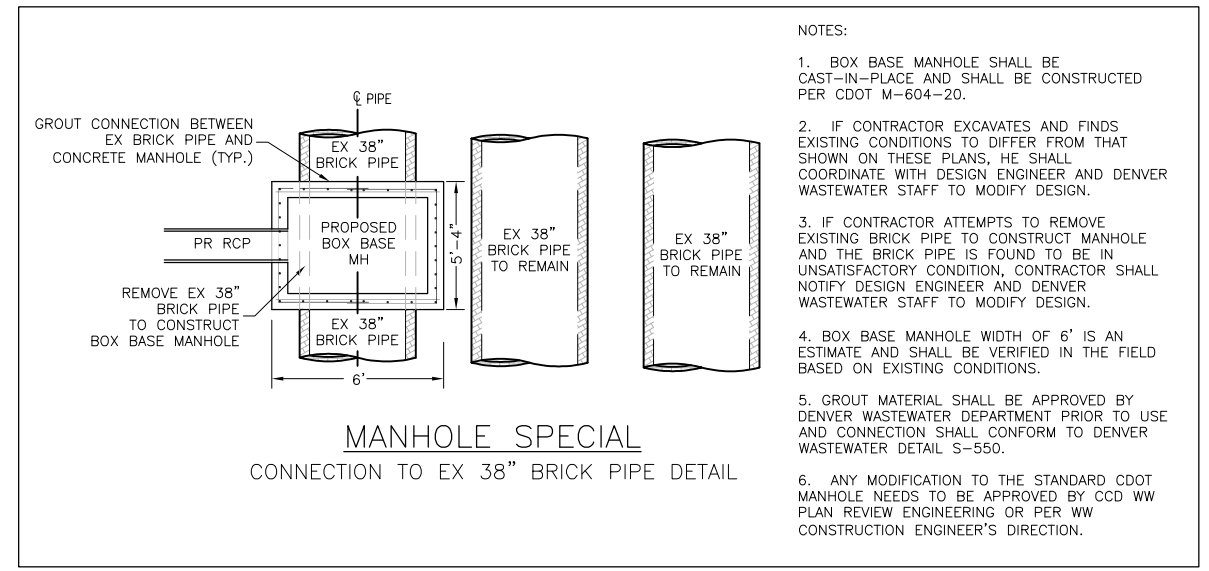
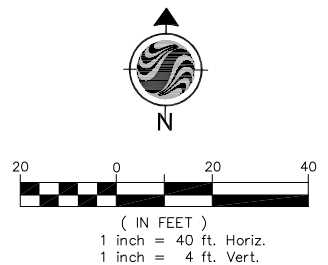
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NORTHWEST FLOWLINE PLAN & PROFILE	
Roadway Plans	

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	16952
Sheet Number	21

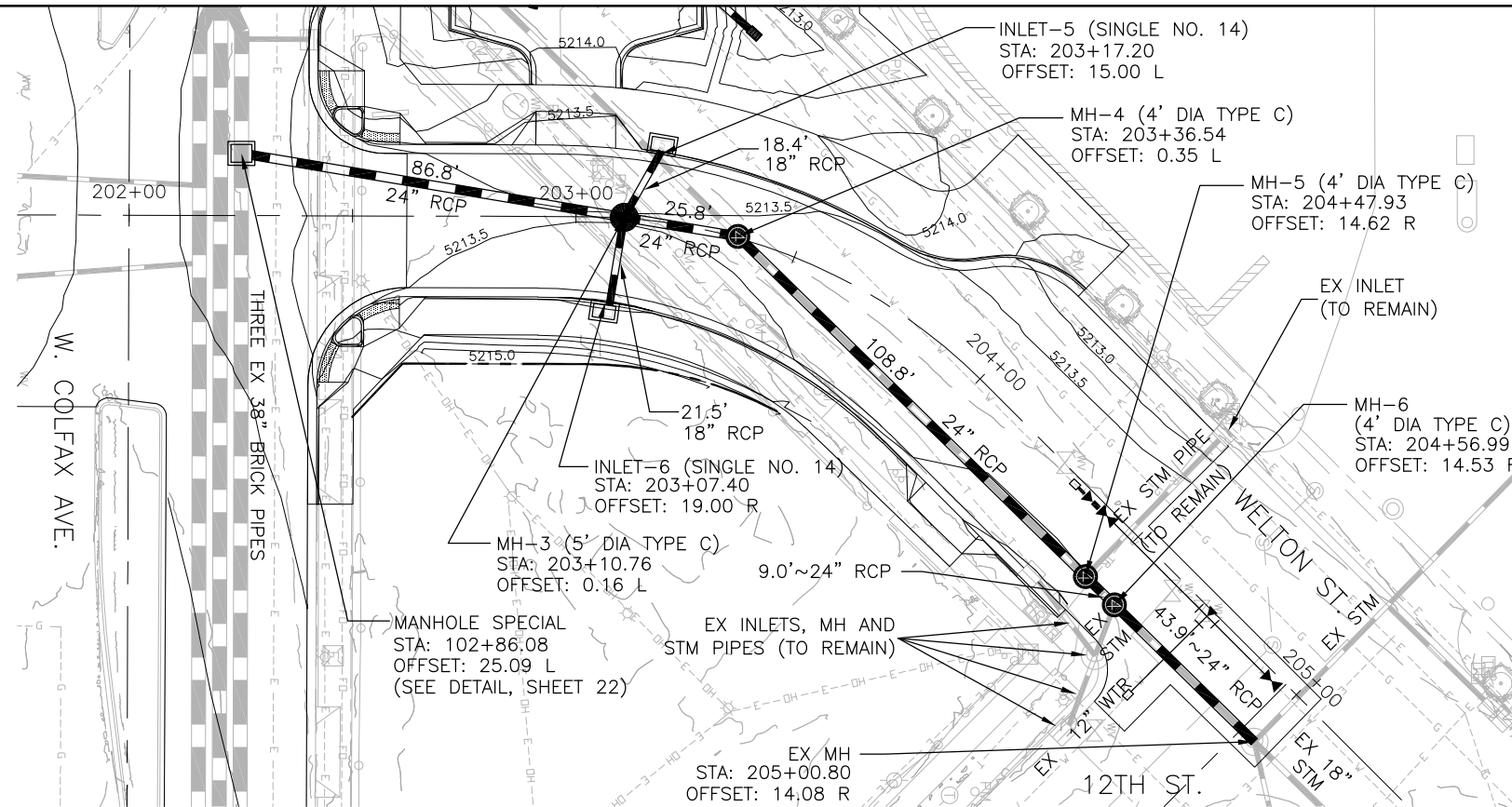


- NOTES:
1. STATIONS AND OFFSETS AT PROPOSED CURB INLETS ARE AT MIDPOINT OF INLET ALONG FLOWLINE OF ROADWAY.
 2. PIPE LENGTHS ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
 3. XCEL ENERGY TO RAISE EXISTING ELECTRIC DUCT BANKS PRIOR TO STORM SEWER CONSTRUCTION IN THE VICINITY OF INLET-3. CONTRACTOR SHALL USE CAUTION WHEN WORKING IN THE VICINITY OF THE XCEL ENERGY MANHOLE. CONCRETE VAULT SIZE IS APPROXIMATELY 19'x7.33'.
 4. ALL CCD STORM/SANITARY SEWERS SHALL BE PER CCD STANDARDS OR SPECIFICATIONS. ALL CCD STORM/SANITARY SEWERS ARE TO BE INSPECTED BY CCD WASTEWATER MANAGEMENT DIVISION. PLEASE CALL CCD WASTEWATER MAINLINE INSPECTION @ 303-446-3529, AT LEAST 24 HOURS PRIOR TO CONSTRUCTION FOR SCHEDULING A PRECONSTRUCTION MEETING.



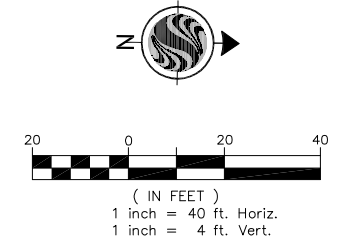
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Last Modification Date: 8/24/2012 Initials: MCHAPMAN					Revised:				16952		
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Acad Ver. 2008 Scale: 1"=40' Units: Feet				Region 6							

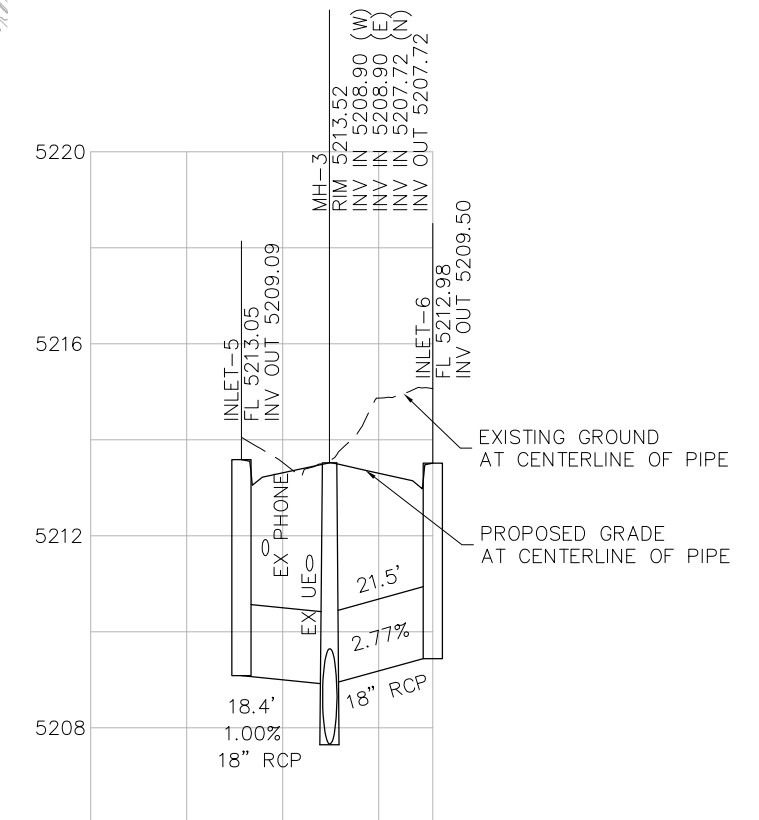
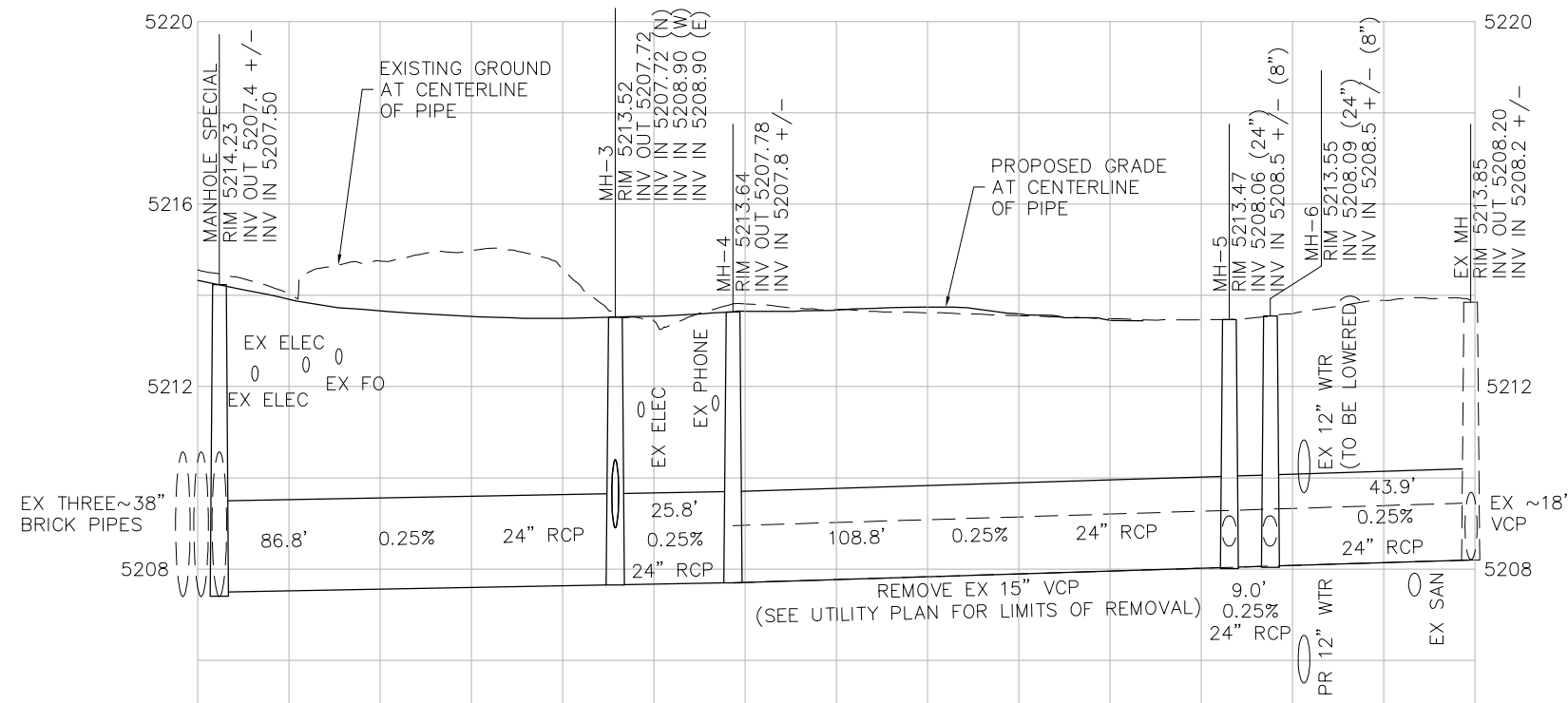


NOTES:

- STATIONS AND OFFSETS AT PROPOSED CURB INLETS ARE AT MIDPOINT OF INLET ALONG FLOWLINE OF ROADWAY.
- PIPE LENGTHS ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
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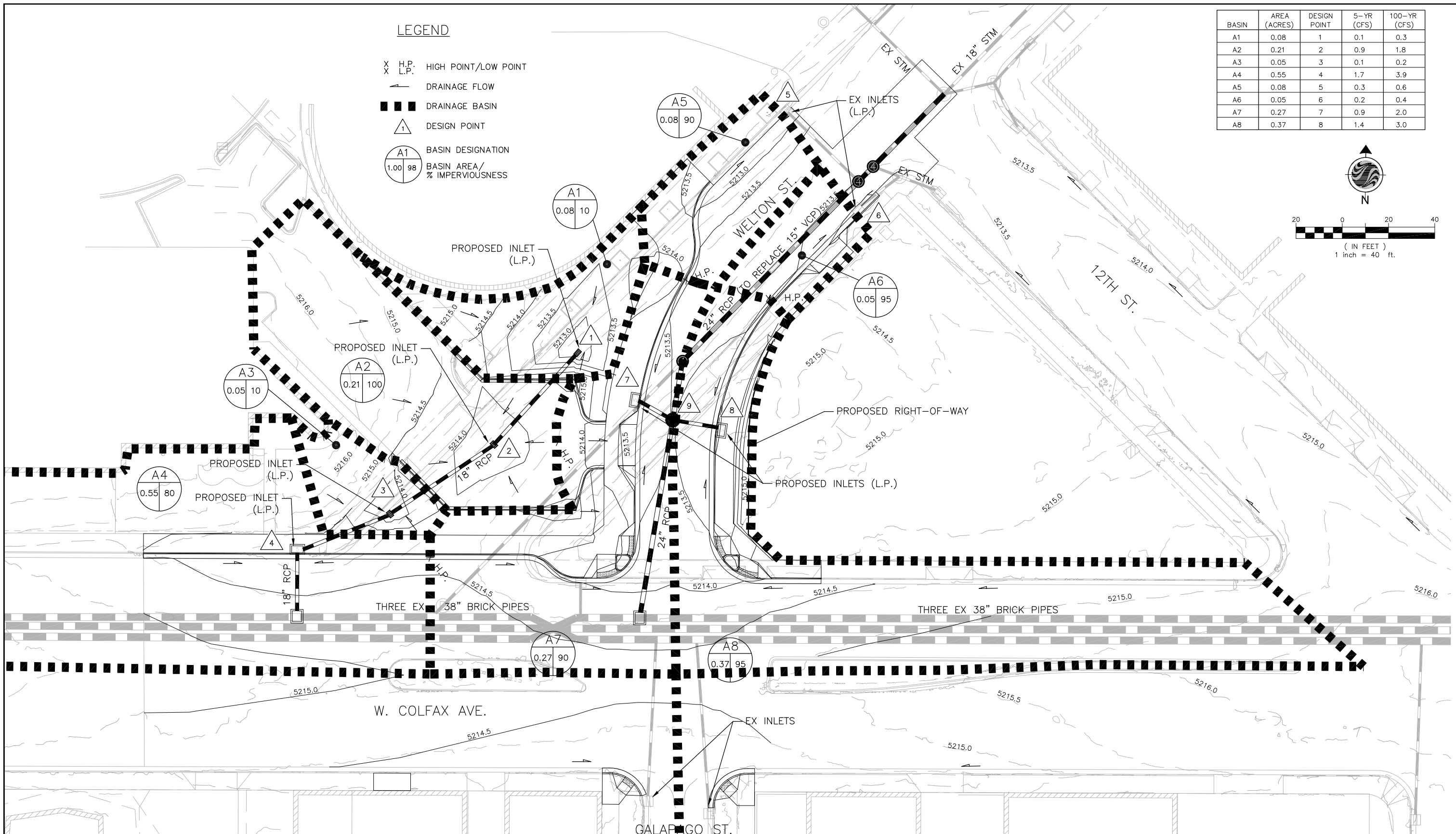
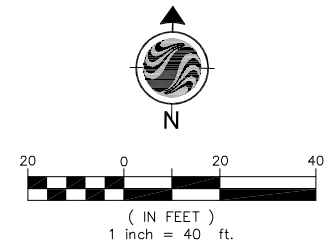


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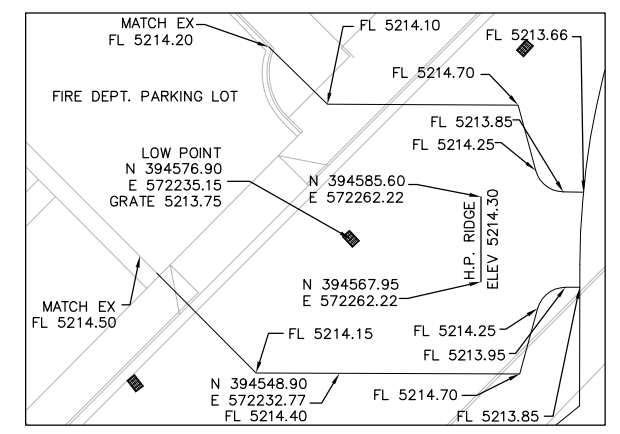
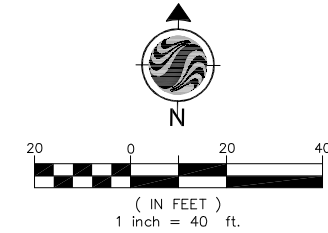
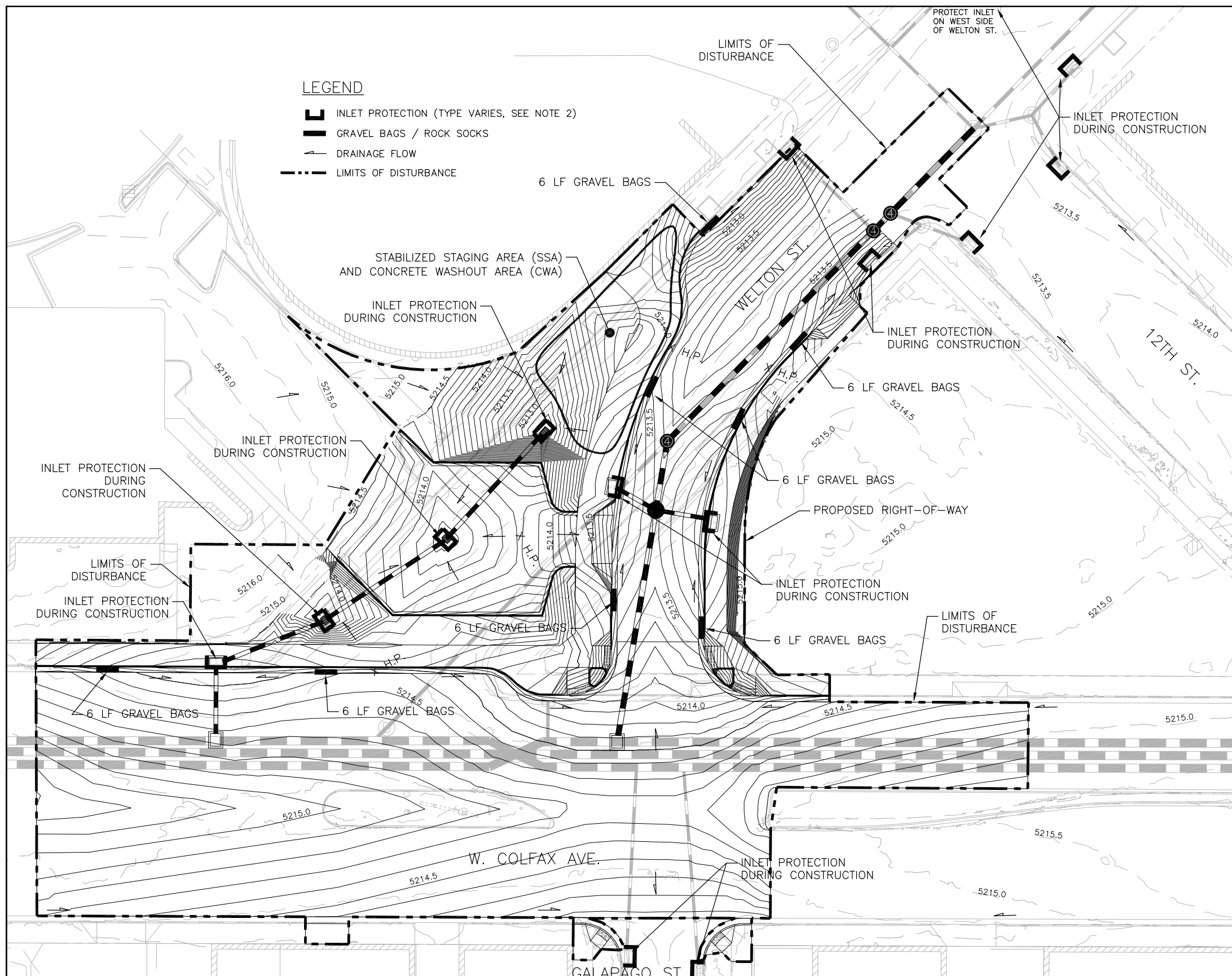
LEGEND

- X H.P. HIGH POINT/LOW POINT
- ← DRAINAGE FLOW
- DRAINAGE BASIN
- △ DESIGN POINT
- A1 BASIN DESIGNATION
- 1.00 98 BASIN AREA/
% IMPERVIOUSNESS

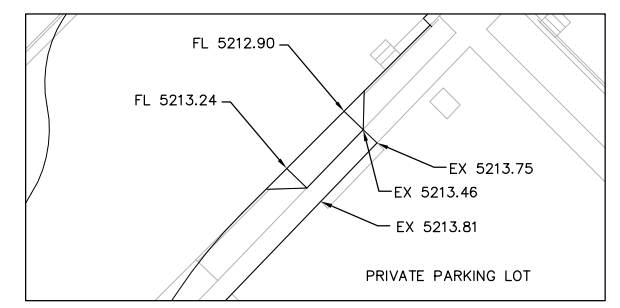
BASIN	AREA (ACRES)	DESIGN POINT	5-YR (CFS)	100-YR (CFS)
A1	0.08	1	0.1	0.3
A2	0.21	2	0.9	1.8
A3	0.05	3	0.1	0.2
A4	0.55	4	1.7	3.9
A5	0.08	5	0.3	0.6
A6	0.05	6	0.2	0.4
A7	0.27	7	0.9	2.0
A8	0.37	8	1.4	3.0



Computer File Information		Index of Revisions				As Constructed		FINAL DRAINAGE MAP		Project No./Code															
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DETAILED GRADING PLAN OF FIRE DEPT PARKING LOT



DETAILED GRADING PLAN OF ACCESS TO PRIVATE PARKING LOT

NOTES:

- 1) ALL EROSION & SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED PER URBAN DRAINAGE & FLOOD CONTROL DISTRICT (UDFCD) CRITERIA. SEE THE STORMWATER MANAGEMENT PLAN (SWMP) NARRATIVE FOR ADDITIONAL DETAILS.
- 2) THE TYPE OF INLET PROTECTION USED SHALL VARY WITH THE TYPE OF INLET BEING PROTECTED. SEE UDFCD AND THE STORMWATER MANAGEMENT PLAN (SWMP) NARRATIVE FOR ADDITIONAL DETAILS.
- 3) THE USE OF A PORTABLE CONCRETE WASHOUT IS ACCEPTABLE; HOWEVER, UDFCD APPLICABLE CRITERIA FOR CONCRETE WASHOUT AREA (CWA) MUST STILL BE MET.

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Last Modification Date: 8/24/2012	Initials: MCHAPMAN					Revised:				16952	
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Acad Ver. 2008	Scale: 1"=40'	Units: Feet							ROADWAY PLANS		

1. SITE DESCRIPTION

For Project Information

- A. **PROJECT SITE DESCRIPTION** : The site is located at the intersections of Colfax Ave./Galapago St./Welton St. The area consists of two intersections that will be combined into one signalized intersection. The reconfigured intersection area will include pedestrian amenities.
- B. **PROPOSED SEQUENCING FOR MAJOR ACTIVITIES**:
 - 1. While Welton Street remains open to traffic, build the east portion of the new roadway and the new intersection with Colfax. Remove west median on Colfax (use barrels to close until Phase 2)
 - 2. Close Welton Street and complete utility and roadway improvements, as well as north lane on Colfax.
 - 3. Open new Colfax/Welton intersection, including traffic signal. Re-stripe Galapago to a one-way northbound roadway; complete landscaping.
- C. **ACRES OF DISTURBANCE** :
 - 1. Total area of construction site: 1.3
 - 2. Total area of disturbance: 1.3
 - 3. Acreage of seeding/sodding: 0.09
- D. **EXISTING SOIL DATA** :
 - 1. See the Geotechnical Report
- E. **EXISTING VEGETATION, INCLUDING PERCENT COVER** :
 - 1. The existing area within the limits of the project is pavement, sidewalks, or buildings and therefore essentially impervious. The proposed improvements will not significantly alter the impervious condition.
- F. **POTENTIAL POLLUTANTS SOURCES** : See First Construction Activities under Potential Pollutant Sources. The ECS shall prepare a list of all potential pollutants and their locations.
- G. **RECEIVING WATER** :
 - 1. Project is entirely within the City and County of Denver.
 - 2. The existing inlets and storm sewer system have no reported problems. Because the imperviousness and flows paths are not being significantly changed by the project, runoff volumes will be unchanged.
 - 3. In general, stormwater runoff flows to Colfax Avenue via overland flow or storm sewer system. The proposed improvements will maintain that drainage pattern using existing and proposed storm sewer.
 - 4. Outfall locations: A main storm sewer trunk line runs from east to west within Colfax Avenue.
 - 5. Names of receiving water(s) on site and the ultimate receiving water: Cherry Creek
 - 6. Distance ultimate receiving water is from project: 500 feet to the west
 - 7. Does the receiving water have an approved TMDL: No
- H. **ALLOWABLE NON-STORMWATER DISCHARGES** :
 - 1. Groundwater and stormwater dewatering: Discharges to the groundwater from construction dewatering activities may be authorized provided that:
 - a. the source is groundwater and/or groundwater combined with stormwater that does not contain pollutants
 - b. the source and BMPs are identified in the SWMP
 - c. discharges do not leave the site as surface runoff or to surface waters.
 - 2. If discharges do not meet the above criteria a separate permit from the Department of Health will be required. Contaminated groundwater requiring coverage under a separate permit may include groundwater contaminated with pollutants from a landfill, mining activities, industrial pollutant plumes, underground storage tank, etc.
 - 3. No discharges are expected.
- I. **ENVIRONMENTAL IMPACTS**:
 - 1. Wetland Impacts: NO
 - 2. Stream Impacts: NO
 - 3. Threatened and Endangered Species: None in area.

2. SITE MAP COMPONENTS :

Pre-construction

- A. **CONSTRUCTION SITE BOUNDARIES** See Plan Sheets.
- B. **ALL AREAS OF GROUND SURFACE DISTURBANCE** See Plan Sheets
- C. **LOCATION OF ALL STRUCTURAL BMPs IDENTIFIED IN THE SWMP** See Plan Sheets
- D. **LOCATION OF NON-STRUCTURAL BMPs AS APPLICABLE IN THE SWMP** See Plan Sheets
- E. **SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER** N/A
- F. **PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION** See Plan Sheets

3. SWMP ADMINSTRATOR FOR DESIGN:

Stantec Consulting
 2000 S. Colorado Blvd., Ste. 2-300
 Denver, CO 80222
 (303) 758-4058
 Contact: Monica Chapman, PE

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

- A. **DESIGNATE A SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR** (To be filled out at time of construction; designate the individual(s) responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the administrator shall address all aspects of the projects SWMP.)
- B. **POTENTIAL POLLUTANT SOURCES**
 ECS shall evaluate, identify and describe all potential sources of pollutants at the site and place in the SWMP notebook. All BMPs related to potential pollutants shall be shown on the SWMP site map by the contractor's ECS.
- C. **BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION PHASED BMP IMPLEMENTATION During Design**: Fields are marked when used in the SWMP. During construction: the ECS shall update the checked boxes to match site conditions. STRUCTURAL BMP practices for erosion and sediment control ; practices may include, but are not limited to:

BMP	TYPE OF CONTROL	BMP as Designed	In use on site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Inlet Protection	erosion	x		x	x	
Gravel Bag	erosion	x		x	x	
Concrete Washouts	construction	x			x	
Other						

NON-STRUCTURAL BMP practices for erosion and sediment control; practices may include, but are not limited to:

BMP	TYPE OF CONTROL	BMP as Designed	In use on site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Sweeping	construction	x		x	x	
Other						

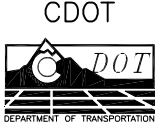


Erosion control devices are used to limit the amount of erosion on site.
 Sediment control devices are designed to capture sediment on the project site.
 Construction control are BMPs related to construction access and staging.

BMP Descriptions

Inlet Protection - -- To be used on inlets to intercept and filter sediment-laden water from the disturbed construction site. Prior to construction commencing, inlets needing protection, shall be evaluated for the appropriate protection, protected and the SWMP revised accordingly. Protection is required until all disturbances adjacent to or upstream of inlets have been completed and stabilized.
Concrete Washouts - To be used to contain all wash water from tools or concrete truck chutes. They shall be used in locations where concrete will be used. The washouts shall be installed prior to any concrete operations taking place.
Gravel bags - Add *Gravel Bags* are to be used in the gutter pans along the flow line and prior to storm drain inlets to capture sediment laden water or other pollutants from saw cutting, metal grinding, or other work. Gravel bags shall be installed prior to work commencing and shall be removed once work at the site is complete. Gravel bags shall be maintained and kept in operating condition at all times.
Sweeping - whenever sediment is tracked onto the paved surfaces, they shall be swept with a pick-up broom to minimize sediment being tracked off-site.

D. STABILIZED CONSTRUCTION ENTRANCE/VEHICLE TRACKING CONTROL

- 1. Sweeping shall be implemented in accordance with subsection 208.04.

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Acad Ver. 2008	Scale: N/A	Units: Feet							SWMP			

E. 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, or discharging to state waters.
2. Perimeter control may consist of gravel bags, existing landforms, or other BMPs as approved.

5. 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 SWMP Administrator/Erosion Control Supervisor (ECS) in accordance with Section 208.

6. INTERIM AND FINAL STABILIZATION

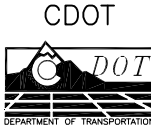


No seeding is expected for stabilizations purposes. See Landscaping plans for planting that are used for decorative purposes. If stabilization seeding is necessary, it shall be at the Contractor's expense.

7. TABULATION OF STORMWATER QUANTITIES

Pay Item	Description	Unit	Quantity
*	Sweeping (Pick-Up-Broom)		
208	Concrete Washout Structure	2 Each	
208	Gravel Bags	75 LF	
208	Storm Drain Inlet Protection	14 Each	
208	Vehicle Tracking Pad	1 Each	
208	Erosion Control Supervisor	1 LS	
700	Erosion Control	1 F/A	

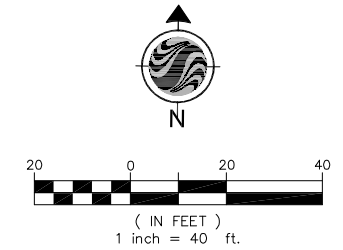
* To be included in the cost of work according to subsection 208

1. BMP Maintenance shall be paid for as: included in the cost of the erosion control device.
2. It is estimated that 2 concrete washout structures will be required on the project. The contractor shall provide a mobile concrete washout at all concrete work locations, to be designed and provided by the Contractor. The unit shall be capable of withholding the concrete chute wash and not allow any concrete-laden water to enter the storm drain or adjacent ground. The concrete washout shall be capable of being removed without digging into the ground surface. The concrete wash water in the concrete washout structure shall be allowed to dry and the remaining hardened concrete shall be disposed of properly per the CDOT 2005 Standard Specifications for Road and Bridge Construction.

Computer File Information		Index of Revisions		 CDOT DEPARTMENT OF TRANSPORTATION Region 6		 Stantec	As Constructed		STORMWATER MANAGEMENT PLAN		Project No./Code	
Creation Date: 12/07/09	Initials: PM	<input type="checkbox"/>	<input type="checkbox"/>				No Revisions:					STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN	<input type="checkbox"/>	<input type="checkbox"/>				Revised:			16952		
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-SWMP.dwg		<input type="checkbox"/>	<input type="checkbox"/>				Void:			Sheet Number 27		
Acad Ver. 2008	Scale: N/A	Units: Feet	<input type="checkbox"/>				SWMP					

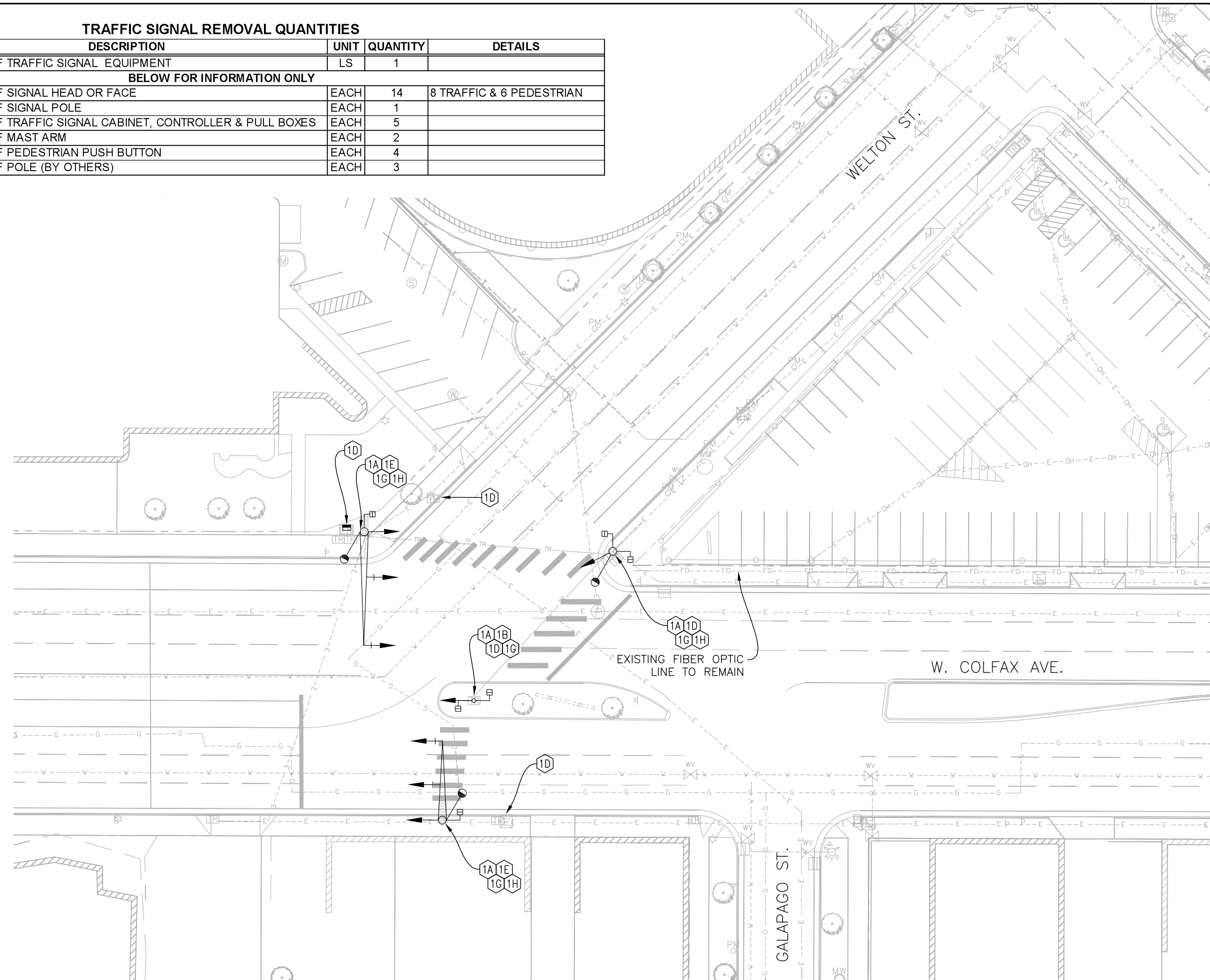
TRAFFIC SIGNAL REMOVAL QUANTITIES

KEY	ITEM	DESCRIPTION	UNIT	QUANTITY	DETAILS
-	202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	1	
BELOW FOR INFORMATION ONLY					
1A	202	REMOVAL OF SIGNAL HEAD OR FACE	EACH	14	8 TRAFFIC & 6 PEDESTRIAN
1B	202	REMOVAL OF SIGNAL POLE	EACH	1	
1D	202	REMOVAL OF TRAFFIC SIGNAL CABINET, CONTROLLER & PULL BOXES	EACH	5	
1E	202	REMOVAL OF MAST ARM	EACH	2	
1G	202	REMOVAL OF PEDESTRIAN PUSH BUTTON	EACH	4	
1H	202	REMOVAL OF POLE (BY OTHERS)	EACH	3	



NOTES:

1. REFER TO CCD STANDARDS FOR SIGNAL KEY NOTES AND LEGEND.
2. REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL NOT INCLUDE THE LUMINAIRES OR THE POLES THAT THE LUMINAIRES ARE ON.
3. THE EXISTING SIGNAL WILL BE USED UNTIL THE NEW SIGNAL IS OPERATIONAL. REMOVAL OF SIGNAL EQUIPMENT WILL BE PERFORMED IN STAGES IN ACCORDANCE WITH THE CONSTRUCTION PHASING.



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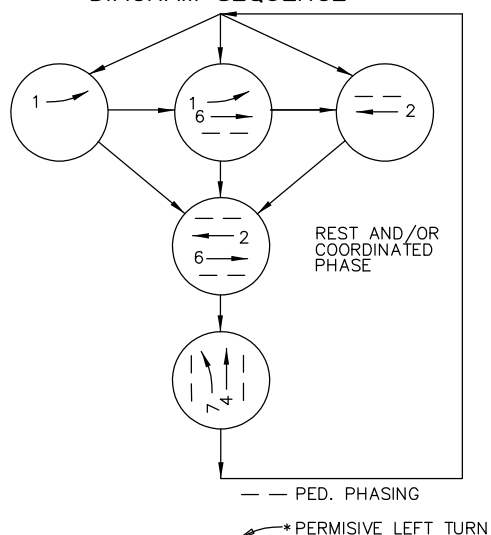
Computer File Information		Index of Revisions		CDOT DEPARTMENT OF TRANSPORTATION Region 6	 CITY OF AURORA SEAL	 Stantec	As Constructed	TRAFFIC SIGNAL REMOVAL PLAN	Project No./Code
Creation Date: 12/07/09 Initials: PM		00					No Revisions:		STU M320-060
Last Modification Date: 8/24/2012 Initials: MCHAPMAN		00					Revised:		16952
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Signal Removal Plan.dwg		00					Void:	Signal Plans	Sheet Number 28
Acad Ver. 2008 Scale: 1"=40' Units: Feet									

TRAFFIC SIGNAL TABULATION

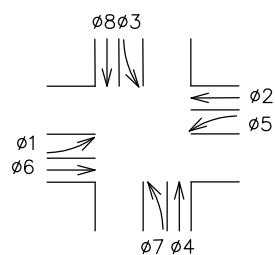
KEY	ITEM	DESCRIPTION	UNIT	QUANTITY	DETAILS
-	614	TELEMETRY (FIELD)	EA	1	
3A	614	TRAFFIC SIGNAL FACE (12-12-12)	EA	15	
3A	614	PEDESTRIAN SIGNAL FACE (16)(COUNTDOWN)	EA	8	
3B	614	TRAFFIC SIGNAL CONTROLLER & TRAFFIC SIGNAL CONTROLLER CABINET	EA	1	
3C	§	PEDESTRIAN PUSH BUTTON	EA	4	
3D	613	(3) INSTALL 3 CONDUITS (TWO 3-INCH CONDUITS AND ONE 2-INCH CONDUIT)	LF	1170	390' OF 2" & 780' OF 3"
3E	614	TRAFFIC SIGNAL-LIGHT POLE STEEL (1 MAST ARM)	EA	3	
3E	614	TRAFFIC SIGNAL LIGHT POLE STEEL	EA	1	
3F	§	TRAFFIC MAST ARM - (LENGTH SHOWN ON PLANS)	EA	3	2-35', 1-55'
3H	613	PULL BOX (SPECIAL) - MARKED "TRAFFIC COMM" ON LID	EA	12	
3J	614	INTERSECTION DETECTION SYSTEM (CAMERA)	EA	2	
3N	613	LUMINAIRE HPS (250 WATT)	EA	4	
3T	614	FIRE PREEMPTION UNIT AND TIMER	EA	3	
3U	614	FIBER OPTIC CABLE (SPECIAL)	LF	230	

§ FOR INFORMATION ONLY

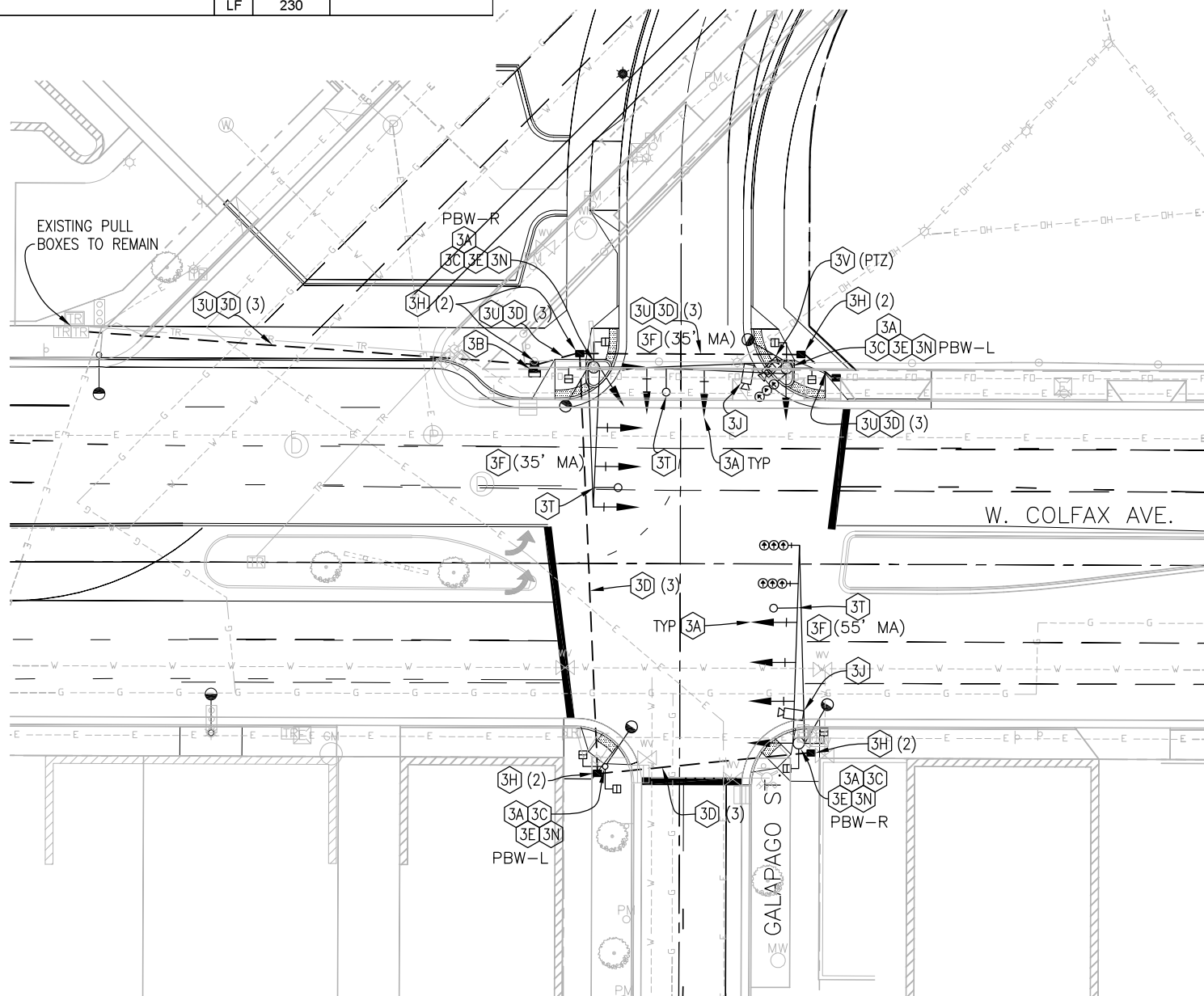
PROPOSED PHASING DIAGRAM SEQUENCE



PROPOSED PHASING LAYOUT

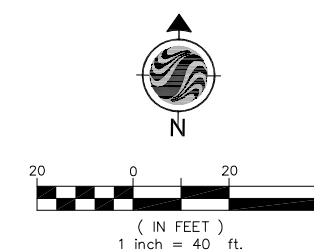


- (X) — MAST ARM LENGTH OR NUMBER OF CONDUITS/PULL BOXES
- ⊞ — REFER TO CCD STANDARDS FOR SIGNAL KEY NOTES AND LEGEND



NOTES

- ALL SIGNAL EQUIPMENT SHALL BE INSTALLED PER CITY AND COUNTY OF DENVER TRAFFIC SIGNAL SPECIFICATIONS. REFER TO CCD STANDARDS FOR SIGNAL KEY NOTES AND LEGEND.
- THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
- FIELD LOCATE EXACT LOCATIONS OF ALL PULL BOXES, SIGNAL POLES, MAST ARMS, CONDUIT, AND CONTROLLER CABINETS. ITEMS SHOULD NOT BE ORDERED UNTIL LOCATIONS ARE VERIFIED AND APPROVED BY CCD TRAFFIC SIGNAL ENGR.
- EXISTING SIGNALS SHALL REMAIN OPERATIONAL UNTIL NEW EQUIPMENT IS INSTALLED, APPROVED AND OPERATIONAL.
- ALL TRAFFIC SIGNAL FACES SHALL BE 12" LED. ALL PEDESTRIAN CROSSING HEADS SHALL BE 16" LED. ALL PLASTIC CONDUIT SHALL BE SCHEDULE 80.
- ALL CONDUIT, VEHICLE DETECTORS, PULL BOXES, AND PUSH BUTTON LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL CONTACT THE ENGINEER TO DETERMINE PLACEMENT IN THE FIELD.
- TRAFFIC SIGNALS WILL BE INTERCONNECTED. COORDINATE ALL SIGNAL INSTALLATION WITH THE CITY AND COUNTY OF DENVER TRAFFIC SIGNAL DEPARTMENT.
- ALL SIGNAL POLES SHALL INCLUDE PUSH BUTTONS, R10-4D SIGNS, AND MEET XCEL STANDARDS.
- LANE STRIPING IS SHOWN FOR INFORMATION ONLY, SEE THE SIGNING & STRIPING PLAN FOR DETAIL.
- DIRECTIONAL ARROWS SHOWN FOR REFERENCE ONLY.
- CONTRACTOR SHALL COORDINATE POWER SOURCE WITH XCEL.
- THIS ROADWAY IS CLASSIFIED AS URBAN. RESPONSE TIME TO SIGNAL MAINTENANCE IS ONE HOUR.
- ALL TRAFFIC SIGNAL CONTROLLER CABINET BASES SHALL BE CONCRETE AND SHALL ACCOMMODATE BOTH AN M-TYPE CONTROLLER CABINET AND A G-TYPE UPS CABINET. THE DIMENSIONS OF THE BASE ARE APPROXIMATELY 60" LONG X 24" WIDE X 24" HIGH. THE CONTRACTOR SHALL CONTACT DENVER TRAFFIC FOR OTHER DETAILS RELATED TO THE CABINET BASE (CONDUIT REQUIREMENTS, MOUNTING DETAILS, ETC.)



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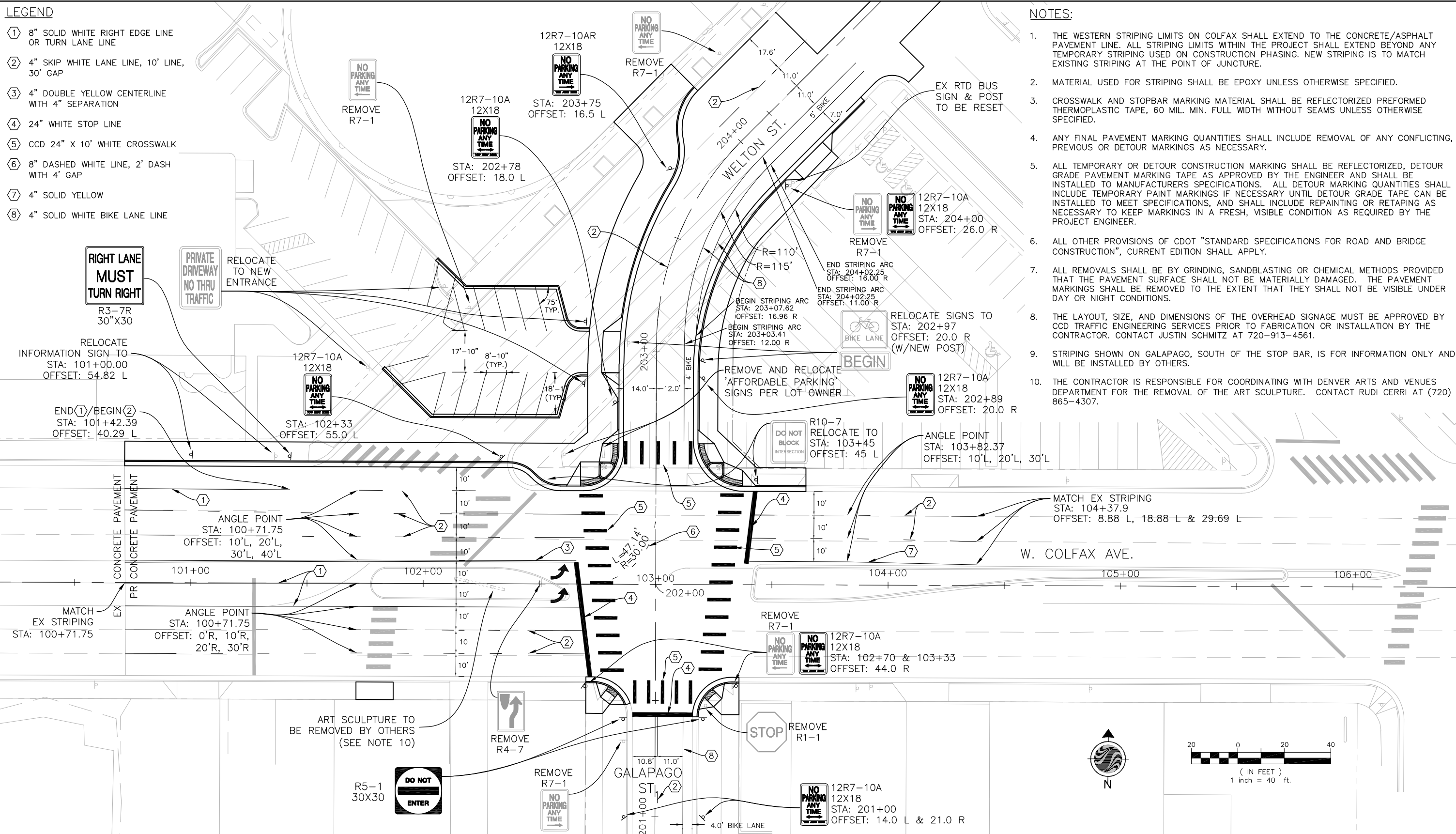
Computer File Information		Index of Revisions		CDOT	As Constructed	TRAFFIC SIGNAL PLAN		Project No./Code
Creation Date: 12/07/09	Initials: PM				No Revisions:			STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN				Revised:			16952
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Signal Plan.dwg					Void:			Sheet Number 29
Acad Ver. 2008	Scale: 1"=40'			Region 6		Signal Plans		

LEGEND

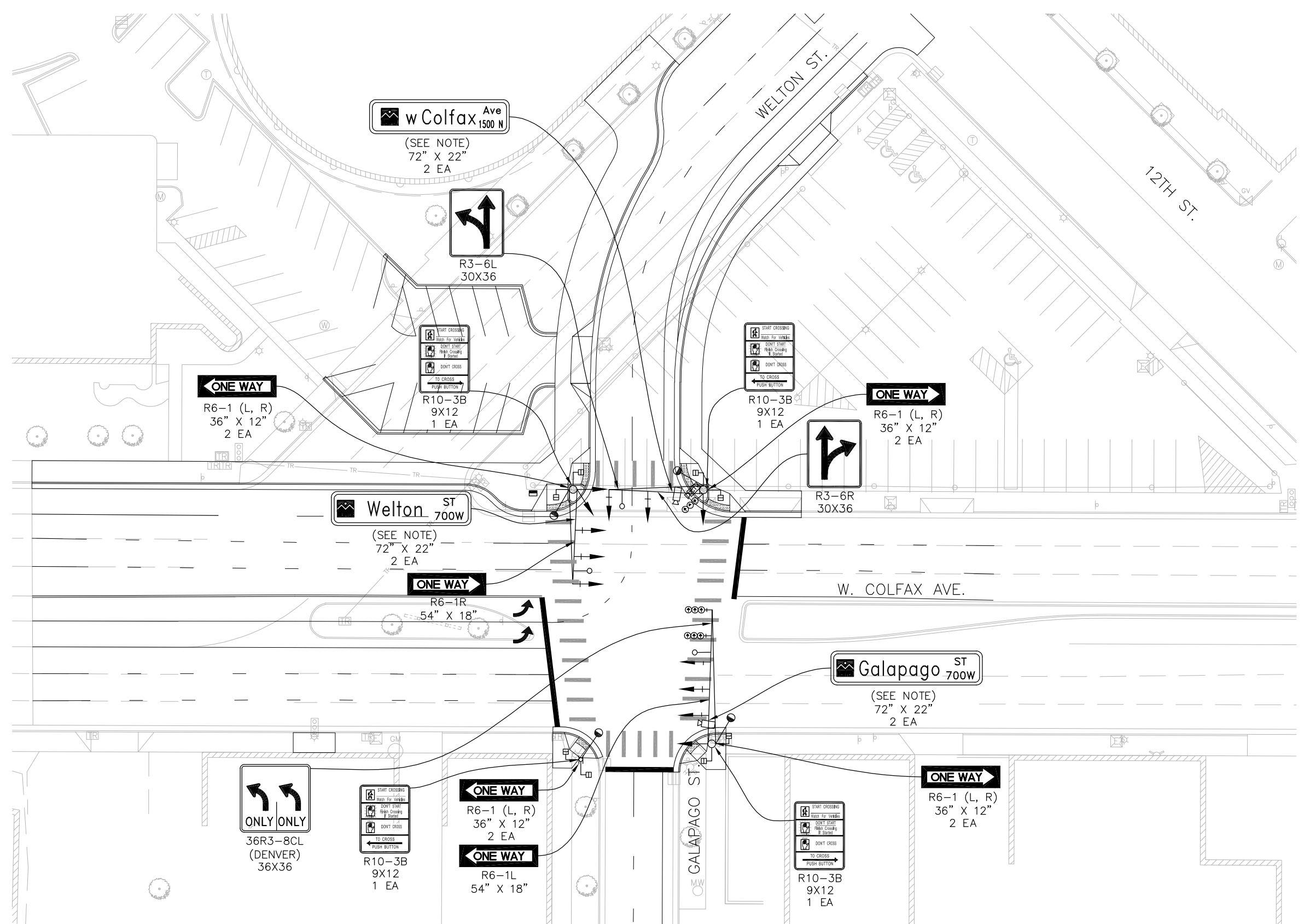
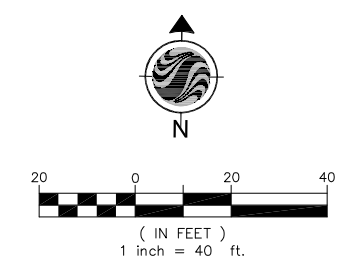
- ① 8" SOLID WHITE RIGHT EDGE LINE OR TURN LANE LINE
- ② 4" SKIP WHITE LANE LINE, 10' LINE, 30' GAP
- ③ 4" DOUBLE YELLOW CENTERLINE WITH 4" SEPARATION
- ④ 24" WHITE STOP LINE
- ⑤ CCD 24" X 10' WHITE CROSSWALK
- ⑥ 8" DASHED WHITE LINE, 2' DASH WITH 4' GAP
- ⑦ 4" SOLID YELLOW
- ⑧ 4" SOLID WHITE BIKE LANE LINE

NOTES:

1. THE WESTERN STRIPING LIMITS ON COLFAX SHALL EXTEND TO THE CONCRETE/ASPHALT PAVEMENT LINE. ALL STRIPING LIMITS WITHIN THE PROJECT SHALL EXTEND BEYOND ANY TEMPORARY STRIPING USED ON CONSTRUCTION PHASING. NEW STRIPING IS TO MATCH EXISTING STRIPING AT THE POINT OF JUNCTURE.
2. MATERIAL USED FOR STRIPING SHALL BE EPOXY UNLESS OTHERWISE SPECIFIED.
3. CROSSWALK AND STOPBAR MARKING MATERIAL SHALL BE REFLECTORIZED PERFORMED THERMOPLASTIC TAPE, 60 MIL. MIN. FULL WIDTH WITHOUT SEAMS UNLESS OTHERWISE SPECIFIED.
4. ANY FINAL PAVEMENT MARKING QUANTITIES SHALL INCLUDE REMOVAL OF ANY CONFLICTING, PREVIOUS OR DETOUR MARKINGS AS NECESSARY.
5. ALL TEMPORARY OR DETOUR CONSTRUCTION MARKING SHALL BE REFLECTORIZED, DETOUR GRADE PAVEMENT MARKING TAPE AS APPROVED BY THE ENGINEER AND SHALL BE INSTALLED TO MANUFACTURERS SPECIFICATIONS. ALL DETOUR MARKING QUANTITIES SHALL INCLUDE TEMPORARY PAINT MARKINGS IF NECESSARY UNTIL DETOUR GRADE TAPE CAN BE INSTALLED TO MEET SPECIFICATIONS, AND SHALL INCLUDE REPAINTING OR RETAPING AS NECESSARY TO KEEP MARKINGS IN A FRESH, VISIBLE CONDITION AS REQUIRED BY THE PROJECT ENGINEER.
6. ALL OTHER PROVISIONS OF CDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION SHALL APPLY.
7. ALL REMOVALS SHALL BE BY GRINDING, SANDBLASTING OR CHEMICAL METHODS PROVIDED THAT THE PAVEMENT SURFACE SHALL NOT BE MATERIALLY DAMAGED. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY SHALL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS.
8. THE LAYOUT, SIZE, AND DIMENSIONS OF THE OVERHEAD SIGNAGE MUST BE APPROVED BY CCD TRAFFIC ENGINEERING SERVICES PRIOR TO FABRICATION OR INSTALLATION BY THE CONTRACTOR. CONTACT JUSTIN SCHMITZ AT 720-913-4561.
9. STRIPING SHOWN ON GALAPAGO, SOUTH OF THE STOP BAR, IS FOR INFORMATION ONLY AND WILL BE INSTALLED BY OTHERS.
10. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH DENVER ARTS AND VENUES DEPARTMENT FOR THE REMOVAL OF THE ART SCULPTURE. CONTACT RUDI CERRI AT (720) 865-4307.



Computer File Information		Index of Revisions				As Constructed		Project No./Code	
Creation Date: 12/07/09	Initials: PM					No Revisions:		STU M320-060	
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Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Signing & Striping Plan.dwg						Void:		Sheet Number 30	
Acad Ver. 2008	Scale: 1"=40'	Units: Feet						Signal Plans	



NOTE:
ALL OVERHEAD STREET NAME SIGNS SHALL USE THE CLEARVIEW FONT.

Computer File Information		Index of Revisions		CDOT DEPARTMENT OF TRANSPORTATION Region 6		As Constructed		SIGNING ON TRAFFIC SIGNAL		Project No./Code	
Creation Date: 12/07/09	Initials: PM						No Revisions:			STU M320-060	
Last Modification Date: 8/24/2012	Initials: MCHAPMAN						Revised:			16952	
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Signing On Traffic Signal.dwg							Void:			Sheet Number 31	
Acad Ver. 2008	Scale: 1"=40'	Units: Feet						Signal Plans			

TABULATION OF SIGNS

SIGN NO.	SIGN CODE	STATION	SIDE	SIGN PANEL SIZE	BACK-GROUND COLOR	REMOVAL OF GROUND SIGN (EA)	RESET GROUND SIGN (EA)	STEEL SIGN POSTS		SIGN PANEL (SQ. FT.)				
								NO. OF POSTS	POST (LF)	CLASS I	CLASS II	CLASS III		
	INFO SIGN	101+36 / 101+00	55' L				1							
	R3-7R	101+43	55' L	30X30				1	12	6.25				
	12R7-10A	102+33	55' L	12X18				1	11	1.5				
	R4-7	102+50	MEDIAN			1								
	R7-1	102+70	44' R			1								
	12R7-10A	102+70	44' R	12X18				1	11	1.5				
	R1-1	103+22	52' R			1								
	R7-1	103+33	44' R			1								
	12R7-10A	103+33	44' R	12X18				1	11	1.5				
	R10-7	102+50 / 103+45	45' L				1							
	FIRE DEPT PKG LOT													
	PRIVATE DRIVE NO THRU TRAFFIC SIGNS							2						
	PKG LOT EAST OF WELTON													
	AFFORDABLE PARKING PRIVATE SIGNS							2						
	GALAPAGO													
	12R7-10A	201+00	L/R	12X18				2	22	3				
	R7-1	201+32	L			1								
	R5-1	201+42	L/R	30X30				2	24	12.5				
	WELTON													
	12R7-10A	202+78	18' R	12X18				1	11	1.5				
	12R7-10A	202+89	20' R					1	11	1.5				
	R3-17	203+04 / 202+97	12' L/20' R	30X24			1	1	12					
	R7-1	203+14	80' L			1								
	12R7-10AR	203+75	16.5' L					1	11	1.5				
	R7-1	204+00	26' R			1								
	12R7-10A	204+00	26' R					1	11	1.5				
	RTD BUS SIGN	204+00	26' R	12X18			1							
	R7-1	204+20	33' L			1								
	COLFAX													
	TRAFFIC SIGNAL													
	102+78													
	L													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	R6-1 ON MAST ARM													
	54X18													
	R10-3B ON POLE													
	50' L 12X9													
	R6-1 ON POLE													
	50' L 36X12													
	R6-1 ON POLE													
	50' L 36X12													
	COLFAX													
	103+30													
	R													
	TRAFFIC SIGNAL													
	R3-8CL (DENVER) ON MAST ARM													
	36X36													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	R6-1 ON MAST ARM													
	54X18													
	R10-3B ON POLE													
	46' R 12X9													
	R6-1 ON POLE													
	46' R 36X12													
	R6-1 ON POLE													
	46' R 36X12													
	WELTON													
	202+50													
	L & R													
	TRAFFIC SIGNAL													
	R3-6L ON MAST ARM													
	30X36													
	R3-6R ON MAST ARM													
	30X36													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	STREET SIGN ON MAST ARM													
	72X22 WHITE													
	R10-3B ON POLE													
	27' R 12X9													
	R6-1 ON POLE													
	27' R 36X12													
	R6-1 ON POLE													
	27' R 36X12													
	GALAPAGO													
	201+47													
	TRAFFIC SIGNAL													
	R10-3B ON POLE													
	19' L 12X9													
	R6-1 ON POLE													
	19' L 36X12													
	R6-1 ON POLE													
	19' L 36X12													
PROJECT TOTALS								8	8	13	147	162.75	0	0

PAVEMENT MARKING TABULATION

STATION	LOCATION	EPOXY PAVEMENT MARKING					PREFORM THERMO PVMT MKG			THERMOPLASTIC PVMT MARKING		
		4 IN DOUBLE YELLOW	4 IN WHITE SKIP	4 IN WHITE SOLID	8 IN WHITE DASHED	8 IN WHITE SOLID	STOP 24 IN WHITE	XWALK 24" X 10" WHITE	LEFT TURN ARROW	4 IN DOUBLE YELLOW	4 IN WHITE SKIP	4 IN WHITE SOLID
COLFAX		LF	LF	LF	LF	LF	SF	SF	SF	LF	LF	LF
100+72 TO 102+69	0' R				24	195	100	220	15.5			
100+72 TO 102+69	10' R					196						
100+72 TO 102+69	20' R											
100+72 TO 102+69	30' R		50									
100+72 TO 102+69	10' L	398							15.5			
100+72 TO 102+69	20' L		50									
100+72 TO 102+69	30' L		50									
100+72 TO 102+43	40' L		25			71						
103+40 TO 104+38 (SINGLE 4" YELLOW)	10' L	98										
103+40 TO 104+38	20' L		24				60	220				
103+40 TO 104+38	30' L		24									
WELTON												
202+62 TO 204+50	0' R		47					100				
202+62 TO 204+50	12-11' R			179								
203+08 TO 204+50	17-16' R			130								
204+02 TO 204+50	11' L		12									
FIRE DEPT PKG LOT												
4" YELLOW PARKING STALL STRIPES												
		308										
GALAPAGO												
201+45	L & R						52	100				
PROJECT SUBTOTAL :		804	331	309	24	462	212	640	31	0	0	0
PAVEMENT MARKING (SQUARE FOOT)		268	111	103	17	309	212	640	31	0	0	0
PAVEMENT MARKING (SQUARE FOOT) PAY QUANTITY		808					883			100		
		EPOXY					PREFORM THERMO			THERMO		

- NOTES:
- FOR DETAILS OF PAVEMENT MARKING LINES AND LINE PLACEMENT, SEE REVISED STANDARD S-627-1
 - CONTRACTOR SHALL MAINTAIN FULL COMPLIANCE PAVEMENT MARKING ON THE PROJECT AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD
 - THE CONTRACTOR WILL BE RESPONSIBLE FOR THE INVENTORY OF EXISTING PAVEMENT MARKING AND RECORDING THEM SO THAT NEW MARKING CAN BE INSTALLED TO MATCH.
 - ALL STRIPING SHALL CONFORM TO THE CITY AND COUNTY OF DENVER STANDARDS AND SPECIFICATIONS, THE COLORADO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 - CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. WORK SHALL BE CONSIDERED INCIDENTAL TO THE STRIPING OPERATION.
 - INSTALLATION OF PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - PAVEMENT MARKING PAINT APPLICATION RATE IS 100 S.F. / GAL.
 - FOR THIS PROJECT IT IS ESTIMATED THAT 25 GALLONS OF WHITE AND 6 GALLON OF YELLOW WILL BE REQUIRED AS TEMPORARY LANE MARKING - PAVEMENT MARKING PAINT (WATERBORNE).

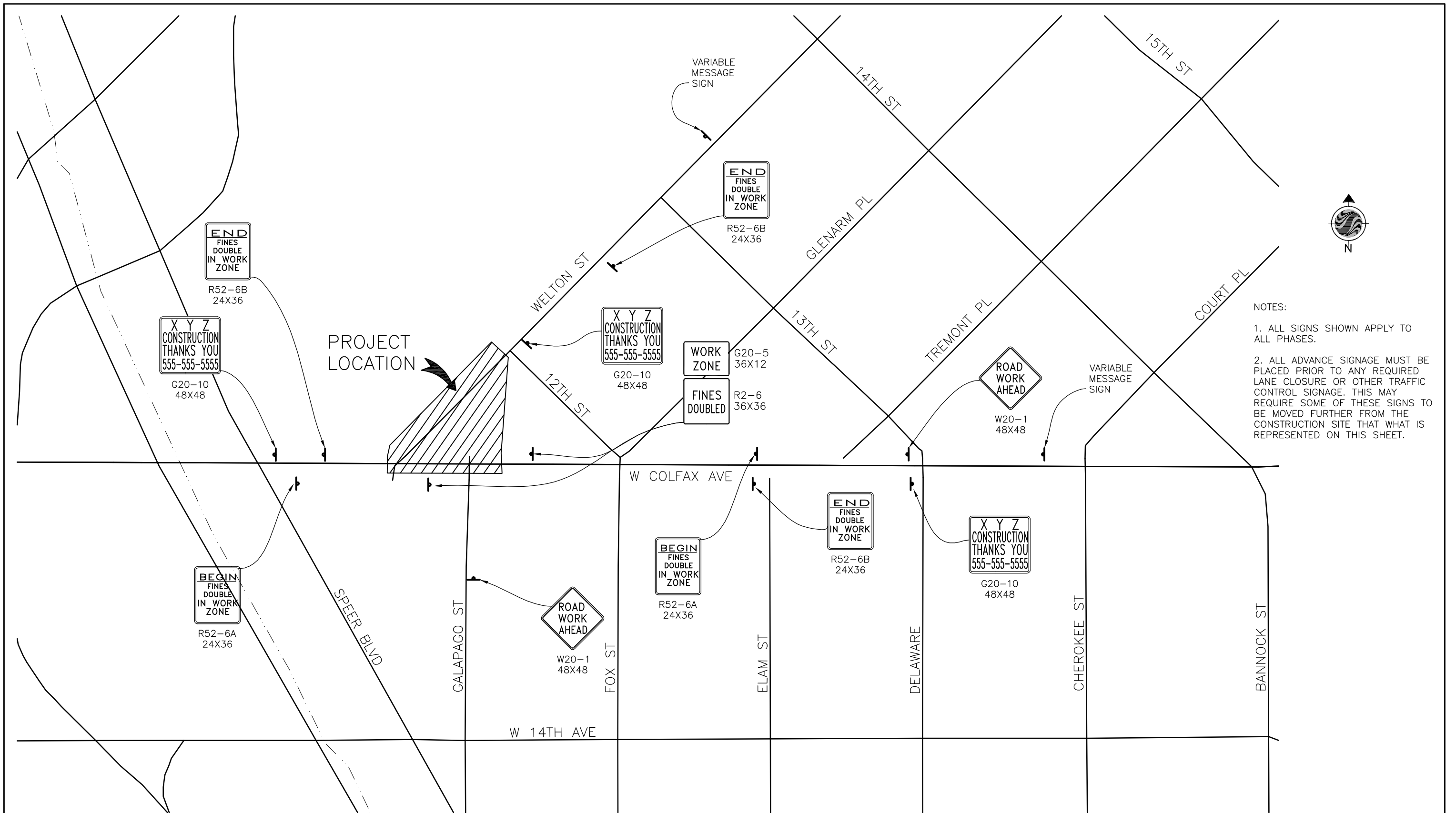
TABULATION OF CONSTRUCTION ZONE TRAFFIC CONTROL SIGNS

SIGN CODE	LEGEND	DIMENSIONS	PANEL SIZE		
			A	B	C
G20-10	(NAME)/CONSTRUCTION/THANKS YOU/(TELEPHONE NUMBER)	48"x48"		3	
G20-5	WORK ZONE	36"x12"	2		
R2-6	FINES/DOUBLE	36"x36"	2		
R3-1	TURN PROHIBITION (RT)	24"x24"	1		
R3-2	TURN PROHIBITION (LT)	24"x24"	1		
R3-5	MANDATORY MOVEMENT (RT/TH/LT)	36"x36"	2		
R3-6	OPTIONAL MOVEMENT (ONE LANE)	30"x36"	2		
R3-7	MANDATORY MOVEMENT (TEXT)	30"x30"	1		
R3-8	LANE USE (RT/TH/LT-RT ONLY)	36"x30"	2		
R4-8A	KEEP LEFT	24"x30"	1		
R5-1	DO NOT ENTER	30"x30"	1		
R9-3	NO PEDESTRIAN CROSSING	12"x18"	1		
R9-3a	NO PEDESTRIAN CROSSING (SYMBOL)	18"x18"	1		
R9-9	SIDEWALK CLOSED	24"x12"	7		
R9-11L	SIDEWALK CLOSED AHEAD, CROSS HERE	24"x12"	1		
R9-11R	SIDEWALK CLOSED AHEAD, CROSS HERE	24"x12"	1		
R9-11aR	SIDEWALK CLOSED, CROSS HERE (RIGHT ARROW)	24"x12"	1		
R11-2	ROAD CLOSED	48"x30"		1	
R52-6a	BEGIN/FINES/DOUBLE/IN WORK/ZONE	36"x48"		2	
R52-6b	END/FINES/DOUBLE/IN WORK/ZONE	36"x48"		3	
W4-2 §	LANE ENDS (SYMBOL)	36"x36"	2		
W8-11	UNEVEN LANES	36"x36"	2		
W9-3	LANE CLOSED AHEAD	36"x36"	2		
W20-1	ROAD/WORK/AHEAD	48"x48"		2	
W20-5 §	LANE/CLOSED/AHEAD	36"x36"	2		
W20-7a	(FLAGGER SYMBOL)	36"x36"	2		
W24-1	DOUBLE LANE SHIFT	36"x36"	1		
PROJECT TOTALS			38	11	

ITEM NO.	ITEM	UNIT	PROJECT TOTALS
630-00000	FLAGGING	HOUR	3000
630-00007	TRAFFIC CONTROL INSPECTION	DAY	240
630-00012	TRAFFIC CONTROL MANAGEMENT	DAY	240
630-80335	BARRICADE (TYPE 3 M-A) (TEMPORARY)	EACH	5
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EACH	38
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EACH	11
630-80355	PORTABLE MESSAGE SIGN PANEL	EACH	2
630-80356	FLASH ARROW PANEL	EACH	2
630-80360	DRUM CHANNELIZING DEVICE	EACH	30
630-80363	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	EACH	30
630-80380	TRAFFIC CONE	EACH	50

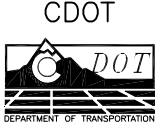


- SEE STANDARD S-630-1 OF THE "COLORADO STANDARD PLANS" FOR TYPICAL PLACEMENT OF THE CONSTRUCTION TRAFFIC CONTROL DEVICES.
- ROLL-UP TYPE SIGN SHALL NOT BE ALLOWED
- SIGNS WITH "§" TO BE PROVIDED WITH INTERCHANGEABLE PLAQUES AT NO ADDITIONAL COST TO THE PROJECT

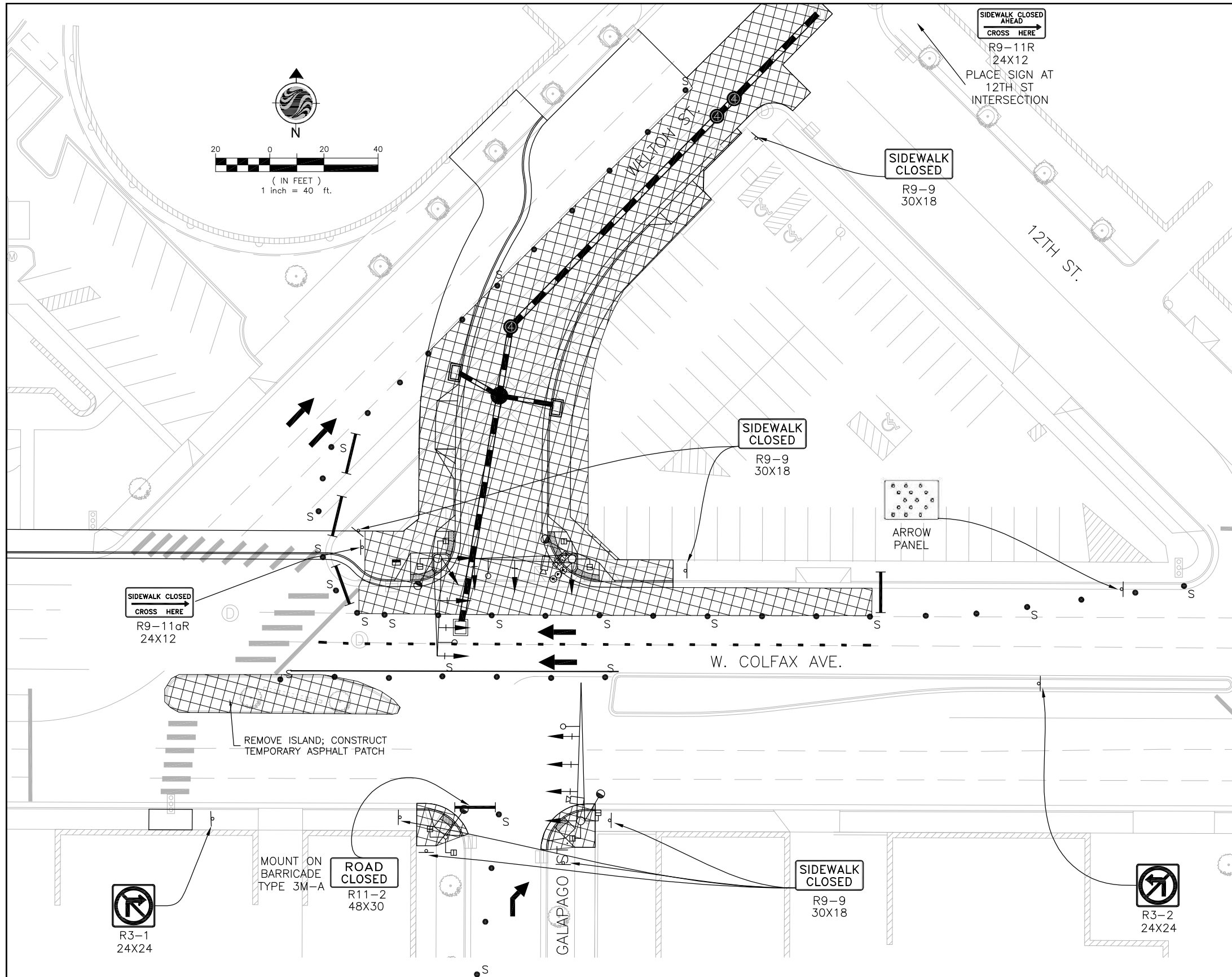
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Creation Date: 07/01/08	Initials: KRM					No Revisions:		STU M320-050
Last Modification Date: 8/24/2012	Initials: MCHAPMAN					Revised:		16220
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Acad Ver. 2008	Scale: N/A	Units: Feet					ROADWAY PLANS	



NOTES:

1. ALL SIGNS SHOWN APPLY TO ALL PHASES.
2. ALL ADVANCE SIGNAGE MUST BE PLACED PRIOR TO ANY REQUIRED LANE CLOSURE OR OTHER TRAFFIC CONTROL SIGNAGE. THIS MAY REQUIRE SOME OF THESE SIGNS TO BE MOVED FURTHER FROM THE CONSTRUCTION SITE THAT WHAT IS REPRESENTED ON THIS SHEET.

Computer File Information		Index of Revisions		  		SUGGESTED TRAFFIC CONTROL PLAN		Project No./Code	
Creation Date: 12/07/09	Initials: PM					As Constructed		STU M320-060	
Last Modification Date: 8/24/2012	Initials: MCHAPMAN					No Revisions:		16952	
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Traffic Control.dwg						Revised:		Sheet Number 33	
Acad Ver. 2008	Scale: NTS					Void:		ROADWAY PLANS	
	Units: Feet								

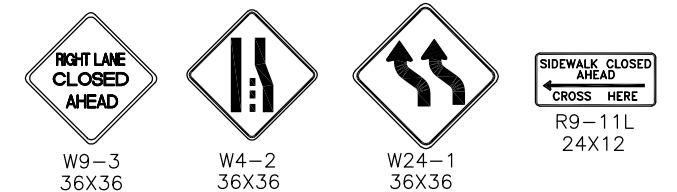


PROPOSED PHASING / TRAFFIC:

- EXISTING WELTON STREET REMAINS OPEN TO TRAFFIC; BIKE LANE AND PARKING STALLS ARE REMOVED.
- MEDIAN ON COLFAX REMOVED AND TEMPORARY ASPHALT PATCH INSTALLED.
- EXISTING TRAFFIC SIGNAL AT COLFAX/WELTON REMAINS IN USE; WESTBOUND TRAFFIC ON COLFAX USES TWO LANES.
- SOUTHBOUND LANE ON GALAPAGO CLOSED TO VEHICLE TRAFFIC; NORTHBOUND LANE REMAINS OPEN.
- CONSTRUCT NEW STORM SEWER, WATERMAIN MODIFICATIONS, EAST CURB, GUTTER & WALK ON WELTON STREET; PAVE SOUTH END OF NEW WELTON.
- CONSTRUCT NEW RAMPS & SIDEWALK AT COLFAX AND GALAPAGO.
- MAINTAIN MINIMUM 10' LANES.
- PEDESTRIANS ON COLFAX SHOULD USE SOUTH SIDEWALK THROUGH PROJECT AREA. PEDESTRIANS ON WELTON SHOULD USE NORTHWEST SIDEWALK THROUGH PROJECT AREA.
- ** INSTALL THE PROPOSED TRAFFIC SIGNAL SYSTEM. **

NOTES

- THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
- COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.
- CERTAIN PHASES OF CONSTRUCTION MAY REQUIRE UNIFORMED TRAFFIC CONTROL.
- CONSTRUCTION OF THE HANDICAP RAMPS ON THE SOUTH SIDE OF COLFAX SHALL OCCUR ONLY WHEN PEDESTRIANS CAN USE THE NORTH SIDEWALK ALONG COLFAX. SIDEWALKS ON BOTH SIDES OF COLFAX CANNOT BE CLOSED AT THE SAME TIME.

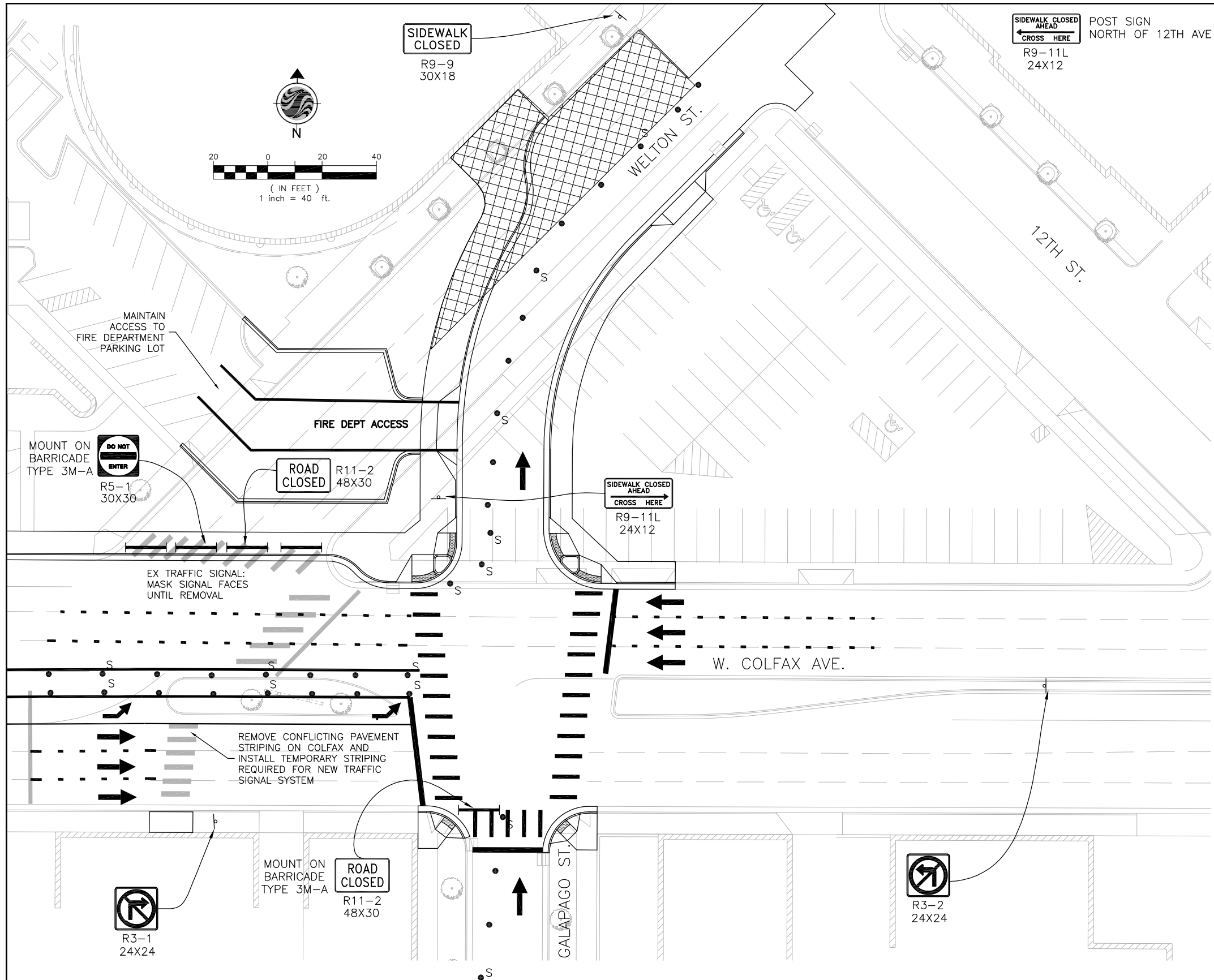


ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX

LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information Creation Date: 12/07/09 Initials: PM Last Modification Date: 8/24/2012 Initials: MCHAPMAN Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Phasing 1.dwg Acad Ver. 2008 Scale: 1"=40' Units: Feet		Index of Revisions <table border="1"> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>														CDOT DEPARTMENT OF TRANSPORTATION Region 6		 		As Constructed No Revisions: Revised: Void:		CONSTRUCTION PHASING PHASE 1 CONSTRUCTION PHASING		Project No./Code STU M320-060 16952 Sheet Number 34	



PROPOSED PHASING / TRAFFIC:

1. WELTON STREET OPEN TO TRAFFIC, ONE LANE NORTHBOUND; EAST SIDEWALK OPEN.
2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
3. SOUTHBOUND LANE ON GALAPAGO CLOSED TO VEHICLE TRAFFIC; NORTHBOUND LANE REMAINS OPEN.
4. CONSTRUCT REMAINDER OF WELTON.
5. MAINTAIN MINIMUM 10' LANES.

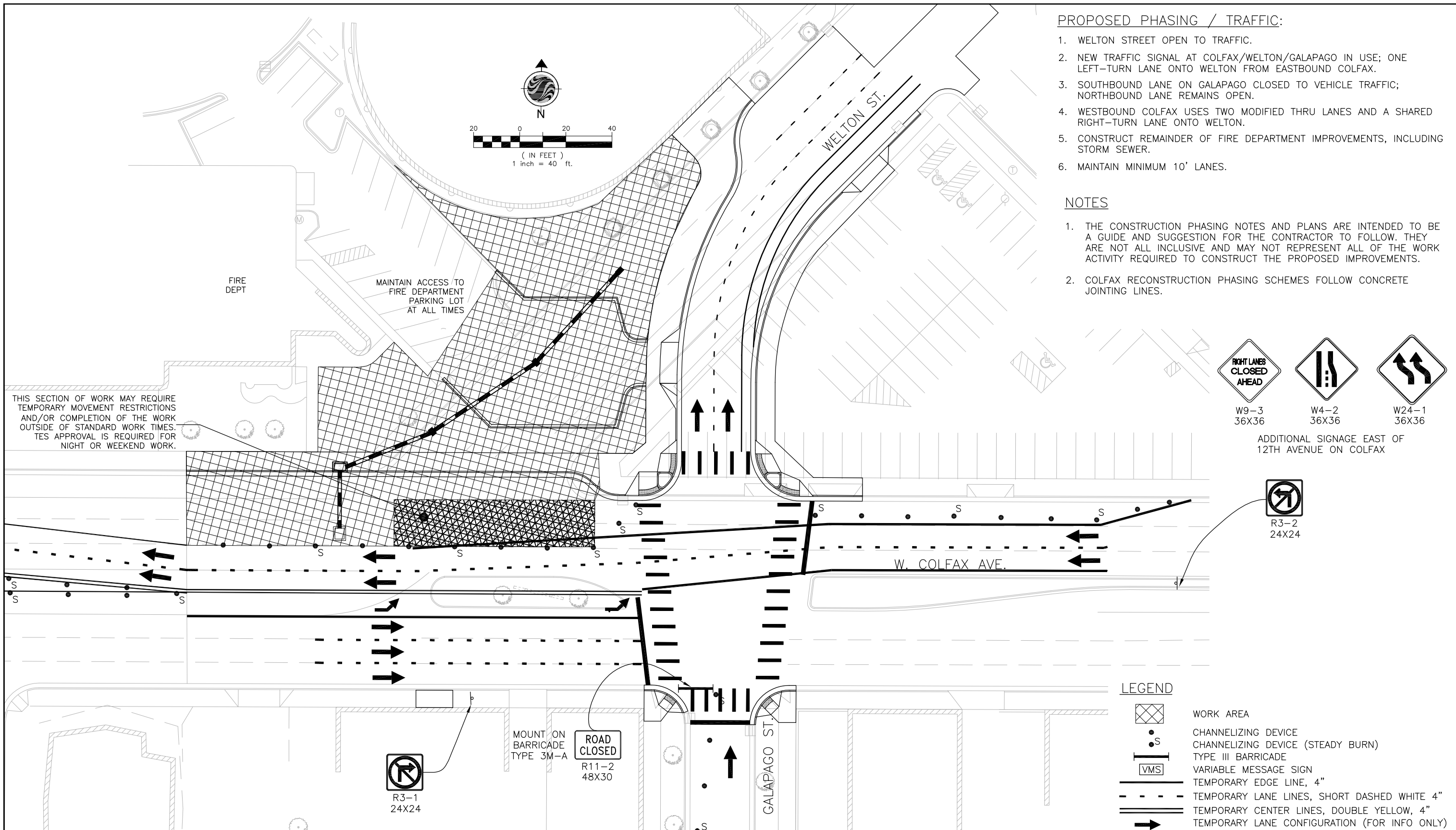
NOTES

1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.

LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information Creation Date: 12/07/09 Initials: PM Last Modification Date: 8/24/2012 Initials: MCHAPMAN Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Phasing 2.dwg Acad Ver. 2008 Scale: 1"=40' Units: Feet		Index of Revisions <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																		CDOT DEPARTMENT OF TRANSPORTATION Region 6		 		As Constructed No Revisions: Revised: Void:		CONSTRUCTION PHASING PHASE 2 CONSTRUCTION PHASING		Project No./Code STU M320-060 16952 Sheet Number 35	



- PROPOSED PHASING / TRAFFIC:**
1. WELTON STREET OPEN TO TRAFFIC.
 2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
 3. SOUTHBOUND LANE ON GALAPAGO CLOSED TO VEHICLE TRAFFIC; NORTHBOUND LANE REMAINS OPEN.
 4. WESTBOUND COLFAX USES TWO MODIFIED THRU LANES AND A SHARED RIGHT-TURN LANE ONTO WELTON.
 5. CONSTRUCT REMAINDER OF FIRE DEPARTMENT IMPROVEMENTS, INCLUDING STORM SEWER.
 6. MAINTAIN MINIMUM 10' LANES.

- NOTES**
1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
 2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.



ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX



- LEGEND**
- WORK AREA
 - CHANNELIZING DEVICE
 - CHANNELIZING DEVICE (STEADY BURN)
 - TYPE III BARRICADE
 - VARIABLE MESSAGE SIGN
 - TEMPORARY EDGE LINE, 4"
 - TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
 - TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
 - TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information

Creation Date: 12/07/09	Initials: PM
Last Modification Date: 8/24/2012	Initials: MCHAPMAN
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Phasing 3.dwg	
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Index of Revisions

No.	Description

CDOT

 Region 6

CITY AND COUNTY OF DENVER

Stantec

As Constructed

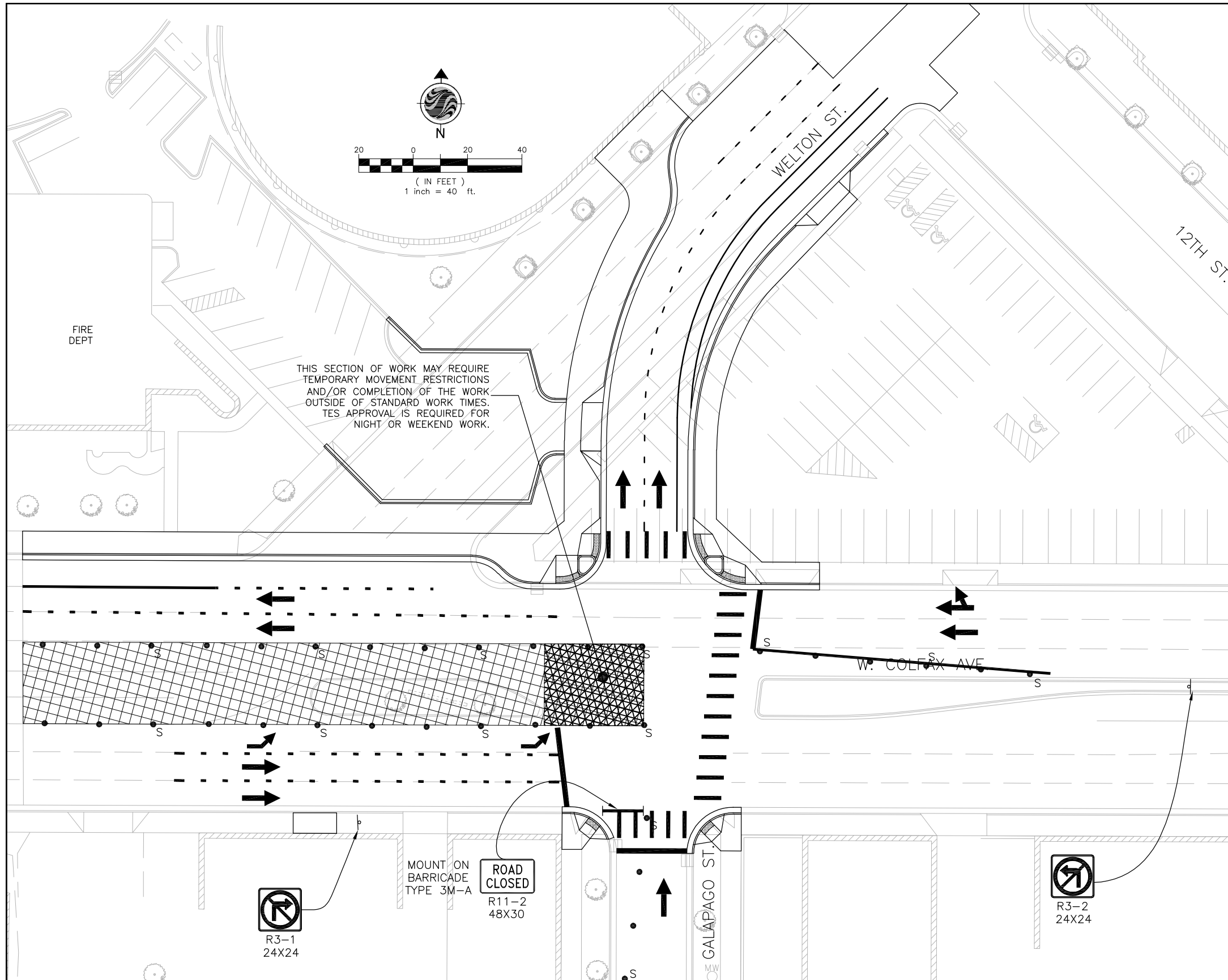
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Revised:	
Void:	

CONSTRUCTION PHASING PHASE 3

CONSTRUCTION PHASING	
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Project No./Code

STU M320-060
16952
Sheet Number 36



PROPOSED PHASING / TRAFFIC:

1. WELTON STREET OPEN TO TRAFFIC.
2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
3. SOUTHBOUND LANE ON GALAPAGO CLOSED TO VEHICLE TRAFFIC; NORTHBOUND LANE REMAINS OPEN.
4. WESTBOUND COLFAX USES ONE MODIFIED THRU LANE AND A SHARED THRU / RIGHT-TURN LANE ONTO WELTON.
5. MAINTAIN MINIMUM 10' LANES.

NOTES

1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.



W9-3
36X36



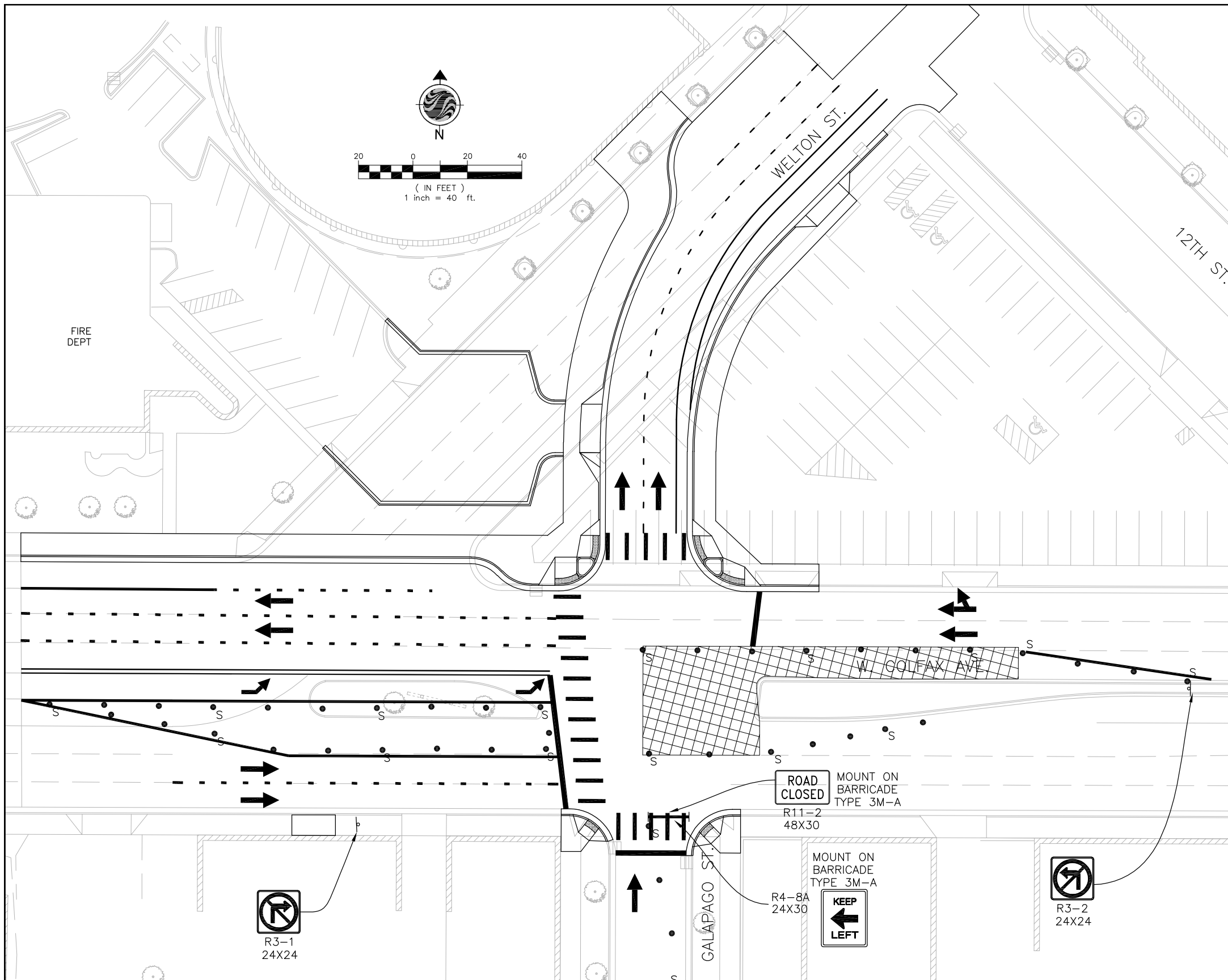
W4-2
36X36

ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX

LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information		Index of Revisions		CDOT Region 6			As Constructed	CONSTRUCTION PHASING PHASE 4	Project No./Code
Creation Date: 12/07/09	Initials: PM						No Revisions:		STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN						Revised:		16952
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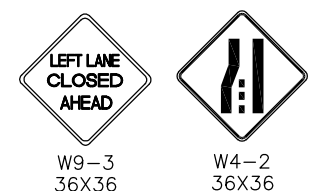


PROPOSED PHASING / TRAFFIC:

1. WELTON STREET OPEN TO TRAFFIC.
2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
3. RE-STRIPING OF GALAPAGO BETWEEN 14TH AND COLFAX COMPLETED; TRAFFIC USES ONE NORTHBOUND LANE (WEST SIDE) AT COLFAX.
4. WESTBOUND COLFAX USES ONE THRU LANE AND A SHARED THRU / RIGHT-TURN LANE ONTO WELTON.
5. MAINTAIN MINIMUM 10' LANES.

NOTES

1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.

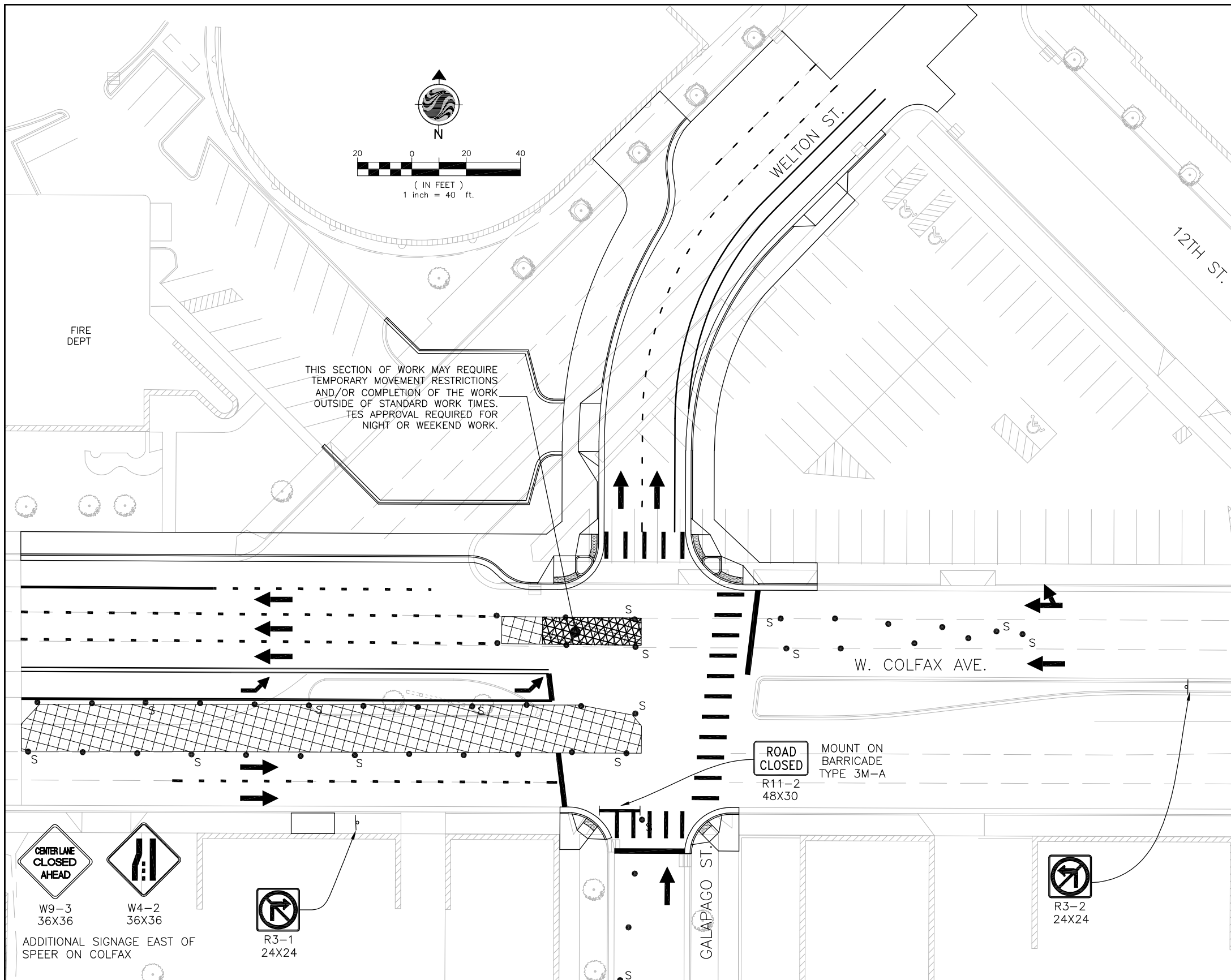


ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX

LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information		Index of Revisions		CDOT Region 6		As Constructed	CONSTRUCTION PHASING PHASE 5		Project No./Code
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Last Modification Date: 8/24/2012 Initials: MCHAPMAN						Revised:			16952
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Acad Ver. 2008 Scale: 1"=40' Units: Feet							CONSTRUCTION PHASING		



- PROPOSED PHASING / TRAFFIC:**
1. WELTON STREET OPEN TO TRAFFIC.
 2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
 3. GALAPAGO TRAFFIC USES ONE NORTHBOUND LANE (EAST SIDE) AT COLFAX.
 4. WESTBOUND COLFAX USES ONE THRU LANE AND A SHARED THRU / RIGHT-TURN LANE ONTO WELTON.
 5. MAINTAIN MINIMUM 10' LANES.

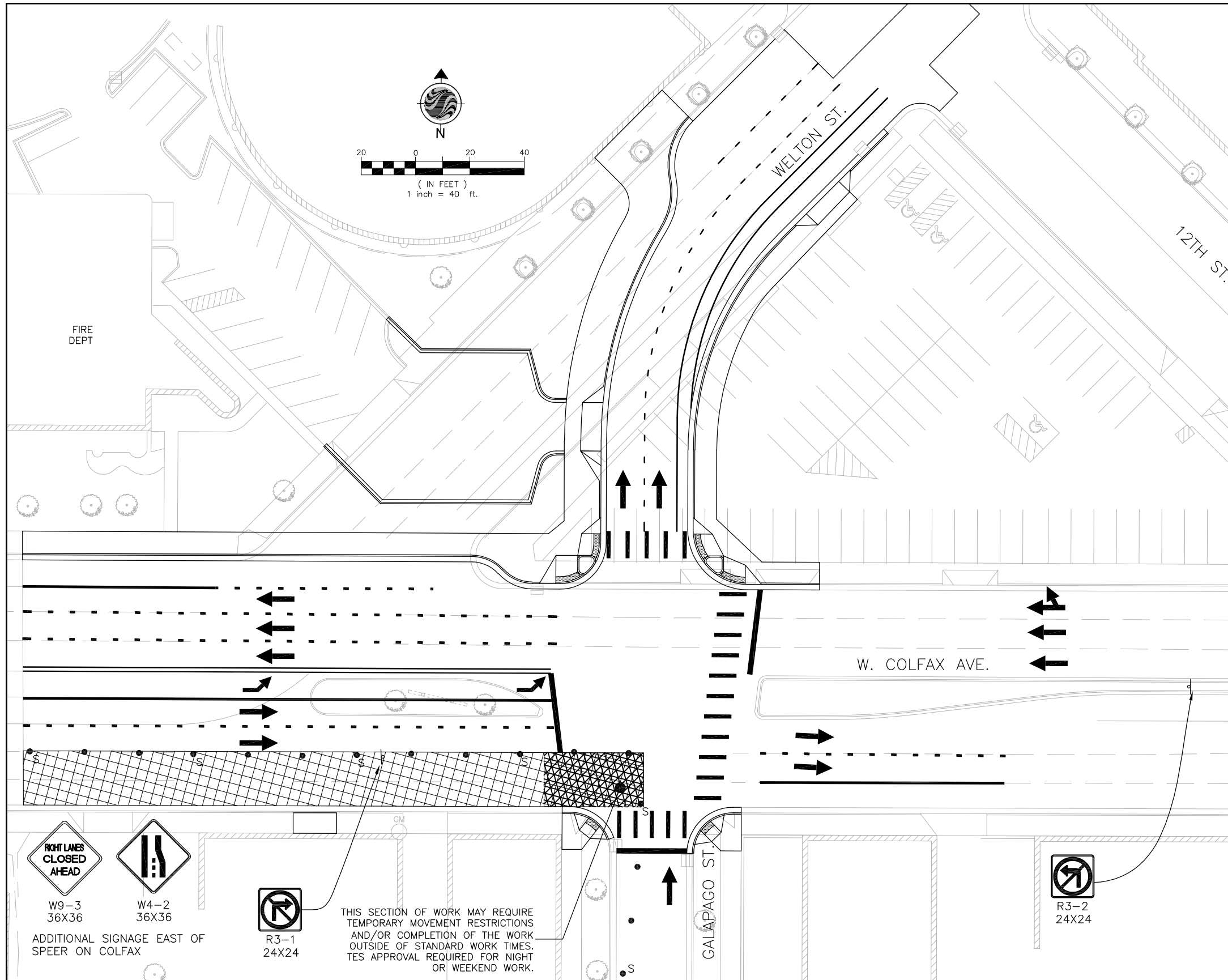
- NOTES**
1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
 2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.



ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX

- LEGEND**
- WORK AREA
 - CHANNELIZING DEVICE
 - CHANNELIZING DEVICE (STEADY BURN)
 - TYPE III BARRICADE
 - VARIABLE MESSAGE SIGN
 - TEMPORARY EDGE LINE, 4"
 - TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
 - TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
 - TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

Computer File Information		Index of Revisions		CDOT Region 6			As Constructed	CONSTRUCTION PHASING PHASE 6		Project No./Code
Creation Date: 12/07/09 Initials: PM							No Revisions:			STU M320-060
Last Modification Date: 8/24/2012 Initials: MCHAPMAN							Revised:			16952
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Acad Ver. 2008 Scale: 1"=40' Units: Feet								CONSTRUCTION PHASING		



PROPOSED PHASING / TRAFFIC:

1. WELTON STREET OPEN TO TRAFFIC.
2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; ONE LEFT-TURN LANE ONTO WELTON FROM EASTBOUND COLFAX.
3. GALAPAGO TRAFFIC USES ONE NORTHBOUND LANE (EAST SIDE) AT COLFAX.
4. WESTBOUND COLFAX USES TWO THRU LANES AND A SHARED THRU / RIGHT-TURN LANE ONTO WELTON.
5. MAINTAIN MINIMUM 10' LANES.

NOTES

1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.

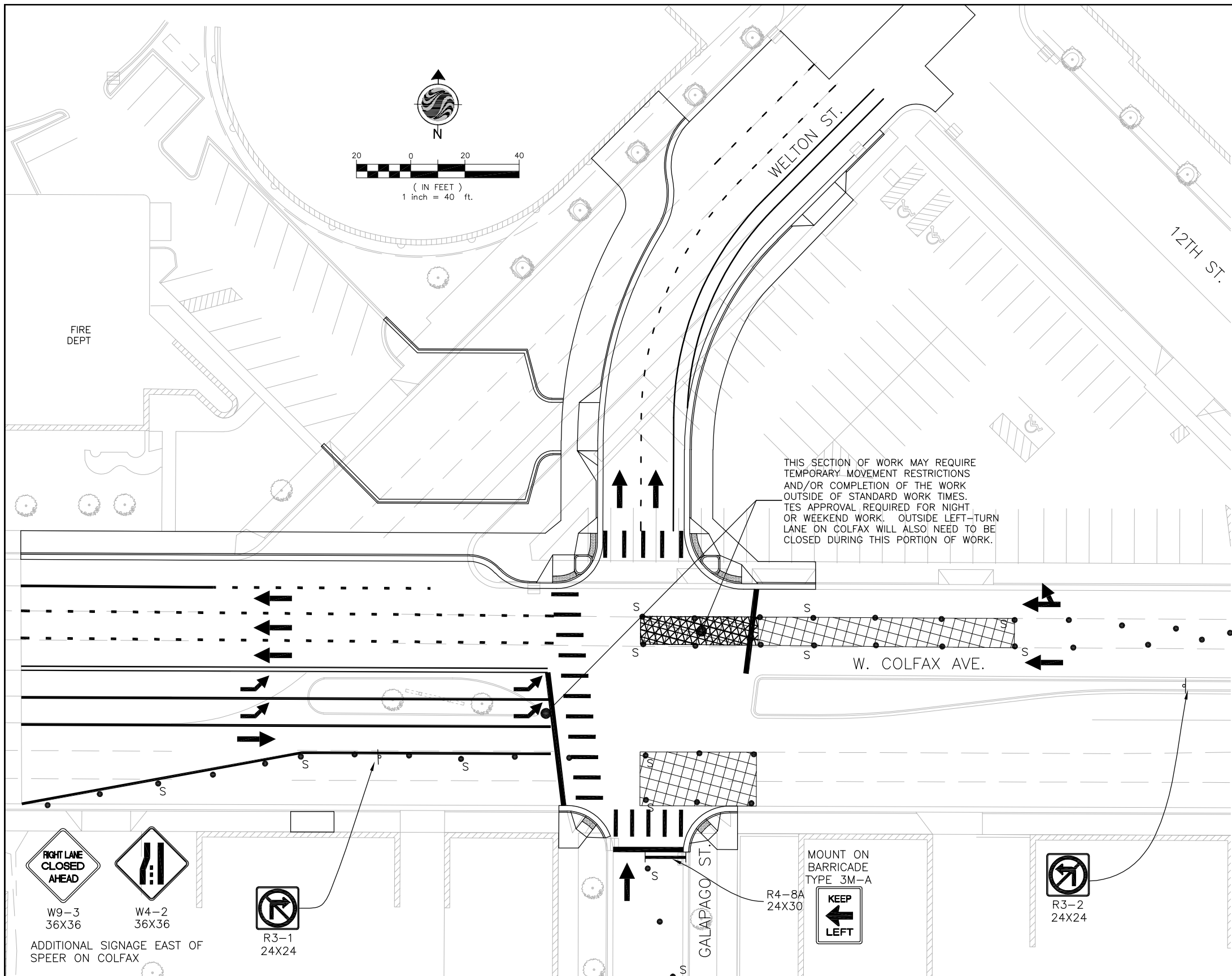
LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)

W9-3 36X36
 ADDITIONAL SIGNAGE EAST OF SPEER ON COLFAX
 W4-2 36X36
 R3-1 24X24
 THIS SECTION OF WORK MAY REQUIRE TEMPORARY MOVEMENT RESTRICTIONS AND/OR COMPLETION OF THE WORK OUTSIDE OF STANDARD WORK TIMES. TES APPROVAL REQUIRED FOR NIGHT OR WEEKEND WORK.

R3-2 24X24

Computer File Information		Index of Revisions		CDOT Region 6	 	As Constructed	CONSTRUCTION PHASING PHASE 7		Project No./Code
Creation Date: 12/07/09 Initials: PM						No Revisions:			STU M320-060
Last Modification Date: 8/24/2012 Initials: MCHAPMAN						Revised:			16952
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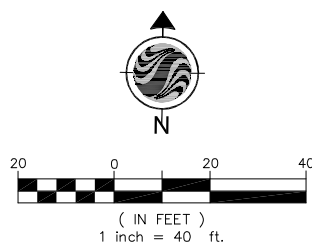


PROPOSED PHASING / TRAFFIC:

1. WELTON STREET OPEN TO TRAFFIC.
2. NEW TRAFFIC SIGNAL AT COLFAX/WELTON/GALAPAGO IN USE; TWO LEFT-TURN LANES ONTO WELTON FROM EASTBOUND COLFAX.
3. GALAPAGO TRAFFIC USES ONE NORTHBOUND LANE (WEST SIDE) AT COLFAX.
4. WESTBOUND COLFAX USES ONE THRU LANE AND A SHARED THRU / RIGHT-TURN LANE ONTO WELTON.
5. MAINTAIN MINIMUM 10' LANES.

NOTES

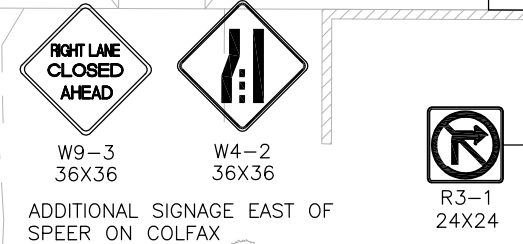
1. THE CONSTRUCTION PHASING NOTES AND PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW. THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
2. COLFAX RECONSTRUCTION PHASING SCHEMES FOLLOW CONCRETE JOINTING LINES.
3. THIS PHASE OF CONSTRUCTION MAY REQUIRE WORK ON THE WEEKEND. TWO THRU LANES MUST REMAIN OPEN ON COLFAX AT ALL TIMES DURING WEEKDAYS.



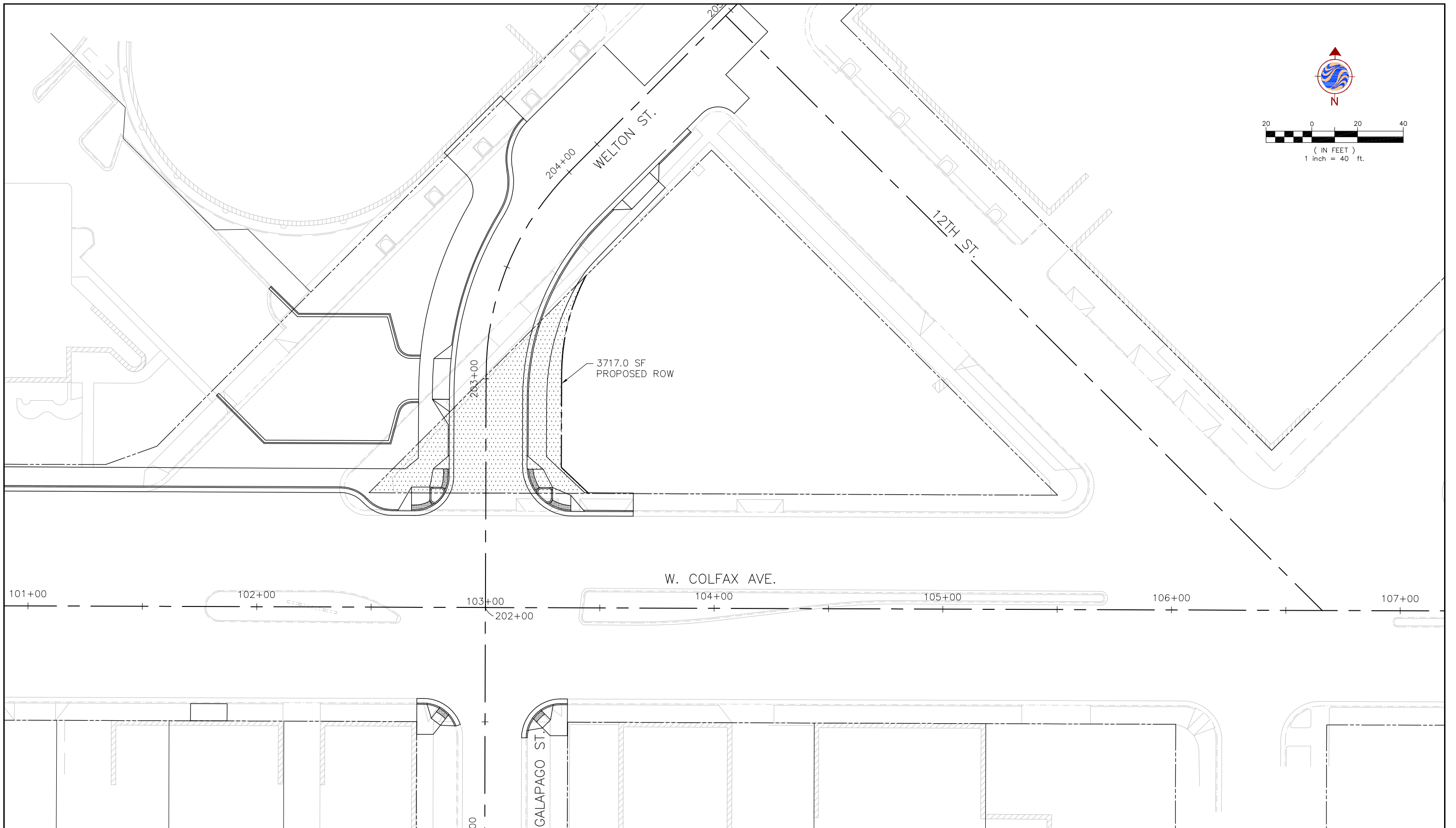
ADDITIONAL SIGNAGE EAST OF 12TH AVENUE ON COLFAX

LEGEND

- WORK AREA
- CHANNELIZING DEVICE
- CHANNELIZING DEVICE (STEADY BURN)
- TYPE III BARRICADE
- VARIABLE MESSAGE SIGN
- TEMPORARY EDGE LINE, 4"
- TEMPORARY LANE LINES, SHORT DASHED WHITE 4"
- TEMPORARY CENTER LINES, DOUBLE YELLOW, 4"
- TEMPORARY LANE CONFIGURATION (FOR INFO ONLY)



Computer File Information Creation Date: 12/07/09 Initials: PM Last Modification Date: 8/24/2012 Initials: MCHAPMAN Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Phasing 8.dwg Acad Ver. 2008 Scale: 1"=40' Units: Feet		Index of Revisions <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																		CDOT DEPARTMENT OF TRANSPORTATION Region 6		 		As Constructed No Revisions: Revised: Void:		CONSTRUCTION PHASING PHASE 8 CONSTRUCTION PHASING		Project No./Code STU M320-060 16952 Sheet Number 41	



Computer File Information	
Creation Date: 12/07/09	Initials: PM
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CDOT

 DEPARTMENT OF TRANSPORTATION
 Region 6


 CITY OF GALAPAGO
 SEAL


 Stantec

As Constructed
No Revisions:
Revised:
Void:

PROPOSED RIGHT-OF-WAY	
Exhibits	

Project No./Code
STU M320-060
16952
Sheet Number 42

TO ESTABLISH GEOMETRIC CONTROL FOR THE CONSTRUCTION OF THIS PROJECT, THE DEPARTMENT HAS PROVIDED THE FOLLOWING INFORMATION:

- Horizontal Control Format Plans
- Vertical Control Plans
- Roadway Alignment Plans
- Original Terrain Data _____
- Other: PLANS

* Specify the information format, i.e., plan sheet, computer disk, computer printout, or other. The information marked is either contained on the plans or is available from the Engineer.

TYPE OF PROJECT

- Landscaping
- Signalization
- Safety Improvement
- Asphalt Overlay
- Concrete Overlay
- Minor Widening
- Major Reconstruction
- New Roadway Construction
- Bridge Replacement
- Bridge Widening
- New Bridge
- Other: _____

SURVEY WORK TO BE PERFORMED BY OTHERS: _____

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 625:

- Establish and Maintain Project Centerline or Engineer Approved Offset Line(s)
- Verification and Maintenance of Horizontal and Vertical Control
- Verify or Determine existing grades and alignments
- Verify or Determine existing topography
- Clearing and Grubbing Limits (Section 201)
- Removal Limits (Section 202)
- Reset Items (Section 210)
- Excavation and Embankment (Section 203)

- Excavation
 - Unclassified
 - Stripping
 - Muck
 - Rock
 - Borrow
 - Other: _____
 - Potholing

- Embankment
- Site Grading
- Erosion Control (Perm)
- Other: _____
- As Staked Earthwork Quantities (See General Notes)

- Landscaping
 - Top Soil (Section 207)
 - Seeding (Section 212)
 - Mulching (Section 213)
 - Planting (Section 214)
 - Herbicide (Section 217)
 - Other: _____

- Erosion Control (Section 208)
 - Seeding (Temp)
 - Silt Fence
 - Erosion Bales
 - Erosion Logs
 - Riprap (Temp)
 - Other: Inlet Protection

- Roadway Bases
 - Untreated Subgrade
 - Treated Subgrade
 - Aggregate Base Course (Section 304)
 - Reconditioning
 - PMBB - Plant Mix Bituminous Base
 - Other: _____

Excavation	Slope Staking (Y/N)	Grid (Y/N)	Grade Stakes	Special Interval
	NO	NO	NO	-
-	-	-	-	
-	-	-	-	
-	-	-	-	
-	-	-	-	

Embankment	Slope Staking (Y/N)	Grid (Y/N)	Grade Stakes	Special Interval
	NO	NO	NO	-
-	-	-	-	
-	-	-	-	
-	-	-	-	

Roadway Bases	Grid (Y/N)	Grade (Y/N)	Special Interval	Special Offset
	-	-	-	-
-	-	-	-	
-	-	-	-	
-	-	-	-	
-	-	-	-	

- Pavements
 - HMA - Hot Mix Asphalt (Section 403)
 - Concrete (Section 412)
 - Heating & Scarifying Treatment
 - Prime Coat, Tack Coat & Rejuvenating Agent (Section 407)
 - Seal Coat or Chip Seal (Section 409)
 - Other: _____

Pavements	Grid (Y/N)	Special Interval	Special Offset
	NO	-	-
-	-	-	
-	-	-	
-	-	-	
-	-	-	

- Roadway Elements
 - Curb and Gutter (Section 609)
 - Drop Inlets - alignment and grades (Section 604)
 - Retaining Walls
 - Guard Rail (Section 606)
 - Sidewalk (Section 608)
 - Overlay Stationing
 - Other: _____

Curb & Gutter	Tangent Interval	Curve Interval	Special Offset
	-	-	-
-	-	-	

- Riprap (Perm) (Section 506)
- Slope and Ditch Paving (Section 507)

- Minor Structures
 - Structure Excavation limits (Section 206)
 - Culverts (Section 603)
 - Culverts w/ Headwalls and Wingwalls (Section 601)
 - Concrete Box Culverts w/ Headwalls and Wingwalls
 - Pipes (Section 603)
 - Sanitary Sewer
 - Storm Sewer
 - Water
 - Irrigation
 - Miscellaneous
 - Manholes (Section 604)
 - Inlets (Section 604)
 - Other: _____

Stationing	Left Interval	Center Interval	Right Interval
	-	-	-
-	-	-	

- Major Structures - Overhead Signs (Section 614), Concrete Box Culverts, Bridges - and all other structures assigned a structure number
 - Structure Excavation limits (Section 206)
 - Concrete Box Culverts (Section 603) w/ Headwalls and Wingwalls (Section 601)
 - Piling locations and cut off elevations (Section 502)
 - Caisson locations and elevations (Section 503)
 - Footing locations, alignment, and elevations
 - Abutment/Pier locations, alignment, and elevations
 - Wingwall skew angles/offsets
 - Structural concrete form locations
 - Substructure As-constructed survey required for Bridges (Subsection 601 .12) and Overhead signs (S-614-50)
 - Bridge expansion joint(s) alignment and grade (longitudinal and transverse)
 - Deck grades at Girder 10th or "n" th point locations and elevations
 - Slope and Ditch Paving (Section 507)
 - Other: _____

- Fencing (Section 607)
 - Temporary
 - Permanent
 - Sound Barrier
 - Other: _____

- Delineators (Section 612)
 - Temporary
 - Permanent

- Lighting (Section 613) and Traffic Control Devices (Permanent) (Section 614)
 - Signal pole locations and elevations
 - Light pole locations and elevations
 - Sign locations
 - Field verify sign post locations, elevations, and lengths before fabrication.
 - Other: _____

- Pavement Marking (Section 627)
 - Striping (Temp)
 - Striping (Perm)
 - Symbols
 - Other: _____
- Temporary Lighting and Construction Traffic Control Devices (Section 630)
 - Signal pole locations and elevations (Temp)
 - Light pole locations and elevations (Temp)
 - Sign Locations (Temp)
 - Other: _____
- Easements (Temp Staking by P.L.S. Only)
- Right of Way (Temp Staking by P.L.S. Only)

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 629:

- Monumentation (Section 629)
 - Control
 - Right of Way
 - Land corners, Aliquot corners
 - Easements
 - Reference the specified existing monuments: ** _____
 - Replace the specified existing monuments: ** _____
 - Locate monuments. It is estimated _____ hours are required.

NOTE: All 629 items shall include adequate research, calculations, and evaluations of evidence for monuments to be set.

** A Tabulation of Survey Monuments may be provided on the plans.

GENERAL NOTES:

- Unless indicated otherwise on this Survey Tabulation Sheet, all survey work and staking intervals shall be done in accordance with the latest edition of the CDOT Survey Manual.
- Adequate information for establishing lines, grades, and locations for all work items have been specified on the plans. Any additional information required to stake the item or element shall be generated by the Contractor's surveyor.
- The Contractor's surveyor shall provide an estimate of the man-hours necessary to complete the work items indicated on this sheet. A copy of this sheet, with the estimated man-hours written on the blank line to the left of the specified items, shall be submitted with the Survey Schedule to the Engineer _____ days prior to the Presurvey Conference - Construction Survey.
- Stakes and Monuments which are damaged or destroyed by the progress of construction shall be replaced by the Contractor at no additional cost to the Department.
- The Contractor shall furnish an As Staked earthwork quantity to the Engineer prior to completion of twenty percent (20%) of the planned earthwork in any phase as per the CDOT Survey Manual. A printed copy of the As Staked earthwork data and a computer disk in the specified format shall be submitted to the Engineer. The Contractor shall field verify original ground cross sections at a maximum 500 feet intervals.
- Prior to beginning work on any subsequent operation, such as placing base course or paving, the Contractor shall certify in writing to the Engineer that the final grade is within specified tolerance.
- The Contractor's surveyor shall perform all field surveying and calculations necessary to tie plan grades into field grades.
- The Contractor shall coordinate construction staking on the project with any utility work.
- Fieldbooks shall contain daily records of points set and or measurements observed. The information recorded shall contain: date, crew members' names, point no., description, staking information, and sketches. If the survey information is collected electronically, information recorded shall be provided to the Project Engineer in a hard copy format that is intuitive, clear and related to the supplemental information recorded in the field books. All linear surveys, such as slope stakes and blue tops, shall have the station and offset information related to the measured information. Non-linear surveys such as structures staking shall have sketches relating electronic information, such as point numbers, to the sketch.
- The Contractor's surveyor shall submit the following fieldbooks to the Engineer:
 - Horizontal Control (Primary & Secondary)
 - Vertical Control (i.e. Benchmarks)
 - Property Pin Ties
 - Horizontal Alignment
 - Grading
 - Slope Staking
 - Minor Structures
 - Major Structures
 - One fieldbook for each work category shown on this sheet
 - Other Fieldbook(s): _____

Computer File Information		Index of Revisions		CDOT		As Constructed		SURVEY TABULATION		Project No./Code	
Creation Date: 07/01/08	Initials: KRM					No Revisions:		SURVEY		STU M320-050	
Last Modification Date: 8/24/2012	Initials: MCHAPMAN					Revised:				16220	
Full Path & Drawing File Name: V:\52876\active\187607770\drawing\sheets\07770c-CGAL-Survey Tabulation.dwg						Void:				Sheet Number 43	
Acad Ver. 2008	Scale: N/A	Units: Feet		Region 6							

NOTES:

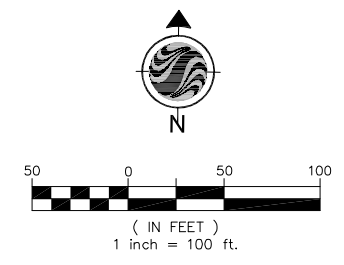
- THIS SURVEY CONTROL DIAGRAM WAS PREPARED FOR USE BY THE CITY AND COUNTY OF DENVER. IT IS NOT A LAND SURVEY PLAT OR RIGHT OF WAY PLAT.
- BASIS OF COORDINATES: COORDINATES SHOWN ON THIS SURVEY CONTROL PLAN ARE BASED ON THE CITY AND COUNTY OF DENVER GRID KNOWN AS "CCOD_LOCAL":
 TRANSVERSE MERCATOR ZONE: CCD_LOCAL
 DATUM: NAD83-1992
 CENTRAL POINT FALSE NORTHING = 400000.0000
 CENTRAL POINT FALSE EASTING = 600000.0000
 LATITUDE OF ORIGIN = N39°45'19.00000"
 CENTRAL MERIDIAN = W104°53'53.00000"
 ZONE WIDTH = 6°00.0"
 SCALE FACTOR AT ORIGIN = 1.00025403000
 UNITS ARE US SURVEY FEET.
 COORDINATES FOR THE SW COR., SEC. 34 ARE N 394547.563, E 572149.886.
- VERTICAL CONTROL WAS ESTABLISHED BY DIFFERENTIAL LEVELING FROM THE CITY OF DENVER BENCHMARK NO 3B. THE PUBLISHED ORTHOMETRIC HEIGHT OF BM 3B IS 5214.12 FT NAVD 1988. SITE BENCHMARKS ARE 2" BRASS CAPS MARKED "DEA" AND SHOWN HEREON.
- LOCAL BASIS OF BEARING: BEARINGS ARE BASED ON THE LINE BETWEEN DEA CONTROL POINTS MONUMENTED ON AS SHOWN HEREON:
 NORTH 83°16'10" EAST, 873.69'.
- DATE OF LAST FIELD INSPECTION: JANUARY, 2010.
- ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE STATEMENT SHOWN.

REFERENCES:

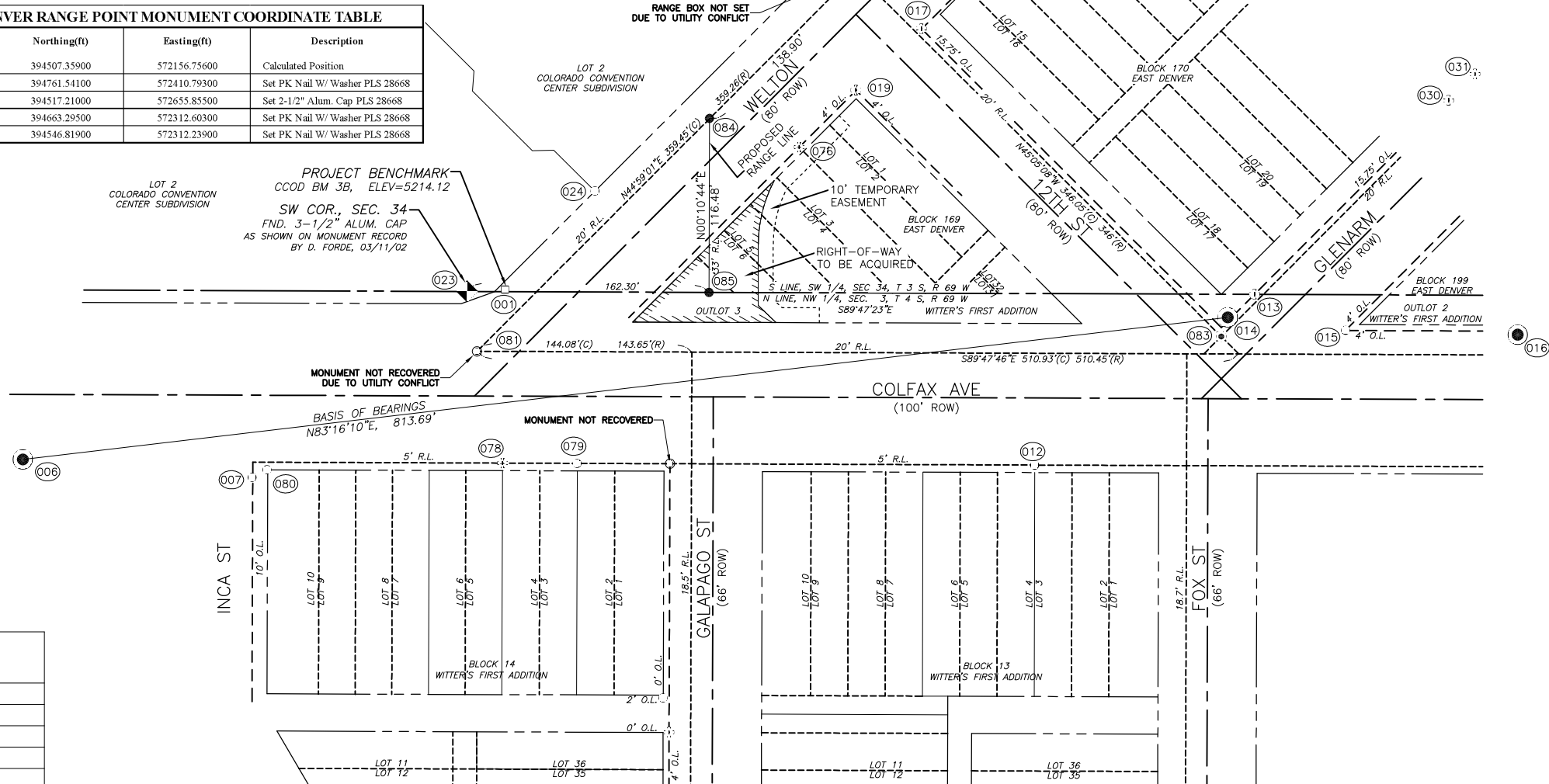
- MAP OF THE OFFICIAL SURVEY OF EAST DENVER KNOWN AS THE BONSAI MAP.
- MAP OF THE OFFICIAL SURVEY OF WITTER'S FIRST ADDITION.
- MISCELLANEOUS CITY AND COUNTY OF DENVER TIE BOOKS.
- LAND SURVEY PLATS 242-128, 246-106, 255-038, 284-267, 294-055 AND 300-023,
- DENVER JUSTICE CENTER SURVEY AND RIGHT OF WAY DIAGRAM, LSP NO. 300-050.
- MONUMENT RECORD FOR THE SW COR., SEC. 34, BY D. FORDE DATED 03/11/02.

SURVEY CONTROL PLAN COLFAX, WELTON AND GALAPAGO

PORTIONS OF BLOCKS 169, 170 & 199, EAST DENVER, BLOCKS 14 & 15 WITTER'S FIRST ADDITION AND LOTS 1 & 2 COLORADO CONVENTION CENTER
 LOCATED IN THE SOUTHWEST QUARTER OF SECTION 34, T. 3 S., R. 69 W., 6TH P.M.
 AND THE NORTHWEST QUARTER OF SECTION 3, T. 4 S., R. 69 W., 6TH P.M.
 CITY AND COUNTY OF DENVER, STATE OF COLORADO



Point No.	Northing(ft)	Easting(ft)	Description
81	394507.35900	572156.75600	Calculated Position
82	394761.54100	572410.79300	Set PK Nail W/ Washer PLS 28668
83	394517.21000	572655.85500	Set 2-1/2" Alum. Cap PLS 28668
84	394663.29500	572312.60300	Set PK Nail W/ Washer PLS 28668
85	394546.81900	572312.23900	Set PK Nail W/ Washer PLS 28668



PROJECT COORDINATES SUMMARY TABLE (FEET) GROUND

POINT #	PROJECT COORDINATES		ELEVATION (NAVD 88)	DESCRIPTION
	NORTHING	EASTING		
001	394548.653	572175.506	5214.12	FOUND 2" BRASS CAP - CCOD BM 3B
006	394434.725	571852.066	5218.15	FOUND 2" BRASS CAP - DEA CONTROL POINT
007	394422.698	572005.827	-	FOUND PK W/TAG PLS ILLEGIBLE
009	394274.757	572281.501	-	FOUND PK W/TAG PLS ILLEGIBLE
010	394251.742	572285.430	-	FOUND CHISELED CROSS
012	394430.978	572530.780	-	FOUND PK W/TAG PLS ILLEGIBLE
013	394545.624	572678.209	-	FOUND CHISELED CROSS
014	394530.090	572660.144	5215.42	FOUND 2" BRASS CAP - DEA CONTROL POINT
015	394521.400	572739.281	-	FOUND PK W/TAG PLS ILLEGIBLE
016	394523.800	573345.600	5226.63	FOUND 2" BRASS CAP - DEA CONTROL POINT
017	394723.743	572454.783	-	FOUND CHISELED CROSS
018	395072.987	572803.826	-	FOUND CHISELED CROSS
019	394682.540	572410.776	-	FOUND CHISELED CROSS
023	394547.507	572149.840	5215.21	FOUND 3-1/2" ALUM. CAP
024	394614.872	572235.698	-	FOUND PK W/TAG PLS ILLEGIBLE
030	394675.713	572808.345	-	FOUND CHISELED CROSS
031	394693.377	572826.015	-	FOUND CHISELED CROSS
076	394644.246	572372.738	-	FOUND CHISELED CROSS
078	394432.297	572173.759	-	FOUND CHISELED CROSS
079	394432.104	572223.829	-	FOUND PK W/TAG PLS ILLEGIBLE
080	394427.868	572015.857	-	FOUND YELLOW PLASTIC CAP ILLEGIBLE

SURVEYORS STATEMENT

I, ALAN WARNER, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, DO HEREBY STATE THAT THIS SURVEY CONTROL DIAGRAM WAS PREPARED UNDER MY RESPONSIBLE CHARGE BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF, IN ACCORDANCE WITH NORMAL STANDARDS OF PRACTICE.



ALAN WARNER, PLS 28668
 FOR AND BEHALF OF
 STANTEC CONSULTING SERVICES INC.

FOR REVIEW ONLY

ANY DIGITAL REPRESENTATION AND/OR COMPUTER AIDED DRAFTING FILES OF THIS SURVEY ARE EXCLUDED FROM THIS CERTIFICATION.

PURSUANT TO COLORADO STATE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS BOARD RULE 6.2.2(d) THIS CERTIFICATION IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

FILING CERTIFICATION:

DEPOSITED THIS _____ DAY OF _____, 20____ AT _____
 IN BOOK _____ OF THE SURVEYOR'S LAND
 SURVEY/RIGHT-OF-WAY SURVEYS AT PAGE _____
 RECEPTION NUMBER _____

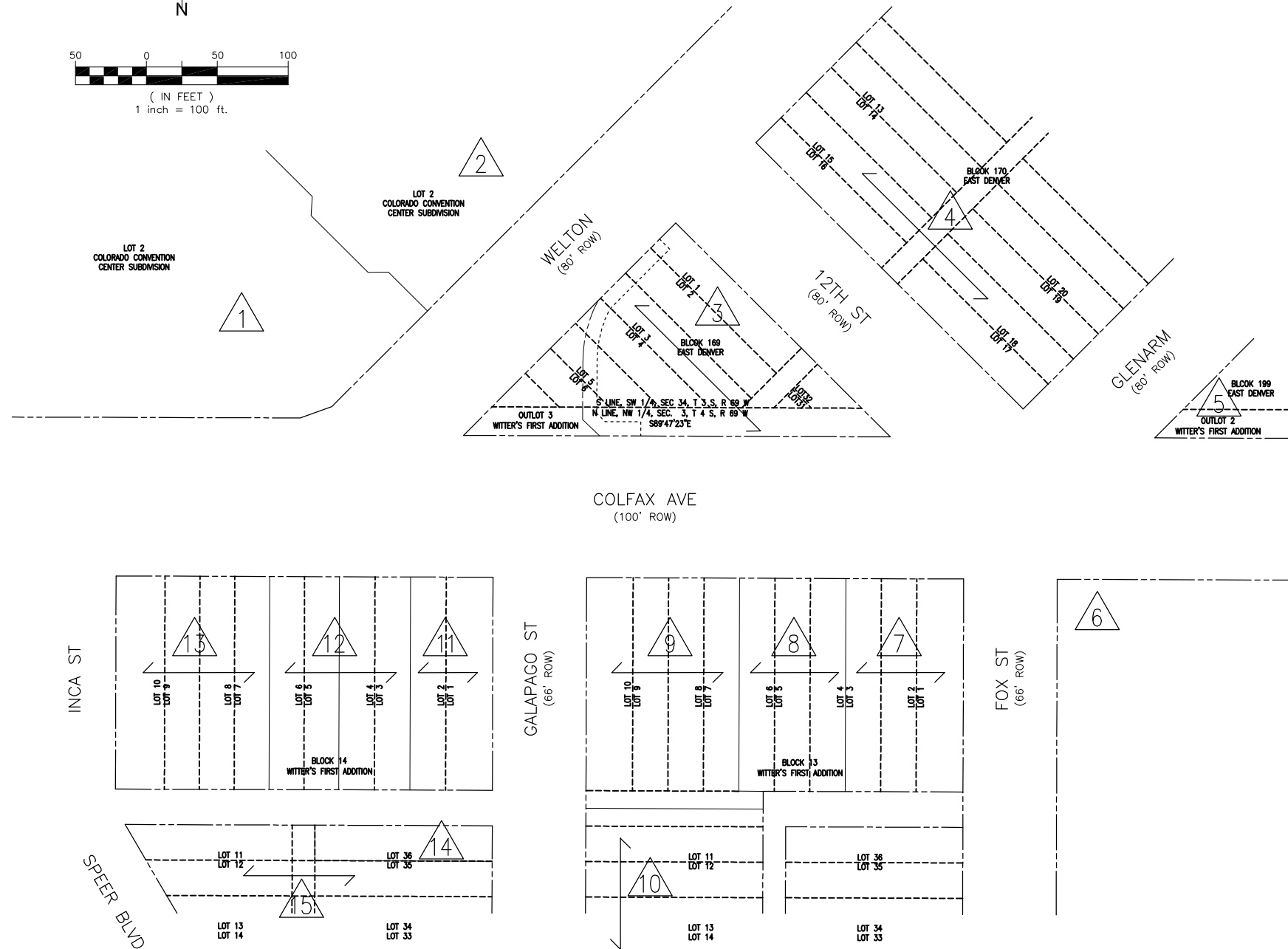
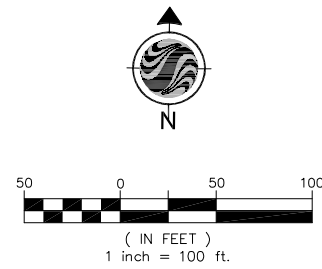
 COUNTY SURVEYOR

BY: DEPUTY COUNTY SURVEYOR

Computer File Information		Index of Revisions		CDOT DEPARTMENT OF TRANSPORTATION Region 6	Stantec	As Constructed		SURVEY CONTROL PLAN	Project No./Code	
Creation Date: 12/07/09	Initials: PM					No Revisions:				STU M320-060
Last Modification Date: 8/24/2012	Initials: MCHAPMAN						16952			
Full Path & Drawing File Name: V:\52876\active\187607770\Cofax Galapago\drawing\sheets\07770c-CGAL-Survey Control Plan.dwg							Sheet Number 44			
Acad Ver. 2008	Scale: 1"=100'	Units: Feet								

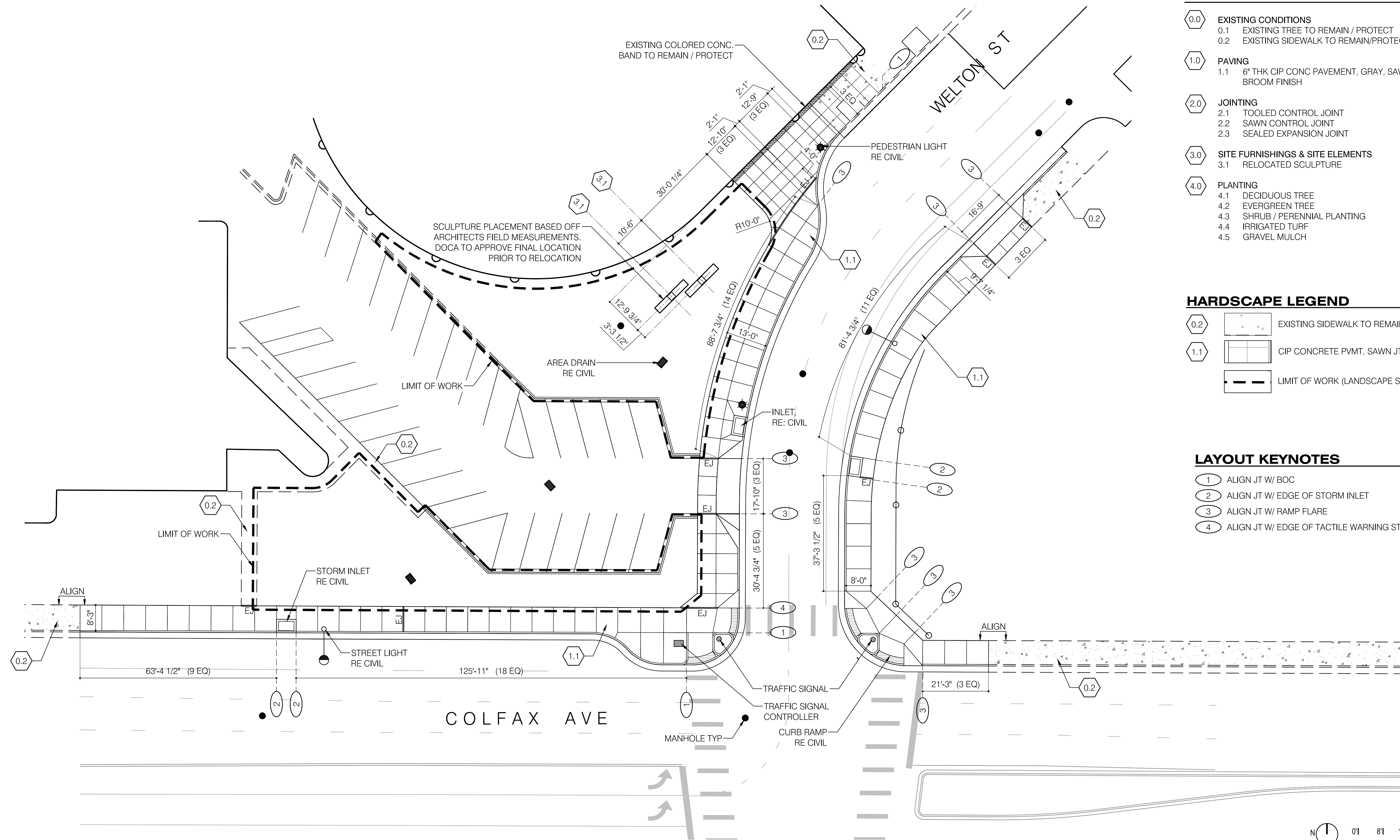
OWNERSHIP MAP COLFAX, WELTON AND GALAPAGO

PORTIONS OF BLOCKS 169, 170 & 199, EAST DENVER, BLOCKS 14 & 15 WHITTER'S FIRST ADDITION
AND LOTS 1 & 2 COLORADO CONVENTION CENTER
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 34, T. 3 S., R. 69 W., 6TH P.M.
AND THE NORTHWEST QUARTER OF SECTION 3, T. 4 S., R. 69 W., 6TH P.M.
CITY AND COUNTY OF DENVER, STATE OF COLORADO



OWNERSHIP TABLE				
NO.	OWNERS NAME	PROPERTY ADDRESS	PARCEL ID	LEGAL DESCRIPTION
1	DENVER CAPITAL LEASING CORP.	745 W. COLFAX AVE. DENVER, CO 80206	0233624002000	LOT 2, COLORADO CONVENTION CENTER SUBDIVISION.
2	CITY AND COUNTY OF DENVER	700 14TH ST DENVER, CO 80206	0233624001000	LOT 1, COLORADO CONVENTION CENTER SUBDIVISION.
3	GELLER, RICHARD A & PADERSKI, DAVID R	1150 WELTON ST DENVER, CO 80206	0233618008000	EAST DENVER, BLK 169, LOTS 1-7&31-32, WHITTERS OUTLOT 3 & VACATED ALLEY
4	SCHOOL DISTRICT NO. 1	1250 WELTON ST DENVER, CO 80206	0233616004000	EAST DENVER, BLK 170, LOTS 1 thru 32, WITH VACATED ALLEY ADJACENT
5	GLENARM ASSOCIATES INC	515 W. COLFAX AVE. DENVER, CO 80206	0233617006000	EAST DENVER, BLK 199, LOTS 11-13, & WITTERS 1ST ADD. PT OF OUTLOT 2
6	CITY AND COUNTY OF DENVER	520 W COLFAX AVE DENVER, CO 80206	0503102030000	WITTERS 1ST ADD BLOCK 12 & VACATED ALLEY
7	FOX STREET INC	606 W COLFAX AVE DENVER, CO 80206	0503403006000	WITTERS 1ST ADD, BLOCK 13, LOTS 1-3
8	ROCKY MOUNTAIN ASSOCIATES	620 W COLFAX AVE DENVER, CO 80204	0503403030000	WITTERS 1ST ADD, BLOCK 13, LOTS 4-6, & VAC. ALLEY ADJ TO W 16.98' LOT 6
9	ROCKY MOUNTAIN ASSOCIATES	650 W COLFAX AVE DENVER, CO 80204	0503403029000	WITTERS 1ST ADD, BLOCK 13, LOTS 7-10, WITH N 1/2 VAC. ALLEY
10	ROCKY MOUNTAIN METAL PRODUCTS	1450 GALAPAGO ST DENVER, CO 80204	0503403031000	WITTERS 1ST ADD, BLOCK 13, LOTS 11-16, & S 1/2 ALLEY ADJACENT LOT 11
11	ROCKY MOUNTAIN ASSOCIATES	700 W COLFAX AVE DENVER, CO 80206	0503404007000	WITTERS 1ST ADD, BLOCK 14, LOTS 1-2
12	R & R ENGINEERING PROPERTIES LLC	710 W COLFAX AVE DENVER, CO 80206	0503404039000	WITTERS 1ST ADD, BLOCK 14, LOTS 3-6
13	SKORDOS, GEORGE	740 W. COLFAX AVE. DENVER, CO 80204	0503404022000	WITTERS 1ST ADD, BLOCK 14, LOTS 7-10
14	ROCKY MOUNTAIN ASSOCIATES	1449 GALAPAGO ST DENVER, CO 80204	0503404036000	WITTERS 1ST ADD, BLOCK 14, LOT 36
15	SOKA GAKKAI INTERNAIONAL USA	1450 N SPEER BLVD DENVER, CO 80204	0503404037000	WITTERS 1ST ADD, BLOCK 14, LOTS 28-35, & 11-18 EAST OF SPEER6, & VAC. ALLEY

Computer File Information		Index of Revisions		CDOT DEPARTMENT OF TRANSPORTATION Region 6			As Constructed	OWNERSHIP MAP		Project No./Code
Creation Date: 12/07/09 Initials: PM		0000					No Revisions:			STU M320-060
Last Modification Date: 8/24/2012 Initials: MCHAPMAN		0000					Revised:			16952
Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\07770c-CGAL-Ownership.dwg		0000					Void:			Sheet Number 45
Acad Ver. 2008 Scale: 1"=100' Units: Feet								SURVEY		



MATERIAL KEYNOTES

0.0	EXISTING CONDITIONS	
0.1	EXISTING TREE TO REMAIN / PROTECT	
0.2	EXISTING SIDEWALK TO REMAIN/PROTECT	RE SPECS
1.0	PAVING	
1.1	6" THK CIP CONC PAVEMENT, GRAY, SAWN JTS BROOM FINISH	RE CIVIL
2.0	JOINTING	
2.1	TOOLED CONTROL JOINT	1/L201
2.2	SAWN CONTROL JOINT	1/L201
2.3	SEALED EXPANSION JOINT	1/L201
3.0	SITE FURNISHINGS & SITE ELEMENTS	
3.1	RELOCATED SCULPTURE	
4.0	PLANTING	
4.1	DECIDUOUS TREE	4/L201
4.2	EVERGREEN TREE	5/L201
4.3	SHRUB / PERENNIAL PLANTING	2.3/L201
4.4	IRRIGATED TURF	RE SPECS
4.5	GRAVEL MULCH	6/L201

HARDSCAPE LEGEND

0.2		EXISTING SIDEWALK TO REMAIN / PROTECT
1.1		CIP CONCRETE PVTM, SAWN JTS, LT BROOM FINISH
		LIMIT OF WORK (LANDSCAPE SHTS ONLY)

LAYOUT KEYNOTES

1	ALIGN JT W/ BOC
2	ALIGN JT W/ EDGE OF STORM INLET
3	ALIGN JT W/ RAMP FLARE
4	ALIGN JT W/ EDGE OF TACTILE WARNING STRIP

N 01 81 161 321 641

Computer File Information Creation Date: 12/07/09 Initials: PM Last Modification Date: 5/14/2012 Initials: WBOWEN Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\L-101.dwg Acad Ver. 2008 Scale: 1"=16' Units: Feet		Index of Revisions <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																		<p>Region 6</p>		As Constructed No Revisions: Revised: Void:		LAYOUT ENLARGEMENT PLAN Project No./Code STU M320-050 16220 Sheet Number 46	

PLANT LIST

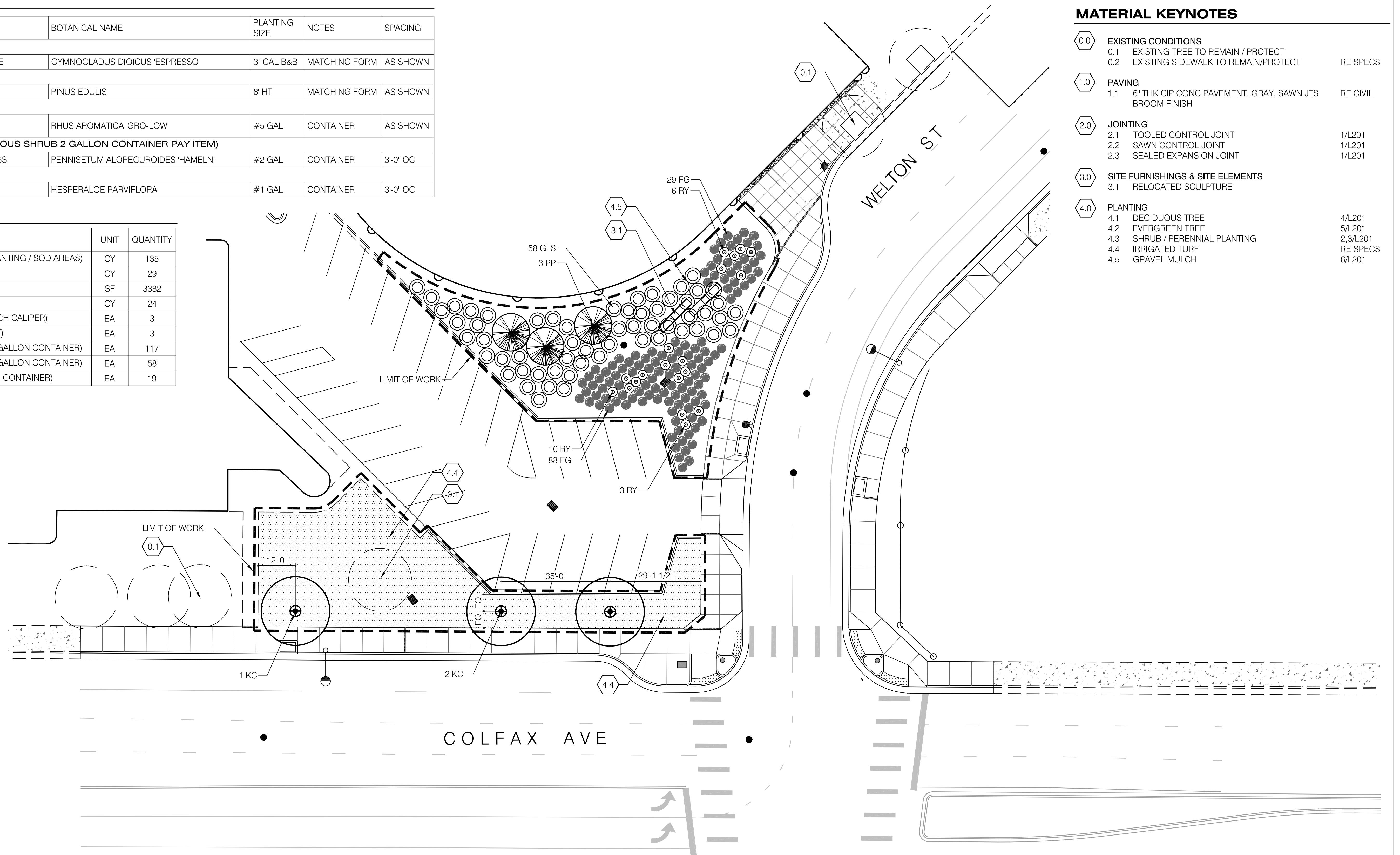
SYM	QTY	COMMON NAME	BOTANICAL NAME	PLANTING SIZE	NOTES	SPACING
DECIDUOUS TREES						
KC	3	KENTUCKY COFFEETREE	GYMNOCLADUS DIOICUS 'ESPRESSO'	3" CAL B&B	MATCHING FORM	AS SHOWN
EVERGREEN TREES						
PP	3	PINON PINE	PINUS EDULIS	8' HT	MATCHING FORM	AS SHOWN
DECIDUOUS SHRUBS						
GLS	58	GRO-LOW SUMAC	RHUS AROMATICA 'GRO-LOW'	#5 GAL	CONTAINER	AS SHOWN
ORNAMENTAL GRASSES (DECIDUOUS SHRUB 2 GALLON CONTAINER PAY ITEM)						
FG	117	DWARF FOUNTAIN GRASS	PENNISETUM ALOPECUROIDES 'HAMELN'	#2 GAL	CONTAINER	3'-0" OC
PERENNIALS/GROUNDCOVERS						
RY	19	RED YUCCA	HESPERALOE PARVIFLORA	#1 GAL	CONTAINER	3'-0" OC

PAY ITEM TOTALS

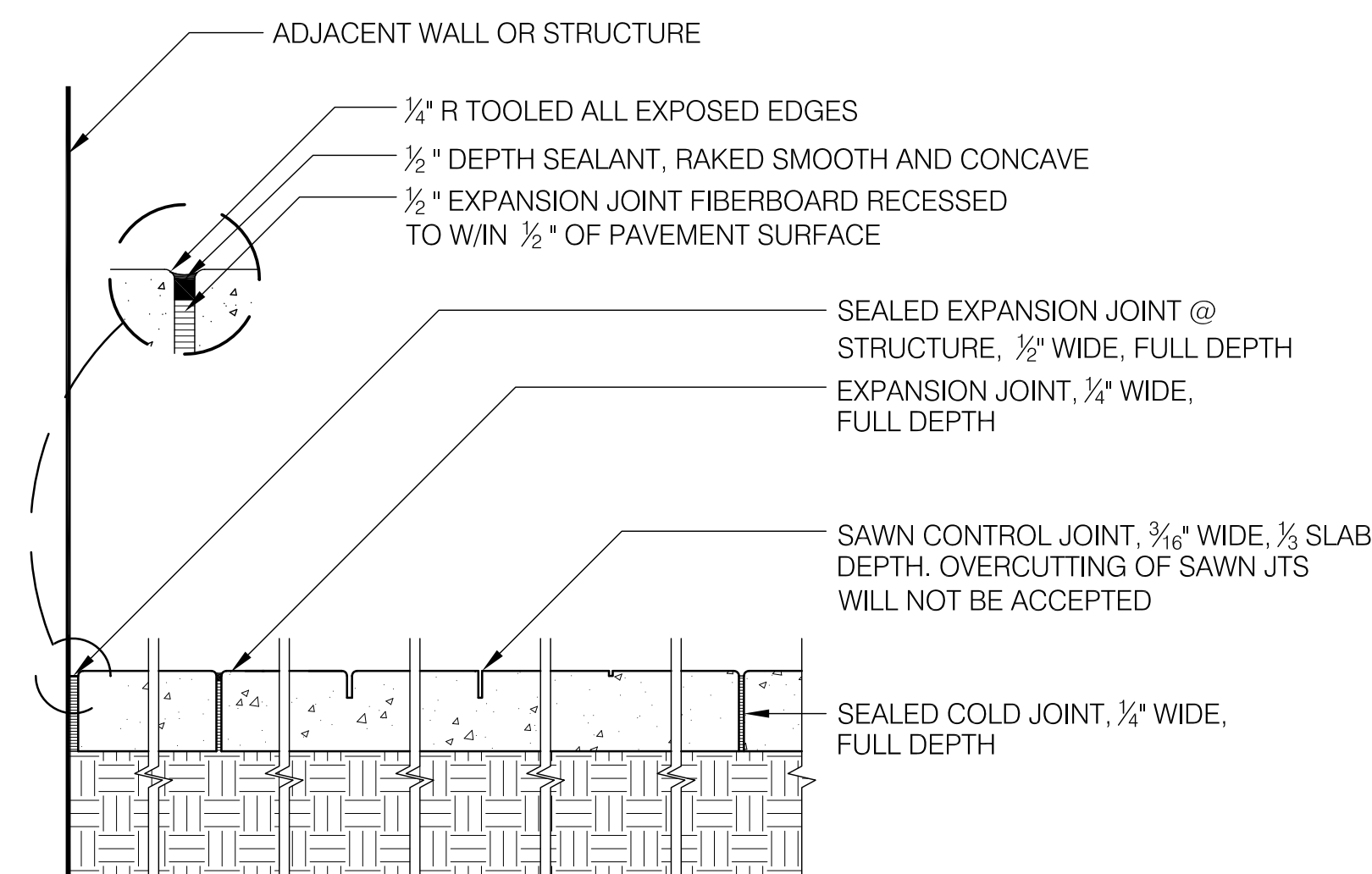
PAY ITEM	DESCRIPTION	UNIT	QUANTITY
207	TOPSOIL (6" DEPTH, PLANTING / SOD AREAS)	CY	135
212	SOIL PREP (SPECIAL)	CY	29
212	SOD	SF	3382
213	INORGANIC MULCH	CY	24
214	DECIDUOUS TREE (3 INCH CALIPER)	EA	3
214	EVERGREEN TREE (8' HT)	EA	3
214	DECIDUOUS SHRUB (2 GALLON CONTAINER)	EA	117
214	DECIDUOUS SHRUB (5 GALLON CONTAINER)	EA	58
214	PERENNIALS (1 GALLON CONTAINER)	EA	19

MATERIAL KEYNOTES

0.0	EXISTING CONDITIONS	
0.1	EXISTING TREE TO REMAIN / PROTECT	
0.2	EXISTING SIDEWALK TO REMAIN/PROTECT	RE SPECS
1.0	PAVING	
1.1	6" THK CIP CONC PAVEMENT, GRAY, SAWN JTS BROOM FINISH	RE CIVIL
2.0	JOINTING	
2.1	TOOLED CONTROL JOINT	1/L201
2.2	SAWN CONTROL JOINT	1/L201
2.3	SEALED EXPANSION JOINT	1/L201
3.0	SITE FURNISHINGS & SITE ELEMENTS	
3.1	RELOCATED SCULPTURE	
4.0	PLANTING	
4.1	DECIDUOUS TREE	4/L201
4.2	EVERGREEN TREE	5/L201
4.3	SHRUB / PERENNIAL PLANTING	2,3/L201
4.4	IRRIGATED TURF	RE SPECS
4.5	GRAVEL MULCH	6/L201



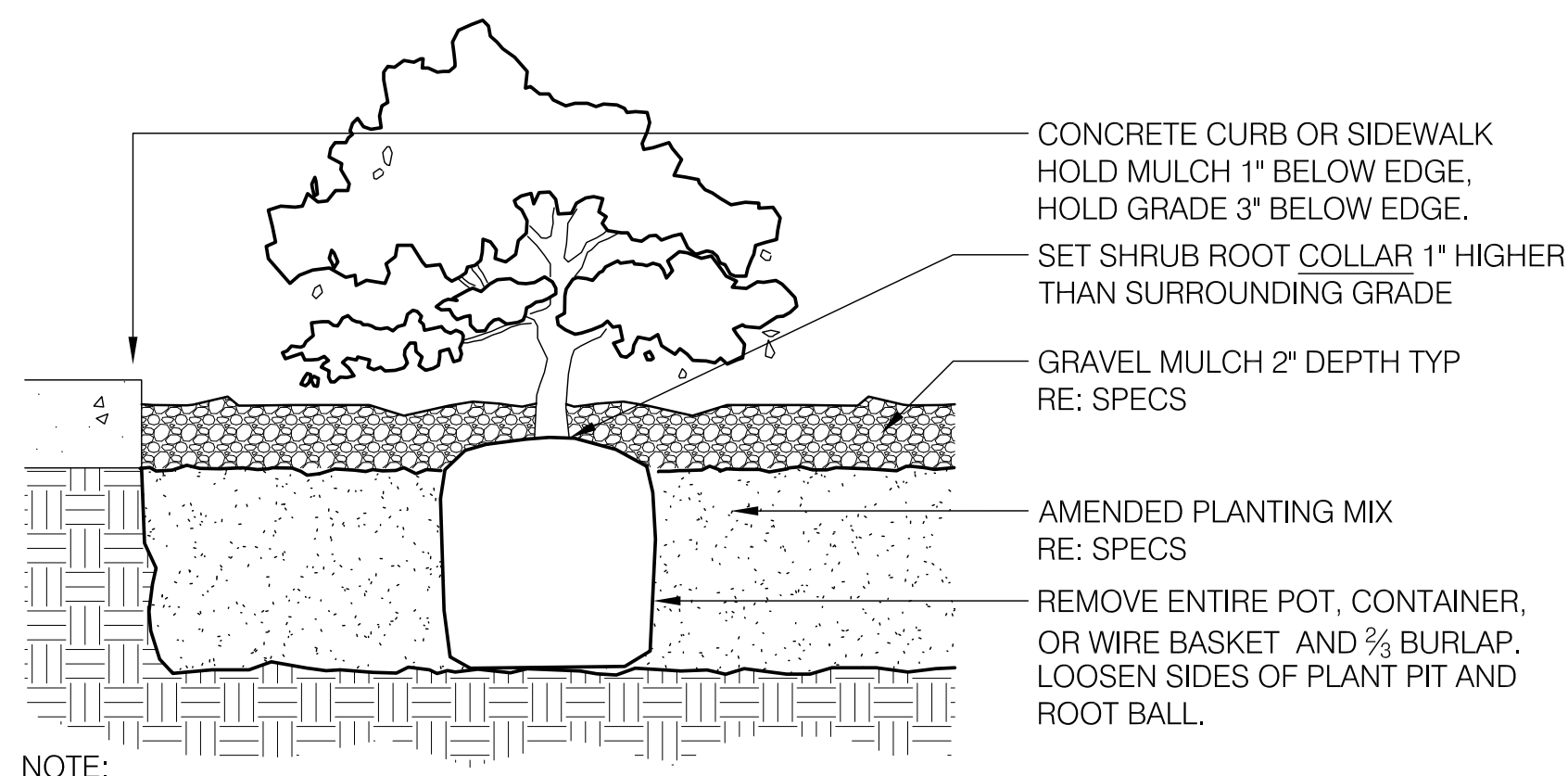
Computer File Information Creation Date: 12/07/09 Initials: PM Last Modification Date: 8/16/2012 Initials: WBOWEN Full Path & Drawing File Name: V:\52876\active\187607770\Colfax Galapago\drawing\sheets\L-101.dwg Acad Ver. 2008 Scale: 1"=16' Units: Feet		Index of Revisions <table border="1"> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>																As Constructed No Revisions: Revised: Void:		PLANTING PLAN L102		Project No./Code STU M320-050 16220 Sheet Number 47	



- NOTES:
 1. RE LANDSCAPE PLANS FOR JOINT LOCATIONS
 2. SEALANT TO MATCH ADJACENT CONCRETE. SUBMIT SAMPLE FOR APPROVAL

1 PAVEMENT JOINTING

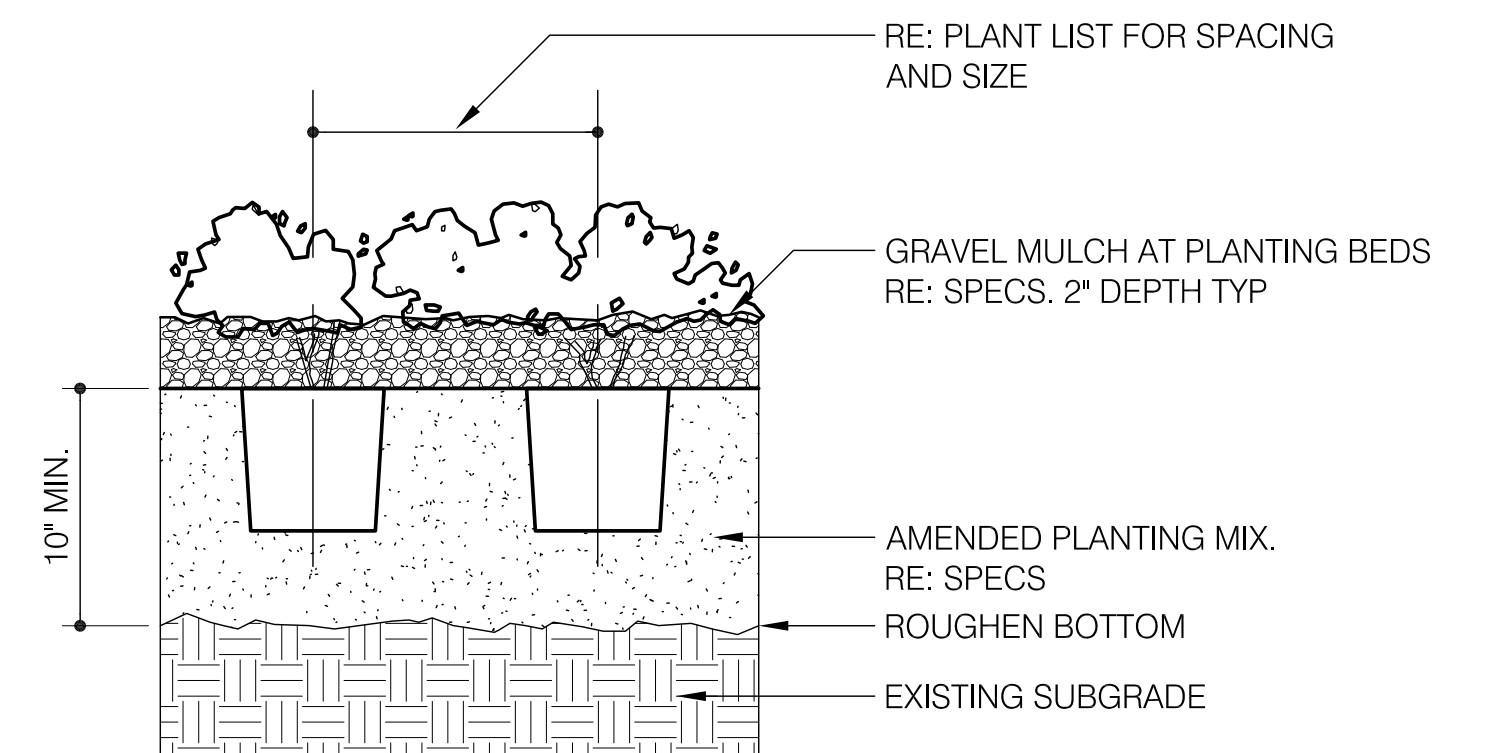
SCALE: 1 1/2" = 1'-0"



- NOTE:
 1. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE CONTAINER OR BASKET WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALL.
 2. PRUNE ALL DAMAGED OR DEAD WOOD IMMEDIATELY PRIOR TO PLANTING.

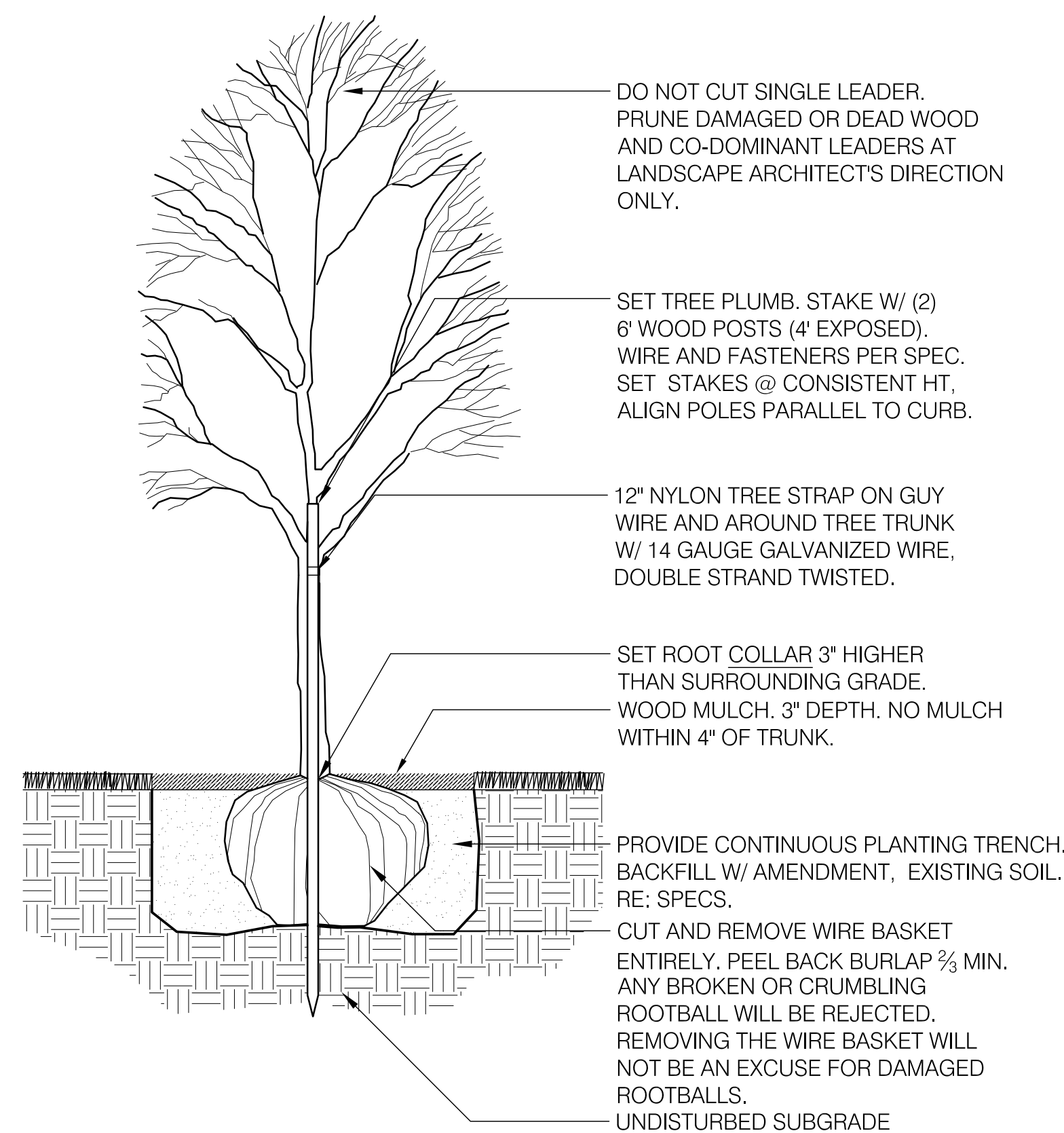
2 SHRUB PLANTING

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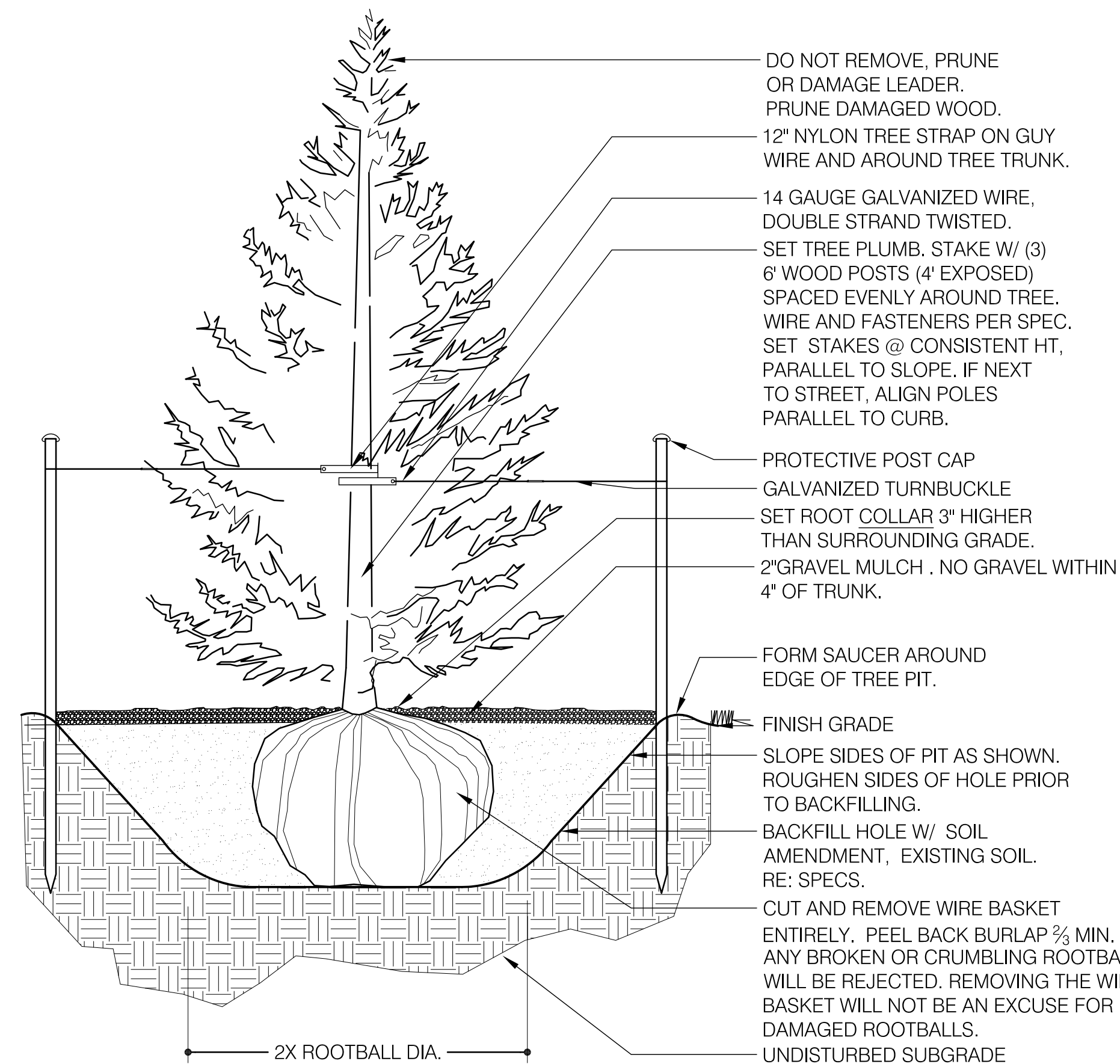
3 PERENNIAL PLANTING

SCALE: 1 1/2" = 1'-0"



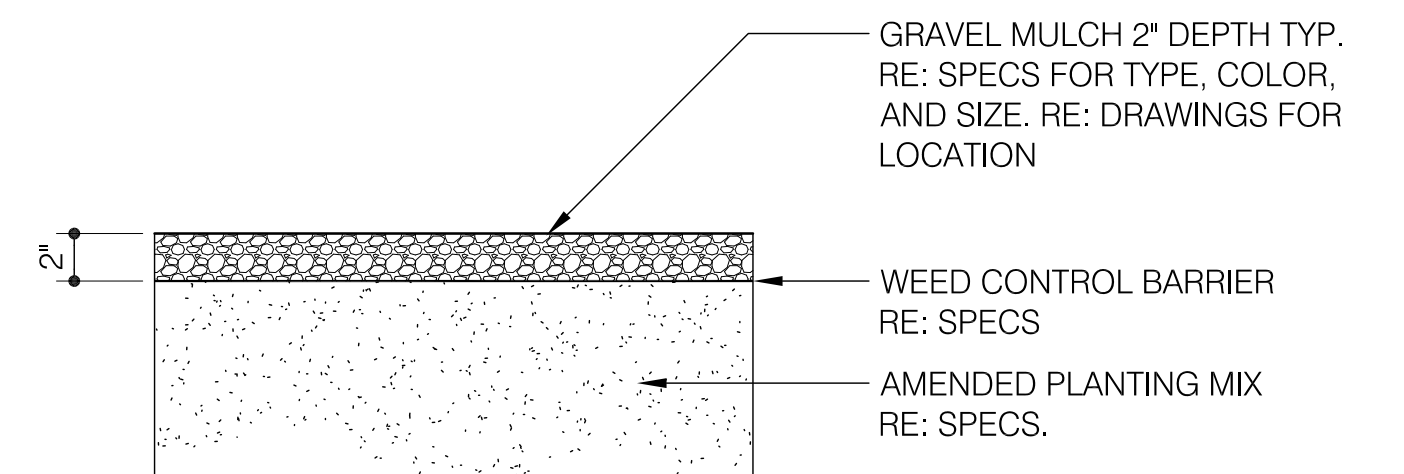
4 DECIDUOUS TREE PLANTING

SCALE: 1/2" = 1'-0"



5 EVERGREEN TREE PLANTING

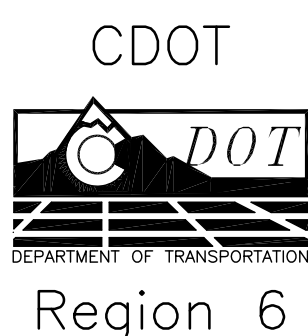
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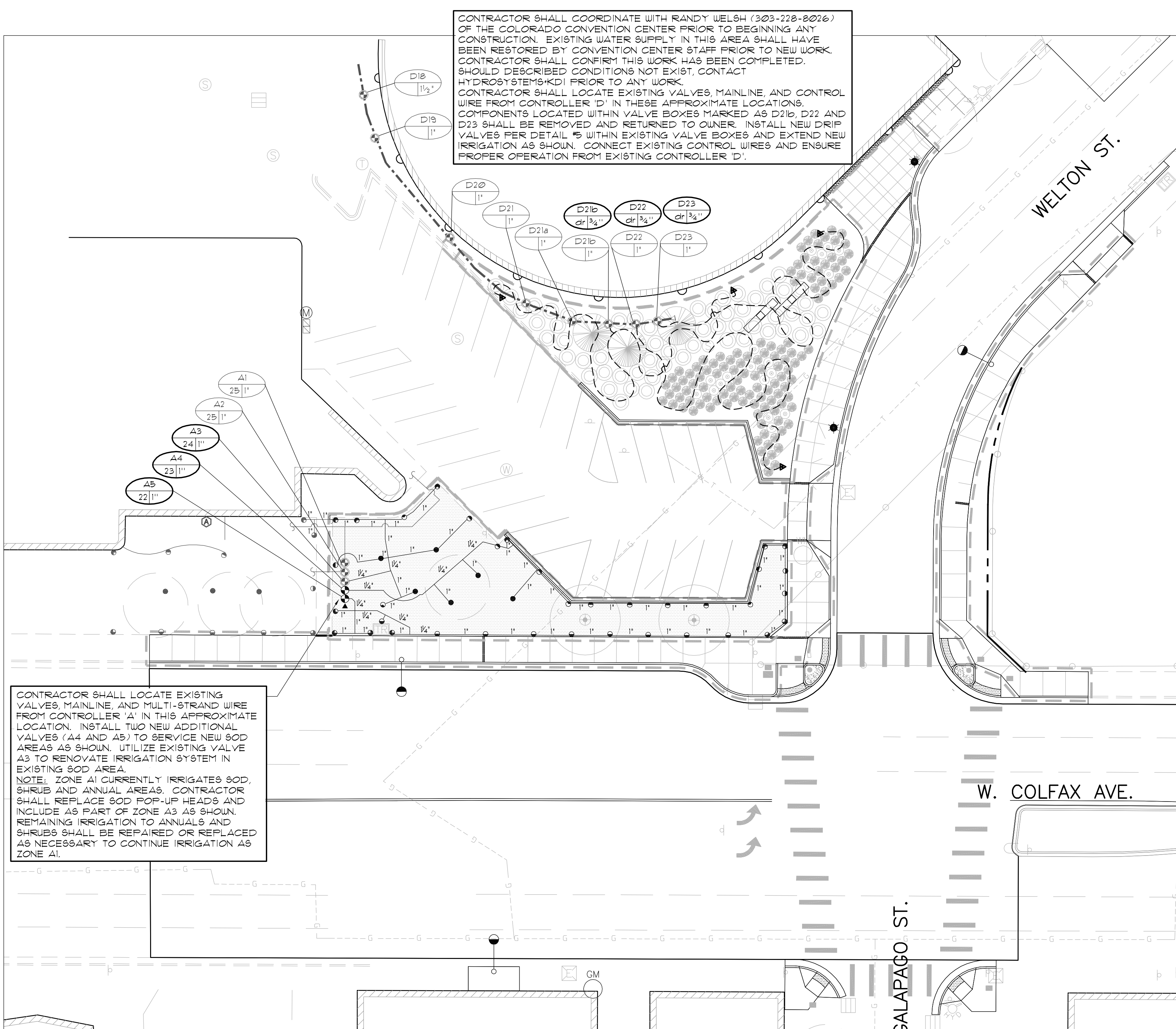


6 GRAVEL MULCH

SCALE: 1 1/2" = 1'-0"

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CONTRACTOR SHALL COORDINATE WITH RANDY WELSH (303-228-8026) OF THE COLORADO CONVENTION CENTER PRIOR TO BEGINNING ANY CONSTRUCTION. EXISTING WATER SUPPLY IN THIS AREA SHALL HAVE BEEN RESTORED BY CONVENTION CENTER STAFF PRIOR TO NEW WORK. CONTRACTOR SHALL CONFIRM THIS WORK HAS BEEN COMPLETED. SHOULD DESCRIBED CONDITIONS NOT EXIST, CONTACT HYDROSYSTEMS-KDI PRIOR TO ANY WORK. CONTRACTOR SHALL LOCATE EXISTING VALVES, MAINLINE, AND CONTROL WIRE FROM CONTROLLER 'D' IN THESE APPROXIMATE LOCATIONS. COMPONENTS LOCATED WITHIN VALVE BOXES MARKED AS D21b, D22 AND D23 SHALL BE REMOVED AND RETURNED TO OWNER. INSTALL NEW DRIP VALVES PER DETAIL 'S' WITHIN EXISTING VALVE BOXES AND EXTEND NEW IRRIGATION AS SHOWN. CONNECT EXISTING CONTROL WIRES AND ENSURE PROPER OPERATION FROM EXISTING CONTROLLER 'D'.

CONTRACTOR SHALL LOCATE EXISTING VALVES, MAINLINE, AND MULTI-STRAND WIRE FROM CONTROLLER 'A' IN THIS APPROXIMATE LOCATION. INSTALL TWO NEW ADDITIONAL VALVES (A4 AND A5) TO SERVICE NEW SOD AREAS AS SHOWN. UTILIZE EXISTING VALVE A3 TO RENOVATE IRRIGATION SYSTEM IN EXISTING SOD AREA.
NOTE: ZONE A1 CURRENTLY IRRIGATES SOD, SHRUB AND ANNUAL AREAS. CONTRACTOR SHALL REPLACE SOD POP-UP HEADS AND INCLUDE AS PART OF ZONE A3 AS SHOWN. REMAINING IRRIGATION TO ANNUALS AND SHRUBS SHALL BE REPAIRED OR REPLACED AS NECESSARY TO CONTINUE IRRIGATION AS ZONE A1.

Irrigation Schedule and Pay Item Totals

ITEM NO.	SYMBOL	MANUFACTURER	MODEL NO.	DESCRIPTION	DETAIL NO.	UNITS	QTY
623-00204		RAIN BIRD	1806 SAM FRS W/ MPR NOZ.	POP-UP SPRAY HEAD	1	EA	42
		EXISTING		POP-UP SPRAY HEAD			
623-03108		RAIN BIRD	FEB SERIES	ELECTRIC CONTROL VALVE	2	EA	2
623-04008		RAIN BIRD	44 LRC	QUICK COUPLING VALVE	3	EA	1
		EXISTING		ELECTRIC CONTROLLER			
		EXISTING		BACKFLOW PREVENTER			
		EXISTING		PVC MAINLINE			
619-50020			CLASS 200 BE	PVC LATERAL - 1"		LF	420
619-50100			CLASS 200 BE	PVC LATERAL - 1 1/4"	6	LF	115
619-50060		IRRITROL	DURA-FOL	POLY DRIP TUBING - 3/4" MIN. WIDTH	7	LF	550
623-00166		RAIN BIRD	XCZ-075-FRF WITH BALL VALVE	DRIP VALVE ASSEMBLY	5	EA	3
623-00186				DRIP LINE BLOW-OUT STUB	4	EA	4
623-00164		RAIN BIRD	XERI-BUG	DRIP EMITTERS	7	EA	265
				EXISTING VALVES			
				CONTROLLER & STATION NO.			
				CONTROL VALVE SIZE			
NUMBER OF SPARE WIRES - 2 CONTROL AND 1 SPARE WIRES TO WHICH CONTROLLER - SEE CONSTRUCTION NOTES							

Irrigation Construction Notes

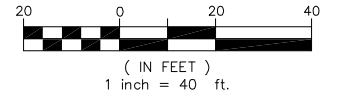
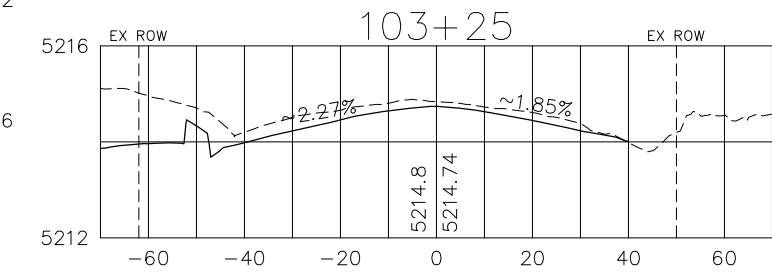
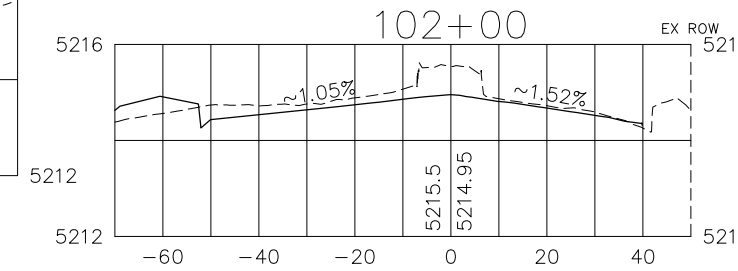
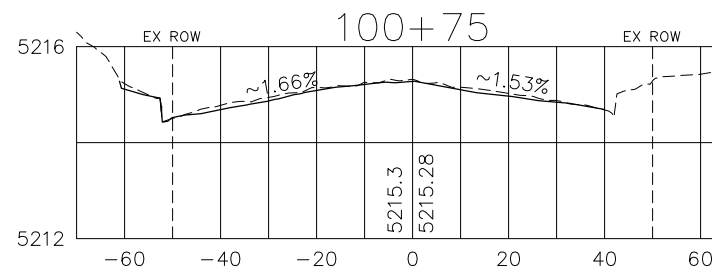
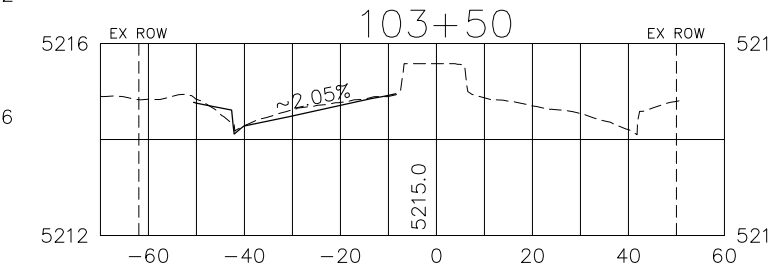
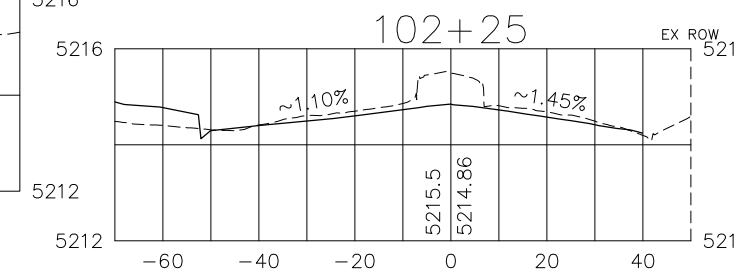
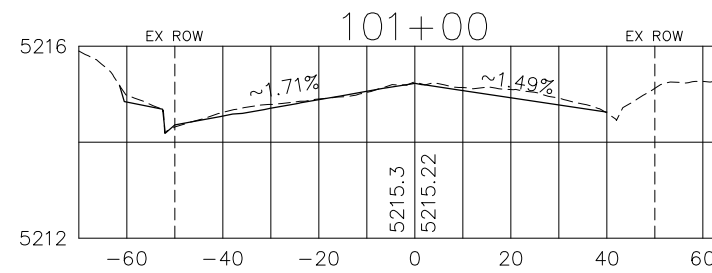
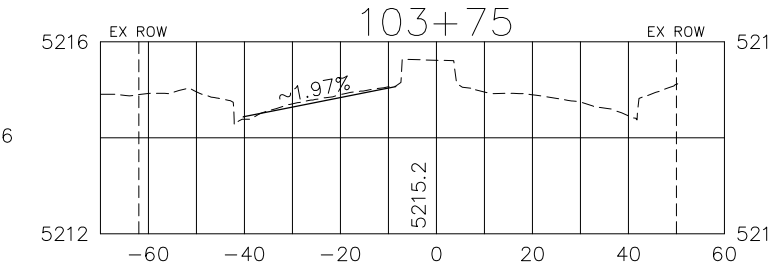
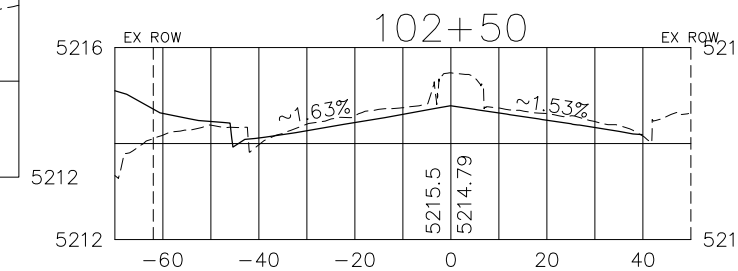
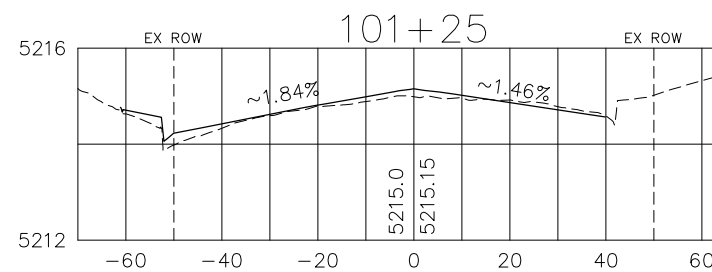
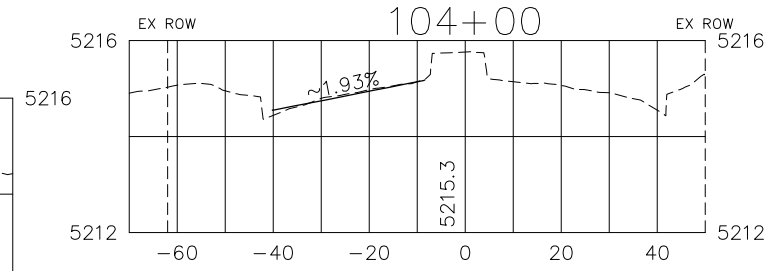
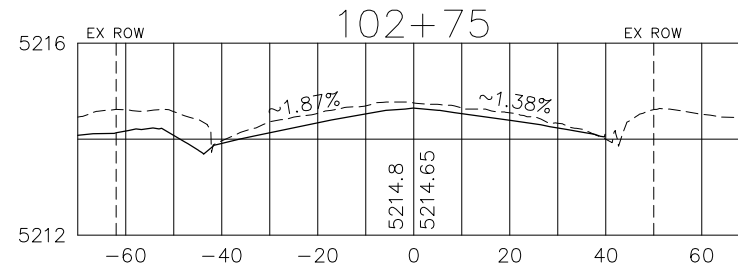
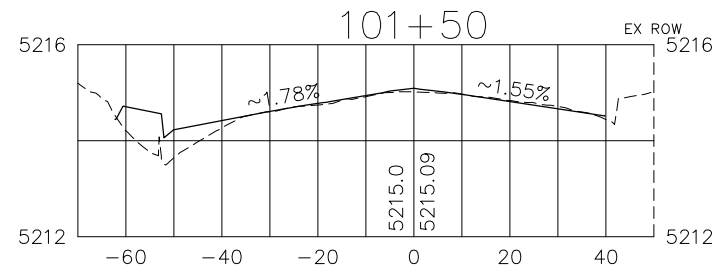
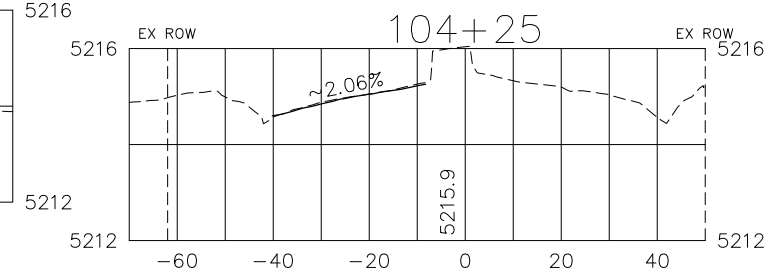
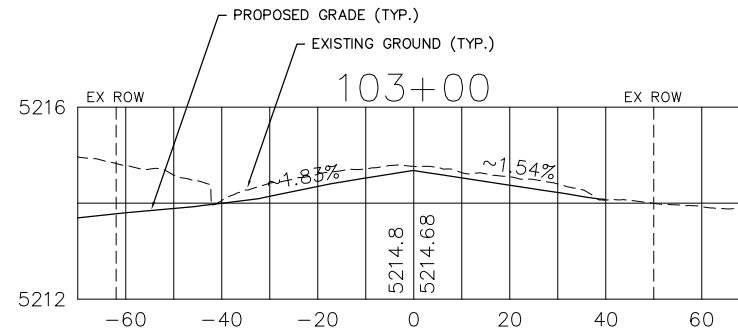
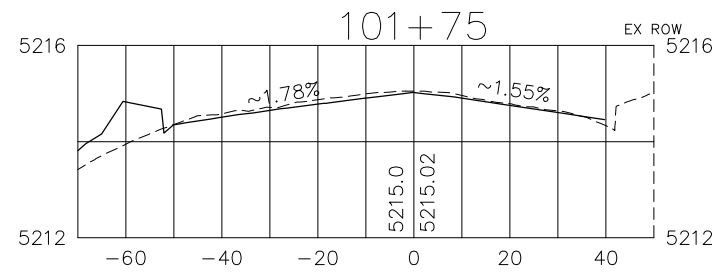
- DRAWINGS AND BASE INFORMATION - ALL BASE AND PLANTING INFORMATION HAVE BEEN PROVIDED BY STUDIO/SITE. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY HYDROSYSTEMS-KDI OF ANY DISCREPANCIES BETWEEN THE UTILITY OR PLANTING PLANS AND THE IRRIGATION PLAN. IF CONTRACTOR FAILS TO NOTIFY HYDROSYSTEMS-KDI AND MAKES CHANGES TO THE IRRIGATION SYSTEM DESIGN, HE ASSUMES ALL COSTS AND LIABILITIES ASSOCIATED WITH THOSE FIELD CHANGES. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS.
- SYSTEM PRESSURE - HYDROSYSTEMS-KDI HAS CONTACTED THE LOCAL WATER DISTRICT THAT SERVES THIS SITE AND THEY HAVE BEEN TOLD THAT THE STATIC WATER PRESSURE IN THIS AREA SHOULD BE 74 PSI MINIMUM. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PRESSURE PRIOR TO COMMENCING ANY CONSTRUCTION AND NOTIFY HYDROSYSTEMS-KDI OF ANY VARIANCE FROM THE STATED PRESSURE. IF CONTRACTOR FAILS TO FIELD VERIFY PRESSURE AND/OR NOTIFY HYDROSYSTEMS-KDI OR ANY VARIATIONS FROM THIS PRESSURE, THEN HE ASSUMES ALL CONSTRUCTION AND ENGINEERING COSTS ASSOCIATED WITH SYSTEM MODIFICATIONS REQUIRED TO ACCOMMODATE ACTUAL SITE PRESSURE. THIS SYSTEM HAS BEEN DESIGNED FOR A REQUIRED STATIC PRESSURE OF 35 PSI MINIMUM AT THE VALVE BOX LOCATIONS.
- IRRIGATION SYSTEM OPERATION INTENT - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO IRRIGATE THE ESTABLISHED LANDSCAPE WITHIN A SIX NIGHT PER WEEK, SIX HOUR PER NIGHT WATERING WINDOW. ESTABLISHMENT WATERING WILL REQUIRE UP TO TWICE AS MUCH IRRIGATION FOR A FOUR TO SIX WEEK PERIOD. THE DESIGN IS BASED ON THE FOLLOWING PROJECTED WEEKLY APPLICATION RATES AFTER ESTABLISHMENT. THESE FIGURES ARE BASED ON A 30-YEAR AVERAGE WEATHER DATA AND WILL NEED TO BE ADJUSTED DUE TO SEASONAL CHANGES AND WEATHER CONDITIONS ABOVE AND BELOW THE AVERAGE VALUES UTILIZED.
 BLUEGRASS TURF 1.75" PER WEEK PEAK SEASON
 ORNAMENTAL PLANTINGS 1.00" PER WEEK PEAK SEASON
- EQUIPMENT INSTALLATION - IT IS THE INTENT OF THIS DESIGN THAT ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN PROPERTY LIMITS AND WITHIN LANDSCAPED AREAS. ANY EQUIPMENT SHOWN OUTSIDE OF THESE LIMITS IS SHOWN IN THAT LOCATION FOR GRAPHICAL CLARITY ONLY. ALL VALVE BOXES SHALL BE INSTALLED A MINIMUM OF 2'-0" FROM EDGE OF ANY PAVED SURFACES. ALL VALVE BOXES SHALL BE PLACED A MINIMUM OF 3'-0" FROM THE CENTERLINE OF ANY DRAINAGE SWALE.
- SLEEVING - ALL SLEEVING UNDER PAVED SURFACES SHOWN ON PLANS IS BY CONTRACTOR UNLESS OTHERWISE NOTED. SLEEVING SHALL BE INSTALLED IN THE SIZES AND QUANTITIES SHOWN ON PLANS OR BASED ON THE SCHEDULE BELOW. WHERE SLEEVES ARE SHOWN, BUT NOT LABELED, FOLLOW THE SCHEDULE BELOW. ALL MAINLINE, CONTROL WIRES AND DRIP LINES UNDER PAVED SURFACES ARE TO BE INSTALLED IN SLEEVING.
 SLEEVED PIPE SIZE/WIRE QUANTITY REQUIRED SLEEVE SIZE & QUANTITY:
 3/4" - 1 1/4" PIPING 2" FVC (1)
 1-50 CONTROL WIRES 3" FVC (1)
- POP-UP SPRAY NOZZLES - CONTRACTOR TO INSTALL PLASTIC NOZZLES ON ALL POP-UP SPRAY HEADS. INSTALL 15 SERIES NOZZLES ON ALL HEADS SPACED AT 13' TO 15'. INSTALL 12 SERIES NOZZLES ON ALL HEADS SPACED 11' TO 12'. INSTALL 10 SERIES NOZZLES ON ALL HEADS SPACED AT 9' TO 10'. INSTALL 8 SERIES NOZZLES ON ALL HEADS SPACED LESS THAN 8'. INSTALL SIDE STRIP NOZZLES ON ALL HEADS WITH AN 'S' DESIGNATION AND RIGHT AND LEFT CORNER STRIP NOZZLES ON ALL HEADS WITH AN 'C' DESIGNATION. VARIABLE ARC NOZZLES SHOULD BE UTILIZED ADJACENT TO CURVILINEAR SHRUB BEDS OR FOR ANY ANGLES THAT ARE NOT A STANDARD NOZZLE ANGLE.
- DRIP IRRIGATION - REFER TO IRRIGATION DETAIL SHEET FOR DRIP EMITTER QUANTITIES AND PLACEMENT.
- ADJUSTMENT - CONTRACTOR SHALL FINE TUNE/ADJUST THE IRRIGATION SYSTEM TO REDUCE/AVOID OVERSPRAY ONTO HARD SURFACES BY ADJUSTING NOZZLE DIRECTION AND NOZZLE RADIUS.
- PRODUCT SELECTION - CONTRACTOR SHALL INSTALL ALL MATERIALS AND EQUIPMENT AS SHOWN ON THE PLANS AND DETAILS. NO SUBSTITUTIONS OF EQUIPMENT WILL BE ACCEPTABLE WITHOUT PRIOR WRITTEN APPROVAL BY THE CONSULTANT AND/OR OWNER. THE IRRIGATION CONTRACTOR MAY BE REQUIRED TO REMOVE AND REPLACE ALL UNAPPROVED SUBSTITUTED EQUIPMENT AT HIS OWN COST IF SO DIRECTED BY THE CONSULTANT.
- EXISTING IRRIGATION DAMAGE - CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING IRRIGATION SYSTEMS DAMAGED DURING NEW INSTALLATION. REPAIR OR REPLACEMENT SHALL BE DETERMINED BY OWNER OR OWNER'S REPRESENTATIVE AND PAID FOR BY THE LANDSCAPE CONTRACTOR.
- EXISTING IRRIGATION COORDINATION - EXISTING IRRIGATION SYSTEM SHALL NOT BE TURNED OFF FOR MORE THAN 24 HOURS MAXIMUM. CONTRACTOR SHALL COORDINATE TURN OFF OF SYSTEM WITH OWNER OR MAINTENANCE STAFF 12 HOURS PRIOR TO ANY NEW CONSTRUCTION.

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Lakewood, Colorado 80401
303-980-5527
Fax: 303-980-5384

REFER TO SHEETS "50" AND "51" FOR IRRIGATION DETAILS

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DEPARTMENT OF TRANSPORTATION
Region 6

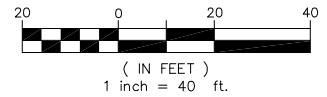
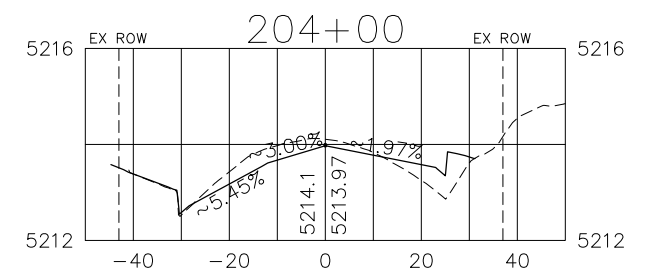
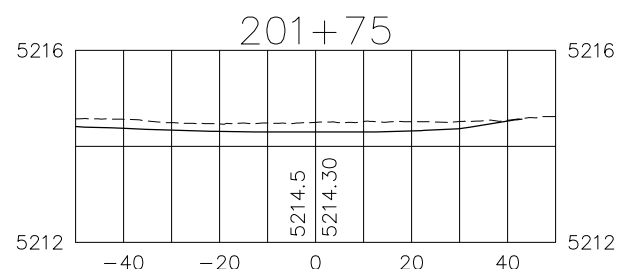
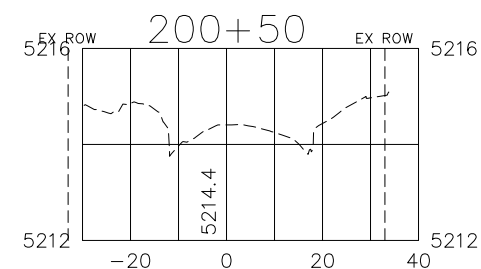
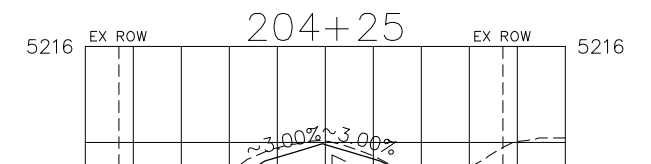
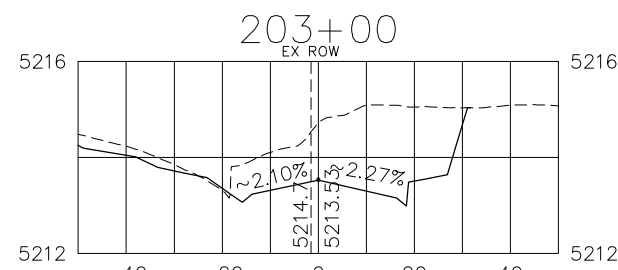
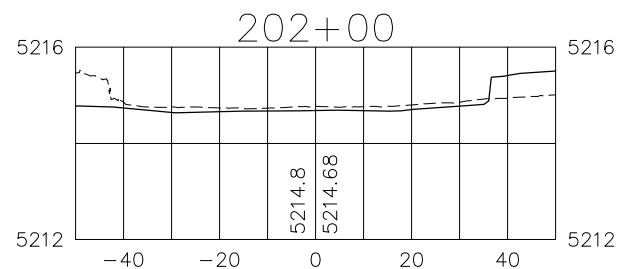
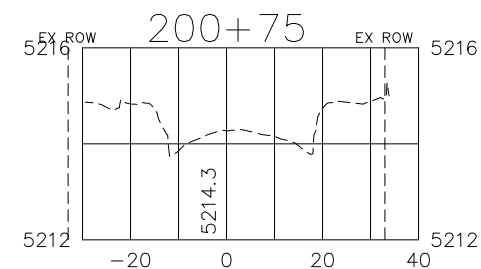
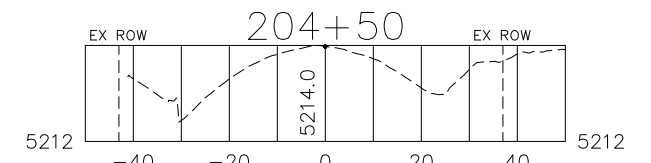
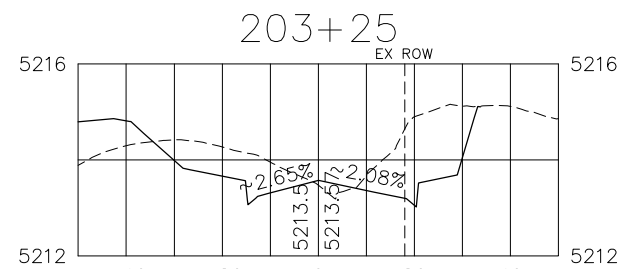
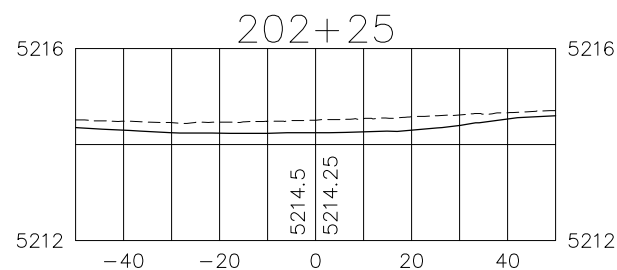
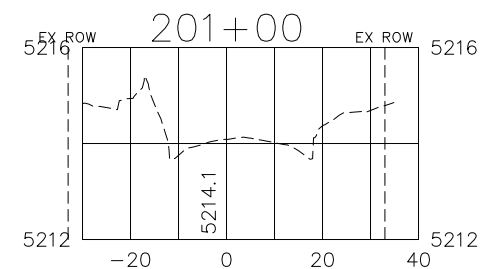
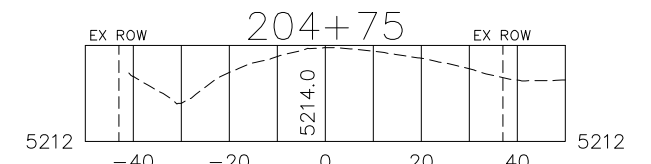
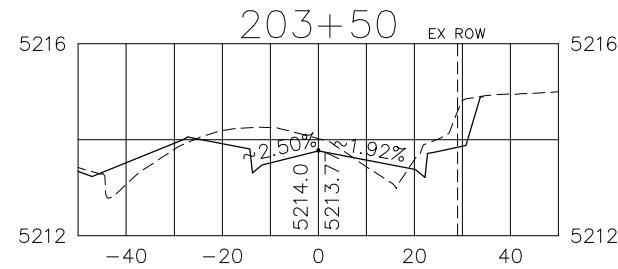
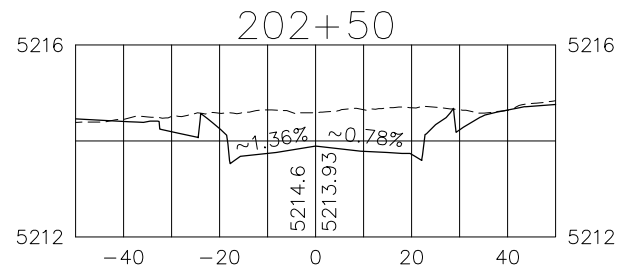
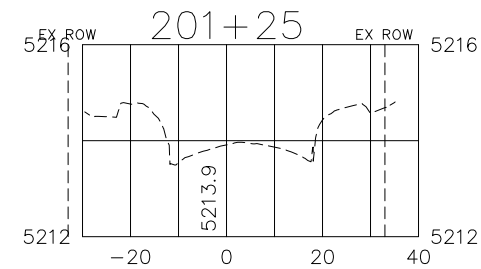
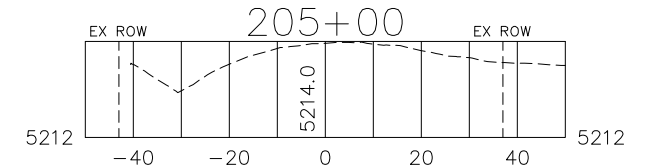
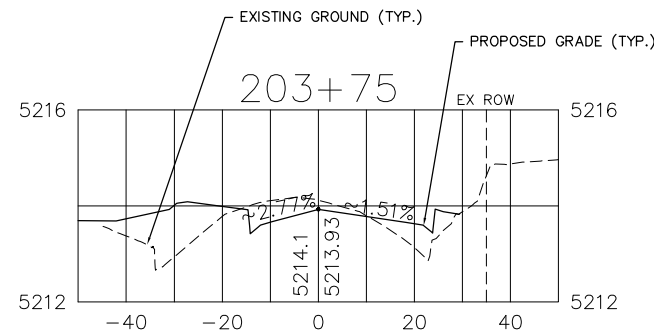
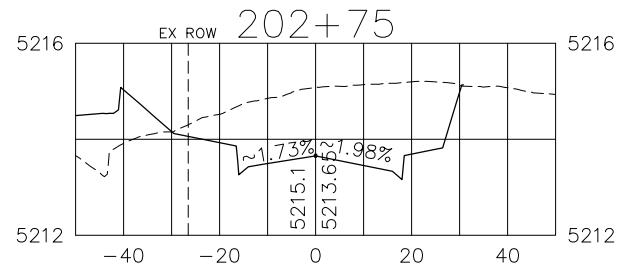
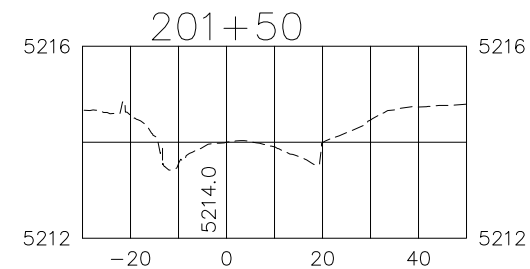




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CROSS SECTIONS	

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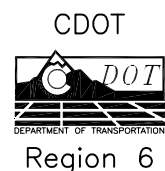


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GALAPAGO/WELTON CROSS SECTIONS

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STU M320-060
16952
Sheet Number 53

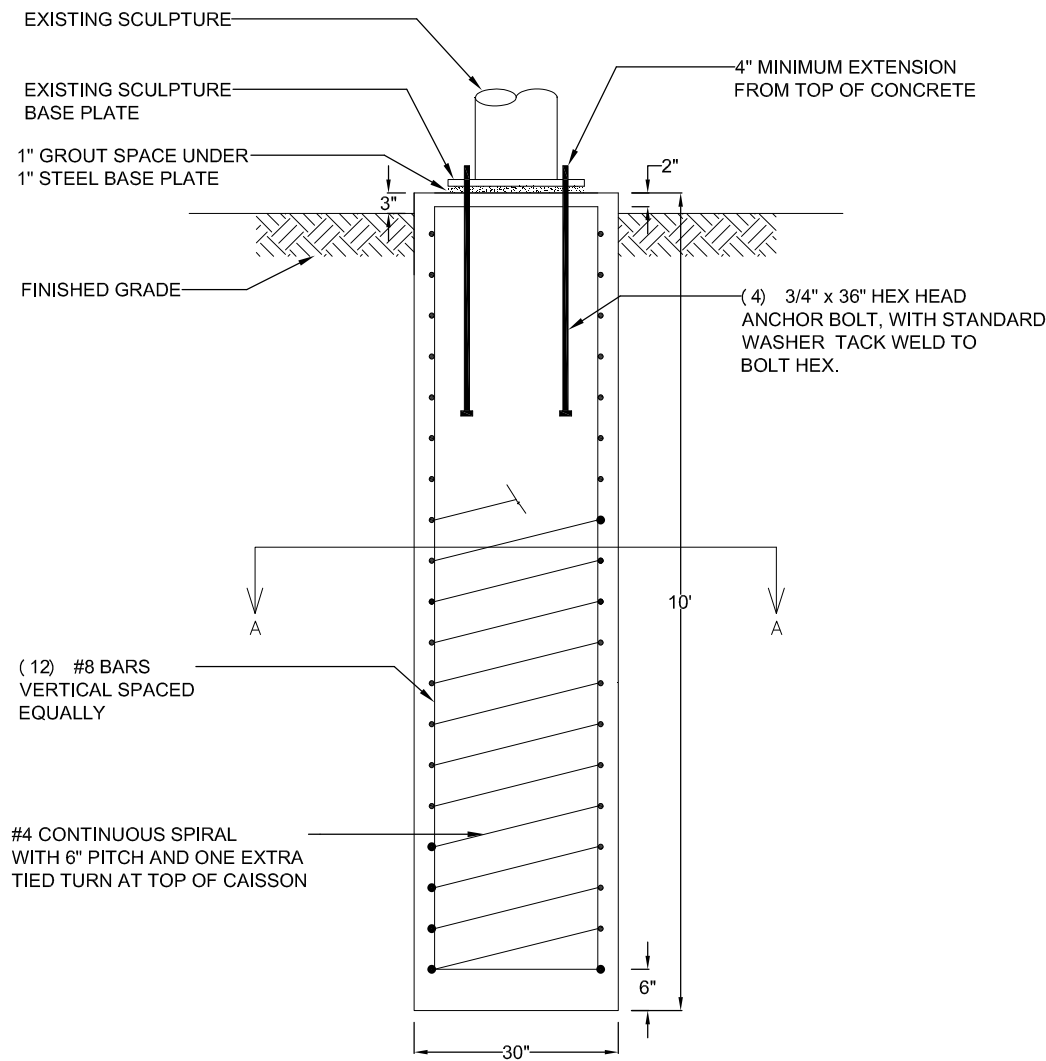
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ANCHOR BOLTS

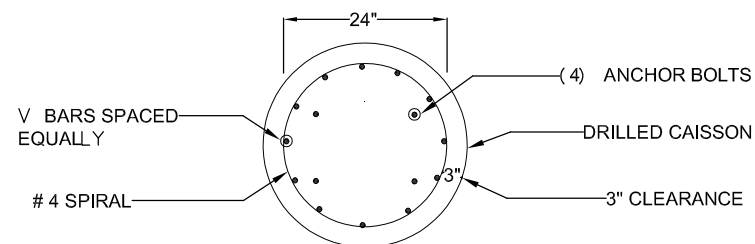
- (4) 3/4" DIAMETER ANCHOR BOLTS PER CAISSON WITH (2) 3/4" HEX AND (2) 3/4" WASHERS PER BOLT WITH THREADED END GALVANIZED TO AT LEAST 12" FROM END.
- ANCHOR BOLTS SHALL BE A307, GRADE A OR F1554, GRADE 36.
- LENGTH, THREAD LENGTH, AND DIAMETER OF EACH ANCHOR BOLT SHALL BE AS NOTED ABOVE IN DETAIL.
- 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 TOLERANCE IN ACCORDANCE WITH ANSI B1.1.

NUTS AND WASHERS

- 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 THRE 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 NUTS.



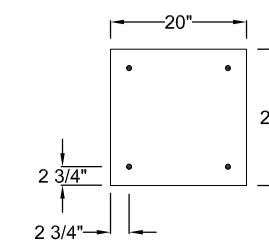
CAISSON PROFILE



SECTION A-A

GENERAL NOTES

- A DESIGN WIND VELOCITY OF 100 MPH HAS BEEN USED FOR THE DESIGNS HEREIN.
- 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 SCULPTURE.
- ANCHOR BOLTS AND NUTS ARE TO BE FURNISHED BY THE CONTRACTOR AND ARE INCLUDED IN THE COST OF THE CAISSON. ANCHOR BOLTS AND NUTS SHALL NOT BE PAID FOR SEPARATELY.
- FOUNDATION SHALL BE PAID BY THE FEET OF DEPTH DRILLED.
- 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 4,000 PSI CLASS B AIR ENTRAINED CONCRETE.
- YIELD STRESS OF REINFORCING STEEL SHALL BE MINIMUM 60,000 PSI.



EXISTING BASE PLATE DETAIL

Computer File Information		Index of Revisions		 	 	As Constructed		MANGOLD SCULPTURE FOUNDATION	Project No./Code	
Creation Date: 12/07/09	Initials: PM					No Revisions:				STU M320-060
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